Service Manual

Stroke Applicator

4114 / 4116

MADE IN GERMANY

Service Manual
for the following products

Family	Type
Stroke applicator	4114L-200
	4114L-300
	4114L-400
	4114R-200
	4114R-300
	4114R-400
	4116L-200
	4116L-300
	4116L-400
	4116R-200
	4116R-300
	4116R-400

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Editor

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1 Introduction

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 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 Intended Use

- The device is manufactured in accordance with the current technological status and the recognized safety rules. However, danger to life and limb of the user or third parties and/or damage to the device and other tangible assets can arise during use.
- The device may only be used for its intended purpose and if it is in perfect working order, and it must be used with regard to safety and dangers as stated in the manual.
- The device is designed to use on a cab printer of the HERMES Q series. Any other use or use going beyond this shall be regarded as improper use. The manufacturer/supplier shall not be liable for damage resulting from unauthorized use; the user shall bear the risk alone.
- Usage for the intended purpose also includes complying with the manual, including the manufacturer‘s maintenance recommendations and specifications.

Note!
The complete and current version of the documentation can be found in the Internet.

1.3 Safety Instructions

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 of 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, where the pad is moved between the starting and the labelling position. During operation do not reach into that zone and keep long hair, loose clothes, and jewelry away. Before any alterations are undertaken in those areas, close the compressed air shutoff valve.
- The device may only be used in a dry environment, do not expose it to moisture (water splashes, sprays and mist)
- 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 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 by 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 danger. Warning stickers may therefore not be removed.

1.4 Safety Marking

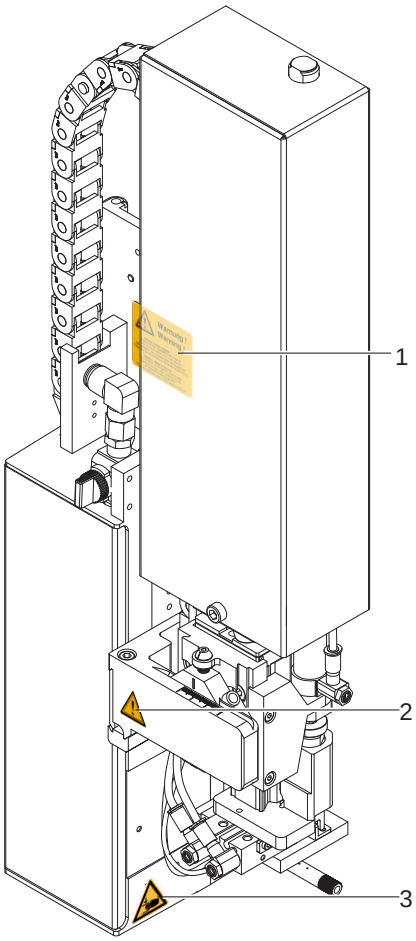


Fig. 1 Safety marking

1: 

Risk of injuries by moving parts!

2: 
The cylinder is under pressure also if the printer is switched off.
Possibility of residual energy!

3: 
Danger of crushing to hands and fingers by the moving pad!

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

1.5 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 applicator enables it to be easily disassembled into its component parts.

▶ Send the parts for recycling.

2 Product Description

2.1 Important Features

- The supporting air and the vacuum as well as the speed of the cylinder are adjustable. That way the applicator can be adapted to different label materials and sizes.
- To avoid contamination within the vacuum channels they are cleaned by air pressure impulse at the end of each application.
- For operation in a system the I/O interface of the printer can be used.

2.2 Technical Data

Label transfer method		**Tamp pad**	**Tamp pad with foam**	**Tamp pad with label stop**	**Blow pad**
		4114/16 L/R 11 F	**4114/16 L/R 12 F**	**4114/16 L/R 61 F**	**4014 L/R 2100**
Label width in mm for	HERMES Q2	4 - 58	10 - 58	10 - 58	10 - 58
	HERMES Q4	10 - 114	10 - 114	10 - 114	10 - 114
	HERMES Q6	50 - 174	50 - 174	50 - 174	-
Label height in mm for	HERMES Q2	4 - 80	8 - 80	4 - 80	10 - 80
	HERMES Q4	8 - 80	8 - 80	8 - 80	10 - 80
	HERMES Q6	8 - 80	8 - 80	8 - 80	-
Compressed air pressure		0,45 MPa (4,5 bar)			
Sound pressure level		under 74 dB(A)			
Product during labeling	fixed	■	■	■	■
	in motion	-	-	-	■
Labeling onto the product	from the top	■	■	■	■
	from below	■	■	■	■
	sideways	■	■	■	■
Product height	fixed	-	-	-	■
	variable	■	■	■	-
Product distance to lower edge at cylinder stroke	200 mm up to mm	135	135	135	140
	300 mm up to mm	235	235	235	240
	400 mm up to mm	335	335	335	340
Immersion depth pad F[2]	up to mm	100	100	100	-
Cycle time about frequency/min.[1]		30	30	30	30

Label transfer method		**Silicon pad**
		4114/16 L/R 8800 F
Label width in mm for	HERMES Q2	10 - 58
	HERMES Q4	10 - 114
	HERMES Q6	50 - 174
Label height in mm		8 - 80
Compressed air pressure		0,45 MPa (4,5 bar)
Sound pressure level		under 74 dB(A)
Product during labeling	fixed	■
	in motion	-
Labeling onto the product	from the top	■
	from below	■
	sideways	■
Product height	variable	■
Product distance to lower edge at cylinder stroke	200 mm up to mm	135
	300 mm up to mm	235
	400 mm up to mm	335
Cycle time about frequency/min.[1]		20

Table 1 Technical Data

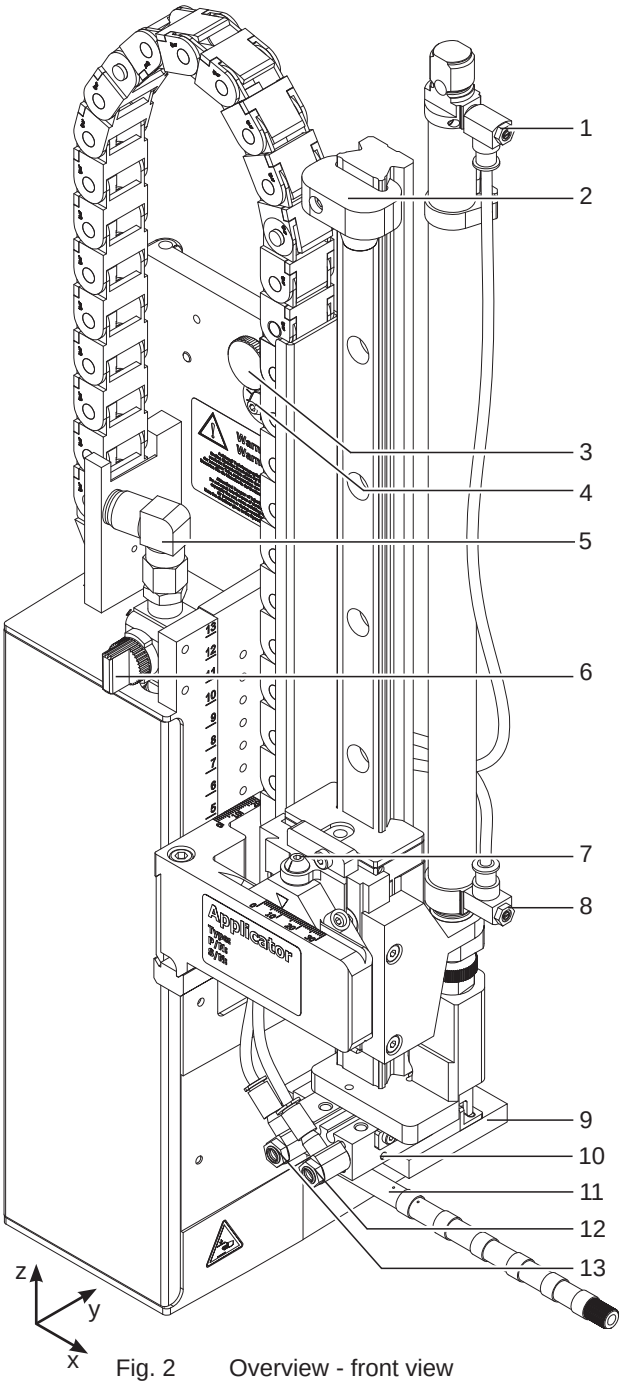
[1] Determined at 100 mm stroke below device / smallest label height / print speed 100 mm/s.

[2] Immersion depth at applicator >25 mm, the cover of the HERMES Q must be modified.

Immersion depth at applicator >25 mm, the cover of the HERMES Qmust be modified.

2.3 Overview without Cover

Front view



Throttle valves vacuum/support air

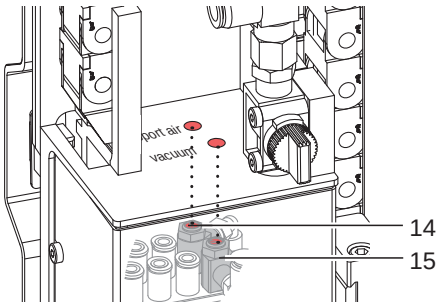


Fig. 2 Overview - front view

1 Throttle valve cylinder - move in Z-direction
2 Stopper for the operation mode "Blow on", transport lock
3 Knurled screw for attaching the applicator to the printer
4 Setting screw to adjust the angle between applicator and printer
5 Compressed air connector
6 Shutoff valve
7 Setting screw for vertical adjustment cylinder assembly
8 Throttle valve cylinder - move out Z-direction
9 Pad - customized
10 Cylinder Y
11 Blow tube for supporting air
12 Throttle valve cylinder - move out Y-direction
13 Throttle valve cylinder - move in Y-direction
14 Support air throttle valve
15 Vacuum throttle valve

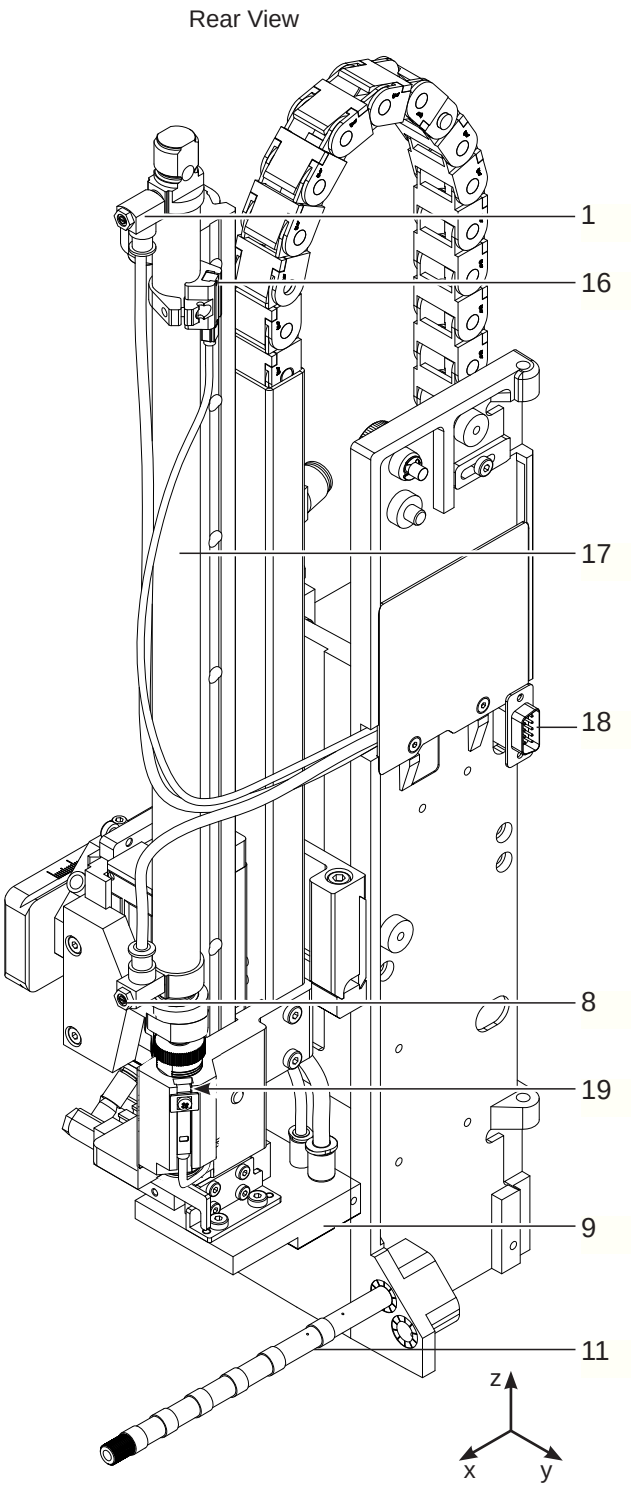


Fig. 3 Device overview - Rear view

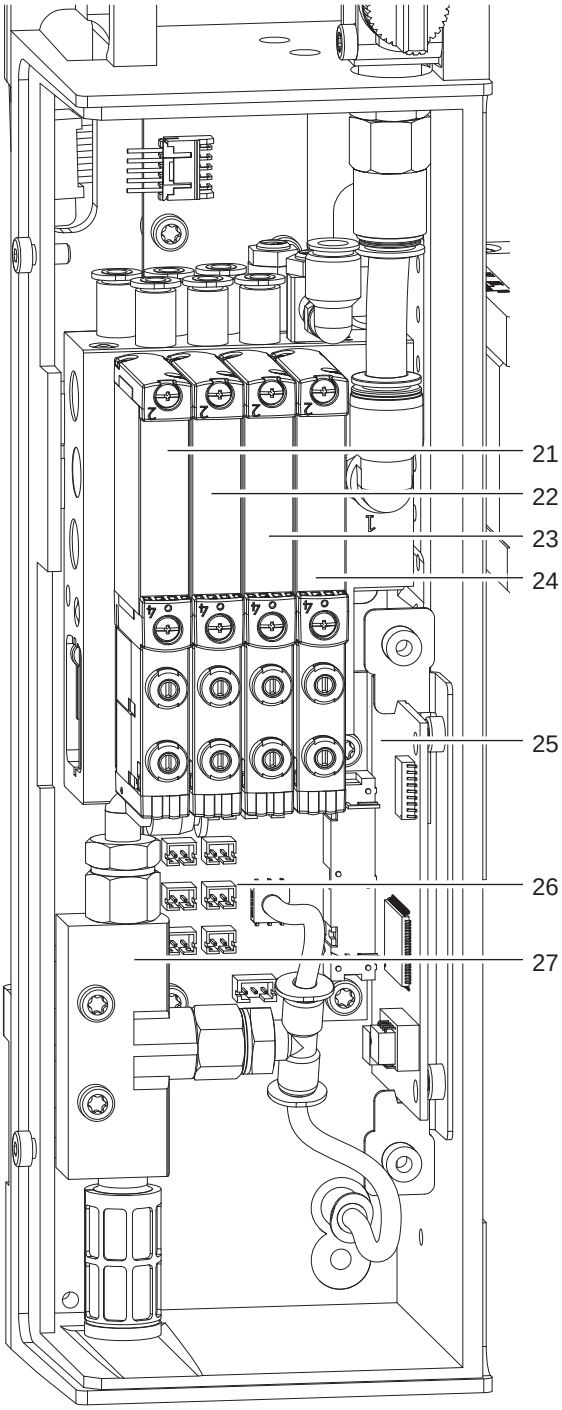


Fig. 4 Device overview - control system

1 Throttle valve cylinder - move in Z-direction
8 Throttle valve cylinder - move out Z-direction
9 Pad - customized
11 Blow tube for supporting air
16 Sensor "start position" Cyl. Z
17 Cylinder Z-direction
18 Interface to the printer
19 Sensor "end position" Cyl. Z

21 Valve Cylinder Z
22 Valve Cylinder Y
23 Valve Blow air
24 Valve Vacuum and Support air
25 PCB Applicator Control
26 PCB Applicator Interfaces
27 Vacuum Generator

2.4 Contents of Delivery

- Applicator (1)
- Screws as part of the pad (2)
- Pad - as ordered (3)
- Blow tube - as ordered (4)
- Documentation

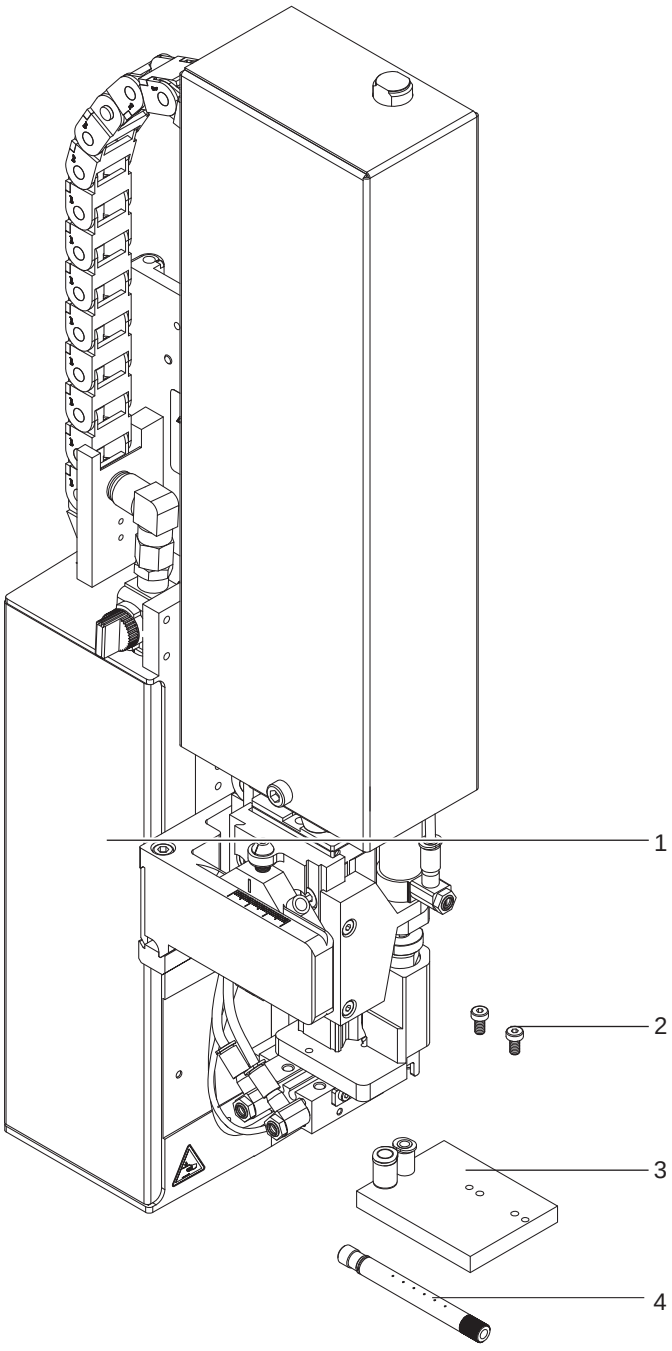


Fig. 5 Contents of delivery

Note!
Please keep the original packaging in case the applicator must be returned.

Attention!
The device and printing materials will be damaged by moisture and wetness.
▶ Set up label printer with applicator only in dry locations protected from moisture and splashes.

3.1 Standard Operation

- ▶ Check all external connections.
- ▶ Load the material. Ensure that the locking system is locked ▷ "Operator's Manual" of the printer.
- ▶ Open the shutoff valve.

Attention!

- ▶ **Ensure that the pad is not covered by a label when switching on the printer-applicator system. Otherwise the vacuum sensor may be calibrated incorrectly.**

- ▶ Switch on the printer.

Note!

If the pad is outside the starting position when the printer-applicator system is switched on the procedure will be interrupted with an error message visible on the display.

Pushing the pause button on the printer will negate the error moving the pad to the starting position. The Applicator is ready for work.

- ▶ Press the  at the printer.
  A synchronization feed is initiated. The processed labels have 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 has been interrupted with the cancel key.

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

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

Error messages during labelling process are shown in the display of the printer ▷„4 Error Messages“

3.2 Cleaning

Attention!

Never use solvent and/or abrasive.

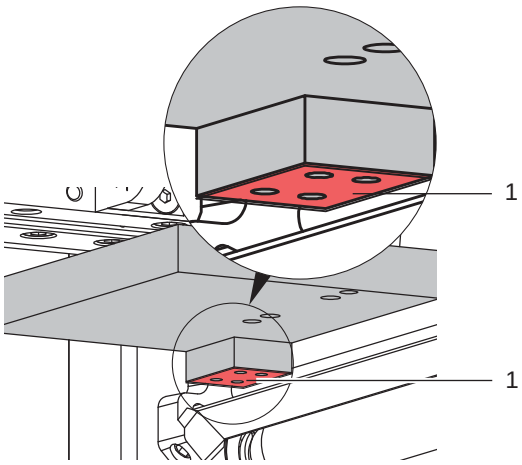


Fig. 6 Cleaning the pad

- ▶ Clean the outside surfaces with multi purpose cleaner.
- ▶ Remove dust particles and leftover label pieces with a soft brush and/or vacuum cleaner.
- ▶ The slide foil (1) requires regular cleaning as most of the dirt will accumulate here.

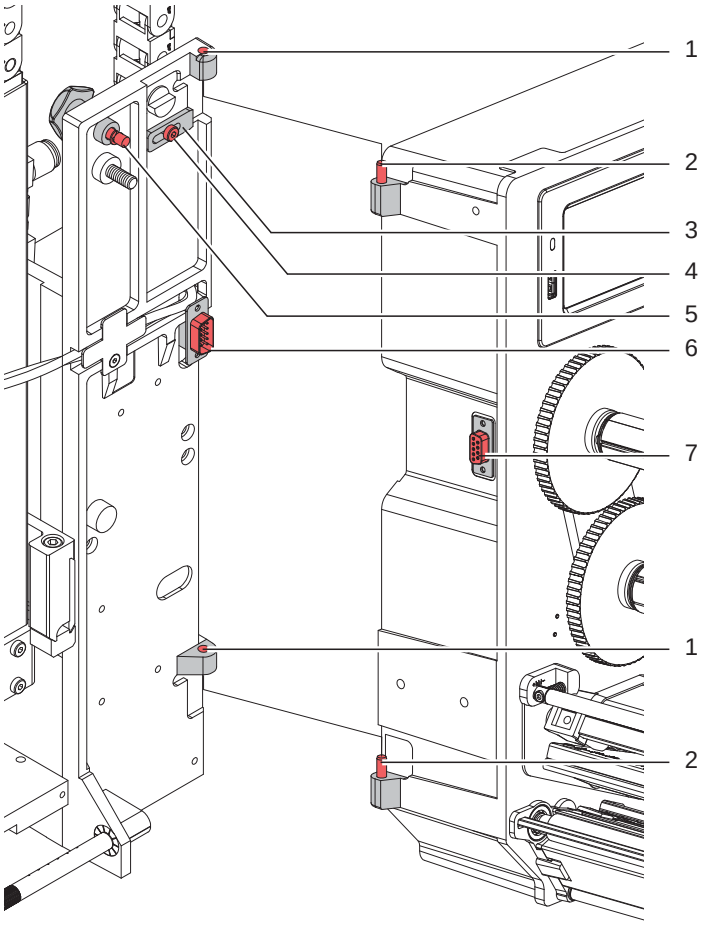


Fig. 7 Mounting applicator to printer

Attention!

- ▶ **Disconnect the printer from the power supply before mounting the applicator!**
- ▶ **Ensure the printer is in a stable secure position!**
- ▶ **Connect the compressed air only after mounting the applicator to the printer!**

For cleaning the applicator and printer it is sometime necessary to turn away or/and dismount the applicator.
Do not change the adjustments of setting screws, throttle valves or other.

Pivot Away/Dismount the Applicator

1. Loosen thumbscrew (5) and pivot the applicator aside.
2. Disconnect SUB-D 15 male connector (6) from the female connector (7) of the printer.
3. Loosen screw (4) and remove the locking plate (3) from the hinges.
4. Lift the applicator from the hinges.

Mount the Applicator

1. With the female parts (1) of hinges hang the applicator on the hinges parts (2) of the printer.
2. Connect the SUB-D 15 male connector (6) to the female connector (7) of the printer.
3. To secure the applicator against slipping out of hinges, loosen screw (4), move metal part (3) under the hinge and tighten screw (4).
4. Swing the applicator to the printer and tighten the thumbscrew (5).

4.1 Error Messages of the Printer

For detailed information about printer errors (e.g. 'Paper out', 'Ribbon out', etc.) ▷ Check the operator's manual of the printer.

Error treatment:

▶ Clearing the error results.

▶ Press the  to synchronize the label feed, remove the left over labels manually.

To quit the error state press *Repeat*.

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

4.2 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
Air pressure error	Compressed air is switched off
	Pressure to low < 4 bar
	Pressure to high > 6 bar
Label not depos.	Label has not been placed onto the product; after the pad has moved back the label still sticks on the pad
Upper position not reached	Pad is not in start position if the printer swiched on
	Pad has not reached the home position within 2s after the movement of the pad was started
	Pad has undefined leaving the start position
External error	Process of labeling was braked via the I/O interface of the printer with the XSTP signal
Upper position not left	There has been no change of the switch state at the upper sensor at the cylinder between the start of the labelling process and the signal from the labelling position sensor
Vac. plate empty	Label has not been picked up properly by the pad; or label fell off the pad before it could be placed onto the product
Lower position not reached	Pad has not reached the starting position within 2s after the pad has left the labelling position; or pad has left the starting position unauthorized

Table 2 Error messages of the applicator

Error treatment:

▶ Clear the error state.

▶ In order to clear the error state press **continue, repeat** or **cancel.**

Continue with the next label in the printing queue.
Repeat repeat the print of the label causing the error.
Only applicable with error *Vac. plate empty.*
Cancel the current print job.

Warning!

After the error has been resolved the pad will immediately move back to the starting position!

Danger of injury to hands and fingers by the moving pad!

▶ **Do not reach into the area of the moving pad and keep long hair, loose clothes, and jewelry away.**

Reprinting a label, interrupted by an error, is not possible without a new printing job.

▶ In the mode "apply/print" before the standard cyclic operation can commence the signal "print first label" must be sent or push  to send a printed label to the pad.

5.1 Factory default Settings

Note!
The applicator is set up in a standard configuration by the factory. These values guarantee a smooth operation.

Note!
In the case of a customer specific setup with special material the settings can deviate from the standard values.
The standard values in the setup protocol are as follows.

The factory default settings are:

- Connected to a cab HERMES Q printer, vertical
- Used Pad for factory settings: cab part No.: 5963881 54x36 for L
cab part No.: 5963878 54x36 for R
- Material used for factory default settings: cab part No.: 5556472 54x35.5
- Pressure value of the compressed air: 0.45 MPa (4.5 bar)
- Factory setting sensors
  - Cylinder Z ▷ „6.8 Sensors on Cylinder Z“
  - Cylinder Y ▷ „6.13 Sensors on Cylinder Y“
- Factory settings throttle valves
  - Cylinder Z ▷ „6.7 Lift Speed of Cylinder Z“
  - Cylinder Y ▷ „6.12 Lift Speed of Cylinder Y“

5.2 Tools

Screwdriver with parallel blade	2.5		To adjust the throttle valves and product sensor
Hexagon key L-wrench	0.8		To adjust the sensors (in contents of delivery)
	2.5		For matched norm parts (in contents of delivery)
	4		Pad adjustments Changing pad
Flat-round nose	straight		To mount/dismount tubes
	angled		
Open spanner	SW 8		To change the throttle valves
	SW 13		Setting the spring power on the adapter bolt
	SW20		Changing the cylinder
Manometer	± 7 bar		Air pressure control

Table 3 Tools

5.3 Mounting and Dismounting the Cover

To initiate the applicator or for adjustments it is necessary to dismount the cover (2).
After these works are finished remount the cover.

Warning!

- ▶ **Do not operate the applicator without cover (2).**
- ▶ **Only dismount the cover when servicing the applicator.**

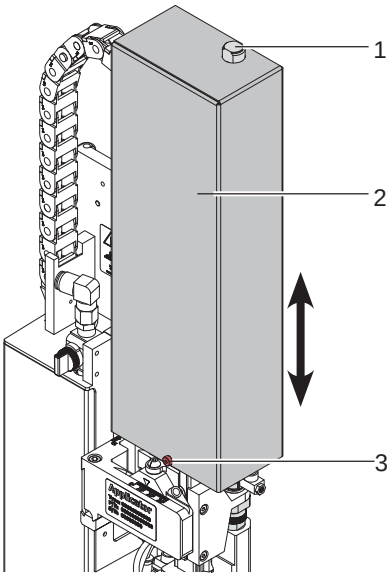


Fig. 8 Cover

Dismount

1. Loosen screw (3).
2. Lift off cover (2).

Mount

3. Move the cover (2) over the cylinder assembly.
4. Put in the cylinder (1) through the hole in the cover (2).
5. Tighten screw (3) to fasten the cover (2).

5.4 Transportation Lock

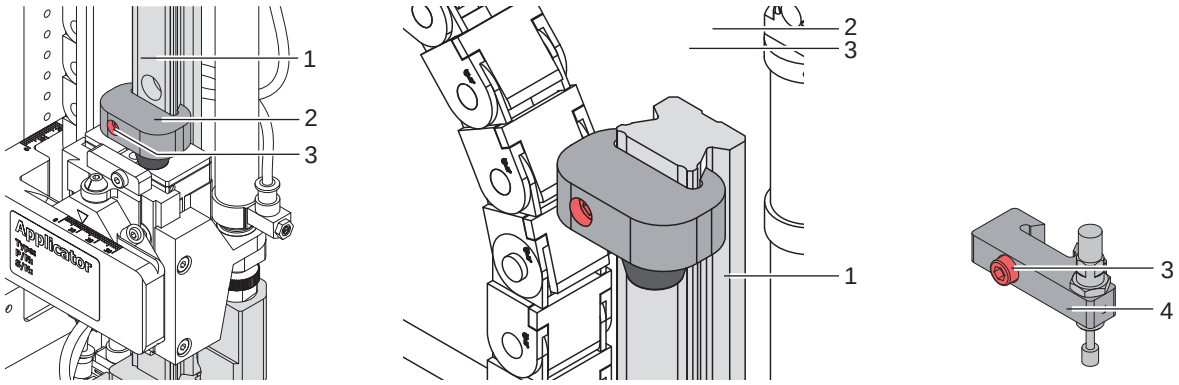


Fig. 9 Stopper as transport lock

When the applicator is delivered, the stopper (2) is mounted on the rod (1). With this stopper (2) the labelling position for the operation mode "Blow on" can be adjusted. In delivery status the stopper (2) is used as transport lock.

Note!
To reduce the impact energy it is possible to use a stopper with cushion (4).

Releasing the transport lock

1. Loosen screw (3) of the stopper (2).
2. Move the stopper (2) along the rod (1) into the position as in operation mode:
   - Operation mode "Blow on": ▷ 7.4 Adjusting the stopper
   - Operation mode "Stamp on": Move the stopper (2) up to the end of the rod (1).
3. Tighten screw (3) to fix the stopper (2) in position.

5.5 Mounting the Applicator to the Printer

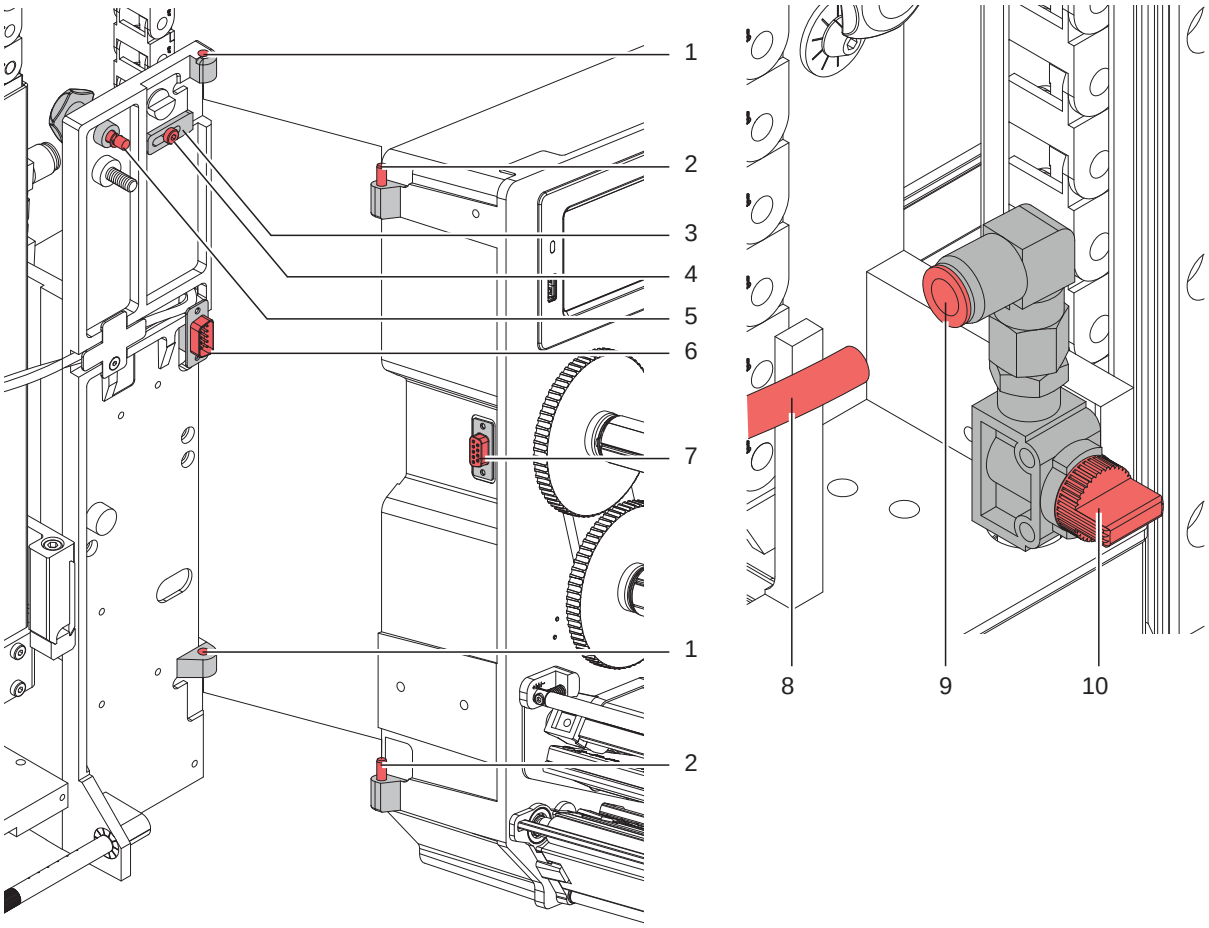


Fig. 10 Mounting applicator on printer

Attention!
Initiation, adjustments and changing of parts is only for qualified service personal only.
▷ Service Manual

Mount the applicator

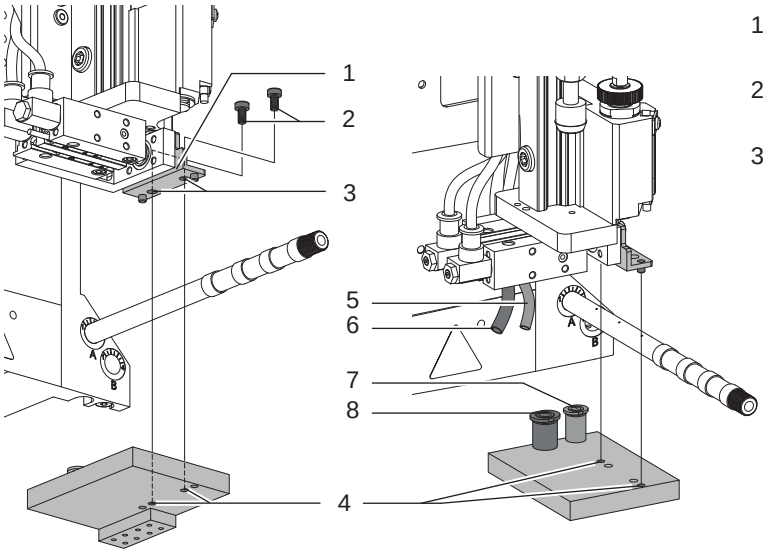
1. Hang the applicator with the female part of hinges (1) at the printer mounted hinges parts (2).
2. Connect SUB-D 15 male connector (6) to the female connector (7) of the printer.
3. To prevent the applicator from slipping out of the hinges loosen screw (4) and move the locking plate (3) under the hinges and tighten screw (4).
4. Swing the applicator to the printer and tighten the thumbscrew (5).
5. Keep the external compressed air supply closed and close the shut-off valve (10) on the applicator ▷ see illustration
6. Insert external compressed air supply (8) into the plug connector (9) on the shut-off valve (10).
7. Switch on compressed air and open shut-off valve (10) by turning 90 °.

For cleaning the applicator and printer it's sometime necessary to turn away or/and dismount the applicator.
Don't change the adjustments of setting screws, throttle valves or other.

Turn away/Dismount the applicator

8. To turn away the applicator loosen thumbscrew (5) and swing the applicator aside.
9. Disconnect SUB-D 15 male connector (6) to the female connector (7) of the printer.
10. Loosen screw (4) and move off the locking plate (3) from the hinges.
11. Lift the applicator upward.

5.6 Mounting the Pad



1. Slide the pins (3) into the holes of pad (4) by lifting the pad to pad holder (1).
2. Fix the pad with the screws (2) to the pad holder (1).
3. Insert the vacuum tube (5) and the blowing air tube (6) into the appropriate push-in-fittings (7,8) of the pad.

Fig. 11 Mounting the pad

Attention!

▶ **To avoid possible collisions of the pad with other parts of the printer-applicator system, please roughly align the pad in all directions (▷„6 Adjustments“) before connecting the applicator to the compressed air supply!**

5.7 Mounting the Blow Tube

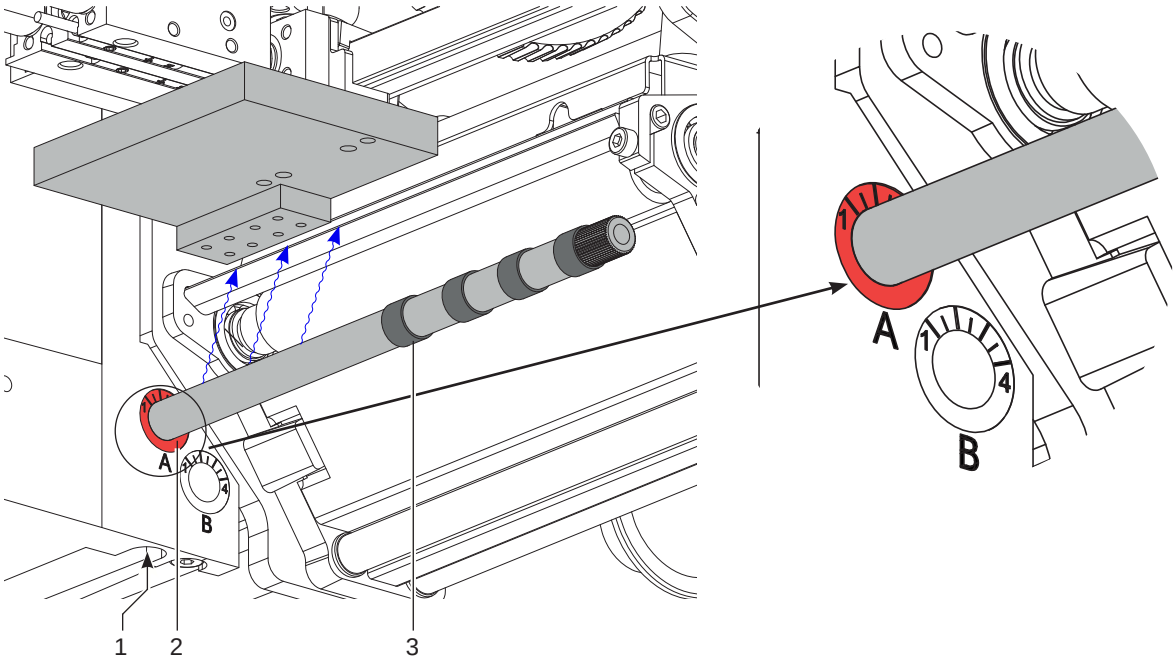


Fig. 12 Mounting the blow tube

It is possible to rotate the blow tube to optimize the direction of the support air for the take over procedure of the label from printer to applicator.

1. Loosen screw (1).
2. Put in the blow tube (3) into the hole A (2).
3. Tighten screw (1) gently to secure it. ▷„6.6 Adjustment of the Stopper for Blow on Mode“

5.8 Connecting the Compressed Air

Attention!
Adjustments and function control were done with a compressed air value of 4.5 bar.
The applicator operating range is between 4.0 and 6.0 bar.

Warning!
When connecting the applicator to compressed air it is considered "IN USE!" Cylinder motion is possible!
▶ Do not reach into the zone of the moving pad and keep long hair, loose clothes, and jewelry away.

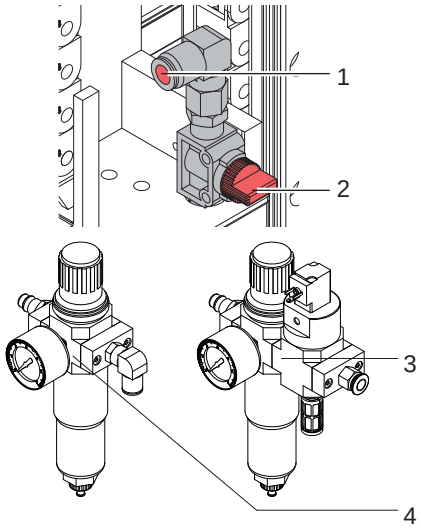


Fig. 13 Compressed air connection

1 Check that the stop valve (2) is closed as illustrated
2 Attach compressed air to connector (1).
3 Open the stop valve (2) by turning it into the direction of air flow.
4 Switch on the printer by the power switch.

It is possible to use an air pressure regulation unit.

cab offers two versions of air pressure regulators.

- Air pressure regulation unit with included magnetic valve (3)
  Controlling via printer
  ▷ Interface description of the printer
- Standard version (4)

Note!
If the pad is not in the start position when the printer is switched on an error message appears on the display.

Press the pause button on the printer.
The applicator will move into the start position and will be ready for use.

Note!
Only mount the air pressure regulation unit as illustrated otherwise the functionality of the air-water separator cannot be guaranteed.

6.1 Adjusting the Pad

For the perfect application of labels it is necessary that the pad is placed precisely above the dispensed label.

Aligning the pad parallel to the dispensing plate

The edge of the pad should be positioned parallel to the dispensing plate of the printer in order to position the label exactly on the pad.

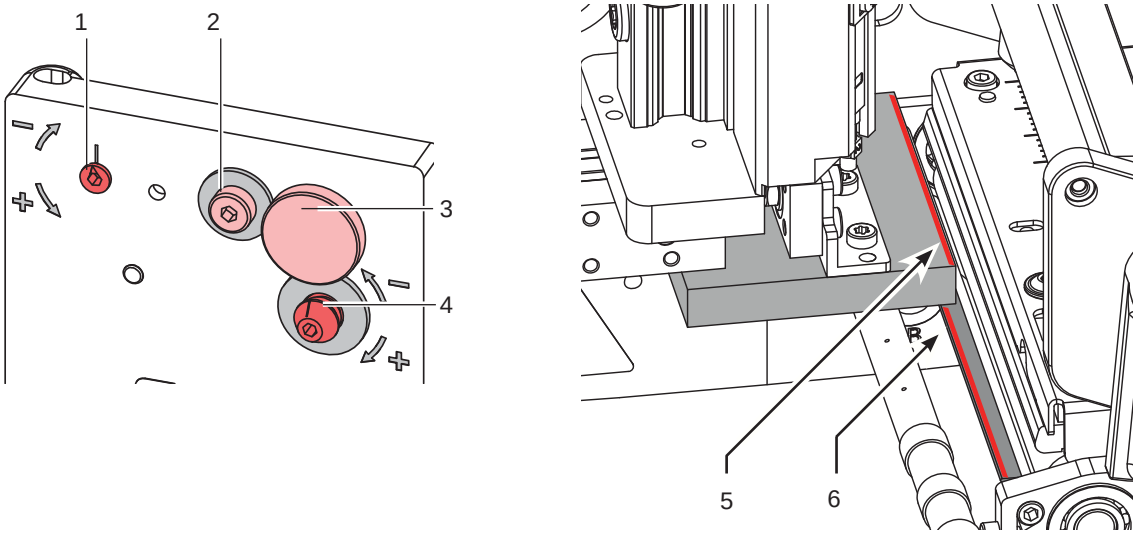
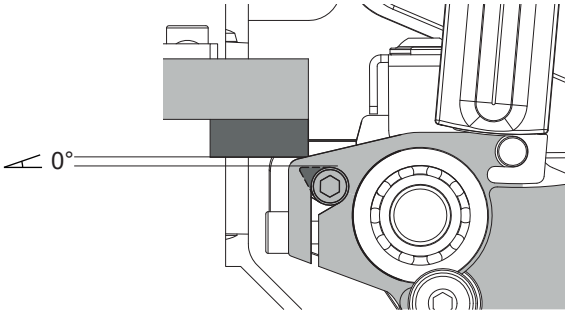


Fig. 14 Aligning the pad to the dispensing plate

1. Loosen the knurled screw (3) and the set screw (4).
2. Screw in the knurled screw (3) until the pad edges (5) are aligned parallel to the dispensing edge (6) of the printer.
3. Tighten the set screw (4) until it touches the printer.

Aligning the pad at an angle to the dispensing plate



4. If the angle between the pad surface and the dispensing edge - support surface is not 0 ° loosen screw (2).
5. Correct the angle of attack by turning the eccentric (1).
6. Tighten screw (2).

6.1.1 Moving the Pad in Y-Direction

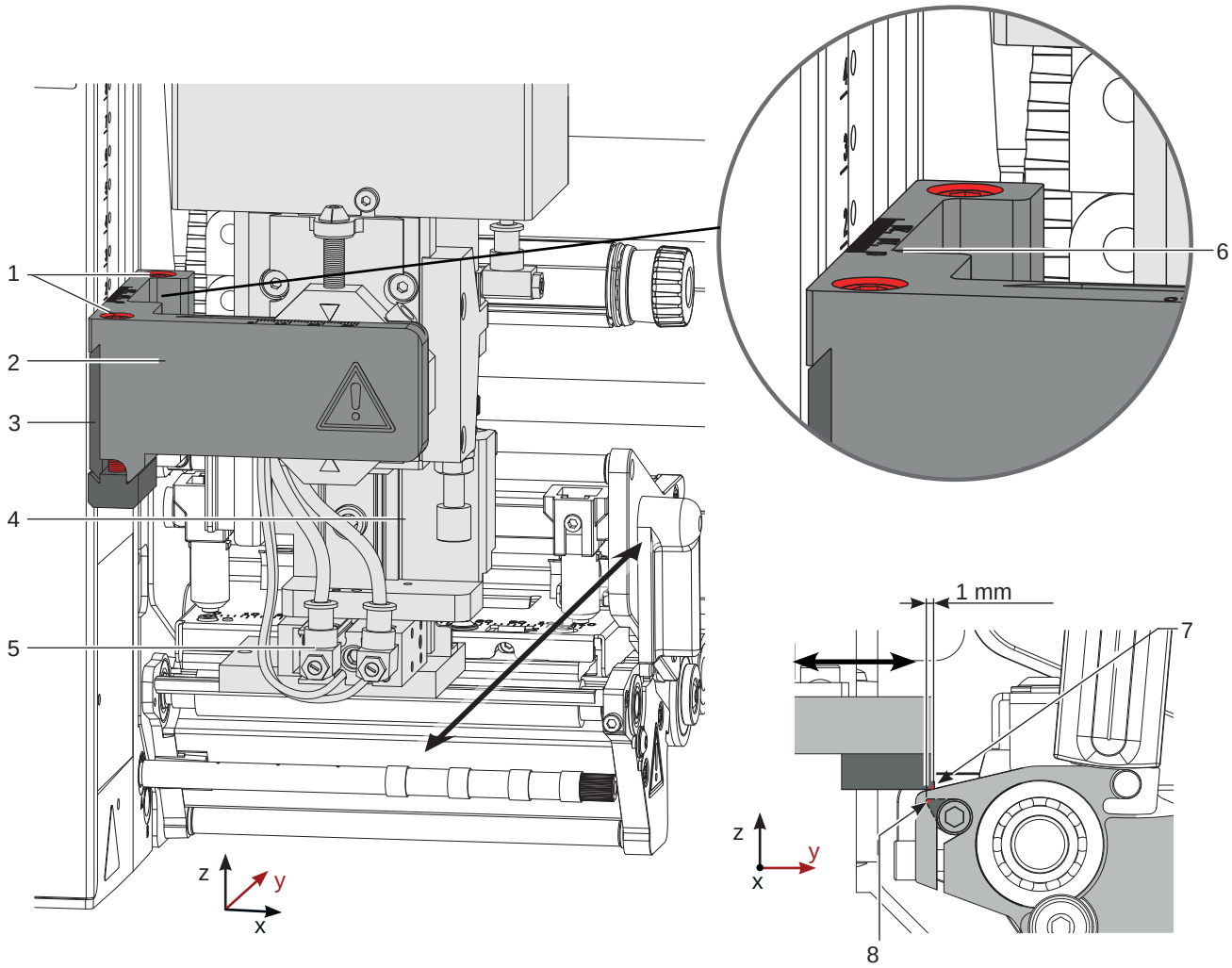


Fig. 15 Displacement in the Y direction

Displacement in the Y direction (printing direction)

1. Switch off the compressed air and pull the tube out of the throttle valve (5). The cylinder extends by spring force and is in the label transfer position.
2. Loosen screws (1) on the cross beam (2).
3. Move cylinder assembly (4) with the pad and crossbeam (2) along the guiding rail (3) that the distance from the edge of the pad (7) to the edge of the dispensing plate (8) of the printer is approximately 1 mm.
   Orientation: Graduation (6)
4. Tighten screws (1).
5. Put the tube back into the throttle valve (5) and switch on the compressed air.

6.1.2 Moving the Pad in Z-Direction

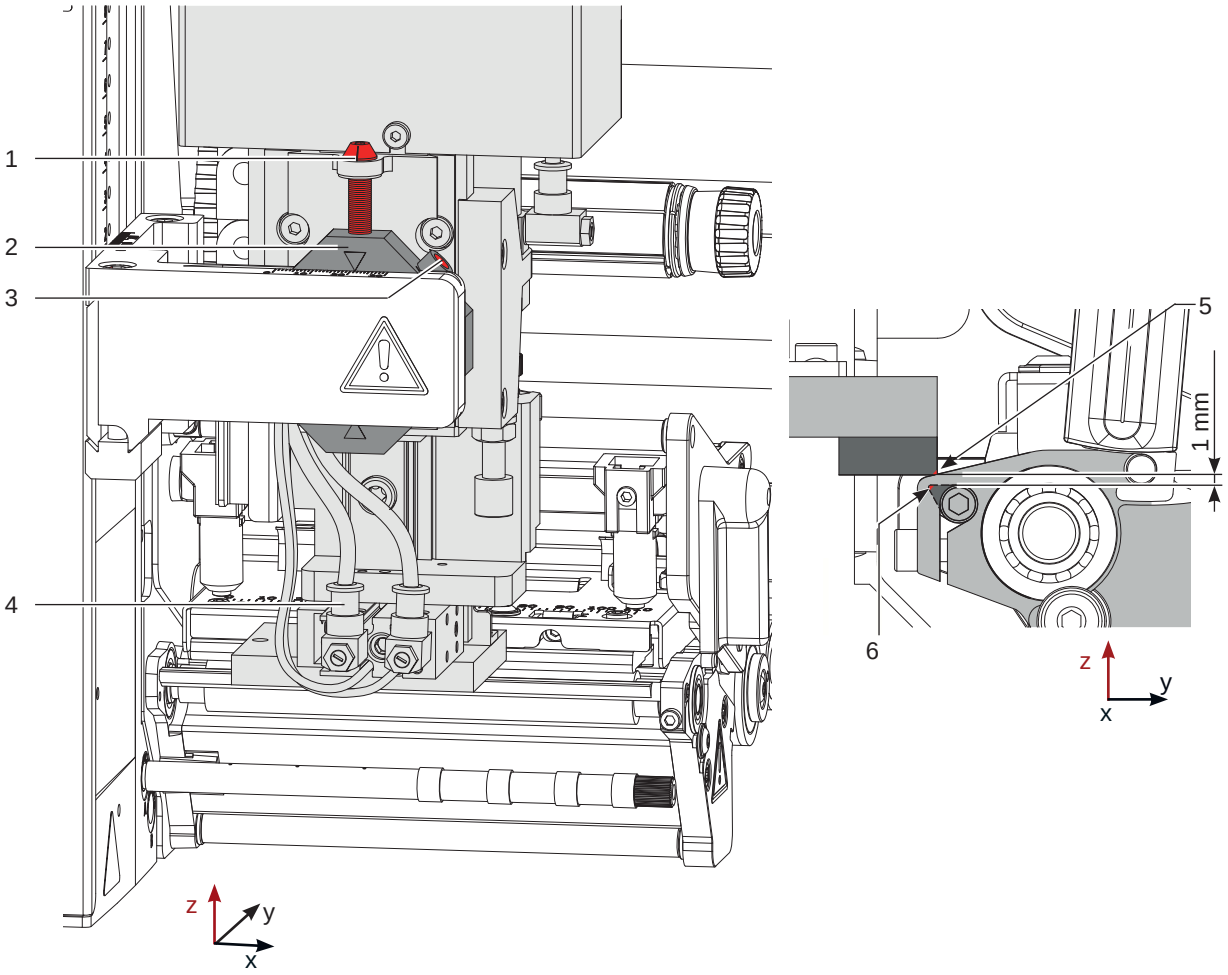


Fig. 16 Displacement in the Z direction

1. Switch off the compressed air and pull the tube out of the throttle valve (4). The cylinder extends by spring force and is in the label transfer position.
1. Loosen screw (3) on the binder (2).
2. Turn the setting screw (1) so that the bottom side of the pad is 1 mm over the top of the dispensing plate (6) of the printer.
3. Tighten screw (3).
4. Put the tube back into the throttle valve (4) and switch on the compressed air.

6.1.3 Moving the Pad in X-Direction

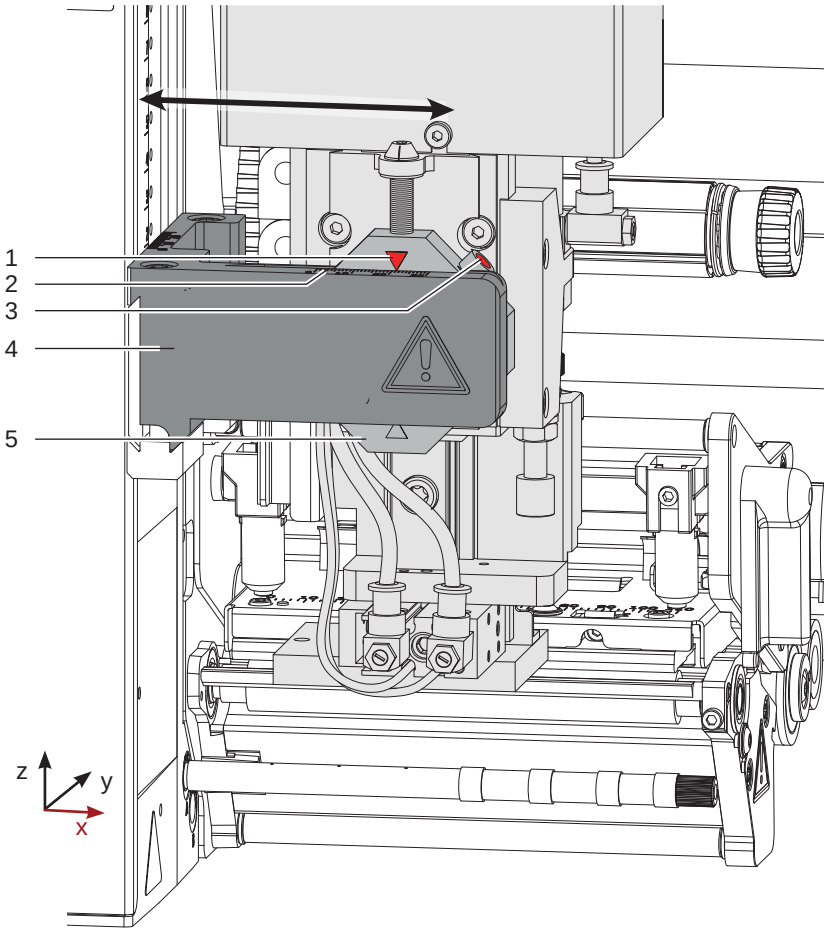


Fig. 17 Displacement in the Y direction

Displacement in the X direction (Side)

1. Loosen screw (3) on the binder (5).
2. Move cylinder assembly with the pad along the crossbeam (4) so that the dispensed label is aligned centrally to the pad. As reference use the provided graduation/ruler on the crossbeam.
   Orientation: Graduation (2) and Marking (1)
3. Tighten screw (3).

6.2 Set Throttle Valves on the Cylinders

Exhaust throttle valves are installed on the cylinders of the applicator. The valves control the movement of the cylinders in the direction of the valves.

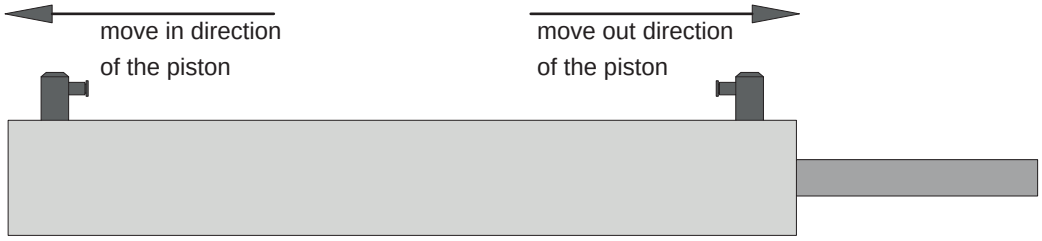


Fig. 18 Throttle valves on the cylinders

Note!

▶ **When replacing or re-adjusting the throttle valves, always adopt the settings from the test report!**

The setting values are the revolutions of the adjusting screw on the throttle valve. To do this, the throttle valve is completely closed. Turn the adjusting screw on the throttle valve clockwise until it stops.

To adjust, turn the adjusting screw on the throttle valve counterclockwise. The number of revolutions for the respective throttle valve can be found in the test protocol included in the scope of delivery of the applicator.

- Factory settings throttle valves

  Cylinder Z ▷ „6.7 Lift Speed of Cylinder Z“

  Cylinder Y ▷ „6.12 Lift Speed of Cylinder Y“

6.3 Set the Sensors

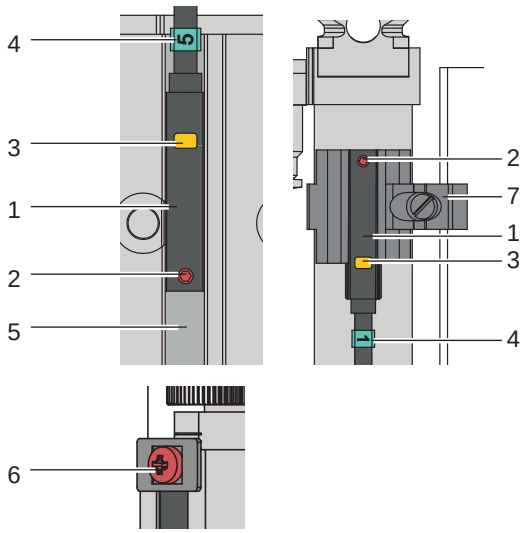
Sensors are used for status detection and process control on the applicator. Precise positioning is important for the applicator to function correctly. The sensors are proximity switches that are triggered by a magnet in the cylinder piston.

An LED is integrated for status detection of the sensor. This LED lights up when the sensor is triggered by the magnet in the cylinder piston.

Note!

▶ **When replacing or re-adjusting the sensors, always adopt the settings from the test report!**

Sensor and types of mounting



1. Sensor
2. Set screw with 0.8 mm hexagon socket to fix the sensor.
3. LED for status detection.
4. Markers on the sensor and on the connector for connection to the control circuit board
5. Guide groove on the cylinder.
6. Phillips screw with holding plate for fixing the sensor.
7. Mounting clamp for sensors.

Fig. 19 Sensor / Mounting

- Factory setting sensors

  Cylinder Z ▷ „6.8 Sensors on Cylinder Z“

  Cylinder Y ▷ „6.13 Sensors on Cylinder Y“

6.4 Vacuum Adjustments

The label will be held on the pad by a vacuum.

The vacuum needs to be set up in such a way that the label covers all the suction holes and is not hindered before it reaches its intended position on the pad.

The default Value of the Vacuum is -0.6 bar.

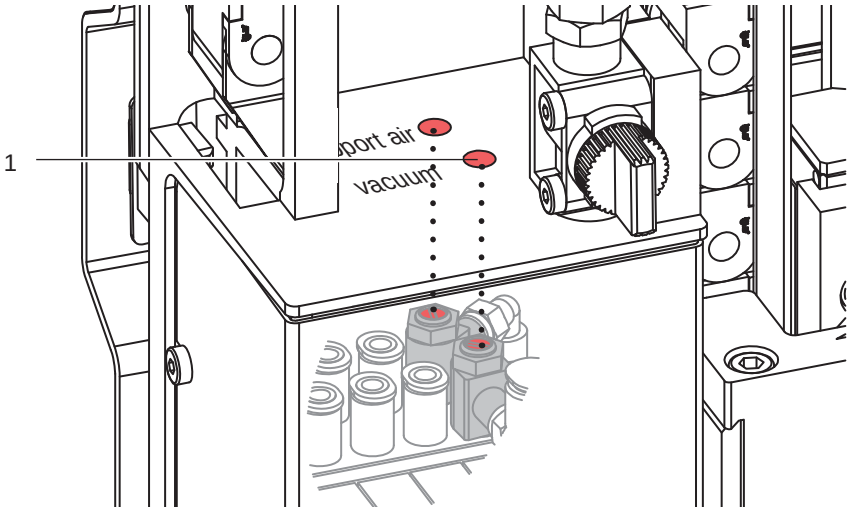
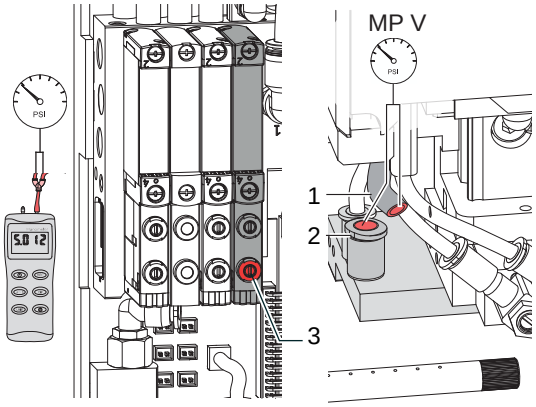


Fig. 20 Throttle valve "vacuum"

- ▶ Adjust the vacuum on the throttle valve "vacuum" (1) so that the label will be sucked up over the entire area.
- ▶ To increase the vacuum turn the setting screw on the throttle valve (1) counterclockwise.

Measuring Point Vacuum (MP V)



Use a manometer with a measurement area -7 to 7 bar for measurement the pressure.

MP V: Vacuum -standard value -0.6 bar

1. Remove cover.
2. Cover the suction plate so it is airtight.
3. Attach manometer between tube (1) at the energy track and fitting (2) on the pad.
4. Activate the valve manually by pressing the micro switch (3) to measure the pressure.
5. Mount cover.

Fig. 21 Measuring Points for the vacuum

Attention!
After pressure measurements, reconnect all components correctly.

6.5 Adjusting the Blow Tube (Supporting Air)

The blow tube must be adjusted in such a way that the label takeover is unhindered by turbulence and the supporting air blows the label evenly against the pad.

The default factory value is 2 bar.

Note!
Use an appropriate blow tube for the printer in use.

A number of holes of the blowing tube are covered by plastic rings. It is necessary remove as many of these rings as are needed to ensure the entire label-width is supported.

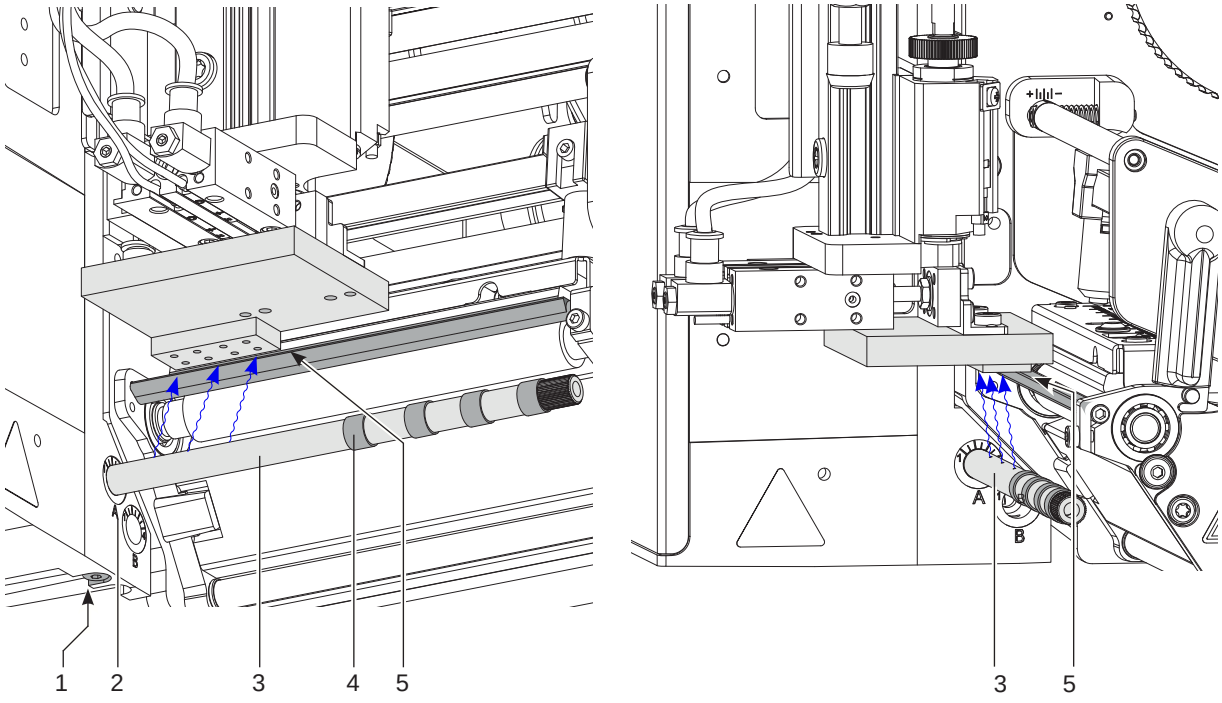


Fig. 22 Adjust the blow tube

The blow tube (3) for the supporting air can be rotated around its axis. That way the direction of the supporting air can be optimized.

1. Loosen screw (1).
2. Put in the blow tube (2) into the tube adapter A (2).
   Turn the blow tube (2) in the direction that the air current can support the take up of the label.
   - For small labels direct the air current more toward the dispensing edge (5) of the printer.
   - For larger labels direct the air current away from the dispense edge (6).

   Use the graduation guide for orientation.
3. Open all holes of the blow tube to cover the label width. Remove rings (4) if necessary.
   All holes outside the label width should be covered with the shrink tube rings provided. Once the unneeded holes have been covered the shrink tube should be shrunk.
4. Tighten screw (1).

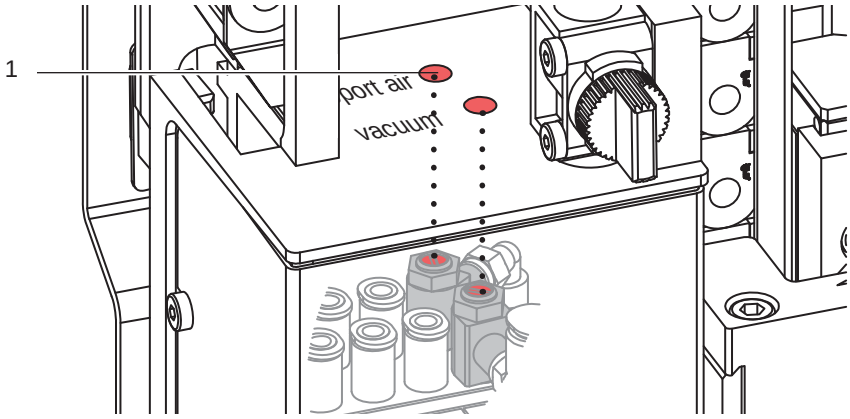
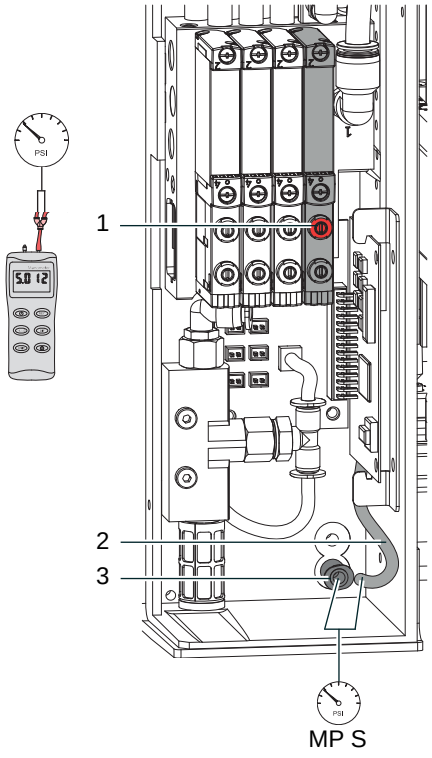


Fig. 23 Throttle valve "support air"

The air pressure can be adjusted with the "support air" valve (1) to fine tune the procedure.

▶ To increase the supporting air turn counterclockwise the screw at the valve (1)

Measuring Point Support Air (MP S)



Use a manometer with a measurement range of -7 to 7 bar to control the pressure.

MP V: Vacuum - Reference Value (-0.6 bar)

1. Remove cover.
2. Cover the suction plate so it is airtight.
3. Attach manometer between tube (1) of the energy chain and fitting (2) of the pad.
4. Activate the magnetic valve manually by pressing the micro switch (3) to measure the pressure.
5. Mount cover.

Fig. 24 Measuring support air

Attention!
After pressure measurements, reconnect all components correctly.

6.6 Adjustment of the Stopper for Blow on Mode

Note!
For operation mode "Blow on" only!

The operation mode "Blow on" allows labelling without contact.

The pad does not press on the product. The label will be blown from the pad to the product over a distance up to 10 mm.

Attention!

▶ **Switch off the printer and close the shutoff valve for the compressed air at the service unit!**

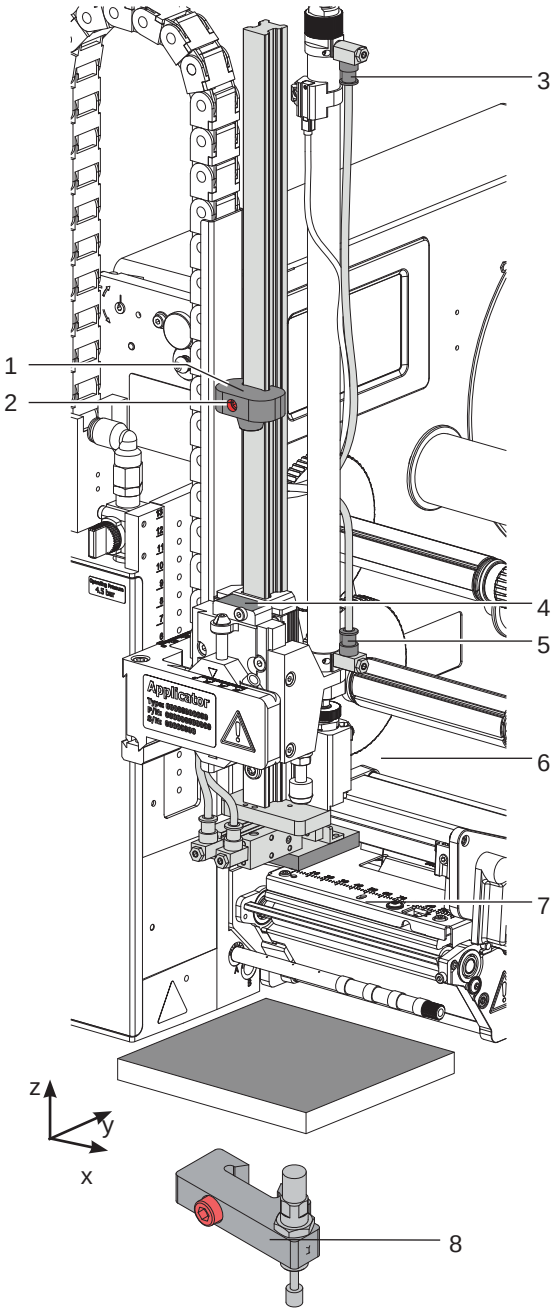


Fig. 25 Adjusting the Stopper

1. Place a product sample (7) at the labelling point.
2. Pull the tubes out of the push-in-fittings (3,5).
3. Loosen the screw (2) in the stopper (1).
4. Move the pad manually in the required labelling position. The distance between the blow pad (6) in the labelling position and the product surface (7) must not exceed 10 mm.
5. Move the stopper (1) against the guide block (4) and tighten the screw (2)
6. Insert the tubes into the appropriate push-in-fittings (3,5).
7. Open the shutoff valve and switch on the printer.

Note!
To reduce the impact energy of the pad it is possible to use a stopper with cushioning as option.

6.7 Lift Speed of Cylinder Z

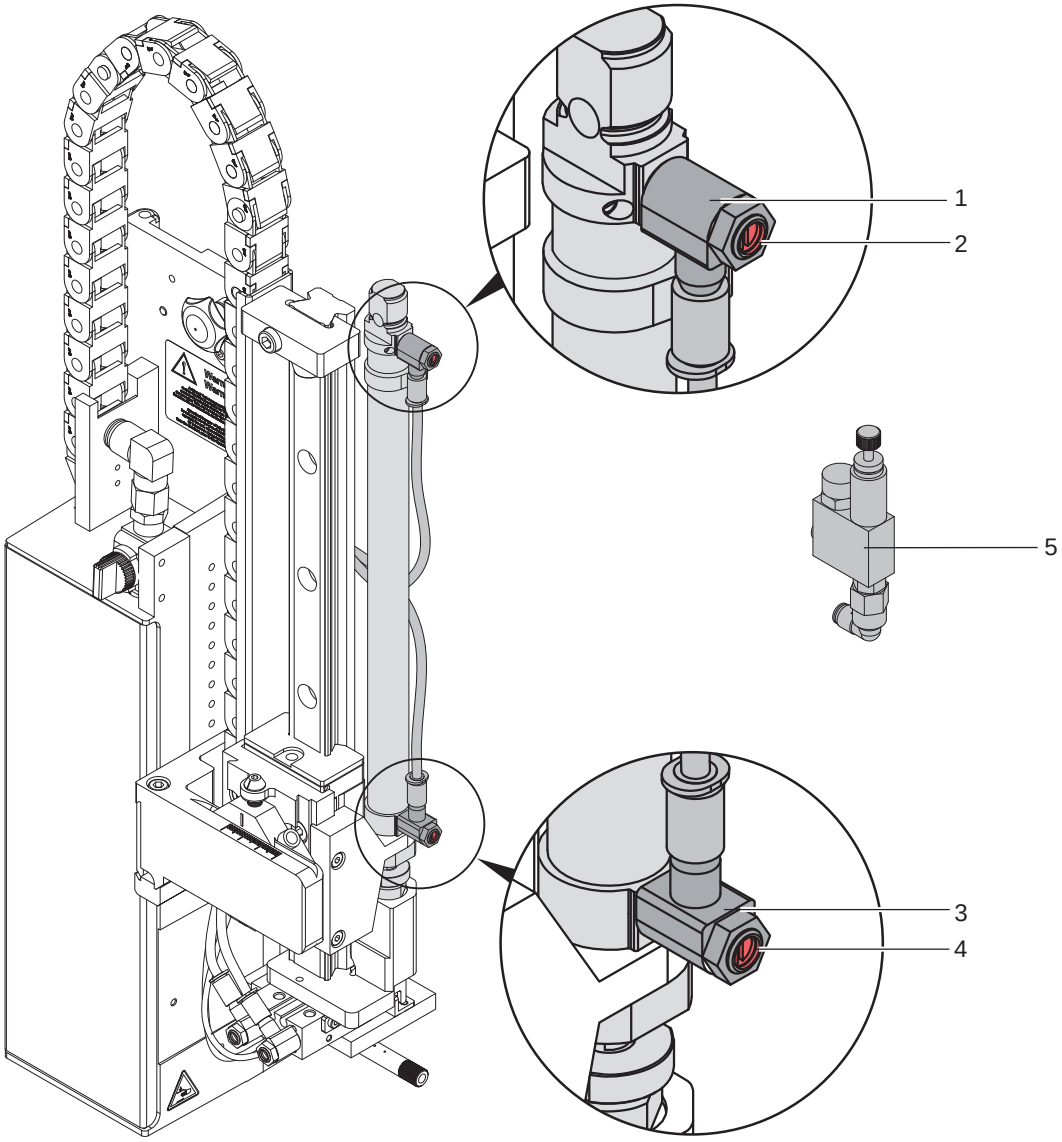


Fig. 26 Throttle valves on the cylinder Z

The speed of the pad movement can be regulated by two throttle valves (1, 3).

- ▶ Adjust the pad movement speed as necessary.
- ▶ To increase the downward speed turn counterclockwise the screw (4) at the lower valve (3).
- ▶ To increase the upward speed turn counterclockwise the screw (2) at the upper valve (1).

Note!
The application pressure of the pad is mainly depending on the downward speed of the pad.

- ▶ **In order to reduce the application pressure turn clockwise the screw (4).**

Attention!
The time for the downward movement of the pad may not exceed 2 seconds
Otherwise the error message "*Lower position*" will appear.

Note!
To reduce the air pressure in Z-direction it is possible to use an optional pressure reduction valve (5).

▷ **„6.12 Lift Speed of Cylinder Y“**

6.8 Sensors on Cylinder Z

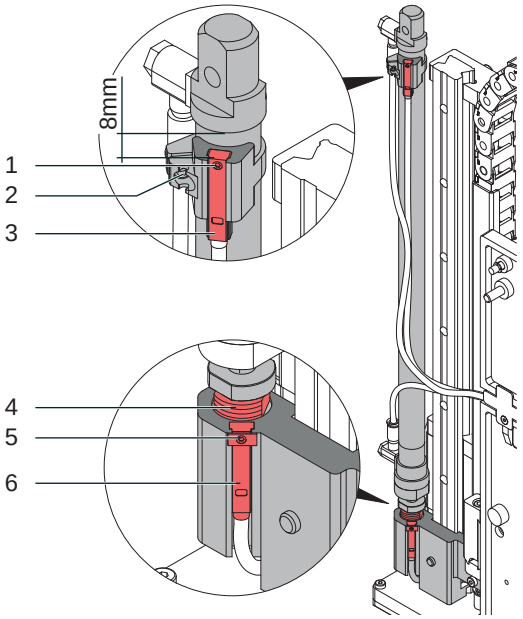


Fig. 27 Sensors on cylinder Z

Sensor Start Position (3) Cylinder Z

1. Loosen screw (1) of sensor "Start Position" (3) and move the sensor so that the top edge of the sensor sits comfortably in the sensor holder.
2. Remove the compressed air tubes of the cylinder Z and power up the printer with connection to the applicator.
3. Move the pad toward the stopper manually.
4. Loosen screw (2) of the sensor holder.
5. Position the sensor so that it triggers securely with lit up LED at complete contraction of cylinder Z. This is achieved with the top edge of the sensor being about 8 mm from the top edge of the connection ring.
6. Tighten screw (2).

Sensor End Position (6) Cylinder Z

The sensor End Position (6) is to be mounted flush with the upper edge of the punch holder.
Depending on the weight of the punch and the installation position, the tension of the spring in the adapter bolt is set in order to avoid unintentional triggering of the sensor End Position (6). The triggering magnet is integrated in the adapter bolt and varies its position when the spring tension changes.

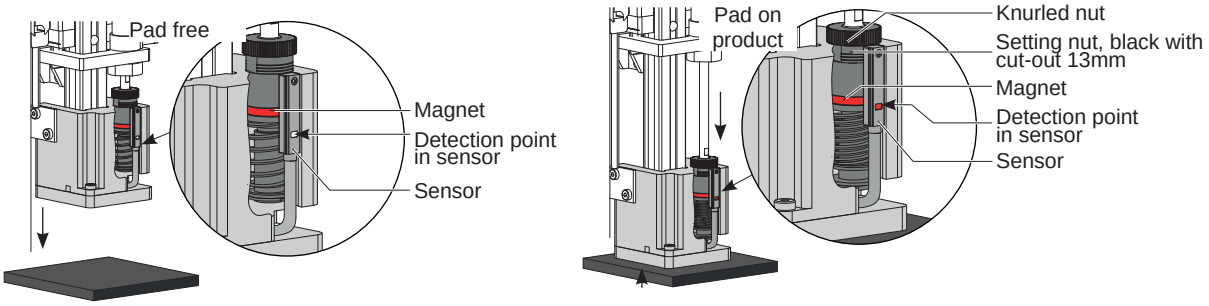


Fig. 28 Labelling sensor principle

1. Getting the printer and applicator into the final orientation.
2. Adjust the spring tension on the adapter bolt (4) via the black setting nut so that:

- The adapter bolt is not pushed into the stamp assembly group during motion.
- The sensor triggers when the pad has reached the labeling position.

3. Turn the setting nut with an open spanner 13 mm and fix the knurled nut by holding it.
   - Turning the setting nut clockwise will increase the spring tension.
   - Turning the setting nut counterclockwise will decrease the spring tension. Loosen screw (5) and move the sensor (6) so that the LED lights up when the adapter bold is pushed into the pad assembly.
4. Tighten screw (5).

6.9 Stopper Tamp Assembly

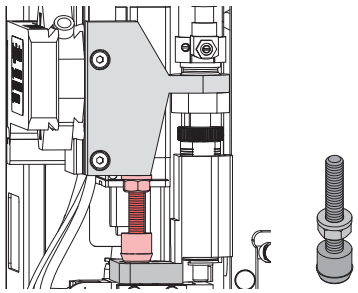


Fig. 29 Stopper (pad assembly)

The stopper avoids the triggering of the labelling sensor by the weight of the pad assembly at the inward motion in case of an installation of 90° or 180°.

The adjustment must be done in the start position of the applicator.

1. Loosen the counter nut of the stopper.
2. Turn the stopper until it easily touches the pad retainer. Do not change the take over position of the pad by the stopper.
3. Tighten the counter nut to fix the stopper.

6.10 End Position Cushioning

Note!
The end position cushioning of the cylinder is set up to client specifications and does usually not need to be adjusted.

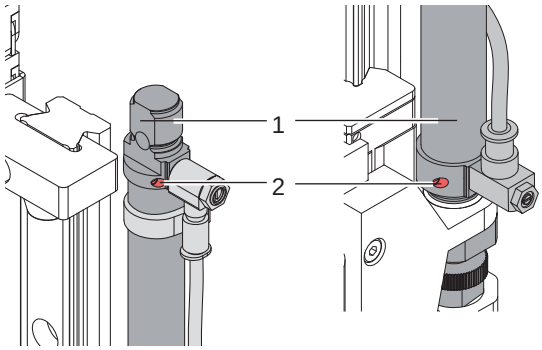


Fig. 30 End position cushioning

The end position cushioning of the main cylinder reduces the impact energy when the applicator is operating at high speeds and/or mass.

Adjust the end position cushioning so that the piston arrives the end position definitively but does not strike it to hard.

A higher level of end position cushioning will reduce the lift speed.

- ▶ To increase the value of the end position cushioning turn the setting screw (2) clockwise on cylinder (1).
- ▶ To reduce the value of the end position cushioning turn the setting screw (2) counterclockwise on cylinder (1).

6.11 Adjusting the Options for Z-Direction Movement

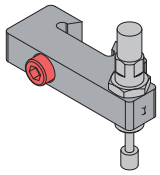


Fig. 31 Stopper with cushioning (guide rail)

The stopper with cushioning (guide rail) reduces the speed of the cylinder Z shortly before impact when the applicator is operated at higher cylinder speeds and with larger pads.

Adjustments like chapter ▷ „6.6 Adjustment of the Stopper for Blow on Mode“

Adjust the stopper with maximum compressed spring.
▷ „5.4 Transportation Lock“

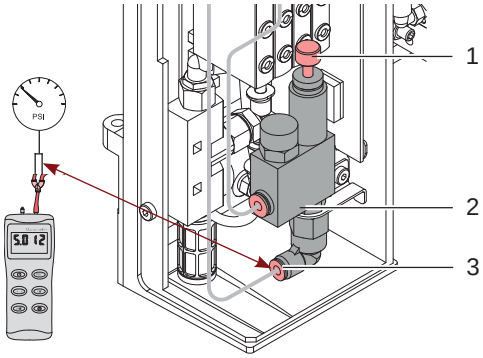


Fig. 32 Pressure reduction valve cylinder Z

The pressure reduction valve (2) can be used when labelling pressure-sensitive products or considering general safety aspects to reduce the pressure of the cylinder in Z-direction.

The standard value is 2.5 bar.

- ▶ Connect the manometer between tube and exit (3) and adjust the pressure to 2.5 bar with the knurled screw (1).

It is possible to order an upgraded set with a pressure reduction valve.

Instructions are provided with the upgraded set.

6.12 Lift Speed of Cylinder Y

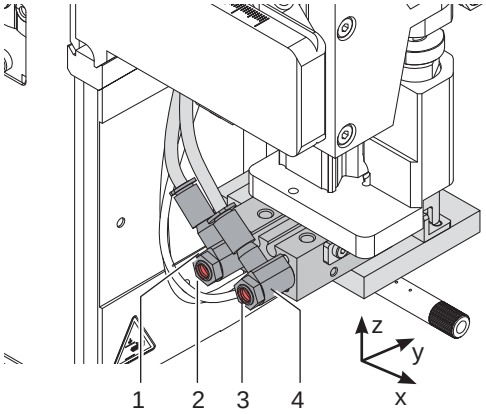


Fig. 33 One-way flow control valve on cylinder Y

The speed of the pad movement can be regulated by two throttle valves (1, 3).

To set the values, turn the adjusting screws (2 or 4) clockwise as far as they will go.

- ▶ To increase the move-out speed in Y-direction turn counterclockwise the screw (2) on valve (1) .
- ▶ To increase the move-in speed in Y-direction turn counterclockwise the screw (3) on valve (4) .

▶ To increase the move-out speed in Y-direction turn counterclockwise the screw (2) on valve (1) .
▶ To increase the move-in speed in Y-direction turn counterclockwise the screw (3) on valve (4) .

6.13 Sensors on Cylinder Y

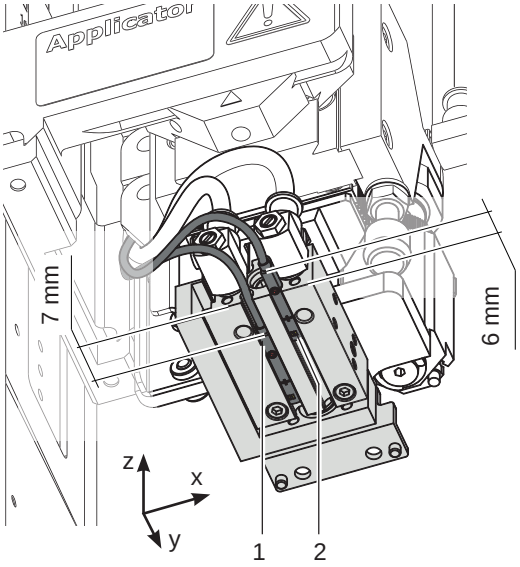


Fig. 34 Sensors on cylinder Y

- Place sensor start position (2) on cylinder Y so that the sensor will switch on if the cylinder is completely moved out and will switch off if the cylinder leaved this position.

  Factory setting: 6 mm outwards from the front edge of the cylinder to the edge of the sensor on the cable

- Place sensor end position (1) on cylinder Y so that the sensor will switch on if the cylinder is completely moved in and will switch off if the cylinder leaved this position.

  Factory setting: 7 mm inwards from the front edge of the cylinder to the edge of the sensor on the cable

6.14 Labeling from below - Changing the Spring at the Impact Sensor

For fault free labeling in a sideways- or upward-motion it is necessary to change the spring of the impact sensor.

The stronger spring prevents the unwanted triggering of the impact sensor due to the inertia of the cylinder and stamp assembly group.

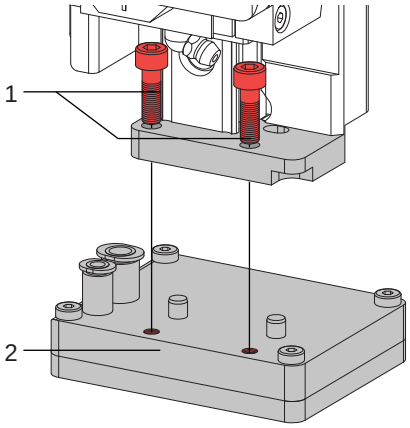


Fig. 35 Demounting the stamp

- Loosen screw (1) and dismount the stamp (2) to reach the locking washer (6).

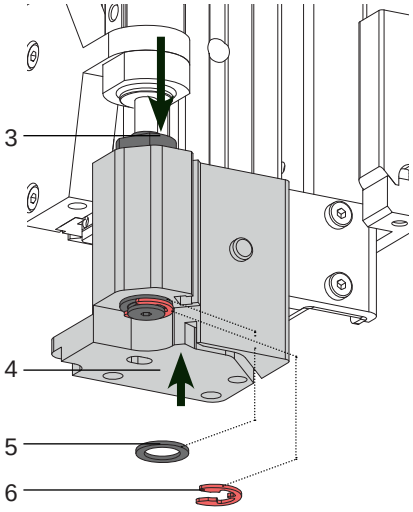


Fig. 36 Loosening the adapter bolt

- Push the adapter bolt (3) into the stamp uptake (4) to ensure that the bottom of the bottom of the bolt is pushed out.
  demount locking plate (6).
- Remove washer (5).

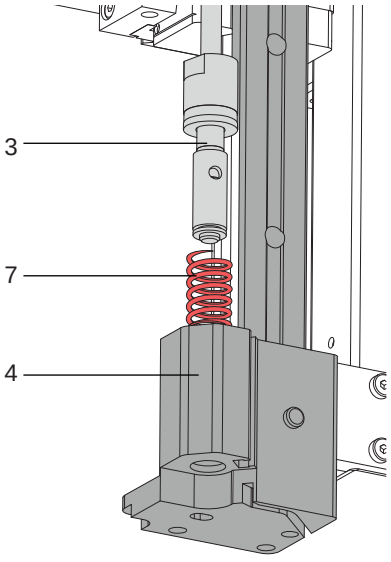


Fig. 37 Changing the spring

- Hold onto the adapter bolt (3) and pull off the stamp uptake (4).
- Pull out the pressure spring (6) and replace it with the new one.
- Push together the stamp uptake (4) and the adapter bolt (3).
- Replace the washer (5).
- Place the locking washer (6) back into it's position.

The applicator can be operated in different ways. While the original process stays the same, the operation mode can be chosen from within the printer setup.

The most important setting is the selection between the operation modes "Stamp on" and "Blow on".

Additionally the applicator has different application modes concerning the order of printing and applying within one labelling cycle

	Stamp on	Blow on
Print/Apply	**x**	**x**
Apply/Print Waiting position up	**x**	**x**
Apply/Print Waiting position down	**-**	**x**

Table 4 Operation and application modes

Additionally all operating modes can be adjusted by setting different time delays.

Note!
For more information about the printer configuration and the function of the buttons in the navigator pad ▷ Configuration manual of the printer or ▷ Operator's manual of the printer

7.1 Method for Changing the Printer Setup

1. Press **menu** button.
2. Select *Setup > Machine param. > Applicator*.
3. Select and adjust the needed parameters.
4. Return to the "Ready" mode.

7.2 Quick Mode for Setting the Delay Times

1. Press **menu** button.
2. Menu

 *Setup>*  *Labelling >*

3. Select and adjust the needed parameters.
4. Return to the "Ready" mode.

7.3 Configuration Parameters of the Applicator

▶ Start menu.

▶ Select  *Setup* >  *Labelling.*

Parameter	Meaning	Default
 *Transfer mode*	Setting the operation mode *Stamp on, Roll on, Blow on*	*Stamp on*
 *Cycle sequence*	Setting the application mode *Print-Apply / Apply-Print* *Print-Apply*: An external start signal releases the print of a label and following the application of the label. After a cycle is complete, the pad without label waits in the start position. *Apply-Print*: An extra signal starts the print of the first label and the transfer of the label to the pad. The external start signal releases the application of the label and following the print and transfer of the next label. After a cycle is complete, the pad with a label is in the waiting position.	*Print-Apply*
 *Waiting position*	∗ Only at *Transfer mode = Blow on* and *Cycle sequence = Apply-Print* *up*: Pad waits in the start position for the start signal *down*: Pad waits in the labelling position for the start signal	*up*
 *Blow time*	∗ Only at *Transfer mode = Roll on* Switch-on time (max. 2,5 s) of the blowing air for the label transfer	*1000 ms*
 *Support delay on*	Setting the switch-on delay (max. 2,5 s) for the supporting air between print start and switching on the supporting air. The delay prevents swirling at the front of the label and, consequently, avoids faults when the label is being picked up from the printer.	*0 ms*
 *Support delay off*	Setting the switch-off delay (max. 2,5 s) for the supporting air between the end of label forwarding and switching on the supporting air. The delay can be useful to separate the rear edge of the label from the carrier to avoid errors and to improve the accuracy of label positioning	*0 ms*
 *Start delay*	Delay (max. 2,5 s) between start signal and the start of an labelling cycle. Allows e.g. the use of product sensors at conveyors.	*0 ms*
 *Lock time*	All start signals coming in following the first start signal are ignored when they arrive within the lock time (max. 2,5 s).	*0 ms*
 *Vacuum delay*	*On* - The vacuum will be switched on after the label feed is completed. *Off* - The vacuum will be switched on when the label feed starts.	*Off*
 *Vacuum control*	Setting the label transfer check from printer to pad and from pad to product by the vacuum sensor	*On*
 *Label hand-over*	*Passive* - The pad waits in front of the dispense edge for the label. *Active* - The pad moves to the dispense edge and takes the label.	*Passive*
 *Cleaning blow*	Activation of a short blow impulse after the application of the label to clean the suction channels.	*Off*
 *Peel-off position*	Shift the position of the dispensed label relative to the dispensing edge. The setting can also be adjusted by the software. The settings of configuration and software are added together.	*0.0 mm*

Table 5 Parameters of the *Setup* > *Labelling* menu

7.4 Setting the Peel Position

To optimize the transfer of the labels from the printer to the pad 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 that procedure for a certain start after label loading and for the re-start after error treatment.

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  . ▷ „8.1 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
  ▷ „7.3 Configuration Parameters of the Applicator“

Peel-off offset in the software

- Check the setting in the software. Perform labelling cycles by repeatedly pressing the Enter button ↵.
  ▷ „8.2 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.

7.5 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.**

8.1 Test Mode without a Print Job

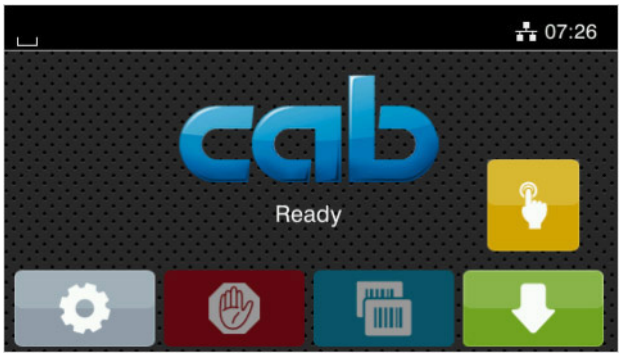


Fig. 38 Display

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 signalized 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.**

8.2 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.**

9.1 Block Diagram

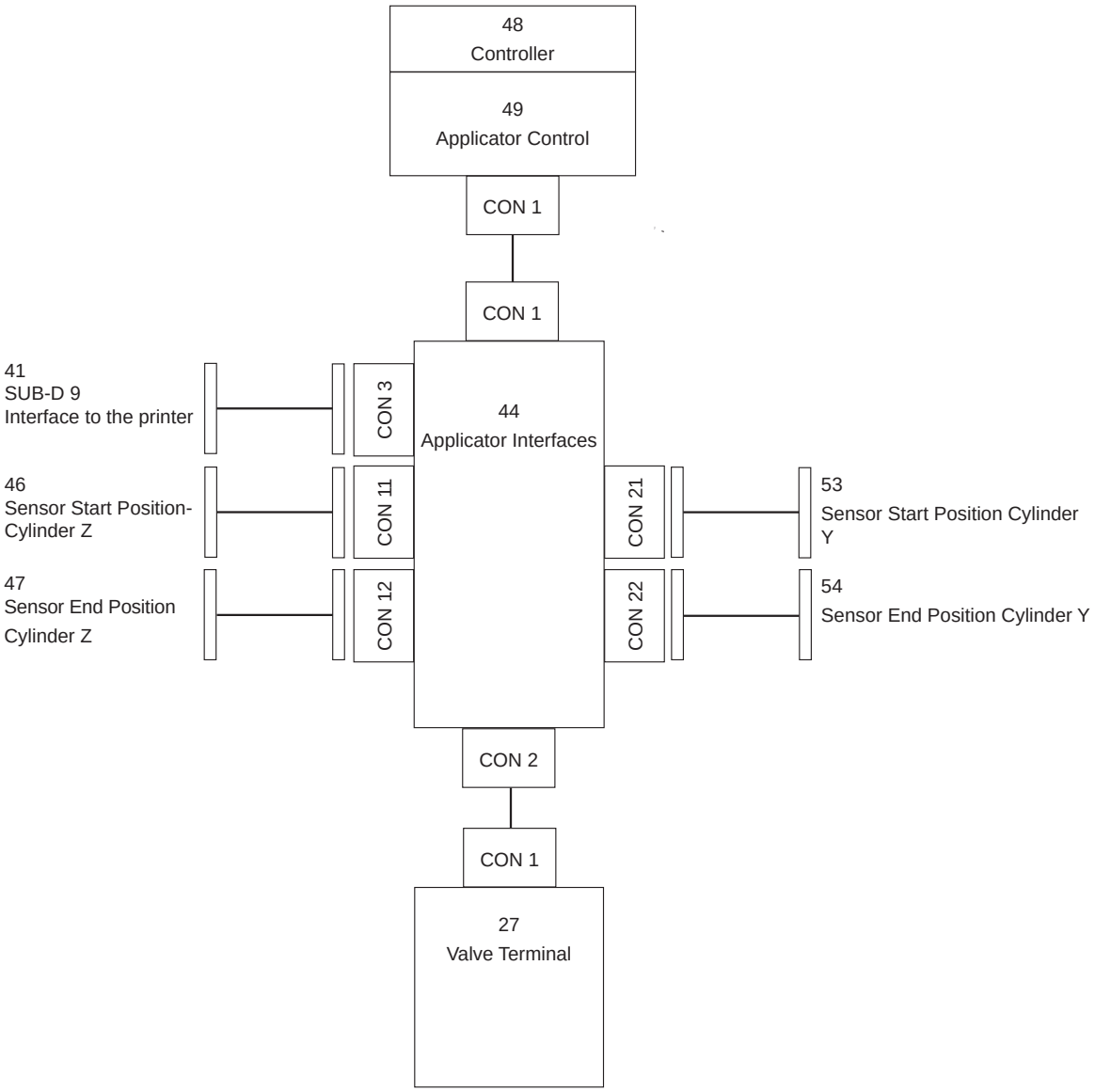


Fig. 39 Block diagram

9.2 Pneumatic Drawing Type 4114

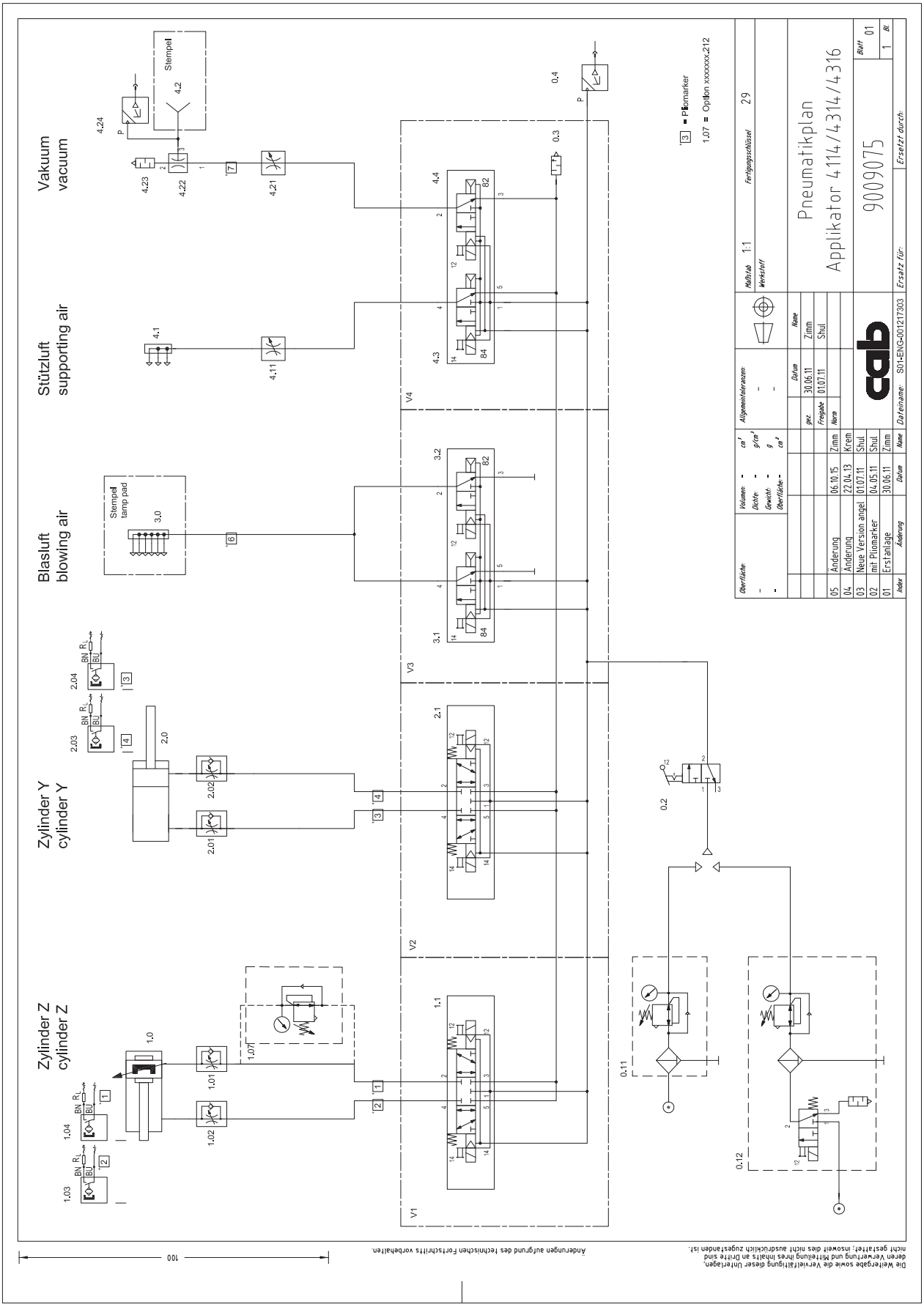


Fig. 40 Pneumatic drawing type 4114

9.3 Pneumatic Drawing Type 4116

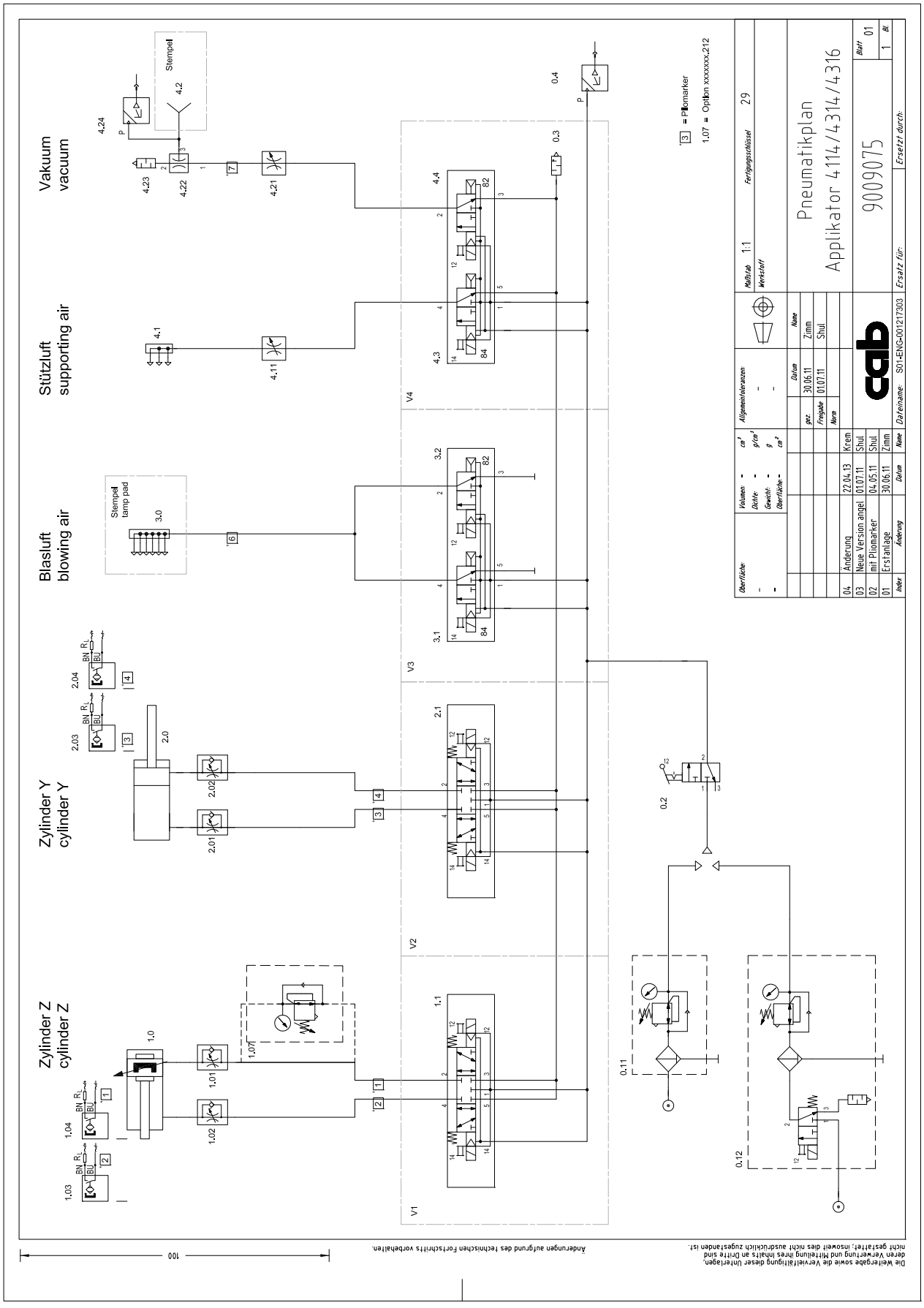


Fig. 41 Pneumatic drawing type 4116

9.4 Pneumatic Drawing Type 4114 pressure reduced 4.5 bar

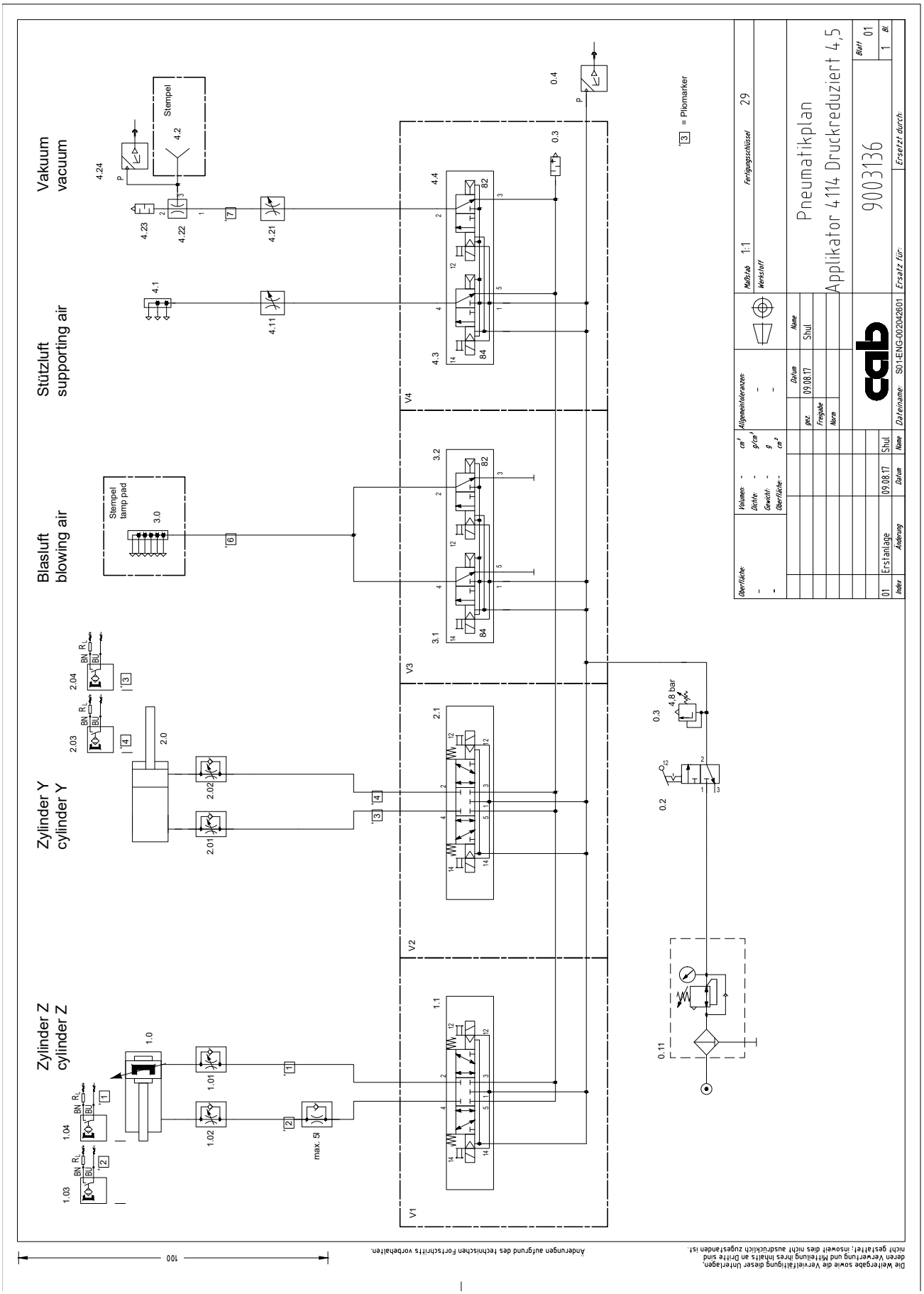


Fig. 42 Pneumatic drawing type 4114 pressure reduced 4.5 bar

9.5 Label Position Type 4114L/4116L

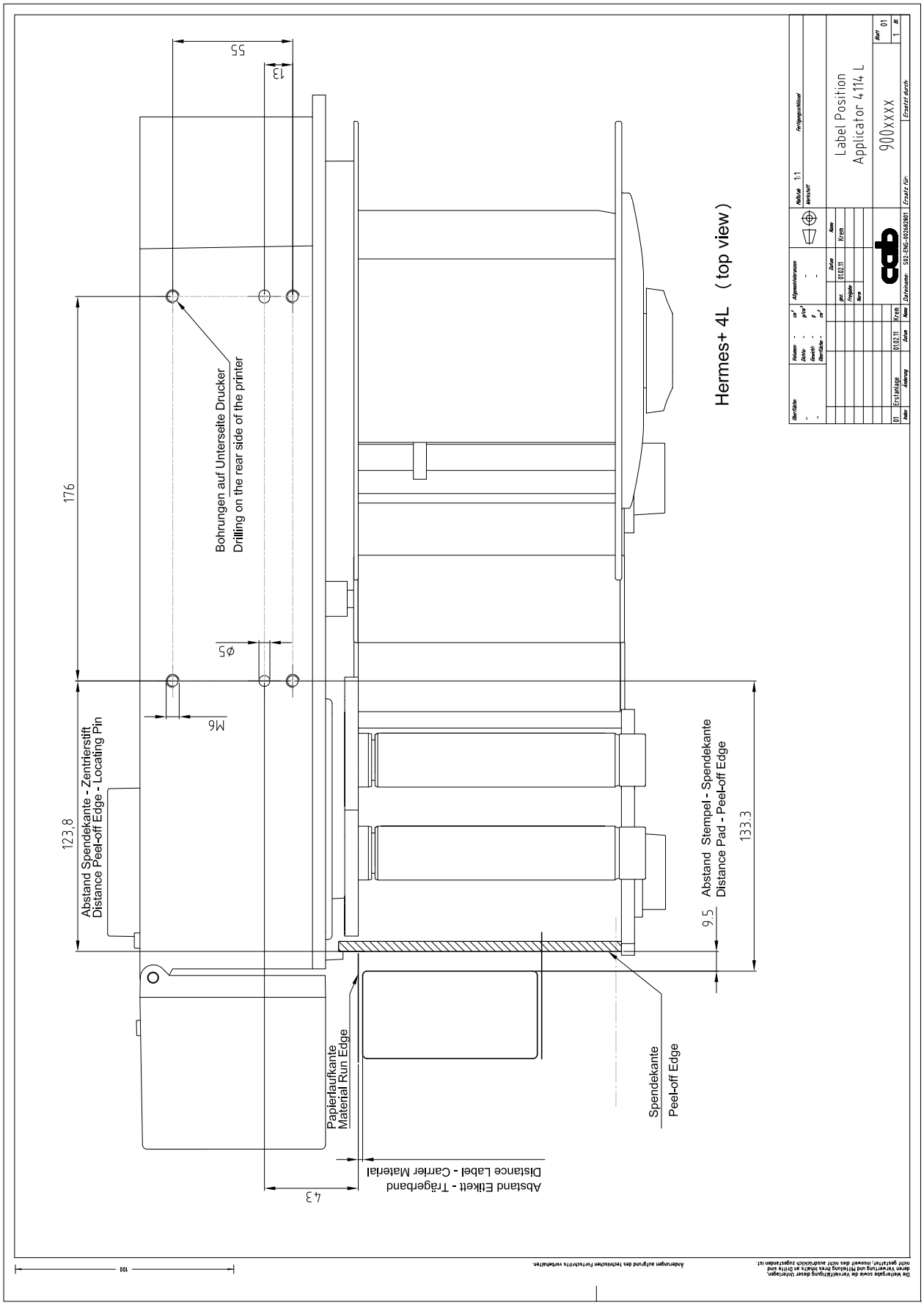


Fig. 43 Label position 4414L/4116L

9.6 Label Position Type 4114R/4116R

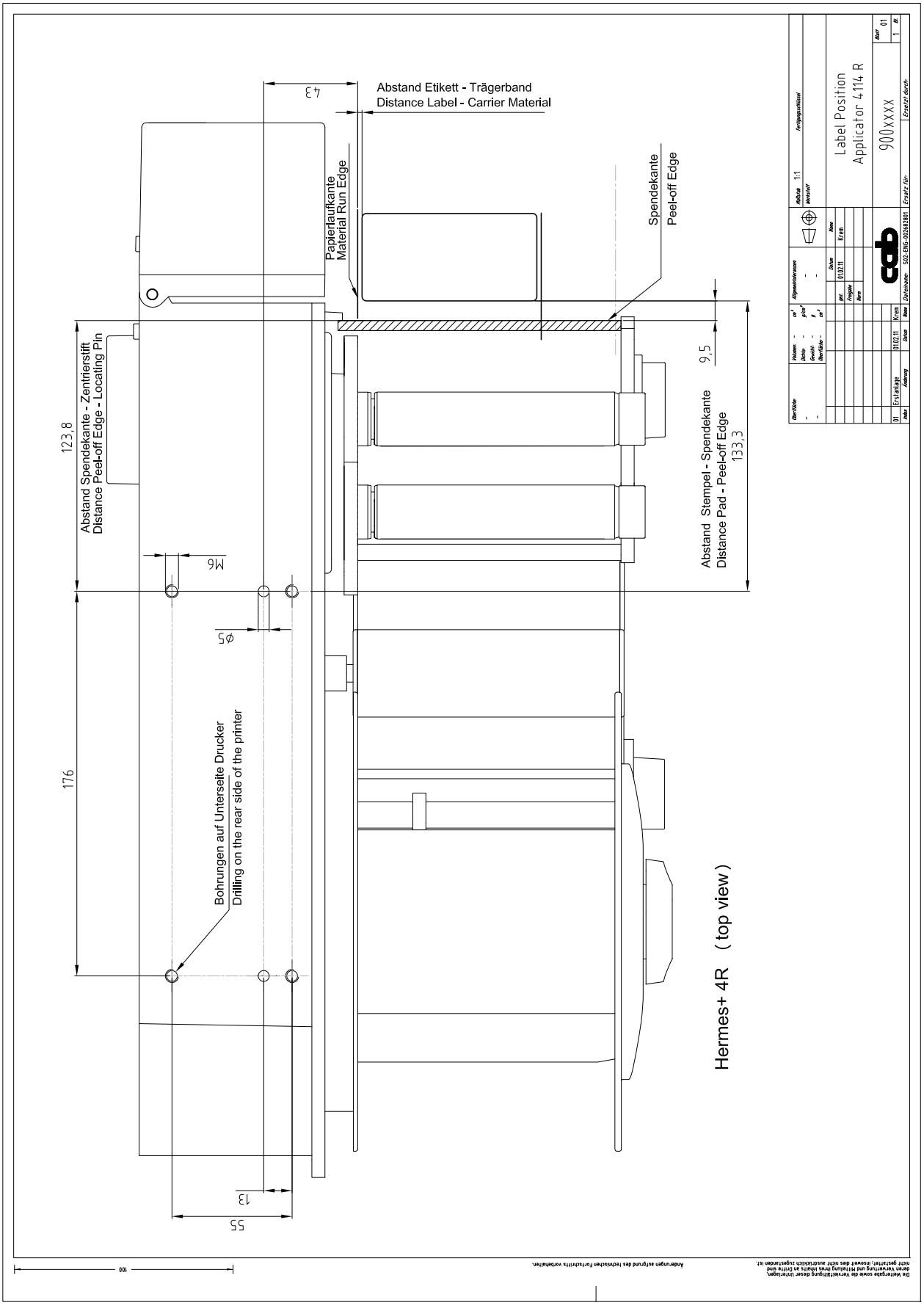


Fig. 44 Label position 4114R/4116R

A

Abbau des Applikators....15
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Arbeitsdruck....6

B

Blowing air....29
Blow Mode....22
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Y

Y-direction....18

Z

Z-direction....18
Zylinderhub....6