

Applicator 1000

Service Manual for the following products

Family	Type
Applicator	1000

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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).

1.2 Safety Instructions

- Only connect the device to other devices which have a protective low voltage.
- Before mounting the delivered components disconnect the printer from the power supply and close the shutoff valve at the applicator.
- The device may only be used in a dry environment, do not expose it to moisture (sprays of water, mists, etc.).

**Warning!**

In case of working on the applicator disconnect the printer of the power supply and close the pressure air.

**Warning!**

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.

**Warning!**

Don't change the device in a kind which not described in the documentation of the printer and applicator.

1.3 Environment



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

- Send to suitable collection points, separately from residual waste.

The modular construction of the print module enables it to be easily disassembled into its component parts.

- Send the parts for recycling.

2.1 Device Overview

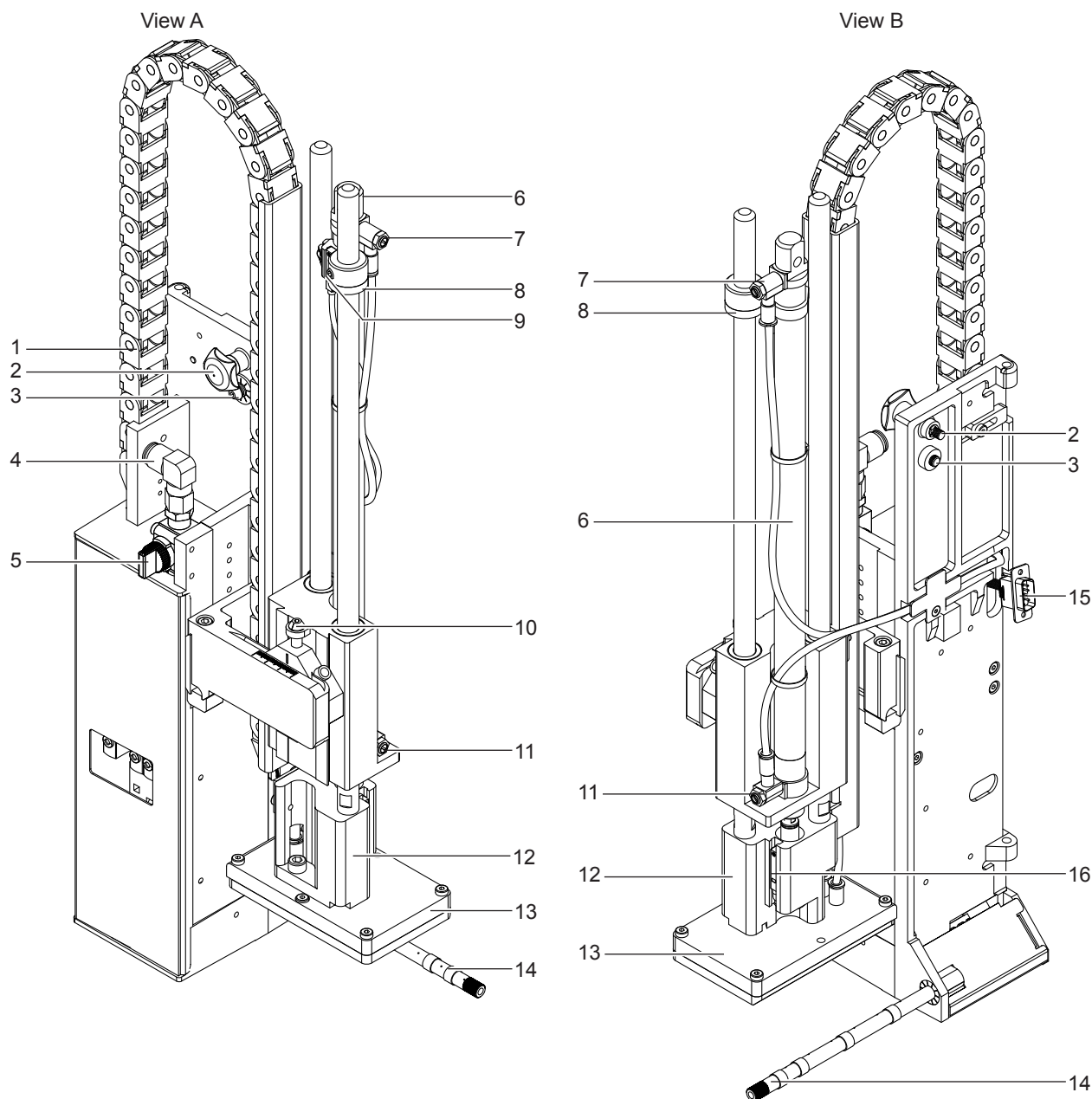


Fig. 1 Overview

- | | | | |
|---|------------------------------------|----|---------------------------------------|
| 1 | Energy Track | 9 | Sensor Start Position |
| 2 | Knurled Screw | 10 | Set Screw vertical |
| 3 | Set Screw horizontal | 11 | Throttle Valve Lift Cylinder (bottom) |
| 4 | Connector Compressed Air | 12 | Pad Retainer |
| 5 | Shut Down Valve | 13 | Pad (* customized) |
| 6 | Cylinder | 14 | Blow Tube |
| 7 | Throttle Valve lift Cylinder (top) | 15 | Connector Applicator - Printer |
| 8 | Stopper | 16 | Labelling Sensor |

View C

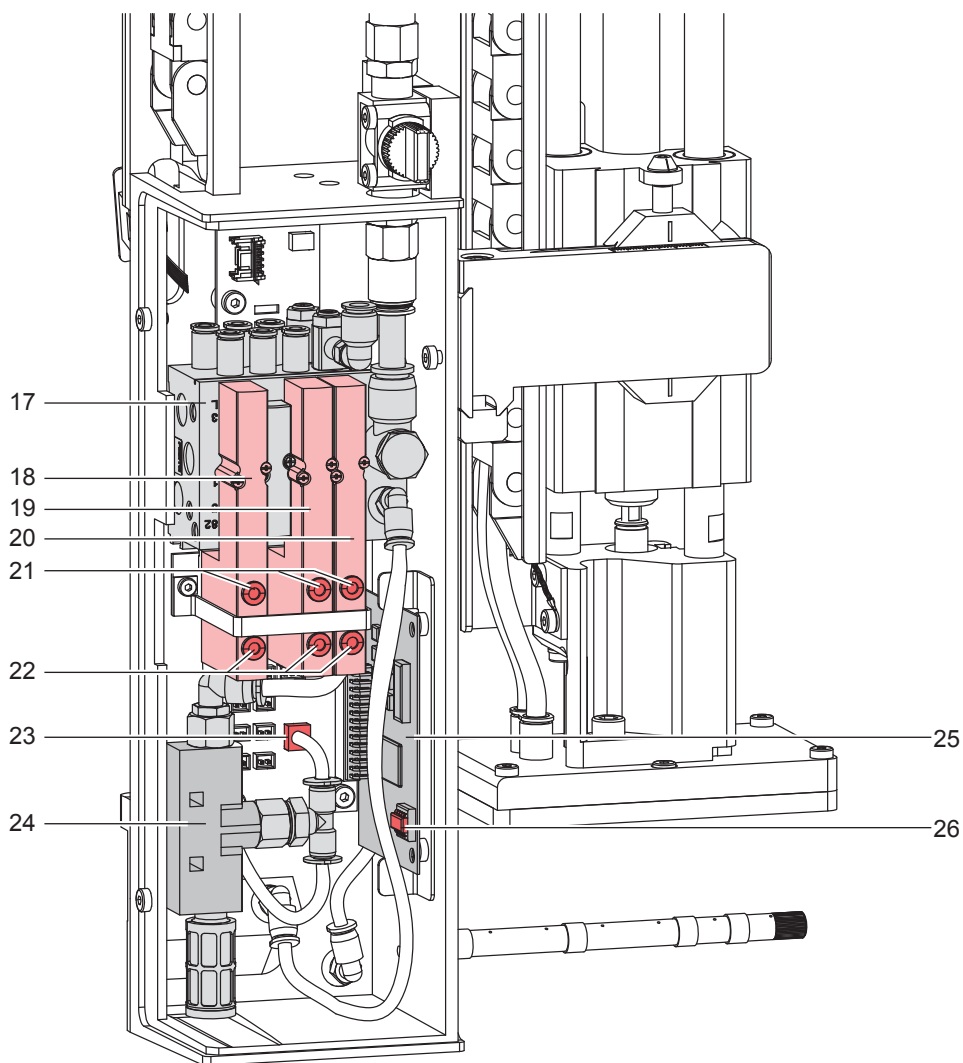


Fig. 2 Overview

- | | | | |
|----|--|----|------------------------|
| 17 | Valve Block | 24 | Vacuum Generator |
| 18 | Valve Cylinder | 25 | PCB Applicator Control |
| 19 | Valve Blow Air | 26 | Controller |
| 20 | Valve Vacuum / Support Air | | |
| 21 | Switch to the valve control by hand | | |
| 22 | Switch to the valve control by hand | | |
| 23 | Sensor for vacuum on the PCB Applicator Interfaces | | |

2.2 Function

2.2.1 Sensors

Sensor Labeling position

The contact of the pad onto the product or the reaching of the release position is detected by a Hall-sensor. For which purpose the displacement of the adapter bolt in relation to the sensor is used.

Sensor Start Position

The start position is the upper end position of cylinder and the position of the pad which takeover the label from printer. This position will be detected via a Hall-sensor in interaction with a magnet mounted inside cylinder.

Sensor Vacuum

The correct transfer of a label will be checked by the vacuum sensor. It also checks that there is no longer a label on the pad in case of the return movement. This sensor is integrated on the PCB applicator interfaces.

Sensor Pressure Air

The pressure sensor controls the pressure air. This sensor is integrated on the PCB applicator interfaces.

2.2.2 Pneumatics

Cylinder

A cylinder with stroke of 100-400 mm is used for the transport of labels between the dispense edge of the printer and the labelling position. It will be controlled by the "cylinder" valve. The speed of movement can be changed by two throttle valves mounted at cylinder.

Pad

The label will be transported by a pad. The pad must be appropriate to the size of label. The pad assembly and cylinder are conjoint and it will range by the cylinder.

In case of a label transportation it's a vacuum applied on the pad.

When the applicator will be used in 'blow' mode, the label will be applied by a high pressure.

Vacuum Generator

The vacuum at the pad will be produced by a vacuum generator. The vacuum generator is controlled by the vacuum valve "Vakuum". It's possible to adjust the low pressure by a throttle valve.

Blow Tube

Air is blown from below (supporting air) through a blow tube onto the label in order to support the transfer of the label from the printer to the pad. It's possible to adjust the direction of the blast. The supporting air is switched on by the supporting air valve "Stützluft".

Pneumatic Maintenance Unit

The pneumatic maintenance unit is offered as an option for the applicator. The important components of the pneumatic maintenance unit are a pressure reducer with manometer, a water separator with micro filter and a main connector for compressed air.

Valve Block

The distribution of the compressed air to the various pneumatic units is made in the valve block.

On the valve block is mounted the control valve for vacuum and support air in combination with throttle valves and the control valves for lift cylinder and blow air.

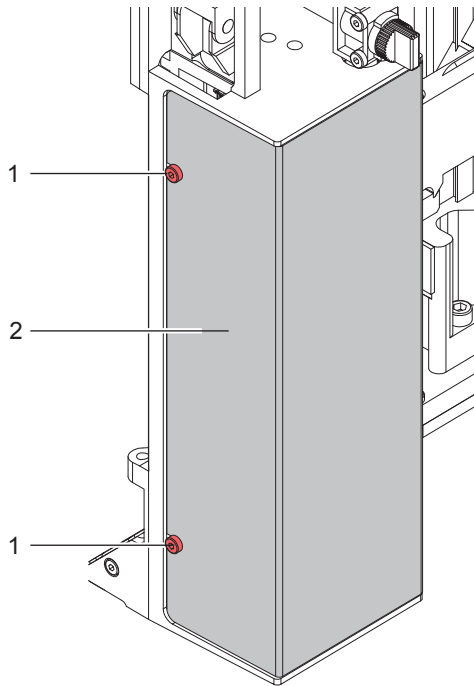


Fig. 3 Dismount cover

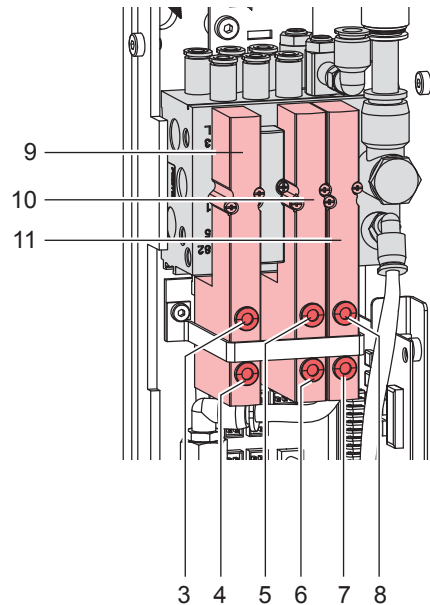


Fig. 4 Pneumatic control valves

Valves

For control and adjust works its possible to start a valve direct by hand via an integrated switch. You can see the valves only with dismantled cover.

► Loosen screws (1) and remove cover (2) .

Via integrated Keys (3-8) you can switch the pneumatic valves by hand.

Three way valve (9) to control the lift cylinder

Is the printer switched on the valve will be electrical controlled and the pad will move to the start position and hold on this place. In case of switching the valve the pad will move to the labelling position. In normal labelling operation the valve switched again after the signal of the labelling sensor.



Notice!

The manually control of the valves is only possible when the printer is switched off.

When switching the valve via the key 3 the pad will moved down to the most bottom position. It doesn't use the stop signal from the labelling sensor.

Switch key 4 and the pad will move up.

Double two way valve (10) to control the blow air

In the operation mode "blow" the label will blow on the product trough switch on the blow air on the pad.

in the operation modes "stamp" and "roll on" will start the blow air for a short time in the movement back to the start position to clean all holes in the pad.

For all described function the both integrated valves will switched parallel.

When switching the valves (blow air) manually by switch 5 and 6 there used only one of the two integrated valves.

Double two way valve (11) to control the vacuum / support air

The both internal valves attend to switch on the vacuum generator , to create a depression on the pad and independent of there to control the support air on the blow tube.

switch 7 switched the support air and switch 8 the vacuum.

3.1 Tools

All tools you need for repair the applicator

Tools	Size	for Assemblies
combination wrench	5,5 mm	cylinder plunger
	9,0 mm	throttle valve
	10,0 mm	guide rod
	14,0 mm	L-connector (valve block > pneumatic maintenance unit)
	20,0 mm	lift cylinder
hexagon wrench	2,0 mm	valve block, energy track ...
	2,5 mm	PCB ...
	5,0 mm	adjustment guiding block
screwdriver for slotted screws	2,5 mm	throttle valves
crosstip screwdriver	PH0	valves on the valve block
	PH2	Sensors on cylinder
PC-Extractor		changing controller
wrist grounding		for works at PCB and controller
manometer	to 5 bar	pressure measurement
soft brush, cloth, multi purpose cleaner (without solvent))		

Table 2 Tools and their purpose



Attention!

Pull tubes (1) at pneumatic connectors only if the releasing ring (2) pressed. (Figure 6 right).

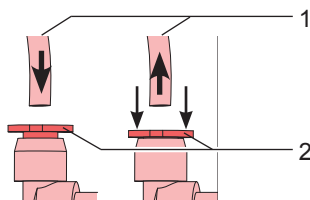


Fig. 5 Push (left) and pull (right) of tubes

3.2 Cleaning



Attention!

Never use solvent and abrasive.

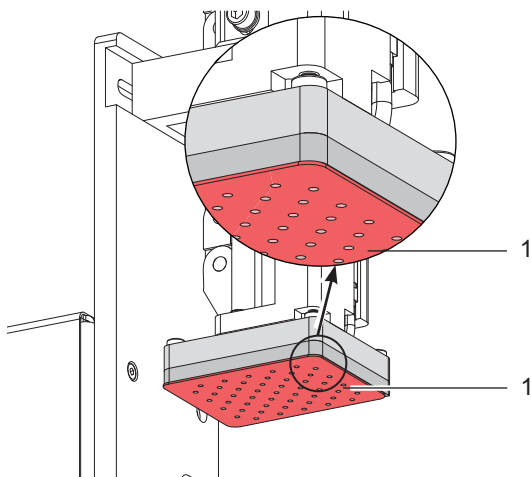


Fig. 6 Pad with slide foil

- ▶ 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.

To divide on the mother plate to arrive it's necessary to dismount the cover.
Before the regular work will start it's absolutely necessary to mount the cover again.



Warning!

Attend that the printer power supply is disconnected and the compressed air supply is closed before starts the mounting works.

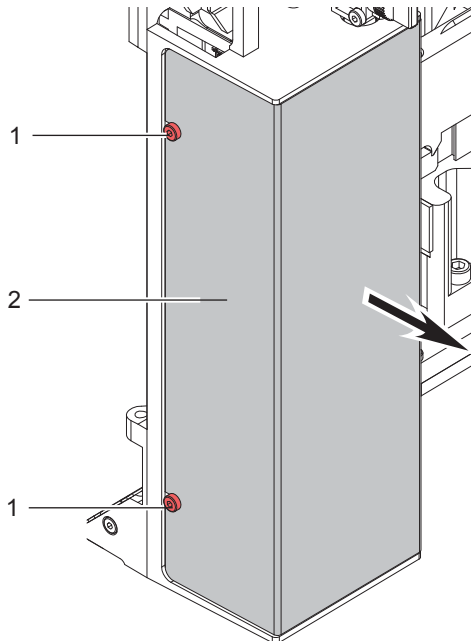


Fig. 7 Cover mount and dismount

Dismount Cover

1. Loosen screws (1).
2. Remove cover in direction of arrow.



Attention!

Mount the cover again before you start the normal operation!

4.1 Instructions for sticking Slide Foil onto the Pad

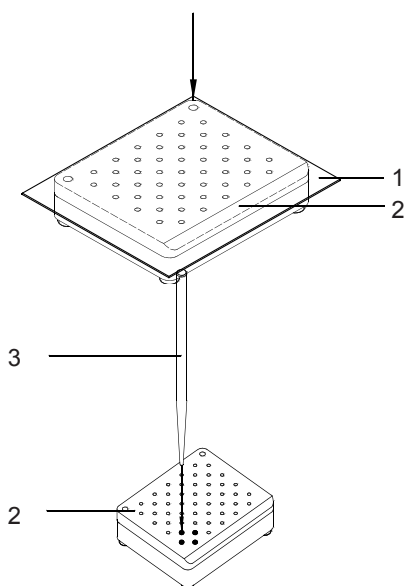


Fig. 8 Sticking the slide foil /Punching the holes

1. Dismount the pad unit.
2. Make a note of the hole pattern on the slide foil.
3. Remove the slide foil completely.
4. Clear the surface from remains of glue.
5. Remove covering foil from the slide foil.
6. Put the slide foil (1) with its adhesive side onto the pad (2).
7. Press the slide foil firmly on the pad.
8. Cut off those parts of the slide foil (1) (along the broken line) that jut out over the edge of the pad (2).
9. Punch the slide foil on the pad (2) using the punch pin (3) appropriate to the hole pattern on the wearing slide foil.
10. Punch the hole completely by turning the pin.
11. Mount the pad unit.

4.2 Change Valves



Warning!

Attend that the printer power supply is disconnected and the compressed air supply is closed before starts the mounting works.

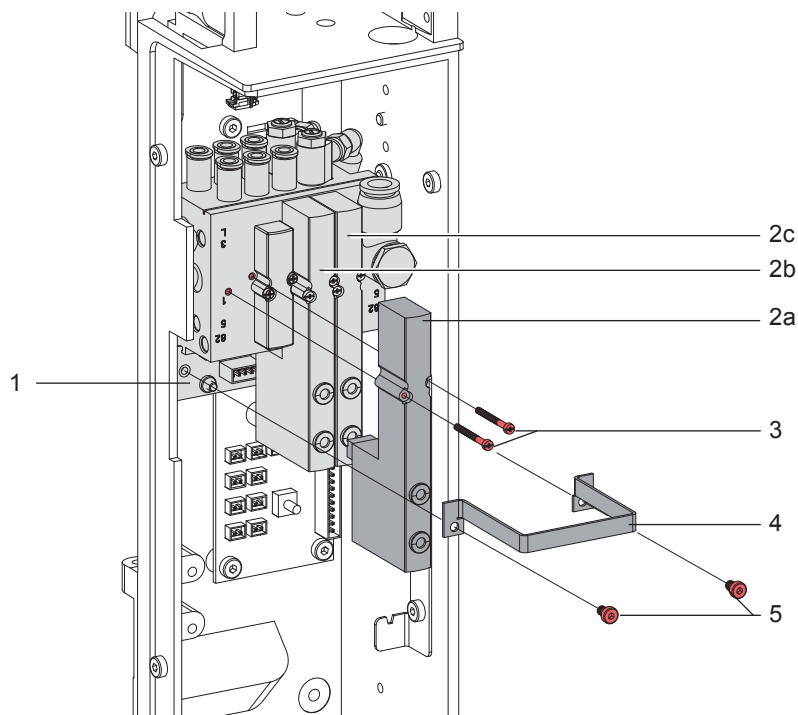


Fig. 9 Change valves

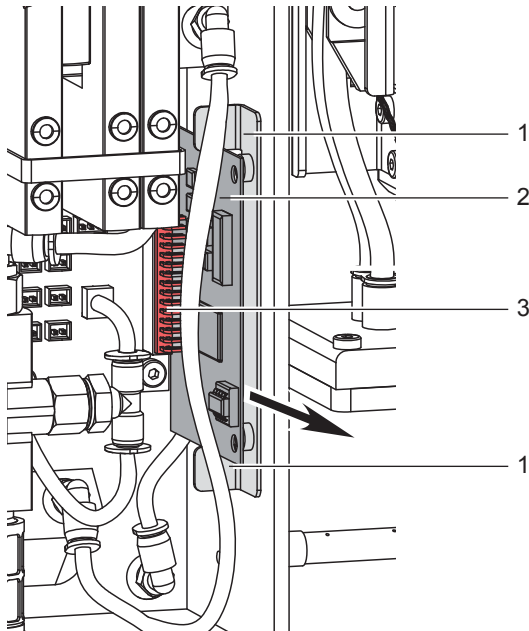
1. Remove the cover.
2. Loosen screws (5) from bracket (4) and the PCB valve block (1).
3. Remove bracket (4).
4. Loosen screws (3) of the to switch valve.
5. Change valve (2a,b or c).
6. Tighten screws(3) of the changed valve.
7. Set on the bracket (4) to the PCB valve block (1) and tighten it with the screws (5).
8. Mount the cover again.

4.3 Change PCB Applicator Control



Attention!

Protection against electrostatic discharge before work → grounding



1. Dismount the cover.
2. Pull PCB (2) out from the connector (3) of the interface to the PCB Applicator Interfaces.
3. Pull the PCB (2) in the guiding (1) out of the device.
4. Mounting in reverse order.

Fig. 10 Change PCB Applicator Control

4.4 Change Controller



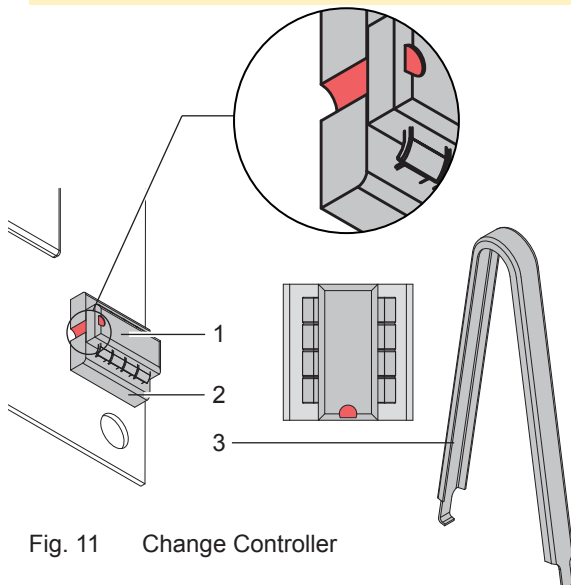
Attention!

Protection against electrostatic discharge before work → grounding



Attention!

Remove controller only with a special tool



1. Dismount PCB Applicator Control described like chapter 4.3.
2. Replace controller (1) with PC-Extractor (3) from the socket.
3. Put in Controller (1). Look at the marker! half round marker on Controller → half round marker on Socket
4. Mount PCB Applicator Control like chapter 4.3 .

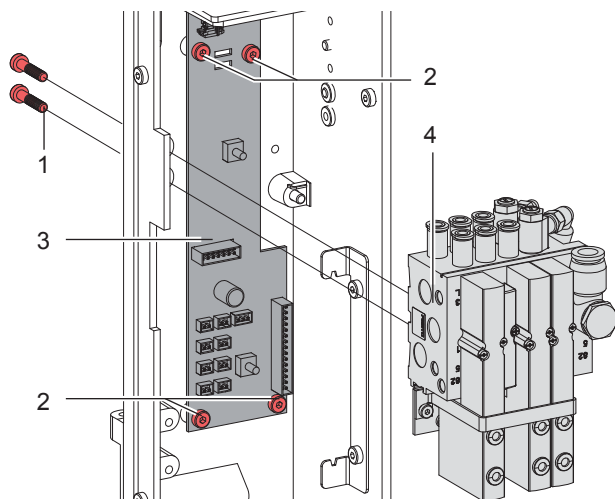
Fig. 11 Change Controller

4.5 Change PCB Applicator Interfaces



Warning!

Attend that the printer power supply is disconnected and the compressed air supply is closed before starts the mounting works.



1. Remove cover.
2. Detach all tubes from valve block (4).
3. Loosen screws (1) and move out valve block (4).
4. Remove PCB Applicator Control.
5. Loosen screws (2) and remove PCB Applicator Interfaces (3).
6. Mounting of the PCB Applicator Interfaces (3) in reverse order.

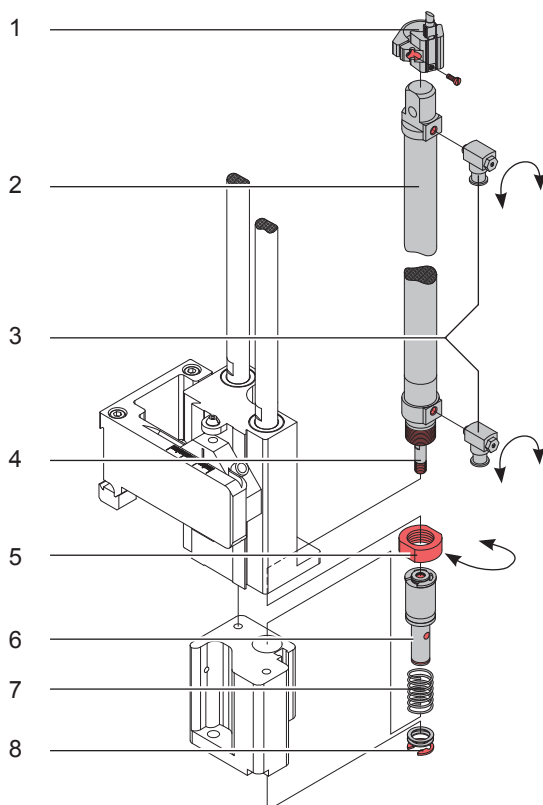
Fig. 12 Change PCB Applicator Interfaces

4.6 Change Cylinder



Warning!

Attend that the printer power supply is disconnected and the compressed air supply is closed before starts the mounting works.



1. Dismount sensor start position (1) with sensor collar and remove all tubes from cylinder (2).
2. Remove throttle valves (3) from cylinder (2).
3. Remove lock washer (8) and the two other washer.
4. Pull guide down from adapter bolt (6) and take out the spring (7).
5. Hold the adapter bolt (6) on the hole with a tool and unscrew the piston (4) with a 5,5 mm wrench from adapter bolt.
6. Loosen nut (5) and take out cylinder (2).
7. Put in the new cylinder (2) and attach it with nut (5).
8. Tighten the adapter bolt (6) on the piston (4) of the cylinder.
9. Attach the spring (7) to the guide and press the guide at the top. Press the adapter bolt toward the guide.
10. Attach the washer and fix it with the lock washer (8).
11. Mount throttle valves (3).
12. Mount again sensor start position (1) and all tubes.

Fig. 13 Change cylinder

4.7 Change Sensors On The Cylinder

**Warning!**

Attend that the printer power supply is disconnected and the compressed air supply is closed before starts the mounting works.

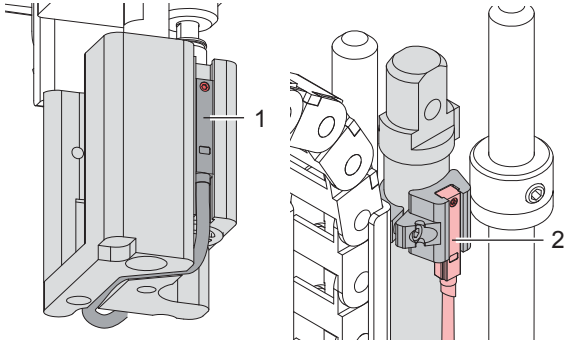


Fig. 14 Sensor labelling position / sensor start position

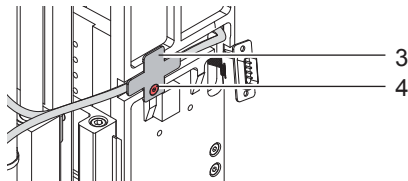


Fig. 15 Cable run

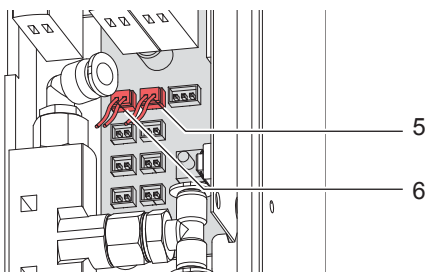


Fig. 16 Interfaces sensors

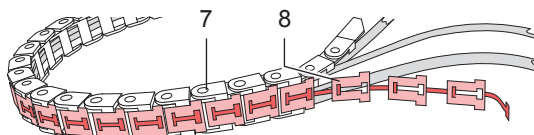


Fig. 17 Open of the energy track - Sensor labelling position

1. Remove cover.
2. Remove the connector of the sensor, you would change.
Slot CON 11 (6) ➔ Sensor Start Position (2)
Slot CON 12 (5) ➔ Sensor Labelling Position (1)
3. Dismount sensor:

Sensor Labelling Position (1)

- ▶ Loosen screws (5) to dismount the energy track on one side only.
- ▶ Detach the into one another looked divide in T-form (7) from the divide in U-form (8) of the energy track. (Figure 17)
- ▶ Pull out the dismounted sensor.
- ▶ Replace the sensor.
- ▶ Close the energy track again. Press in the T-form (7) pieces into the U-form (8) pieces.

Sensor Start Position (2)

- ▶ Remove the cable clip from the cylinder.
- ▶ Loosen the screw of the sensor and remove the sensor.
- ▶ Change sensor start position (2) .

4. Mounting of new sensors in reverse order.

Notice!

After replacing a sensor it's necessary to adjust the sensor position new. ➤ chapter 5.1

5.1 Check Sensor Labeling Position / Sensor Start Position

Sensor labeling position and sensor start position shown their initiation by integrated LED's. In case of activation the LED's will glow.

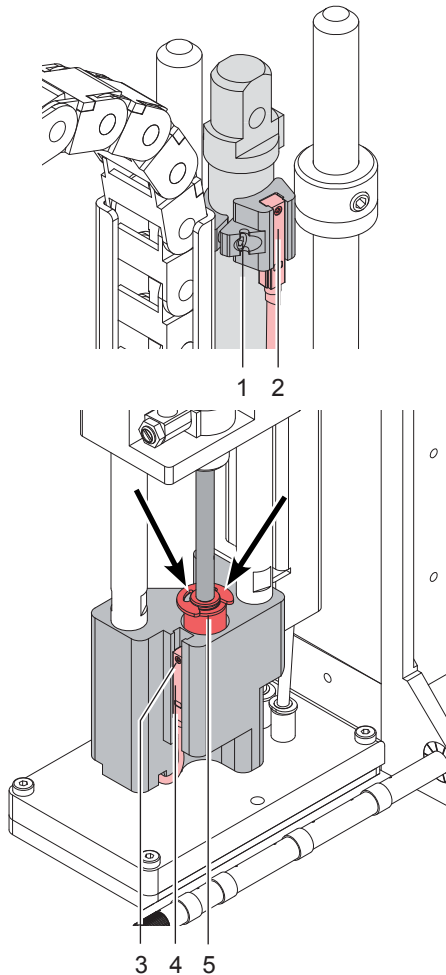


Fig. 18 Sensor adjustments

Adjustment Sensor Start Position (1)

1. Ease the locking ring by loosen the screw (1).
2. Compressed air supply open.
3. Printer switch on → cylinder will be retracted (start position)
4. Move the locking ring so that the LED glow in the sensor (2).
5. Fix the position of the sensor via tighten the ring (1)

Adjustment Sensor Labeling Position(4)

1. Ease screw (3) and printer switch on.
2. Move the sensor (4) that the LED will glow if the Adapter bolt (3) is pressed approx. 5 mm into the pad assembly. The LED is extinguish in case of an pressed adapter bolt.

5.2 Status LED

On the PCB Applicator Control (1) a status LED (2) is integrated.

When switching on the printer the system (printer and applicator) goes through a self test and the LED lights up short. The LED shines permanently is present an error at the applicator .

In the display of the printer an error message appears. ▷ Chapter 5.4

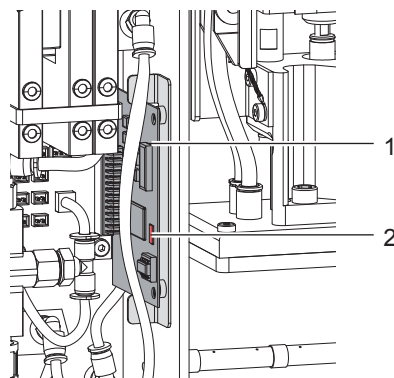


Fig. 19 LED for a general error status

5.3 Pressure Measurement

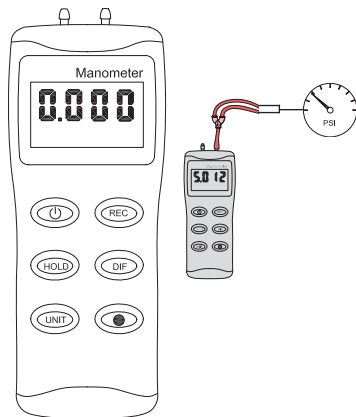


Fig. 20 Pressure Measurement

Use a manometer with a measurement area to 5 bar for measurement the pressure

Reading points (RP) of pressure values.

RP 1 : Support air (reference value 2 to 2,5 bar)

1. Remove cover.
1. Consecutively connect the manometer on RP 1.
 - Tube (5) from valve block to blow tube connector.
 - L-Fitting (6) on the blow tube.
2. Activate the valve manually to measure the pressure.
3. As and when required adjust it on support air throttle valve (1).
4. Mount cover again.

RP 2 : Vacuum (reference value -0,3 to -0,6 bar)

1. Remove cover.
1. Close suction plate hermetic.
2. Attach manometer between measurement points RP 4.
 - T-Fitting (3) on the vacuum generator
 - Tube (4) from vacuum generator to the pad
3. Open the air supply and activate the valve manually to measure the pressure.
4. As and when required adjust it on vacuum throttle valve (2).
5. Mount cover again.

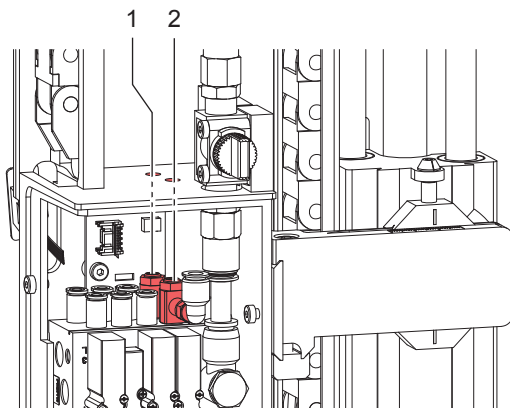


Fig. 21 Throttle valves support air and vacuum

**Attention!**

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

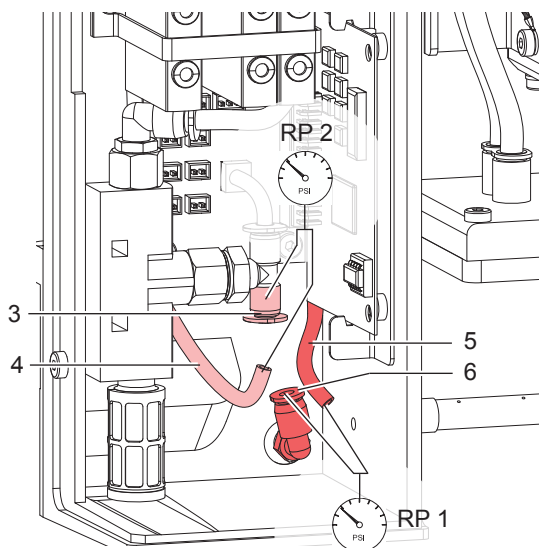


Fig. 22 Reading points to measure the pressure

5.4 Error Indication

The following table comprised possible sources of faults and possible proposals for fault clearance. Outer causes like lack of pressure air and malfunction of printer will be verified further.

Symptom	Cause and solution
Insufficient vacuum on pad	<ol style="list-style-type: none"> 1. In cyclical operation, the vacuum valve won't controlled. PCB Applicator Control defect ► Change PCB Applicator Control 2. There is no pressure at the outlet of the vacuum throttle valve or the pressure can't be controlled. ► Replace vacuum throttle valve. 3. It doesn't establish a vacuum on exit of the vacuum generator ► Replace the sound absorber if it soiled. 4. Leakage in the chain of vacuum ► Measurement like described in ▷5.2 ► Check the vacuum transmission elements and in case of failure replace it. 5. It doesn't establish a vacuum on exit of the vacuum generator ► Replace the vacuum generator in case of failure. 6. Not enough negative pressure at the suction plate. Suction channels at the suction plate, foil or absorbability plate clogged. ► Clean the suction channels and/or replace foil and absorbability plate respectively.
Fault in cylinder movement	<p>The state of valve control will shown via LED's on the valves.</p> <ol style="list-style-type: none"> 1. Cylinder will be not controlled. LED's glow in case of switching but valve doesn't work ► Replace valve ► Check connections, replace as necessary PCB's 2. There is no pressure at the outlet of each on cylinder mounted throttle valve or the pressure can't be controlled. ► Replace the fault throttle valve.
Loss of blow air	<ol style="list-style-type: none"> 1. The valve doesn't activated, LED at valve doesn't glow. PCB Applicator Control damaged ► Replace PCB Applicator Control 2. On pad doesn't exist enough pressure in case of activated valve. Pneumatic tubes fault ► Replace pneumatic tubes
Loss of applicator function	<ol style="list-style-type: none"> 1. Interface applicator-printer connector SUB-D15 doesn't connect accurate. ► Reestablish connection. 2. Breakdown pressure air. ► Check circuit points. 3. Applicator PCB Applicator Control damaged. ► Replace PCB Applicator Control.

Table 4 Troubleshooting and fault clearance

Symptom	Cause and solution
Loss of support air	<ol style="list-style-type: none"> 1. Valve will not controlled, LED doesn't glow. ➤ Operator's Manual - PCB Applicator Control defect ▶ Replace PCB Applicator Control 2. There is no pressure at the outlet of the support air throttle valve or the pressure can't be controlled. ▶ Replace support air throttle valve. 3. Not enough pressure air at blow tube in case of controlled valve. Pneumatic tubes fault ▶ Replace pneumatic tubes
Permanent error in transfer of labels to the pad (Error message: pad empty)	<ol style="list-style-type: none"> 1. Incorrect pad position in the start position compared to the printer's dispense edge. Backmost edge of pad approx. 1 mm over the printer's dispense edge. (➤ Operator's manual) 2. Temporary falling pressure in compressed air supply for the lift cylinder. (e.g. trough manipulate hand slide valves) ▶ Quit the error message 3. Vacuum to low and want of Vacuum at pad ▶ Adjust vacuum throttle valve. 4. Support air doesn't blow exactly the label to the pad. ▶ Adjust the blow tube for support air. ▶ Adjust pressure of support air via throttle valve 'support air'.
System not ready. Status LED (➤ chapter 5.2) lights permanent	<ol style="list-style-type: none"> 1. Pressure air supply not ready ▶ Check pressure air supply. Applicator not in start position ▶ Check sensor Start position. ▶ Check pressure air supply of the cylinder. ▶ Check valve for cylinder control.
Error message "Air pressure ins." in case of a correct pressure air supply	<ol style="list-style-type: none"> 1. Sensor pressure air defect ▶ Change PCB Applicator Interfaces
Permanent error message "Label not depos." with no label on pad or "Vac. plate empty" with covered pad	<ol style="list-style-type: none"> 1. Sensor vacuum defect ▶ Change PCB Applicator Interfaces

Table 4 Troubleshooting and fault clearance (continuance)

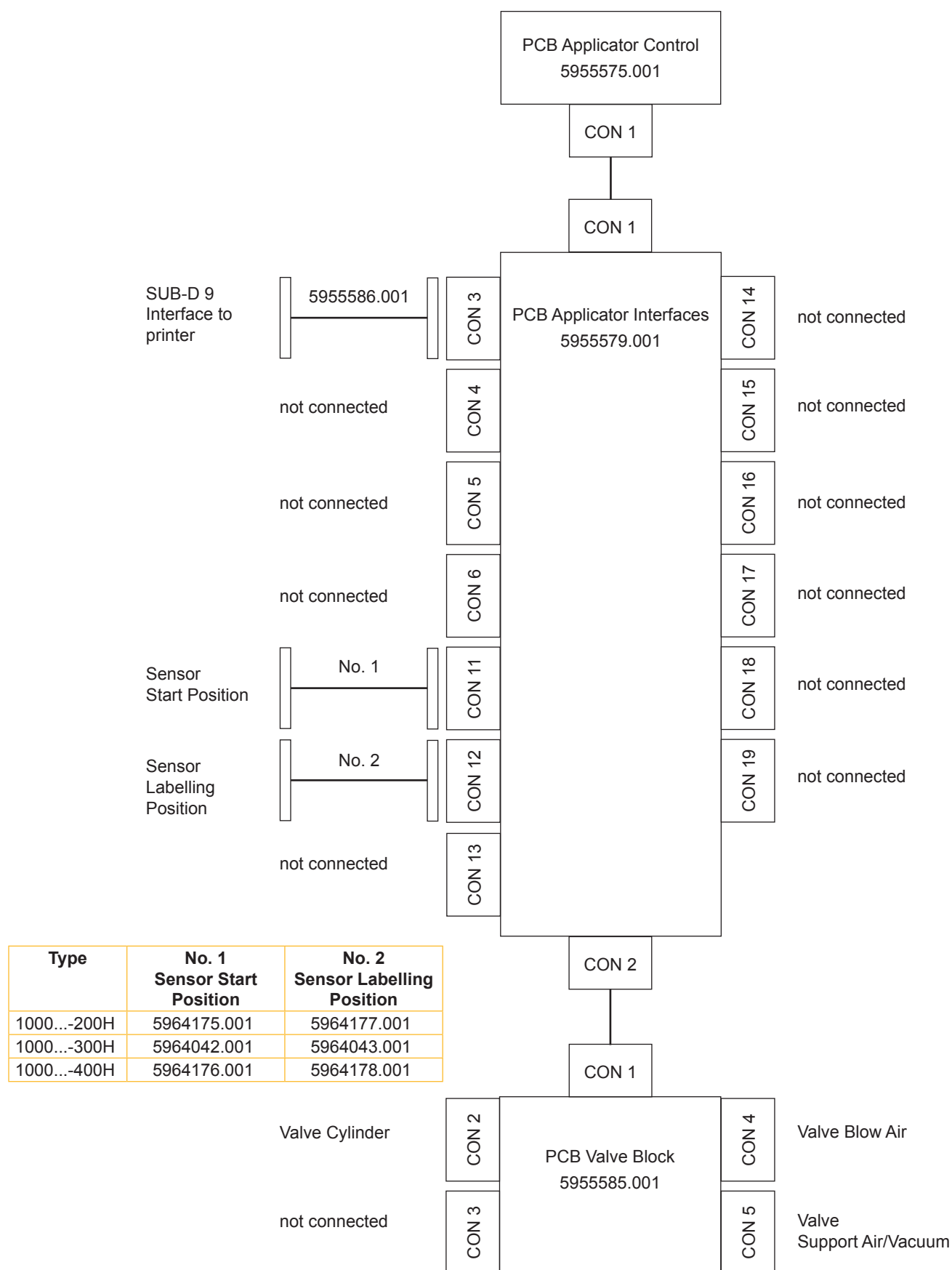


Fig. 23 Block Diagram. Applicator 1000

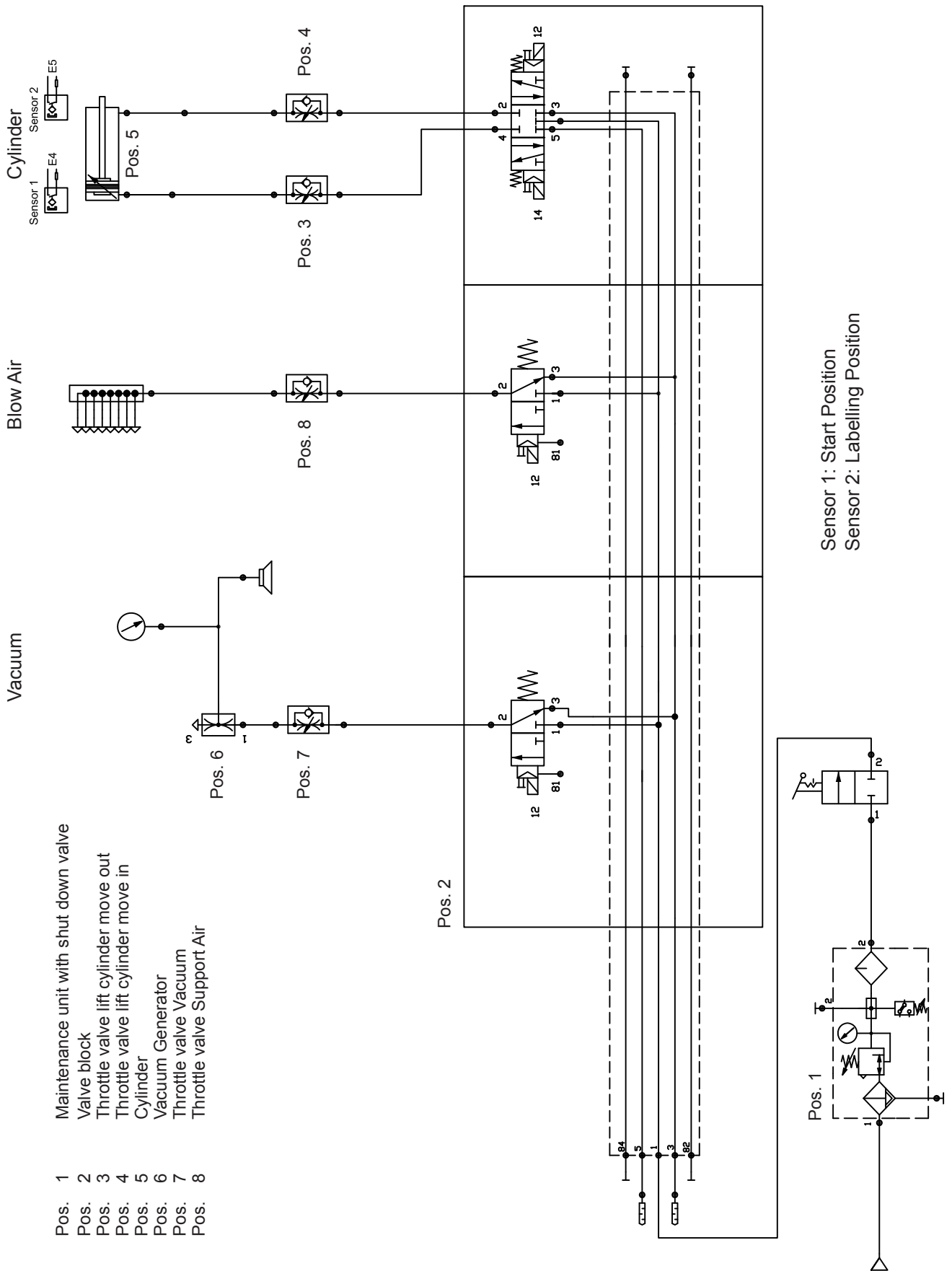


Fig. 24 Pneumatic Drawing Applicator 1000

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