



Vacuum-Belt Applicator

**5414 / 5416**

## for the following products

Family	Type
Vacuum-Belt Applicator	5414L
	5414R
	5416L
	5416R

Edition: 09/2022 - Part No. 9003095

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Germany  
**cab Produkttechnik GmbH & Co KG**  
 Karlsruhe  
 Phone +49 721 6626 0  
[www.cab.de](http://www.cab.de)

USA  
**cab Technology, Inc.**  
 Chelmsford, MA  
 Phone +1 978 250 8321  
[www.cab.de/us](http://www.cab.de/us)

Taiwan  
**cab Technology Co., Ltd.**  
 Taipei  
 Phone +886 (02) 8227 3966  
[www.cab.de/tw](http://www.cab.de/tw)

Singapore  
**cab Singapore Pte. Ltd.**  
 Singapore  
 Phone +65 6931 9099  
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France  
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 Niedermodern  
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 Juárez  
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China  
**cab (Shanghai) Trading Co., Ltd.**  
 Shanghai  
 Phone +86 (021) 6236 3161  
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South Africa  
**cab Technology (Pty) Ltd.**  
 Randburg  
 Phone +27 11 886 3580  
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## 1.1 Instructions

Important information and instructions in this documentation are designated as follows:



### Danger!

Draws attention to an exceptionally great, imminent danger to your health or life due to hazardous voltages.



### Danger!

Draws attention to a danger with high risk which, if not avoided, may result in death or serious injury.



### Warning!

Draws attention to a danger with medium risk which, if not avoided, may result in death or serious injury.



### Caution!

Draws attention to a danger with low risk which, if not avoided, may result in minor or moderate injury.



### Attention!

Draws attention to potential risks of property damage or loss of quality.



### Note!

Advice to make the work routine easier or on important steps to be carried out.



### Environment!

Gives you tips on protecting the environment.



Handling instruction



Reference to section, position, illustration number or document.



Option (accessories, peripheral equipment, special fittings).

*Time*

Information in the display.

## 1.2 Safety Instruction



### Attention!

Initiation, adjustments and changing of parts are to be performed by qualified service personnel only.



### Warning!

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

- Before mounting the delivered components disconnect the printer from the power supply and close the shutoff valve at the applicator.
- Only connect the device to other devices which have a protective low voltage.
- Switch off all affected devices (computer, printer, accessories) before connecting or disconnecting.
- In operation, moving parts are easily accessible.  
This applies especially for the zone of belts and fans. During operation do not reach into that zone and keep long hair, loose clothes, and jewelry distant.
- During operation do not reach into that zone and keep long hair, loose clothes, and jewelry distant.
- The device may only be used in a dry environment, do not expose it to moisture (sprays of water, mists, etc.).
- Do not use the device in an explosive atmosphere.
- Do not use the device close to high-voltage power lines.
- Perform only those actions described in this operating manual.  
Work going beyond this may only be performed by trained personnel or service technicians.
- Unauthorized interference with electronic modules or their software can cause malfunctions.
- Other unauthorized work on or modifications to the device can also 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 various warning stickers on the device. They draw your attention to dangers. Warning stickers must therefore not be removed, as then you and other people cannot be aware of dangers and may be injured.

1.3 Safety Markings

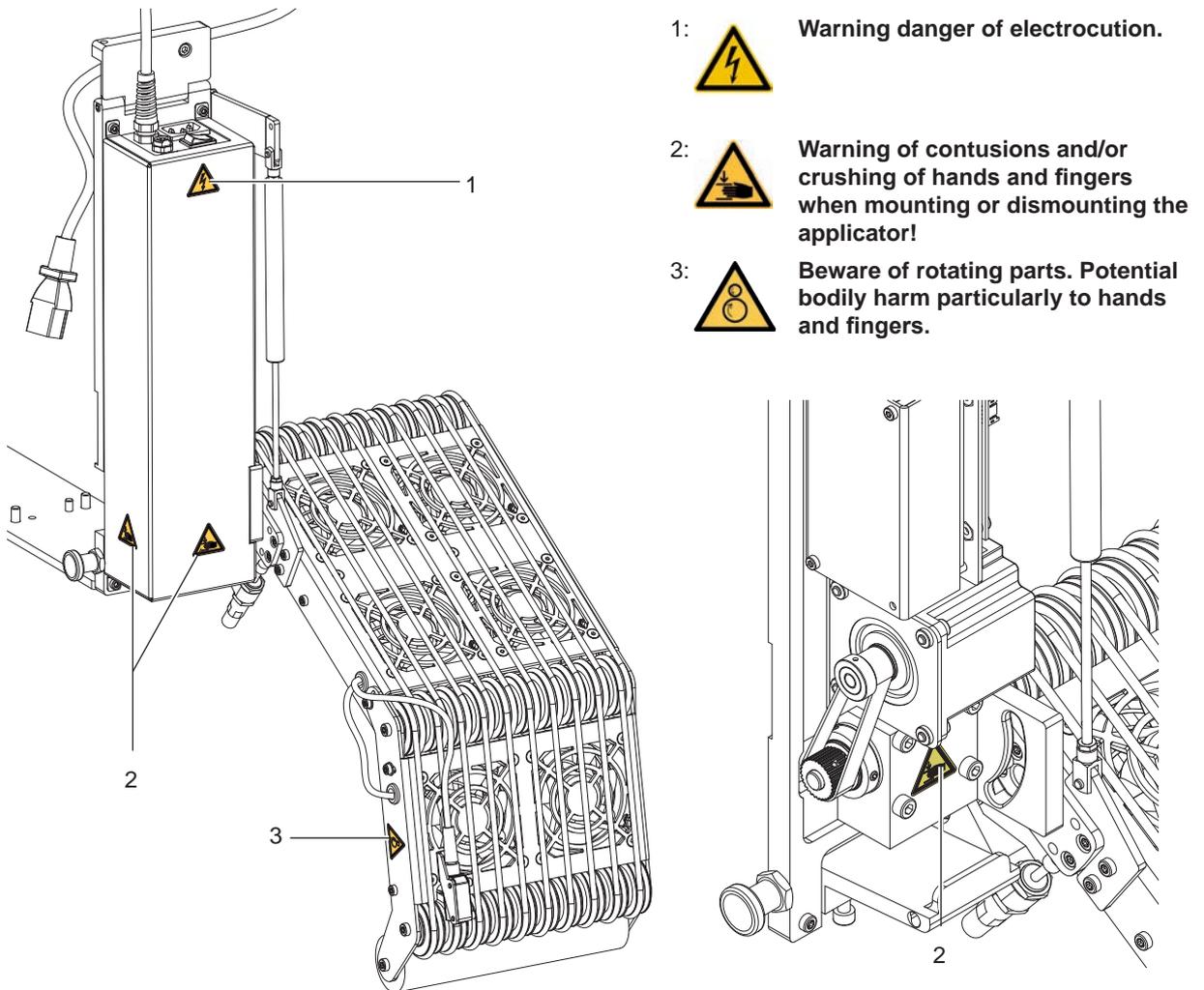


Fig. 1 Safety Markings



**Attention!**  
 Never remove or cover safety markings! Replace it in case of damage!

1.4 Environment



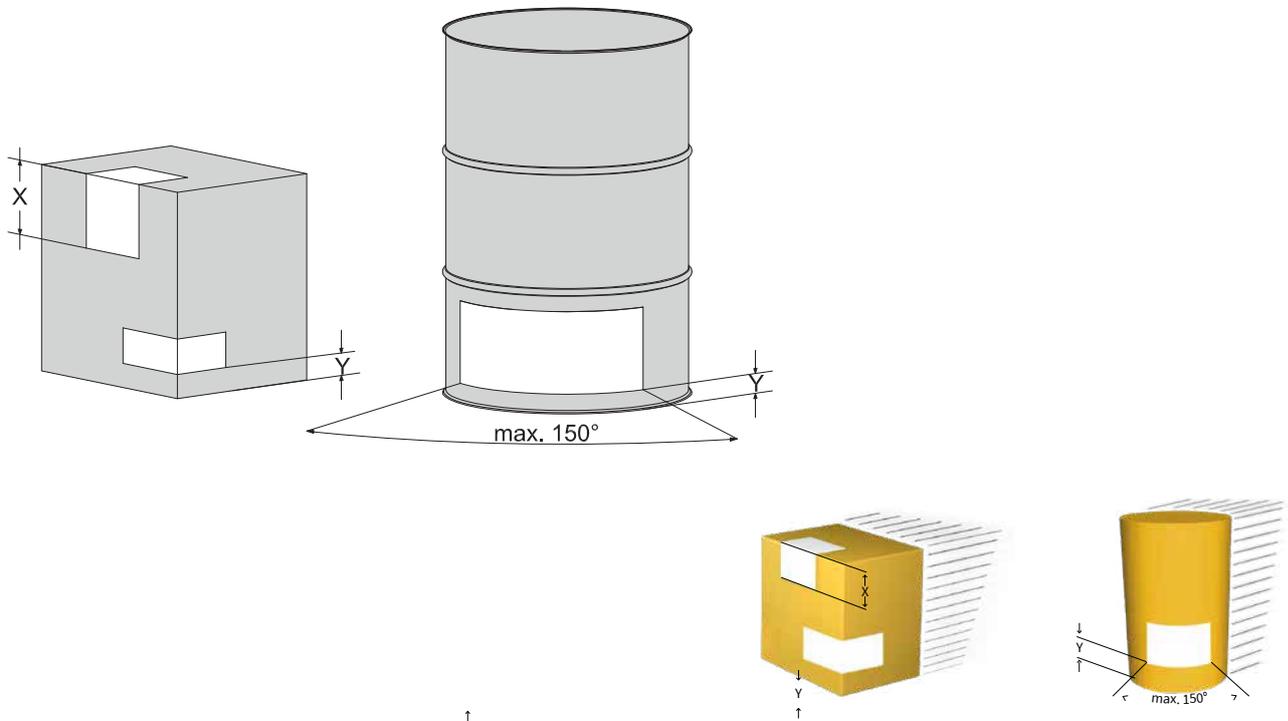
Obsolete devices contain valuable recyclable materials that should be sent for recycling.

- ▶ Send to suitable collection points, separately from residual waste.
- The modular construction of the print module enables it to be easily disassembled into its component parts.
- ▶ Send the parts for recycling.

### 2.1 Important Features

- For operation in a system the I/O interface of the printer can be used.

### 2.2 Technical Data



Vacuum belt applicator		5414-3	5416-3
Label applications		on cylindrical surfaces and corner-wrap	
Directions to which dispense labels		left and right	
Label widths operating a HERMES Q4/Q4.3	mm	20 - 114	-
HERMES Q6.3	mm	-	46 - 174
Label heights	mm	80 - 356	80 - 356
State of a package at the moment a label is applied in motion		■	
Label applications	from the top	■	
	from the side	■	
Package heights	uniform	■	
	variable	■	
Package speeds	up to m/s	0.3	
Gap between packages	at least m	0.5	
Steadiness identified at the point a label is transferred		F <sup>1)</sup> = 30 N	
Corner-wrap label applications	up to mm	X = 160	
Vacuum belt speed <sup>2)</sup>	mm/s	100 - 300	
Cycle rate <sup>3)</sup>	labels/min up to	15	
Distance of a label to the conveyor belt, when applying from the side	mm	Y = 20	

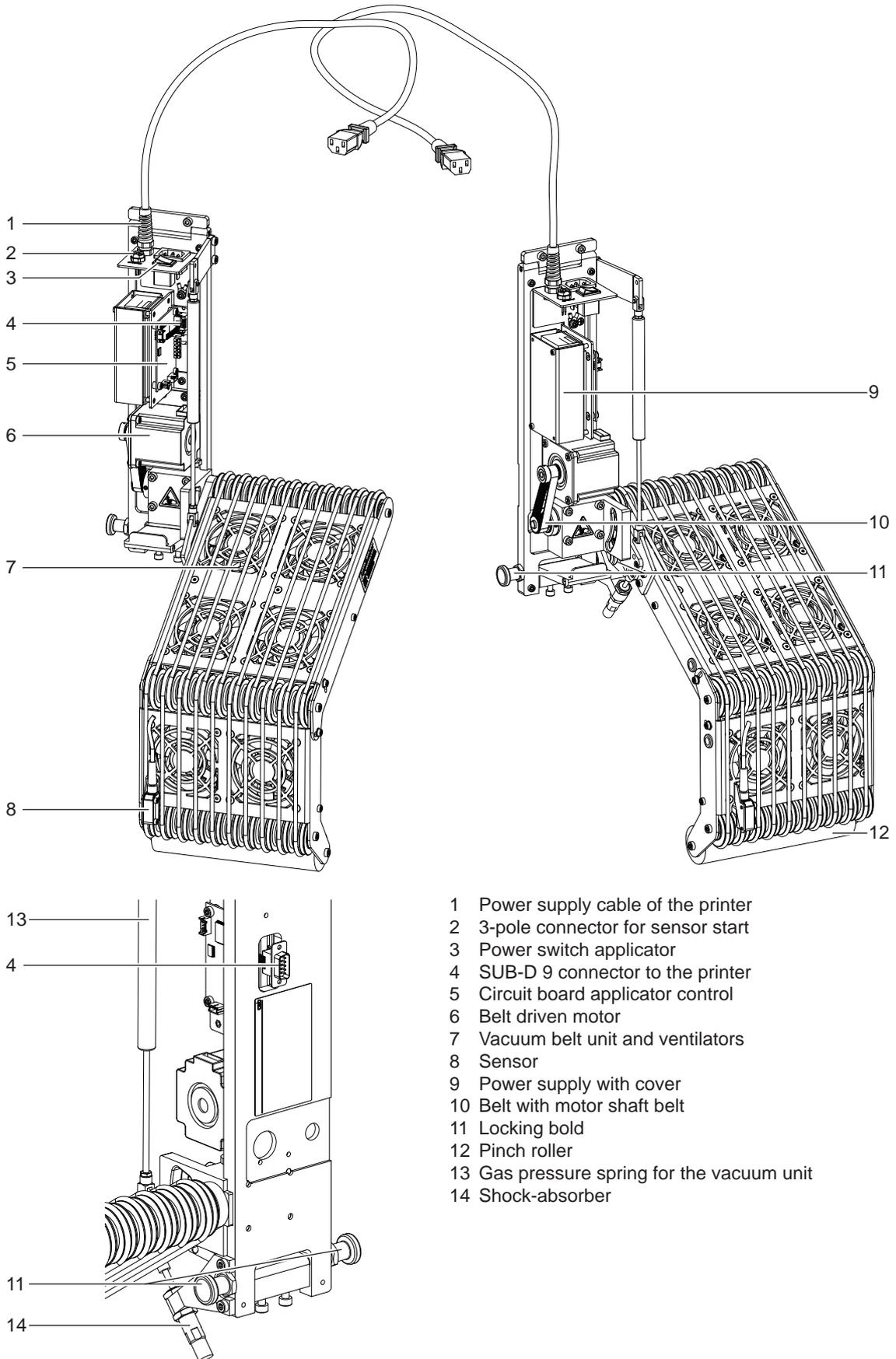
<sup>1)</sup> F = force required to make the vacuum belt pivot

<sup>2)</sup> The speed of a package must be at least as high as the speed of the vacuum belt.

<sup>3)</sup> calculated using labels 100 mm high and a print speed of 250 mm/s

Table 1 Technical Data

2.3 Device Overview



- 1 Power supply cable of the printer
- 2 3-pole connector for sensor start
- 3 Power switch applicator
- 4 SUB-D 9 connector to the printer
- 5 Circuit board applicator control
- 6 Belt driven motor
- 7 Vacuum belt unit and ventilators
- 8 Sensor
- 9 Power supply with cover
- 10 Belt with motor shaft belt
- 11 Locking bold
- 12 Pinch roller
- 13 Gas pressure spring for the vacuum unit
- 14 Shock-absorber

Fig. 2 Overview

## 2.4 Contents of Delivery

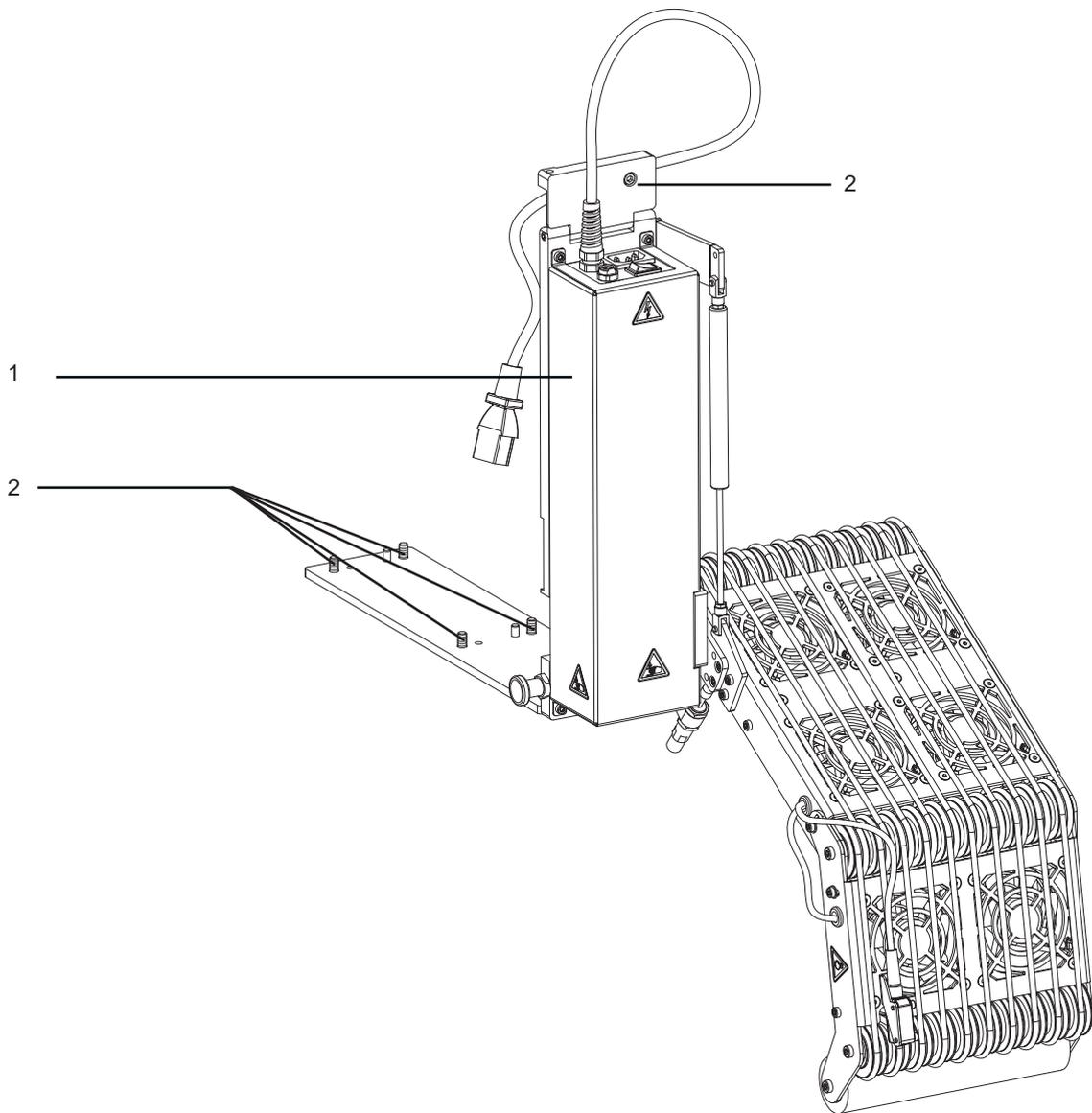


Fig. 3 Contents of delivery

- Mounted applicator
- Screws for mounting the applicator to the printer
- Documentation

**Note!**

Please keep the original packaging in case the applicator needs to be transported or returned.

**Attention!**

The device and printing materials will be damaged by moisture and wetness.

- ▶ Only set up the label printer with applicator in dry locations protected from moisture and/or water.

### 3.1 Standard Operation

- ▶ Check all external connections.
- ▶ Load the material. ▷ "Operator's Manual"
- ▶ Switch on the printer.
- ▶ Press the  respectively **feed** at the printer.  
A synchronization feed is initiated. The processed labels need to be removed manually. After a few seconds the printer carries out a short backfeed to position the front edge of the next label at the printing line.



#### Note!

This synchronization also has to be carried out when the print job is interrupted with  respectively the cancel key.

Synchronizing is not necessary if the print head was not lifted between print jobs. This also applies if the printer was powered off in between print jobs.

- ▶ Start a print job.
- ▶ Start the labelling process via PLC interface.

Error messages that occur during the labelling process are shown in the display of the printer

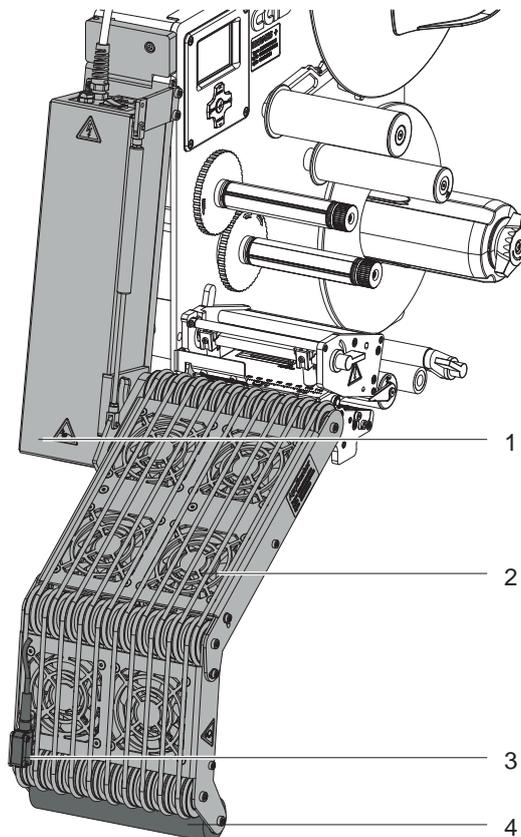
- ▷ Error messages of the Applicato

### 3.2 Cleaning



#### Attention!

Never use solvent and abrasive.



- ▶ Dismount the applicator in order to reach all areas. ▷ „5.3 Mounting and Dismounting the Applicator“
- ▶ For cleaning the outer surfaces (1) and transport belts a multipurpose cleaner is sufficient.
- ▶ Clean the fan area (2) with a soft brush or a vacuum cleaner.
- ▶ Use glass cleaner to clean the reflex sensor (3).
- ▶ Clean the pinch roller (4) with a special pinch roller cleaner or a multi purpose cleaner.
- ▶ Remount the applicator

Fig. 4 Cleaning

### 3.3 Power Supply of the Device

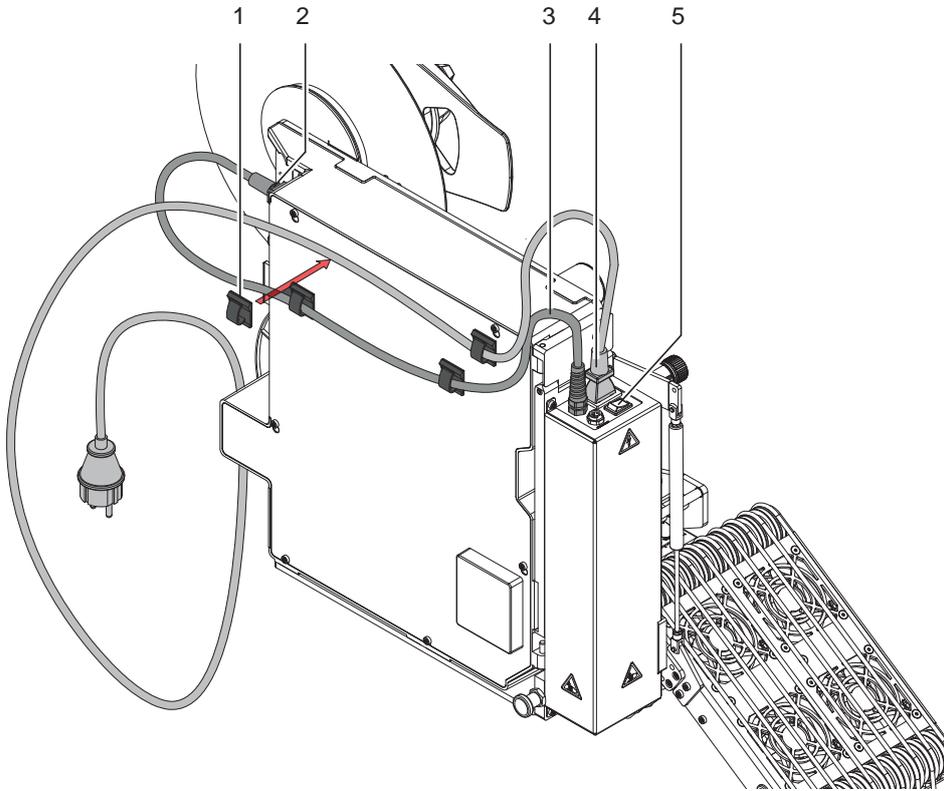


Fig. 5 Power supply of the printer and the applicator



#### Attention!

**When the power cable is connected the entire current flows through the power supply of the printer. The power switch of the applicator only affects the powers supply of the applicator.**

1. Plug the power cable (4), as part of the contents of delivery, into the plug point of the applicator.
2. Disconnect the plug (2) of cable (3) of the applicator and plug it into the plug point of the printer.
3. Switch on the applicator via the switch (5).
4. Power up the printer.



#### Note!

**If only the printer is powered and not the applicator, the error message: *Compressed air error* will be displayed.**

5. To better organize the cables use the self adhering cable clamps (1). These clamps may be freely placed to best suit the needed support for the cables.

## 3.4 Pivoting the Applicator

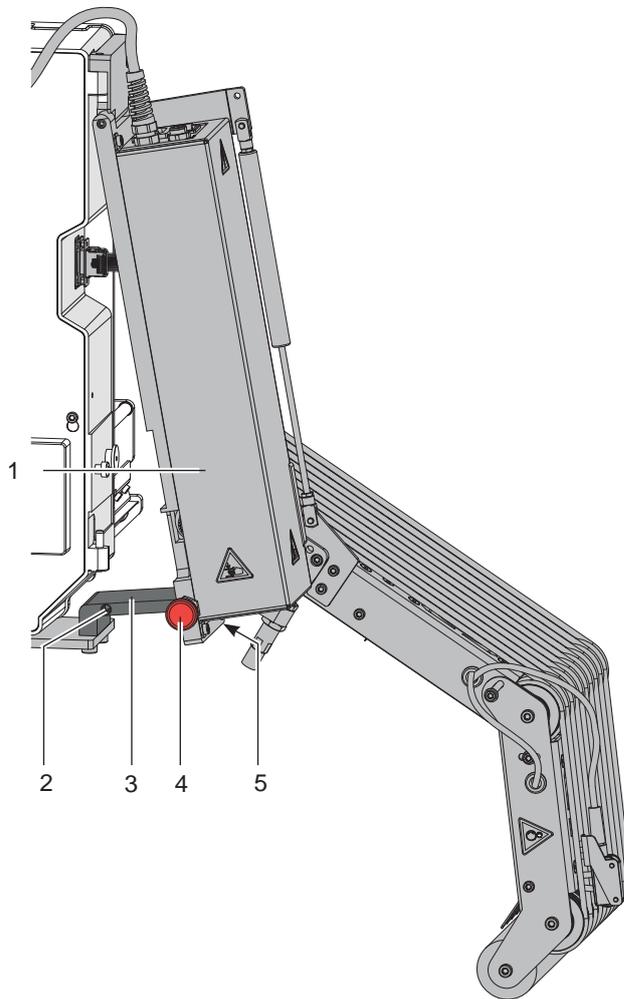


Fig. 6 Pivoting the applicator

**Attention!**

**Danger of injury to hands and fingers by the applicator!**

**When releasing the snap lock keeping the applicator in place, it will drop due to its own weight.**

1. To dismount the applicator (1), for cleaning or inserting material, pull the locking bolts (4) outward.
2. With pulled out locking bolts (4) lift the applicator (1) until the bolts can snap into the provided holes (5) of the mounting plate (3).
3. To remount the applicator pull the locking bolts (4) outward again and push the applicator toward the printer until the bolts (4) can securely lock into the provided holes (2) on the mounting plate (3).

### 3.5 Error Messages of the Printer

For detailed information about printer errors (e.g. 'Paper out', 'Ribbon out', etc.) ▷ Operator's manual of the printer  
Error treatment:

- ▶ Clear the error results.
- ▶ Press the **feed** key to synchronize the label feed and remove the peeled labels manually.
- ▶ Press the **pause** key to quit the error state.

After error correction, the label causing the error will be reprinted.

### 3.6 Error messages of the Applicator

The following table contains an overview of error messages and their possible causes. It also suggests methods to resolve the problem:

Error Message	Possible Cause
<i>Vac. plate empty</i>	Label is removed from the waiting position on the pressure roll before the signal START is coming in.
<i>Upper position not reached</i> <i>Upper position (Hermes+)</i>	Label has not reached the area of the reflex sensor after 5 sec or was not detected.

Table 2 Error messages of the applicator

Error treatment:

- ▶ Clear the error results
- ▶ Press the **pause** key to quit the error state.



**Note!**

**In fault check adjustments and settings with help of the Service Manual.**

After error correction, the print of the label causing the error cannot be repeated without re-start the print job. Except at the error " *Vac. plate empty*". In this case, the last label will be printed again after the error state has been quit with the **pause** key and by then pressing the Enter button ↵.

- ▶ In the application mode "Apply/Print" send the signal "Print first label" or press the button ↵ to send a printed label to the reflex sensor position on the applicator.

4.1 Factory Default Settings



**Note!**

The applicators are set to default configurations by factory standards. These values guarantee a seamless operation within the parameters.



**Note!**

If the customer requires a custom setup the parameters will be pre installed. These values may deviate from the factory default parameters. The values are listed in the setup protocol and delivered with the printer applicator system.

The default factory values are:

- Connected to a cab HERMES Q printer, vertical
- Default material used for the setup:

cab part No.: 5556472 54x35.5

4.2 Tools

<ul style="list-style-type: none"> <li>• Crosstip screwdriver (Phillips)</li> </ul>	2		to adjust the sensor
<ul style="list-style-type: none"> <li>• Hexagon key L-wrench</li> </ul>	2.5		for matched norm parts (in delivery state of the applicator)
	3		to set the angle of the applicator
	5		to adjust the pressure roller
<ul style="list-style-type: none"> <li>• Flat-round nose</li> </ul>	straight		
	angled		

Table 3 Tools

### 4.3 Mounting and Dismounting the Applicator

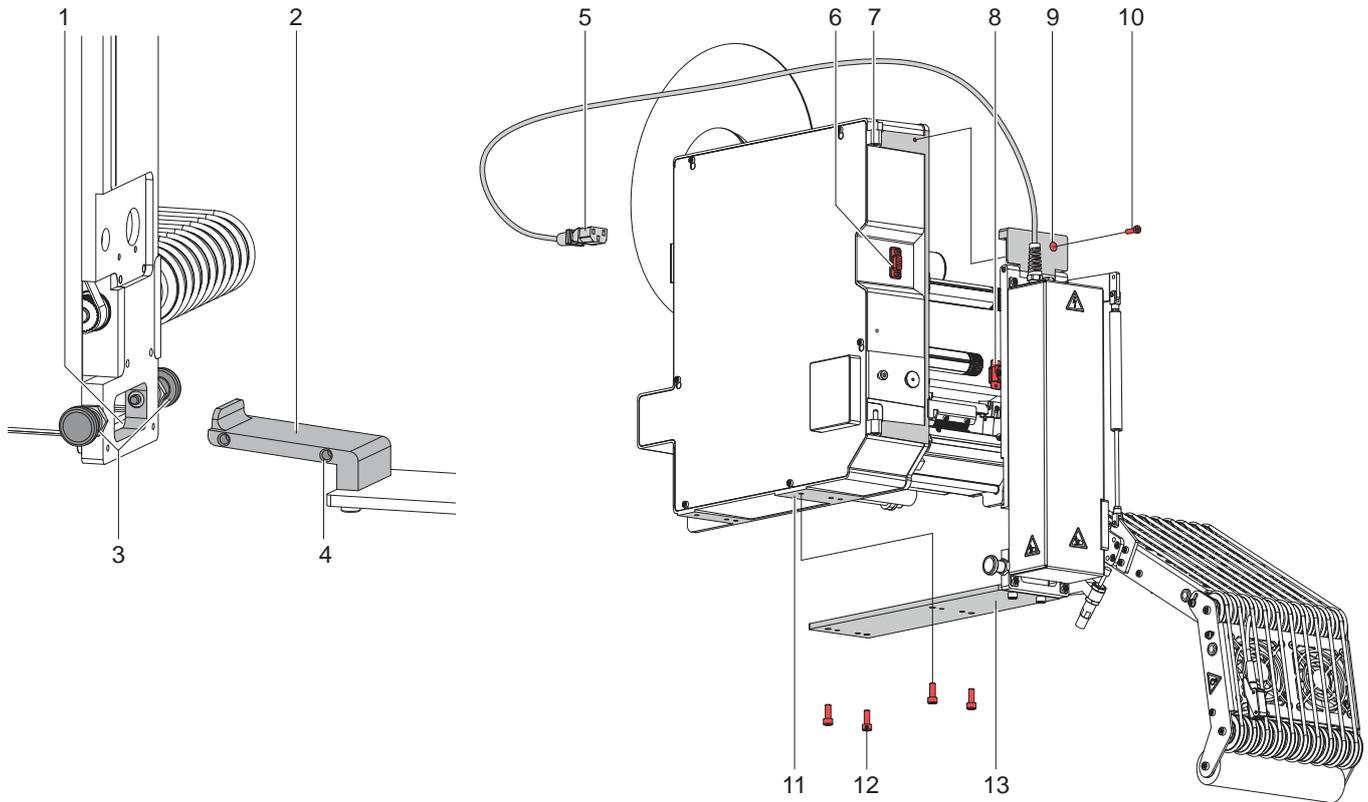


Fig. 7 Mounting and dismounting the applicator

To clean the applicator and printer it is sometimes necessary to pivot away or even dismount the applicator entirely from the printer.

Do not adjust the setting screws, throttle valves or other alignment elements as this will enable use of the applicator directly after cleaning.

- 1 Pull the locking pins (3) outward and guide the mounting plate (2) into the opening (1) of the applicator.
- 2 Let the locking pins (3) snap into holes (4).
- 3 If the printer is not mounted in such a way that the undercover of the printer is accessible turn the printer onto its back with the printing unit and material guides facing upwards.
- 4 Connect pin (7) to the hinge hole (9).
- 5 Connect the Sub-D 9 plug (8) of the applicator to the Sub-D 9 socket (6) of the printer.
- 6 Pivot the applicator to the printer and fasten them via screw (10).
- 7 The holes of the mounting plate (13) need to be congruent to the holes of the printer floor (11).
- 8 Place and fasten screws (12).
- 9 Fasten screw (10).



#### Attention!

Initiation, adjustments and changing of parts is to be performed by qualified service personnel only.

▷ **Service Manual Applicator.**



#### Attention!

▶ **Disconnect the printer from the power supply before mounting the applicator!**

▶ **Ensure the printer is standing securely in a stable position!**

4.4 External Start-Sensor

The start signal to apply the label can originate from an external sensor connected to the 3 pole connector (1) connected directly to the applicator.

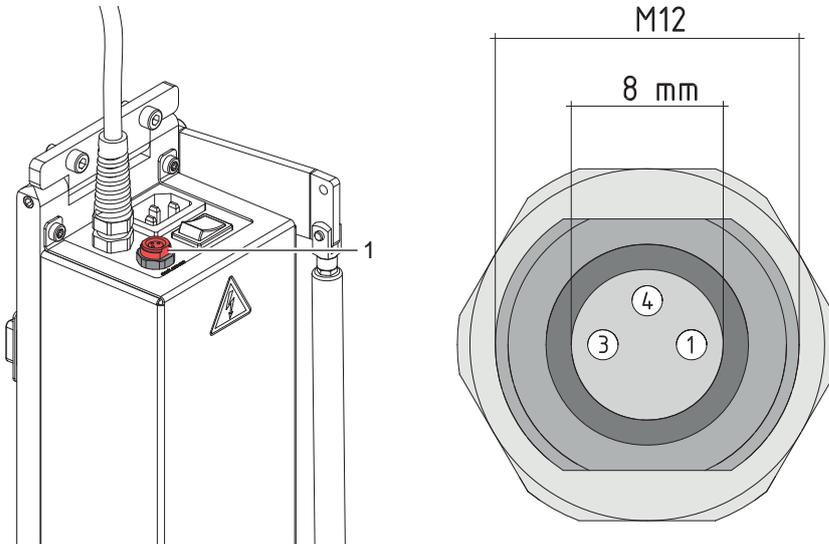


Fig. 8 Start signal connector on the applicator

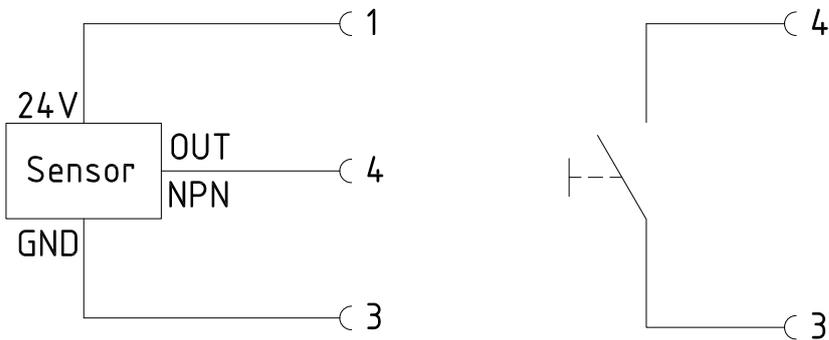


Fig. 9 Examples of connections of start sensors

The start of the printing job - print first label is still initiated over the I/O interface of the printer. Circuitry and programming of the connections is to be set as illustrated. ▷ „5.3 Signals“

**Note!**

The position of the applicator to the printer is predetermined by the factory and should not be altered to guarantee a reliable label take-over. Only change the angle of the applicator and the pressure of the pinch roller.

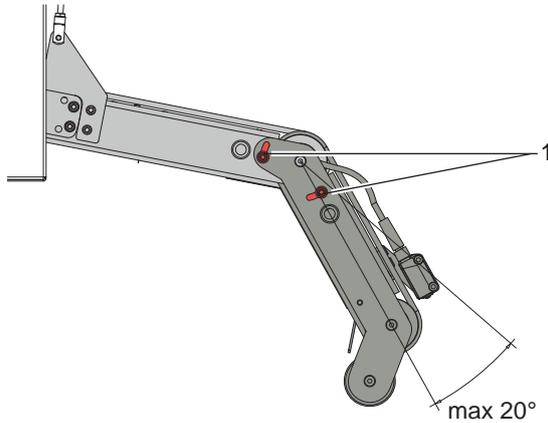
**5.1 Adjusting the Angle to the Printer**

Fig. 10 Angle of the applicator to the printer

**Warning!**

If you loosen screw (1) the device will drop onto its own weight! Potential risk of injury!

- ▶ Loosen screw (1) to set the angle, and depth, of the applicator to the printer.
- ▶ Set the angle to the product (4) and fasten the screw (1).
  - ▷ Settings in the Configuration of the Printer“

5.2 Settings in the Configuration of the Printer

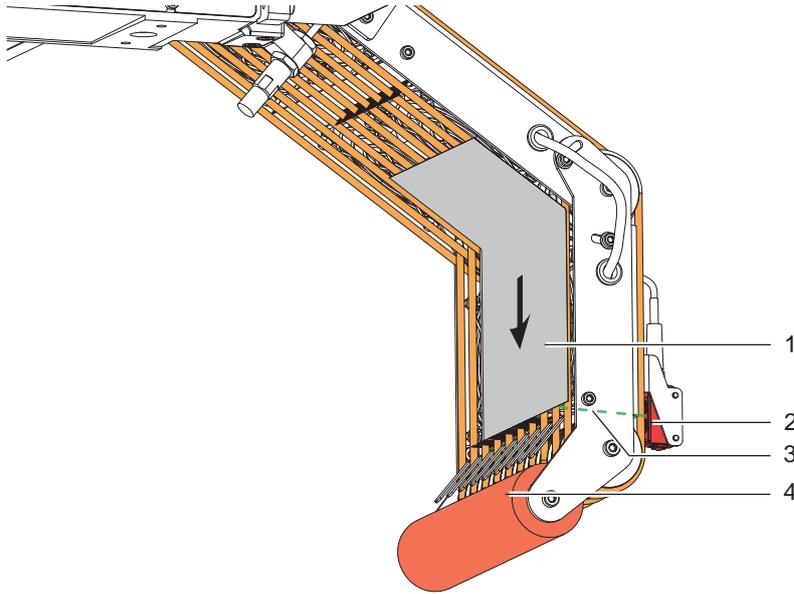


Fig. 11 Label transport/reflex sensor

The operation mode "Blow" must be selected in the setup:  Setup >  Labelling >  Transfer mode . Only once this is selected is it possible to change the parameter "Blow time".

After detection of the label (3) by the reflex sensor (1) it will be transported further for a set time to reach the pinch roller (4). To change this value use the parameter:

 > Blow time

A higher value causes a longer transport distance.  
200 ms equates to 10 mm. ▷ Setup parameters of the applicator

**Overrun of the label**

If the label (3) has left the sensor area (2) it will be transported further for a defined time to apply the label via the roller. To change this overrun time use the parameter:

 > Support delay on

5.3 Signals

- The signal **DREE** causes the label to be printed which is then transported to the waiting position.
- The signal **START** will transport and apply the label to the product.

In the application mode "**Apply - Print**" the printing of the next label starts directly after application of the previous label.

In the application mode "**Print - Apply**" the signal DREE must be sent for the print of each label.

Pin	Signal	Name	Description		Activation/active status
			without applicator	with applicator	
1		DREE	-	print first label in mode "Apply-Print"	Switch on +24V between Pin 1 and Pin 25
13		START	Print start signal Precondition: The superior control has confirmed with the ETE signal that the previous label has been taken from the peel-off position.	Start of printing and labeling	+24V between Pin 13 and Pin 25

Table 4 A section of the interface description of the label printer

## 6.1 Configuration Parameters of the Applicator

The configuration parameters of the applicator can be found in the menu *Setup > Machine param.*



### Note!

The speed of the belt and the label transport is set by the parameter *Support del. off.* The value is displayed in ms and not the actual value used mm/s.



### Note!

It is necessary to set the values of the table precisely. Deviation from the listed values will cause the default value of 100 to be used.

Parameter	Meaning	Default
 > <i>Support del. off.</i>	Parameter to set the speed of the belts. Four steps are available. 100 ms: 100 mm/s speed of the transport belt 150 ms: 150 mm/s speed of the transport belt 220 ms: 220 mm/s speed of the transport belt 300 ms: 300 mm/s speed of the transport belt 500 ms: 300 mm/s speed of the transport belt	100 ms

Table 5 Applicator parameters

## 6.2 Setting the Peel Position

To optimize the transfer of the labels from the printer to the applicator there are two different parameters available for adjusting the peel position.



### Attention!

- ▶ First adjust the parameter "Peel Position" in the printer configuration.
- ▶ Then adjust the additional peel-off offset in the software.

It is very important to follow this procedure for a seamless start after loading material and dealing with the treatment of error.

#### Parameter "Peel Position" in the printer configuration

- ▶ Check the basic settings in the printer setup. Perform labelling cycles by alternately pressing the  button and Enter button  ▷ „7.1 Test Mode without a Print Job“
- ▶ In the submenu  *Labelling* >  *Peel-off position* adjust the "Peel-off position" in such a way, that the blank labels are peeled-off completely from the liner.

#### Peel-off offset in the software

- ▶ Check the setting in the software. Perform labelling cycles by repeatedly pressing  .  
▷ „7.2 Test Mode with a Print Job“
- ▶ Adjust the peel-off offset in such a way, that the printed labels are peeled-off completely from the liner  
▷ Programming manual or software documentation.

## 6.3 Activation of Peel-off Mode



### Note!

- ▶ For labelling operation activate the peel-off mode in the software.  
For direct programming use the P command ▷ Programming manual.

## 7.1 Test Mode without a Print Job

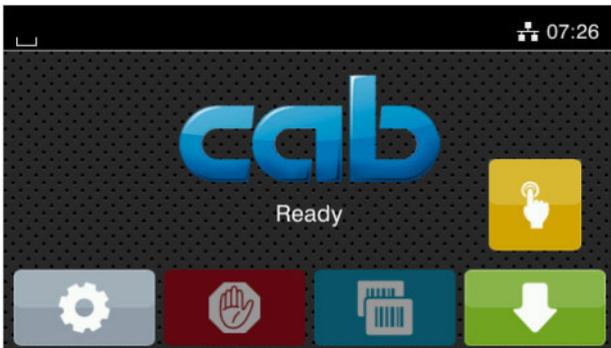


Fig. 12 Display

By alternating between buttons  and  on the display it is possible to simulate the labeling process without an active printing job.

- ▶ Push button . This causes the feed of an empty label. Simultaneously the vacuum of the pad as well as the supporting air are activated. As soon as the label has securely arrived at the pad the supporting air is switched off.
- ▶ Push button . When pushing this button the cylinder Z is extended into the labeling position. Reaching the labeling position is signaled by the triggering of the impact sensor. With that signal the vacuum is stopped and the label is applied to the product. With the application of the label the cylinder is contracted back into the starting position.

**Note!**

- ▶ Use the printer configuration to find the best peel-off offset for the initiation.

## 7.2 Test Mode with a Print Job

This method allows testing of the labeling process with actual printing data by using the  button.

- ▶ Send a print job.

The test mode is executed in two half cycles:

- ▶ Push the  button.  
**Half cycle 1**  
A label is printed. The vacuum of the pad as well as the supporting air (blow tube) are switched on. When the label has been picked up by the pad, the supporting air is switched off.
- ▶ Push the  button.  
**Half cycle 2**  
The pad is moved to the labelling position. The triggered impact sensor signals when the labelling position is reached. The vacuum is switched off as soon as the label is placed onto the product. Then, the pad is moved back into the starting position.

If the label is removed by hand after **half cycle 1** has been completed and the  button is pressed, **half cycle 1** will be repeated with the next label in the printing line.

**Note!**

- ▶ Use the software to find the best peel-off offset for the initiation.

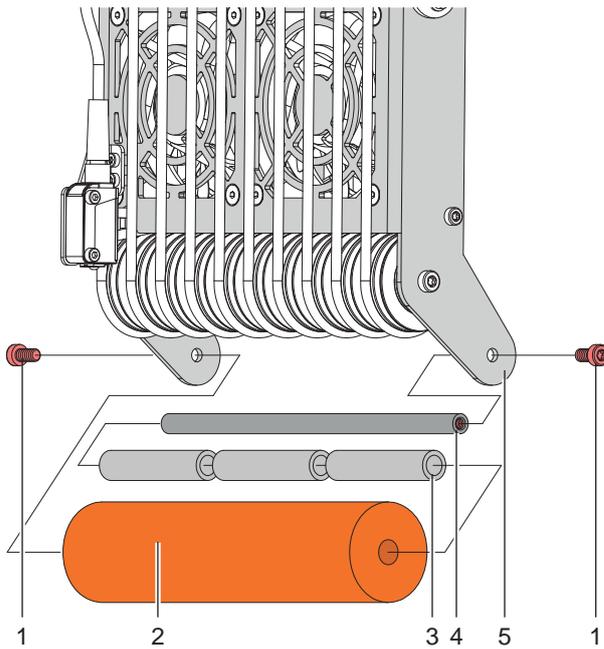


Fig. 13 Exchanging the pinch roller

1. Loosen screws (1).
2. Take out the pinch roller (2) with tubes (3) and the axle (4) out of the frame (5).
3. Pull out the axle shaft (4).
4. Remove the tubes (3) from the pinch roller (2) and place them into the new pinch roller.
5. Reassemble the pinch roller in the reverse order to disassembling it.

## Comparison of menu items / parameter

HERMES Q		Hermes+	
	Label feed	<b>feed</b>	Label feed
	with print job:alternately print and apply of a label without print job: Start of the applicator movement		Enter
	Start display - Selection menü		Setup
	Setup		Machine param.
	Labelling		Applicator
	Transfer mode		Mode of oper.
	Cycle sequence		Mode of apply
	Waiting position		Waiting position
	Blow time		Blow time
	Roll-on time		Roll-on time
	Support delay on		Support delay on
	Support delay off		Support delay off
	Start delay		Delay time
	Lock time		Lock time
	Vacuum delay		Delay vacuum
	Vacuum control		Vacuum control
	Label hand-over		Hand-over up
	Cleaning blow		Cleaning blow
	Peel-off position		Peel position

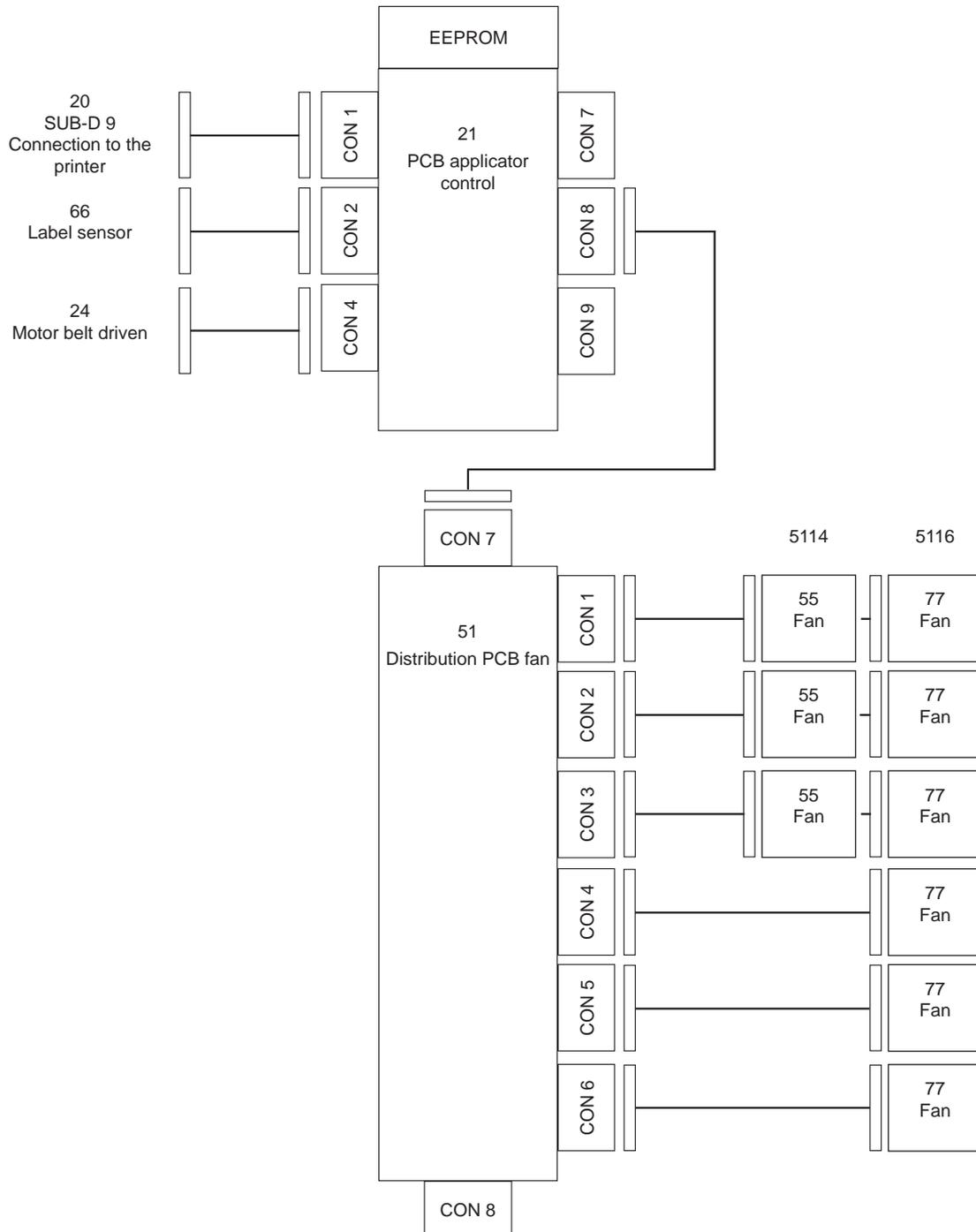


Fig. 14 Block diagram

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