Service Manual

Applicator

4314 / 4316 L/R

Service Manual
for the following products

Family	Type
Applicator	4314L-200
	4314L-300
	4314L-400
	4314R-200
	4314R-300
	4314R-400
	4316L-200
	4316L-300
	4316L-400
	4316R-200
	4316R-300
	4316R-400

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Editor

Regarding questions or comments please contact cab Produkttechnik GmbH & Co. KG.

Topicality

Due to the constant further development of our products discrepancies between documentation and product can occur.

Please check www.cab.de for the latest update.

Terms and conditions

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Germany
cab Produkttechnik
GmbH & Co KG

Postfach 1904
D-76007 Karlsruhe
Wilhelm-Schickard-Str. 14
D-76131 Karlsruhe

Telefon +49 721 6626-0
Telefax +49 721 6626-249

www.cab.de
info@cab.de

France
cab technologies s.a.r.l.
F-67350 Niedermodern
Téléphone +33 388 722 501

www.cab.de/fr
info.fr@cab.de

USA
cab Technology Inc.
Tyngsboro MA, 01879
Phone +1 978 649 0293

www.cab.de/us
info.us@cab.de

South Africa
cab Technology (Pty.) Ltd.
2125 Randburg
Phone +27 11-886-3580

www.cab.de/za
info.za@cab.de

Asia 亚洲
cab Technology Co., Ltd.
希爱比科技股份有限公司
Junghe, Taipei, Taiwan
Phone +886 2 8227 3966

www.cab.de/tw
info.asia@cab.de

China 中国
cab (Shanghai)Trading Co., Ltd.
铠博(上海)贸易有限公司
Phone +86 21 6236-3161

www.cab.de/cn
info.cn@cab.de

Representatives in other countries on request

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Spare Parts / Drawings

1 Introduction

1.1 Instructions

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

Danger!
Draws your attention to an exceptionally grave, impending danger to your health or life.

Warning!
Indicates a hazardous situation that could lead to injuries or material damage.

Attention!
Draws attention to possible dangers, material damage or loss of quality.

Notice!
Gives you tips. They make a working sequence easier or draw attention to important working processes.

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 the 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 operating manual.
- The device applicator mounted on a cab printer of the Hermes+ series is intended exclusively for applying suitable materials that have been approved by the manufacturer. 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 operating manual, including the manufacturer's maintenance recommendations and specifications.

Notice!
The complete documentation can currently be found in the Internet.

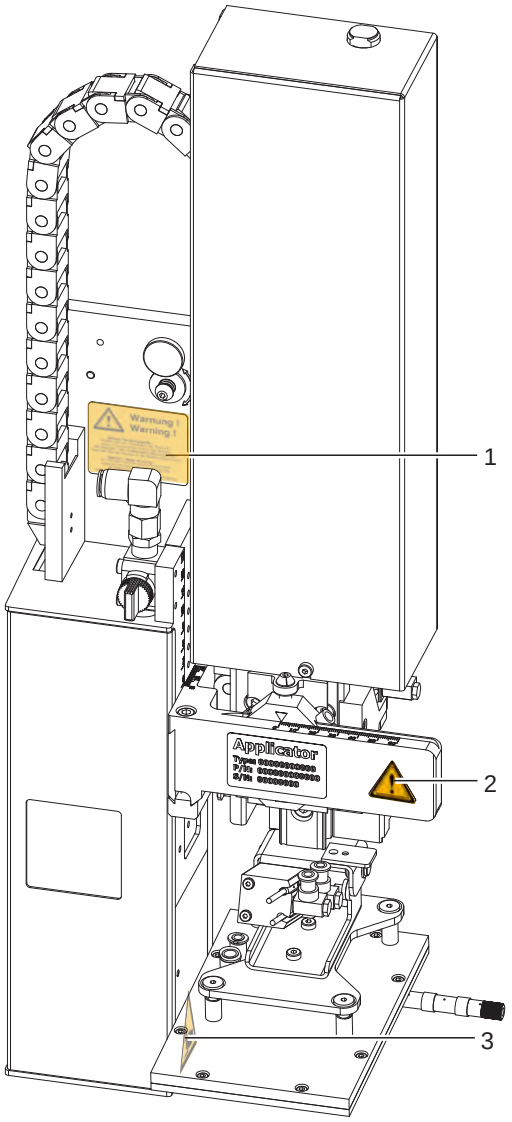
1.3 Safety Instruction

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

- 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, 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 distant. Before any manipulations in those areas, close the shutoff valve.
- 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.

1.4 Safety Marking



1: 

Warning to damages by moving parts !

2: 
Cylinder is under pressure, also is it switched off
Possibility of remain energy!!

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

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

Fig. 1 Safety marking

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 print module 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.

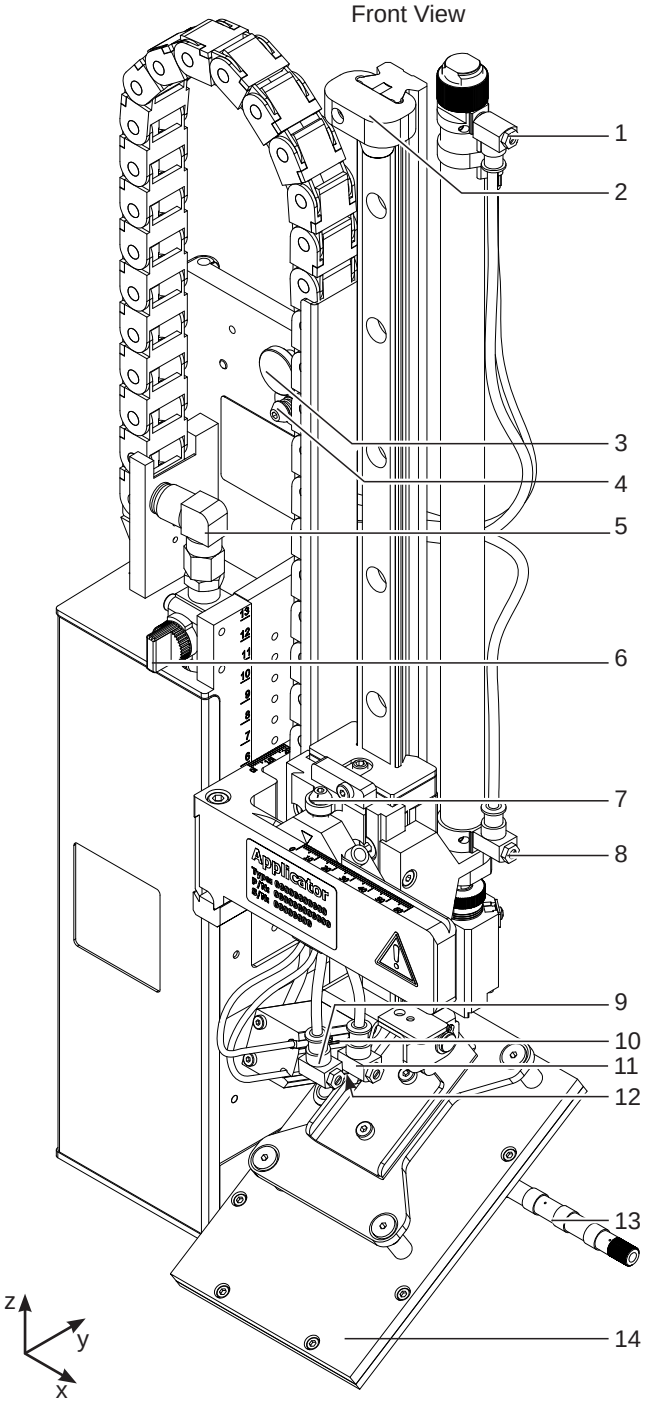
2.2 Technical Data

			Type 4314 / 4316
Label transfer method			**Stamp on spring mounted**
Label width in mm for Hermes^{+}4			100 - 114
for Hermes^{+}6			100 - 174
Label height in mm			100-250
Cylinder stroke in mm			200 - 400
Compressed air pressure			0,45 MPa (4,5 bar)
Sound pressure level			under 74 dB(A)
Product	fixed		■
	variable		-
Product height	fixed		-
	variable		■
Distance product to lower device edge			
with cylinder stroke	200 mm	till	130
	300 mm	till	230
	400 mm	till	330
Retraction depth of the stamp till in mm			70
Cycle time about pulse/min.			20

Table 1 Technical Data

2.3 Overview without Cover

Front View



Throttle valves vacuum / support air

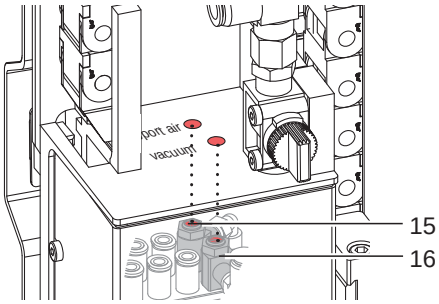


Fig. 2 Device overview - Front view

1 Throttle Valve Cylinder - move in Z-direction
2 Stopper, 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 Throttle Valve Cylinder Y End Position (Swing)
10 Sensor Cylinder Y End Position (Swing)
11 Sensor Cylinder Y Start Position (Swing)
12 Throttle Valve Cylinder Y Start Position (Swing)
13 Blow Tube for Supporting Air (depend of printer type)
14 Pad (customized)
15 Support Air Throttle Valve
16 Vacuum Throttle Valve

Rear View

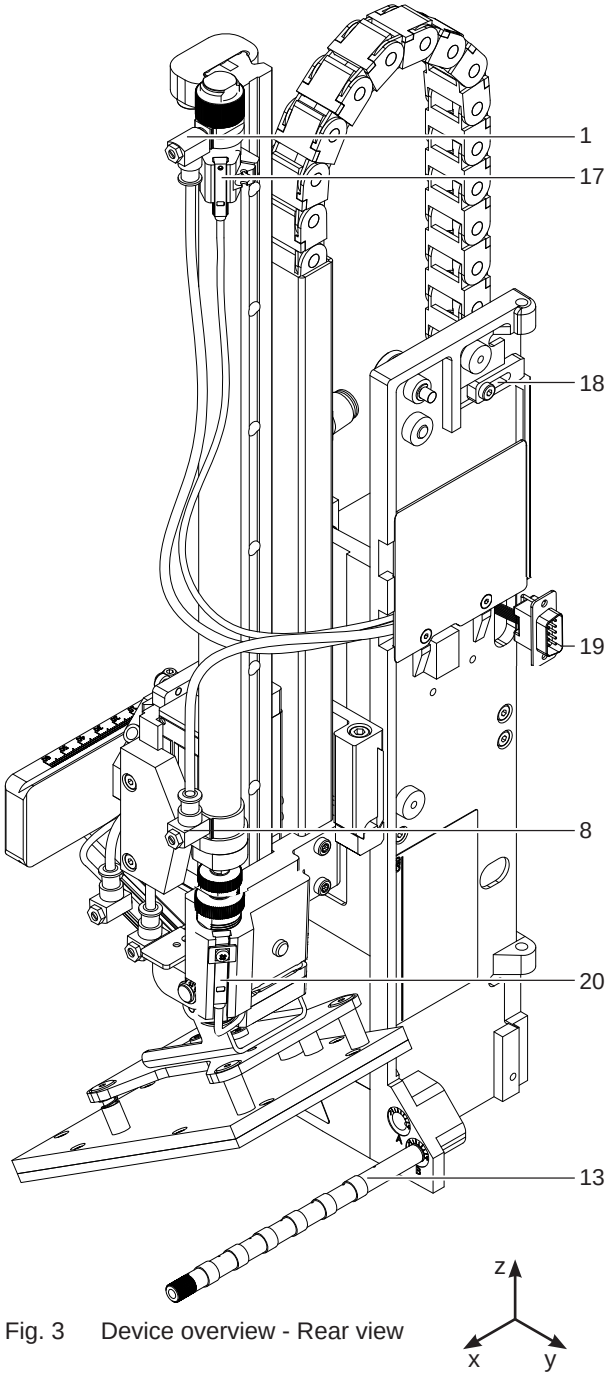


Fig. 3 Device overview - Rear view

Valves and control system

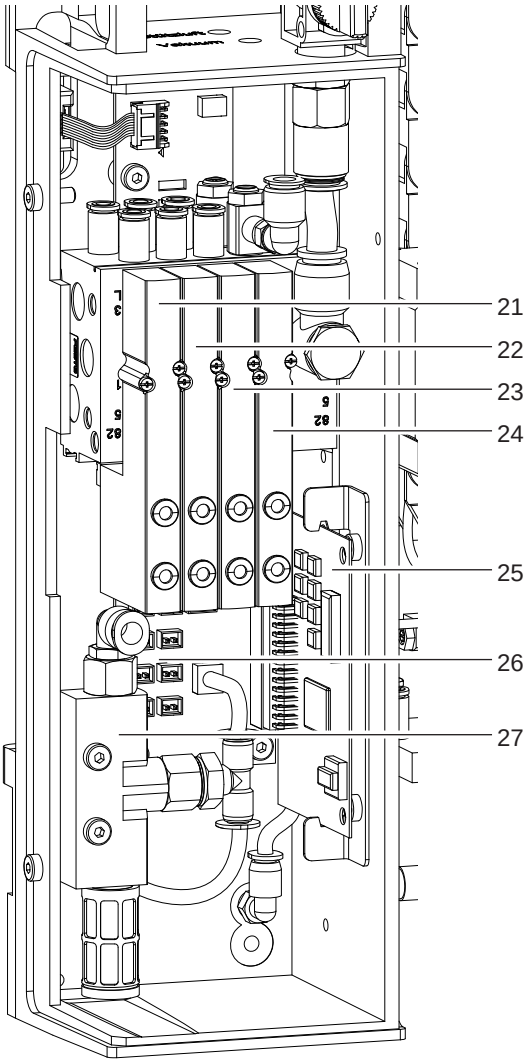
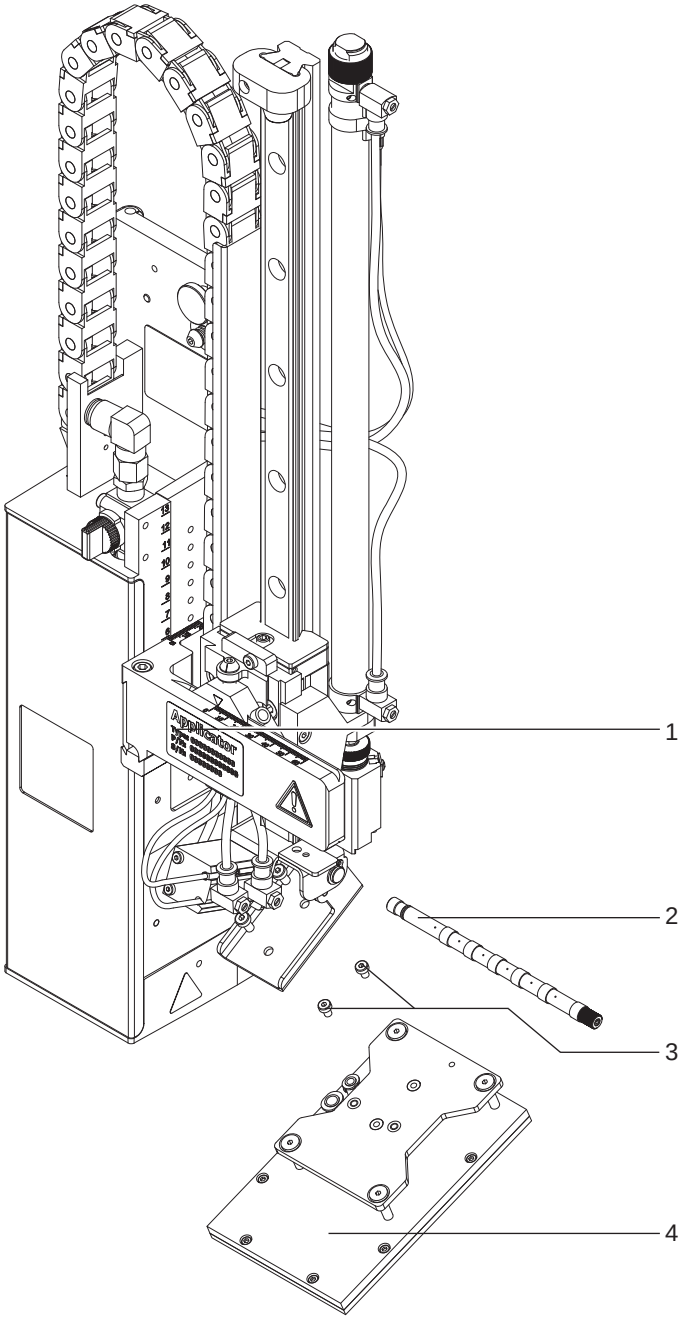


Fig. 4 Device overview - Control system

1 Throttle Valve Cylinder - move in Z-direction
8 Throttle Valve Cylinder - move out Z-direction
13 Blow Tube for Supporting Air (depend of printer type)
17 Sensor Start Position Cyl. Z
18 Locking for Hinges
19 Interface to the printer
20 Sensor End Position Cyl. Z

21 Valve Cylinder Z
22 Valve Cylinder Y (Swing)
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



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

Fig. 5 Contents of delivery

Notice!
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 splash water.

3 Operation

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 faultily.**

- ▶ Switch on the printer.

Notice!

In case the pad is outside the start position in the moment of switching on it will interrupted the procedure and give notice an error message on the display of the printer.

If you push the button pause on the printer is receipt the error and the applicator will move into the start position.

The Applicator is ready for work.

- ▶ Press the **feed** key at the printer.
  A synchronization feed is released. 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.

Notice!

This synchronizing 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 off 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 abrasive.

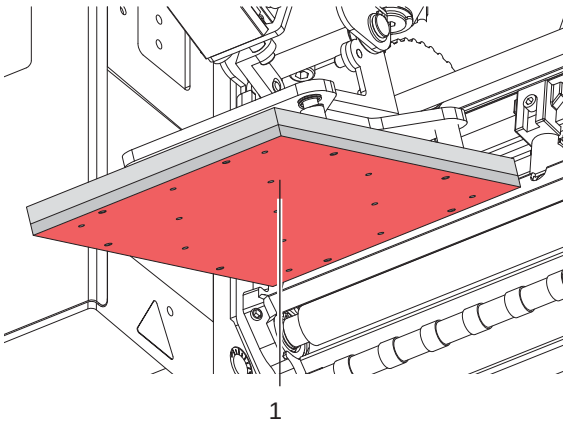


Fig. 6 Cleaning pad with slide foil

- ▶ Clean the outside surfaces with multi purpose cleaner.
- ▶ In regularly function it's possible that accrue dust particles and label splits. Remove that by a soft brush or/and a vacuum cleaner.
- ▶ Especially at slide foil (1) it's possible that fouling deposit. To receive an ideal takeover and handling of the label it's necessary to clean the surface of slide foil at regular intervals.

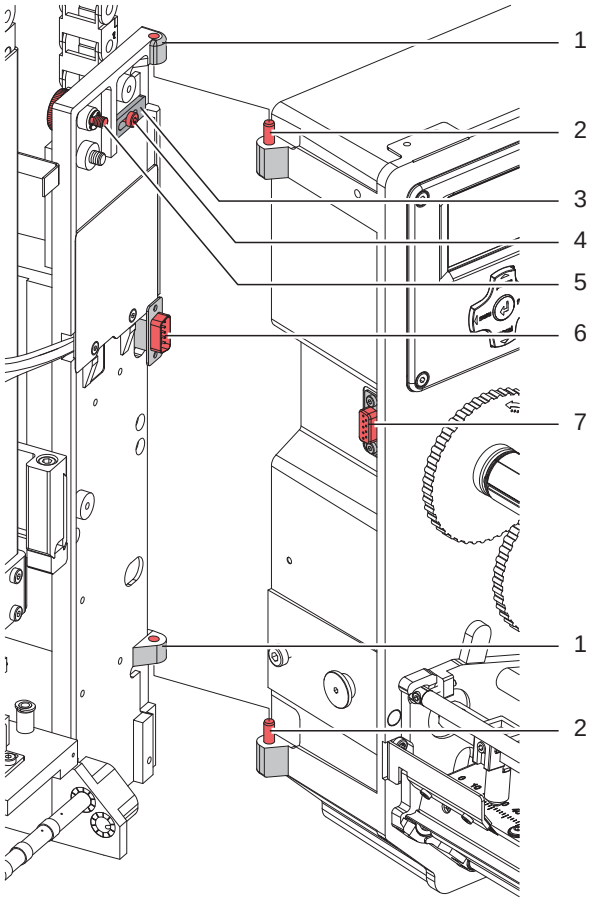


Fig. 7 Mounting applicator on printer

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

Attention!
- **Disconnect the printer from the power supply before mounting the applicator !**
- **Ensure a stable standing of the printer !**
- **Connect the compressed air only after mounting the applicator to the printer !**

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

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

Mount the applicator

5. Applicator hang with the female part (1) of hinges at the printer mounted hinges parts (2).
6. Connect SUB-D 15 male connector (6) to the female connector (7) of the printer.
7. To secure the applicator to slip out of hinges loosen screw (4) and move metal part (3) under the hinges and tighten screw (4).
8. Swing the applicator to the printer and tighten the thumbscrew (5).

4 Error Messages

4.1 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, remove the peeled labels manually
- ▶ Press the **pause** key to quit the error state.

After error correction, the print of the label causing the error will be repeated.

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 ins.`	Compressed air is switched off
	Pressure to low < 4 bar
	Pressure ti 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.
`Lower position`	Pad is not in start position if the printer swiched on.
	Pad has not reached the labelling position within 2s after the movement of the pad was started
	Pad has undefined leaving the start position.
`Process Error`	Process of labeling was braked via the I/O interface of the printer with the XSTP signal.
`Refl. sensor blk.`	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.
`Upper position`	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 results
- ▶ Press the **pause** key to quit the error state.

Notice!

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

Warning!

The pad will immediately be moved in the starting position !

Danger of crushing to hand and fingers by the moving pad !

- ▶ **Do not reach into the zone of the moving pad and keep long hair, loose clothes, and jewelry distant.**

After error correction, the print of the label causing the error cannot be repeated without re-start of the print job. Except at the error "`Vac. plate empty`". In this case, the latest label will print again after quit the error with the **pause** key and then press 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 tamp.

5.1 EC Declaration of Incorporation

Gesellschaft für Computer- und Automations-Bausteine mbH & Co KG
Wilhelm-Schickard-Str. 14
D-76131 Karlsruhe,
Germany

EC Declaration of Incorporation

We declare herewith that the following „partly completed machinery“ as a result of design, construction and the version put in circulation complies with the essential requirements of the **Directive 2006/42/EC on machinery** :

Annex I, Article 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.2.1, 1.3.2, 1.5.2, 1.5.8, 1.6.3, 1.7

The „partly completed machinery“ additionally complies with the Directive 2004/108/EC relating to electromagnetic compatibility.

In the event of any alteration which has not been approved by us being made to any device as designated below, this statement shall thereby be made invalid.

Device:	**Applicator**
Type:	**4314 / 4316**
Applied EC Regulations and Norms:	
Directive 2006/42/EC on machinery	• **EN ISO 12100:2010**
	• **EN 60950-1:2006+A11:2009+ A12:2011+A1:2010**
Person authorised to compile the technical file :	**Erwin Fascher Am Unterwege 18/20 99610 Sömmerda**
Signed for, and on behalf of the Manufacturer : **cab Produkttechnik Sömmerda Gesellschaft für Computer- und Automationsbausteine mbH 99610 Sömmerda**	**Sömmerda, 05.03.2013** **Erwin Fascher** **Geschäftsführer**

The product must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive on machinery

The documents according annex VII part B from the incomplete machinery are created and will commit to state agencies on request in electronic kinds.

Declaration of Conformity according Directive 2004/108/EC relating to electromagnetic compatibility on the next page

5.2 EC Declaration of Conformity

Gesellschaft für Computer- und Automations- Bausteine mbH & Co KG
Wilhelm-Schickard-Str. 14
D-76131 Karlsruhe,
Germany

EC Declaration of Conformity

We declare herewith that as a result of the manner in which the device designated below was designed, the type of construction and the devices which, as a result have been brought on to the general market comply with the relevant fundamental regulations of the EC Rules for Safety and Health. In the event of any alteration which has not been approved by us being made to any device as designated below, this statement shall thereby be made invalid.

Device:	**Applicator**
Type:	**4314 / 4316**
Applied EC Regulations and Norms:	Applied Norms:
Directive 2004/108/EC relating to electromagnetic compatibility	• **EN 55022:2010**
	• **EN 55024:2010**
	• **EN 61000-6-2:2005**
Signed for, and on behalf of the Manufacturer : **cab Produkttechnik Sömmerda** **Gesellschaft für Computer-** **und Automationsbausteine mbH** **99610 Sömmerda**	**Sömmerda, 05.03.2013**  **Erwin Fascher** **Geschäftsführer**

6.1 Standard Adjustments Ex Factory

Notice!
The applicator is by the factory adjusted after default values in a standard configuration. Attitudes after these values guarantee a smooth operation with same configuration.

Notice!
In case of a customer setup will be the adjustments with the customized configuration.
It's possible that the values are different to the standard values.
Then the values in the setup protocol are valid.

The standard values for the settings ex-factory are:

- Connecting on a cab Hermes+ printer, vertical
- Used Tamp: as ordered
- Used material for ex-factory settings: as ordered
- Pressure value of the compressed air 0,45 MPa (4,5 bar)

6.2 Tools

• Screwdriver with parallel blade	2,5		Adjust the throttle valves
• Hexagon kay L-wrench	0,8		Adjust the sensors (in delivery state of the applicator)
	2,5		for matched norm parts (in delivery state of the printer)
	4		Tamp adjustments Changing tamp
• Flat-round noise - straight - angled			Mount/Dismount of tubes
• Open spanner	SW 8 SW 13		Changing the throttle valves Setting the spring power on the adapter bolt
	SW 20		Changing the cylinder
• Manometer			± 7 bar Air pressure control

Fig. 8 Tools

6.3 Mount and Dismount the Cover

To initiate the applicator (▷3.5 Transport lock) or adjustments it's necessary to dismount the cover (2). After finished this works mount the cover again.

Warning!
It's permitted to use the applicator in normal operation only with mounted cover (2). only for service works it#s permitted to dismount the cover.

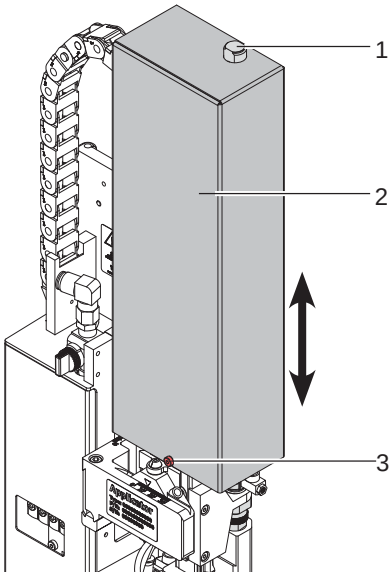


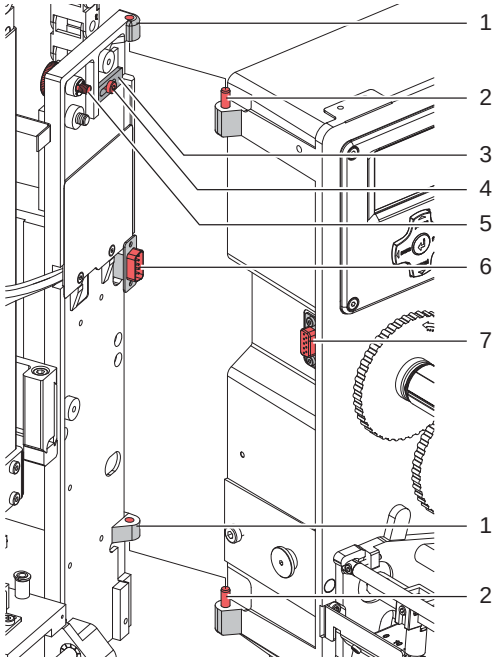
Fig. 9 Cover

1. Loosen screw (3).
2. Lift cover (2) upwards.
3. Move the cover (2) from top over th cylinder assembly.
4. Put in the cylinder (1) into the hole in the cover (2) .
5. Tighten screw (3) to fix cover (2) .

6.4 Mounting the Applicator

Attention!

- ▶ **Disconnect the printer from the power supply before mounting the applicator !**
- ▶ **Ensure a stable standing of the printer !**
- ▶ **Connect the compressed air only after mounting the applicator to the printer !**



1. Applicator hang with the female part (1) of hinges 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 secure the applicator to slip out of hinges loosen screw (4) and move metal part (3) under the hinges. Tighten screw (4) again.
4. Swing the applicator to the printer and make sure that the cable not will be damaged.
5. Tighten the thumbscrew (5).
6. Move up stopper of the position of transport safety for a free movement of the lift cylinder. ▷3.5 Transport lock

Fig. 10 Mounting applicator on printer

6.5 Lift the Transport Lock

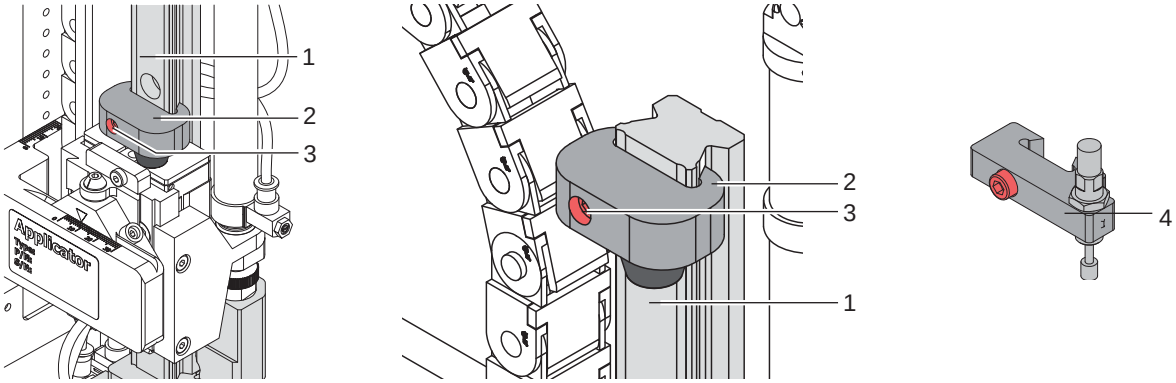


Fig. 11 Stopper as transport lock

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 in a transport safety position. Dependent of delivery time it's two different version of stopper. The function are the same.

To reduce the impact energy it's possible to use a stopper with cushion (4).

Lift the transport lock

1. Loosen screw (3) at the stopper (2).
2. Move the stopper (2) on the guiding (1) so in direction of the top that the pad doesn't touch the product placement (table, conveyor or other) and stops before. In other case the label will be applied on the product placement.
3. Tighten screw (3) to fix the stopper (2) position.

6.6 Mounting the Pad

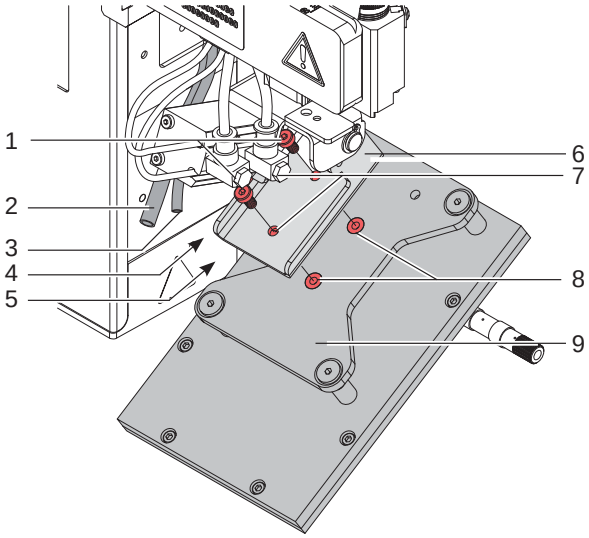


Fig. 12 Mounting the pad

1. Hold pad (9) with the holes (8) on the holes (7) of the mounting bracket (6). Short side of the pad to the printer
2. Tighten the pad (9) with screws (1) on the mounting bracket.
3. Put in the vacuum tube (3) and the blow air tube (2) in the right push-in fittings (4, 5) of the pad (9).

Attention!

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

6.7 Mounting the Blow Tube

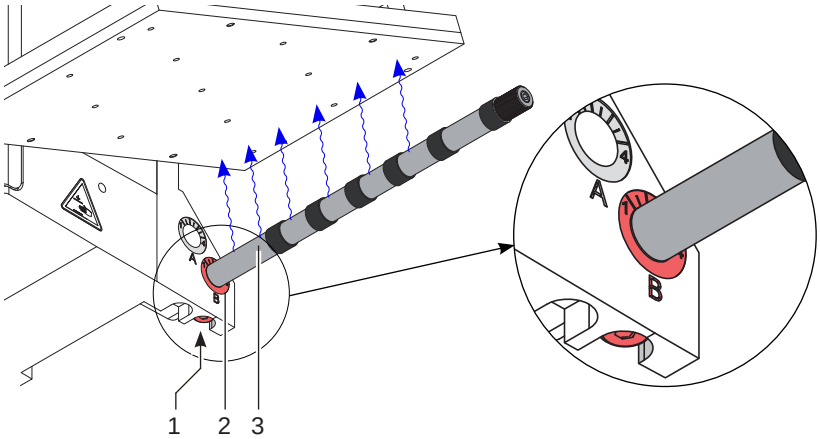


Fig. 13 Mounting the blow tube

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 (3) into the hole B (2) so far as possible. .
3. Tighten screw (1). ▷ Adjust the blow tube (Support air)

6.8 Connecting the Compressed Air

Attention!
Adjustments and function control was made with a compressed air value of 4,5 bar.
The applicator operating range is between 4,0 and 6,0 bar.

Warning!
n case of connecting printer and compressed air the applicator is regard as in operation.

- **Do not reach into the zone of the moving pad and keep long hair, loose clothes, and jewelry distant. Danger of striking by the moving rods !**

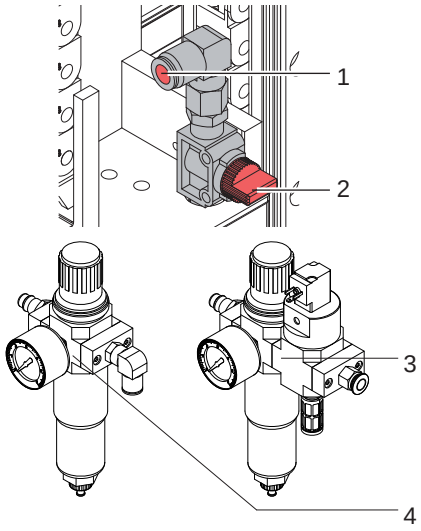


Fig. 14 Compressed air connection

1 Check the vertical position of the stop valve (2). (stop valve closed like picture)
2 Attach compressed air at the fitting (1).
3 Open the stop valve (2) (arm in direction of flow).
4 Switch on the printer by the power switch.

It's possible to use a air pressure regulation unit with included magnetic valve * (3)

Controlling via printer
▷ Interface description of the printer

air pressure regulation unit * (4)

Notice!
In case the pad is outside the start position in the moment of switching on it will interrupted the procedure and give notice an error message on the display of the printer.

If you push the button PAUSE on the printer is receipt the error and the applicator will move into the start position.
The Applicator is ready for work.

Notice!
Mount and use the air pressure regulation unit only in the described position. Else the function of the air-water separator can't be guaranteed.

7.1 Tamp Adjustments

For a perfect function of the applicator it's necessary that the tamp for the take over procedure (printer to applicator) is to place exact over the label.

Moving the tamp in X-, Y- and Z-direction

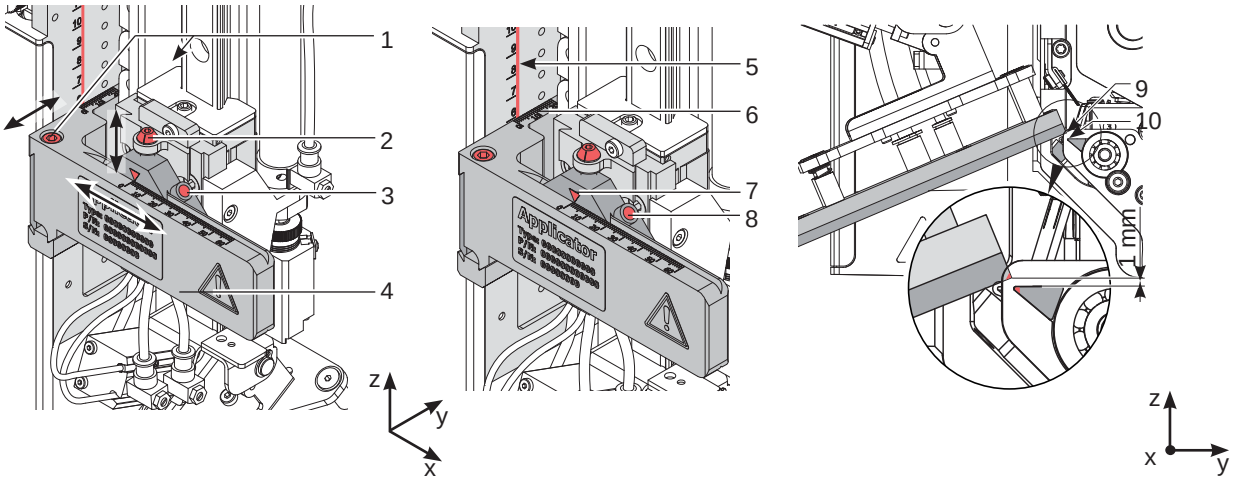


Fig. 15 Moving the tamp assembly

Adjustment in X-direction (Side adjustment)

1. Loosen screw (3)..
2. Move cylinder assembly (5) with pad at the bearing (4) so that the dispensed label is aligned centrally to the pad. As reference use the graduation on the cross beam.
   Orientation: Graduation (8) and Marking (7)
3. Tighten screw (3).

Adjustment in Y-direction (print direction)

1. Loosen screw (1).
2. Move cylinder assembly (4) with pad at the guide rail that the distance over the edge of the pad (5) to the edge of the dispense plate (6) of the printer is approximately 1 mm. Orientation: Graduation (6) and Edge (5)
3. Tighten screws (1).

Adjustment in Z-direction (Height adjustment)

1. Loosen screw (3).
2. Turn setting screw (2).
   so that the bottom side of the pad is 1 mm over the top side of the dispense plate (6) of the printer.
3. **Tighten screw (3).**

Adjusting the Parallelism between Pad and Dispense Edge

The edge of the tamp must be parallel to the dispense edge of the printer to place the label exact on the tamp.

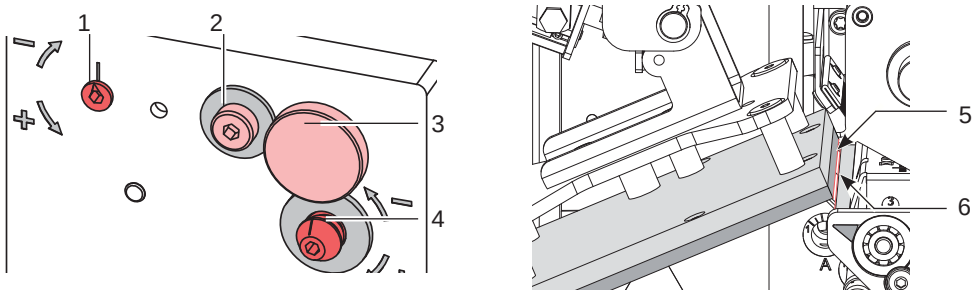


Fig. 16 Adjusting the tamp to the dispense edge

1. Loosen knurled screw (3) and screw (2).
2. Press the applicator against the printer and adjust the angle between applicator pad edge (5) and printer dispense plate (6) via the setting screw (4) and the eccentric (1).
3. Tighten screw (2) and fix the applicator again via knurled screw (3) on the printer.

7.2 Vacuum Adjustments

With an under pressure (vacuum) will be the label fixed on the tamp. This vacuum must be so strong that the label is fixed on the tamp and all suction holes of the tamp are covered by the label. The vacuum doesn't be so strong that the correct transport of the label from printer to applicator will be risk. This is depend of the label material.
The standard value ex factory is -0,6 bar.

Notice!
Over the adjustment of the vacuum it's possible that the form feed of the label to the tamp could be manipulate.
If the vacuum to strong it's possible that the form feed of the label stop to early.

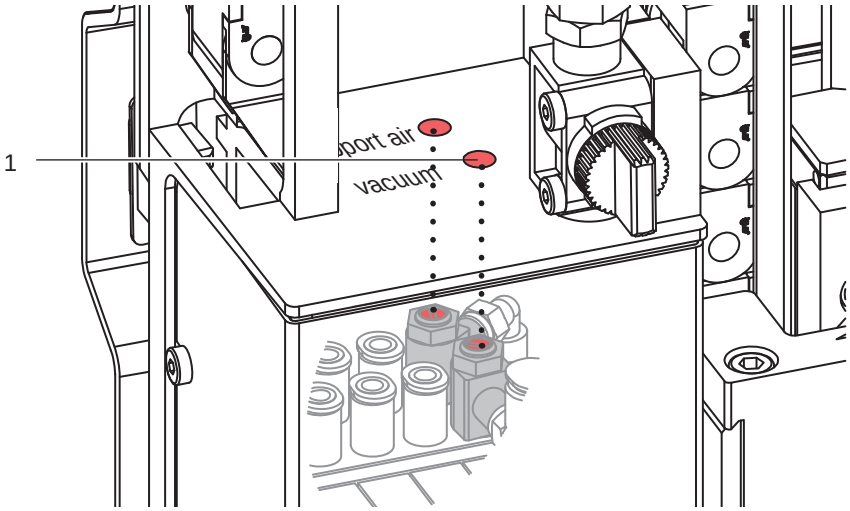


Fig. 17 Throttle valve "vacuum"

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

Reading Point (RP V) to measure the Vacuums

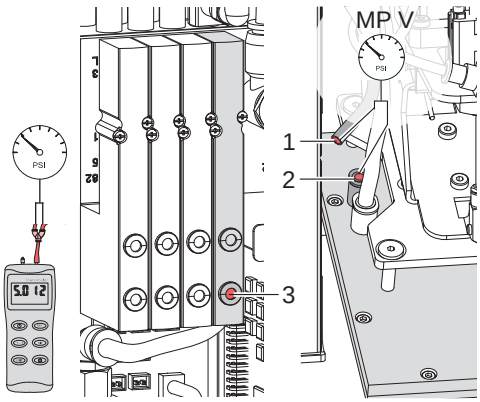


Fig. 18 Reading point to measure the vacuum

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 suction plate hermetic.
3. Attach manometer between measurement points RP V.
   - Tube (1) at the energy track
   - Fitting (2) from the fitting on tamp
4. Activate the valve manually with open compressed air supply and pressing of micro switch (3) to measure the pressure.
5. As and when required adjust it on vacuum throttle valve "vacuum".
6. Mount cover again.

Attention!
After pressure measurements, connect all component exactly and check it.

7.3 Blow Tube (Support Air) Adjustments

Adjust the support air that the label can constant without swirl come to the tamp from the dispense edge of the printer.
All drilling in the blow tube which are over the broadness from the label must be covered.

The standard value ex factory is 2 bar.

Notice!
If changed the printer broadness (2", 4" or 6") use a blow tube for the used type of printer. If changed the broadness of the labels check the count of free holes of the blow tube and change it if necessary.

Make free so many holes that the support air can cover the full broadness of the label, no more.

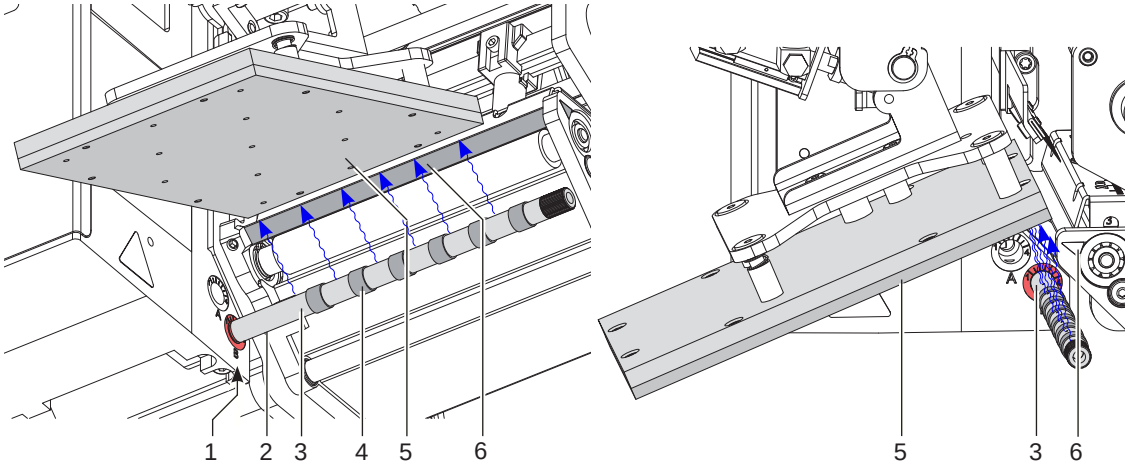


Fig. 19 Adjust the Blow Tube

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 (3) into the tube adapter B (2).
   Turn the blow tube (3) in that direction, that the air current supports the sucking of the label from the dispense edge (6) by the pad (5).

- For small labels direct the air current to the dispense edge (4) of the printer.
- For larger labels direct the air current away from the dispense edge (4).
  Use the graduation to orientation.

3. Tighten screw (1).

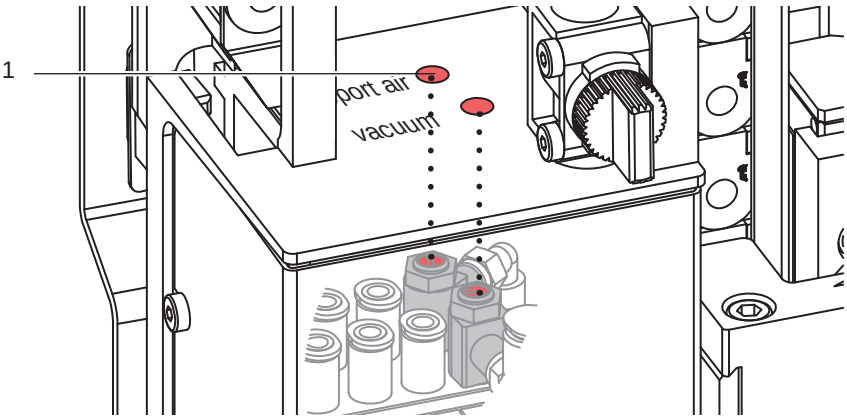
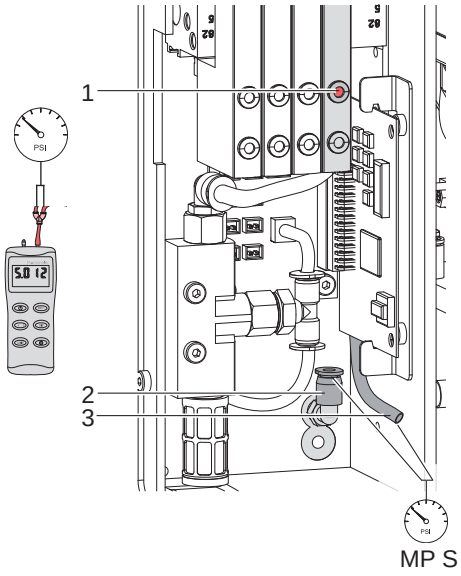


Fig. 20 Throttle valve "support air"

Adjust with the valve "support air" (1) the supporting air to blow the label against the pad.

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

Reading point (RP S) of support air



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

RP S : support air (reference value 2 bar)

1. Remove cover and connect the manometer on RP S.
   - Tube (2) from valve block to blow tube connector.
   - Fitting (3) on the blow tube.
2. Activate the valve manually with open compressed air supply and pressing of micro switch (1) to measure the pressure.
3. As and when required adjust it on support air throttle valve "support air" .
4. Mount cover again.

Fig. 21 Reading points to measure the pressure

Attention!
After pressure measurements, connect all component exactly and check it.

7.4 Lift Speed of Cylinder Z

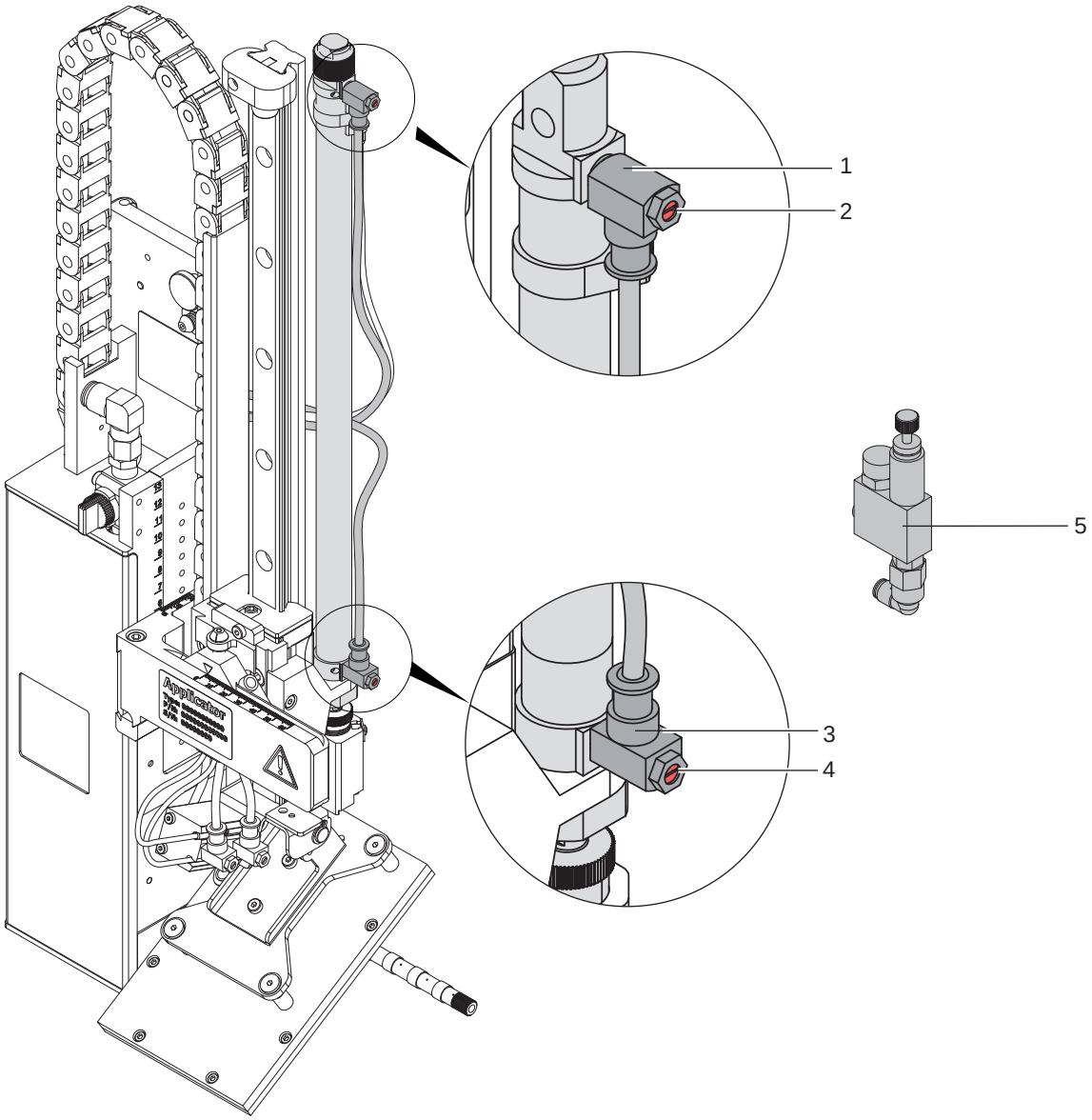


Fig. 22 Throttle valves on the cylinder Z

The speed of the pad movement can be regulated via 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).

Notice!
The application pressure of the pad is mainly dependent 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.

Notice!
To reduce the air pressure in Z-direction it's possible to use a pressure reduction valve (5) as option.

7.5 Sensors on Cylinder Z

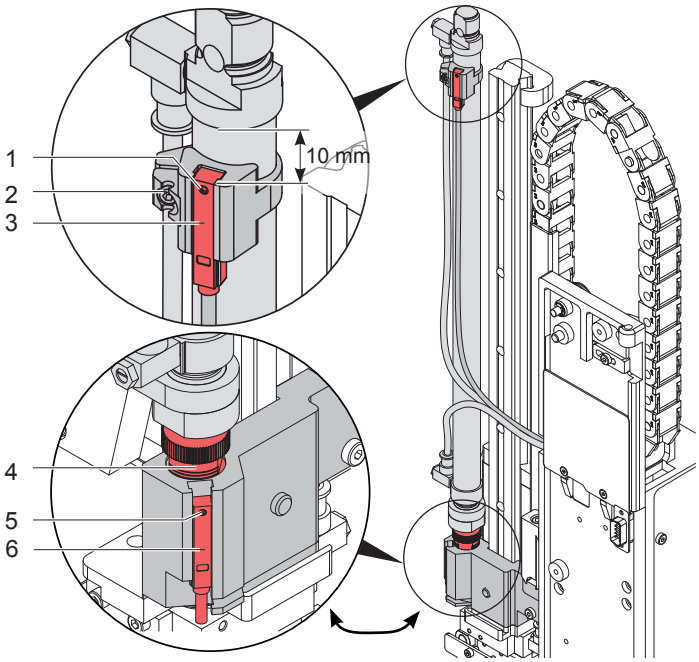


Fig. 23 Sensors on cylinder Z

Sensor Start Position 1

1. Loosen screw (1) on sensor "Start Position" (3) and move the sensor so that the top edge of the sensor is on the same level like the sensor holder.
2. Close the compressed air supply and pull out the tubes from cylinder-Z. Switch on the printer with a connecting to the applicator via the electronic interface (SUB-D).
3. Move the tamp by hand on top to the stopper.
4. Loosen screw (2) on the sensor holder.
5. Move the sensor that the LED will glow if the cylinder is competed moved in. It's a distance of 10 mm between top edge of the sensor and the lower edge of the connecting ring of cylinder (Fig.).
6. Tighten screw (2).

Labelling Sensor 2

The position of the labelling sensor (6) is depend of the tamp assembly weight and the mounting position. The spring tension on the adapter bolt is depend of this parameters and must adjust so that the sensor can't switch unintended. The triggering magnet is integrated into the adapter bolt and change the position if the spring tension will changed.

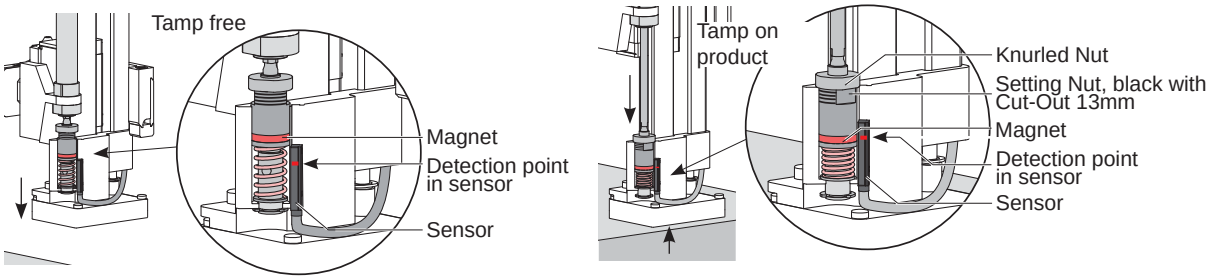


Fig. 24 labelling sensor principle

1. Mount printer and applicator in the finally mounting position.
2. Adjust the spring tension on the adapter bolt (4), the counter force to the cylinder Z so that the adapter bolt will pressed into the tamp assembly only at the labelling on or in "Blow Mode" by the stopper.
   Turn the setting nut with a open spanner 13 mm and hold to fix the knurled nut .
   - Turning clockwise, the spring tension will be higher up to three steps (marking).
   - Turning counterclockwise, the spring tension will be lower up to one steps (marking).
   The cylinder pressed more if the tamp assembly will stopped by the stopper. The adapter bolt will pressed then into the tamp assembly and the labelling sensor switched.
3. Loosen screw (5) and move the sensor (6) that the LED glow and go out if the adapter bold will pressed into the tamp assembly.
4. Tighten screw (5).

7.6 End Position Cushioning

Notice!
The end position cushioning on the cylinder is adjusted by factory at customer project values.
It's not necessary to change it if you don't change the configuration.

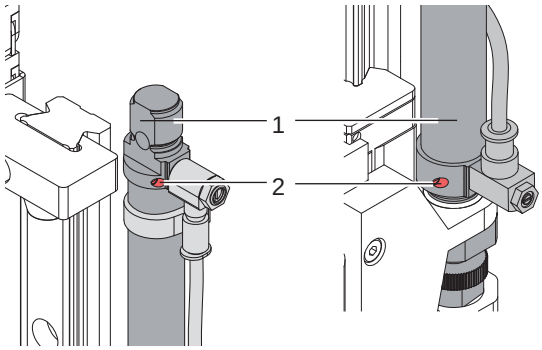


Fig. 25 End Position Cushioning

The end position cushioning of the main cylinder serves mechanical release during high speed of lift, large masses and high impact energy.

Adjust the end position cushioning that the piston arrive the end position certainly but don't strike to hard.

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

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

7.7 Adjusting the Options for Z-Direction Movement

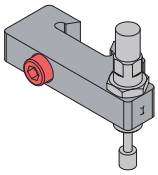


Fig. 26 Stopper (Guide Rail)

The stopper (guide rail) with absorption reduced the speed of the cylinder Z short before impact like end position cushioning. So it serves mechanical release during high speed of lift, large masses and high impact energy.

Make adjustments like chapter 7.5 "Stopper for Blow Mode Adjustment"

Adjust the stopper with maximum compressed spring like description.

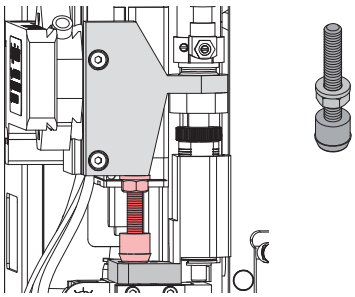


Fig. 27 Stopper (Tamp Assembly)

The stopper (tamp assembly) would-be the switching of the labelling sensor by the weight of the tamp assembly in the move-in movement in case of an installation in 90° or 180°.

The adjustment must make in the start position of the applicator.

1. Loosen the counter nut of the stopper.
2. Turn the stopper, that the stopper touched easy the tamp retainer.
   Don't change the take over position of the tamp by the stopper..
3. Tighten the counter nut to fix the stopper.

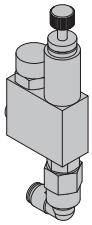


Fig. 28 Pressure reduction valve Cylinder Z

The pressure reduction valve will used in case of labelling pressure-sensitive products or generally safety aspects to reduce the pressure into the cylinder in Z-direction.

The setting standard value is 2,5 bar.

7.8 Lift Speed of Cylinder Y (Swing)

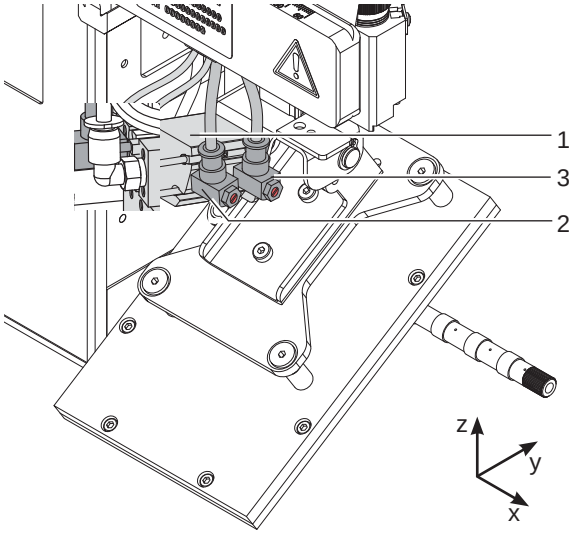


Fig. 29 One-Way Flow Control Valve on Cylinder Y

- ▶ Adjust lift speed as necessary..
- ▶ To push the movement out of the cylinder "swing movement" in direction start position turn screw on throttle valve (3) counterclockwise. Turning clockwise the screw on throttle valve (2) reduced the speed move out.
- ▶ To push the movement in of the cylinder "swing movement" in direction start position turn screw on throttle valve (2) counterclockwise. Turning clockwise the screw on throttle valve (2) reduced the speed move in.

7.9 Sensors on Cylinder Y (Swing)

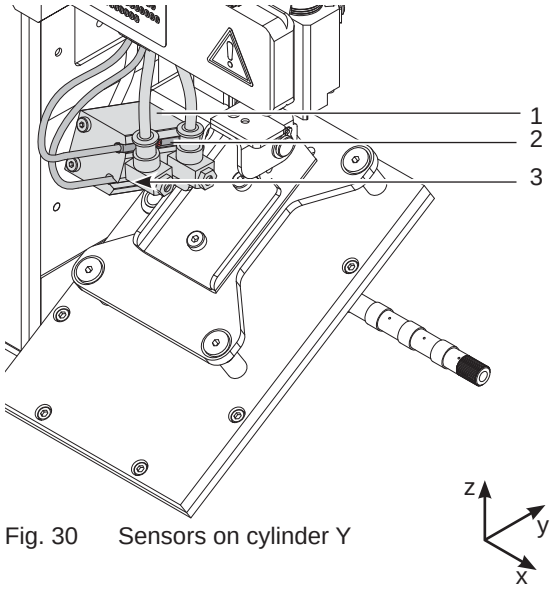


Fig. 30 Sensors on cylinder Y

The sensors on the Y-cylinder detect the right start and end position of the cylinder (1).

- Place sensor start position (3) on cylinder Y so that it switched on in case the cylinder (1) is full moved out and switched off if the cylinder leaved this position.
- Place sensor end position (2) on cylinder Y so that it switched on in case the cylinder (1) is full moved in and switched off if the cylinder leaved this position.

The tamp applicator can be operated in different ways. While the original process stays the same, the operation mode can be chosen 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
Print/Apply	**x**
Apply/Print Waiting position up	**x**
Apply/Print Waiting position down	**-**

Table 3 Operation and application modes

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

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

8.1 Method for Changing the Printer Setup

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

8.2 Quick Mode for Setting the Delay Times

Beside the standard method for the printer configuration there is a quick mode to adjust the delay times available.

Notice !
The quick mode settings can be made during operation . The changes affect directly the current print job.

1. Press the **menu** key for at least 2 seconds.
   The first delay time appears on the display.
2. Adjust the delay time by pressing the ▲ key and ▼ key.
3. To switch between the different delay times press the ▶ key.
4. To leave the quick setup mode press the ◀ key.
   The selected delay times are stored in the printer.

8.3 Configuration Parameters of the Applicator

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

Parameter	Meaning	Default
`Applicator`	Configuration parameters of the applicator	
`> Mode of oper.`	Setting the operation mode `Stamp on, Roll on, Blow on`	`Stamp on`
`> Mode of appl.`	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 Mode of oper. `Blow on` and Mode of appl. `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 Mode of oper. `Blow on`** Switch-on time (max. 2,5 s) of the blowing air for the label transfer	`0 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 del. 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	`270 ms`
`> Delay time`	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.	`0 ms`
`> Peel position`	Shift the position of the dispensed label relatively to the dispense edge. In the software an extra peel offset value is available. The offset values from “Peel position“ and from software are added together for execution. ▷ "Setting the Peel Position".	`0,0 mm`
`> Vacuum control`	Setting the label transfer check from printer to pad and from pad to product by the vacuum sensor	`On`
`> Hand-over up`	Take over the label direct from the dispense edge via contact between pad and dispense edge. Not in function for Type 4014 / 4016, 4314 / 4316.	`Off`
`> Cleaning blow`	Activate / Deactivate - air pressure impulse to clean the pad	`On`
`> Vacuum delay`	`On` - The vacuum will switched on after end of the label transport. `Out` - The vacuum will switched on with start of the label transport.	`Out`

Table 4 Applicator parameters

8.4 Setting the Peel Position

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

Attention!

- ▶ **First adjust the parameter "Peel Position" in the printer configuration.**
- ▶ **Following 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 setting in the printer setup. Perform labelling cycles by alternately pressing the **feed** key and the pre-dispense key ▷ 6.3 Test Mode without Print Job.
- ▶ Adjust the "Peel Position" in such a way, that the blank labels are peeled-off completely from the liner ▷ 4.3 Configuration Parameters of the Applicator.

Peel-off offset in the software

- ▶ Check the setting in the software. Perform labelling cycles by repeatedly pressing the the pre-dispense key ▷ 6.4 Test Mode with 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.

8.5 Activation of Peel-off Mode

Notice!

- ▶ **For labelling operation activate the peel-off mode in the software.**

For direct programming use the P command ▷ Programming manual.

9.1 Test Mode without Print Job

Warning!
The pad will immediately be moved in the starting position !
Danger of crushing to hand and fingers by the moving pad !
▶ **Do not reach into the zone of the moving pad and keep long hair, loose clothes, and jewelry distant.**

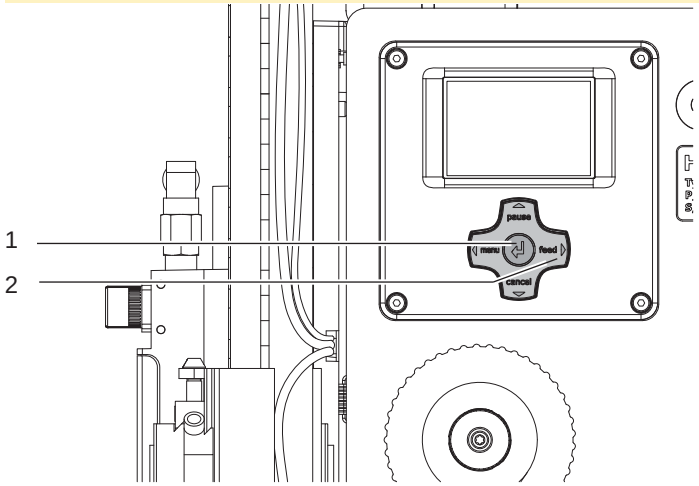


Fig. 31 Test mode via Enter key

Notice!
▶ **Please use that test mode to adjust the parameter "Peel position" in the printer configuration.**

The whole labelling process can be simulated without the need of a print job or a connection to a computer by alternately pressing the **feed** (2) key and the Enter key ↵ (1) :

▶ Press the **feed** key (2).
A blank label is fed. The vacuum at the pad as well as the supporting air (blow tube) are switched on. After the label has been picked up by the pad, the supporting air is switched off.

▶ Press the Enter key ↵ (1).
The pad is moved to the labelling position. A sensor signals when the labelling position is reached. The vacuum is switched off and the label is placed onto the product. Then, the pad is moved back into the starting position.

9.2 Test Mode with Print Job

Notice!
▶ **Please use that test mode to adjust the peel-off offset in the software.**

That method allows to check labelling process with the real print data using the Enter key ↵ (1).

▶ Send a print job.

The test mode is executed in two half cycles :

▶ Press the Enter key ↵ (1).
Half cycle 1
A label is printed. The vacuum at the pad as well as the supporting air (blow tube) are switched on. After the label has been picked up by the pad, the supporting air is switched off.

▶ Press the Enter key ↵ (1) again.
Half cycle 2
The pad is moved to the labelling position. A sensor signals when the labelling position is reached. The vacuum is switched off and the label is placed onto the product. Then, the pad is moved back into the starting position.

If the label is manually removed from the pad after the first half cycle, the half cycle 1 will be repeated when the pre-dispense key is pressed again.

10.1 Retainer Assembly

No.	Part-No.	Description	PU	Serial No.	
				from	to
1	5902489.001	Screw DIN7984-M4x8	10		
2.1	5964129.001	Cover L	1		
2.2	5964260.001	Cover R	1		
3	5964367.001	Knurled Screw	1		
4	5964104.001	Set Screw	1		
5	5904544.001	Spring	10		
6	5964090.001	Bar	1		
7.1	5964429.001	Plate L	1		
7.2	5964438.001	Plate R	1		
8	5902021.001	Screw DIN7991-M3x6	10		
9	5903525.001	E-Ring DIN6799-3	10		
10.1	5964036.001	Mounting Plate L	1		
10.2	5964185.001	Mounting Plate R	1		

No.	Part-No.	Description	PU	Serial No.	
				from	to
11.1	5964318.001	Adapter Profile L/R 200/300H	1		
11.2	5970013.001	Adapter Profile L 400H	1		
11.3	5970014.001	Adapter Profile R 400H	1		
12	5902167.001	Screw DIN912 M5x49	10		
13.1	5964312.001	Crossbeam L	1		
13.2	5964331.001	Crossbeam R	1		
14.1	5964310.001	Clamping Element L	1		
14.2	5964328.001	Clamping Element R	1		
15	5964062.001	Binder	1		
98	5966530.001	Eccentric	1		
99	5966529.001	Hinges	1		

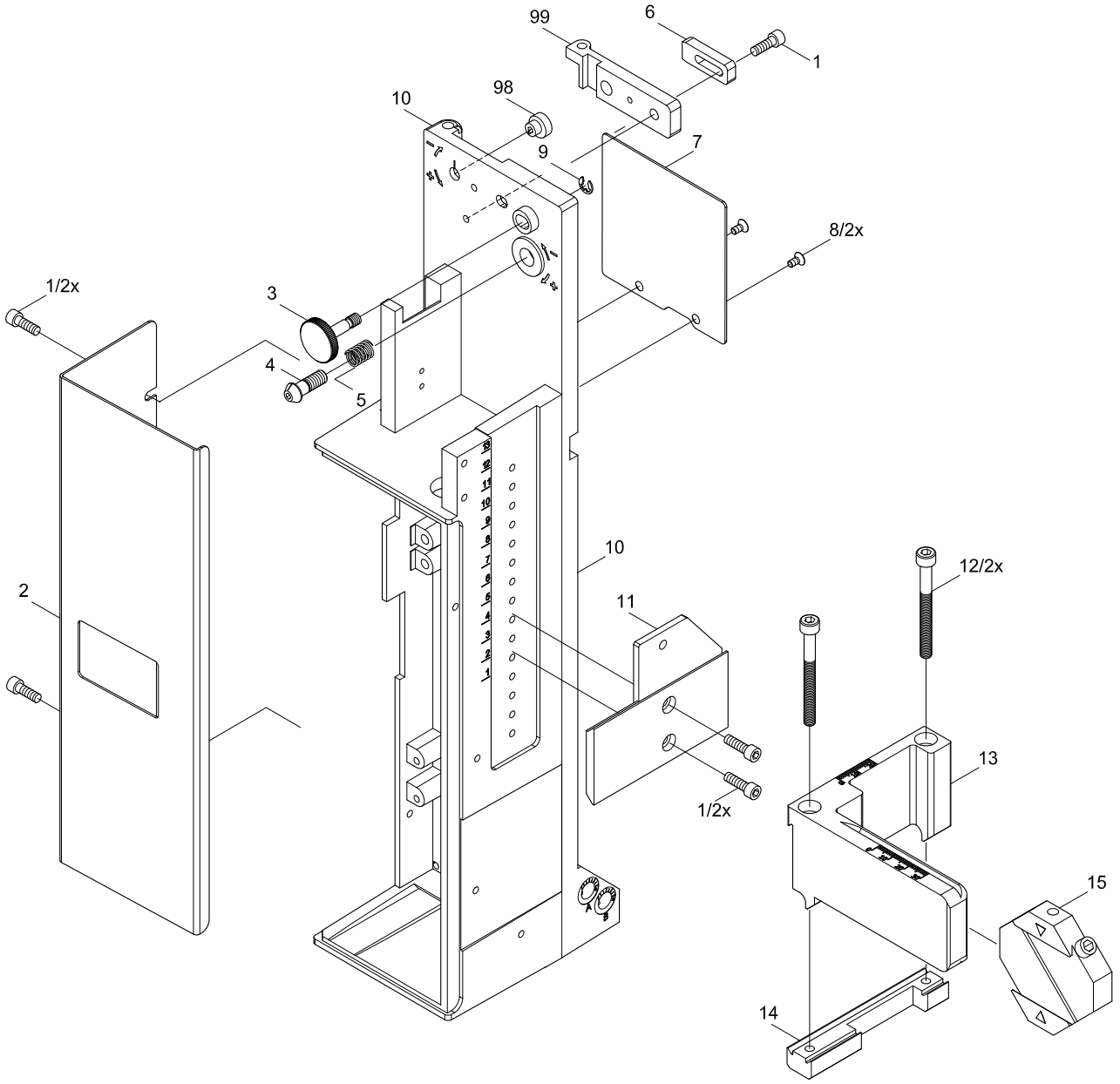


Fig. 32 Retainer Assembly - Spare Parts

10.2 Pneumatics Retainer Assembly

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
1	5902489.001	Screw DIN7984-M4x8	10		
16	5902863.001	Screw DIN7984 M4x24	10		
17	5905285.001	Push-in L-Connector	1		
	FESTO 153276	QSLF-1/8-8-B			
18	5905284.001	Block Valve	1		
	FESTO 153296	HE-3-1/8-1/8			
19	5906656.001	Push-in/threaded Fitting	1		
	FESTO 153023	QSF-1/8-6-B			
20	5966460.001	Tube Ø 1	2m		
	FESTO 152584	PUN 4x0,75-SI			
21	5966463.001	Tube Ø 2	2m		
	FESTO 159663	PUN-4x0,75-SW			
22	5966464.001	Tube Ø 4	2m		
	FESTO 159665	PUN-6x1-SW			
23	5966465.001	Tube Ø 7	2m		
	FESTO 159667	PUN-8x1,25-SW			
24	5966466.001	Tube 2x Ø 2	2m		
	FESTO 152822	PUN-4x0,75-DUO-SI			
26	5905371.001	Push-in Y-Fitting	1		
	FESTO 153371	QSMY-4			

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
27.1	5906852.001	Valve Block L	1		
27.2	5906868.001	Valve Block R	1		
28	5906021.001	Valve	1		
	FESTO 527000	CPASC1-M1H-G-P-2,5			
29	5906022.001	Valve	1		
	FESTO 527315	CPASC1-M1H-K-P-2,5			
32	5905317.001	Push-in L-Connector	1		
	FESTO 153336	QSML-1/8-6			
33	5906844.001	Vacuum Generator	1		
	FESTO 193509	VN-10-H-T3-PI4-VI4-RO1			
34	5905257.001	Silencer	1		
	FESTO 2307	U-1/8			
36	5905338.001	Push-in T-Connector	1		
	FESTO 153355	QSMT-1/8-4			
38	5905283.001	Push-in/threaded Fitting	1		
	FESTO 153315	QSM-M5-4-I			
39.1	5964277.001	Blow Tube 2"	1		
39.2	5964095.001	Blow Tube 4"	1		
39.2	5964614.001	Blow Tube 6"	1		
86	5966414.001	Pressure Reduce Valve	1		

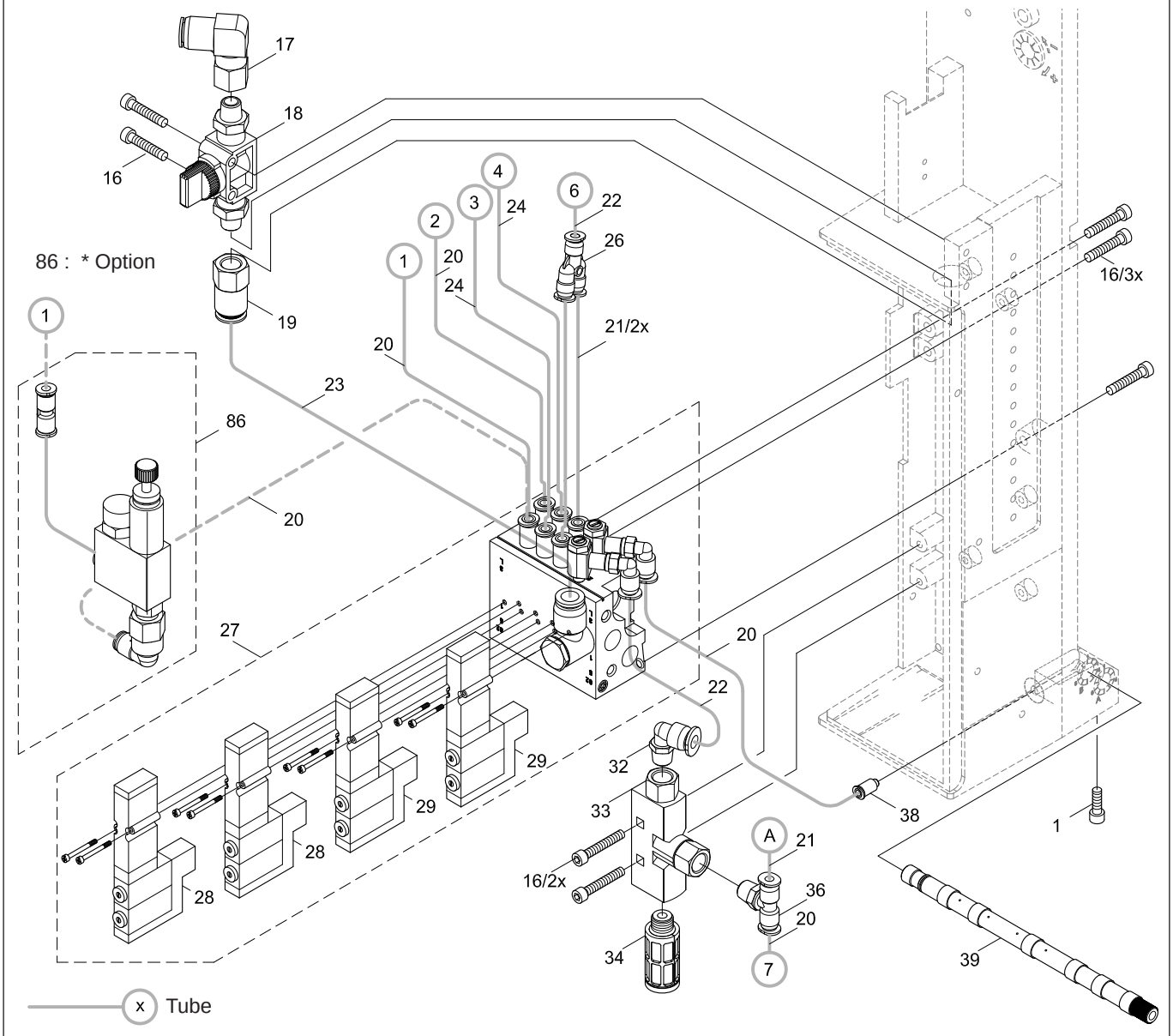


Fig. 33 Pneumatics Retainer Assembly - Spare Parts

10.3 Electronics Retainer Assembly

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
21	5966463.001	Tube Ø 3	2m		
	FESTO 159663	PUN-4x0,75-SW			
40	5964045.001	Bracket	1		
41	5955586.001	Cable	1		
42.1	5964590.001	Cable Ground 200H	1		
42.2	5964591.001	Cable Ground 300H	1		
42.3	5964592.001	Cable Ground 400H	1		
43	5902571.001	Screw DIN7984-M4x4	10		
44.1	5955579.001	Applicator Interfaces L	1		
44.2	5964188.001	Applicator Interfaces	1		
45	5955585.001	PCB Valve Block assem.	1		
46.1	5964454.001	Sensor Start Pos. Cyl.Z 200H	1		
46.2	5964494.001	Sensor Start Pos. Cyl.Z 300H	1		
46.3	5964495.001	Sensor Start Pos. Cyl.Z 400H	1		

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
47.1	5964490.001	Sensor End Pos. Cyl.Z 200H	1		
47.2	5964594.001	Sensor End Pos. Cyl.Z 300H	1		
47.3	5964595.001	Sensor End Pos. Cyl.Z 400H	1		
48	5964651.001	EEPROM	1		
49	5955575.001	Applicator Control	1		
50	5964041.001	Holder	1		
51	5902144.001	Screw DIN7984-M3x4	10		
53.1	5964457.001	Sensor Start Position Cyl.Y 200H	1		
53.2	5964458.001	Sensor Start Position Cyl.Y 300H	1		
53.3	5964459.001	Sensor Start Position Cyl.Y 400H	1		
54.1	5964491.001	Sensor End Position Cyl.Y 200H	1		
54.2	5964492.001	Sensor End Position Cyl.Y 300H	1		
54.3	5964493.001	Sensor End Position Cyl.Y 400H	1		
97	5906943.001	Sealing Ring	10		

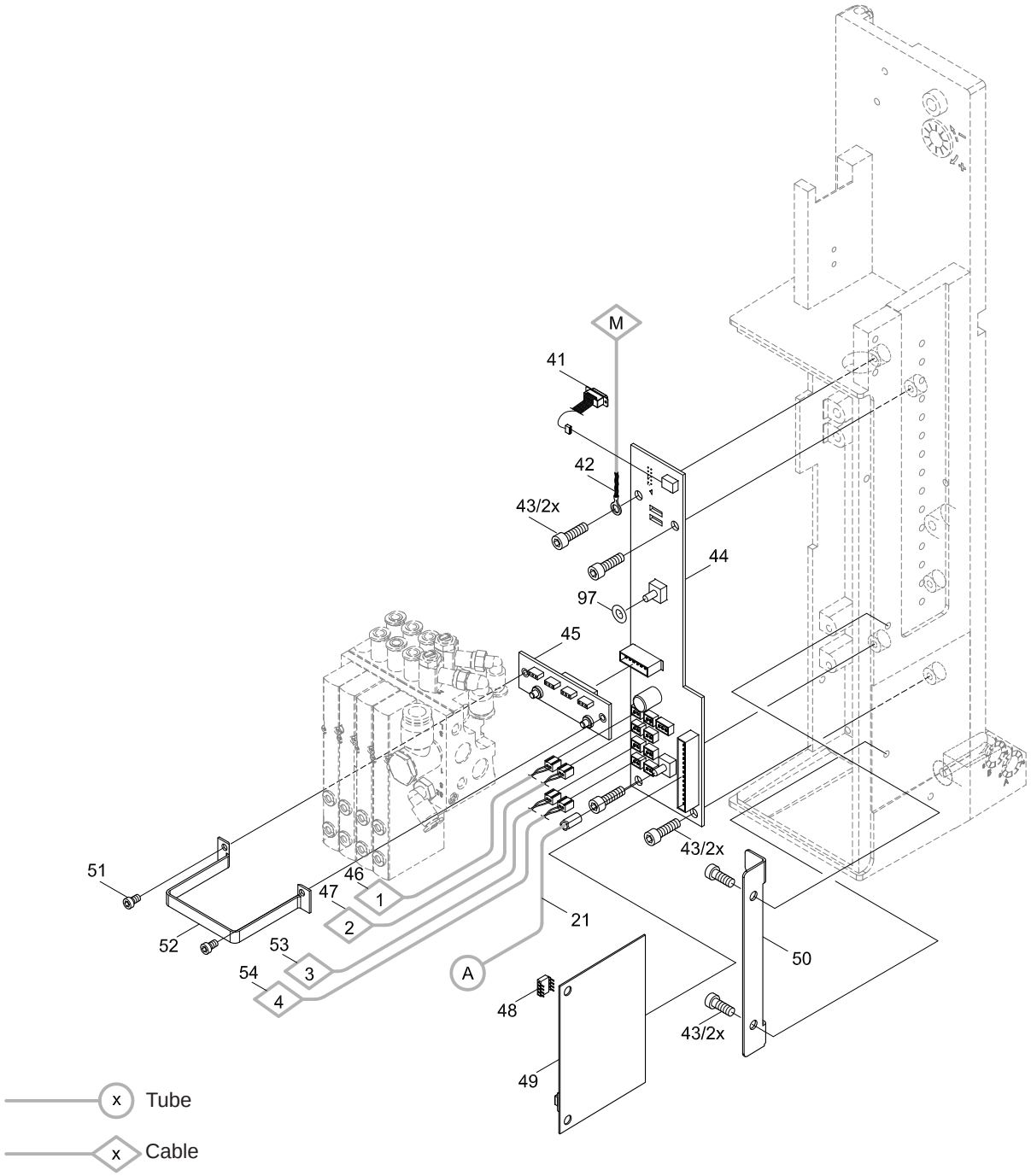


Fig. 34 Electronics Retainer Assembly- Spare Parts

10.4 Cylinder Assembly Y

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
20	5966460.001	Tube Ø 2	2m		
	FESTO 152584	PUN 4x0,75-SI			
22	5966464.001	Tube Ø 5	2m		
	FESTO 159665	PUN-6x1-SW			
24	5966466.001	Tube 2x Ø 3	2m		
	FESTO 152822	PUN-4x0,75-DUO-SI			
43	5902571.001	Screw DIN7984-M4x5	10		
47.1	5964490.001	Sensor End Pos. Cyl.Z 200H	1		
47.2	5964594.001	Sensor End Pos. Cyl.Z 300H	1		
47.3	5964595.001	Sensor End Pos. Cyl.Z 400H	1		
53.1	5964457.001	Sensor Start Position Cyl.Y 200H	1		
53.2	5964458.001	Sensor Start Position Cyl.Y 300H	1		
53.3	5964459.001	Sensor Start Position Cyl.Y 400H	1		
54.1	5964491.001	Sensor End Position Cyl.Y 200H	1		
54.2	5964492.001	Sensor End Position Cyl.Y 300H	1		
54.3	5964493.001	Sensor End Position Cyl.Y 400H	1		
55	5964343.001	Stopper *Option	1		
56	5964364.001	Stopper	1		
57	5964061.001	Setting Screw	1		
58	5965966.001	Sliding Carriage	1		
59	5964302.001	Plate L	1		
60	5903505.001	E-Ring DIN6799-4	10		
61	5964301.001	Holder L	1		

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
62	5902562.001	Screw DIN7984-M4x13	10		
63	5521159.001	Nut	1		
64.1	5964236.001	Tamp Retainer L	1		
64.2	5964241.001	Tamp Retainer R	1		
65	5964351.001	Stopper *Option	1		
66	5964311.001	Adapter Bolt	1		
67	5905069.001	Spring	1		
68	5521157.001	Washer	1		
69	5521158.001	Washer	1		
70	5903501.001	E-Ring DIN6799-6	10		
71	5902171.001	Screw. DIN7984 M3x40	10		
72	5906977.001	Zylinder Y	1		
	FESTO 188088	ADVC-12-5-I-P-A			
73	5906636.001	One-way Flow Control Valve	1		
	FESTO 175056	GRLA-M5-QS-4-LF-C			
74	5903516.001	Snap Ring DIN471-8x0.8	10		
75	5902138.001	Screw DIN912-M5x10	10		
76	5966526.001	Mounting Plate	1		
77	5964435.001	Axle	1		
79	5964613.001	Spring	1		
80	5964432.001	Mounting Bracket	1		
81		Pad (customized)	1		

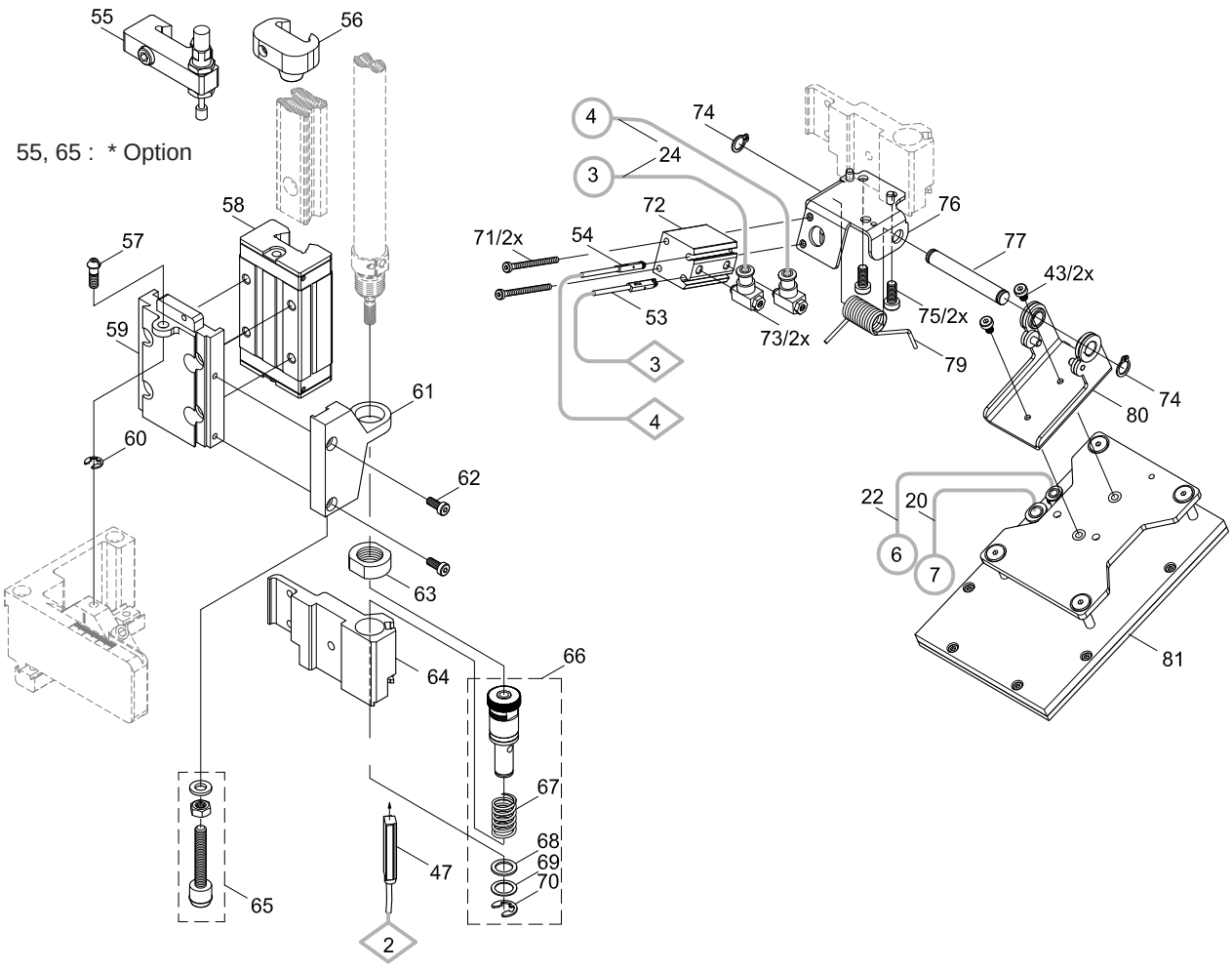
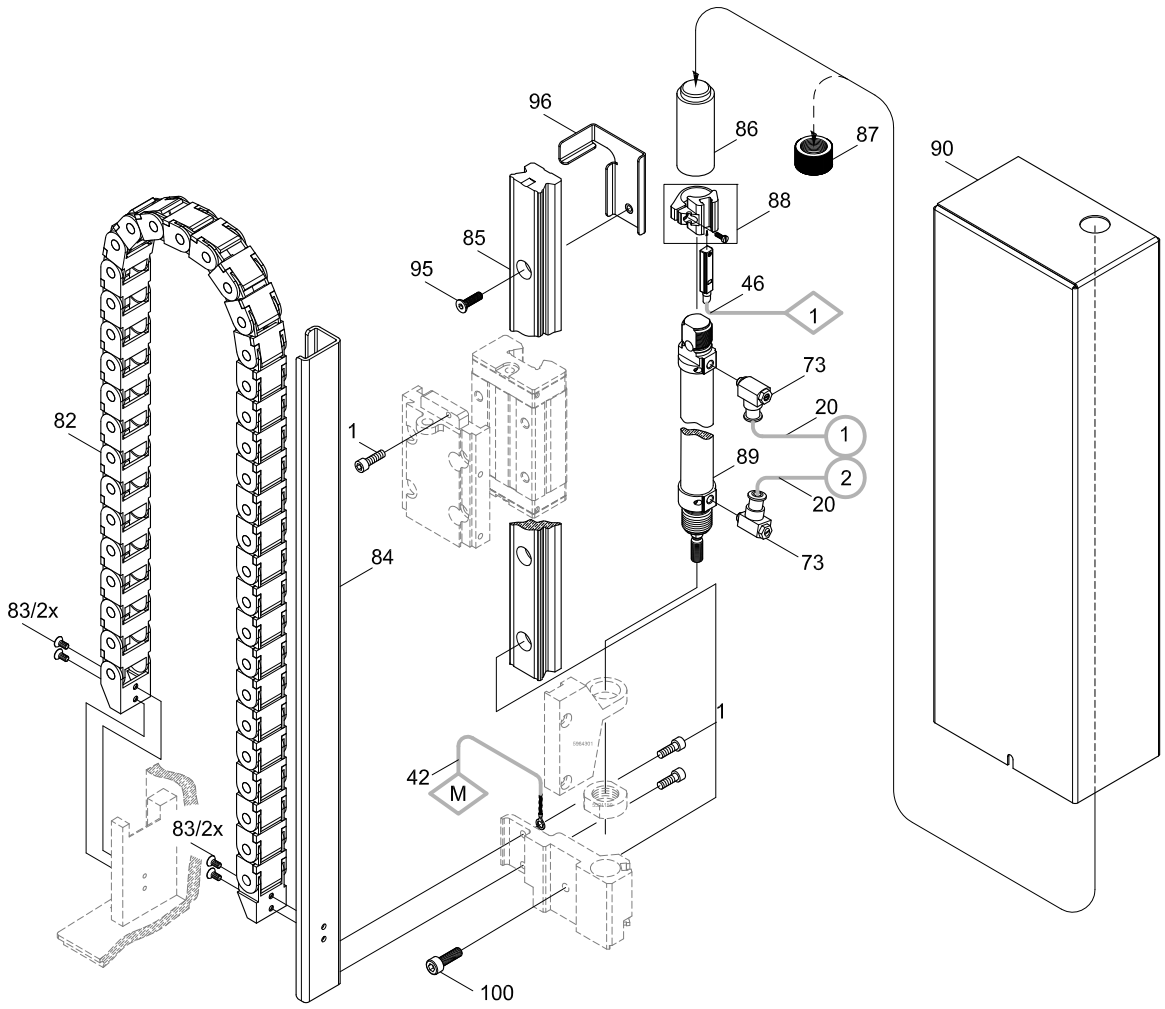


Fig. 35 Cylinder Assembly Y - Spare Parts

10.5 Cylinder Assembly Z

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
1	5902489.001	Screw DIN7984-M4x8	10		
20	5966460.001	Tube Ø 3	2m		
	FESTO 152584	PUN 4x0,75-SI			
42.1	5964590.001	Cable Ground 200H	1		
42.2	5964591.001	Cable Ground 300H	1		
42.3	5964592.001	Cable Ground 400H	1		
46.1	5964454.001	Sensor Start Pos. Cyl.Z 200H	1		
46.2	5964494.001	Sensor Start Pos. Cyl.Z 300H	1		
46.3	5964495.001	Sensor Start Pos. Cyl.Z 400H	1		
73	5906636.001	One-way Flow Control Valve	1		
	FESTO 175056	GRLA-M5-QS-4-LF-C			
82.1	5964373.001	Energy Track 200H	1		
82.2	5964374.001	Energy Track 300H	1		
82.3	5964375.001	Energy Track 400H	1		
83	5902047.001	Screw DIN7991-M3x5	10		
84.1	5964347.001	Bracket L200H	1		
84.2	5964357.001	Bracket L300H	1		
84.3	5964358.001	Bracket L400H	1		
84.4	5964396.001	Bracket R200H	1		
84.5	5964398.001	Bracket R300H	1		
84.6	5964402.001	Bracket R400H	1		

No.	Part-No.	Description	PU	Serial No. from	Serial No. to
85	5964306.001	Guide Rail 200H	1		
86	5964443.001	Bolt	1		
87	5964489.001	Knurled Nut 300H/400H	1		
88	5905593.001	Mounting Clip	1		
	FESTO 175094	SMBR-8-16			
89.1	5906938.001	Cylinder Z 200H	1		
	FESTO 19235	DSNU-16-200-PPV-A			
89.2	5905973.001	Cylinder Z 300H	1		
	FESTO 14320	DSNU-16-300-PPV-A			
89.3	5906117.001	Cylinder Z 400H	1		
	FESTO 14320	DSNU-16-400-PPV-A			
90.1	5964440.001	Cover L200H	1		
90.2	5964483.001	Cover L300H	1		
90.3	5964484.001	Cover L400H	1		
90.4	5964451.001	Cover R200H	1		
90.5	5964453.001	Cover R300H	1		
90.6	5964485.001	Cover R400H	1		
95	5902224.001	Screw DIN7991-M4x12	10		
96.1	5966524.001	Support L 400H	1		
96.2	5966528.001	Support R 400H	1		
100	5902335.001	Screw DIN7984-M6x25	10		

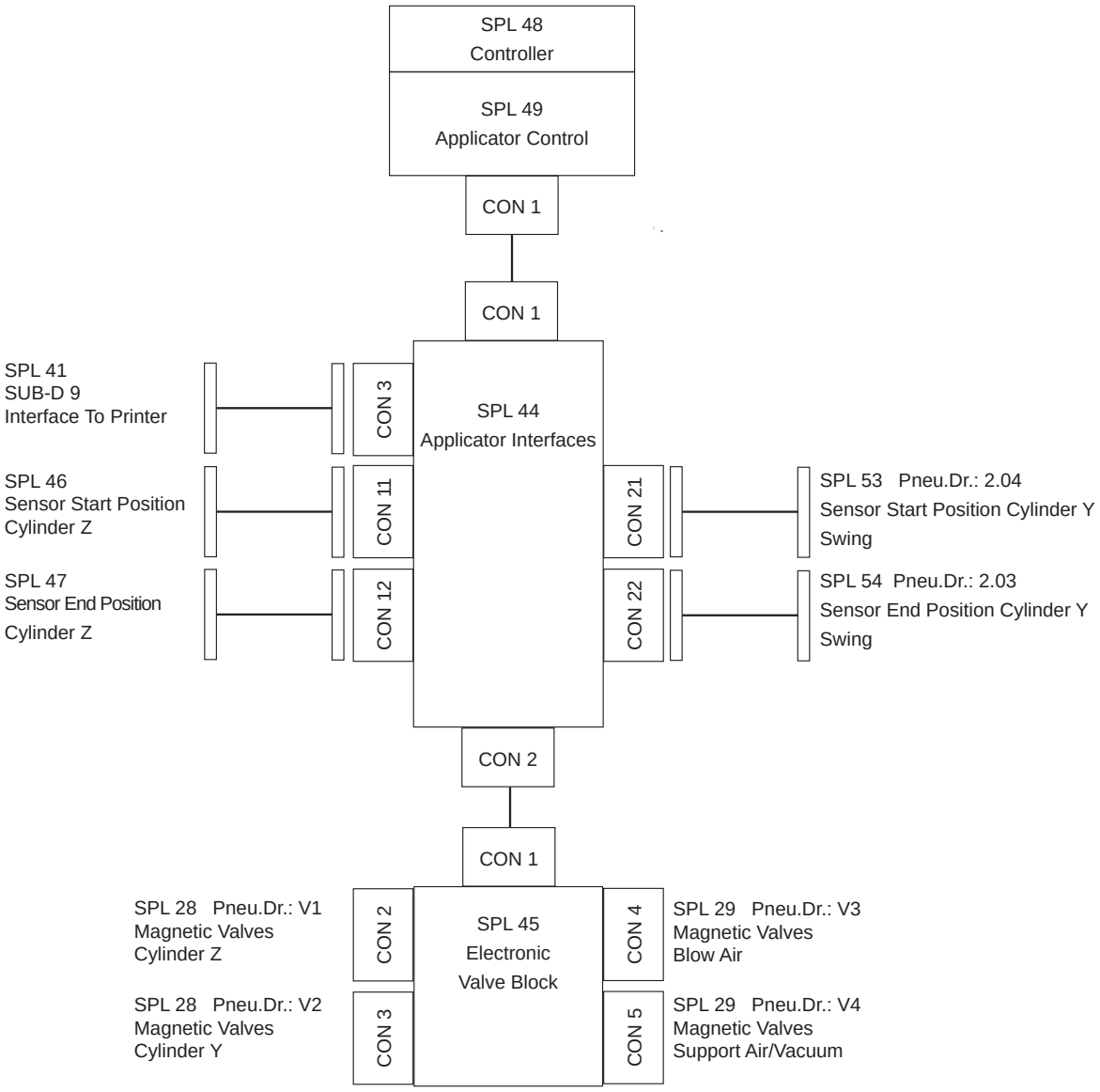


x Tube

x Cable

Fig. 36 Cylinder Assembly Z - Spare Parts

11.1 Block Diagram Type 4314 / 4316



SPL: Spare Parts List
Pneu.Dr.: Pneumatic Drawing

Fig. 37 Block diagram Type 4314 / 4316

11.2 Pneumatic Drawing Type 4314 / 4316

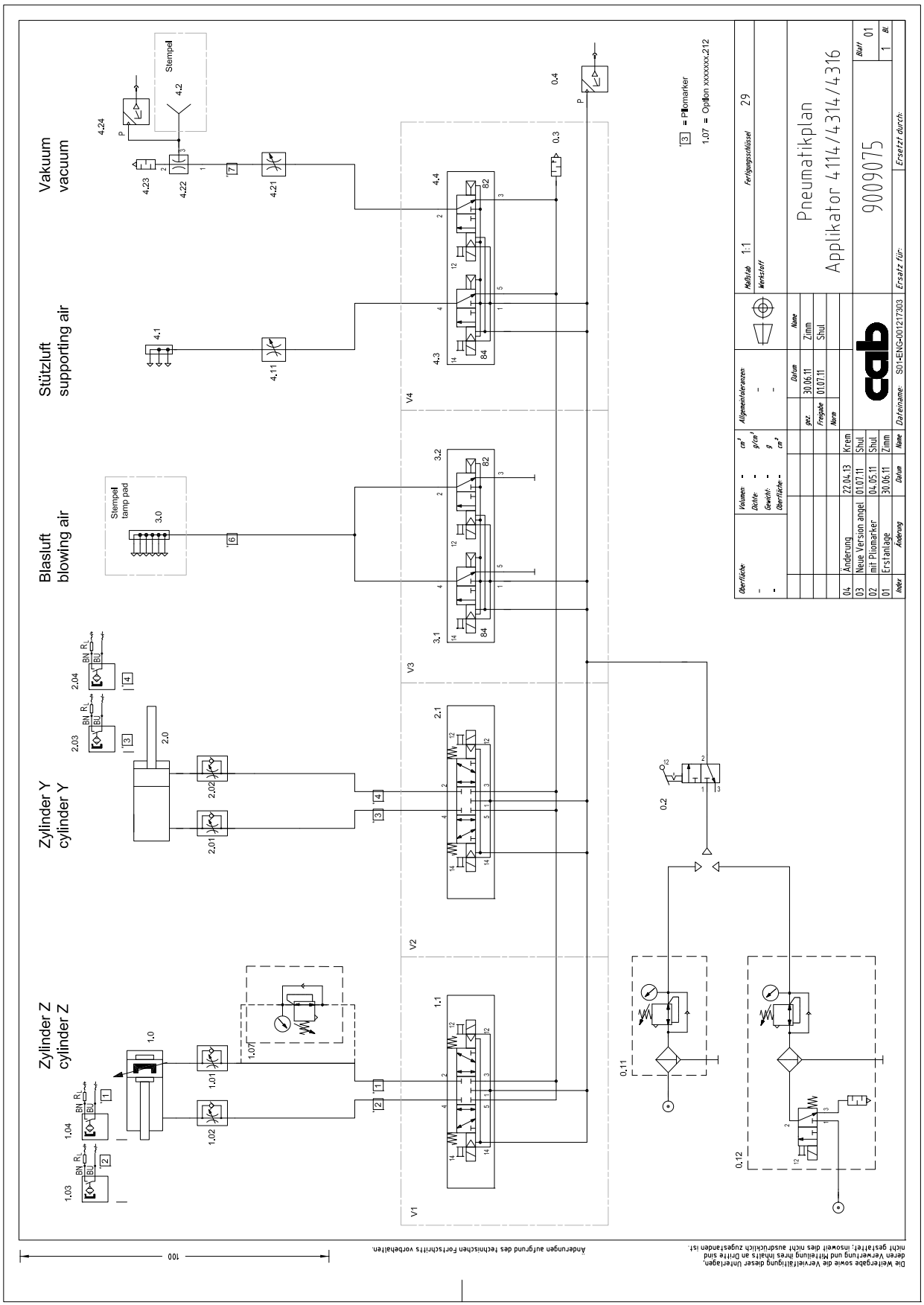


Fig. 38 Pneumatics Type 4314 / 4316

11.3 Label Position Type 4314 L

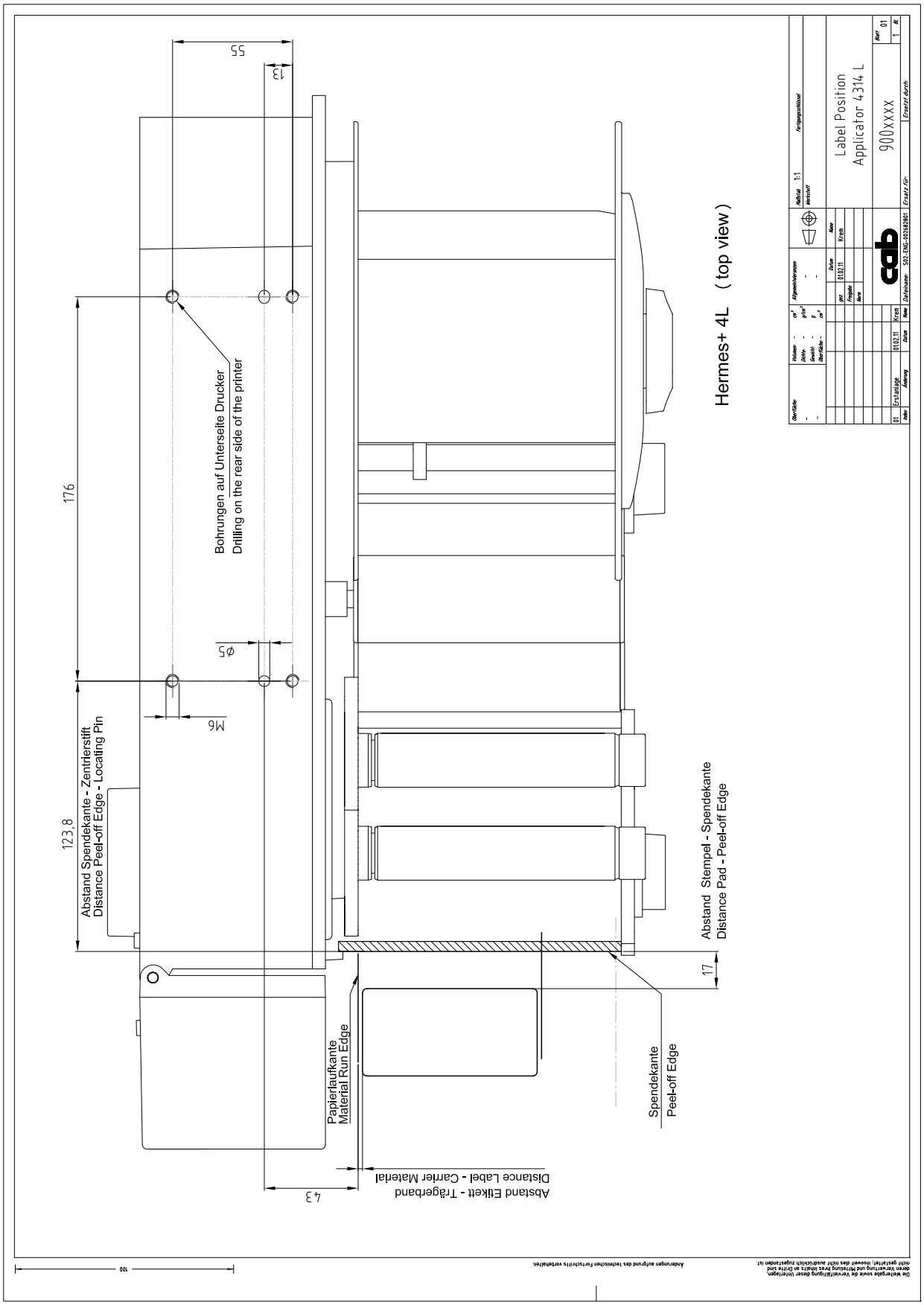


Fig. 39 Label position 4314L

11.4 Label Position Type 4314 R

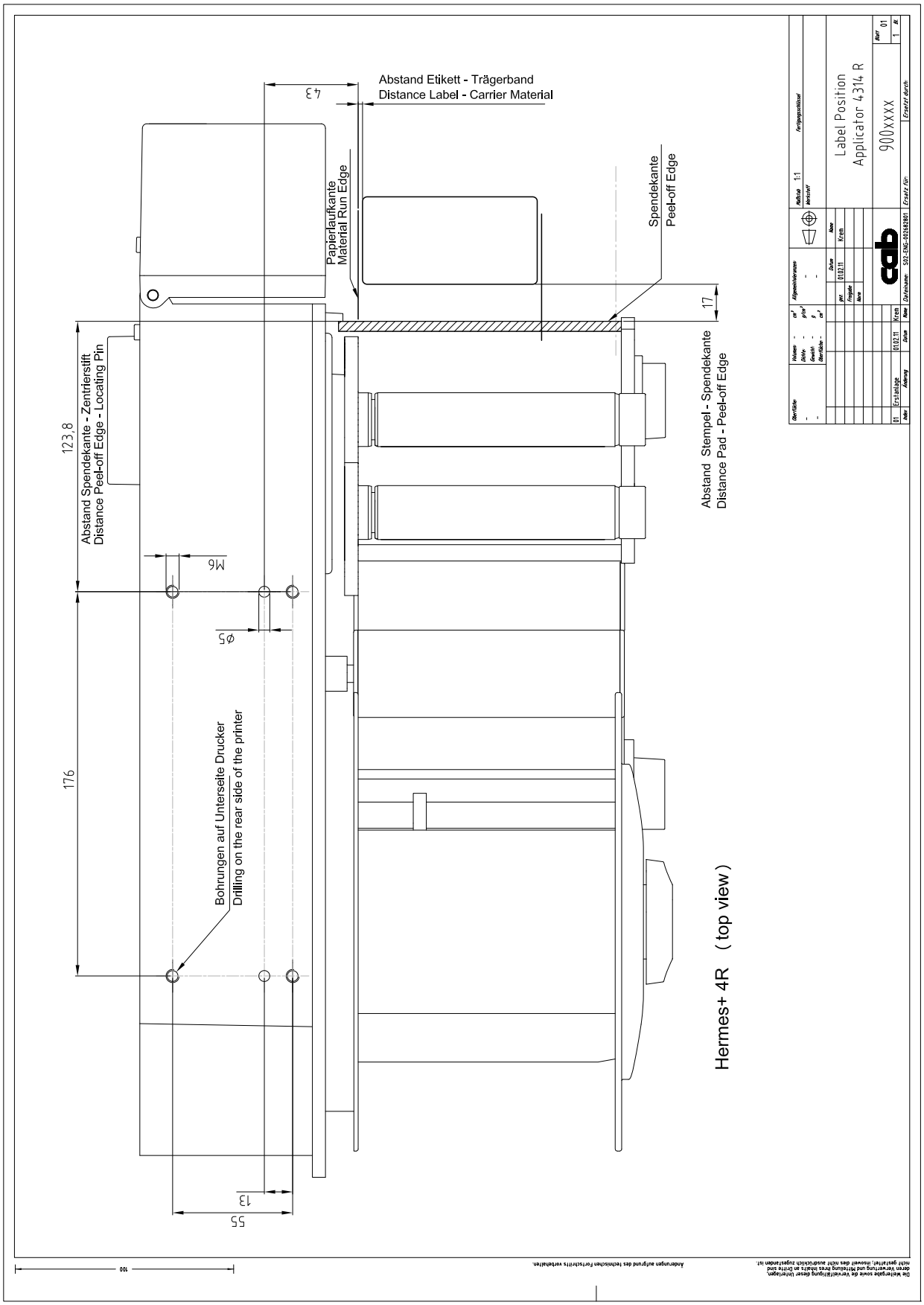


Fig. 40 Label position 4314R