valentin DRUCKSYSTEME

FLEXICODE

Service Instructions

Quality . Tradition . Innovation

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

We reserve the rights to make modifications.

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

Trademarks

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Carl Valentin direct print modules comply with the following safety guidelines:

CE Low-Voltage Directive (2014/35/EU)
Electromagnetic Compatibility Directive (2014/30/EU)

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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 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 dealer.

1.2 Instructions

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

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

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

WARNING of cutting injuries.

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

WARNING of hand injuries.

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

WARNING of hot surfaces.

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

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

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

Gives you tips on protecting the environment.

⇒ Handling instruction

* Optional accessories, special fittings

`Date` Information in the display

1.3 Cross References

Drawings

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

Cross references to chapters and sections

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

References to other documents

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

2 Safety Instructions

2.1 General Safety Instructions

Workplace and method of working

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

⇒ Work in a safety-conscious manner.

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

Clothing

CAUTION!

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

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

⇒ Button or roll up shirt or jacket sleeves.

⇒ Tie or pin up long hair.

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

DANGER!

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

⇒ Do not wear clothing with metal parts.

⇒ Do not wear jewellery.

⇒ Do not wear glasses with a metal frame.

Protective clothing

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

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

Protective equipment

WARNING!

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

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

⇒ Replace faulty parts and those which have become unusable.

General safety instructions

The direct print module is configured for a voltage of 200-240 V AC or 100-120 V AC (see type plate). It has to be plugged into a grounded socket only. 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).

NOTICE!

With the open printing unit (due to construction) the requirements of EN 62368-1 regarding fire protection casing are not fulfilled. These must be ensured by the installation into the end device.

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.

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

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

CAUTION!

Two-pole fuse.

⇒ Before opening the housing cover, disconnect the printing system 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 General Notes

3.1 Continuous Mode

Material Speed

Please note that the material has sufficient adhesion at the pressure transducer roll or encoder roll to permit the exact speed by the encoder.

It is only possible to print when respecting the operating conditions, i.e. the speed has to be observed.

Print Principle

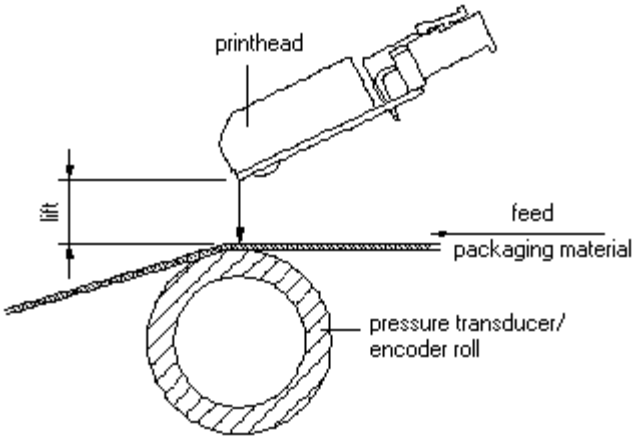


Figure 1

After starting a print order the printhead moves against the print medium. The feed of material is registered by the encoder and then evaluated. The printhead is in start position as long as the printing onto the moving material is finished and then it moves back to its home position.

Material Guiding

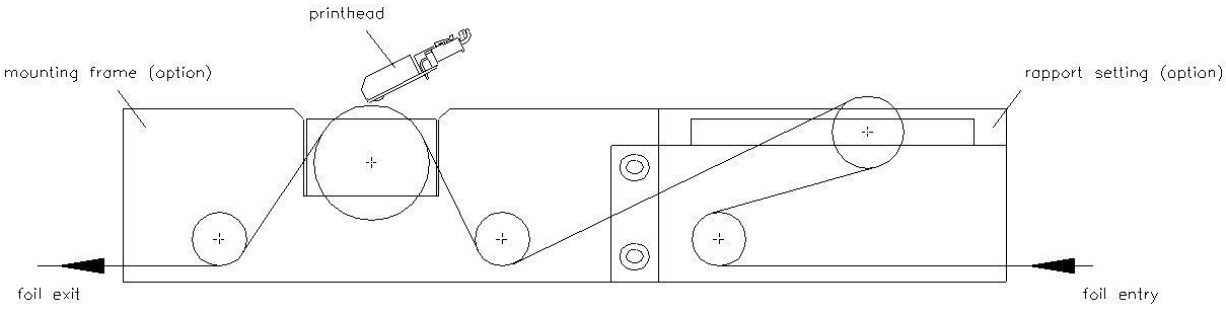


Figure 2

NOTICE!

In case the encoder is connected to the counter-pressure roll or the encoder roll you have to observe that the material has sufficient adhesion at the pressure roll or encoder roll to guarantee an exact speed by the encoder.

3.2 Intermittent Mode

Print Principle

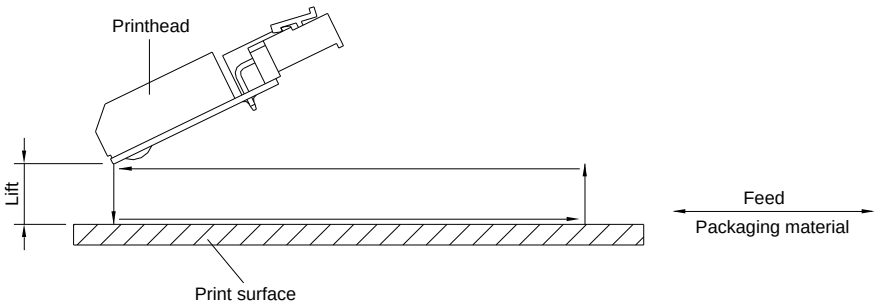


Figure 3

After starting a print order the printhead moves against the print medium. Afterwards the printing carriage moves corresponding to the set or transferred layout length linear over the material which is to be printed. After the print procedure the printhead again lifts up and the printing carriage moves again to the starting position.

Print Position

The direct print module has a print length of 40 mm maximum. The print start position is in a difference of approx. 40 mm to the side panel.

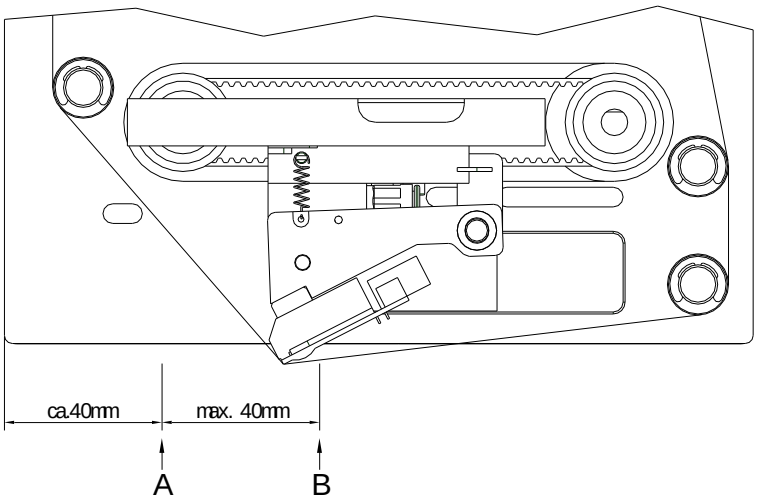


Figure 4

A: Start position

B: End position

3.3 Changing the Module Type

Switch on the control unit and the display shows the main menu.

Press the key F to access the function menu.

Press the key → until the menu *Service functions* is displayed.

Press the key ● to select the menu.

Press the key → until the menu *Paper counter* is displayed.

Press the key 💾 to access the menu *Password*.

Enter the service password '2904'.

Press the key ● to confirm the entry.

Press the key ▲ or ▼ to select the module type.

Press the key ● to confirm the selection.

The changed module type is indicated in the display.

Press the key → to move to the next display.

Indication if a standard motor (ID166) or a stronger motor (ID267) is installed.

Press the key → to move to the next display.

Press the key ▲ or ▼ to select if a left or a right print module is mounted.

4 Electronics (Replacing Components)

DANGER!

Risk of death via electric shock!

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

4.1 Primary Fuses

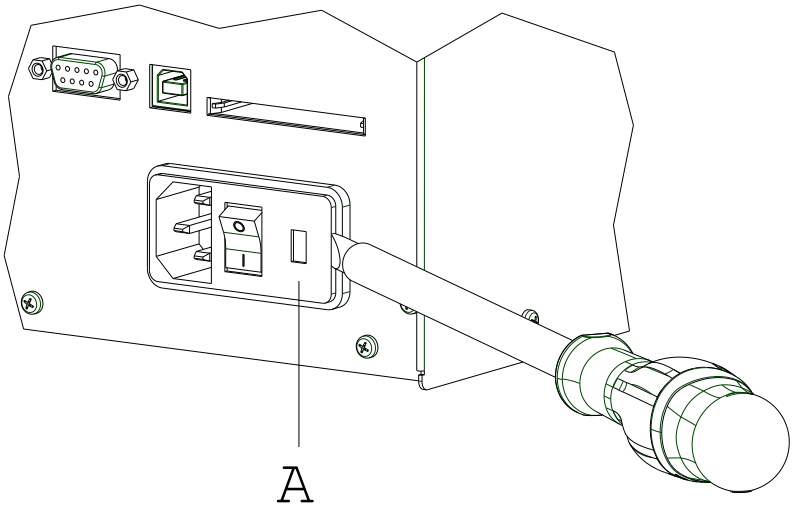


Figure 5

NOTICE!

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

1. Unplug the machine and then open the cover (A).
2. Remove the fuse-holder (the fuse-holder is placed behind the cover).
3. Replace the fuses (microfuse two T4A 250 V).

4.2 CPU PCB

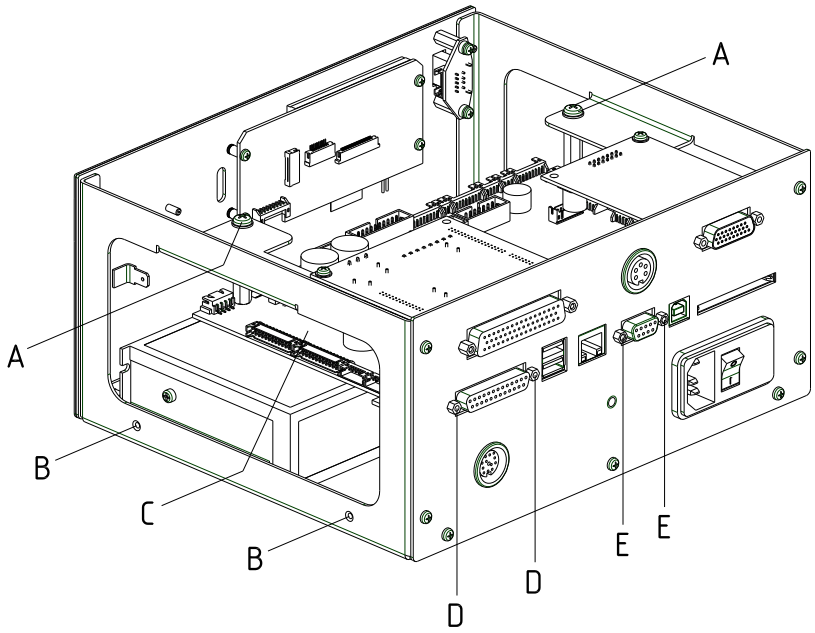


Figure 6

Remove the CPU PCB

NOTICE!

Save direct print module configuration onto a CF card.

1. Unplug the module from the electrical outlet.
2. Remove the screws (B) and remove the cover of control unit.
3. Unplug all connections from the CPU PCB (C).
4. Unscrew the fixing screws (D) at the parallel interface.
5. Unscrew the fixing screws (H) at the serial interface.
6. Remove the screws (A).
7. Remove the CPU BCP (C) carefully of one of the lateral housing openings.
8. If necessary, remove the hexagonal pillar of the CPU.

Install the CPU PCB

1. If necessary, install the hexagonal pillar of the old CPU.
2. Pass the CPU (C) through one of the lateral housing openings and fasten the CPU again with the screws (A, D, E).
3. Insert all plug connections in the PCB.
4. Install again the control unit cover with the screws (B).
5. Restore all interface connections.
6. Connect again the power cable.
7. Verify the firmware version and update it, if necessary.
8. Load the direct print module configuration from CF card. Otherwise set the configuration with help from the function menu.

4.3 Battery

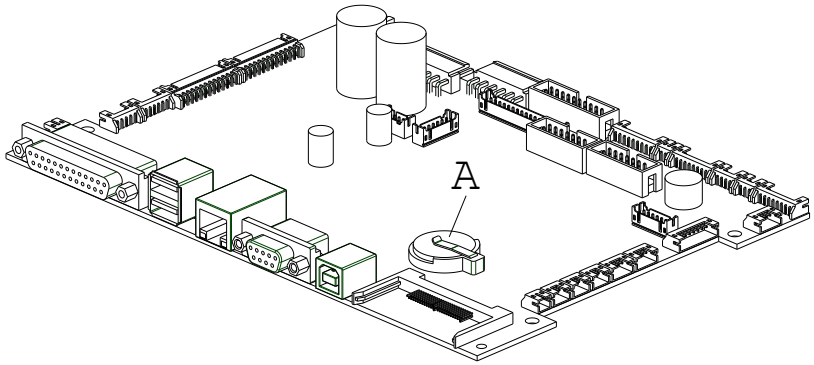


Figure 7

DANGER!

Danger of explosion due to improper replacement of the battery!

⇒ Use non-conductive tools.

⇒ Pay attention to polarity.

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

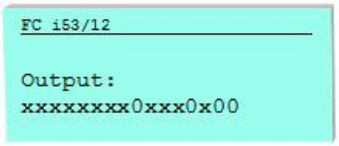
NOTICE!

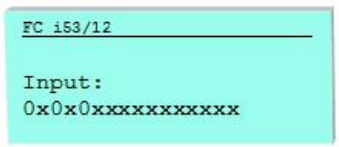
Pay attention to polarity.

4.4 Input/Output Board

NOTICE!

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





If an input is activated then the position corresponding to this input changes to 1.
To activate an output, move the cursor to the corresponding position and press the keys ▲ and ▼ to set value 1.
To deactivate the output, set the corresponding position again to 0.
Inputs and outputs marked with 'x' are not occupied (example at the left side). The example refers to the I/O Profile 'standard_direct' (see function menu 'I/O Parameters').

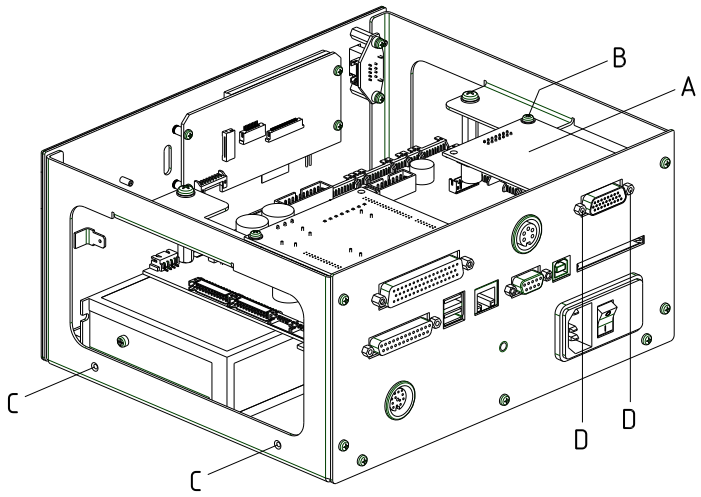


Figure 8

Remove the I/O board

1. Unplug the module from the electrical outlet.
2. Remove the screws (C) and remove the control unit cover.
3. Unscrew the fixing screws (D) at the SUB-D socket.
4. Remove the screw (B).
5. Remove the I/O board and remove the connections.

Install the I/O board

1. Connect the I/O board (A) to the appropriate cable and position it.
2. Install the fixing screws (D) and screw (B).
3. Install again the control unit cover with the screws (C).
4. Connect again the power cable.

4.5 Distributor Plate

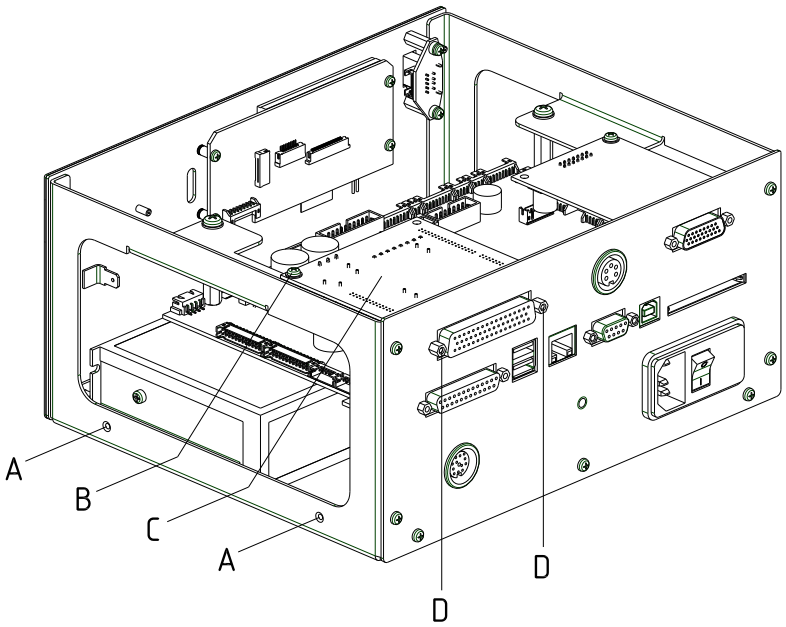


Figure 9

Remove the distributor plate

1. Unplug the module from the electrical outlet.
2. Remove the screws (A) and remove the control unit cover.
3. Unscrew the fixing screws (D) at the SUB-D socket.
4. Remove the screw (B).
5. Remove the distributor plate (C) and remove the connections.

Install the distributor plate

1. Insert all connections in the distributor board and place the distributor plate.
2. Install the fixing screws (D) and screw (B).
3. Install again the control unit cover with the screws (A).
4. Connect again the power cable.

4.6 Power Supply Unit

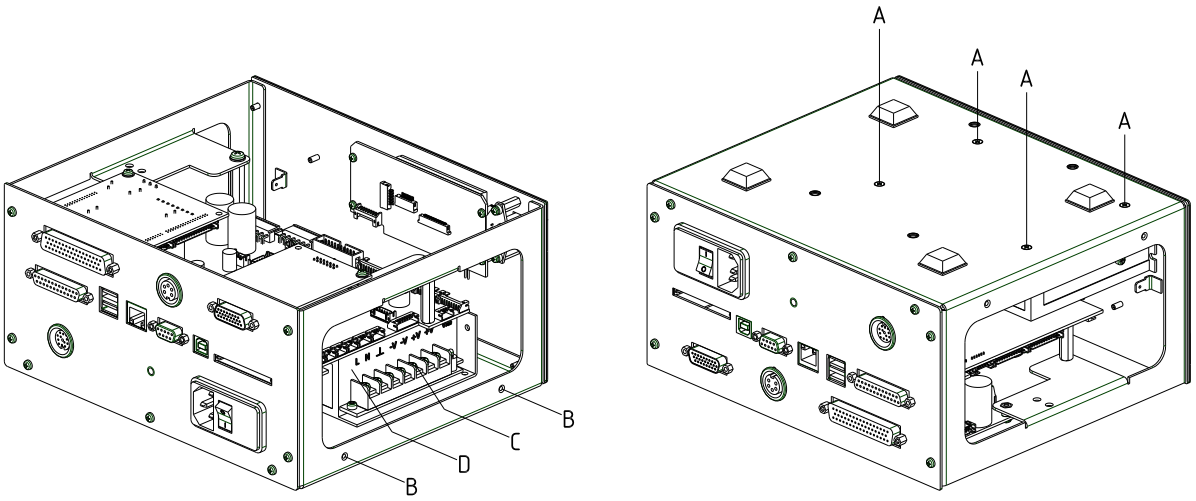


Figure 10

Remove the power supply unit

1. Unplug the module from the electrical outlet.
2. Remove the screws (B) and remove the control unit cover.
3. Remove the CPU PCB (see chapter 4.2, page 16).
4. Remove transparent cover above the clamps (C).
5. Loosen clamps (C) and remove all wires.
6. Unscrew the fixing screws (A) of power supply unit (D) from electronics underside.
   At the same time hold power supply unit.

Install the power supply unit

NOTICE!

Pay attention to the correct position of voltage selector switch in the power supply unit.

1. Place the new power supply unit (D) in the cover of the control unit and fix it with the screws (A).
2. Fix again all connections at the clamps (C).

   NOTICE!

   Pay attention to the correct cable configuration at the screw-type terminal.
3. Apply the transparent cover above the clamps.
4. Install again the CPU PCB.
5. Install again the control unit cover with the screws (B).
6. Connect again the power cable.

5 Cleaning

DANGER!

Risk of death via electric shock!

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

NOTICE!

When cleaning the direct print module, personal protective equipment such as safety goggles and gloves are recommended.

5.1 Cleaning Instructions

NOTICE!

The handling instructions for the use of Isopropanol (IPA) must be observed. In 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 direct print module!

⇒ Do not use abrasives or solvents to clean the outer surface of the direct print module.

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

5.2 Transfer Ribbon Drawing Roller

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

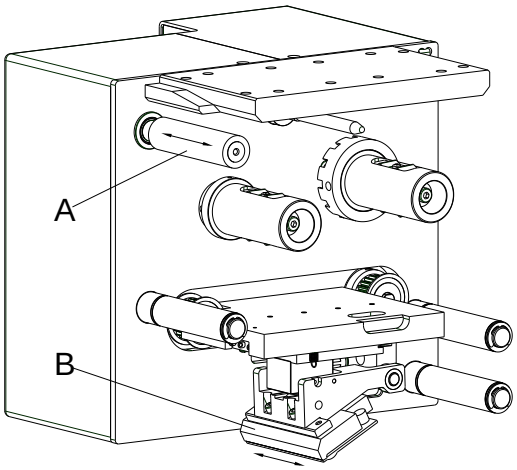


Figure 11

1. Remove the cover.
2. Remove transfer ribbon from the direct print module.
3. Remove deposits with the roller cleaner and a soft cloth.
4. If the roller (A) appears damaged, replace it.

5.3 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!

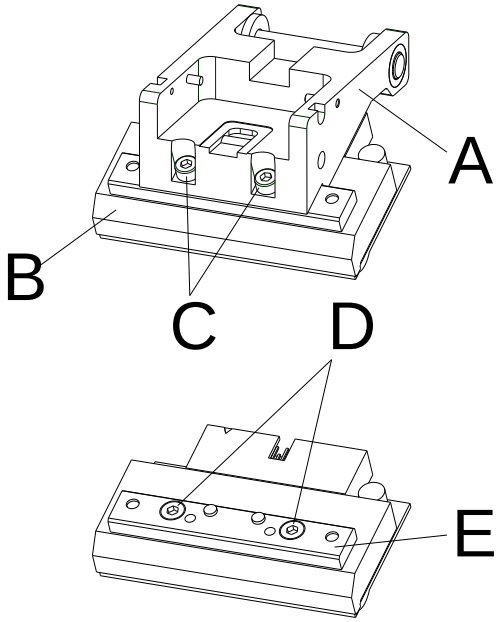
⇒ Do not use sharp or hard objects to clean the printhead.

⇒ Do not touch the protective glass layer of the printhead.

1. Remove the cover.
2. Clean the printhead surface (B) with a special cleaning pen or a cotton swab dipped in pure alcohol.
3. Before using the printing system, let the printhead dry for about two to three minutes.

6 Printhead

6.1 Replace the Printhead



CAUTION!

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

⇒ Set up the device 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 printhead with hard objects or your hands.

Figure 12

Remove the printhead

1. Remove the cover.
2. Move the printhead unit in an appropriate service position.
3. Press the printhead support (A) slightly downwards until an Allen key can be inserted in the screws (C).
4. Unscrew the screws (C) and remove the printhead (B) with the printhead flat rod (E).
5. Remove the connection at the rear of the printhead.
6. Remove the screws (D) and afterwards the printhead (B).

Install the printhead

1. Fix the printhead flat rod (E) with the screws (C) to the printhead. Ensure the correct position of the flat rod (see illustration).
2. Insert the connection assembly to the new printhead.
3. Position the printhead (B) in the printhead support (A), so the engaging pieces catch in the appropriate holes in the printhead support (A).
4. Hold the printhead holder (A) with a finger slightly on the pressure roll and check the correct position of printhead (B).
5. Screw in the screw (C) and tighten it with an Allen key.
6. Insert again the printhead cable.
7. Insert the transfer ribbon.
8. Enter the resistance value of the new printhead in the menu *Service Functions/Heater resistance*. The value is indicated on the type plate of printhead.
9. Start a test print to check the printhead position.

6.2 Angle Adjustment

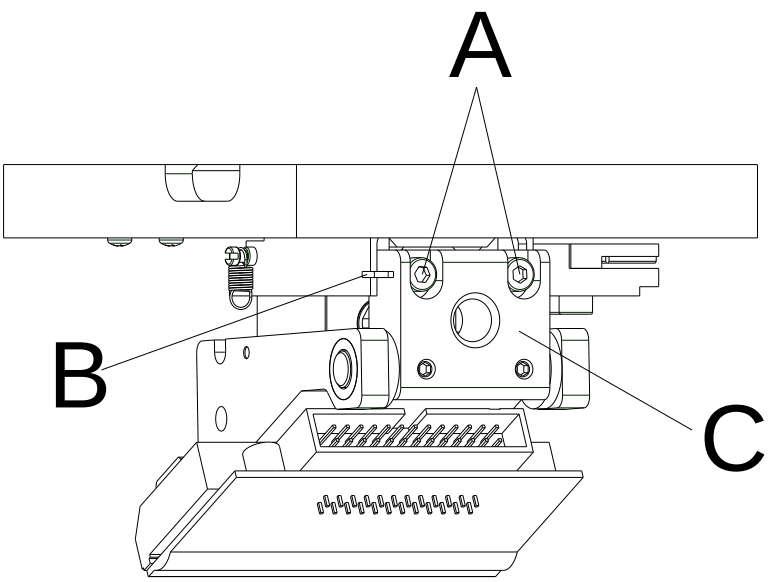


Figure 13

The installation angle of the printhead is default 26° to the print surface. However, manufacturing tolerances of the 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 the Allen head screws (A).
2. Move the adjusting part (C) to adjust the angle between the printhead and printhead support.
   move downwards = decrease angle
   move upwards = increase angle
3. Tighten again the Allen head screws (A).
4. Start a print order with approx. three layouts to check the correct unwrinkled ribbon run.

NOTICE!

The slots (B) serve for position control. Pay attention to a parallel adjustment.

7 Printing Carriage (Replacing Components)

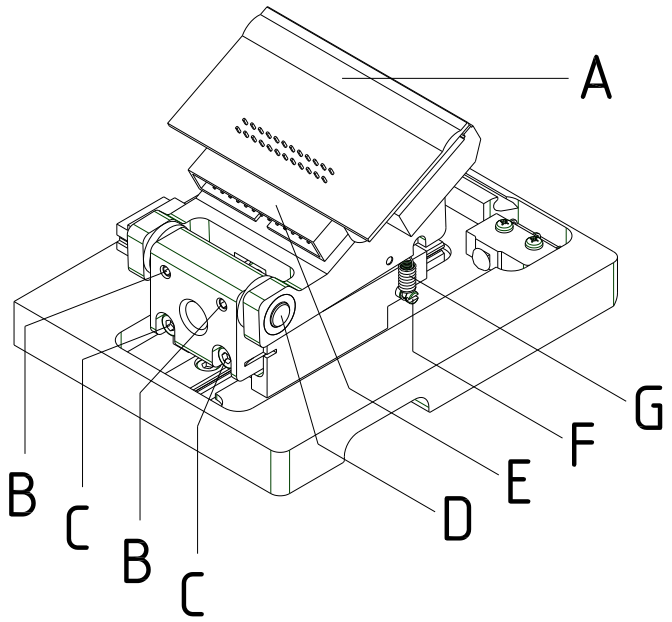


Figure 14

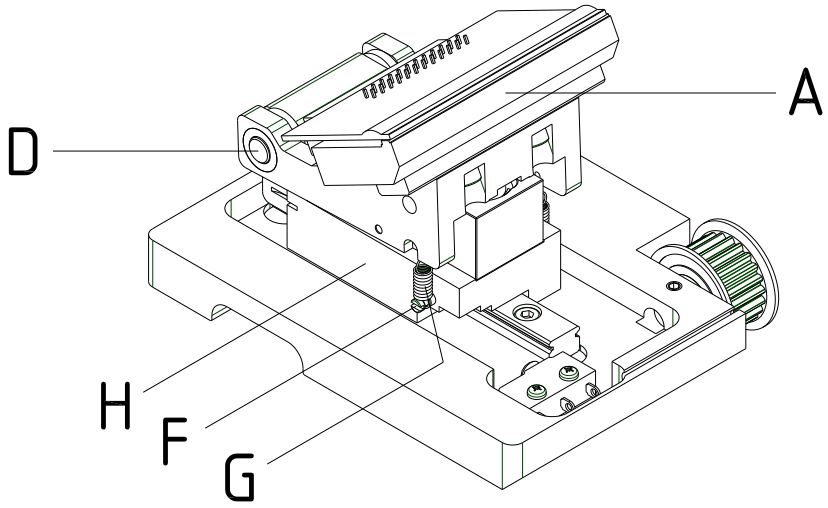


Figure 15

NOTICE!

Use screw locking adhesive Loctite® 243™ to secure the screw (B) and spring pillar (F) against unintentional unscrewing.

7.1 Printhead support

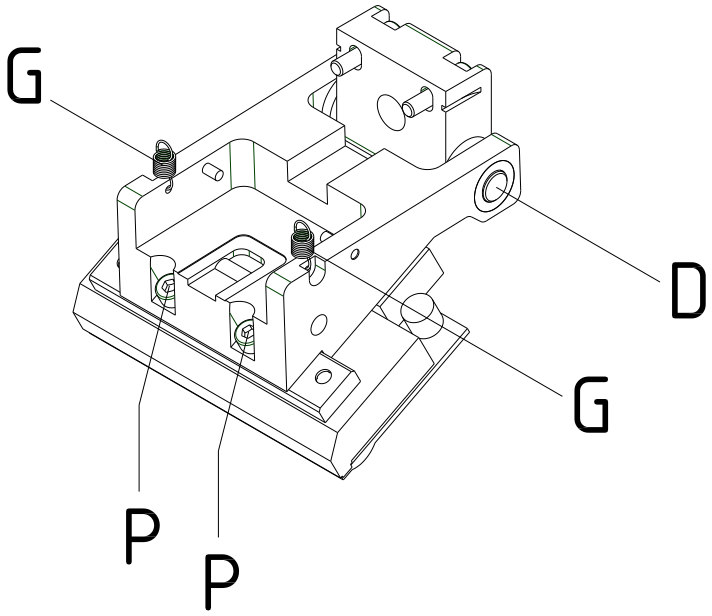


Figure 16

1. Remove the front cover of the print mechanics.
2. Push both tension springs (G) with a tweezers from the spring pillars (F, Figure 14).
3. Remove the printhead cable (E, Figure 14) from the printhead (A, Figure 14).
4. Remove the hexagon socket screws (C, Figure 14).
5. Remove the complete printhead unit.
6. Disconnect the pneumatic tube.
7. Carry out the necessary service work, e.g. replace springs (G) or printhead support.
   Please observe the following notice.

NOTICE!

The component can be fractionized further in its individual parts. For this, unscrew the headless pins (B, Figure 14) and remove the printhead shaft (D).
When installing take care on parallelism of the slots next to the screws (C, Figure 14) to the slots in the guiding carriage (H, Figure 15). After removing the screws (P) the printhead (A) can be removed (see chapter 1.1, page 23

NOTICE!

Use screw locking adhesive Loctite® 243™ to secure the spring pillar (F) against unintentional unscrewing.

7.2 Guiding carriage

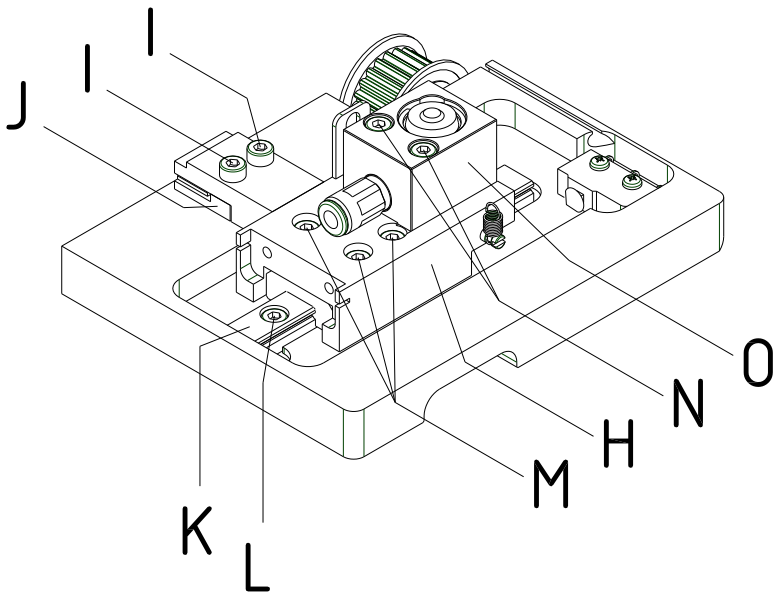


Figure 17

1. Remove the hexagon socket screws (N) for removing the pneumatic cylinder (O).
2. Remove the hexagon head screws (M) for removing the linear guiding (K).
3. Push the guiding carriage (H) aside until the track carriage underneath appears. Remove the hexagon socket screws (L) for replacing the linear guiding (K).
4. The guiding has only little play in the nut to guarantee a linear guiding.
   Lever the linear guiding by means of a screw driver carefully.

   NOTICE!

   If the new guiding should have too much play in the nut, press it to the edge and tighten it.
5. Remove the screws (I) of the washer lock (J) for removing the guiding carriage (H).
   After removing these screws and the 4 screws (M) the guiding carriage (H) can be removed.

NOTICE!

Use screw locking adhesive Loctite® 243™ to secure the screws (I) of the washer lock (J) against unintentional unscrewing.

7.3 Linear cogged belt

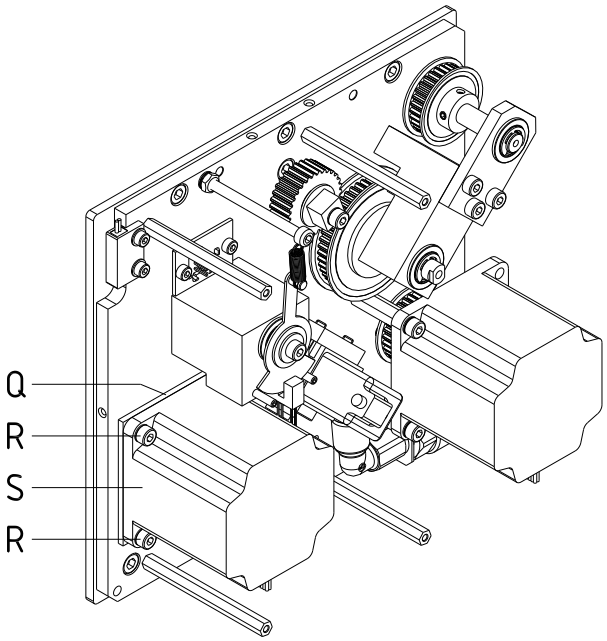


Figure 18

1. Remove the step motor (S).
2. Remove the power electronics and distributor board (see chapter 1.1, page 29).
3. Unscrew 3 screws (R) and remove the intermediate plate (Q) and step motor (S).
4. The cogged belt stands free and can be replaced.
5. Install all components in reverse order.

8 Print Mechanics (Replacing Components)

8.1 Power Electronics and Distributor Plate

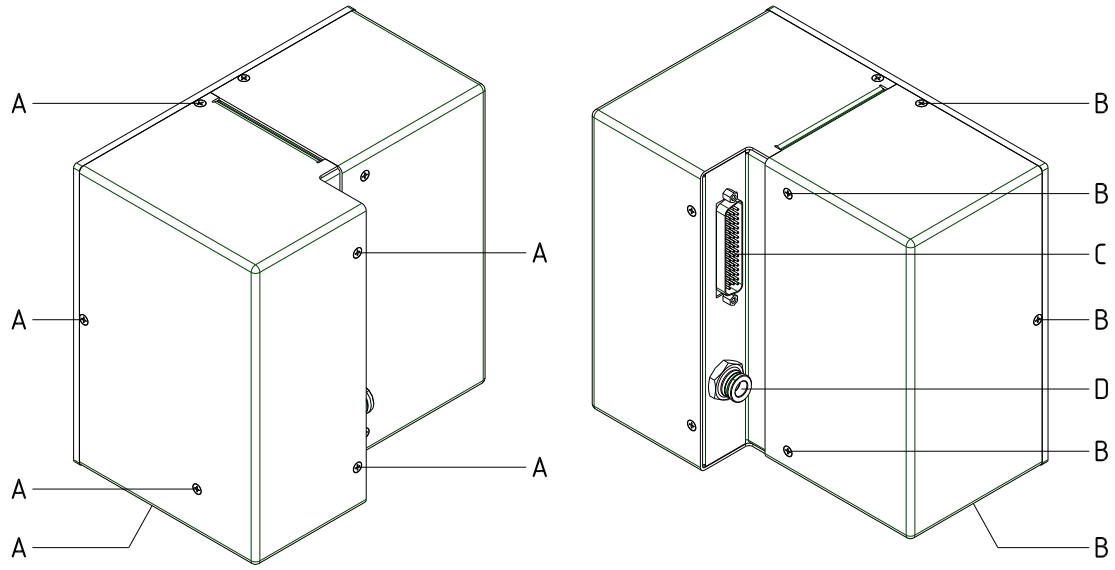


Figure 19

Remove the power electronics and distributor board

1. Remove the connection cable (C) to the control unit.
2. Release the pressure and remove the compressed-air tube (D).
3. Remove the screws (A) and detach the rear cover (high).
4. Remove the screws (B) and detach the rear cover (low).

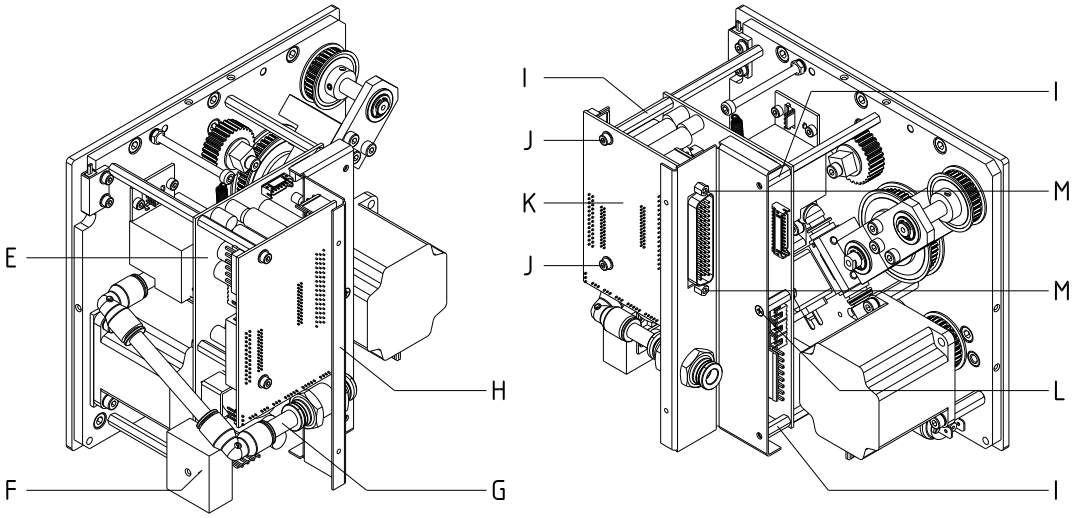


Figure 20

5. Unscrew two hexagonal bolts (M) at the SUB-D male connector.
6. Remove two screws (J) and detach the distributor board (K). Remove all wires from the distributor board.
7. Remove the pneumatic tube (G) from bulkhead connector.
8. Remove the screw (L) and detach the connection plate (H).
9. Unscrew three hexagonal bolts (I).
10. Remove the screw (F, not visible). Disconnect all wires from the power electronics (E). Remove the power electronics (E).

Install the power electronics and distributor board

1. Connect all wires at the new power electronics (E) and position this by the hexagonal bolts.
2. Fix the power electronics (E) with 3 hexagonal bolts (I) and the screw (F) at the existing bolts.
3. Install again the connection plate (H) with screw (L).
4. Connect the pneumatic tube (G).
5. Position the distributor board (K) in the excavation of the connection plate and fix it with the screws (J) and bolts (M).
6. Mount again both rear covers.
7. Install again the compressed-air tube (D) and the connecting cable (C).

8.2 Valve and Pressure Control Device

DANGER!

Risk of injury via a short-circuit.

Because of technical reasons, the adjusting screw (J) of pressure control device is on a voltage potential of 5V.

⇒ Use isolated tools.

⇒ Do not touch the components connected with mass.

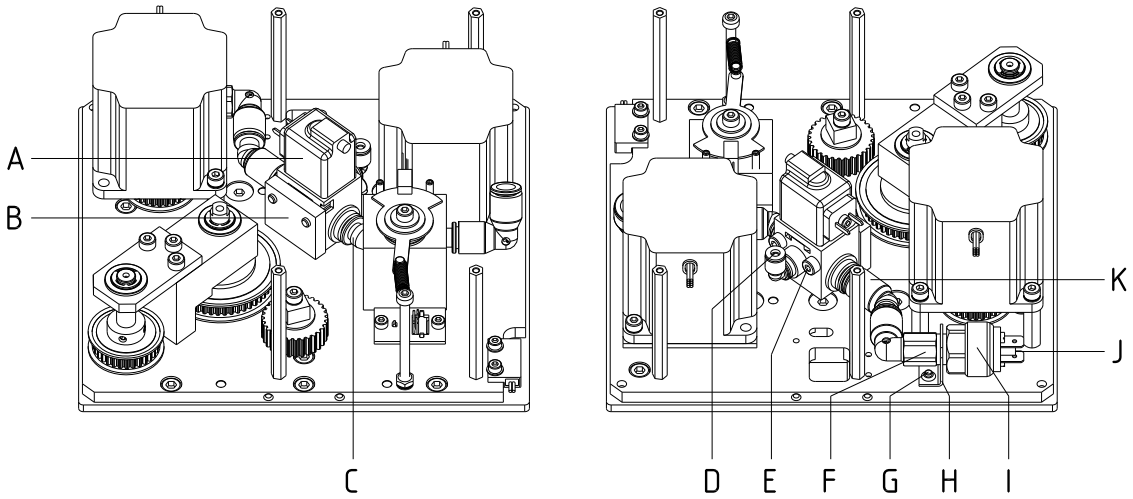


Figure 21

Remove the valve

1. Dismount the power electronics and distributor board (see chapter 1.1, page 29). The print mechanics are arranged as shown in the drawing above.
2. Remove both screws (not visible) of the valve support (B) aside the printhead.
3. Remove all pneumatic connections (C, D, K) to the valve (A).
4. Remove the valve assembly group (A). Remove the screws (E) and detach the support (B). Replace the valve.

Remove the pressure control device

1. Remove the screws (G).
2. Loosen the pneumatic connection and remove the holding angle (H) with the pressure control device (I).
3. Remove the L connection (F) including blocking.

Install the valve and pressure control device

1. Fix the valve support (B) with screws (E) at the valve (A).
2. Preassemble the new pressure control device (I) with the L connection (F) including blocking at the holding angle (H).
3. Construct the pneumatic connection between the valve (A) and pressure control device (I).
4. Insert the complete valve assembly group with the pressure control device and fix the valve support (B) as well as the holding angle (H) at the supporting plate. While doing so, connect the pneumatic connection (C) with the assembly group.
5. Install the power electronics and the distributor board (see chapter 1.1, page 29).

NOTICE!

The switch point must be set for the new pressure control device. To do this, set the compressed air supply on the manometer to 2 bar. The value 'P' (compressed-air control) is monitored in the menu 'Service Functions'. Turn the adjusting screw (J) on the pressure control device (between the blade terminals!) until the value changes from 0 to 1.

If the value on the manometer is set to less than 2 bar, then the value 'P' must be 0. If it is not, then fine-tune again as necessary.

8.3 Transfer Ribbon Drawing Roller

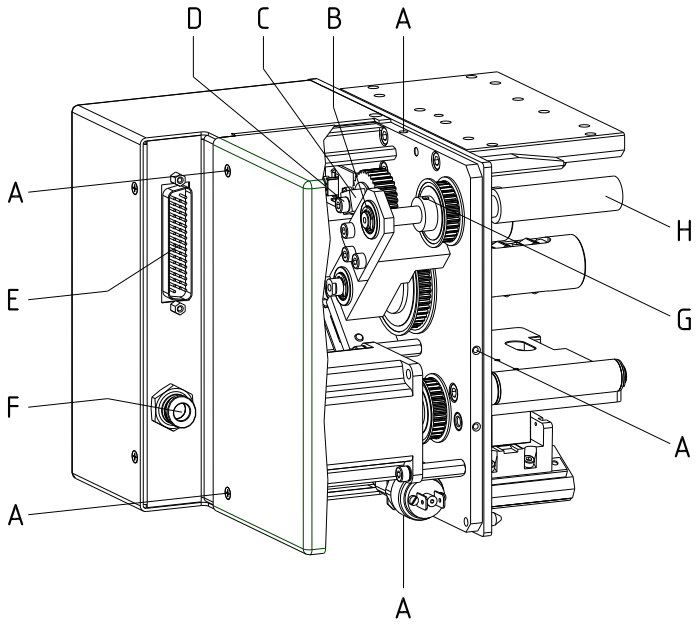


Figure 22

Remove the transfer ribbon drawing roller

1. Remove the connecting cable (E) to the control unit.
2. Release the pressure and remove the compressed-air tube (F).
3. Remove the screws (A) and detach the rear cover (low) of the print mechanics.
4. Remove the locking washer (B).
5. Loosen the two threaded pins (G) by one or two full turns.
6. Pull the drawing roller (H) out of its bearings. Hold the roller belt pulley tight while doing so. The belt tension can be reduced if necessary. To do this, loosen the screw (D) on the eccentric bearing (C). Adjust the belt tension by turning the eccentric bearing (C) using an open-end wrench SW10.

Install the transfer ribbon drawing roller

1. Insert the new drawing roller (H) into the ball bearing of the supporting plate.
2. Position the belt pulley with the toothed belt such that you can insert the drawing roller.
3. Push the drawing roller (H) through to the back and put the locking washer (B) back on.
4. Fasten the toothed belt with threaded pins (G). One pin must be touching the milled surface of the roller axle.

5. If the eccentric bearing has become loosened, you must adjust the belt tension. Then tighten the screw (D) again.

   CAUTION!

   Too high belt tension leads to greater wear and premature failure of the slide bearings.

   ⇒ To protect the bearing points, do not set the belt tension too high.

6. Check that the belt runs correctly by turning the drawing roller (H).
7. Install again the cover of print mechanics.
8. Install again the compressed-air tube (F), connection cable (E) and the front cover.

8.4 Transfer Ribbon Rewinder/Unwinder Unit

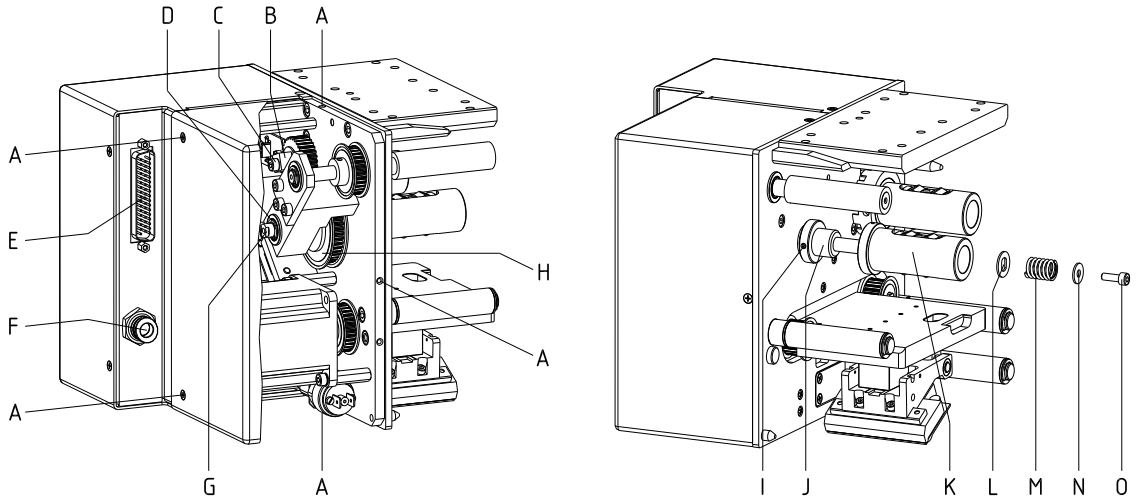


Figure 23

Remove the transfer ribbon rewinder roll

1. Remove the connecting cable (E) to the control unit.
2. Release the pressure and remove the compressed-air tube (F).
3. Remove the front cover of print mechanics.
4. Remove the screws (A) and detach the rear cover of the print mechanics.
5. Unscrew the screw (O) and remove washer (N), spring (M) and carrier disc (L).
6. Remove the transfer ribbon roll (K).

Remove the transfer ribbon shaft

1. Remove the headless pin (I) and detach the bushing (J).
2. Remove the locking washers (D) from the shaft (G).
3. Pull the transfer ribbon shaft (G) out of its bearings. Hold the pulley (H) tight while doing so. The belt tension can be reduced if necessary. To do this, loosen the screw (C) on the eccentric bearing (B). Adjust the belt tension by turning the eccentric bearing (B) using an open-end wrench SW10.

Install the components

1. Insert a new transfer ribbon shaft (G) into the ball bearing of the carrier plate. Position the belt pulley (H) with the cogged belt such that you can insert the shaft.
2. Install again the locking washers (D).
3. Fix the bushing (J). One pin (I) must be touching the milled surface of the shaft (G).

1. If the eccentric bearing has become loose, you must adjust the belt tension. Then tighten the screw (C) again.

   CAUTION!

   Too high belt tension leads to greater wear and premature failure of the slide bearings.

   ⇒ To protect the bearing points, do not set the belt tension too high.

2. Check that the belt runs correctly by turning the shaft (G). The integrated roller clutch should only allow the shaft to turn in one direction.
3. Place the transfer ribbon roll (K) on the shaft and replace the lightly greased carrier disc (L) and the spring (M), washer (N) and screw (O).

   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 for a 55 mm wide transfer ribbon of standard quality. As a guide, the following can assumed for this factory setting:

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

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

   Tightening the Allen head screw (O) = Increase ribbon tension.

   Loosening the Allen head screw (O) = Reduce ribbon tension.
4. Install again the rear cover of print mechanics.
5. Install again the compressed-air tube (F), connecting cable (E) and the front cover.

Remove the transfer ribbon unwinder roll

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

In order to remove the transfer ribbon unwinder shaft, first the power electronics and distributor board are to be removed (see chapter 1.1, page 29) to guarantee access to all components.

8.5 Encoder

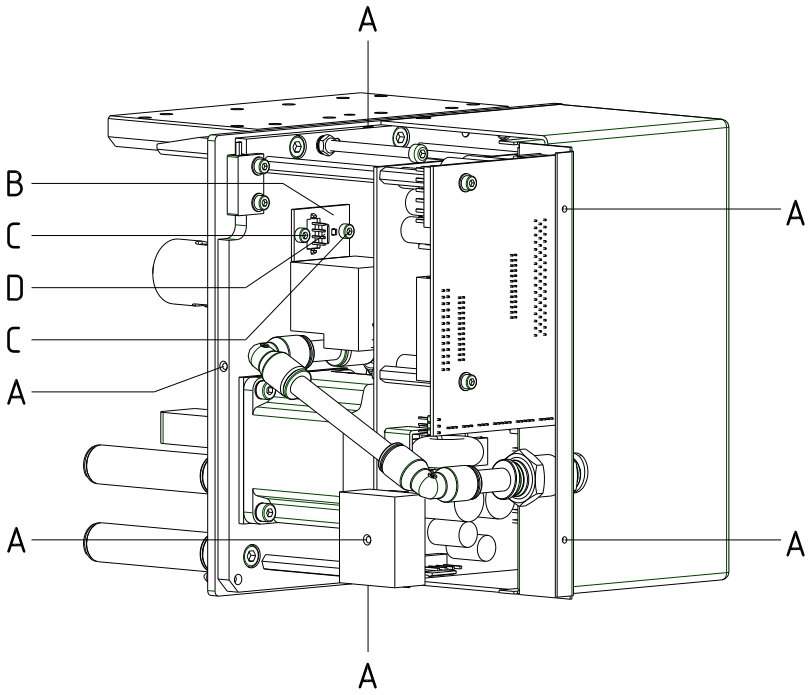


Figure 24

Remove the encoder

1. Remove the connecting cable to the control unit.
2. Release the pressure and remove the compressed-air tube.
3. Remove the screws (A) and detach the rear cover (high).
4. Remove the connector (D).
5. Remove the screws (C).
6. Pull out the supporting plate (B) with encoder from the carrier plate.
7. Unclip the encoder from the supporting plate (B).

Install the encoder

1. Clip the encoder into the supporting plate (B).
2. Insert the supporting plate (B) with encoder into the carrier plate and fix it with the screws (C).
3. Install again the connector (D).
4. Install again the rear cover.
5. Attach again the connecting cable and the compressed-air tube.

8.6 Cover Switch

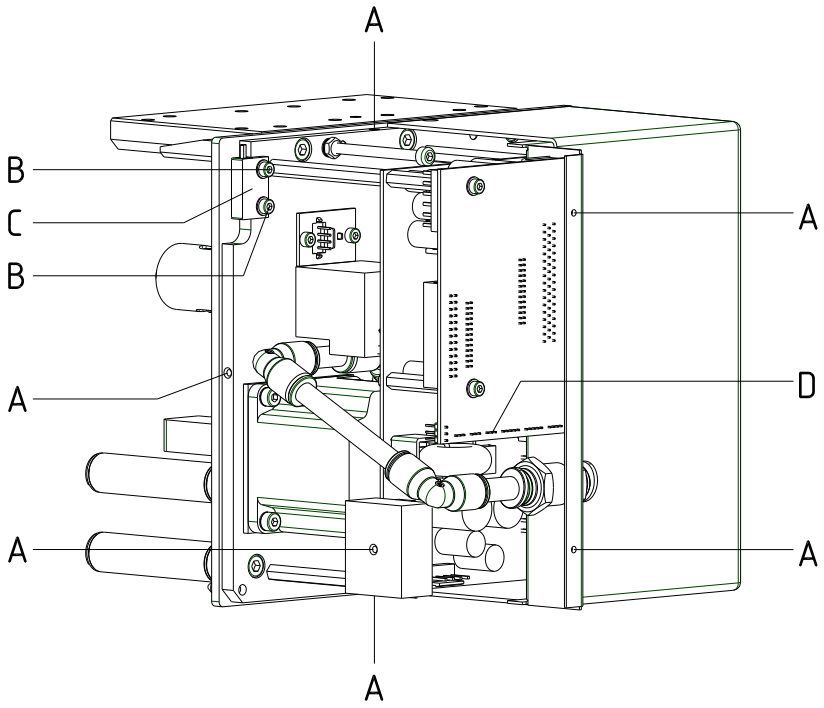


Figure 25

Remove the cover switch

1. Remove the connecting cable to the control unit.
2. Release the pressure and remove the compressed-air tube.
3. Remove the front cover of print mechanics.
4. Remove the screws (A) and detach the rear cover (high).
5. Disconnect the connector of cover switch (C) from the distributor board (D).
6. Remove the screws (B).
7. Remove the cover switch (C).

Install the cover switch

1. Fix the cover switch (C) with screws (B) at the carrier plate.
2. Insert the connector of cover switch (C) into the distributor board (D).
3. Install again the rear cover.
4. Attach again the connecting cable and the compressed-air tube.

NOTICE!

When finished, verify that the cover switch switches properly. It is a reed switch, which means the magnet on the front cover triggers the switch.

8.7 Limit Switch

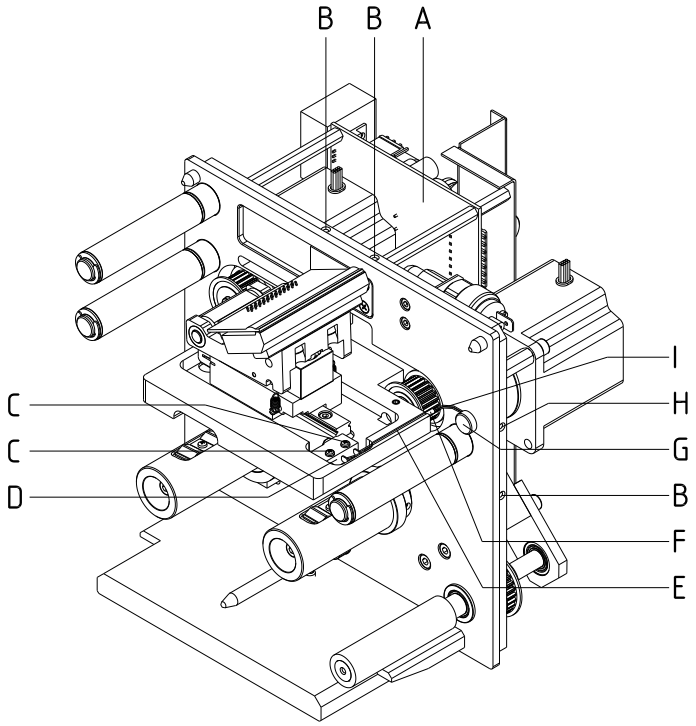


Figure 26

Remove the limit switch

1. Remove the connecting cable to the control unit.
2. Release the pressure and remove the compressed-air tube.
3. Remove the front cover of print mechanics.
4. Remove 11 screws (B) and dismount both rear covers of print mechanics.
5. Loosen the threaded pin (H) by 1-2 full turns.
6. Remove the cable guiding (G) from the carrier plate.
7. Remove the connector of limit switch (D) from the distributor board.
8. Remove the screws (C).
9. Remove the limit switch (D) and pull the insulating tube (F) from the nut (E).
10. Remove the supply line (I) from the nut (E) and guide it through the bore holes of the carrier plate.

Install the limit switch

1. Insert the supply line (I) of the limit switch (D) into the nut (E).
2. Insert the insulating tube (F) into the bore underneath the nut (E).
3. Mount the limit switch (D) with screws (C).
4. Insert the supply line of the limit switch (D) through the bore hole in the carrier plate and fix the cable guiding with a headless pin (H).
5. Insert the connector of limit switch (D) into the distributor board (A).
6. Install the rear cover of the print mechanics.
7. Connect again the connecting cable and the compressed-air tube.
8. Attach the front cover.

NOTICE!

When finished, verify that the limit switch switches properly. Push the printing carriage manually against the switch. The limit switch must actuate before the printing carriage reaches the end.

9 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).

Error message	Cause	Remedy
14 Field number	Received line number is invalid.	Check sent data. Check connection PC - printer.
15 Length mask	Invalid length of received mask statement.	Check sent data. Check connection PC - printer.
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 Cover open	The cover hood is open.	Close the hood.
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 exchange (if necessary). Reduce print speed.
70 Scanner data	Scanned data does not correspond to the data which is to print.	Exchange printhead.
71 Invalid page	As page number either 0 or a number > 9 is selected.	Select a number between 1 and 9.
72 Page selection	A page which is not available is selected.	Check the defined pages.
73 Undefined page	The page is not defined.	Check the print definition.
74 Format user guiding	Wrong format for customized entry.	Check the format string.
75 Format date/time	Wrong format for date/time.	Check the format string.
76 Hotstart CF	No CF card found.	If option hotstart was activated, a CF card must be inserted. Switch off the printer before inserting the memory card.
77 Flip/Rotate	Selection of print of several columns and also mirror/rotate.	It is only possible to select one of both functions.
78 System file	Loading of temporary hotstart files.	Not possible.
79 Shift variable	Faulty definition of shift times (overlapping times).	Check definition of shift times.
80 GS1 Databar	General GS1 Databar error.	Check definition and parameter of GS1 Databar code.
81 IGP error	Protocol error IGP.	Check sent data.

Error message	Cause	Remedy
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. 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.
122 IP occupied	The IP address was already assigned.	Assign a new IP address.

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

Error message	Cause	Remedy
135 Script user error	Error in LUA script user input.	Correct the input value.
136 No reprint available	No label data for reprinting available.	Send new label data to the printer.
137 Printhead short circuit	Electrical short at the printhead.	Check the used printhead. Please contact your distributor.
138 Too less ribbon	Transfer ribbon ends.	Change transfer ribbon.
139 Rewinder error	Label band is torn	Load a new label roll. Stick together the label band.
140 Rewinder motor blocked	External rewinder motor is blocked.	Switch off the printing system and check mechanical resistance. Change the full label roll.
141 Hardware error	A hardware component could not be found.	Please contact your responsible distributor.
142 No print mechanics	No print mechanics connected.	Check connection (print mechanics – control unit)

10 Control Inputs and Outputs

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

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

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

Printer, internal circuitry

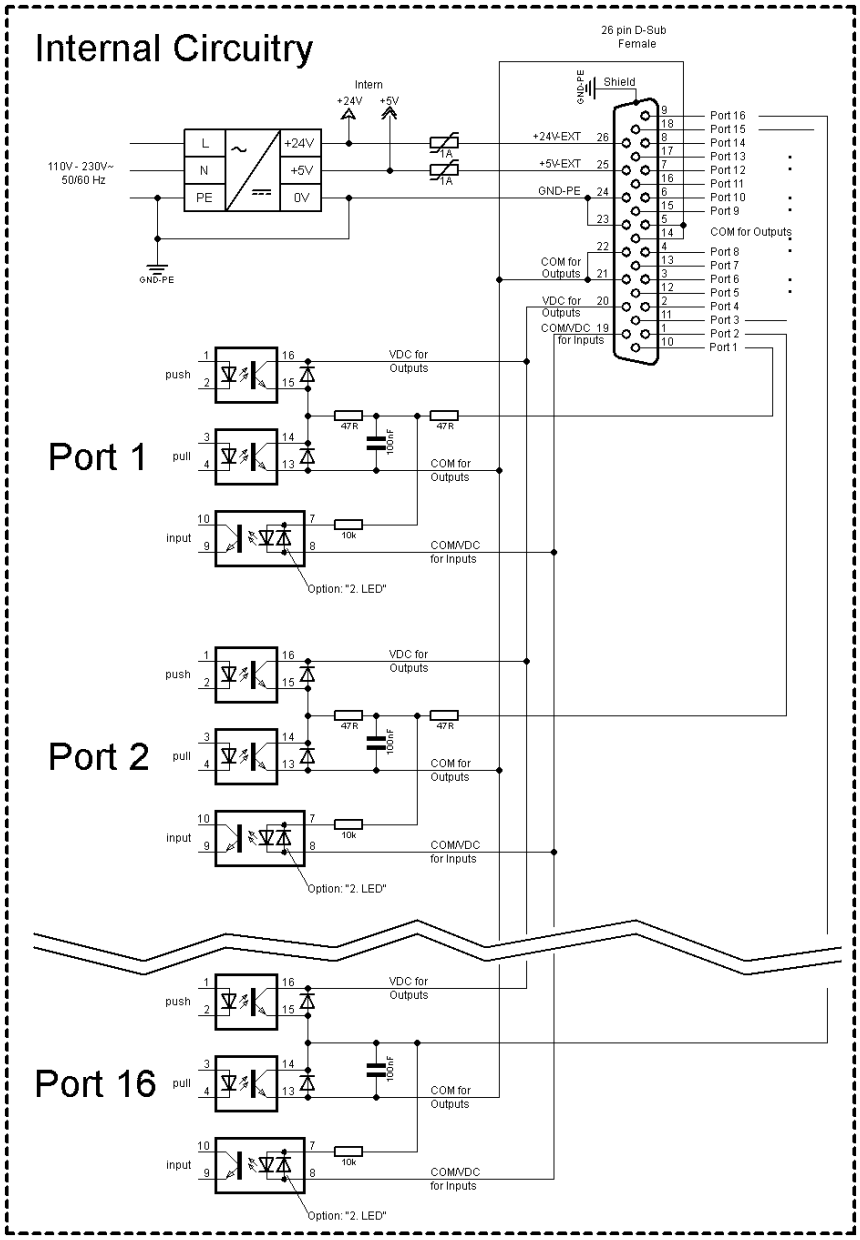


Figure 27

Configuration of D-Sub socket

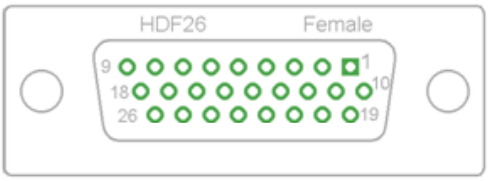


Figure 28

Cable identification

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

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

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	No function
11 (Output)	16	No function
12 (Output)	7	Printing
13 (Output)	17	Ready
14 (Output)	8	No function
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).

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

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 one or two 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 down
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.

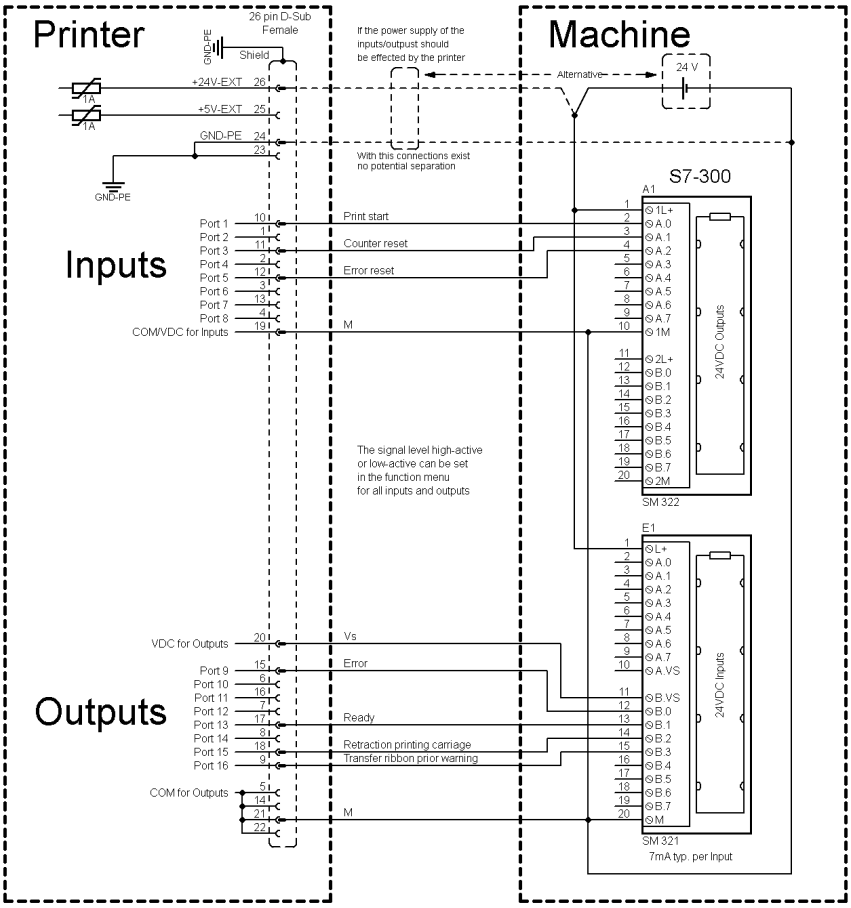


Figure 29

Example 2 Device connection to a operating panel.

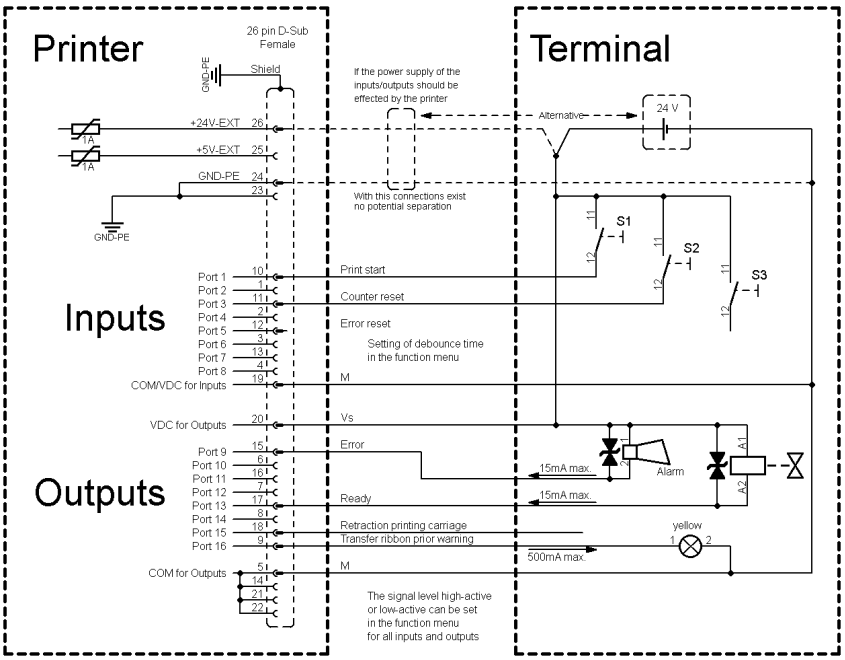


Figure 30

Example 3

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

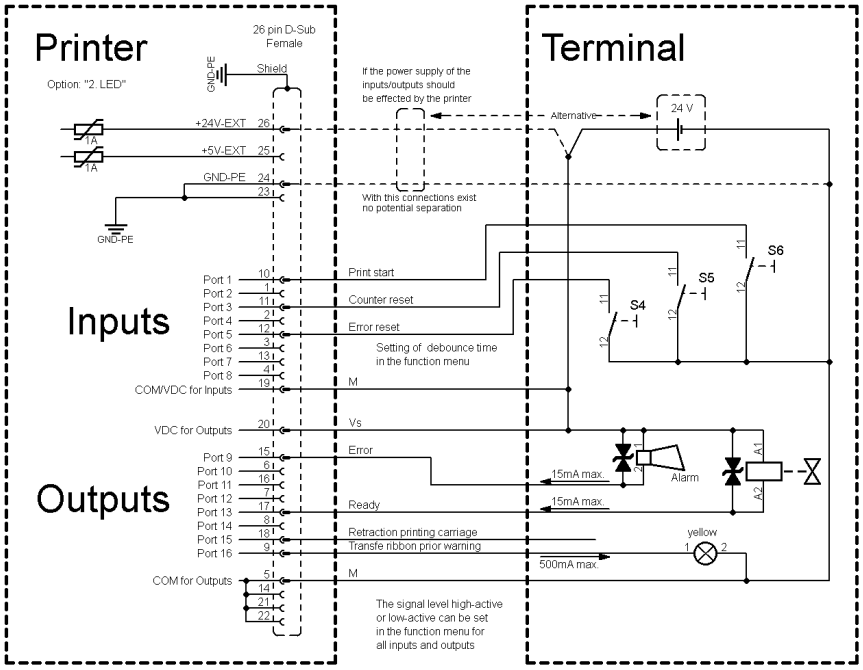


Figure 31

Precautions

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

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

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

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

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

11 Wiring Plans

11.1 Control Unit

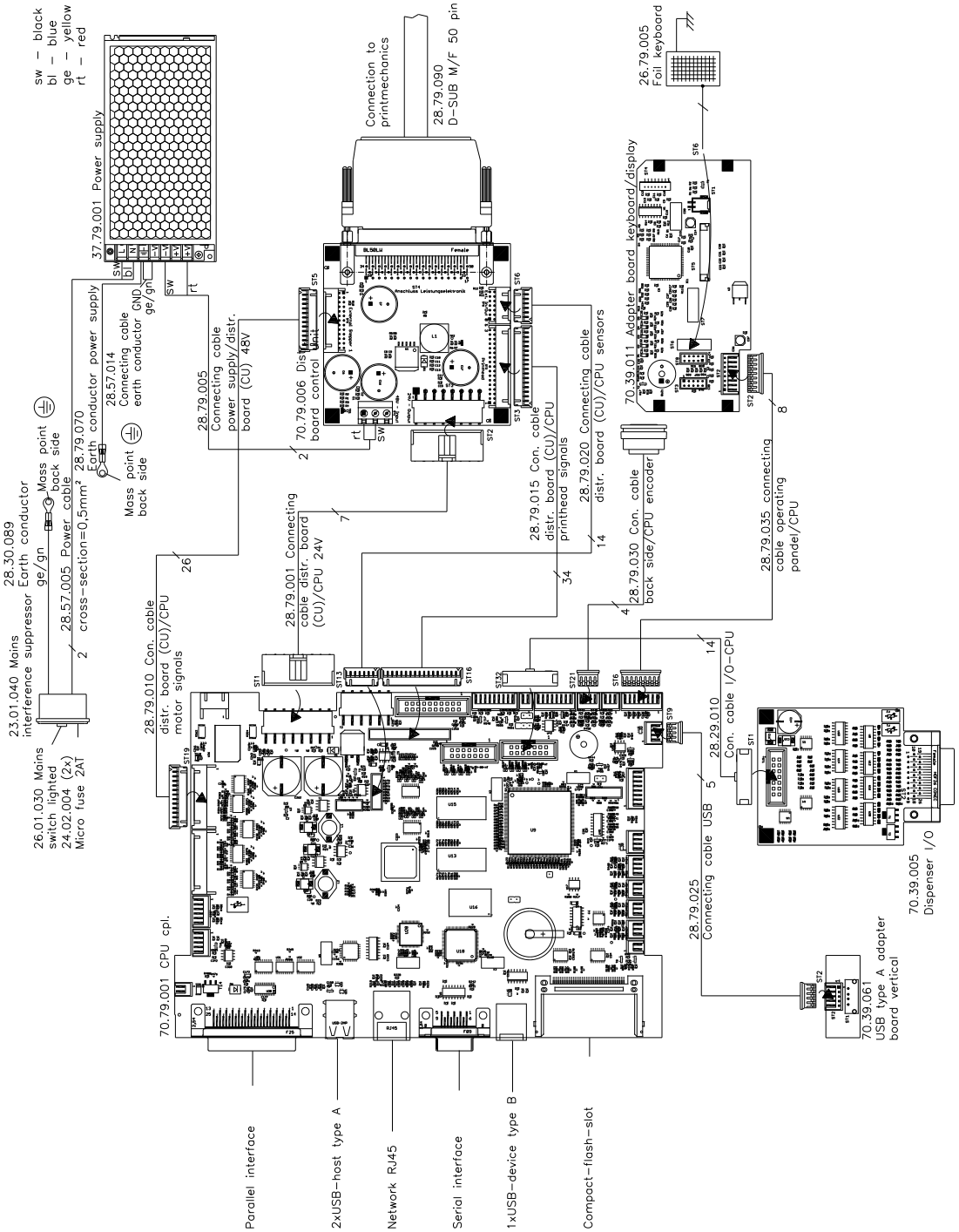


Figure 32

11.2 Print Mechanics (Power Electronics 70.39.400)

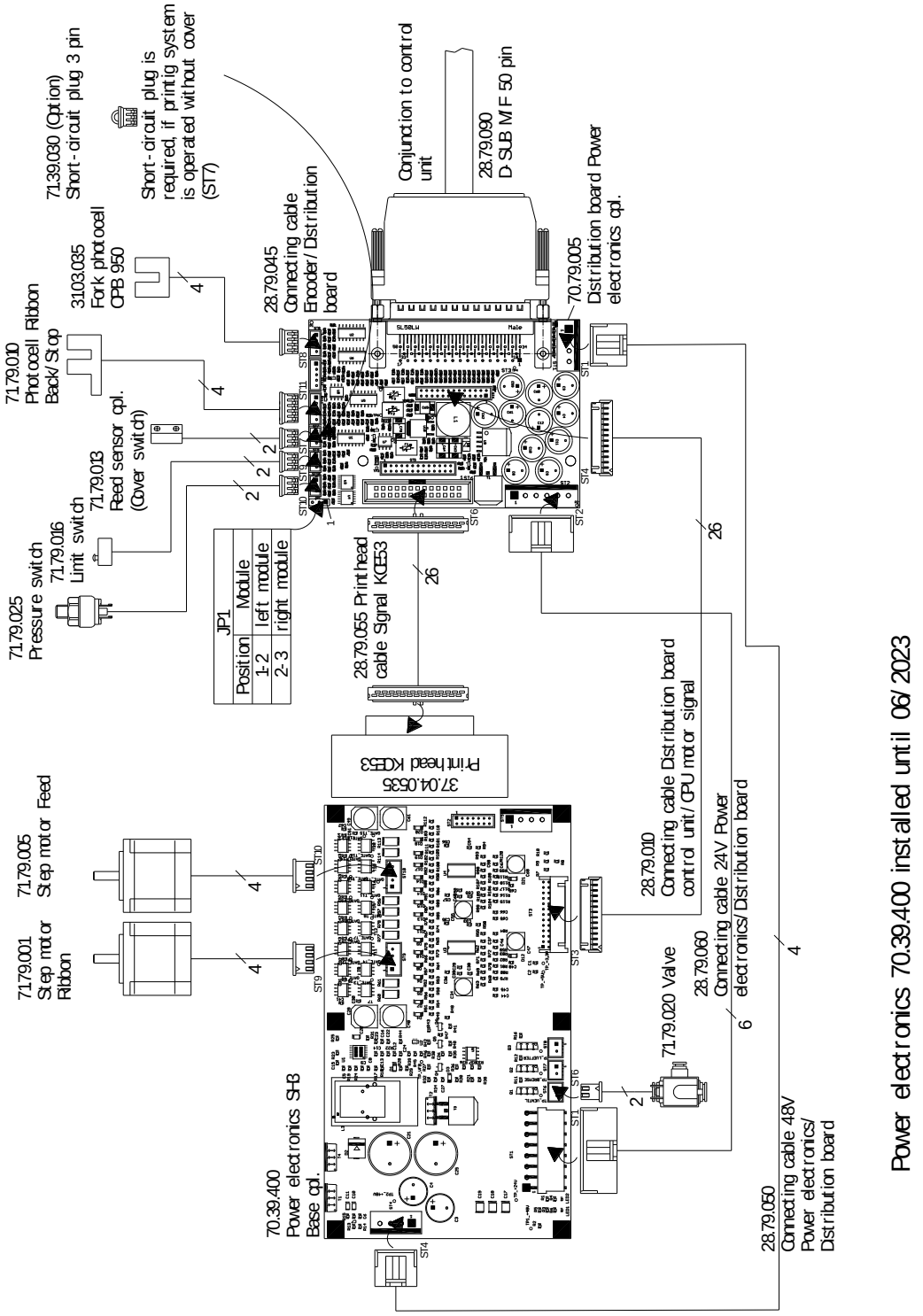


Figure 33

11.3 Print Mechanics (Power Electronics 70.39.402)

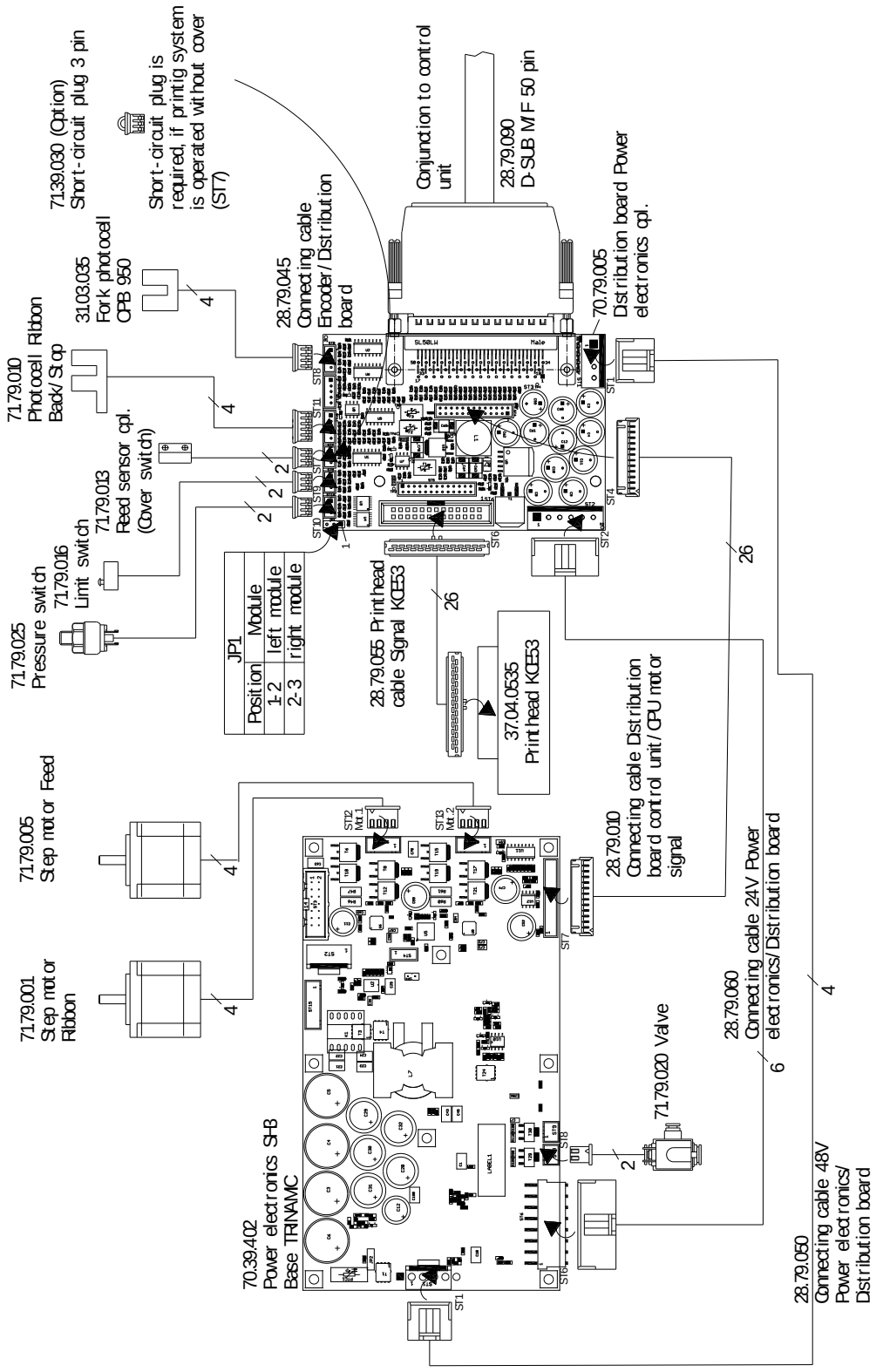


Figure 34

12 Layout Diagrams

12.1 CPU

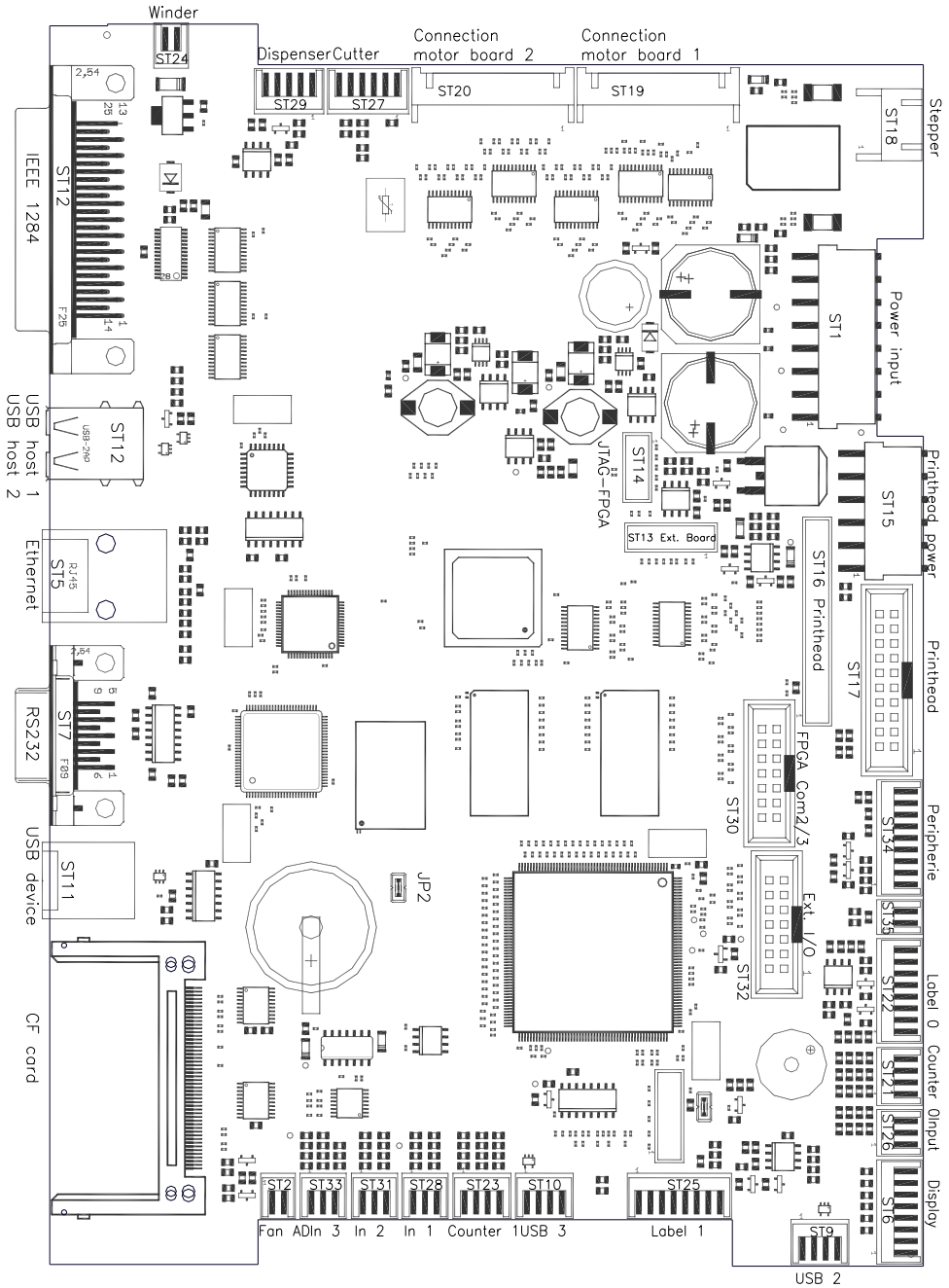


Figure 35

Jumper plan

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

12.2 Distributor Plate (Control Unit)

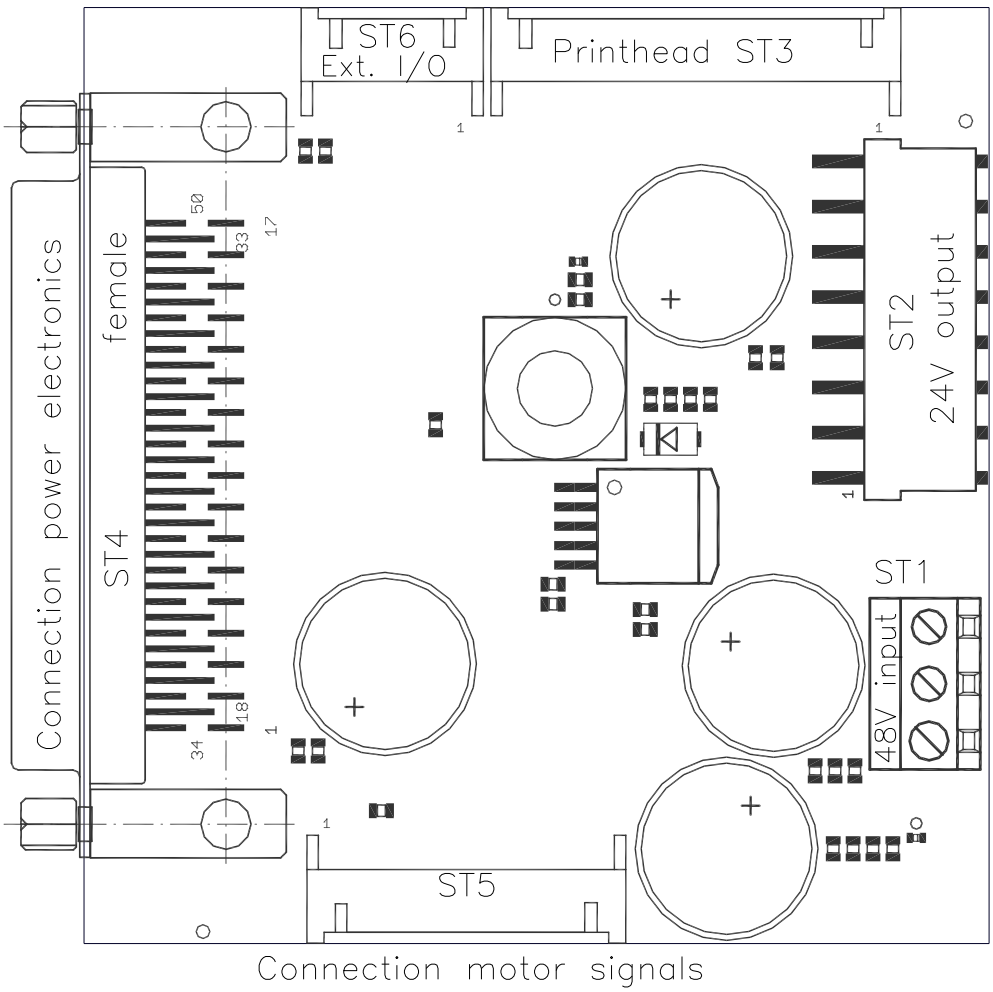


Figure 36

12.3 Distributor Plate (Print Mechanics)

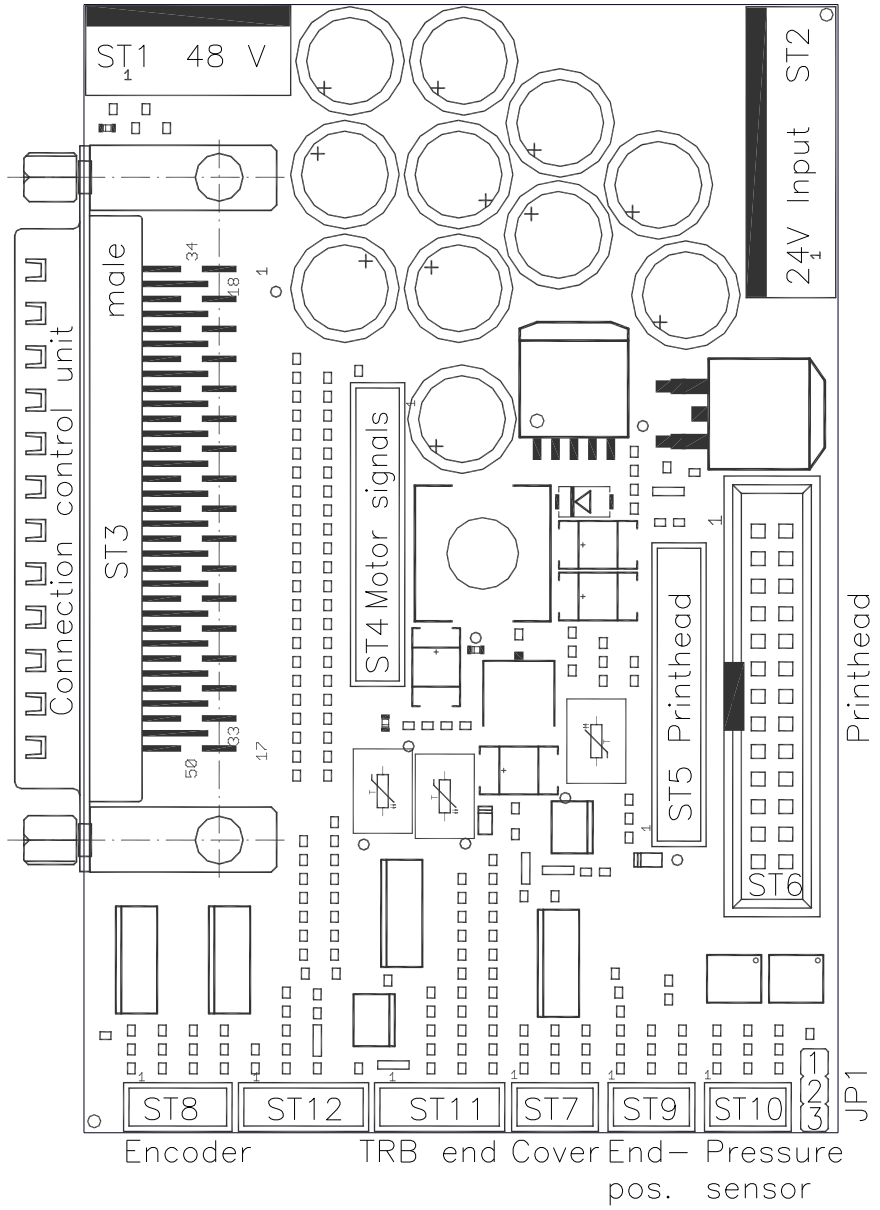


Figure 37

Jumper plan

JP1	
Position	Printing system
1-2	left mechanics
2-3	right mechanics

12.4 Power Electronics

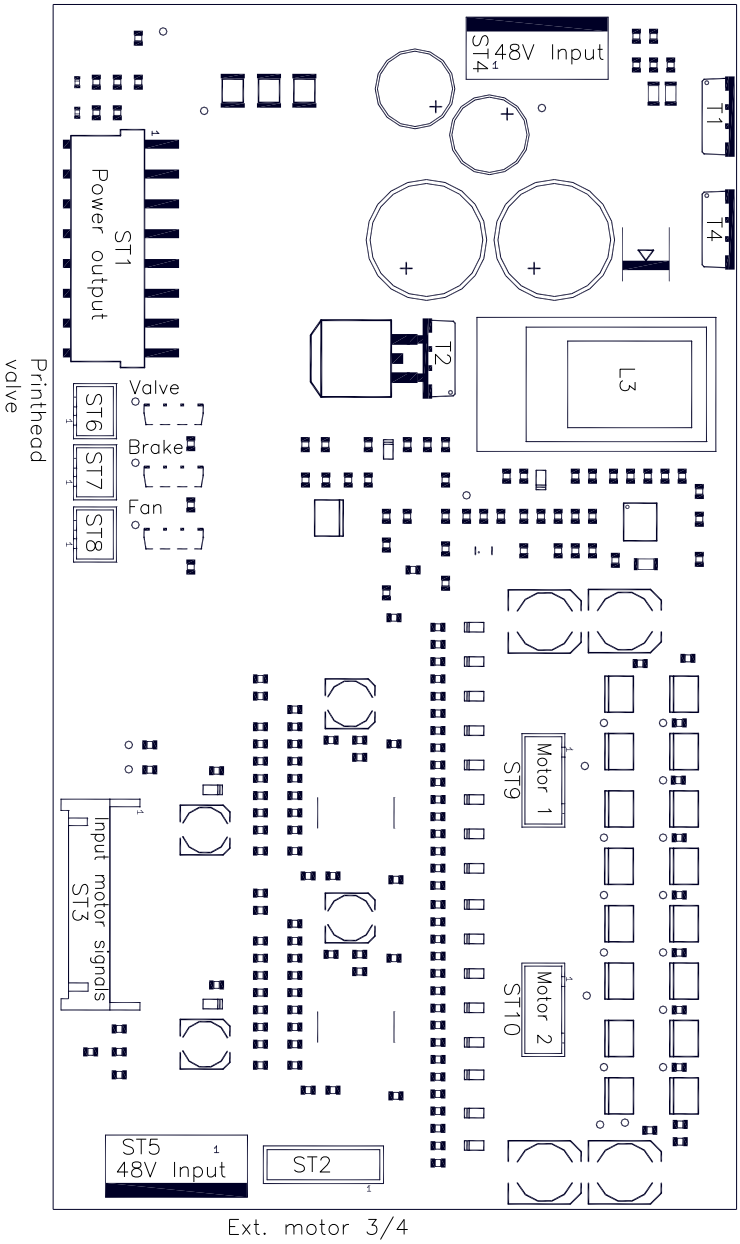


Figure 38

12.5 Operating Panel

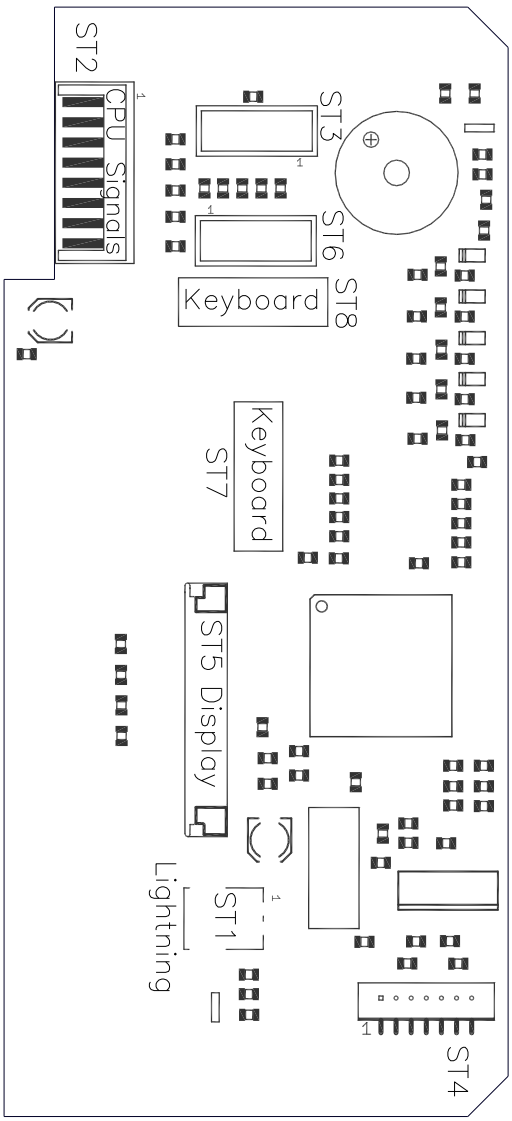


Figure 39

13 Connection Plan Control Unit

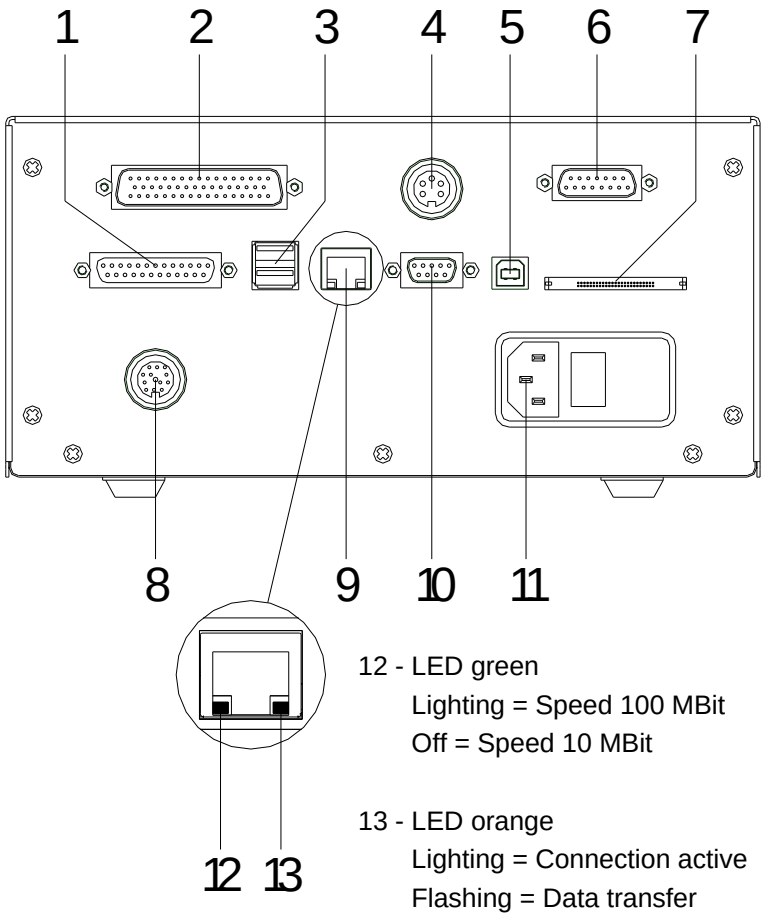


Figure 40

1 = Parallel interface
2 = Connecting cable (mechanics - control unit)
3 = USB host for USB keyboard and USB memory stick
4 = Encoder connection
5 = USB interface
6 = External inputs/outputs
7 = CF card slot
8 = Touch Panel connection
9 = Ethernet interface
10 = RS 232 interface
Pin 2 = TXD, Pin 3 = RXD, Pin 5 = GND, Pin 7 = CTS, Pin 8 = RTS
11 = Power supply with switch

13.1 Connection Cable Mechanics - Control Unit

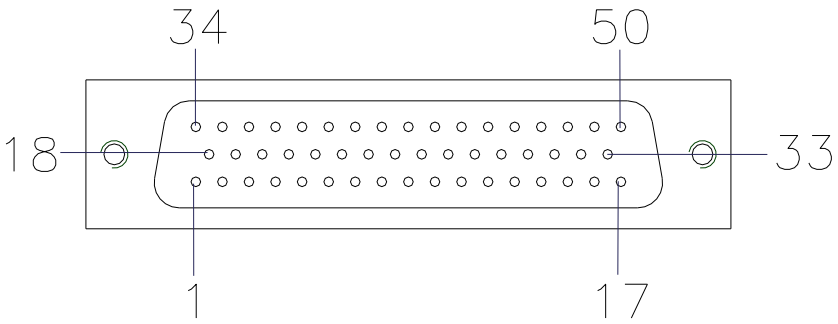


Figure 41

PIN	Signal
1	+48V
2	GND
3	TPH Temperature
4	TPH Clock
5	TPH Cont 1
6	TPH Cont 4
7	Motor 1 Current
8	Motor 2 Current
9	Motor 3 Current
10	Motor 4 Current
11	Output NC
12	SCL
13	Sensor 1
14	Serial Shift
15	Serial Out DAC Data
16	Serial Out Storage Reg Clear
17	GND
18	+48V
19	GND
20	TPH Data
21	TPH Strobe
22	TPH Cont 3
23	Motoren Reset
24	Motor 1 Direction
25	Motor 2 Direction

PIN	Signal
26	Motor 3 Direction
27	Motor 4 Direction
28	Brake
29	Ribbon End position
30	Ribbon Photocell B
31	Serial Input Data
32	Serial Out Storage
33	GND
34	+48V
35	GND
36	TPH Beo
37	TPH Latch
38	TPH Cont 2
39	TPH Cont 5
40	Motor 1 Step
41	Motor 2 Step
42	Motor 3 Step
43	Motor 4 Step
44	Valve Printhead
45	SDA
46	Ribbon Photocell A
47	Serial Input Load
48	Serial Out Data
49	Serial Out Shift Reg Clear
50	Analog Input

13.2 Encoder (Continuous Mode)

5-pin connecting bushing, contacts according to DIN 45322

Connector socket encoder

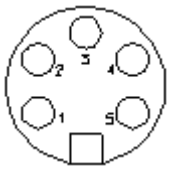


Figure 42

PIN1 = 5 VDC
PIN2 = Encoder signal (channel A)
PIN3 = Encoder signal (channel B)
PIN4 = GND

Electrical data of encoder

Operating voltage:	5 VDC
Output signal:	TTL level
Resolution:	Can be set at print module

Connection of encoder

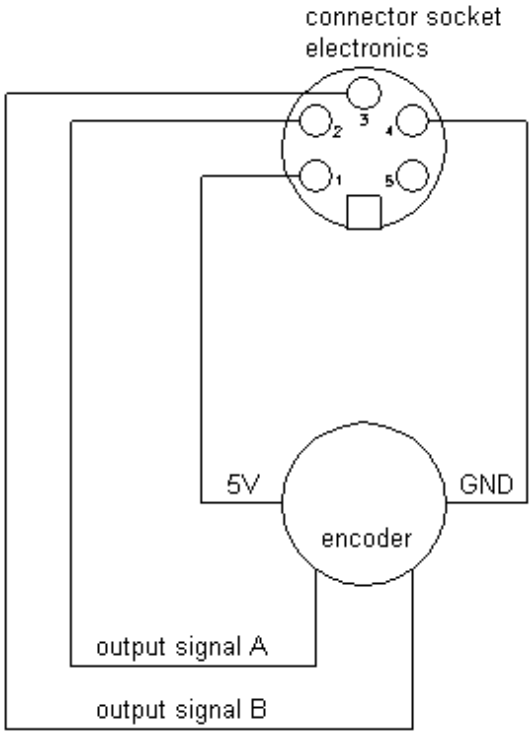


Figure 43

13.3 External Inputs/Outputs

Configuration of D-Sub socket

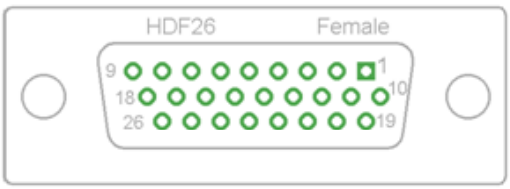


Figure 44

Identification	Pin	Description / Function
Port 1	10	Print start
Port 2	1	No function
Port 3	11	Counter reset
Port 4	2	No function
Port 5	12	Error reset
Port 6	3	No function
Port 7	13	No function
Port 8	4	No function
Port 9	15	Error
Port 10	6	No function
Port 11	16	No function
Port 12	7	Printing
Port 13	17	Ready
Port 14	8	No function
Port 15	18	Return printing carriage
Port 16	9	Transfer ribbon prior warning
Common In	19	Common port of control inputs. The control inputs have no polarity
Common Out	20	Common port of control outputs
GND Out	5,14 21,22	Common GND of control outputs
GND printer	23,24	GND of printer electronics
+ 5 V	25	5 Volt max 1 A This voltage is provided from printer and can be used as control voltage.
+ 24 V	26	24 Volt max 1 A This voltgage is provided from printer and can be used as control voltage.

13.4 Touch Panel

Power supply for touch panel: 12-pole DIN bushing

Illustration: connector - soldering side

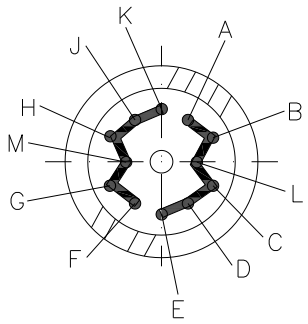
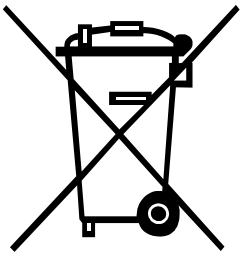


Figure 45

PIN	Signal
A, B, C, D, E, L	48V
F, G, H, J, K, M	GND

14 Environmentally-Friendly Disposal



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valentin
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