

## CU4plus Direct Connect

CONTROL UNIT

FORM NO.: H343613 REVISION: GB-0

READ AND UNDERSTAND THIS MANUAL PRIOR TO OPERATING OR SERVICING THIS PRODUCT.





| <b>Content</b>   | <b>Page</b> |
|--|-------------|
| <b>1. Abbreviations and Definitions</b>                              | <b>4</b>    |
| <b>2. Safety Instructions</b>  | <b>4</b>    |
| 2.1. Sentinels   |             |
| 2.2. Intended use  |             |
| 2.3. General regulations for careful handling                        |             |
| 2.4. Welding instructions  |             |
| 2.5. Persons   |             |
| 2.6. Warranty  |             |
| <b>3. General Terms</b>  | <b>7</b>    |
| 3.1. Purpose of use  |             |
| 3.2. Design of CU4plus Direct Connect                                |             |
| 3.3. Function of the individual components                           |             |
| <b>4. Mechanics and Pneumatics</b>                                   | <b>10</b>   |
| 4.1. Air connections for turning actuator                            |             |
| 4.2. Air connections seat valves and double seat mix proof valves    |             |
| 4.3. Pressure relief valve   |             |
| 4.4. Functional description - block diagrams                         |             |
| 4.5. Technical data / Standards                                      |             |
| 4.6. Solenoid valves   |             |
| 4.7. Throttling function   |             |
| 4.8. NOT element   |             |
| <b>5. Adapter</b>  | <b>22</b>   |
| 5.1. Valves with turning actuator                                    |             |
| 5.2. Single seat valve   |             |
| 5.3. Double seat mix proof valve DE3, DA3+                           |             |
| 5.4. Double seat mix proof valves D4, D4 SL, D4 PMO, DA4             |             |
| 5.5. Double seat tank outlet valve DT4 SL                            |             |
| <b>6. Electronic Module</b>  | <b>24</b>   |
| 6.1. Function/block diagram  |             |
| 6.2. Functional description of connections                           |             |
| 6.3. Technical data  |             |
| 6.4. Connections   |             |
| 6.5. LED indication / Indicator lights                               |             |
| 6.6. Adjustement of valve profiles                                   |             |
| 6.7. Data signals  |             |
| 6.8. Service and Maintenance Software CU4plus Toolbox                |             |
| 6.9. Seat Pulsation - Efficiency in Cleaning                         |             |
| <b>7. Valve Position Indication</b>                                  | <b>41</b>   |
| 7.1. Continuously measuring valve position measuring system          |             |
| 7.2. Tolerance band of the valve position measuring system           |             |
| 7.3. Adjustment of valve position indication / Teach-in              |             |
| 7.4. Use of external sensors   |             |
| <b>8. CU Assembly and Startup</b>                                    | <b>44</b>   |
| 8.1. Valves with turning actuator                                    |             |
| 8.2. Single seat valve   |             |
| 8.3. Double seat valve DA3+ with activated Seat Lift Detection (SLD) |             |
| 8.4. Double seat mix proof valves D4, D4 SL, D4 PMO, DA4             |             |
| 8.5. Double seat tank outlet valve DT4 SL                            |             |
| <b>9. Accessories and Tools</b>                                      | <b>57</b>   |
| <b>10. Service</b>   | <b>58</b>   |
| 10.1. Dismantling  |             |
| <b>11. Trouble Shooting</b>  | <b>59</b>   |
| <b>12. Spare Parts Lists</b>   | <b>61</b>   |

## 1. Abbreviations and Definitions

|             |  |
|-------------|--|
| <b>A</b>    | <b>Exhaust air</b>                                   |
| <b>AWG</b>  | <b>American Wire Gauge</b>                           |
| <b>CE</b>   | <b>Communauté Européenne</b>                         |
| <b>CU</b>   | <b>Control Unit</b>                                  |
| <b>DI</b>   | <b>Digital Input</b>                                 |
| <b>DO</b>   | <b>Digital Output</b>                                |
| <b>EMC</b>  | <b>Electromagnetic Compatibility</b>                 |
| <b>EU</b>   | <b>European Union</b>                                |
| <b>GND</b>  | <b>Ground/mass potential</b>                         |
| <b>IP</b>   | <b>International Protection</b>                      |
| <b>LED</b>  | <b>Light Emitting Diode</b>                          |
| <b>N</b>    | <b>Pneumatic Air Connection NOT element</b>          |
| <b>NEMA</b> | <b>National Electrical Manufacturers Association</b> |
| <b>P</b>    | <b>Supply Air Connection</b>                         |
| <b>PELV</b> | <b>Protected Extra-Low Voltage</b>                   |
| <b>PWM</b>  | <b>Pulse-width modulation</b>                        |
| <b>Y</b>    | <b>Pneumatic Air Connection</b>                      |
| <b>SLD</b>  | <b>Seat Lift Detection / Seat Lift Gathering</b>     |

## 2. Safety Instructions

### 2.1. Sentinels

**Meaning:**



**Danger!**

Direct danger which can lead to severe bodily harm or to death!



**Caution!**

Dangerous situation which can lead to bodily harm and/or material damage.



**Attention!**

Risk as a result of electric current.



**Note!**

Important technical information or recommendation.

**These special safety instructions point directly to the respective handling instructions. They are accentuated by the corresponding symbol. Carefully read the instructions to which the sentinels refer. Continue handling the control unit only after having read these instructions.**

---

## 2. Safety Instructions

---

### 2.2. Intended use

The CU4plus Direct Connect control unit is only intended for use as described in chapter 3.1. Use beyond that described in chapter 3.1. do not comply with the regulations and SPX FLOW shall not be responsible for any damage resulting from this non-observance. The operator bears the full risk. Prerequisites for proper and safe operation of the control unit are the appropriate transport and storing as well as the professional assembly. Intended use also means the observance of operating, service and maintenance conditions.

### 2.3. General regulations for careful handling

To ensure a faultless function of the unit and a long service life, the information given in this instruction manual as well as the operating conditions and permissible data specified in the data sheets of the control unit for process valves should be strictly adhered to.

- The operator is committed to operating the control unit in faultless condition, only.
- Observe the general technical rules while using and operating the unit.
- Observe the relevant accident prevention regulations, the national rules of the user country as well as your company-internal operating and safety regulations during operation and maintenance of the unit.
- Switch off the electrical power supply before carrying out any work on the system!
- Note that piping or valves that are under pressure must not be removed from a system!
- Take suitable measures to prevent unintentional operation or impermissible impairment.
- Following an interruption of the electrical or pneumatic supply, ensure a defined and controlled re-start of the process!
- If these instructions are not observed, we will not accept any liability. Warranties on units, devices and accessories will expire!

## 2. Safety Instructions



### 2.4. Welding instructions

It is generally recommended to avoid welding work in process installation in which control units are installed and connected. If welding is nonetheless required, earthing of the electrical devices in the welding area is a necessity.



### 2.5. Persons

- Installation and maintenance work may only be carried out by qualified personnel and by means of appropriate tools.
- Qualified personnel must get a special training with regard to possible risks and must know and observe the safety instructions indicated in the instruction manual.
- Work at the electrical installation may only be carried out by personnel specialized in electrics!

### 2.6. Warranty

This document does not contain any warranty acceptance. We refer to our general terms of sale and delivery. Prerequisite for a guarantee is the correct use of the unit in compliance with the specified conditions of application.

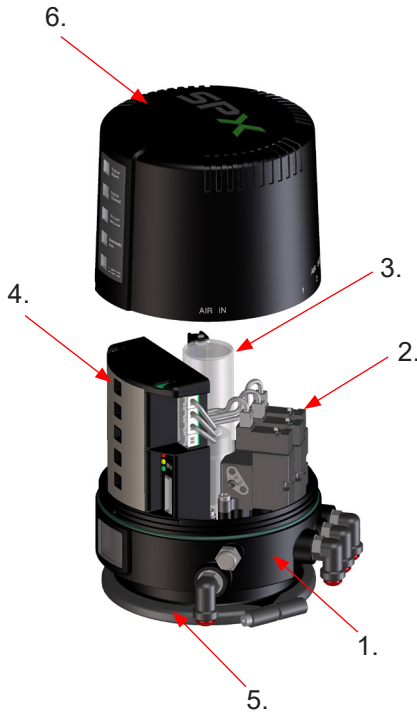


#### Note!

This warranty only applies to the Control Unit. No liability will be accepted for consequential damage of any kind arising from failure or malfunction of the device.

## 3. General Terms

fig. 3.2.



### 3.1. Purpose of use

The control unit CU4plus Direct Connect has been developed for the control of process valves in food processing industry as well as related industries.

The CU4plus Direct Connect control unit operates as interface between process control and process valve and controls the electric and pneumatic signals.

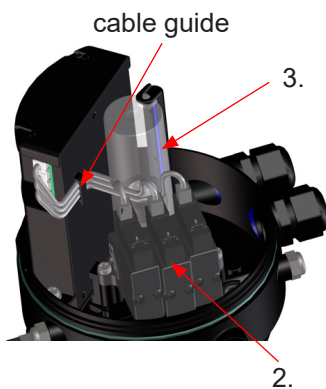
The pneumatic control of valves is undertaken via the solenoid valves. The control unit controls the valve positions, **open** and **closed**, via sensors. The electronic module undertakes the task to process the switching signal from the control and to control the corresponding solenoid valves. The electronic module also provides for potential-free contacts. The corresponding light signals in the control unit provide for an external indication of the valve positions.

### 3.2. Design of CU4plus Direct Connect (fig. 3.2.)

The CU4plus Direct Connect control unit consist of the following components:

1. The Control Unit base with integrated air channels and electric and pneumatic connections as well as viewing windows with type label.
2. 1 or 3 solenoid valves for the control of the valve actuators and for the seat lifting of double seat valves.
  - 1 solenoid valve with 1 logic NOT element for the control of the valve actuators.
3. Sensor module with integrated position measuring system for the detection of the valve position.
4. Electronic module for the electric supply, for the Direct Connect communication with the PLC, evaluation of feedback signals and control of solenoid valves as well as valve position indication through LED.
5. Clamp ring to fasten the CU4plus on the adapter.
6. Cover with LED optics.

fig. 3.2.1



The cable/s by means of which the solenoid valves are connected with the electronic module must be guided through the cable guide at the rear side of the electronic module. (fig. 3.2.1).

## 3. General Terms

### 3.3. Function of the individual components

The installation of the control unit is undertaken by special adapters which are available for the different valves types, see **chapter 5**. Adapter. The snap connectors for supply air and pneumatic air to the individual cylinders at the valves are located at the outside of the control unit. At the control units for valves with turning actuator, the pneumatic air is transferred internally to the actuator. The air supply of the control unit is equipped with an exchangeable air filter. Observance of the required compressed air quality is imperative. Please also see **chapter 4.5** Technical Data.

The number of the solenoid valves installed in the CU4plus depends on the valve actuators to be controlled. Single seat and butterfly valves and double seat valves without seat lift function require 1 solenoid valve.

Control units for double seat valves equipped with 3 solenoid valves. For the manual actuation, the solenoid valves are provided with a safe handle which is easy to operate.

The electronic module installed in the control unit fulfils the task to process the electric signals from the control, to control the solenoid valves and to evaluate the feedback signals from the feedback unit. Moreover, the signalling and indication of the valve positions as well as additional diagnostic functions are undertaken via the electronic module.

The electronic module is the interface between control actuators or sensors. Communication is undertaken via Direct Connect wiring with single parallel cables.

Valve position detection is realized via linear sensors which are integrated in the sensor module.

Control is effected via the solenoid switch cam mounted to the valve actuator rod. The measuring range of the linear sensor detects the complete valve stroke. By means of the Teach-in function, the corresponding position for closed and open valve position are detected and seat lift positions are permanently saved in the electronic module if required. (see **chapter 7.3** Teach-in function)

For DA3+ double seat valves with active seat lift detection (SLD) additionally to the linear sensor integrated in the CU, two external proximity switches installed at the valve actuator are required. The corresponding signals of the linear sensor as well as external proximity switches are evaluated in an internal logic circuit and, thus, the corresponding valve position indications are generated. (see **chapter 6.7**. Data signals, PLC communication)

For the D4 valve generation, additionally to the linear sensor integrated in the control unit, an additional sensor is installed in the lower part of the sensor tower.



---

## 3. General Terms

---

### 3.3. Function of the individual components

The luminous diodes are located on the front side of the electronic module. Their signals are visibly indicated to the outside by an optical window in the cover the control unit. Beside the open and closed valve position, the existence of the operating voltage as well as different diagnostic information are indicated. **Chapter 6.6.** LED indicators provides more details.

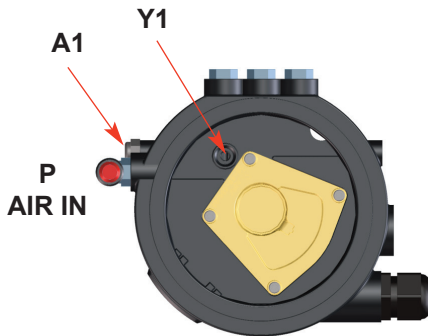
The complete control unit has been designed on the building block principle. By exchange of the electronic module, the control type can be changed, e.g. from direct control (Direct Connect) to communication with AS-Interface.



**Note!** Wiring must be changed!

## 4. Mechanics and Pneumatics

### 4.1. Air connections for turning actuator



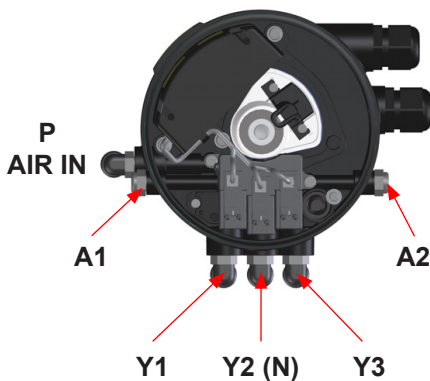
#### 4.1.1. Function

##### CU41plus-T DC

**design for valve with turning actuator, e.g. butterfly valves**

- P air supply with integrated particle filter
- Y1 bore to transfer control air to turning actuator
- A1 exhaust air, with exhaust silencer

### 4.2. Air connections seat valves and double seat mix proof valves



#### 4.2.1. Function

##### CU41plus-S DC

**design for seat valves**

- P air supply with integrated particle filter
- Y1 pneumatic air connection for main actuator
- A1 exhaust air with silencer

##### CU41Nplus-S DC

**design for seat valves with NOT element**

- P air supply with integrated particle filter
- Y1 pneumatic air connection for main actuator
- N pneumatic air connection for the spring support of the actuator by compressed air via NOT element
- A1 exhaust air with silencer

##### CU41plus-M DC

**design for DE3 double seat valves without seat lift function**

- P air supply with integrated particle filter
- Y1 pneumatic air connection for main actuator
- A1 exhaust air with silencer

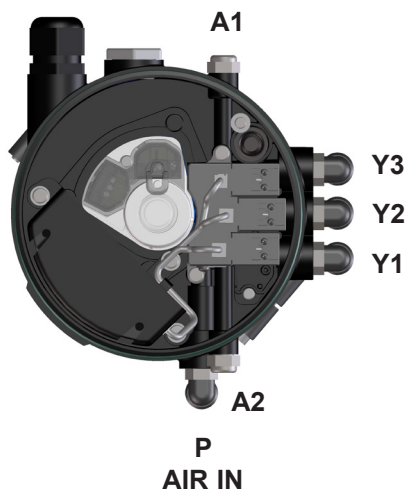
##### CU43plus-M DC

**design for DA3+ double seat valves with seat lift function**

- P air supply with integrated particle filter
- Y1 pneumatic air connection for main actuator
- Y2 pneumatic air connection for seat lift actuator of upper seat lifting
- Y3 pneumatic air connection for seat lift actuator of lower seat lifting
- A1/A2 exhaust air with silencer

## 4. Mechanics and Pneumatics

### 4.2.1. Function



#### CU41plus-D4

**design for D4 double seat mix proof valves without seat lift function**

- P air supply with integrated particle filter
- Y1 control air connection for main actuator
- A1 exhaust air, with exhaust silencer

#### CU43plus-D4

**design for D4 SL, D4 PMO, DA4, DT4 SL double seat mix proof valves with seat lift function**

- P air supply with integrated particle filter
- Y1 control air connection for main actuator
- Y2 pneumatic air connection for seat lift actuator of upper seat lifting
- Y3 pneumatic air connection for seat lift actuator of lower seat lifting
- A1/A2 exhaust air, with exhaust silencer

---

## 4. Mechanics and Pneumatics

---

### 4.3. Pressure relief valve

The base of the control unit is equipped with a pressure relief valve which prevents an inadmissible pressure build-up in the inner control unit.

If required, the pressure relief valve vents into the clearance between the base and the adapter of the control unit.



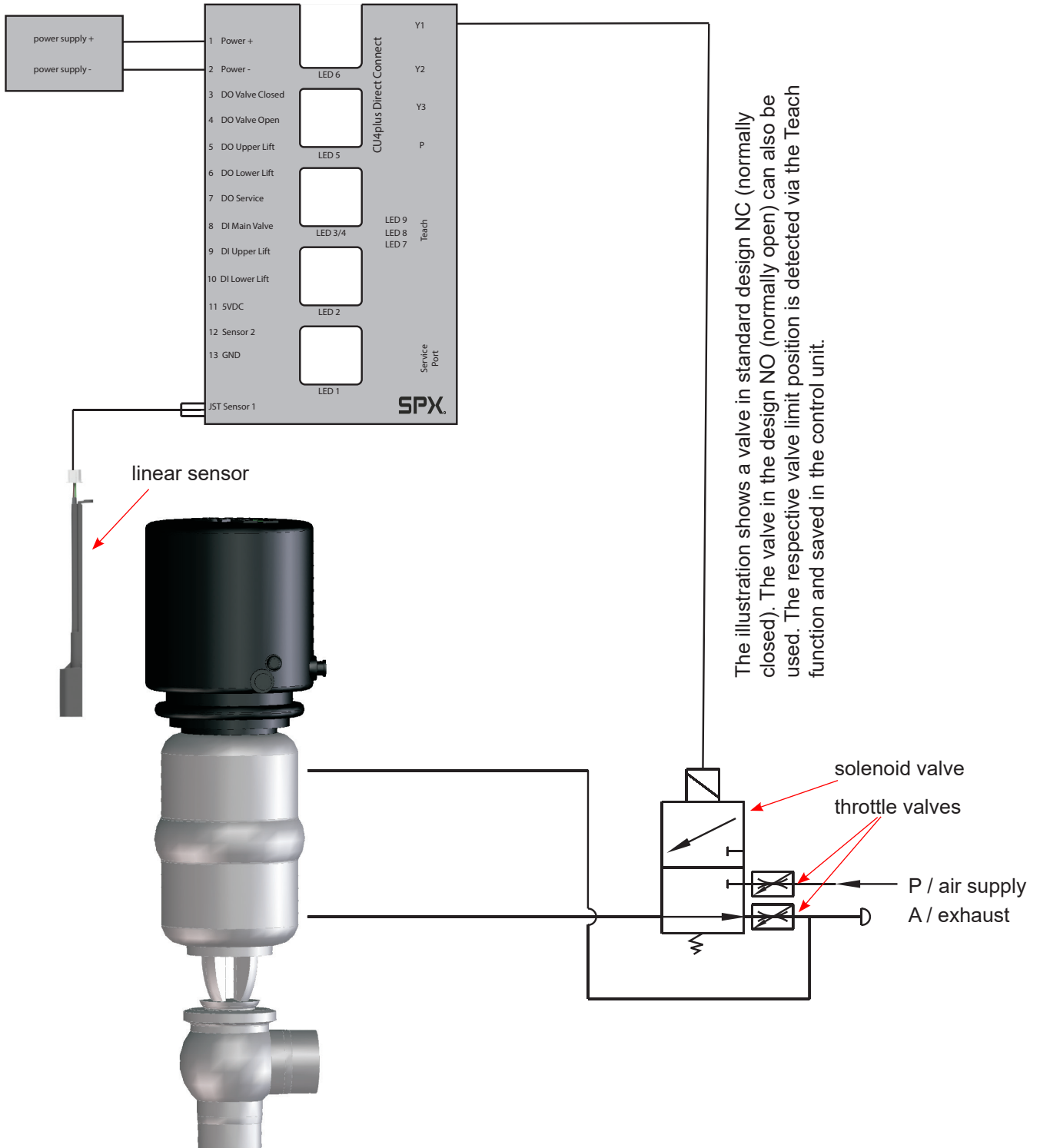
**The pressure relief valve must not be mechanically blocked under any circumstances.**

## 4. Mechanics and Pneumatics

### 4.4. Functional description - block diagrams

#### 4.4.1. CU41plus Direct Connect (internal position measuring system)

Valve types: SW4, MS4, SV1, SVS1F

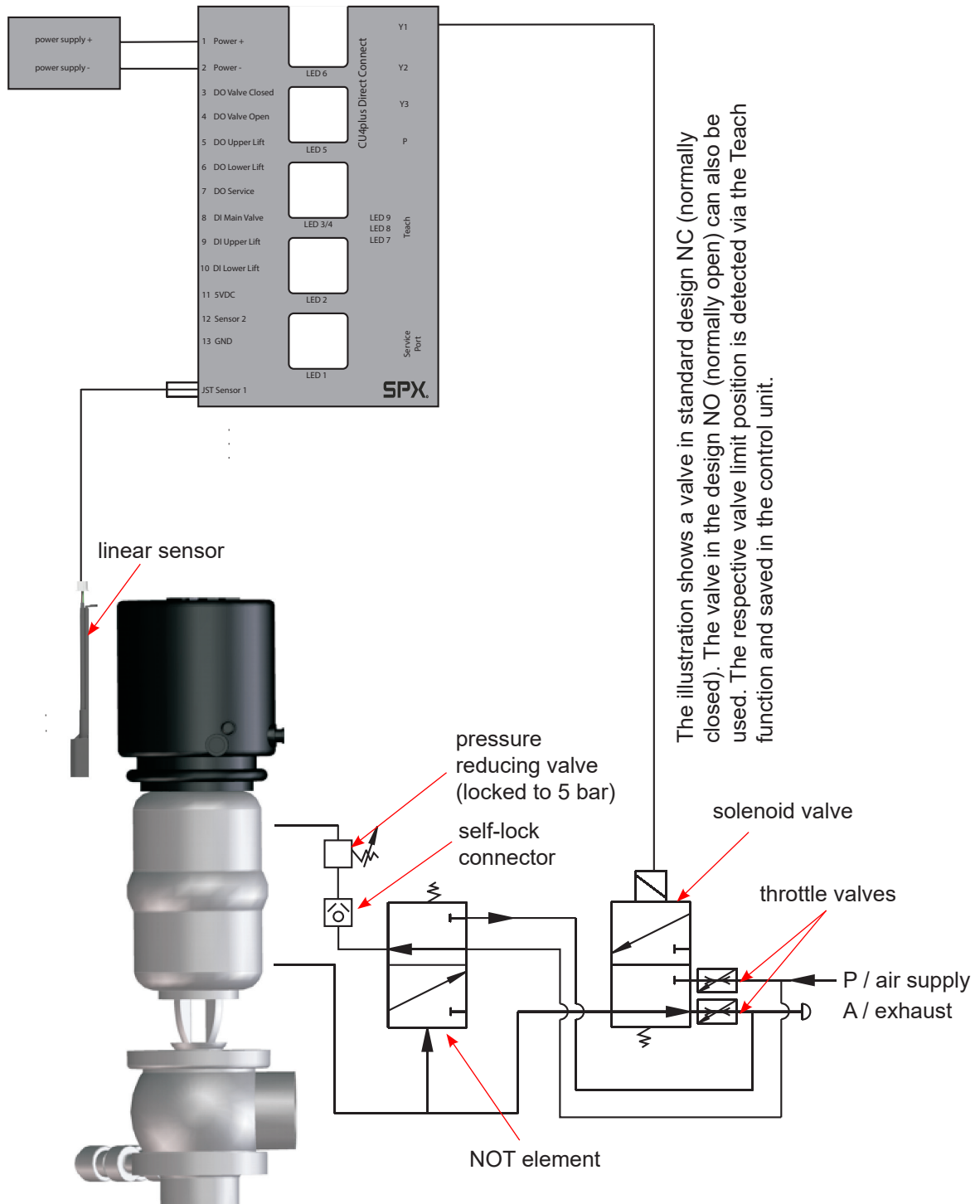


## 4. Mechanics and Pneumatics

### 4.4. Functional description - block diagrams

#### 4.4.2. CU41Nplus Direct Connect (internal position measuring system)

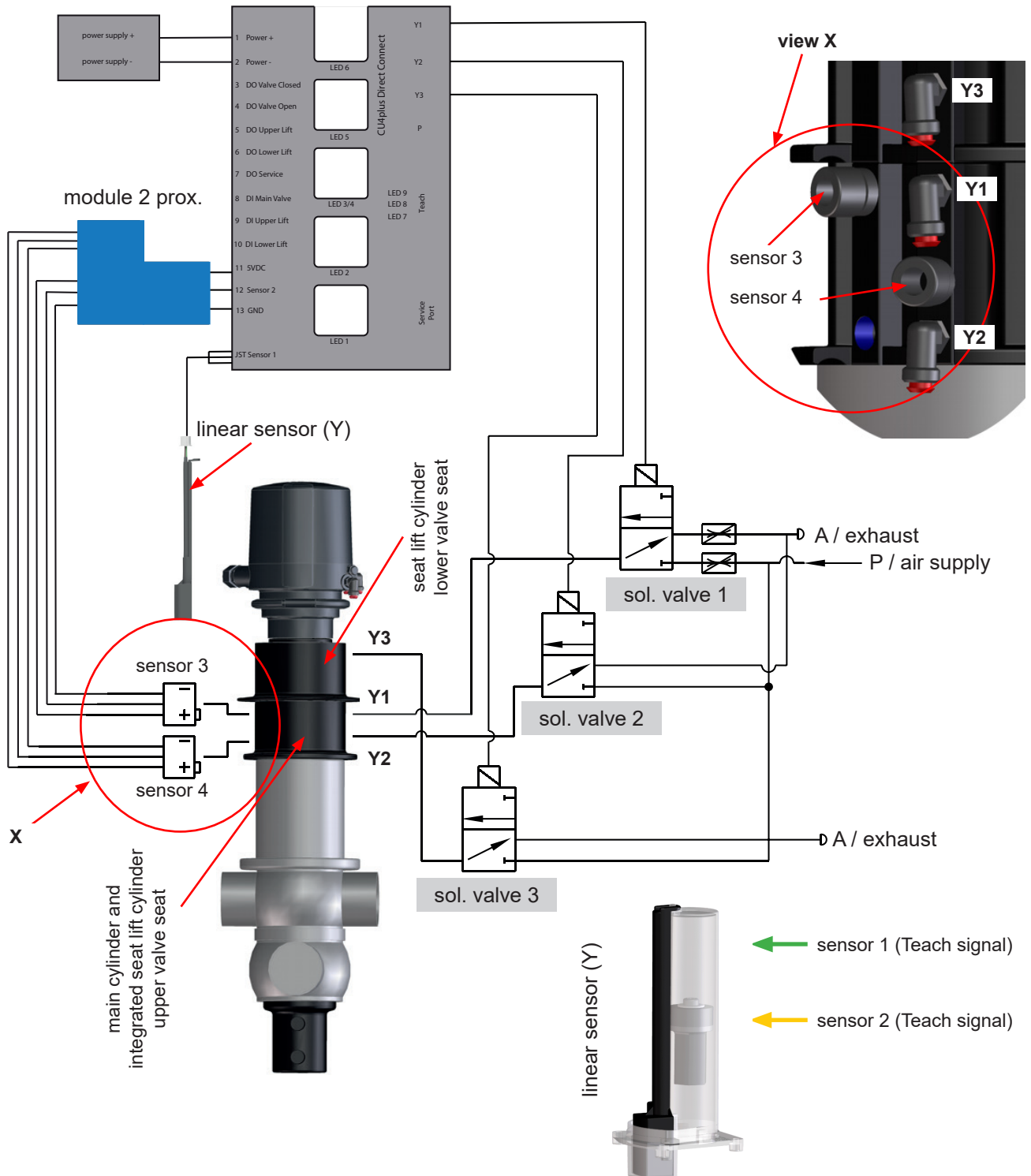
Valve type: SD4



## 4. Mechanics and Pneumatics

### 4.4. Functional description - block diagrams

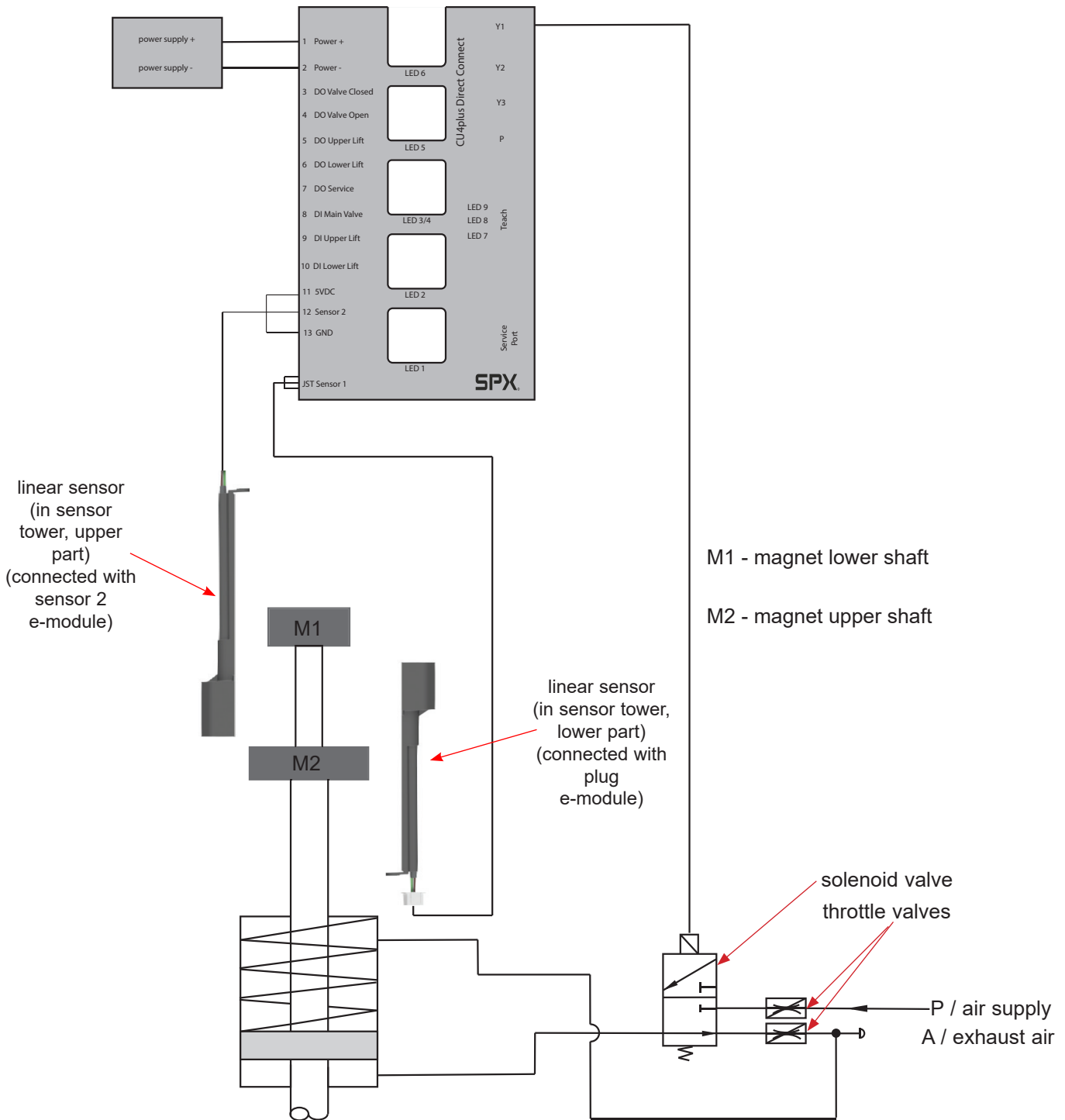
#### 4.4.3. CU43plus Direct Connect for DA3+SLD double seat valve (internal position measuring system and 2 external proximity switches)



## 4. Mechanics and Pneumatics

### 4.4. Functional description - block diagrams

#### 4.4.4. CU41plus-D4 for D4 double seat mix proof valves

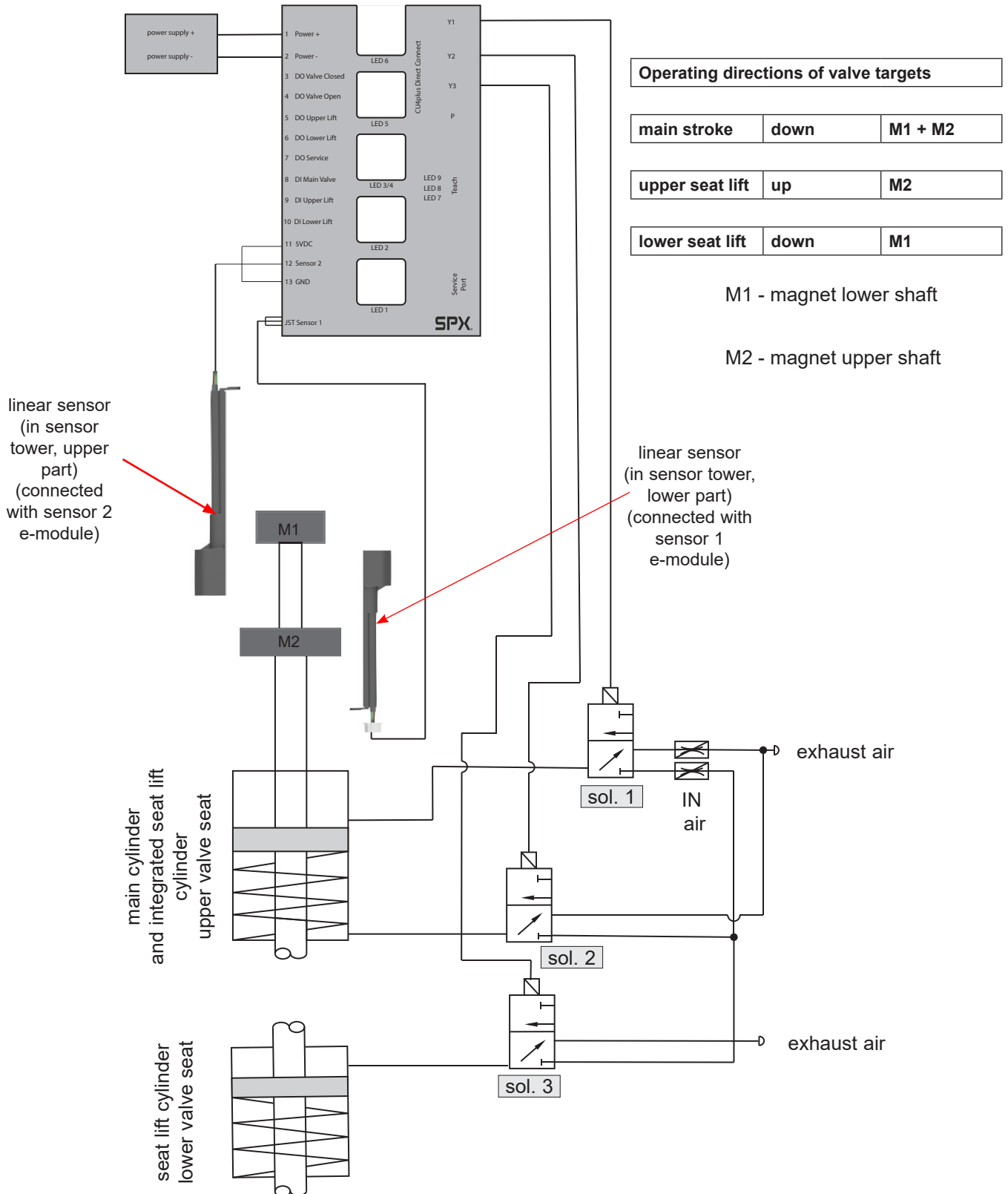




## 4. Mechanics and Pneumatics

### 4.4. Functional description - block diagrams

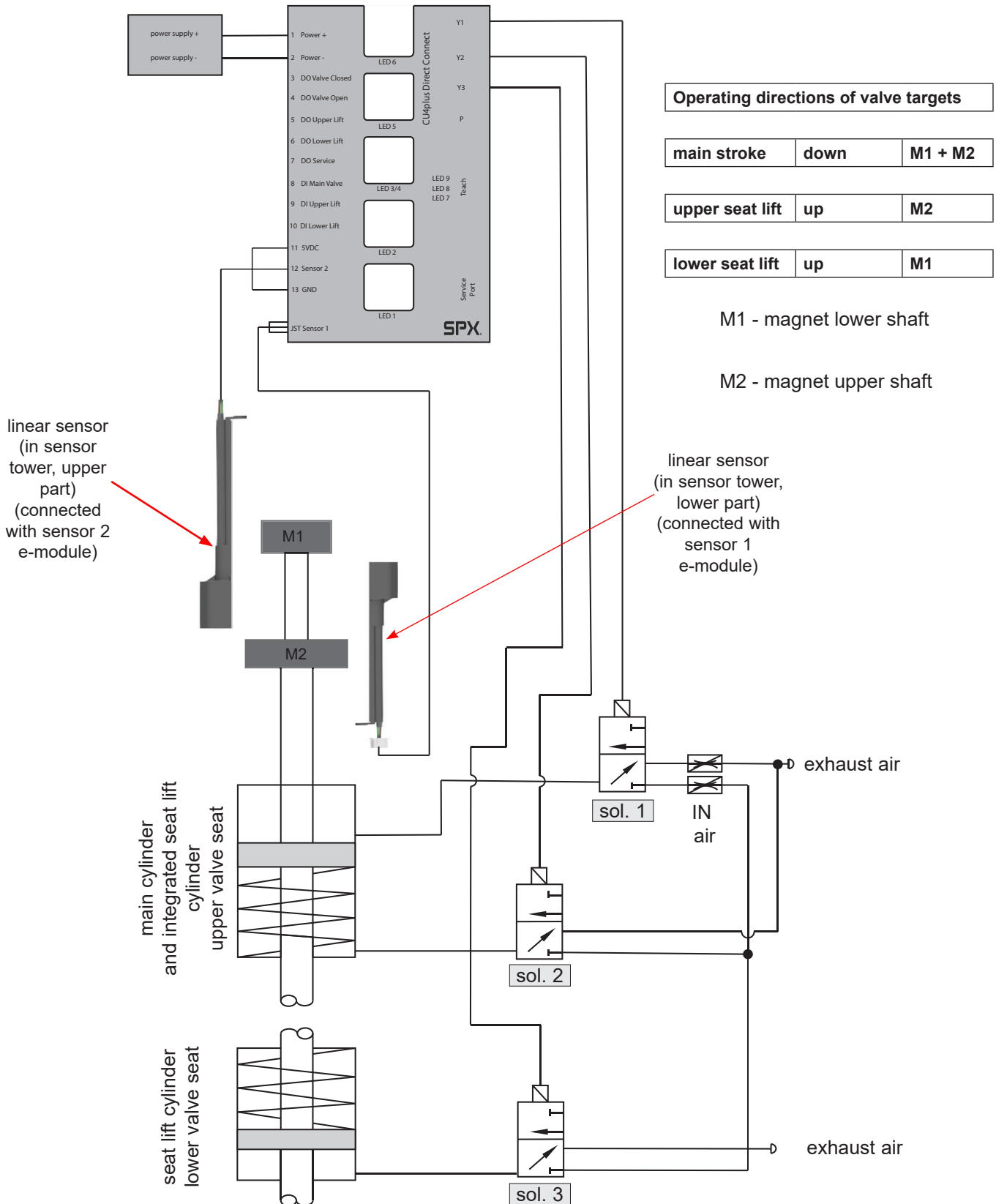
#### 4.4.5. CU43plus-D4 for D4 SL double seat mix proof valves



## 4. Mechanics and Pneumatics

### 4.4. Functional description - block diagrams

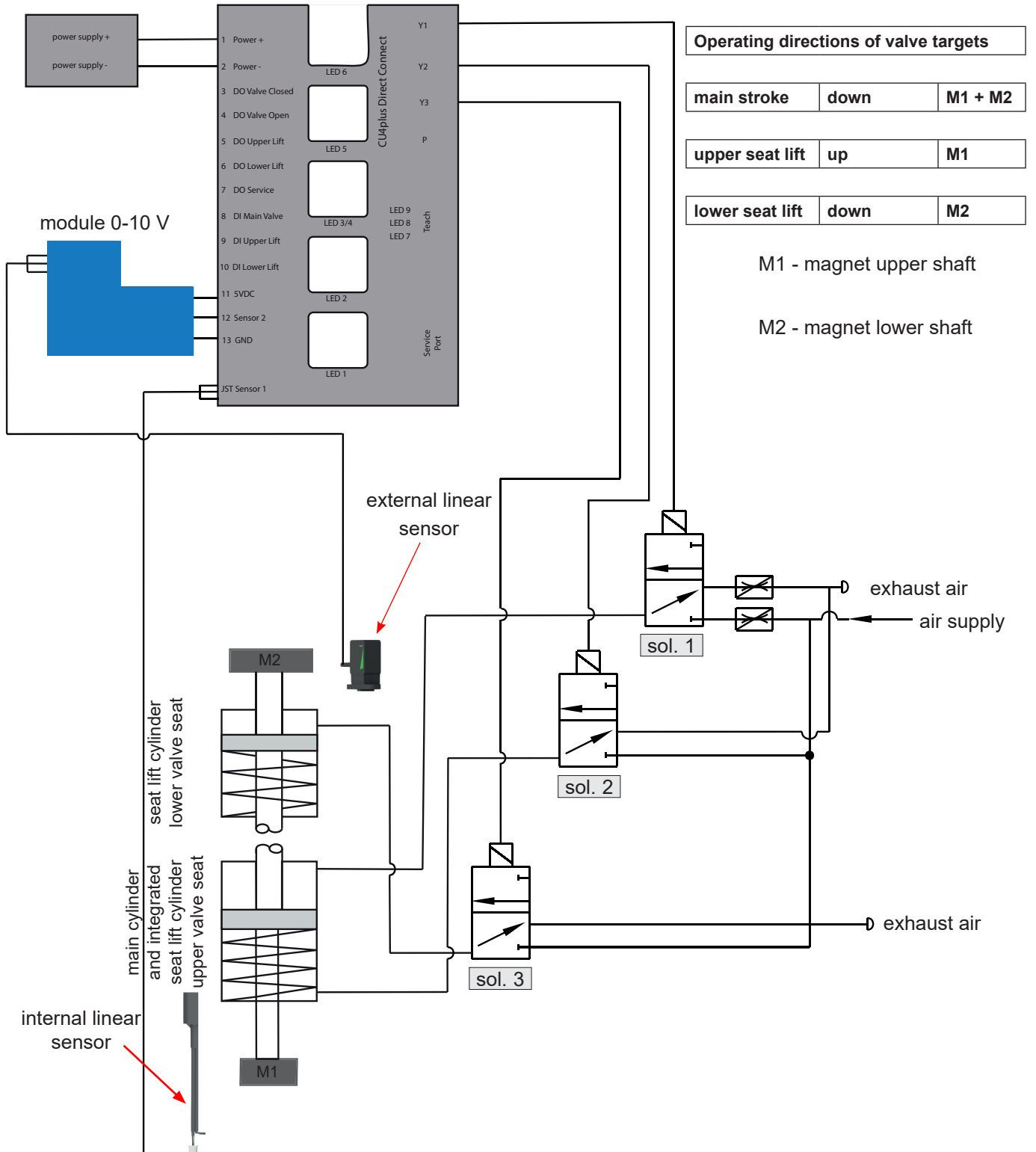
#### 4.4.6. CU43plus-D4 for DA4 double seat mix proof valves



## 4. Mechanics and Pneumatics

### 4.4. Functional description - block diagrams

#### 4.4.7. CU43plus-D4 for DT4 SL double seat tank outlet valves



## 4. Mechanics and Pneumatics

### 4.5. Technical data / Standards

|                             |                              |
|-----------------------------|------------------------------|
| <b>Material:</b>            | PA6.6/PA12                   |
| <b>Ambient temperature:</b> | -20 to +70 °C, -4 to +158 °F |
| <b>EU:</b>                  | EMC 2014/30/EU (89/336/EEC)  |

**Standards and environmental audits:**

protective class IP 67 EN 60529/  
 complies with NEMA 6  
 EMC  
 DIN EN 55011  
 DIN EN 6100-4-2,3,4,5,6

vibration/oscillation EN60068-2-6

safety of machinery DIN EN ISO  
 13849-1,2

**Air hose:** 6 mm / ¼" OD

**Pressure range:** 6–8 bar

**Compressed air quality:** quality class acc. to DIN ISO 8573-1

- **content of solid particles:** quality class 3,  
 max. size of solid particles per m<sup>3</sup>  
 10000 of 0,5 µm < d < 1,0 µm  
 500 of 1,0 µm < d < 5,0 µm
- **content of water:** quality class 3,  
 max. dew point temperature -20 °C  
 For installations at lower temperatures  
 or at higher altitudes, additional  
 measures must be considered to reduce  
 the pressure dew point accordingly.
- **content of oil:** quality class 1,  
 max. 0,01 mg/m<sup>3</sup>

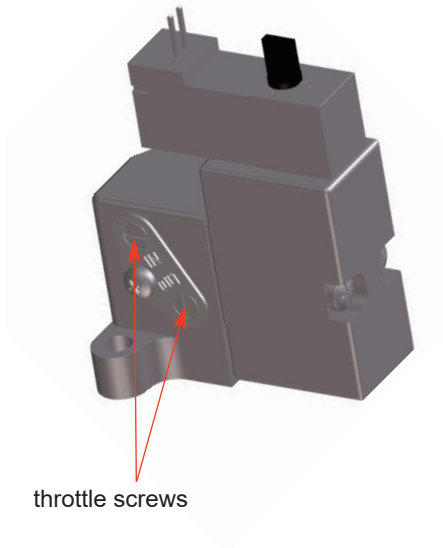
**The oil applied must be compatible with Polyurethane elastomer materials.**

## 4. Mechanics and Pneumatics

### 4.6. Solenoid valves

In the base of the control unit max. 3 solenoid valves are installed. The 3/2-way solenoid valves are connected with the electronic module by moulded cables and plug connector.

**control:** PWM signal  
**handle:** rotary switch at valve



### 4.7. Throttling function

The operating speed of the valve actuator can be varied or reduced. This may be necessary to slacken the actuation of the valve in order to prevent pressure hammers in the piping installation. For this purpose, the supply and exhaust air of the **first solenoid valve** can be adjusted via the throttling screws respectively allocated in the interface of the solenoid valve. By turning the screws in anticlockwise direction, the inlet or outlet air is throttled.

### 4.8. NOT element

Through the installation of the logic NOT element, the closing force of the valve actuator can be increased by additional compressed air. The NOT element conveys the compressed air via an external reducing valve (max. 5 bar) to the spring side of the valve actuator.

**The pressure reducing valve is fixed to 5 bar.**



#### Note!

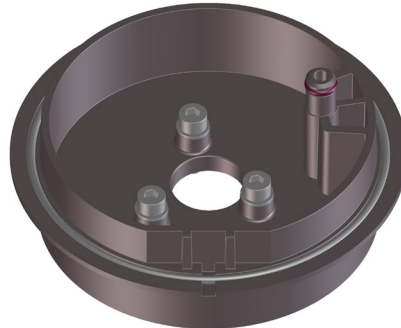
The air connection of the NOT element is equipped with an integrated non-return valve. The air hose must be slid into the air connection until it stops in order to open the non-return valve.

The NOT element is also used for air/air - actuators.

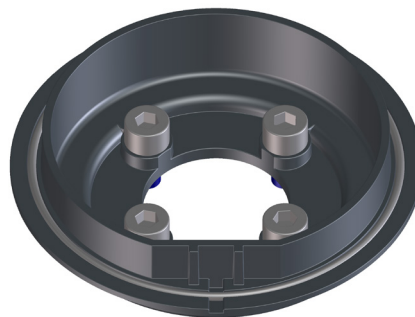
## 5. Adapter

Adapter for different process valves

### 5.1. Valves with turning actuator, e.g. butterfly valve



### 5.2. Single seat valve



### 5.3. Double seat mix proof valve DE3, DA3+



### 5.4. Double seat mix proof valves D4, D4 SL, D4 PMO, DA4



## 5. Adapter

Adapter for different process valves

### 5.5. Double seat tank outlet valve DT4 SL

#### 5.5.1. DT4 - 62 adapter



#### 5.5.2. DT4 - 92 adapter



---

## 6. Electronic Module

---

### 6.1. Function/block diagram

The electronic module of the SPX FLOW CU4plus Direct Connect control unit is designed to be part of the PLC Input/Output system. It should be supplied with the same protected power supply as the other I/O devices. This power supply should not be used for other kinds of loads. The unit is reverse polarity and short cut protected. The power supply must meet EN 61131-2.

For mix proof valves of the D4 family the electronic module works with 2 SPX linear sensor systems.

For single seat valves and butterfly valves the electronic module only works with 1 SPX linear sensor system.

For special valves or previous valve generations the electronic module can also work with 2 SPX proximity switches or in combination of proximity switches and linear sensor.

Make sure that only SPX feedback sensors are used with the CU4plus DC electronic module.

PNP/NPD polarity

PNP (sourcing) or NPN (sinking) function can be selected with PC software Toolbox. Delivery default is PNP.

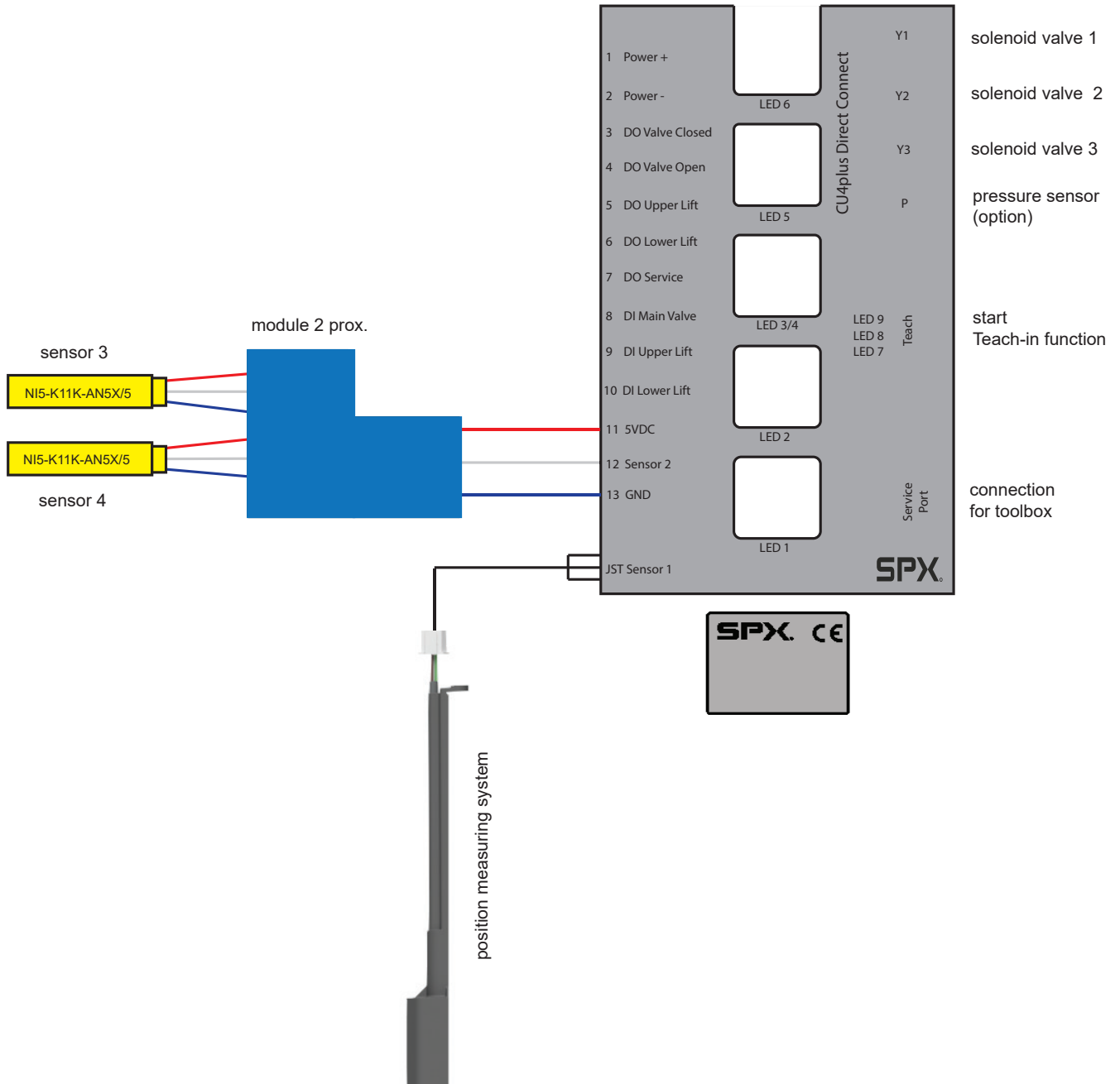
Please refer to chapter 6. Electronic module / Technical Data.



## 6. Electronic Module

### 6.1. Function/block diagram

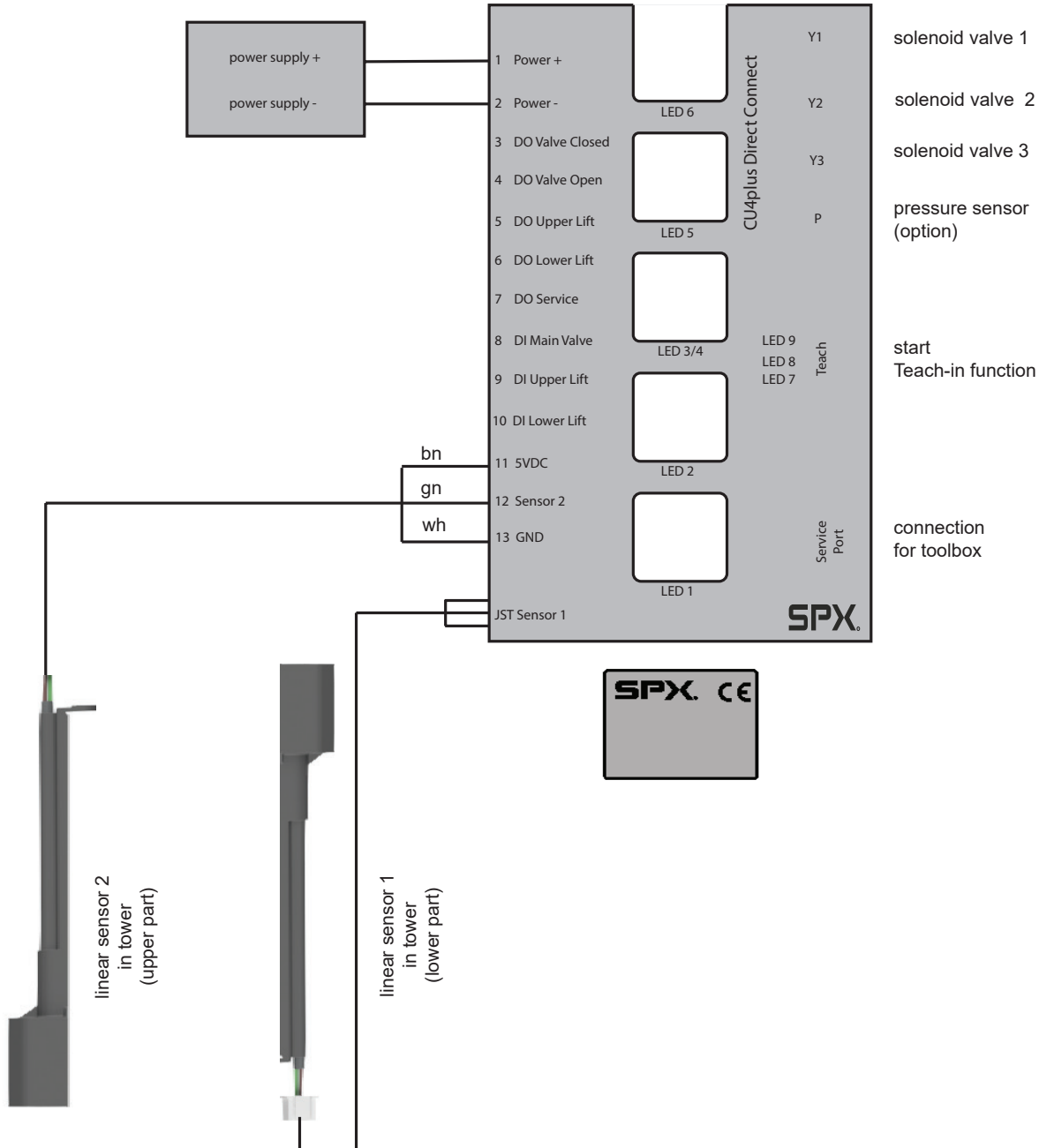
#### 6.1.1. CU43plus Direct Connctect - DA3+



## 6. Electronic Module

### 6.1. Function/block diagram

#### 6.1.2. CU41plus-D4 CU43plus-D4



## 6. Electronic Module

### 6.2. Functional description of connections

| Terminal      | Designation       | Functional Description                              |
|---------------|-------------------|---|
| 1             | Power+            | power supply 24VDC+                                 |
| 2             | Power-            | power supply 24VDC-                                 |
| 3             | O0 Digital Output | PLC input valve status / closed                     |
| 4             | O1 Digital Output | PLC input valve status / open                       |
| 5             | O2 Digital Output | PLC input valve status / upper seat lift            |
| 6             | O3 Digital Output | PLC input valve status / lower seat lift            |
| 7             | SV Digital Output | PLC input service request                           |
| 8             | I0 Digital Input  | PLC output to activate solenoid 1 / main valve      |
| 9             | I1 Digital Input  | PLC output to activate solenoid 2 / upper seat lift |
| 10            | I2 Digital Input  | PLC output to activate solenoid 2 / lower seat lift |
| 11            | +5VDC             | supply voltage for SPX prox. sensor / linear sensor |
| 12            | S                 | signal SPX prox. sensor                             |
| 13            | 0V                | potential for SPX prox. sensor / linear sensor      |
| linear sensor |                   |   |
| Y1            | PWM Output        | solenoid valve 1 (main valve)                       |
| Y2            | PWM Output        | solenoid valve 2 (upper seat lift)                  |
| Y3            | PWM Output        | solenoid valve 3 (lower seat lift)                  |
| service port  |                   | connection serial/USB converter for CU4plus toolbox |

## 6. Electronic Module

### 6.3. Technical data

Power supply: 24 VDC +/- 20%

Typical power consumption:

No solenoid active, 1 feedback active 75 mA

1 solenoid active, 1 feedback active 85 mA

Signal voltage inputs max. 30 VDC

Input impedance 6 kOhm, linear (ohmic characteristic curve)

#### PNP input

switching threshold ON  $\geq 12\text{ V} / \geq 2\text{ mA}$

switching threshold OFF  $\leq 10\text{ V} / \leq 1,6\text{ mA}$

voltage output ON  $\geq U+ - 2\text{V}$

output current  $\leq 100\text{ mA}$

Current is limited by overload protection. In case of overload, the service request is set.

#### NPN input

switching threshold ON  $\leq 12\text{ V} / \geq 1,8\text{ mA}$

switching threshold OFF  $\geq 14\text{ V} / \leq 1,4\text{ mA}$

voltage output ON  $\leq 2\text{ V}$

output current  $\leq 100\text{ mA}$

Current is limited by overload protection. In case of overload, the service request is set.

Supply of solenoids PWM controlling signal from electronic module

Supply of sensors 5 VDC, 4,75...5,25V (sum of all currents < 40mA)



#### **Caution!**

The sensor inputs and the peripheral supply must not be connected with installation-GND.

Connecting terminals: conductor cross section 0.5 – 1,0 mm<sup>2</sup> (with conductor sleeve) complying with AWG 20-17 (max. 11 mm)

## 6. Electronic Module

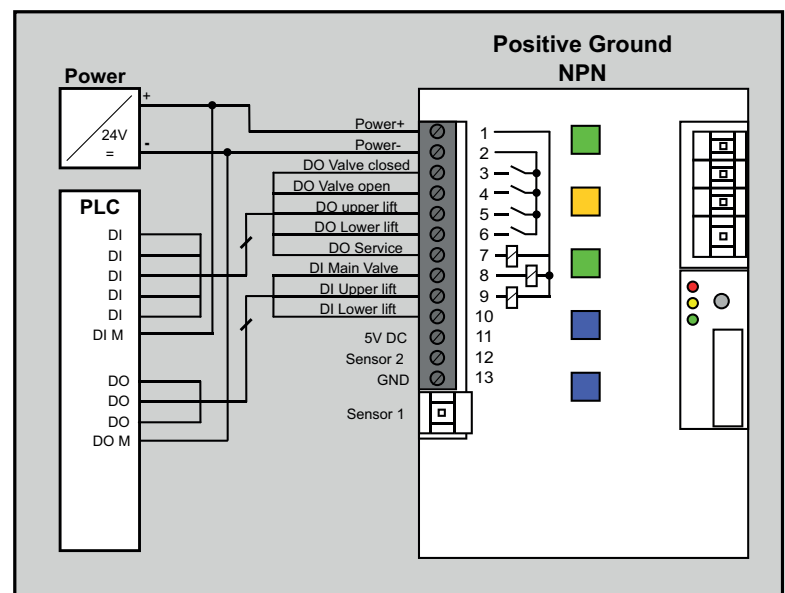
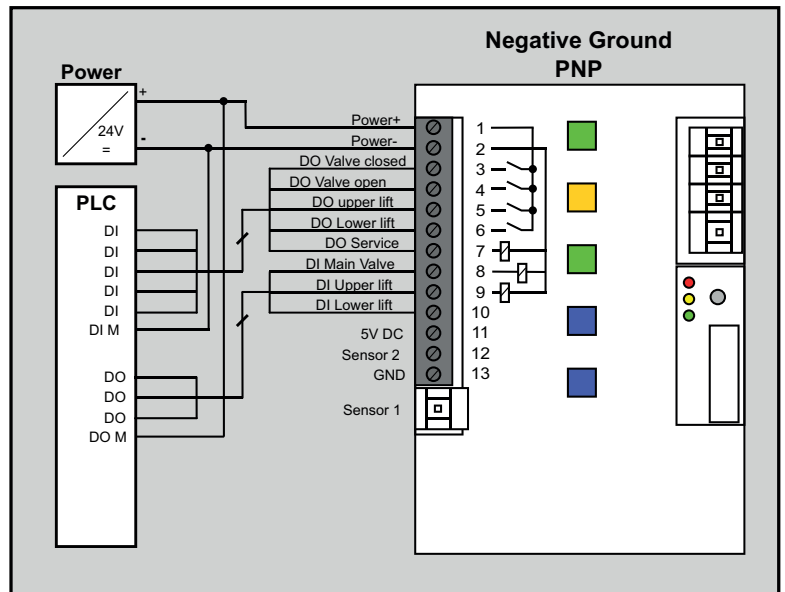
### 6.4. Connections

#### Sensors for valve position detection:














**Internal sensors:** internal linear sensor SPX FLOW type switching distance acc. to SPX FLOW specification

**Internal hall sensors:** "magnetic hall sensor"  
SPX FLOW UB 4.75 - 5.25 VDC switching distance acc. to SPX FLOW specification

**External sensors:** inductive proximity switch  
SPX FLOW UB 4.75-5.25 VDC switching distance acc. to SPX FLOW specification



## 6. Electronic Module

| 6.5. LED indication / Indicator lights |                                    |                             |  |   |
|--|------------------------------------|-----------------------------|--|---|
| LED 1                                  | solenoid valve 2 / upper seat lift | blue, 1 blink               |     | solenoid valve 2 controlled upper seat * <b>lifted</b>                      |
|  | solenoid valve 3 / lower seat lift | blue, 2 blinks              |    | solenoid valve 3 controlled lower seat * <b>lifted</b>                      |
| LED 2                                  | sol. valve 1 /main valve           | blue, 2 blinks              |    | main valve controlled   |
| LED 3/4                                | power and diagnosis                | green, permanent light      |    | operating voltage ok, no failure  |
| LED 3/4                                | power and diagnosis                | green / red alternate blink |    | Teach required  |
| <b>together with</b>                   |                                    |                             |  |   |
| LED 5/6                                | valve open / closed                | green / orange blink        |    |   |
| LED 3/4                                | power and diagnosis                | green / red alternate blink |    | service request caused by: solenoid valve wiring open loop or short circuit |
| <b>together with</b>                   |                                    |                             |  |   |
| LED 8                                  | service request                    | yellow, permanent light     |  |   |
| LED 5                                  | valve closed                       | orange, permanent light     |  | valve closed  |
| LED 6                                  | valve open                         | green, permanent light      |  | valve open  |
| LED 7                                  | pressure signal (option)           |                             |  |   |
| LED 8                                  | service request                    | yellow, permanent light     |  | imminent service request  |
| LED 9                                  | Teach-in                           | red, permanent light blink  |  | Teach-in is running<br>Teach-in required                                    |
| LED Y1                                 | solenoid valve 1                   | permanent light             |  | controlled  |
| LED Y2                                 | solenoid valve 1                   | permanent light             |  | controlled  |
| LED Y3                                 | solenoid valve 1                   | permanent light             |  | controlled  |

**\* Depending on the adjusted mode!**

## 6. Electronic Module

### 6.6. Adjustment of valve profiles

The adjustment of valve profiles is carried out with the Service Software CU4plus Toolbox (see CU4plus Toolbox manual). For the different process valves different logic profiles exist. These differ in view of the detection of the feedback and the logic profile of the valve.

#### Valve profile:

| Type | Valve profile   | Valve position measuring system                          | Tolerance band                 | Valve basic position NO/NC | Invert - valve position indication | Number of solenoids |
|------|---|--|--------------------------------|----------------------------|------------------------------------|---------------------|
| 0    | Mix proof valve DA4   | 2 internal linear sensors                                | fixed<br>+/- 1 mm              | NC only                    | possible                           | always 3            |
| 1    | Mix proof valve D4  | 2 internal linear sensors                                | fixed<br>+/- 1 mm              | NC only                    | possible                           | always 1            |
| 2    | Mix proof valve D4 SL   | 2 internal linear sensors                                | fixed<br>+/- 1 mm              | NC only                    | possible                           | always 3            |
| 6    | Mix proof valve with seat lift detection (SLD)                        | internal linear sensor and 2 external proximity switches | fixed<br>+/- 1 mm              | NC only                    | possible                           | always 3            |
| 7    | Mix proof valve with seat lift detection (SLD) CU3 compatibility mode | internal linear sensor and 2 external proximity switches | fixed<br>+/- 1 mm              | NC only                    | possible                           | always 3            |
| 8    | Mix proof / seat valve with external feedback detection               | external proximity switches                              | not available                  | NC / NO                    | possible                           | optional<br>1,2,3   |
| 9    | Seat valve / butterfly valve with internal feedback detection         | internal linear sensor                                   | +/-1 mm<br>+/- 3 mm<br>+/-5 mm | NC / NO                    | possible                           | optional<br>1,2,3   |
| A    | Double seat tank outlet valve DT4 SL                                  | 1 internal linear sensor<br>1 external linear sensor     | fixed<br>+/- 1 mm              | NC only                    | possible                           | always 3            |
| B    | Mix proof valve D4 PMO  | 2 internal linear sensors                                | fixed<br>+/- 1 mm              | NC only                    | possible                           | always 3            |

Valve basic position: Depending on the valve type, the basic position can be adjusted.

Tolerance band: Selection according to valve type.  
**(see chapter 7.2)**

Valve position indication: LED can be inverted, e.g. for adaption of valve type

Delivery status: Mix proof valve DA4 profile is adjusted.

Adjusted valve characteristics: logic profile 1, for DA3+ with SLD

Teach-in: CU waits for Teach-in with valve, LED 3-6 blink

Adjustment / change of valve profile is realized via ToolBox software (see Toolbox manual).

## 6. Electronic Module

### 6.7. Data signals

#### 6.7.1. Single seat valves with internal feedback detection

| NC - normally closed  |                 |  |  |
|---|-----------------|--|--|
| Application: single seat / butterfly valve with internal feedback detection (SW4, SD4, MS4, SVS, SV etc.) |                 |  |  |
| Output signals  | valve state     | sensor 1   | sensor 2   |
|   |                 | signal generated by Teach-in (position of position sensor) | signal generated by Teach-in (position of position sensor) |
| <b>O0</b>   | closed          | <b>1</b>   | <b>0</b>   |
| <b>O1</b>   | open            | <b>0</b>   | <b>1</b>   |
| <b>O2</b>   | not occupied    | <b>1</b>   | <b>1</b>   |
| <b>O3</b>   | not occupied    | <b>1</b>   | <b>1</b>   |
| Input signals   | solenoid 1 Main | solenoid 2   | solenoid 3   |
| <b>I0</b>   | <b>1</b>        | <b>0</b>   | <b>0</b>   |
| <b>I1</b>   | <b>0</b>        | <b>1</b>   | <b>0</b>   |
| <b>I2</b>   | <b>0</b>        | <b>0</b>   | <b>1</b>   |
| NO - normally open  |                 |  |  |
| Application: single seat / butterfly valve with internal feedback detection (SW4, SD4, MS4, SVS, SV etc.) |                 |  |  |
| Output signals  | valve state     | sensor 1   | sensor 2   |
|   |                 | signal generated by Teach-in (position of position sensor) | signal generated by Teach-in (position of position sensor) |
| <b>O0</b>   | closed          | <b>0</b>   | <b>1</b>   |
| <b>O1</b>   | open            | <b>1</b>   | <b>0</b>   |
| <b>O2</b>   | not occupied    | <b>1</b>   | <b>1</b>   |
| <b>O3</b>   | not occupied    | <b>1</b>   | <b>1</b>   |
| Input signals   | solenoid 1 Main | solenoid 2   | solenoid 3   |
| <b>I0</b>   | <b>1</b>        | <b>0</b>   | <b>0</b>   |
| <b>I1</b>   | <b>0</b>        | <b>1</b>   | <b>0</b>   |
| <b>I2</b>   | <b>0</b>        | <b>0</b>   | <b>1</b>   |



## 6. Electronic Module

### 6.7. Data signals

#### 6.7.2. Mix proof valve with seat lift detection (DA3+ SLD)

| NC - normally closed  |                    |                           |                           |   |   |
|---|--------------------|---------------------------|---------------------------|---|---|
| Application: Double seat mix proof valve with seat lift detection (SLD) |                    |                           |                           |   |   |
| Output signals  | valve state        | sensor 4                  | sensor 3                  | sensor 2  | sensor 1  |
|   |                    | external proximity switch | external proximity switch | signal generated by Teach-in, (position of position sensor) | signal generated by Teach-in, (position of position sensor) |
| <b>O0</b>   | closed             | 1                         | 1                         | 0   | 1   |
| <b>O1</b>   | open               | 0                         | 0                         | 1   | 0   |
| <b>O2</b>   | upper seat lifting | 0                         | 1                         | 0   | 1   |
| <b>O3</b>   | lower seat lifting | 1                         | 1                         | 0   | 0   |

The appropriate output signal for the required valve position will be generated within the CU by logic combination of the 4 sensor signals. The appropriate valve position is shown direct by the output signals. Further adjustments are not required!

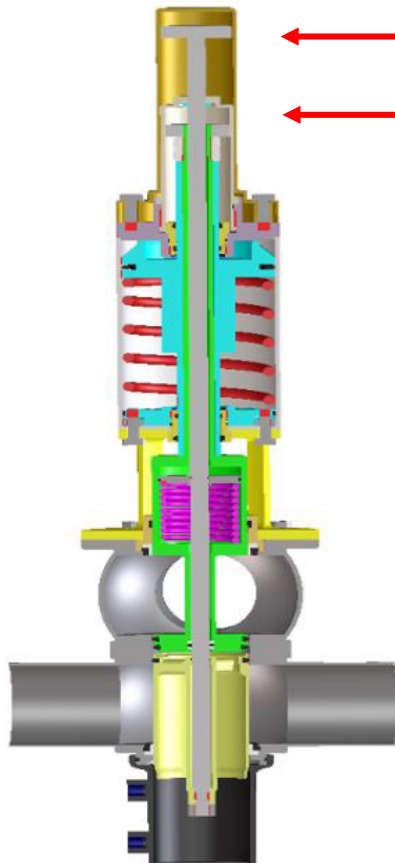
| Input signals | solenoid 1 main | solenoid 2 upper seat lift | solenoid 3 lower seat lift |
|---------------|-----------------|----------------------------|----------------------------|
| <b>I0</b>     | 1               | 0                          | 0                          |
| <b>I1</b>     | 0               | 1                          | 0                          |
| <b>I2</b>     | 0               | 0                          | 1                          |

When replacing a CU3 control unit, use the following profile:  
 Double seat mix proof valve with seat lift detection (SLD) CU3 compatible mode  
 (all signals similar to CU3) - see instruction manual of CU3 Control Unit.

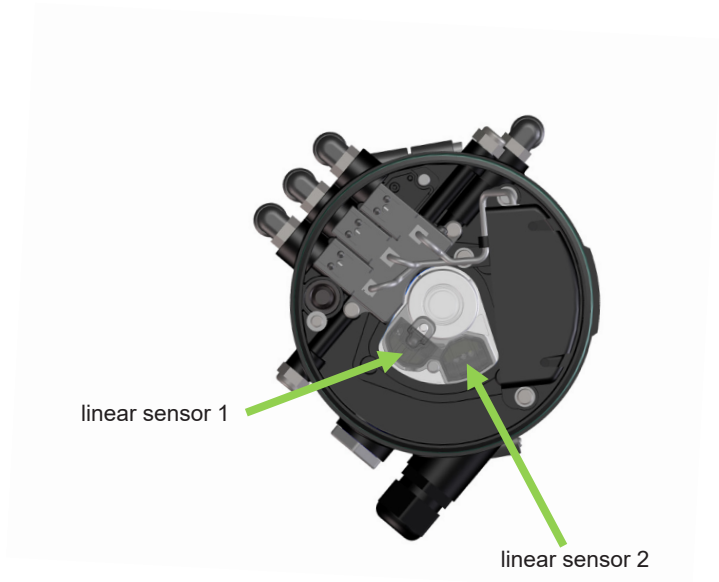
## 6. Electronic Module

### 6.7. Data signals

#### 6.7.3. Mix proof valve D4



|             |                                      |                 |                 |
|-------------|--------------------------------------|-----------------|-----------------|
| operating   | main stroke downwards                |                 |                 |
| main stroke | valve operating direction: downwards |                 |                 |
| lower shaft | signal S3<br>signal S4               | linear sensor 1 | valve target M1 |
| upper shaft | signal S2<br>signal S1               | linear sensor 2 | valve target M2 |



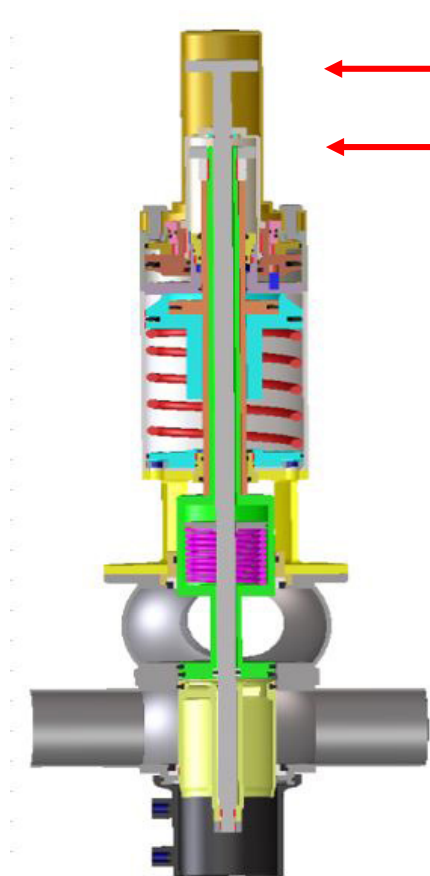
| Output signals | valve status | linear sensor 2 / (Teach data) |                  | linear sensor 1 / (Teach data) |                  | tolerance band  |
|----------------|--------------|--------------------------------|------------------|--------------------------------|------------------|-----------------|
|                |              | sensor signal S1               | sensor signal S2 | sensor signal S3               | sensor signal S4 |                 |
| O0             | closed       | 1                              | 0                | not used                       | 0                | +1 mm,<br>-1 mm |
| O1             | open         | 0                              | 0                | not used                       | 1                | +1 mm,<br>-1 mm |
| DI2            |              |                                |                  |                                |                  |                 |
| DI3            |              |                                |                  |                                |                  |                 |

| Input signal | solenoid 1 Main | solenoid 1 upper seat lift | solenoid 1 lower seat lift |
|--------------|-----------------|----------------------------|----------------------------|
| I0           | 1               | 0                          | 0                          |
| I1           |                 |                            |                            |
| I2           |                 |                            |                            |

## 6. Electronic Module

### 6.7. Data signals

#### 6.7.4. Mix proof valve D4 SL

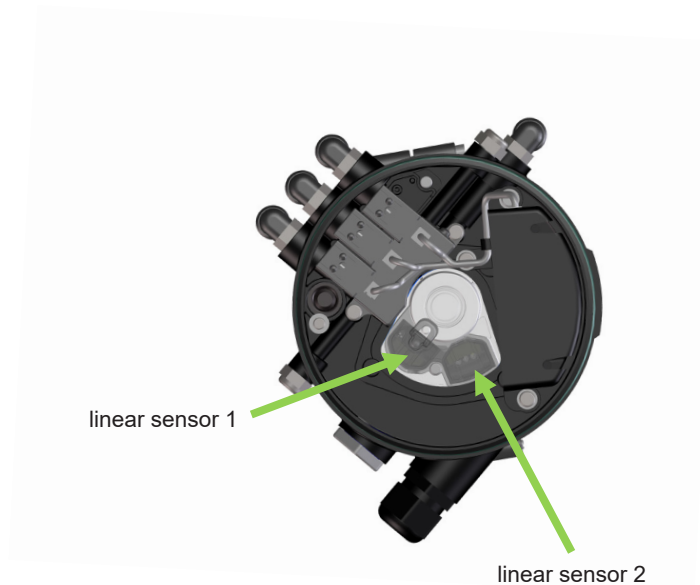


|           |   |  |
|-----------|---|--|
| operating | main stroke downwards<br>upper seat lift upwards<br>lower seat lift downwards |  |
|-----------|---|--|

|             |                                      |  |
|-------------|--------------------------------------|--|
| main stroke | valve operating direction: downwards |  |
|-------------|--------------------------------------|--|

|             |                        |                 |                 |
|-------------|------------------------|-----------------|-----------------|
| lower shaft | signal S3<br>signal S4 | linear sensor 1 | valve target M1 |
|-------------|------------------------|-----------------|-----------------|

|             |                        |                 |                 |
|-------------|------------------------|-----------------|-----------------|
| upper shaft | signal S2<br>signal S1 | linear sensor 2 | valve target M2 |
|-------------|------------------------|-----------------|-----------------|



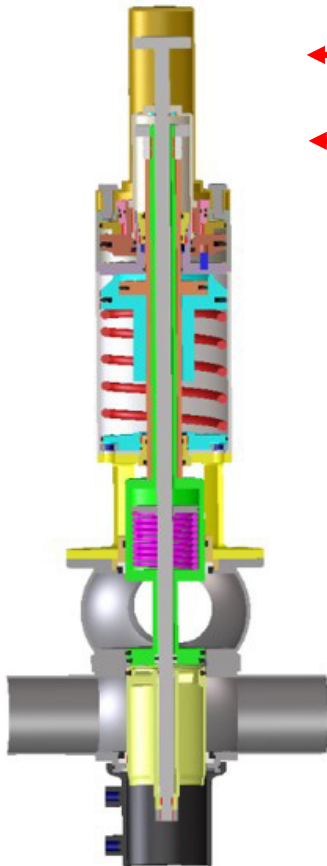
| Output signals | valve status    | linear sensor 2 / (Teach data) |                  | linear sensor 1 / (Teach data) |                  | tolerance band  |
|----------------|-----------------|--------------------------------|------------------|--------------------------------|------------------|-----------------|
|                |                 | sensor signal S1               | sensor signal S2 | sensor signal S3               | sensor signal S4 |                 |
| O0             | closed          | 1                              | 0                | 1                              | 0                | +1 mm,<br>-1 mm |
| O1             | open            | 0                              | 0                | 0                              | 1                | +1 mm,<br>-1 mm |
| O2             | upper seat lift | 0                              | 1                | 1                              | 0                | +1 mm,<br>-1 mm |
| O3             | lower seat lift | 1                              | 0                | 0                              | 0                | +1 mm,<br>-1 mm |

| Input signal | solenoid 1<br>Main | solenoid 2<br>upper seat lift | solenoid 3<br>lower seat lift |
|--------------|--------------------|-------------------------------|-------------------------------|
| I0           | 1                  | 0                             | 0                             |
| I1           | 0                  | 1                             | 0                             |
| I2           | 0                  | 0                             | 1                             |

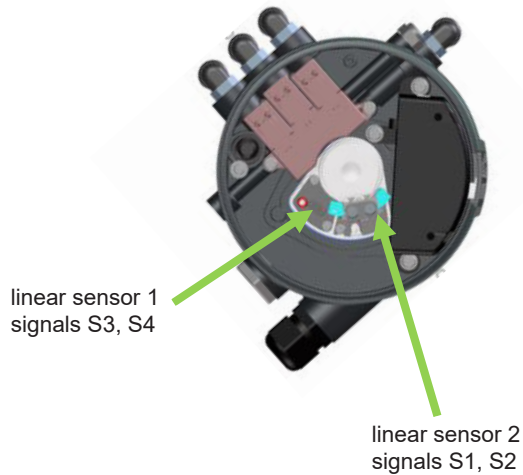
## 6. Electronic Module

### 6.7. Data signals

#### 6.7.5. Mix proof valve D4 PMO



|             |   |                 |   |
|-------------|---|-----------------|---|
| operating   | main stroke downwards<br>upper seat lift upwards<br>lower seat lift downwards |                 |   |
| main stroke | valve operating direction: downwards  |                 |   |
| lower shaft | signal S3<br>signal S4  | linear sensor 1 | electronic module terminal block 10,11,12 |
| upper shaft | signal S2<br>signal S1  | linear sensor 2 | electronic module JST plug linear sensor  |



|  | valve status    | linear sensor 2 / (teach data) |                  | linear sensor 1 / (teach data) |                  | tolerance band |
|--|-----------------|--------------------------------|------------------|--------------------------------|------------------|----------------|
|  |                 | sensor signal S1               | sensor signal S2 | sensor signal S3               | sensor signal S4 |                |
|  | closed          | 1                              | 0                | 1                              | 0                | +1 mm, -1 mm   |
|  | open            | 0                              | 0                | 0                              | 1                | +1 mm, -1 mm   |
|  | upper seat lift | 0                              | 1                | 1                              | 0                | +1 mm, -1 mm   |
|  | lower seat lift | 1                              | 0                | 0                              | 0                | +1 mm, -1 mm   |

| Digital Output data  | DO0 | DO1 | DO2 | DO3 |
|--|-----|-----|-----|-----|
| no logical combination of sensor signals, just raw data<br>combination table has to be implemented in PLC software<br>during seat lift - the opposite valve shaft stays in closed position, this can be monitored by watching the appropriate signal |     |     |     |     |

| Digital Input data | solenoid 1 Main | solenoid 2 upper seat lift | solenoid 3 lower seat lift |
|--------------------|-----------------|----------------------------|----------------------------|
| DI0                | 1               | 0                          | 0                          |
| DI1                | 0               | 1                          | 0                          |
| DI2                | 0               | 0                          | 1                          |

## 6. Electronic Module

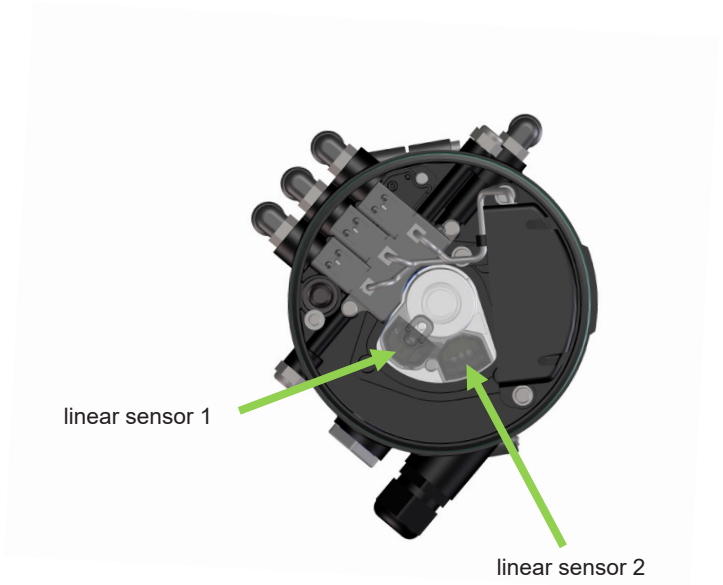
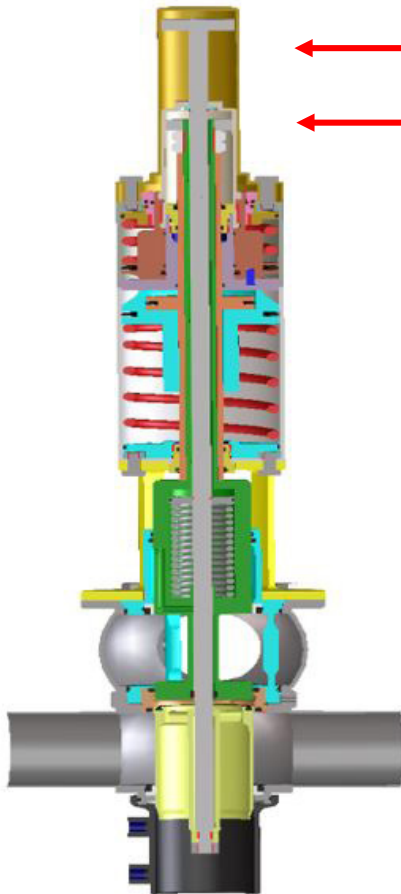
### 6.7. Data signals

#### 6.7.6. Mix proof valve DA4

|           |   |  |
|-----------|---|--|
| operating | main stroke downwards<br>upper seat lift upwards<br>lower seat lift upwards |  |
|-----------|---|--|

|             |                                      |  |
|-------------|--------------------------------------|--|
| main stroke | valve operating direction: downwards |  |
|-------------|--------------------------------------|--|

|             |                        |                 |                 |
|-------------|------------------------|-----------------|-----------------|
| lower shaft | signal S3<br>signal S4 | linear sensor 1 | valve target M1 |
| upper shaft | signal S2<br>signal S1 | linear sensor 2 | valve target M2 |



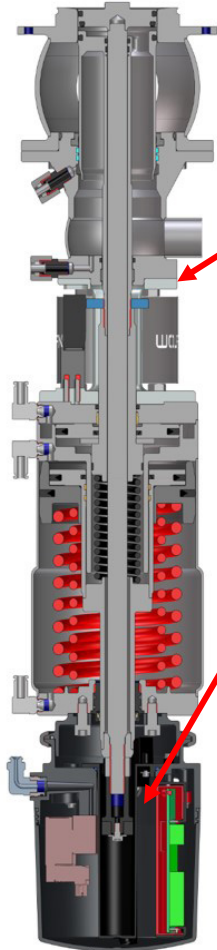
| Output signals | valve status    | linear sensor 2 / (Teach data) |                  | linear sensor 1 / (Teach data) |                  | tolerance band |
|----------------|-----------------|--------------------------------|------------------|--------------------------------|------------------|----------------|
|                |                 | sensor signal S1               | sensor signal S2 | sensor signal S3               | sensor signal S4 |                |
| O0             | closed          | 1                              | 0                | 0                              | 0                | +1 mm, -1 mm   |
| O1             | open            | 0                              | 0                | 0                              | 1                | +1 mm, -1 mm   |
| O2             | upper seat lift | 0                              | 1                | 0                              | 0                | +1 mm, -1 mm   |
| O3             | lower seat lift | 1                              | 0                | 1                              | 0                | +1 mm, -1 mm   |

| Input signals | solenoid 1<br>Main | solenoid 2<br>upper seat lift | solenoid 3<br>lower seat lift |
|---------------|--------------------|-------------------------------|-------------------------------|
| I0            | 1                  | 0                             | 0                             |
| I1            | 0                  | 1                             | 0                             |
| I2            | 0                  | 0                             | 1                             |

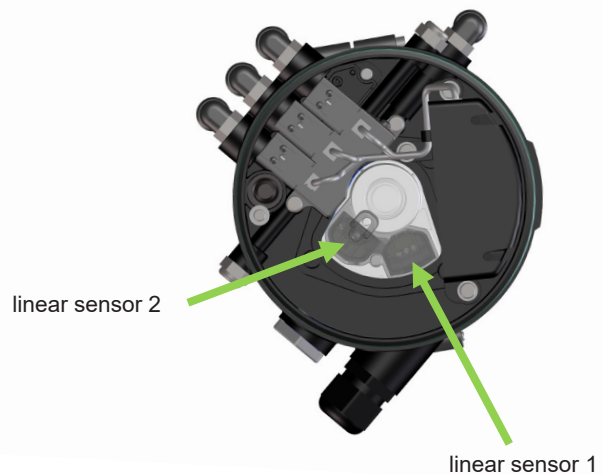
## 6. Electronic Module

### 6.7. Data signals

#### 6.7.7. Double seat tank outlet valve DT4 SL



|                    |   |   |  |
|--------------------|---|---|--|
| operating          | main stroke downwards<br>upper seat lift upwards<br>lower seat lift upwards |   |  |
| main stroke        | valve operating direction:<br>downwards                                     |   |  |
| lower shaft target | signal S4   | linear sensor 2<br>external<br>additional converter<br>module must be<br>used | e-module<br>terminal<br>block<br>10,11,12            |
| upper shaft target | signal S2<br>signal S2<br>signal S3   | linear sensor 1   | e-module<br>terminal<br>JST plug<br>linear<br>sensor |



| Input signals | valve status    | linear sensor 2 / (Teach data) |                  |                    | linear sensor 1 / (Teach data) | tolerance band  |
|---------------|-----------------|--------------------------------|------------------|--------------------|--------------------------------|-----------------|
|               |                 | sensor signal S1               | sensor signal S2 | sensor signal lift | sensor signal S4               |                 |
| I0            | closed          | 1                              | 0                | 0                  | 0                              | +1 mm,<br>-1 mm |
| I1            | open            | 0                              | 1                | 0                  | 0                              | +1 mm,<br>-1 mm |
| I2            | upper seat lift | 0                              | 0                | 1                  | 0                              | +1 mm,<br>-1 mm |
| I3            | lower seat lift | 1                              | 0                | 0                  | 1                              | +1 mm,<br>-1 mm |

| Output signals | solenoid 1<br>Main | solenoid 1<br>upper seat lift | solenoid 1<br>lower seat lift |
|----------------|--------------------|-------------------------------|-------------------------------|
| O0             | 1                  | 0                             | 0                             |
| O1             | 0                  | 1                             | 0                             |
| O2             | 0                  | 0                             | 1                             |

## 6. Electronic Module

### 6.7. Data signals

#### 6.7.8. Parameter data / status / diagnosis

not relevant because of Direct Connect

### 6.8. Service and Maintenance Software CU4plus Toolbox

For the parameterization of the CU4plus DC the CU4plus Toolbox Software is available.

The Toolbox kit with appropriate USB/serial cable can be purchased from SPX Flow using the article number H333470.

The latest version of the Toolbox Software is always available from the SPX Flow F&B Sharepoint. Please contact your SPX Flow Sales representative.

This software is designed for PC system software Windows 7, Windows 8.1, Windows 10.

After installation of the CU4plus Toolbox the corresponding control unit is connected with the PC by means of an adapter cable.

The individual functions are described in the CU4plus Toolbox manual.



---

## 6. Electronic Module

---

### 6.9. Seat Pulsation - Efficiency in Cleaning

For increasing seat cleaning efficiency there is a function called "Pulsation". With this function, the seat lifts can be operated in pulsation mode if the PLC signal activates the seat lift.

For the pulsation the ON and OFF time can be adjusted with the CU4plus Toolbox.

The selection of the pulsation times must be done in accordance with the process situation and the appropriate valve size. The selected times must ensure complete opening and closing of the seats. We recommend to adjust pulsing times which are not shorter than 30 seconds.

During pulsation, the feedback for the appropriate seat lift will always be active!



## 7. Valve Position Indication

### 7.1. Continuously measuring valve position measuring system

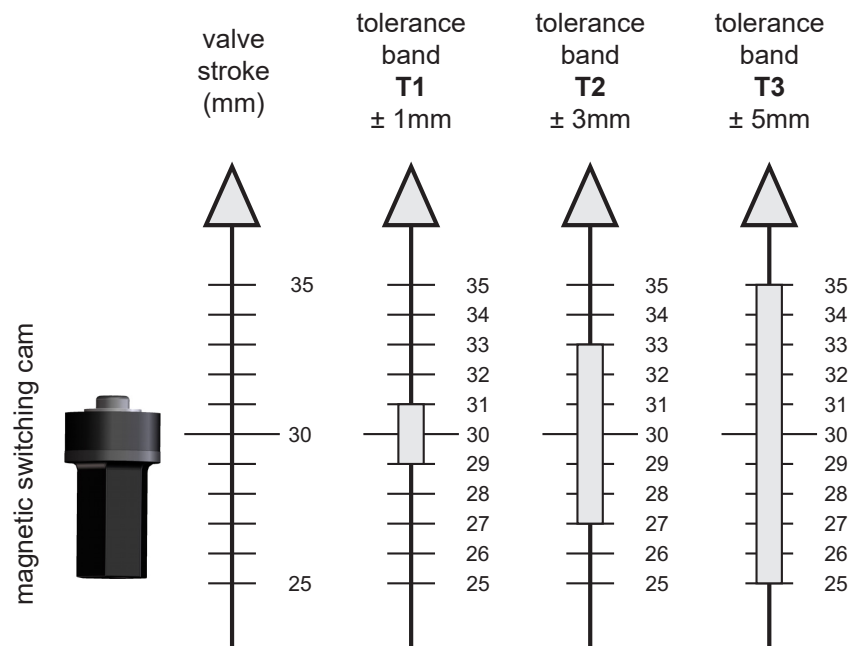
For the internal detection of the valve position indication, a contact-free operating linear sensor is used which is actuated via the magnetic switching cam installed at the valve rod. The nominal measuring range of the measuring system amounts to 0 - 72 mm, relative repetitive accuracy < 0.1 mm.

Within this measuring range, the corresponding positions for closed and open valve position as well as seat lift positions are generated via the Teach-in function and permanently saved in the electronic.

### 7.2. Tolerance band of the valve position measuring system

The tolerance band of the valve position measuring system describes the active measuring range in which the corresponding feedback information, closed or open valve position, is registered. For different process valves also different tolerance bands exist. The adjustment is realized via the ToolBox software.

| Tolerance band | Output of feedback signals in range | Recommendation for valve type             |
|----------------|-------------------------------------|---|
| T1             | +/- 1 mm                            | e.g. DA3+, D4, D4 SL, D4 PMO, DA4, DT4 SL |
| T2             | +/- 3 mm                            | e.g. SW4, MS4                             |
| T3             | +/- 5 mm                            | e.g. SV, SVS, DKR                         |



## 7. Valve Position Indication

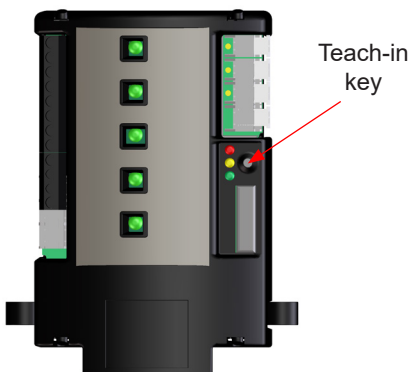
### 7.3. Adjustment of valve position indication / Teach-in

The continuously measuring valve position measuring system is taught via a reference valve movement.

The respective positions for the closed and open valve position as well as for further valve positions, e.g. seat lifting, are travelled to and the corresponding position of the sensor system is permanently stored in the memory of the electronic module. This process is called Teach-in.

The Teach-in is started by pressing the Teach-in key at the electronic module. The key must be pressed permanently for 3 seconds.

After the start of the Teach-in the LED 9 lights up and the valve travels into the corresponding final positions and back into the basic position. The positions of the corresponding valve positions are stored.



| Indication                 | Status   | Action   |
|----------------------------|--|--|
| LED 3-6,9<br>blink         | Delivery status<br>Waiting for Teach-in  | Start Teach-in<br>press Teach-in for at<br>least 3 seconds |
| LED 9 OFF<br>LED 3/4 blink | Teach-in active  | Wait<br>Do not control valve via<br>PLC.                   |
| LED 9 OFF                  | Successful Teach-in  | Valve can be controlled<br>by PLC.                         |
| LED 9 ON                   | Valve Teach<br>carried out   | Wait for Teach result                                      |
| LED 9 blink                | Teach-in not<br>successful,<br>repetition required.<br><br>Possible reasons for<br>Teach-in failure:<br><br>Compressed air is<br>missing.<br>Supply voltage<br>missing. Switching<br>logic does not fit to<br>valve. | Start Teach-in / press<br>Teach-in key for 3 sec.          |

## 7. Valve Position Indication

### 7.3.1. To be observed before Teach-in:

- Corresponding switching cam is mounted to the valve guide rod.



#### **Note! Caution!**

The switching cam is not identical with the standard CU switching cam!

- CU4plus Direct Connect control unit is not duly installed on the valve.
- Valve is duly installed in the process.
- **Valve is not manually controlled or controlled by PLC.**
- Control air is connected (requirements, see Technical Data, chapter 4.5.).
- Nominal valve stroke is not restricted, e.g. through chunky products in the valve.
- Selected switching logic complies with the installed process valve (adjustment is realized via CU4plus Toolbox software, delivery status is switching logic for DA4).

During the Teach-in function, the valve is controlled and moves independently into all operating positions.



**As a precaution, the Teach-in function is to be repeated after any valve service or maintenance!**

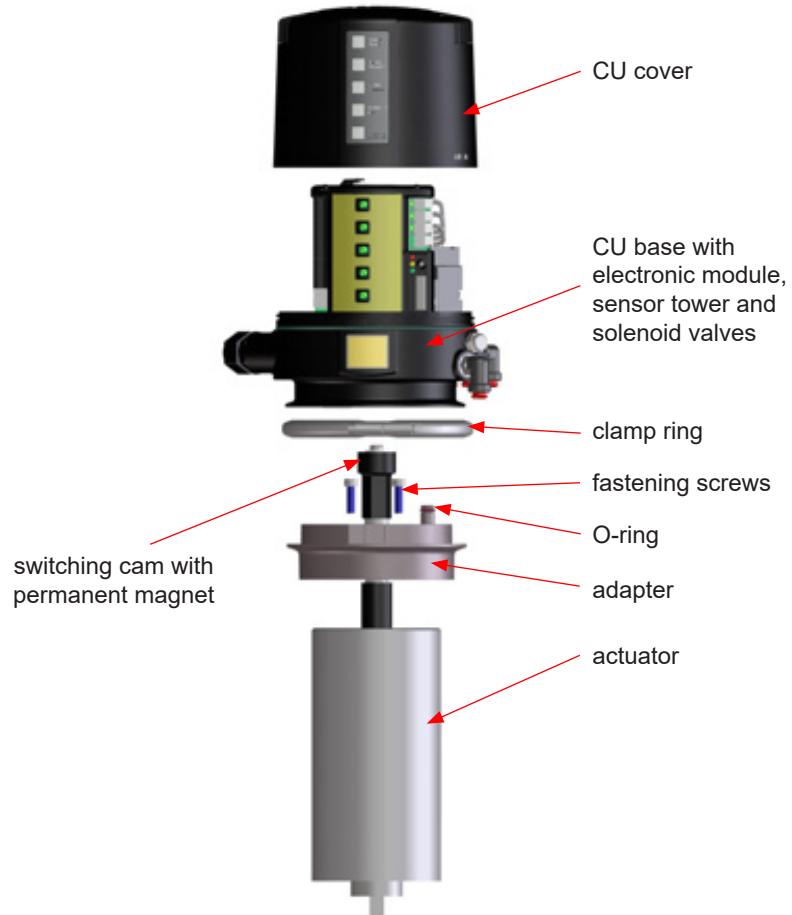
**If these instructions are not observed, process failures, product loss or personal injury may occur!**

### 7.4. Use of external sensors

For double seat valves with active seat lift detection (SLD) 2 additional proximity switches are required which are mounted in the actuator area of the DA3+ valve and connected at the electronic module of the CU4plus Direct Connect.

## 8. CU Assembly and Startup

### 8.1. Valves with turning actuator, e.g. for butterfly valve



#### Caution!

The permanent magnet is made of fragile material and must be protected against mechanical load . – Risk of fracture! The magnetic fields can damage or delete data carrier or influence electronic and mechanic components.

#### Assembly of the control unit on the valve

1. Assembly of the adapter on the turning actuator.  
Fasten with 3 screws.  
See to the right positioning of the O-rings on the lower side of the adapter and in the groove of the air transfer stud.
2. Install switching cam with shaft rod prolongation.  
Secure with Loctite semi-solid and fasten it.
3. Place the control unit via the operating cam onto the adapter.  
Observe alignment.
4. Attach the clamp rings and fasten them with the screws.

## 8. CU Assembly and Startup

### 8.1.1. Pneumatic connection



#### Supply air:

#### Caution!

Shut off the compressed air supply before connecting the air hose!

See that the air hose is professionally cut to length. Use a hose cutter for this purpose.

#### Pneumatic air for valve actuator:

For the assembly of the control unit on the turning actuator with integrated air transfer, air hosing between the control unit and the actuator is not necessary.

#### Exhaust air:

As a standard, the exhaust air connection is equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hosed separately when it must be led off to the exterior, for example.

### 8.1.2. Electric connection



#### Attention!

Electric connections shall only be carried out by qualified personnel!

Observe the Safety Instructions specified in chapter 2.

### 8.1.3. Startup

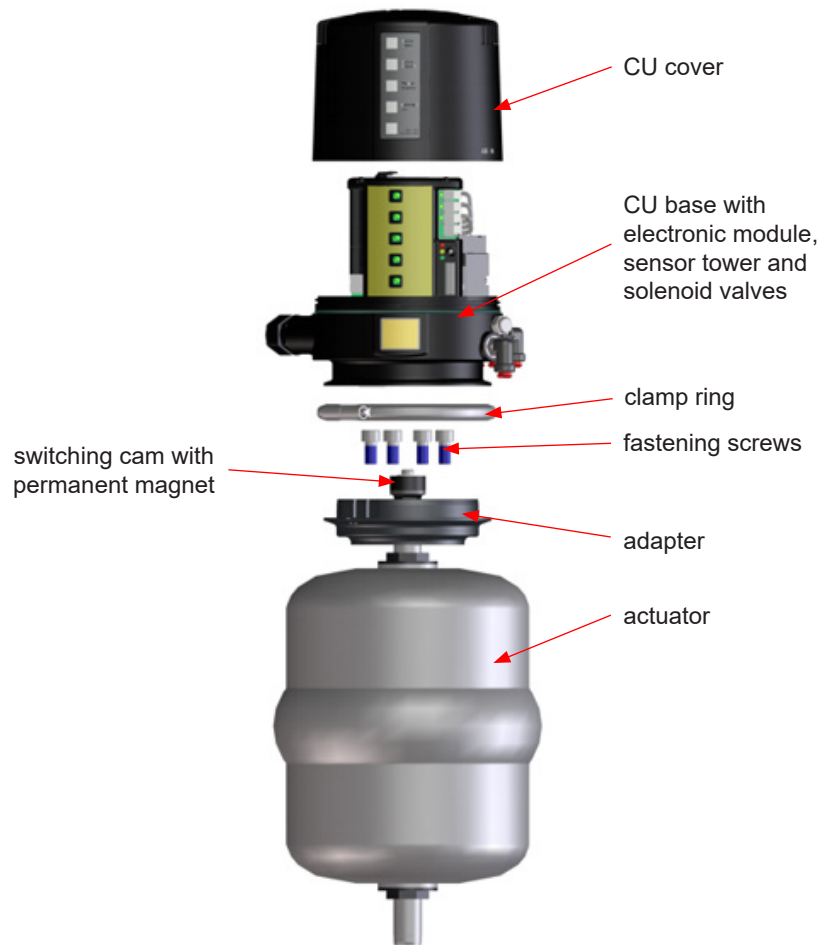
After proper assembly and installation of the control unit, startup can be undertaken as described below:

1. Switch on the air supply.
2. Switch on the voltage supply.
3. Adjust corresponding logic profile in accordance with the process valve used (if this has not been determined for the delivery status).

Start Teach-in. It is mandatory to observe the corresponding prerequisites (**see chapter 7.3.**).

## 8. CU Assembly and Startup

### 8.2. Single seat valve



**Caution!**

The permanent magnet is made of fragile material and must be protected against mechanical load . – Risk of fracture!  
The magnetic fields can damage or delete data carrier or influence electronic and mechanic components.

**Assembly of the control unit on the valve**

1. Assembly of the adapter on the single seat valve. Fasten with 4 screws.
2. Secure switching cam with Loctite semi-solid and fasten it.
3. Place the control unit via the switching cam onto the adapter. Observe alignment!
4. Attach the clamp rings and fasten them with the screws.

## 8. CU Assembly and Startup

### 8.2.1. Pneumatic connection



#### Supply air:

**Caution!** Shut off the compressed air supply before connecting the air hose!

See that the air hose is professionally cut to length. Use a hose cutter for this purpose.

#### Pneumatic air for valve actuator:

Connect the pneumatic air connection **Y1** with the valve actuator.

- For the CU41N (**with logic NOT element**), the pneumatic air connection N must be connected with the spring side of the actuator.  
See to the spring side of the actuator during the assembly of the pressure-reducing valve.

#### Exhaust air:

As a standard, the exhaust air connection is equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hosed separately when it must be led off to the exterior, for example.

### 8.2.2. Electric connection



**Attention!** Electric connections shall only be carried out by qualified personnel.

Observe the Safety Instructions specified in chapter 2.

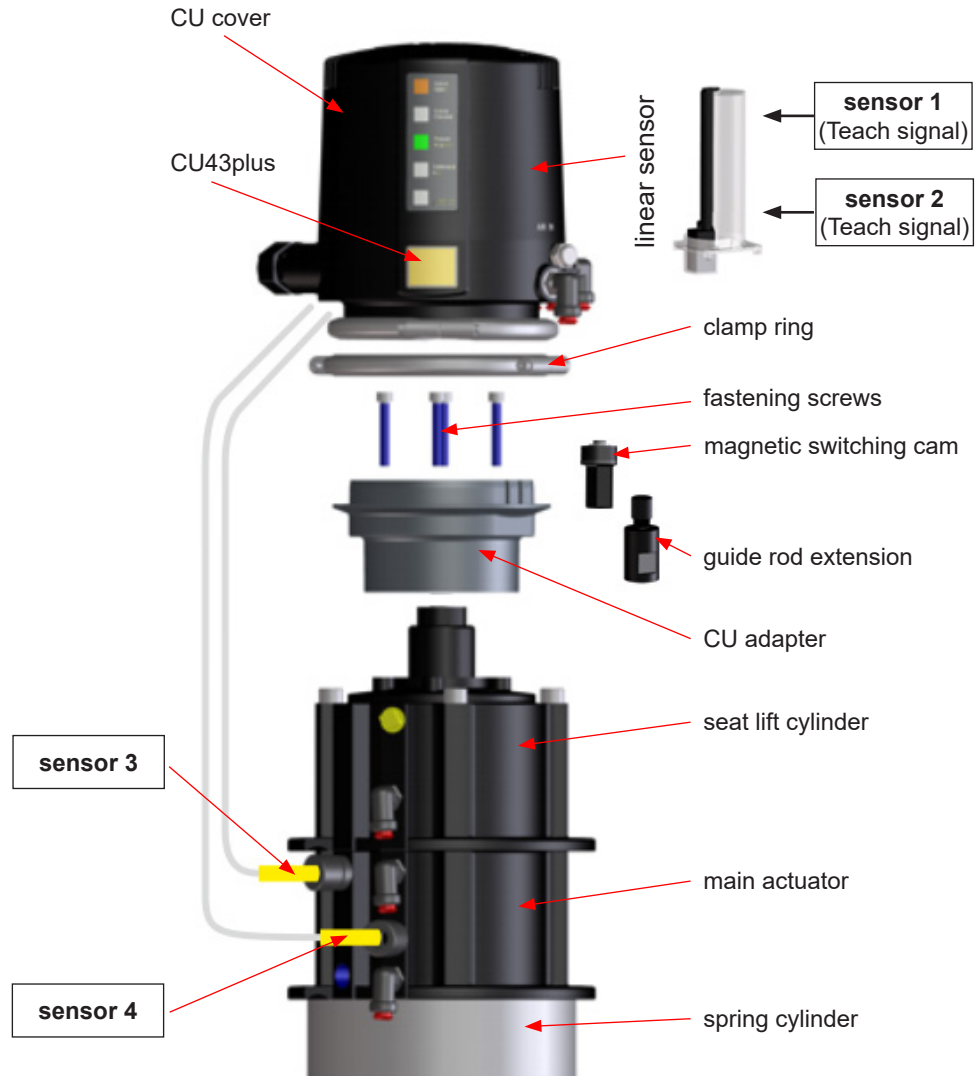
### 8.2.3. Startup

After proper assembly and installation of the control unit, startup can be undertaken as described below:

1. Switch on the air supply.
2. Switch on the voltage supply.
3. Adjust corresponding logic profile in accordance with the process valve used (if this has not been determined for the delivery status).
4. Start Teach-in. It is mandatory to observe the corresponding prerequisites (**see chapter 7.3.**).

## 8. CU Assembly and Startup

### 8.3. Double seat valve DA3+ with activated Seat Lift Detection (SLD)



#### Assembly of the control unit on the valve

1. Assembly of the adapter on the double seat valve. Fasten with 4 screws.
2. Align air connections of the control unit to the valve actuator.
3. Place the control unit onto the adapter. Observe alignment!
4. Attach the clamp rings and fasten them with the screws.
5. Assemble the external proximity switches at the actuator.



## 8. CU Assembly and Startup

### 8.3.1 Pneumatic connection



#### Supply air:

**Caution!** Shut off the compressed air supply before connecting the air hose!

See that the air hose is professionally cut to length. Use a hose cutter for this purpose.

#### Pneumatic air to valve actuator:

Connect pneumatic air connection **Y1** with the valve actuator.  
Main actuator

Connect pneumatic air connection **Y2** with the valve actuator.  
Seat lifting - upper valve seat

Connect pneumatic air connection **Y3** with the valve actuator.  
Seat lifting – lower valve seat

#### Exhaust air:

As a standard, the exhaust air connections **A1** and **A2** are equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hoses separately when it must be led off to the exterior, for example.

### 8.3.2. Electric connection



**Attention!** Electric connections shall only be carried out by qualified personnel.

Observe the Safety Instructions specified in chapter 2.

### 8.3.3. Connection of external proximity switches

The electric connection of the proximity switches specified by SPX is undertaken according to the terminal layout described in chapter 6.

The mechanic assembly of the proximity switches is carried out at the actuator of the corresponding double seat valves. Observance of the instruction manual for double seat valves is essential!

---

## 8. CU Assembly and Startup

---

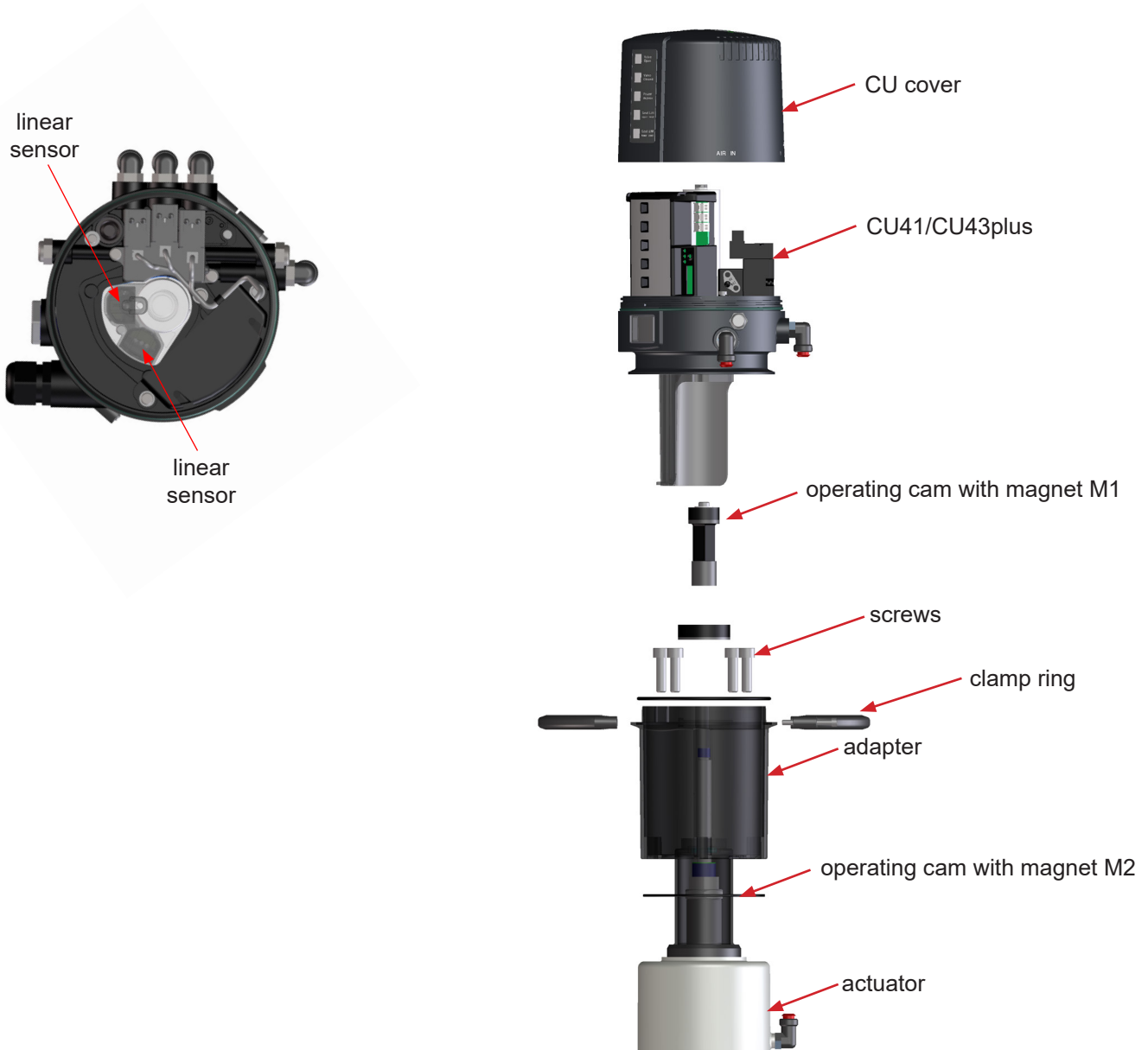
### 8.3.4. Startup

After proper assembly and installation of the control unit, startup can be undertaken as described below:

1. Switch on the air supply.
2. Switch on the voltage supply.
3. Adjust corresponding logic profile in accordance with the process valve used (if this has not been determined for the delivery status).
4. Start Teach-in. It is mandatory to observe the corresponding prerequisites (**see chapter 7.3.**).

## 8. CU Assembly and Startup

### 8.4. Double seat mix proof valves D4, D4 SL, D4 PMO, DA4



#### Assembly of the control unit on the valve

1. Assemble the magnet M2 on the upper shaft under the stop screw.
2. Assemble the adapter with the 4 screws on the double seat valve.
3. Assemble the operating cam M1 with guide rod extension on the guide rod.
4. Place the control unit onto the adapter. Observe alignment!
5. Attach the clamp rings and fasten them with the 2 screws.
6. Align air connections of the control unit to the valve actuator.

## 8. CU Assembly and Startup

### 8.4.1 Pneumatic connection

#### Supply air:



#### Caution!

Shut off the compressed air supply before connecting the air hose!

Make sure that the air hose is professionally cut to length. Use a hose cutter for this purpose.

#### Pneumatic air to valve actuator:

Connect pneumatic air connection **Y1** with the valve actuator. Main actuator



1

Connect pneumatic air connection **Y2** with the valve actuator. (seat lifting - upper valve seat)



2

Connect pneumatic air connection **Y3** with the valve actuator. (seat lifting - lower valve seat)



3

#### Exhaust air:

As a standard, the exhaust air connections **A1** and **A2** are equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hosed separately when it must be led off to the exterior, for example.

### 8.4.2 Electric connection

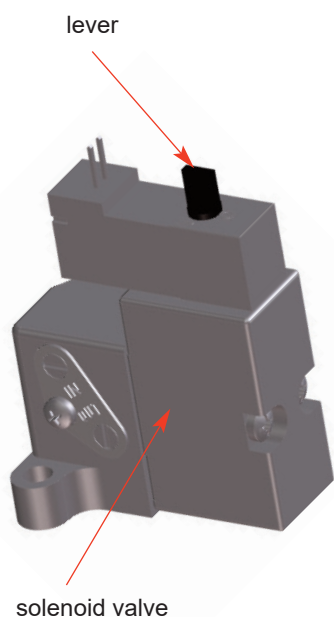


#### Attention!

Electric connections shall only be carried out by qualified personnel.

Observe the Safety Instructions specified in chapter 2.

## 8. CU Assembly and Startup



### 8.4.3 Connection of external proximity switches

The electric connection of the proximity switches specified by SPX FLOW is undertaken according to the terminal layout described in chapter 6.

The mechanic assembly of the proximity switches is carried out at the actuator of the corresponding double seat valves.

Observance of the instruction manual for double seat valves is essential!

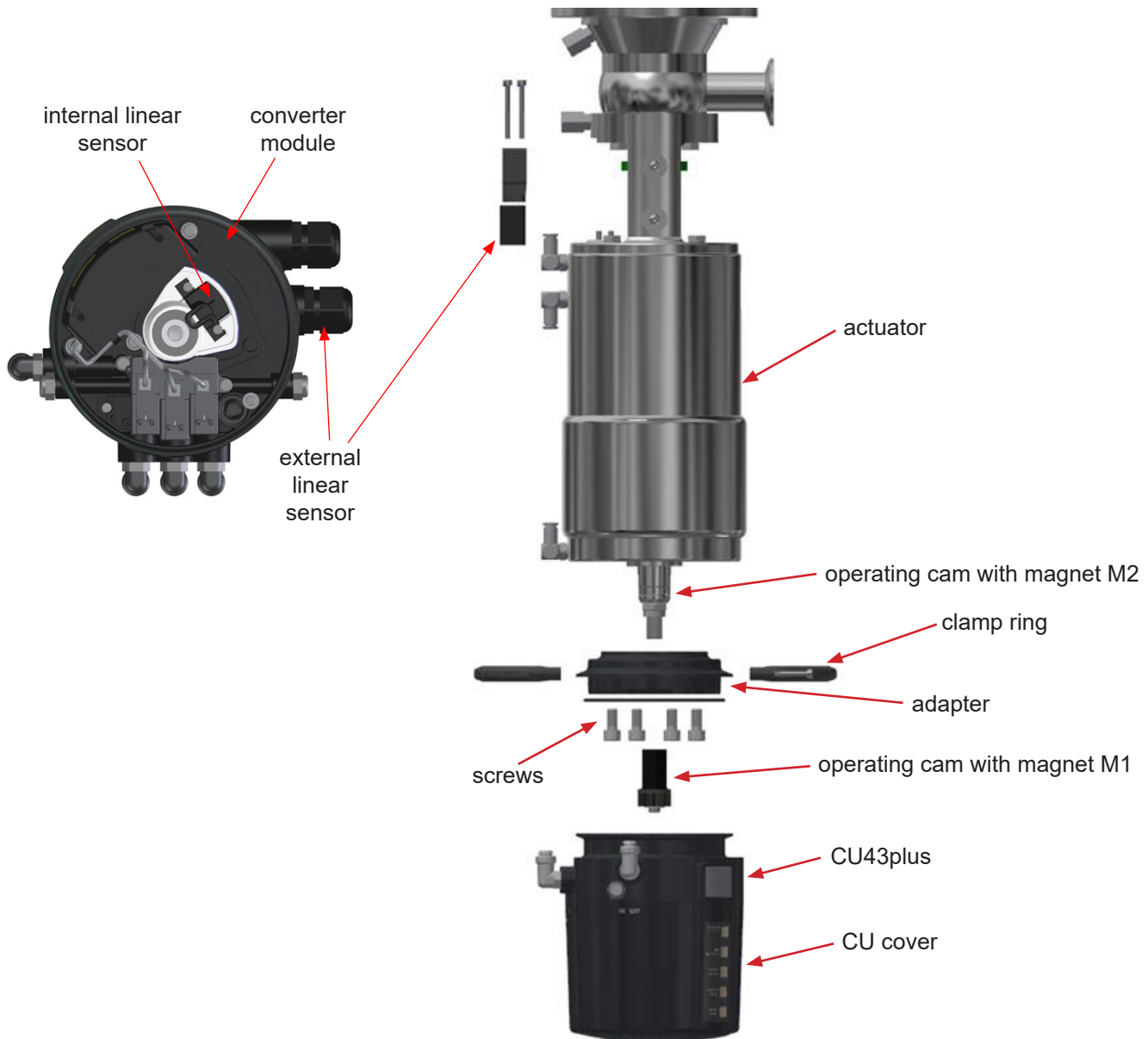
### 8.4.4 Startup

After proper assembly and installation of the control unit, startup can be undertaken as described below

1. Switch on the air supply
2. Switch on the voltage supply.
3. Check the solenoid valves by turning the lever on the upper side by 90°.
4. For final adjustments of the feedback position switches please use the Teach function.

## 8. CU Assembly and Startup

### 8.5. Double seat tank outlet valve DT4 SL



#### Assembly of the control unit on the valve

1. Assemble the magnet M2 on the upper shaft under the stop screw.
2. Assemble the adapter with the 4 screws on the double seat valve.
3. Assemble the operating cam M1 with guide rod extension on the guide rod.
4. Place the control unit onto the adapter. Observe alignment!
5. Attach the clamp rings and fasten them with the 2 screws.
6. Align air connections of the control unit to the valve actuator.

## 8. CU Assembly and Startup

### 8.5.1 Pneumatic connection

#### Supply air:



#### Caution!

Shut off the compressed air supply before connecting the air hose!

Make sure that the air hose is professionally cut to length. Use a hose cutter for this purpose.

#### Pneumatic air to valve actuator:

Connect pneumatic air connection **Y1** with the valve actuator. Main actuator



1

Connect pneumatic air connection **Y2** with the valve actuator. (seat lifting - upper valve seat)



2

Connect pneumatic air connection **Y3** with the valve actuator. (seat lifting – lower valve seat)



3

#### Exhaust air:

As a standard, the exhaust air connections **A1** and **A2** are equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hosed separately when it must be led off to the exterior, for example.

### 8.5.2 Electric connection



#### Attention!

Electric connections shall only be carried out by qualified personnel.

Observe the Safety Instructions specified in chapter 2.

## 8. CU Assembly and Startup

### 8.5.3 Connection of external proximity switches

The electric connection of the proximity switches specified by SPX FLOW is undertaken according to the terminal layout described in chapter 6.

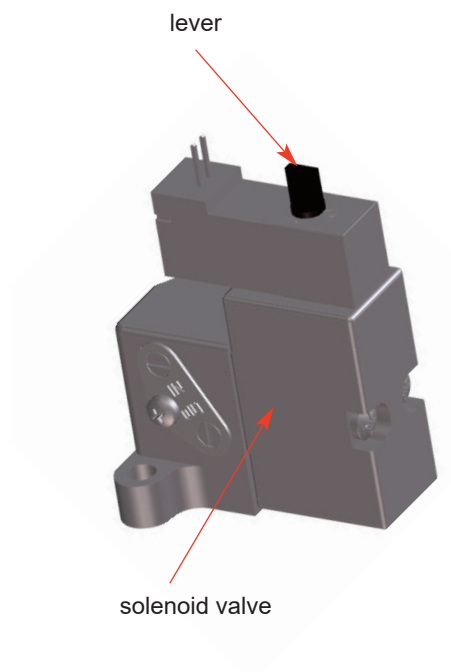
The mechanic assembly of the proximity switches is carried out at the actuator of the corresponding double seat valves.

Observance of the instruction manual for double seat valves is essential!

### 8.5.4 Startup

After proper assembly and installation of the control unit, startup can be undertaken as described below

1. Switch on the air supply
2. Switch on the voltage supply.
3. Check the solenoid valves by turning the lever on the upper side by 90°.
4. For final adjustments of the feedback position switches please use the Teach function.





## 9. Accessories and Tools

### Assembly/disassembly - adapter on valve actuator:

- hexagon socket wrench 6 mm
- screwdriver 4 mm

### Assembly/disassembly – CU on adapter:

- hexagon socket wrench 3 mm

### Assembly/disassembly – electronic module:

- Torx wrench TX20
- screwdriver 3.5 mm

### Assembly/disassembly – feedback unit:

- Torx wrench TX15

### Assembly/disassembly – electronic modules:

- Torx wrench TX20

### Assembly/disassembly – air connections:

- jaw wrench SW13

### Assembly/disassembly – pressure relief valve:

- Torx wrench TX10

Loctite semi-solid

jaw wrench



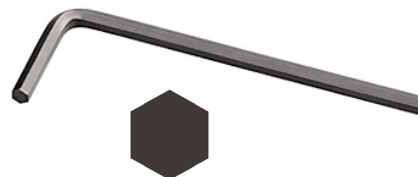
torx wrench



screwdriver



hexagon socket wrench



---

## 10. Service

---

### 10.1. Dismantling

Before disassembly, verify the following items:

- The valve must be in safety position and must not be controlled!
- Shut off air supply!
- Cut off current to control unit, i.e. interrupt the supply voltage!

#### **Solenoid valve (4, 5, 6)**

- + Open the CU cover by turning in counterclockwise direction.
- + Release the plug connection at the electronic module for the corresponding solenoid valve.
- + Release and remove the 2 screws (20) TX20.
- + Replace the solenoid valve.
- + Assembly in reverse order. See to a proper fit of the flat seal!

#### **Electronic module (2)**

Before releasing the cable connections make sure that all lines are de-energised!

- + Open the CU cover by turning in counterclockwise direction.
- + Release the plug connection of the solenoid valves.
- + Release the cable from the terminal strip, all terminals 1-8.
- + Release and remove the 3 screws (20) TX20.
- + Replace the electronic module.
- + Assembly in reverse order.

#### **Feedback unit**

Before releasing the cable connections make sure that all lines are de-energised!

- + Open the cover.
- + Release the cable for the linear sensors from the terminal strip, terminals 3-8.
- + Release the clamp ring and lift the CU4 from the adapter.
- + Remove the 4 screws (9) TX15 at the lower side of the CU base (1).
- + Take out the feedback unit to the bottom.

#### **Linear sensor**

The linear sensor can only be replaced at the dismantled feedback unit.

- + Remove the 2 screws (14) TX10.
- + Release the plug connection at the electronic module.  
Dismantle the linear sensor.
- + Assembly in reverse order.
- + Carry out Teach-in.

## 11. Trouble Shooting

| Failure   | Remedy  |
|---|---|
| Valve position is not indicated.                                | Carry out Teach-in.   |
|   | Check fastening of magnetic switching cam.  |
|   | Check adjusted logic profile and process valve.   |
| Feedback via proximity switches is missing.                     | Check positioning of proximity switches.  |
|   | Check cabling to the electronic module.   |
| LED indication is missing.                                      | Check cabling to the electronic module.   |
|   |   |
| Control Unit CU41 installed on Butterfly valves                 |   |
| Movement of valve flap is missing with actuated solenoid valve. | Check if right control unit is installed. Check label in type window of control unit: CU41plus-T DC |
|   | Check valve movement with manual at solenoid valve.   |
|   | Check cabling between electronic module and solenoid valve.   |
|   | Check compressed air (min. 6 bar).  |
|   | Bore for transfer of control air to turning actuator must be open.                                  |
| Air leakage at lower side of adapter.                           | Check O-rings of adapter.   |

## 11. Trouble Shooting

| Failure   | Remedy  |
|---|---|
| <b>Control Unit CU41 installed on Single seat, Double seal and Double seat valves</b> |   |
| Valve position movement is missing with actuated solenoid valve.                      | Check if right control unit is installed. Check label in type window of control unit:<br>CU41plus-S DC<br>CU41Nplus-S DC<br>CU41plus-M DC<br>CU41plus-D4-DC |
|   | Check valve movement with manual at solenoid valve.   |
|   | Check cabeling between electronic module and solenoid valve.  |
|   | Check compressed air (min. 6 bar).  |
|   | Check control air connection between the CU41 and the valve actuator.   |
| <b>Control Unit CU43 installed on Double seat valves with SLD</b>                     |   |
| Valve position movement is missing with actuated solenoid valve.                      | Check if right control unit is installed. Check label in type window of control unit:<br>CU43plus-M DC<br>CU43plus-D4-DC                                    |
|   | Check valve movement with manual at solenoid valve.   |
|   | Check cabeling between electronic module and solenoid valve.  |
|   | Check compressed air (min. 6 bar).  |
|   | Check control air connection between the CU43plus and the DA3 / DA4 / D4 SL / D4 PMO / DT4 SL actuator.   |

---

## 12. Spare Parts Lists

---

The reference numbers of spare parts for the different control unit designs and adapters are included in the attached spare parts drawings with corresponding lists.

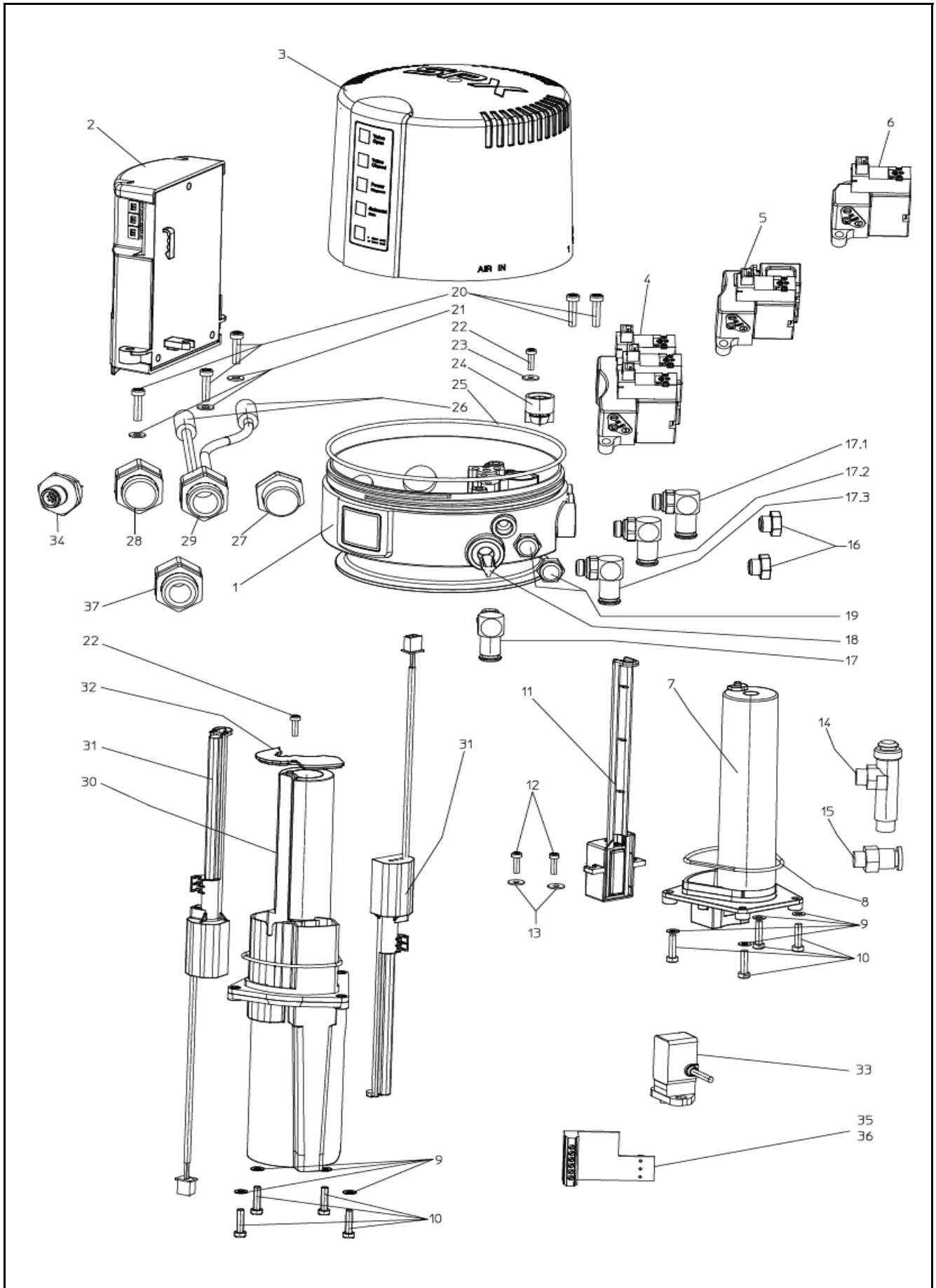
When you place an order for spare parts, please indicate the following data:

- number of parts required
- ID number
- reference number
- parts designation

Data are subject to change.



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.



|          |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------|----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Datum:   | 13.01.12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Name:    | C.Keil   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Geprüft: |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Ersatzteilliste: spare parts list

**Control Unit CU4plus Direct Connect**

|                    |          |
|--------------------|----------|
| <b>SPX FLOW</b>    |          |
| Blatt              | 1 von 13 |
| <b>RN 01.044.7</b> |          |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

## Control Unit CU4 plus Direct Connect

|      |          | Datum: 13.01.21                           |                  |                              |                              |                               |                                | SPX FLOW                      |                    |
|------|----------|---|------------------|------------------------------|------------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------|
|      |          | Name: C. Keil                             |                  |                              |                              |                               |                                |                               |                    |
|      |          | Geprüft:                                  |                  |                              |                              |                               |                                |                               |                    |
|      |          | Datum:                                    |                  |                              |                              | Blatt 2 von 13                |                                |                               |                    |
|      |          | Name:                                     |                  |                              |                              | RN 01.044.7                   |                                |                               |                    |
|      |          | Geprüft:                                  |                  |                              |                              |                               |                                |                               |                    |
| pos. | Menge    | Beschreibung                              | Material         | CU41plus-S<br>Direct Connect | CU41plus-T<br>Direct Connect | CU41plus-M<br>Dirrect Connect | CU41Nplus-S<br>Dirrect Connect | CU41Nplus-T<br>Direct Connect | WS-Nr.<br>ref.-no. |
| item | quantity | description                               | material         | WS-Nr.<br>ref.-no.           | WS-Nr.<br>ref.-no.           | WS-Nr.<br>ref.-no.            | WS-Nr.<br>ref.-no.             | WS-Nr.<br>ref.-no.            | WS-Nr.<br>ref.-no. |
|      |          | CU41plus Direct Connect kpl. (6x1)        | PA 6.6 GF30      | 08-45-401/93                 | 08-45-403/93                 | 08-45-405/93                  | 08-45-411/93                   | 08-45-413/93                  |                    |
|      |          | CU41plus Direct Connect cpl. (6x1)        | schwarz          | H342436                      | H342438                      | H342440                       | H342444                        | H342446                       |                    |
|      |          | CU41plus Direct Connect kpl. (1/4" OD)    | PA 6.6 GF30      | 08-45-402/93                 | 08-45-404/93                 | 08-45-406/93                  | 08-45-412/93                   | 08-45-414/93                  |                    |
|      |          | CU41plus Direct Connect cpl. (1/4" OD)    | schwarz          | H342437                      | H342439                      | H342441                       | H342445                        | H342447                       |                    |
|      |          | CU41plus Direct Connect cpl. M12          | PA 6.6 GF30      | 08-45-421/93                 | 08-45-423/93                 | 08-45-425/93                  | 08-45-445/93                   | 08-45-447/93                  |                    |
|      |          | CU41plus Direct Connect cpl. M12          | schwarz          | H342456                      | H342458                      | H342460                       | H342464                        | H342466                       |                    |
|      |          | CU41plus Direct Connect cpl. (1/4"OD) M12 | PA 6.6 GF30      | 08-45-422/93                 | 08-45-424/93                 | 08-45-426/93                  | 08-45-446/93                   | 08-45-448/93                  |                    |
|      |          | CU41plus Direct Connect cpl. (1/4"OD) M12 | schwarz          | H342457                      | H342459                      | H342461                       | H342465                        | H342467                       |                    |
|      |          |   |                  |                              |                              |                               |                                |                               |                    |
|      |          |   |                  |                              |                              |                               |                                |                               |                    |
|      |          |   |                  |                              |                              |                               |                                |                               |                    |
| 1    | 1        | CU41-Base                                 | GRILON           | 08-46-552/93                 | 08-46-553/93                 | 08-46-554/93                  | 08-46-552/93                   | 08-46-553/93                  |                    |
|      |          | CU41-Base                                 | TSG30 schwarz    | H319853                      | H319854                      | H319855                       | H319853                        | H319854                       |                    |
| 2    | 1        | CU4plus Direct Connect-SLD E-Modul        | Zytel 70G33L     | 000 08-46-916/93             |                              | H343238                       |                                |                               |                    |
|      |          | CU4plus Direct Connect SLD E-Modul        | schwarz          |                              |                              |                               |                                |                               |                    |
| 3    | 1        | CU4 Haube kpl. mit solenoid LED           | PA12/Grilamid    | 08-46-659/93                 |                              |                               |                                |                               |                    |
|      |          | CU4 cap cpl. with solenoid LED            | LV-3H schw. GF30 | H325602                      |                              |                               |                                |                               |                    |
| 4    | 1        | Magnetventilblock 1 EMV                   | PPS              | 08-46-578/93                 | 08-46-578/93                 |                               |                                |                               |                    |
|      |          | solenoid valve 1EMV                       |                  | H319950                      | H319950                      |                               |                                |                               |                    |
| 5    | 1        | Magnetventilblock 1 EMV + NOT-Element     | PPS              | 08-46-579/93                 | 08-46-579/93                 |                               |                                |                               |                    |
|      |          | solenoid valve 1 EMV + NOT-element        |                  |                              |                              |                               |                                |                               |                    |
| 6    | 1        | Magnetventilblock 3 EMV                   | PPS              |                              |                              |                               |                                |                               |                    |
|      |          | solenoid valve 3 EMV                      |                  |                              |                              |                               |                                |                               |                    |
| 7    | 1        | CU4plus Sensortower                       | Grilamid TR90    | 08-46-584/93                 |                              |                               |                                |                               |                    |
|      |          | CU4plus Sensortower                       |                  | H321498                      |                              |                               |                                |                               |                    |
| 8    | 1        | O-Ring                                    | NBR 70 Shore A   | 58-06-218/83                 |                              |                               |                                |                               |                    |
|      |          | O-ring                                    |                  | H320401                      |                              |                               |                                |                               |                    |
| 9    | 4        | Scheibe                                   |                  | 67-01-004/13                 |                              |                               |                                |                               |                    |
|      |          | Washer                                    | A2               | H323771                      |                              |                               |                                |                               |                    |



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

**Control Unit CU4 plus Direct Connect**

|           |                | Datum: 13.01.21  |             |   |   | SPX FLOW                                  |  |  |
|-----------|----------------|--|-------------|---|---|---|--|--|
|           |                | Name: C.Keil   |             |   |   |   |  |  |
|           |                | Geprüft:   |             |   |   | Blatt 3 von 13                            |  |  |
|           |                | Datum:   |             |   |   | RN 01.044.7                               |  |  |
|           |                | Name:  |             |   |   |   |  |  |
|           |                | Geprüft:   |             |   |   |   |  |  |
| pos. item | Menge quantity | Beschreibung description   | Material    | CU41plus-S Direct Connect WS-Nr. ref.-no. | CU41plus-T Direct Connect WS-Nr. ref.-no. | CU41plus-M Direct Connect WS-Nr. ref.-no. | CU41Nplus-S Direct Connect WS-Nr. ref.-no. | CU41Nplus-T Direct Connect WS-Nr. ref.-no. |
| 10        | 4              | Ejot Delta PT Schraube WN 5451<br>Ejot Delta PT screw 35 x 14                          | A2          | 65-17-122/13<br>H320364                   |   |   |  |  |
| 11        | 1              | CU4 techno Sensor kpl. mit Anschlusskabel<br>CU4 techno sensor cpl. With connec. cable |             | 08-46-620/93<br>H324877                   |   |   |  |  |
| 12        | 2              | Ejot Delta PT Schraube WN 5452<br>Ejot Delta PT screw 30 x 10                          | A2          | 65-17-110/13<br>H320363                   |   |   |  |  |
| 13        | 2              | Scheibe DIN9021 A=3,2<br>Washer  | A2          | 67-01-001/12<br>H320404                   |   |   |  |  |
| 14        | 1              | Druckreduzierventil 5 bar<br>Pressure reducer valve 5 bar                              | Ms / vern.  | -----<br>-----                            | 08-60-766/93<br>H208841                   |   |  |  |
| 15        | 1              | Steckverschraub. gerade selbstabsperr. IQSK<br>Connection direct automatic lock        | Ms / vern.  | -----<br>-----                            | 08-63-241/99<br>H320551                   |   |  |  |
| 16.1      | 1              | Blindstopfen G1/8" mit O-Ring<br>Plug G1/8" with o-ring                                | Ms / vern.  | 08-60-051/99<br>H320482                   |   |   | 08-60-051/99<br>H320482                    |  |
| 16.2      | 1              | Blindstopfen G1/8" mit O-Ring<br>Plug G1/8" with o-ring                                | Ms / vern.  | 08-60-051/99<br>H320482                   |   |   |  |  |
| 17        | 1              | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA | 08-60-750/93<br>H208825                   |   |   |  |  |
| 17.1      | 1              | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA | 08-60-811/93<br>H312732                   |   |   |  |  |
| 17.1.1    | 1              | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA | 08-60-750/93<br>H208825                   |   |   |  |  |
| 17.1.2    | 1              | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA | 08-60-811/93<br>H312732                   |   |   |  |  |
| 17.2      | 1              | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA | -----<br>-----                            |   |   |  |  |
| 17.2.1    | 1              | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA | 08-60-750/93<br>H208825                   |   |   |  |  |
| 17.2.2    | 1              | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA | 08-60-811/93<br>H312732                   |   |   |  |  |
| 17.3      | 1              | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA | -----<br>-----                            |   |   |  |  |
| 17.3.1    | 1              | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA | 08-60-750/93<br>H208825                   |   |   |  |  |
| 17.3.2    | 1              | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA | 08-60-811/93<br>H312732                   |   |   |  |  |



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

## Control Unit CU4 plus Direct Connect

|           |                | Datum: 13.01.21                           |                  | Name: C. Keil                             |   | Blatt 5 von 13  |                 | SPX FLOW        |                 |
|-----------|----------------|---|------------------|---|---|-----------------|-----------------|-----------------|-----------------|
|           |                | Geprüft:                                  |                  | Geprüft:                                  |   | WS-Nr. ref.-no. |                 | WS-Nr. ref.-no. |                 |
|           |                | Datum:                                    |                  | Name:                                     |   | Geprüft:        |                 | RN 01.044.7     |                 |
| pos. item | Menge quantity | Beschreibung description                  | Material         | CU43plus-S Direct Connect WS-Nr. ref.-no. | CU43plus-M Direct Connect WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. |
|           |                | CU43plus Direct Connect kpl. (6x1)        | PA 6.6 GF30      | 08-45-407/93                              | 08-45-409/93                              |                 |                 |                 |                 |
|           |                | CU43plus Direct Connect cpl. (6x1)        | schwarz          | H342448                                   | H342450                                   |                 |                 |                 |                 |
|           |                | CU43plus Direct Connect kpl. (1/4" OD)    | PA 6.6 GF30      | 08-45-408/93                              | 08-45-410/93                              |                 |                 |                 |                 |
|           |                | CU43plus Direct Connect cpl. (1/4" OD)    | schwarz          | H342449                                   | H342451                                   |                 |                 |                 |                 |
|           |                | CU43plus Direct Connect cpl. M12          | PA 6.6 GF30      | 08-45-427/93                              | 08-45-429/93                              |                 |                 |                 |                 |
|           |                | CU43plus Direct Connect cpl. M12          | schwarz          | H342468                                   | H342470                                   |                 |                 |                 |                 |
|           |                | CU43plus Direct Connect cpl. (1/4"OD) M12 | PA 6.6 GF30      | 08-45-428/93                              | 08-45-436/93                              |                 |                 |                 |                 |
|           |                | CU43plus Direct Connect cpl. (1/4"OD) M12 | schwarz          | H342469                                   | H342471                                   |                 |                 |                 |                 |
|           |                |   |                  |   |   |                 |                 |                 |                 |
|           |                |   |                  |   |   |                 |                 |                 |                 |
|           |                |   |                  |   |   |                 |                 |                 |                 |
| 1         | 1              | CU43-Base                                 | GRILON           | 08-46-556/93                              |   |                 |                 |                 |                 |
|           |                | CU43-Base                                 | TSG30 schwarz    | H319857                                   |   |                 |                 |                 |                 |
| 2         | 1              | CU4plus Direct Connect SLD E-Modul        | Zytel 70G33L     | 000 08-46-916/93                          |   |                 |                 |                 |                 |
|           |                | CU4plus Direct Connect SLD E-Modul        | schwarz          | H343238                                   |   |                 |                 |                 |                 |
| 3         | 1              | CU4 Haube kpl. mit solenoid LED           | PA12/Grilamid    | 08-46-659/93                              |   |                 |                 |                 |                 |
|           |                | CU4 cap cpl. with solenoid LED            | LV-3H schw. GF30 | H325602                                   |   |                 |                 |                 |                 |
| 4         | 1              | Magnetventilblock 1 EMV                   | PPS              | -----                                     | -----                                     |                 |                 |                 |                 |
|           |                | solenoid valve 1EMV                       |                  | -----                                     | -----                                     |                 |                 |                 |                 |
| 5         | 1              | Magnetventilblock 1 EMV + NOT-Element     | PPS              | -----                                     | -----                                     |                 |                 |                 |                 |
|           |                | solenoid valve 1 EMV + NOT-element        |                  | -----                                     | -----                                     |                 |                 |                 |                 |
| 6         | 1              | Magnetventilblock 3 EMV                   | PPS              | 08-46-580/93                              |   |                 |                 |                 |                 |
|           |                | solenoid valve 3 EMV                      |                  | H319952                                   |   |                 |                 |                 |                 |
| 7         | 1              | CU4plus Sensortower                       | Grilamid TR90    | 08-46-584/93                              |   |                 |                 |                 |                 |
|           |                | CU4plus Sensortower                       |                  | H321498                                   |   |                 |                 |                 |                 |
| 8         | 1              | O-Ring                                    | NBR 70 Shore A   | 58-06-218/83                              |   |                 |                 |                 |                 |
|           |                | O-ring                                    |                  | H320401                                   |   |                 |                 |                 |                 |
| 9         | 4              | Scheibe                                   | A2               | 67-01-004/13                              |   |                 |                 |                 |                 |
|           |                | Washer                                    |                  | H323771                                   |   |                 |                 |                 |                 |
| 10        | 4              | Ejot Delta PT Schraube                    | A2               | 65-17-122/13                              |   |                 |                 |                 |                 |
|           |                | Ejot Delta PT screw                       |                  | H320364                                   |   |                 |                 |                 |                 |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

**Control Unit CU4 plus Direct Connect**

| pos. item |   | Menge quantity   | Beschreibung description | Material | CU43plus-S Direct Connect |                 | CU43plus-M Direct Connect |                 | Date/Name/Checked     |                       | SPX FLOW  |          |
|-----------|---|--|--------------------------|----------|---------------------------|-----------------|---------------------------|-----------------|-----------------------|-----------------------|-----------|----------|
|           |   |  |                          |          | WS-Nr. ref.-no.           | WS-Nr. ref.-no. | WS-Nr. ref.-no.           | WS-Nr. ref.-no. | Datum: Name: Geprüft: | Datum: Name: Geprüft: | Blatt von | Ref. no. |
| 11        | 1 | CU4 techno Sensor kpl. mit Anschlusskabel<br>CU4 techno sensor cpl. With connec. cable |                          |          | 08-46-620/93<br>H324877   |                 |                           |                 | 13.01.21<br>C.Keil    |                       |           | 13       |
| 12        | 2 | Ejot Delta PT Schraube<br>Ejot Delta PT screw  | A2                       |          | 65-17-110/13<br>H320363   |                 |                           |                 |                       |                       |           |          |
| 13        | 2 | Scheibe<br>Washer  | A2                       |          | 67-01-001/12<br>H320404   |                 |                           |                 |                       |                       |           |          |
| 14        | 1 | Druckreduzierventil 5 bar<br>Pressure reducer valve 5 bar                              | Ms / vern.               |          |                           |                 |                           |                 |                       |                       |           |          |
| 15        | 1 | Steckverschraub. gerade selbstabsperr. IQSK<br>Connection direct automatic lock        | Ms / vern.               |          |                           |                 |                           |                 |                       |                       |           |          |
| 16.1      | 1 | Blindstopfen G1/8" mit O-Ring<br>Plug G1/8" with o-ring                                | Ms / vern.               |          | 08-60-051/99<br>H320482   |                 |                           |                 |                       |                       |           |          |
| 16.2      | 1 | Blindstopfen G1/8" mit O-Ring<br>Plug G1/8" with o-ring                                | Ms / vern.               |          |                           |                 |                           |                 |                       |                       |           |          |
| 17        | 1 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA              |          | 08-60-750/93<br>H208825   |                 |                           |                 |                       |                       |           |          |
|           |   | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA              |          | 08-60-811/93<br>H312732   |                 |                           |                 |                       |                       |           |          |
| 17.1      | 1 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA              |          | 08-60-750/93<br>H208825   |                 |                           |                 |                       |                       |           |          |
|           |   | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA              |          | 08-60-811/93<br>H312732   |                 |                           |                 |                       |                       |           |          |
| 17.2      | 1 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA              |          | 08-60-750/93<br>H208825   |                 |                           |                 |                       |                       |           |          |
|           |   | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA              |          | 08-60-811/93<br>H312732   |                 |                           |                 |                       |                       |           |          |
| 17.3      | 1 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                 | 1.4301 / PA              |          | 08-60-750/93<br>H208825   |                 |                           |                 |                       |                       |           |          |
|           |   | W-Verschraubung G1/8" 1/4" OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA              |          | 08-60-811/93<br>H312732   |                 |                           |                 |                       |                       |           |          |
| 18        | 1 | CU4 Luftfilter<br>CU4 air filter   | PE-porös-<br>hydrophob   |          | 08-10-005/93<br>H320223   |                 |                           |                 |                       |                       |           |          |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

## Control Unit CU4 plus Direct Connect

|      |      | Datum: 13.01.21 |   | Name: C. Keil          |                              | Geprüft:                     |                    | Blatt 7 von 13     |                    | SPX FLOW           |                    |
|------|------|-----------------|---|------------------------|------------------------------|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| pos. | item | Menge           | Beschreibung  | Material               | CU43plus-S<br>Direct Connect | CU43plus-M<br>Direct Connect | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. |
|      |      |                 | description   |                        | WS-Nr.<br>ref.-no.           | WS-Nr.<br>ref.-no.           |                    |                    |                    |                    |                    |
| 19   | 1    | 1               | Schalldämpfer<br>sound reducer  | Ms / vern.             | 08-60-751/93<br>H208826      |                              |                    |                    |                    |                    |                    |
| 20   | 5    | 5               | Ejot Delta PT Schraube<br>WN 5452<br>40 x 16  | A2                     | 65-17-131/13<br>H320365      |                              |                    |                    |                    |                    |                    |
| 21   | 3    | 3               | Scheibe<br>Washer<br>DIN125 I=4,3   | A2                     | 67-01-003/13<br>H78576       |                              |                    |                    |                    |                    |                    |
| 22   | 1    | 1               | Ejot Delta PT Schraube<br>WN 5452<br>30 x 10  | A2                     | 65-17-110/13<br>H320363      |                              |                    |                    |                    |                    |                    |
| 23   | 1    | 1               | Scheibe<br>Washer<br>DIN9021 A=3,2  | A2                     | 67-01-001/12<br>H320404      |                              |                    |                    |                    |                    |                    |
| 24   | 1    | 1               | CU4 Überströmventil Rv-Patrone OF-15-HAT<br>CU4 overflow valve Rv-cartridge OF-15-HAT | PPS                    | 08-46-037/93<br>H320352      |                              |                    |                    |                    |                    |                    |
| 25   | 1    | 1               | O-Ring<br>O-ring<br>OR 120,32 x 2,62  | NBR 70 Shore A         | 58-06-533/83<br>H320402      |                              |                    |                    |                    |                    |                    |
| 26   | 2    | 2               | Initiator Ni5 K11K-AN 5X/5<br>Proximity switch Ni5 K11K-AN 5X/5                       |                        |                              | 08-60-769/93<br>H208844      |                    |                    |                    |                    |                    |
| 27   | 1    | 1               | Blindstopfen V-NE-SD M20x1,5<br>Plug V-NE-SD M20x1,5                                  | PA schwarz<br>RAL 9005 | 08-60-053/93<br>H324895      |                              |                    |                    |                    |                    |                    |
| 28   | 1    | 1               | Kabelverschraubung M20x1,5 Kabel ø6-12<br>Screwed cable gland M20x1,5 Kabel ø6-12     | PA schwarz             | 08-46-042/93<br>H323199      |                              |                    |                    |                    |                    |                    |
| 29   | 1    | 1               | Kabelverschraubung M20x1,5 Kabel ø2x5<br>Screwed cable gland M20x1,5 Kabel ø2x5       | PA schwarz             |                              | 08-46-040/93<br>H320371      |                    |                    |                    |                    |                    |
| 34   | 1    | 1               | Female flange M12x1 with sld. con.8pin<br>Female flange M12x1 with sld. con.8pin      | 1.4404                 | 08-46-634/99<br>H341354      |                              |                    |                    |                    |                    |                    |
| 36   | 1    | 1               | CU4plus Adapter Sensor 2 Initiatoren<br>CU4plus Adapter Sensor 2 prox switches        | PA 6.6 GF30<br>schwarz | 08-48-698/93<br>H342435      |                              |                    |                    |                    |                    |                    |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

**Control Unit CU4 plus Direct Connect**

| pos.<br>item | Menge<br>quantity | Beschreibung<br>description  | Material                         | CU41 Plus D4<br>Direct Connect |                         | CU43 Plus D4<br>Direct Connect |                    | Date:<br>Name:<br>Checked: | Date:<br>Name:<br>Checked: | SPX FLOW      |           |
|--------------|-------------------|--|----------------------------------|--------------------------------|-------------------------|--------------------------------|--------------------|----------------------------|----------------------------|---------------|-----------|
|              |                   |  |                                  | WS-Nr.<br>ref.-no.             | WS-Nr.<br>ref.-no.      | WS-Nr.<br>ref.-no.             | WS-Nr.<br>ref.-no. |                            |                            | Blatt<br>Page | von<br>of |
|              |                   | CU4plus D4 Direct Connect V2   | material                         | 08-45-415/93<br>H342442        | 08-45-417/93<br>H342452 |                                |                    |                            |                            |               |           |
|              |                   | CU4plus D4 Direct Connect V2   |                                  | 08-45-416/93<br>H342443        | 08-45-418/93<br>H342453 |                                |                    |                            |                            |               |           |
|              |                   | CU4plus D4 Direct Connect V2 (1/4"OD)                                    |                                  | 08-45-443/93<br>H342462        | 08-45-437/93<br>H342472 |                                |                    |                            |                            |               |           |
|              |                   | CU4plus D4 Direct Connect V2 M12   |                                  | 08-45-444/93<br>H342463        | 08-45-438/93<br>H342473 |                                |                    |                            |                            |               |           |
|              |                   | CU4plus D4 Direct Connect V2 (1/4"OD) M12                                |                                  |                                |                         |                                |                    |                            |                            |               |           |
|              |                   | CU4plus D4 Direct Connect V2 (1/4"OD) M12                                |                                  |                                |                         |                                |                    |                            |                            |               |           |
| 1            | 1                 | CU4-Base<br>CU4-Base   | GRILON<br>TSG30 schwarz          | 08-46-554/93<br>H319855        | 08-46-556/93<br>H319857 |                                |                    |                            |                            |               |           |
| 2            | 1                 | CU4plus Direct Connect SLD E-Modul<br>CU4plus Direct Connect SLD E-Modul | Zytel 70G33L<br>schwarz          | 000 08-46-916/93<br>H343238    |                         |                                |                    |                            |                            |               |           |
| 3            | 1                 | CU4 Haube kpl. mit solenoid LED<br>CU4 cap cpl. with solenoid LED        | PA12/Gilamid<br>LV-3H schw. GF30 | 08-46-659/93<br>H325602        |                         |                                |                    |                            |                            |               |           |
| 4            | 1                 | Magnetventilblock 1 EMV<br>solenoid valve 1EMV                           | PPS                              | 08-46-578/93<br>H319950        |                         |                                |                    |                            |                            |               |           |
| 6            | 1                 | Magnetventilblock 3 EMV<br>solenoid valve 3 EMV                          | PPS                              |                                | 08-46-580/93<br>H319952 |                                |                    |                            |                            |               |           |
| 8            | 1                 | O-Ring<br>O-ring   | NBR 70 Shore A                   | 58-06-218/83<br>H320401        |                         |                                |                    |                            |                            |               |           |
| 9            | 4                 | Scheibe<br>Washer  | A2                               | 67-01-004/13<br>H323771        |                         |                                |                    |                            |                            |               |           |
| 10           | 4                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw                            | A2                               | 65-17-122/13<br>H320364        |                         |                                |                    |                            |                            |               |           |
| 12           | 5                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw                            | A2                               | 65-17-110/13<br>H320363        |                         |                                |                    |                            |                            |               |           |
| 13           | 2                 | Scheibe<br>Washer  | A2                               | 67-01-001/12<br>H320404        |                         |                                |                    |                            |                            |               |           |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

**Control Unit CU4 plus Direct Connect**

| pos.<br>item | Menge<br>quantity | Beschreibung<br>description   | Material               | CU41 Plus D4<br>Direct Connect |                         | CU43 Plus D4<br>Direct Connect |                    | Datei                       |                             | SPX FLOW     |          |
|--------------|-------------------|---|------------------------|--------------------------------|-------------------------|--------------------------------|--------------------|-----------------------------|-----------------------------|--------------|----------|
|              |                   |   |                        | WS-Nr.<br>ref.-no.             | WS-Nr.<br>ref.-no.      | WS-Nr.<br>ref.-no.             | WS-Nr.<br>ref.-no. | Datum:<br>Name:<br>Geprüft: | Datum:<br>Name:<br>Geprüft: | Blatt<br>von | 13<br>13 |
| 17           | 1                 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                | 1.4301 / PA            | 08-60-750/93<br>H208825        | 08-60-750/93<br>H208825 | -----<br>-----                 | -----<br>-----     | 13.01.21<br>C.Keil          |                             |              |          |
|              |                   | W-Verschraubung G1/8" 1/4"OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA            | 08-60-811/93<br>H312732        | 08-60-811/93<br>H312732 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 17.1         | 1                 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                | 1.4301 / PA            | 08-60-750/93<br>H208825        | 08-60-750/93<br>H208825 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
|              |                   | W-Verschraubung G1/8" 1/4"OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA            | 08-60-811/93<br>H312732        | 08-60-811/93<br>H312732 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 17.2         | 1                 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                | 1.4301 / PA            | 08-60-750/93<br>H208825        | 08-60-750/93<br>H208825 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
|              |                   | W-Verschraubung G1/8" 1/4"OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA            | 08-60-811/93<br>H312732        | 08-60-811/93<br>H312732 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 17.3         | 1                 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                | 1.4301 / PA            | 08-60-750/93<br>H208825        | 08-60-750/93<br>H208825 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
|              |                   | W-Verschraubung G1/8" 1/4"OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA            | 08-60-811/93<br>H312732        | 08-60-811/93<br>H312732 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 18           | 1                 | CU4 Luffilter<br>CU4 air filter   | PE-porös-<br>hydrophob | 08-10-005/93<br>H320223        | 08-10-005/93<br>H320223 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 19           | 1                 | Schalldämpfer<br>sound reducer  | Ms / vern.             | 08-60-751/93<br>H208826        | 08-60-751/93<br>H208826 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 20           | 5                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw   | A2                     | 65-17-131/13<br>H320365        | 65-17-131/13<br>H320365 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 21           | 3                 | Scheibe<br>Washer   | A2                     | 67-01-003/13<br>H78576         | 67-01-003/13<br>H78576  | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 22           | 2                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw   | A2                     | 65-17-110/13<br>H320363        | 65-17-110/13<br>H320363 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 23           | 1                 | Scheibe<br>Washer   | A2                     | 67-01-001/12<br>H320404        | 67-01-001/12<br>H320404 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 24           | 1                 | CU4 Überströmventil Rv-Patrone OF-15-HAT<br>CU4 overflow valve Rv-cartridge OF-15-HAT | PPS                    | 08-46-037/93<br>H320352        | 08-46-037/93<br>H320352 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |
| 25           | 1                 | O-Ring<br>O-ring  | NBR 70 Shore A         | 58-06-533/83<br>H320402        | 58-06-533/83<br>H320402 | -----<br>-----                 | -----<br>-----     |                             |                             |              |          |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

**Control Unit CU4 plus Direct Connect**

|              |                   | Datum:<br>13.01.21  |                        |  | SPX FLOW   |                    |
|--------------|-------------------|---|------------------------|--|--|--------------------|
|              |                   | Name:<br>C.Keil   |                        |  |  |                    |
|              |                   | Geprüft:  |                        |  |  |                    |
|              |                   | Datum:  |                        |  | Blatt 10 von 13                                      |                    |
|              |                   | Name:   |                        |  | RN 01.044.6  |                    |
|              |                   | Geprüft:  |                        |  |  |                    |
| pos.<br>item | Menge<br>quantity | Beschreibung<br>description   | Material               | CU41 Plus D4<br>Direct Connect<br>WS-Nr.<br>ref.-no. | CU43 Plus D4<br>Direct Connect<br>WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. |
| 27           | 1                 | Blindstopfen V-NE-SD M20x1,5<br>Plug V-NE-SD M20x1,5                              | PA schwarz<br>RAL 9005 | 08-60-053/93<br>H324895                              |  |                    |
| 28           | 1                 | Kabelverschraubung M20x1,5 Kabel ø6-12<br>Screwed cable gland M20x1,5 Kabel ø6-12 | PA schwarz             | 08-46-042/93<br>H323199                              |  |                    |
| 30           | 1                 | CU4plus Sensortower D4 V2<br>CU4plus sensortower D4 V2                            | Tritan TX 2001<br>PET  | 08-46-593/93<br>H339461                              |  |                    |
| 31           | 2                 | CU4plus Sensor V2<br>CU4plus Sensor V2  | Noryl 731 S<br>schwarz | 000 08-46-594/93<br>H339463                          |  |                    |
| 32           | 1                 | Kappe CU4plus Sensor Tower<br>cap CU4plus sensor tower                            | Noryl 731 S<br>schwarz | 000 08-46-592/93<br>H339432                          |  |                    |
| 34           | 1                 | Female flange M12x1 with sid. Con.<br>Female flange M12x1 with sid. Con.          | 1.4404                 | 08-46-633/99<br>H341353                              | 08-46-634/99<br>H341354                              |                    |



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

**Control Unit CU4 plus Direct Connect**

| pos.<br>item | Menge<br>quantity | Beschreibung<br>description  | Material                         | CU43 Plus DT4<br>Direct Connect |          | CU4 plus DT4<br>Direct Connect |          | Date:<br>Name:<br>Checked: | Date:<br>Name:<br>Checked: | SPX FLOW           |                    |
|--------------|-------------------|--|----------------------------------|---------------------------------|----------|--------------------------------|----------|----------------------------|----------------------------|--------------------|--------------------|
|              |                   |  |                                  | WS-Nr.<br>ref.-no.              | Material | WS-Nr.<br>ref.-no.             | Material |                            |                            | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. |
|              |                   | CU4plus DT4 Direct Connect   |                                  | 08-45-419/93<br>H342454         |          |                                |          | 13.01.21<br>C.Keil         |                            |                    |                    |
|              |                   | CU4plus DT4 Direct Connect   |                                  | 08-45-420/93<br>H342455         |          |                                |          |                            |                            |                    |                    |
|              |                   | CU4plus DT4 Direct Connect (1/4"OD)                                      |                                  | 08-45-441/93<br>H342474         |          |                                |          |                            |                            |                    |                    |
|              |                   | CU4plus DT4 Direct Connect (1/4"OD)                                      |                                  | 08-45-442/93<br>H342475         |          |                                |          |                            |                            |                    |                    |
|              |                   | CU4plus DT4 Direct Connect M12   |                                  |                                 |          |                                |          |                            |                            |                    |                    |
|              |                   | CU4plus DT4 Direct Connect M12   |                                  |                                 |          |                                |          |                            |                            |                    |                    |
|              |                   | CU4plus DT4 Direct Connect (1/4"OD) M12                                  |                                  |                                 |          |                                |          |                            |                            |                    |                    |
|              |                   | CU4plus DT4 Direct Connect (1/4"OD) M12                                  |                                  |                                 |          |                                |          |                            |                            |                    |                    |
|              |                   |  |                                  |                                 |          |                                |          |                            |                            |                    |                    |
|              |                   |  |                                  |                                 |          |                                |          |                            |                            |                    |                    |
| 1            | 1                 | CU4-Base<br>CU4-Base   | GRILON<br>TSG30 schwarz          | 08-46-556/93<br>H319857         |          |                                |          |                            |                            |                    |                    |
| 2            | 1                 | CU4plus Direct Connect SLD E-Modul<br>CU4plus Direct Connect SLD E-Modul | Zytel 70G33L<br>schwarz          | 08-46-916/93<br>H343238         |          |                                |          |                            |                            |                    |                    |
| 3            | 1                 | CU4 Haube kpl. mit solenoid LED<br>CU4 cap cpl. with solenoid LED        | PA12/Gilamid<br>LV-3H schw. GF30 | 08-46-659/93<br>H325602         |          |                                |          |                            |                            |                    |                    |
| 4            | 1                 | Magnetventilblock 1 EMV<br>solenoid valve 1EMV                           | PPS                              | -----<br>-----                  |          |                                |          |                            |                            |                    |                    |
| 6            | 1                 | Magnetventilblock 3 EMV<br>solenoid valve 3 EMV                          | PPS                              | 08-46-580/93<br>H319952         |          |                                |          |                            |                            |                    |                    |
| 8            | 1                 | O-Ring<br>O-ring   | NBR 70 Shore A                   | 58-06-218/83<br>H320401         |          |                                |          |                            |                            |                    |                    |
| 9            | 4                 | Scheibe<br>Washer  | A2                               | 67-01-004/13<br>H323771         |          |                                |          |                            |                            |                    |                    |
| 10           | 4                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw                            | A2                               | 65-17-122/13<br>H320364         |          |                                |          |                            |                            |                    |                    |
| 12           | 5                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw                            | A2                               | 65-17-110/13<br>H320363         |          |                                |          |                            |                            |                    |                    |
| 13           | 2                 | Scheibe<br>Washer  | A2                               | 67-01-001/12<br>H320404         |          |                                |          |                            |                            |                    |                    |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

**Control Unit CU4 plus Direct Connect**

| pos.<br>item | Menge<br>quantity | Beschreibung<br>description   | Material               | CU43 Plus DT4<br>Direct Connect |                         | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no. | SPX FLOW                    |             |           |
|--------------|-------------------|---|------------------------|---------------------------------|-------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------------|-------------|-----------|
|              |                   |   |                        | WS-Nr.<br>ref.-no.              | WS-Nr.<br>ref.-no.      |                    |                    |                    |                    | Datum:<br>Name:<br>Geprüft: | Blatt<br>12 | von<br>13 |
| 17           | 1                 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                | 1.4301 / PA            | 08-60-750/93<br>H208825         | 08-60-750/93<br>H208825 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 17.1         | 1                 | W-Verschraubung G1/8" 1/4"OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA            | 08-60-811/93<br>H312732         | 08-60-811/93<br>H312732 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 17.2         | 1                 | W-Verschraubung G1/8" 6x1<br>Elbow connector G1/8" 6x1                                | 1.4301 / PA            | 08-60-750/93<br>H208825         | 08-60-750/93<br>H208825 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 17.3         | 1                 | W-Verschraubung G1/8" 1/4"OD<br>Elbow connector G1/8" 1/4" OD                         | 1.4301 / PA            | 08-60-811/93<br>H312732         | 08-60-811/93<br>H312732 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 18           | 1                 | CU4 Luffilter<br>CU4 air filter   | PE-porös-<br>hydrophob | 08-10-005/93<br>H320223         | 08-10-005/93<br>H320223 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 19           | 1                 | Schalldämpfer<br>sound reducer  | Ms / vern.             | 08-60-751/93<br>H208826         | 08-60-751/93<br>H208826 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 20           | 5                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw   | A2                     | 65-17-131/13<br>H320365         | 65-17-131/13<br>H320365 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 21           | 3                 | Scheibe<br>Washer   | A2                     | 67-01-003/13<br>H78576          | 67-01-003/13<br>H78576  | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 22           | 1                 | Ejot Delta PT Schraube<br>Ejot Delta PT screw   | A2                     | 65-17-110/13<br>H320363         | 65-17-110/13<br>H320363 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 23           | 1                 | Scheibe<br>Washer   | A2                     | 67-01-001/12<br>H320404         | 67-01-001/12<br>H320404 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 24           | 1                 | CU4 Überströmventil RV-Patrone OF-15-HAT<br>CU4 overflow valve RV-cartridge OF-15-HAT | PPS                    | 08-46-037/93<br>H320352         | 08-46-037/93<br>H320352 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |
| 25           | 1                 | O-Ring<br>O-ring  | NBR 70 Shore A         | 58-06-533/83<br>H320402         | 58-06-533/83<br>H320402 | -----<br>-----     | -----<br>-----     | -----<br>-----     | -----<br>-----     |                             |             |           |

Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

## Control Unit CU4 plus Direct Connect

| pos.<br>item | Menge<br>quantity | Beschreibung<br>description   | Material   | CU43 Plus DT4<br>Direct Connect |                    | CU4 plus Direct Connect |                    | Datei                       |                             | SPX FLOW     |              |
|--------------|-------------------|---|------------|---------------------------------|--------------------|-------------------------|--------------------|-----------------------------|-----------------------------|--------------|--------------|
|              |                   |   |            | WS-Nr.<br>ref.-no.              | WS-Nr.<br>ref.-no. | WS-Nr.<br>ref.-no.      | WS-Nr.<br>ref.-no. | Datum:<br>Name:<br>Geprüft: | Datum:<br>Name:<br>Geprüft: | Blatt<br>von | Blatt<br>von |
| 28           | 1                 | Kabelverschraubung M20x1,5 Kabel ø6-12<br>Screwed cable gland M20x1,5 Kabel ø6-12   | PA schwarz | 08-46-042/93<br>H323199         |                    |                         |                    | 13.01.21<br>C.Keil          |                             |              | 13<br>von    |
| 33           | 1                 | Balluff Lin.sensor BIP AD2-T017-04-BP02<br>Balluff lin.sensor BIP AD2-T017-04-BP02  | PUR        | 08-60-424/93<br>H343141         |                    |                         |                    |                             |                             |              |              |
| 34           | 1                 | Female flange M12x1 with sid. con.8pin<br>Female flange M12x1 with sid. con.8pin    | 1.4404     | 08-46-634/99<br>H341354         |                    |                         |                    |                             |                             |              |              |
| 35           | 1                 | CU4plus Adapter Sensor 0-10V<br>CU4plus Adapter Sensor 0-10V                        | PA schwarz | 08-48-697/93<br>H342434         |                    |                         |                    |                             |                             |              |              |
| 37           | 1                 | Kabelverschraubung M20x1,5 Kabel ø5-9mm<br>Screwed cable gland M20x1,5 Kabel ø5-9mm | PA schwarz | 08-48-697/93<br>H320372         |                    |                         |                    |                             |                             |              |              |

RN 01.044.7



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

## CU4plus Adapter

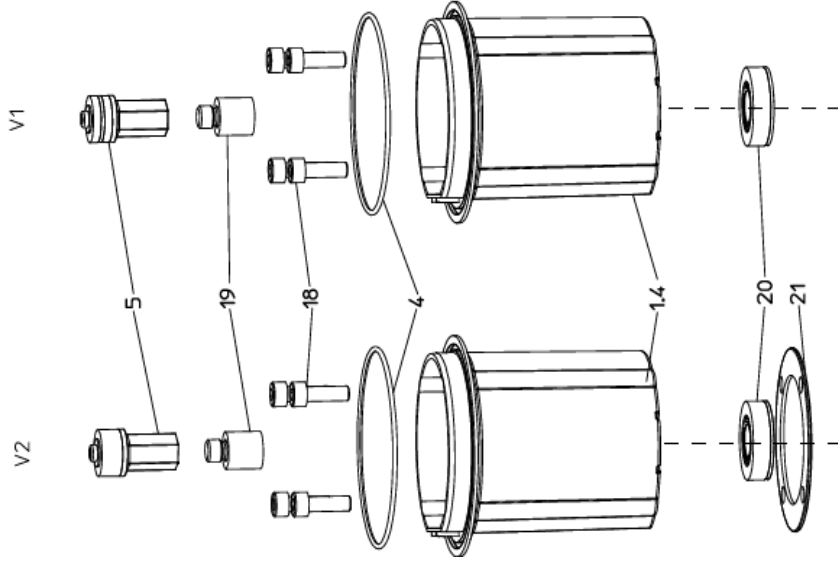
|          |          |          |          |          |
|----------|----------|----------|----------|----------|
| Datum:   | 26.01.16 | 04.04.16 | 20.05.19 | 09.11.19 |
| Name:    | Trytko   | Trytko   | C.Keil   | C.Keil   |
| Geprüft: | Schulz   | Schulz   | C.Keil   | C.Keil   |
| Datum:   | 26.01.21 |          |          |          |
| Name:    | C.Keil   |          |          |          |
| Geprüft: | C.Keil   |          |          |          |

SPX FLOW

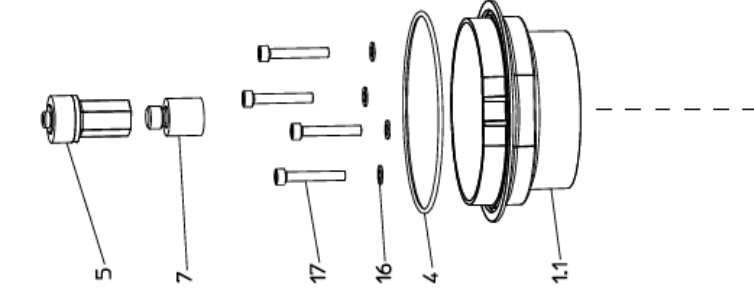
Blatt 1 von 6

RN01.044.3-1

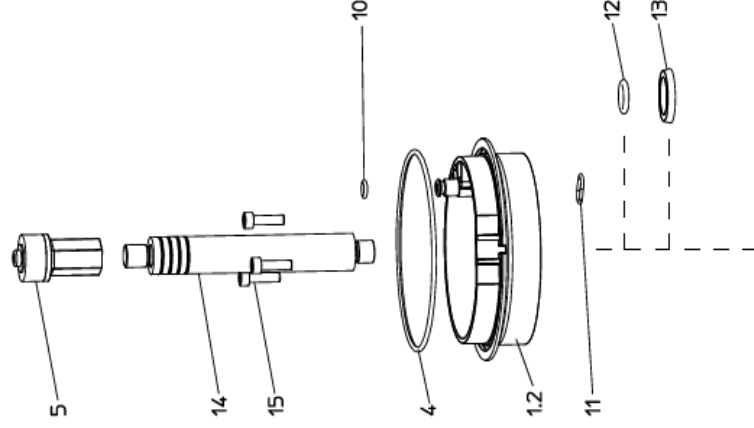
CU4Plus D4 Adapter



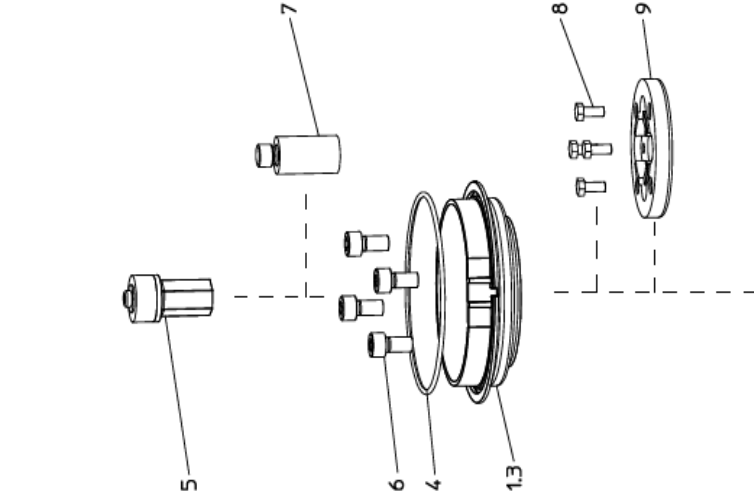
CU4Plus M - Adapter



CU4Plus T - Adapter



CU4Plus S - Adapter



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

## CU4plus Adapter

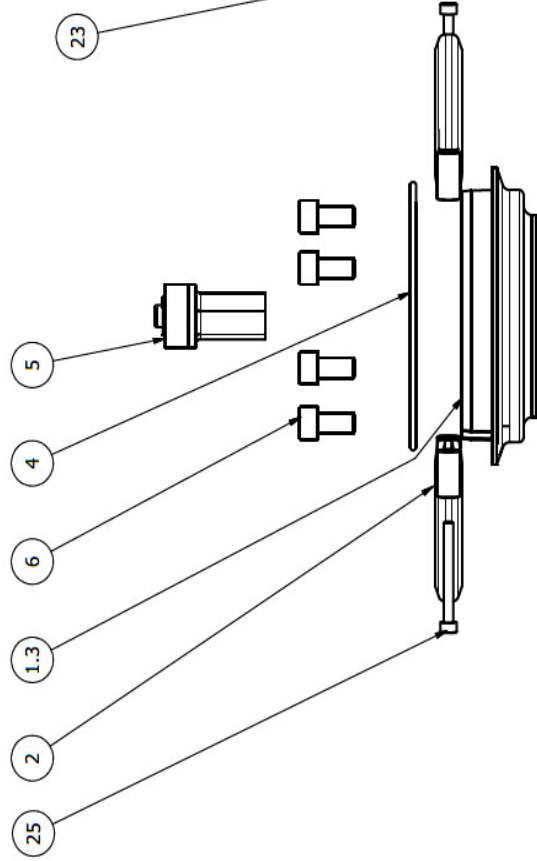
|          |          |          |          |          |
|----------|----------|----------|----------|----------|
| Datum:   | 26.01.16 | 04.04.16 | 20.05.19 | 09.11.19 |
| Name:    | Trytko   | Trytko   | C.Keil   | C.Keil   |
| Geprüft: | Schulz   | Schulz   | C.Keil   | C.Keil   |
| Datum:   | 26.01.21 |          |          |          |
| Name:    | C.Keil   |          |          |          |
| Geprüft: | C.Keil   |          |          |          |

## SPX FLOW

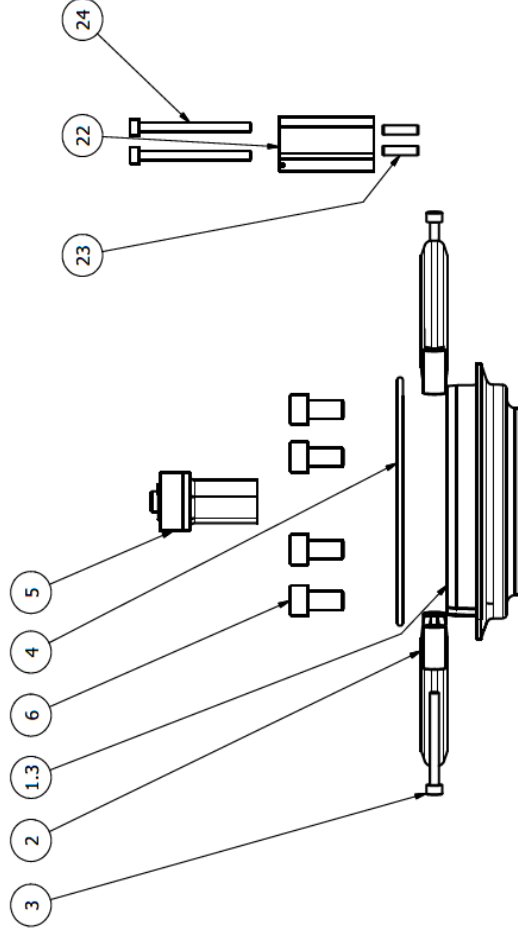
Blatt 2 von 5

**RN01.044.3-1**

CU4Plus DT4 -62 Adapter



CU4Plus DT4 -92 Adapter



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

**Ersatzteilliste: spare parts list**

## CU4plus Adapter

| pos. item |   | Beschreibung<br>description                              | Material                | CU4plus - S                       |                                   |                                   | CU4plus - T                       |                                   |                                   | SPX FLOW                      |  |
|-----------|---|--|-------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------------|--|
|           |   |  |                         | CU4plus - S<br>WS-Nr.<br>ref.-no. | CU4plus - S<br>WS-Nr.<br>ref.-no. | CU4plus - S<br>WS-Nr.<br>ref.-no. | CU4plus - T<br>WS-Nr.<br>ref.-no. | CU4plus - T<br>WS-Nr.<br>ref.-no. | CU4plus - T<br>WS-Nr.<br>ref.-no. | Blatt 3 von 6<br>RN01.044.3-1 |  |
|           |   | CU4 Adapter kpl.<br>CU4 adapter cpl.                     | material                | 08-48-690/93<br>H333143           | 08-48-696/93<br>H335312           | 08-48-691/93<br>H333144           | 08-48-692/93<br>H333145           | 08-48-693/93<br>H333146           | 08-48-694/93<br>H333147           |                               |  |
|           |   |  |                         |                                   |                                   |                                   |                                   |                                   |                                   |                               |  |
| 1.1       | 1 | CU4 Adapter M<br>CU4 adapter M                           | Zytel 70G33L<br>schwarz |                                   |                                   |                                   |                                   |                                   |                                   |                               |  |
| 1.2       | 1 | CU4 Adapter T<br>CU4 adapter T                           | Zytel 70G33L<br>schwarz |                                   |                                   |                                   |                                   |                                   |                                   |                               |  |
| 1.3       | 1 | CU4 Adapter S<br>CU4 adapter S                           | Zytel 70G33L<br>schwarz |                                   |                                   |                                   |                                   |                                   |                                   |                               |  |
| 2         | 2 | CU4 Clamphalbschale kpl.<br>CU4 clamp cpl.               | Grivory GH-5H1          |                                   |                                   | 08-46-570/93<br>H319874           |                                   |                                   |                                   |                               |  |
| 3         | 2 | Zylinderschraube<br>Cyl. Screw                           | A2-70                   |                                   |                                   | 08-46-569/93<br>H319873           |                                   |                                   |                                   |                               |  |
| 4         | 1 | O-Ring<br>O-ring   | NBR                     |                                   |                                   | 65-05-040/13<br>H320360           |                                   |                                   |                                   |                               |  |
| 5         | 1 | CU4 Magnetschaltlocke kpl.<br>CU4 magnet switch cam cpl. | Zytel HTN               |                                   |                                   | 58-06-493/83<br>H148389           |                                   |                                   |                                   |                               |  |
| 6         | 4 | Zylinderschraube<br>Cyl. Screw                           | A2-70                   | 65-05-120/13<br>M8x16 H79012      | 65-05-122/13<br>M8x25 H79014      | 65-05-120/13<br>M8x16 H79012      | 65-05-129/13<br>M8x60 H315760     |                                   |                                   |                               |  |
| 7         | 1 | Zugstangenverlängerung<br>Guide rod extension            | PA6                     |                                   |                                   | 15-26-070/93<br>H208096           | 15-26-058/93<br>H327149           |                                   |                                   |                               |  |
| 8         | 4 | Skt. Schraube<br>Hex. screw                              | A2-70                   |                                   |                                   | 65-01-033/15<br>H78737            |                                   |                                   |                                   |                               |  |
| 9         | 1 | CU Adapter SW4<br>CU adapter SW4                         | PA6                     | 08-48-359/93<br>H330879           |                                   | 08-48-355/93<br>H207570           | 08-48-361/93<br>H327150           |                                   |                                   |                               |  |
| 10        | 1 | O-Ring<br>O-ring   | NBR                     |                                   |                                   |                                   |                                   |                                   | 58-06-059/83<br>H320505           |                               |  |
| 11        | 1 | O-Ring<br>O-ring   | NBR                     |                                   |                                   |                                   |                                   |                                   | 58-06-034/83<br>H321897           |                               |  |
| 12        | 1 | O-Ring<br>O-ring   | NBR                     |                                   |                                   |                                   |                                   |                                   | 58-06-039/83<br>H208632           |                               |  |





Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc.

Ersatzteilliste: spare parts list

## CU4plus Adapter

|      |               | Datum: 26.01.16 04.04.16 20.05.19 09.11.19               |                         |   |                                    |                                       |                                       | SPX FLOW                             |                                      |
|------|---------------|--|-------------------------|---|------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|
|      |               | Name: Trytko Schulz                                      |                         | Name: Trytko Schulz                                 |                                    | Name: C.Keil C.Keil                   |                                       | Name: C.Keil C.Keil                  |                                      |
|      |               | Geprüft: 26.01.21  |                         | Geprüft: C.Keil C.Keil                              |                                    | Blatt 5 von 6                         |                                       | RN01.044.3-1                         |                                      |
| pos. | Menge<br>item | Beschreibung<br>description                              | Material                | CU41plus - M<br>CU4-M is used<br>WS-Nr.<br>ref.-no. | CU43plus - M<br>WS-Nr.<br>ref.-no. | CU4plus - D4 V1<br>WS-Nr.<br>ref.-no. | CU4plus - D4 V2<br>WS-Nr.<br>ref.-no. | CU4plus DT4-62<br>WS-Nr.<br>ref.-no. | CU4plus DT4-92<br>WS-Nr.<br>ref.-no. |
|      |               | CU4 Adapter kpl.<br>CU4 adapter cpl.                     | material                | 08-48-602/93<br>H320476                             | 08-48-695/93<br>H333148            | 08-48-666/93<br>H336441               | 08-48-668/93<br>H341891               | 08-48-699/93<br>H343619              | 08-48-700/93<br>H343620              |
| 1.1  | 1             | CU4 Adapter M<br>CU4 adapter M                           | Zytel 70G33L<br>schwarz | 08-46-572/93<br>H319876                             |                                    |                                       |                                       |                                      |                                      |
| 1.2  | 1             | CU4 Adapter T<br>CU4 adapter T                           | Zytel 70G33L<br>schwarz |   |                                    |                                       |                                       |                                      |                                      |
| 1.3  | 1             | CU4 Adapter S<br>CU4 adapter S                           | Zytel 70G33L<br>schwarz |   |                                    |                                       |                                       | 08-46-570/93<br>H319874              |                                      |
| 1.4  | 1             | CU4 Adapter D4<br>CU4 Adapter D4                         | PA6.6 GF30              |   |                                    | 08-46-940/93<br>H336038               |                                       |                                      |                                      |
| 2    | 2             | CU4 Clamphalbschale kpl.<br>CU4 clamp cpl.               | Grivory GH-5H1          |   |                                    | 08-46-569/93<br>H319873               |                                       |                                      |                                      |
| 3    | 2             | Zylinderschraube<br>Cyl. Screw                           | A2-70                   |   |                                    | 65-05-040/13<br>H320360               |                                       |                                      |                                      |
| 4    | 1             | O-Ring<br>O-ring   | NBR                     |   |                                    | 58-06-493/83<br>H148389               |                                       |                                      |                                      |
| 5    | 1             | CU4 Magnetschaltlocke kpl.<br>CU4 magnet switch cam cpl. | Zytel HTN               |   |                                    | 08-46-767/93<br>H333099               |                                       |                                      |                                      |
| 6    | 4             | Zylinderschraube<br>Cyl. Screw                           | A2-70                   |   |                                    |                                       |                                       | 65-05-120/13<br>M8x16 H79012         |                                      |
| 7    | 1             | Zugstangenverlängerung<br>Guide rod extension            | PA6                     |   | 08-46-920/93<br>H333136            |                                       |                                       |                                      |                                      |
| 8    | 4             | Skt. Schraube<br>Hex. screw                              | A2-70                   |   |                                    |                                       |                                       |                                      |                                      |
| 9    | 1             | CU Adapter SW4<br>CU adapter SW4                         | PA6                     |   |                                    |                                       |                                       |                                      |                                      |
| 10   | 1             | O-Ring<br>O-ring   | NBR                     |   |                                    |                                       |                                       |                                      |                                      |
| 11   | 1             | O-Ring<br>O-ring   | NBR                     |   |                                    |                                       |                                       |                                      |                                      |





# CU4plus Direct Connect

CONTROL UNIT



## SPX FLOW

### Design Center

Gottlieb-Daimler-Straße 13  
D-59439 Holzwickede, Germany  
P: (+49) (0) 2301-9186-0  
F: (+49) (0) 2301-9186-300

## SPX FLOW, Inc.

### Production

611 Sugar Creek Road  
Delavan, WI 53115, USA  
P: (+1) 262 728 1900 or (800) 252 5200  
F: (+1) 262 728 4904 or (800) 252 5012  
E: [wcb@spxflow.com](mailto:wcb@spxflow.com)

## SPX FLOW

### Production

Stanisława Jana Rolbieskiego 2  
PL- Bydgoszcz 85-862, Poland  
P: (+48) 52 566 76 00  
F: (+48) 52 525 99 09

SPX FLOW reserves the right to incorporate the latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only and should not be relied upon unless confirmed in writing. Please contact your local sales representative for product availability in your region.

For more information visit [www.spxflow.com](http://www.spxflow.com).

ISSUED 03/2021 - Original Manual

COPYRIGHT ©2021 SPX FLOW, Inc.