SPXFLOW®

INSTRUCTION MANUAL

CU4plus AS-interface V1 - V2

CONTROL UNIT

FORM NO.: H333978 REVISION: GB-5

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

SPXFLOW®

CE Declaration of Conformity
UKCA Declaration of Conformity

We,

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declare under our sole responsibility that the

SPX FLOW APV brand Control Units of the series
CU4 Direct Connect and AS-interface Control Unit
CU4plus Direct Connect, AS-interface and IO-Link Control Units
CU4 110V Module (*)

meet the requirements of the
Electromagnetic Compatibility Directive 2014/30/EU
& protection class IP 67 EN 60529, EN 61000-6-2, EN 61000-6-4, EN 60068-2-6
RoHS Directive 2011/65/EU
Low Voltage Directive 2014/35/EU (*only applicable for APV CU4 110V Module)

Holzwickede, November 2022

ppa. B. Ariatabar

Dr.-Ing. Behdad Ariatabar, Design Center Lead - Valves

meet the requirements of the
Electromagnetic Compatibility Regulations 2016 No. 1091 & BS harmonized standards
Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulation 2012 No. 3032
Electrical Equipment (Safety) Regulations 2016 No. 1101 (*only applicable for APV CU4 110V Module)

Crawley, November 2022

Ewout Roozendaal, Director Global Pricing

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1. Abbreviations and Definitions

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

2. Safety Instructions

2.1. Sentinels

Meaning:

Danger! Direct danger which can lead to severebodily 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 AS-i 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.

2. Safety Instructions

2.7. Important safety instructions for AS-interface networks

Aside from complying with the Installation Guidelines according to AS-i Specification, observe the following instructions!

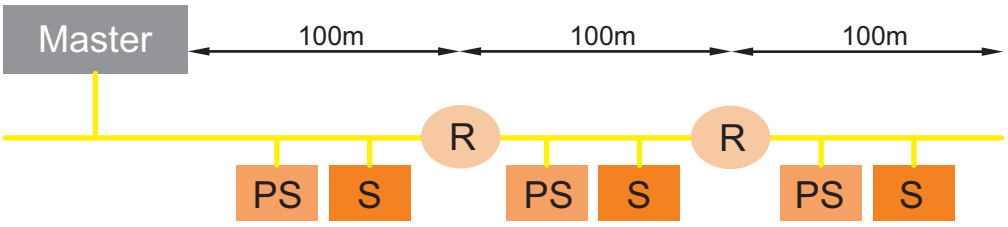
2.7.1 Earthing

- The PE connection of the AS-i power supply (protective earth) must (if existent) be grounded.
- The symmetry point of the AS-i network (GND, ground, shield) must be connected with the plant ground).
- Neither AS-i – nor AS-i + must be grounded.
- Use of earth-leakage relay, insulation monitoring modules is recommended.
- Use of surge protection modules is recommended.

2.7.2. Network design and voltage supply

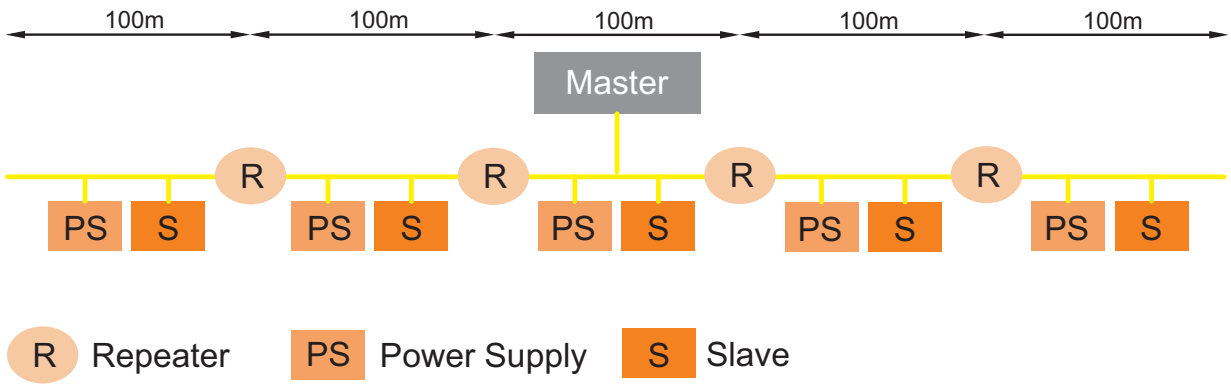
- Use only AS-i certified power supplies.
- Output voltage 26.5 to 31.6 VDC
- AS-i power supplies deliver up to 8A.
- The voltage drop between power supply and bus device must not exeed 3V. If required, the power supply must be set closer to the slaves. Alternatively power supplies with repeaters can be extended to such an extent that up to 3 power supplies can be distributed over the whole bus, see fig.
- An AS-i segment including all stubs must not be longer than 100 m.
- Additional 100 m AS-i cable may be connected to each repeater, whereas not more than 2 repeaters (max. 2 connected in series) may be set between a slave and the master.
- A galvanically isolated AS-i power supply must be connected in every segment.

Extension with repeater



2. Safety Instructions

Extension with repeater to max. 500 m (central positioning)



- AS-i power cables must be separated from the energy cables and must be as short as possible.
- External proximity switches must be connected to the slave as close as possible.
- Floating sensors/actuators: Grounding of galvanic peripheral devices connected with AS-i potential is not permitted. It must be avoided in terms of immunity to interference.

2.7.3. Selection of the appropriate power supply:
The max. electricity demand in the AS-i net (sum of all consumers) per segment must be smaller than the admissible current carrying capacity of the AS-i network (max. 90 %).

- The electricity demand of the individual slave results from the instruction manual. For the design of the networks a simultaneity factor can be integrated if necessary. A max. assignment of e.g. 62 slaves should be taken as a basis.
- At the end of each segment under full load, the AS-i voltage must be within the specification 26.5 to 31.6 V.

2.7.4. What has to be observed if a 8A AS-i power supply is used?
If more than the standard current of 2 A is transferred via the AS-i cables, the following boundary conditions must be considered when planning the net:

- The voltage drop along the AS-i line increases. For orientation purposes: If 2 A are transferred via one 100 m-long-cable with wire cross-section of 1.5 mm, the voltage drop amounts to 5 V.
- The contacts of the penetration technology are desiged only for certain maximum permanent current which are partially below 8 A. Refer to the manufacturer datasheet!

2.7.5. Increase in interference resistance

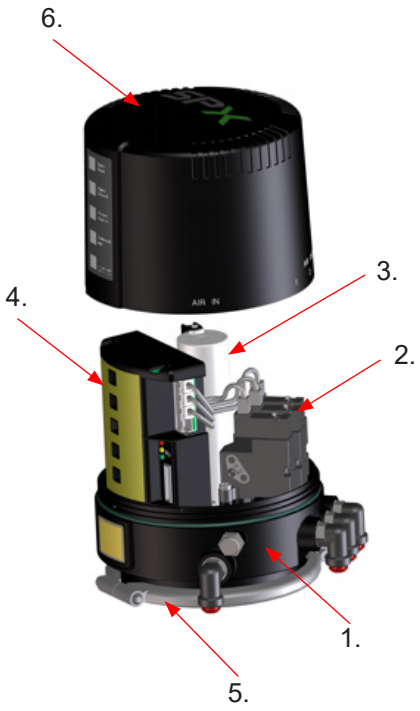
- The connection „Schirm“ (shield) at the AS-i power supply unit must be connected directly and with good RF characteristics with the potential equalization of the machine or plant. This is not a grounding measure for safety reasons, but a functional grounding so that the AS-i line can be operated symmetrically against the earth. If a shielded cable is used, the cable shield must be connected there - and there only, as well.
- A good symmetrie must also be observed towards other electrical sources of interference (speed-controlled actuators, welding units etc.). The length of the connecting cables between the active slaves (CU4, CU4plus etc.) and the proximity switches connected to them must be limited to max. 2 m.
- When high electrostatic charge is expected (e.g. polishing machines, injection moulding machines, wrapping foils for plastic materials etc.) it may be required to take additional protective measures, such as the installation of arresters for static loads.

2.7.6. May the AS-i cable be laid in parallel to power cables?

- Although the communication via AS-i cable is not sensitive to EMC, it should be laid separately from line cables - also in control cabinets.
- Maximum distance to potential sources of interference (e.g. frequency converter) must be observed.
- Every AS-i wiring harness should have its own cable, i.e. AS-i cables should not be laid together with other cables in the same common cable.
- If it is required to lay single conductors (e.g. in control cabinets), parallel conductors must be laid. In case of standard stranded wires, lay and twist single coductors together.

3. General Terms

fig. 3.2.



3.1. Purpose of use

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

The CU4plus AS-i control unit operates as interface between process control and process valve and controls the electric and pneumatic signals.

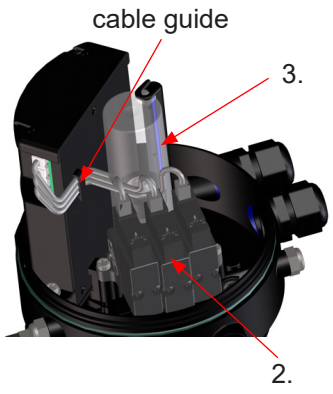
The pneumatic control of valves is undertaken via the solenoid valves. The control unit controls the valve positions, **open** and **closed**, via sensors. The electronic module undertakes the task to process the switching signal from the control and to control the corresponding solenoid valves. The 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 AS-interface (fig. 3.2.)

The CU4plus AS-interface 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 AS-i communication with the control, evaluation of feedback signals and control of solenoid valves as well as valve position indication through LED.
5. Clamp ring to fasten the CU4 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 CU4 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. Commnication is undertaken via the standard AS-interface bus protocol according to specification V3.0.

Valve position detection is realized via a linear sensor which is 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, AS-i communication)

For the D4 valve generation, additionally to the linear sensor integrated in the control unit, 1 or 2 internal hall sensors are installed at the CU4 feedback tower.

3. General Terms

3.3. Function of the individual components

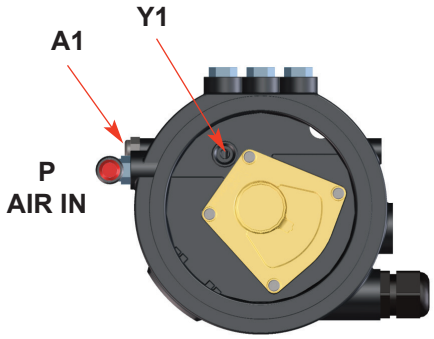
The luminous diodes are located on the front side of the electronic module. Their signals are visibly indicated to the outside by an optical window in the cover the control unit. Beside the open and closed valve position, the existence of the operating voltage as well as different diagnostic information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

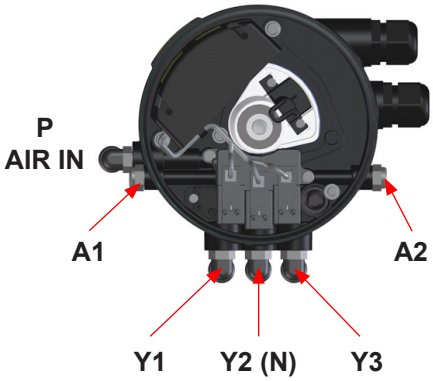


4.1.1. Function

CU41plus-T AS-i
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 AS-i
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 AS-i
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 AS-i
design for DE3 double seat valves without seat lift function

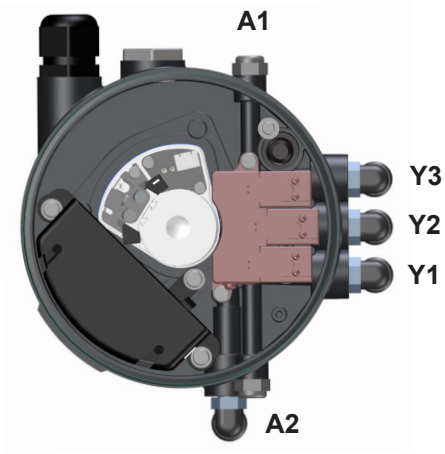
P air supply with integrated particle filter
Y1 pneumatic air connection for main actuator
A1 exhaust air with silencer

CU43plus-M AS-i
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-V1-V2
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-V1-V2
design for D4 SL, DT4 SL, D4 PMO, DA4 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.

DANGER

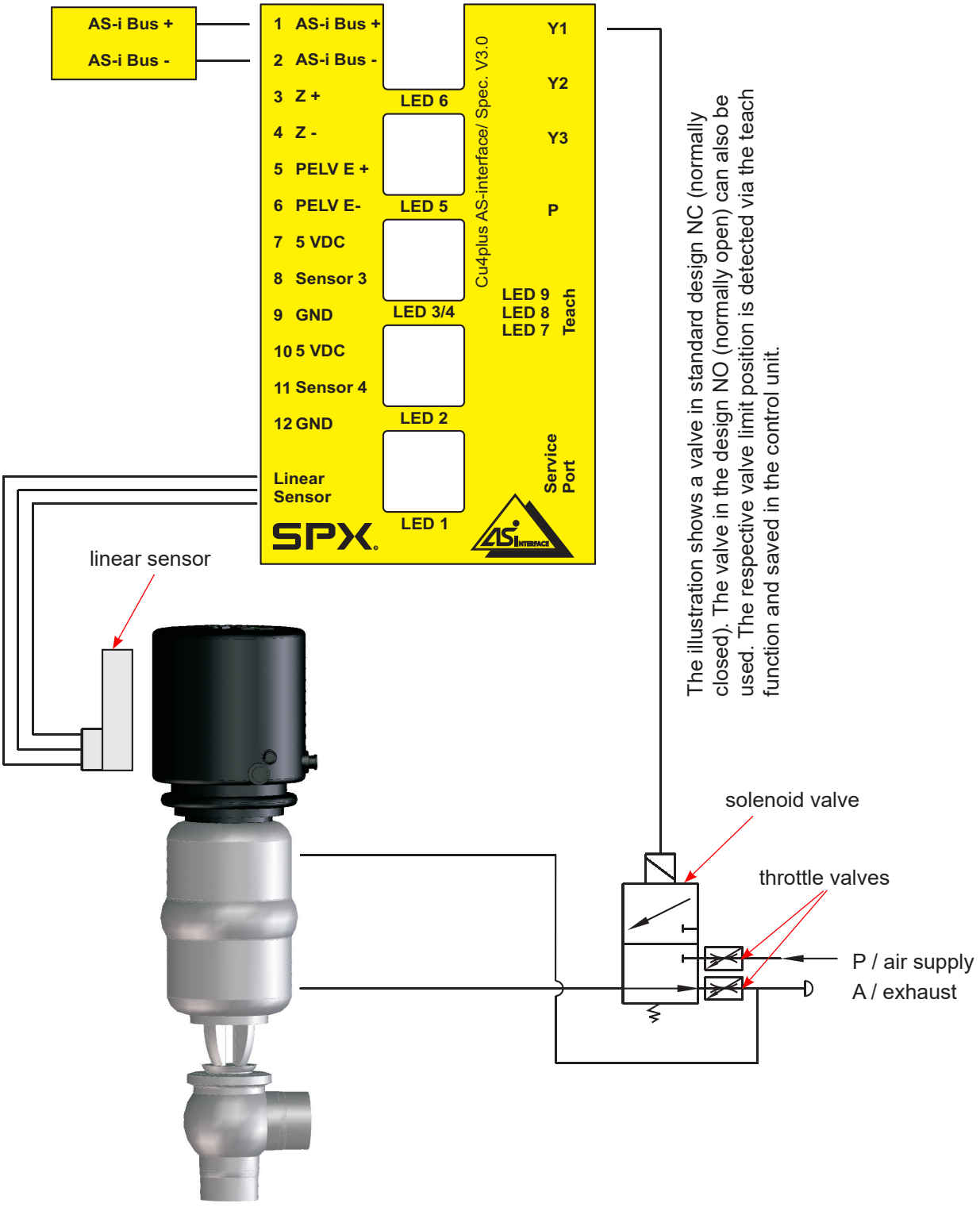
The pressure relief valve must not be mechanically blocked under any circumstances.

4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

4.4.1. CU41plus AS-interface
(internal position measuring system)

Valve types: SW4, MS4, SV1, SVS1F

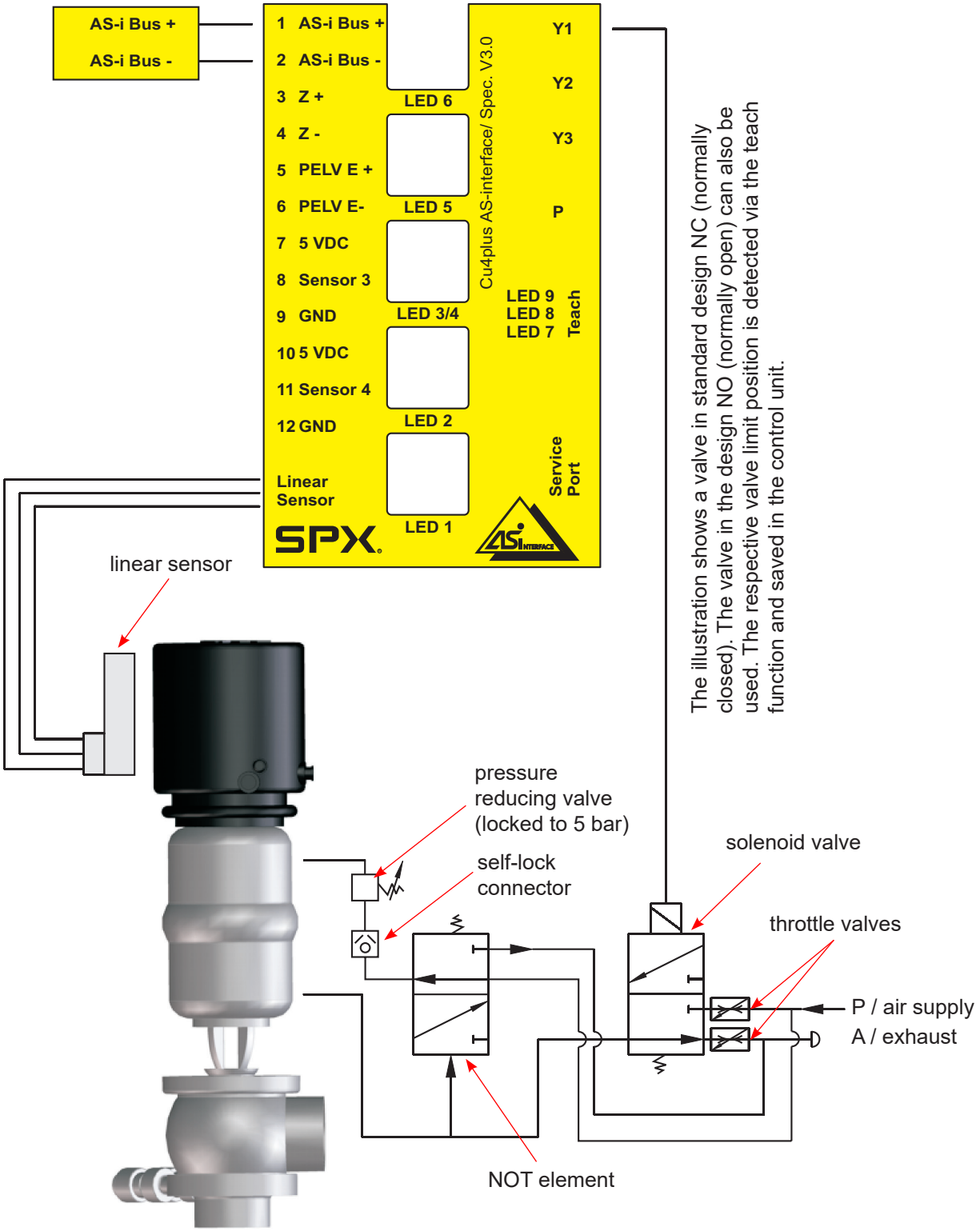


4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

4.4.2. CU41Nplus AS-interface
(internal position measuring system)

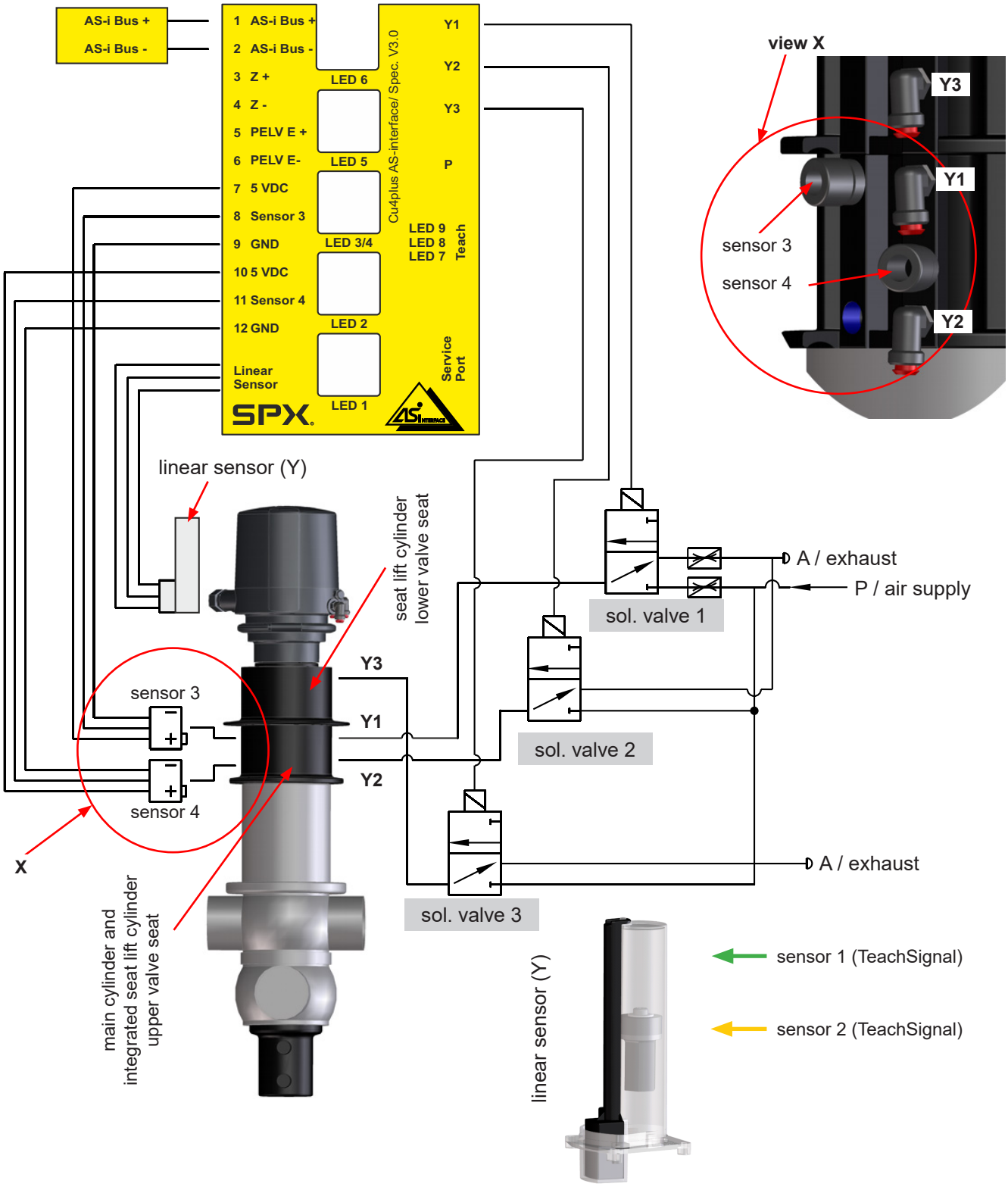
Valve type: SD4



4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

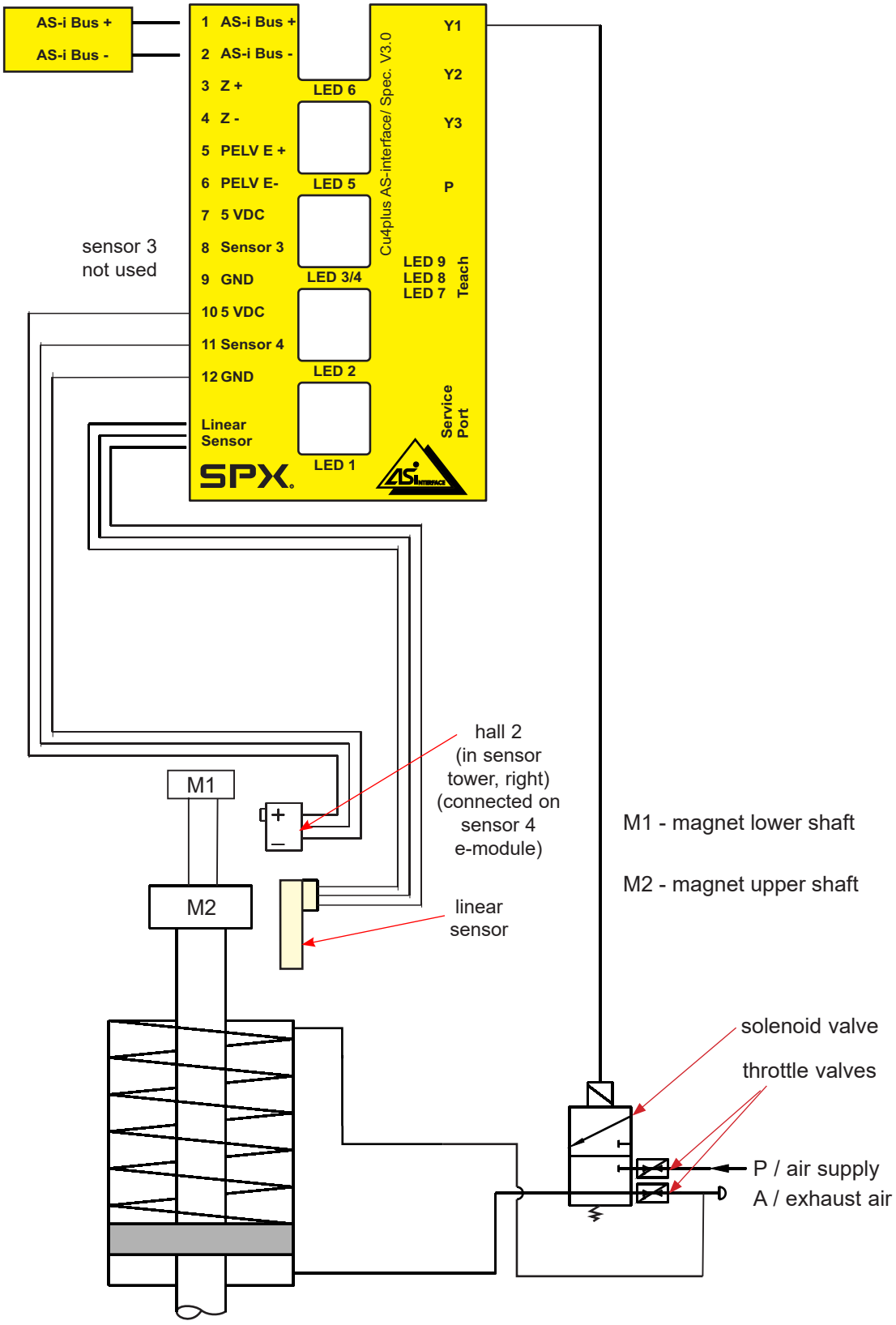
4.4.3. CU43plus AS-interface for DA3+SLD double seat valve
(internal position measuring system
and 2 external proximity switches)



4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

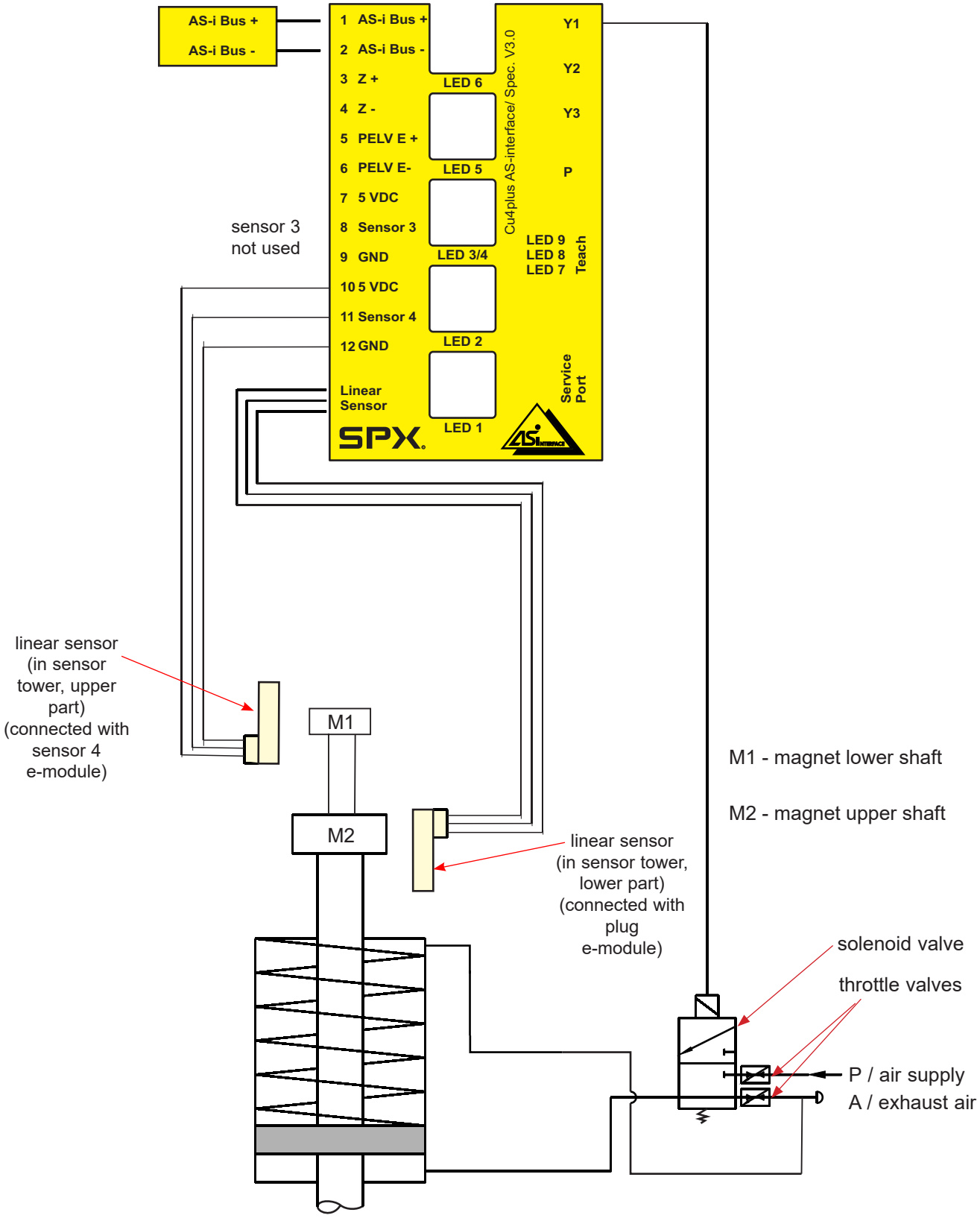
4.4.4. CU41plus-D4-V1 for D4 double seat mix proof valves



4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

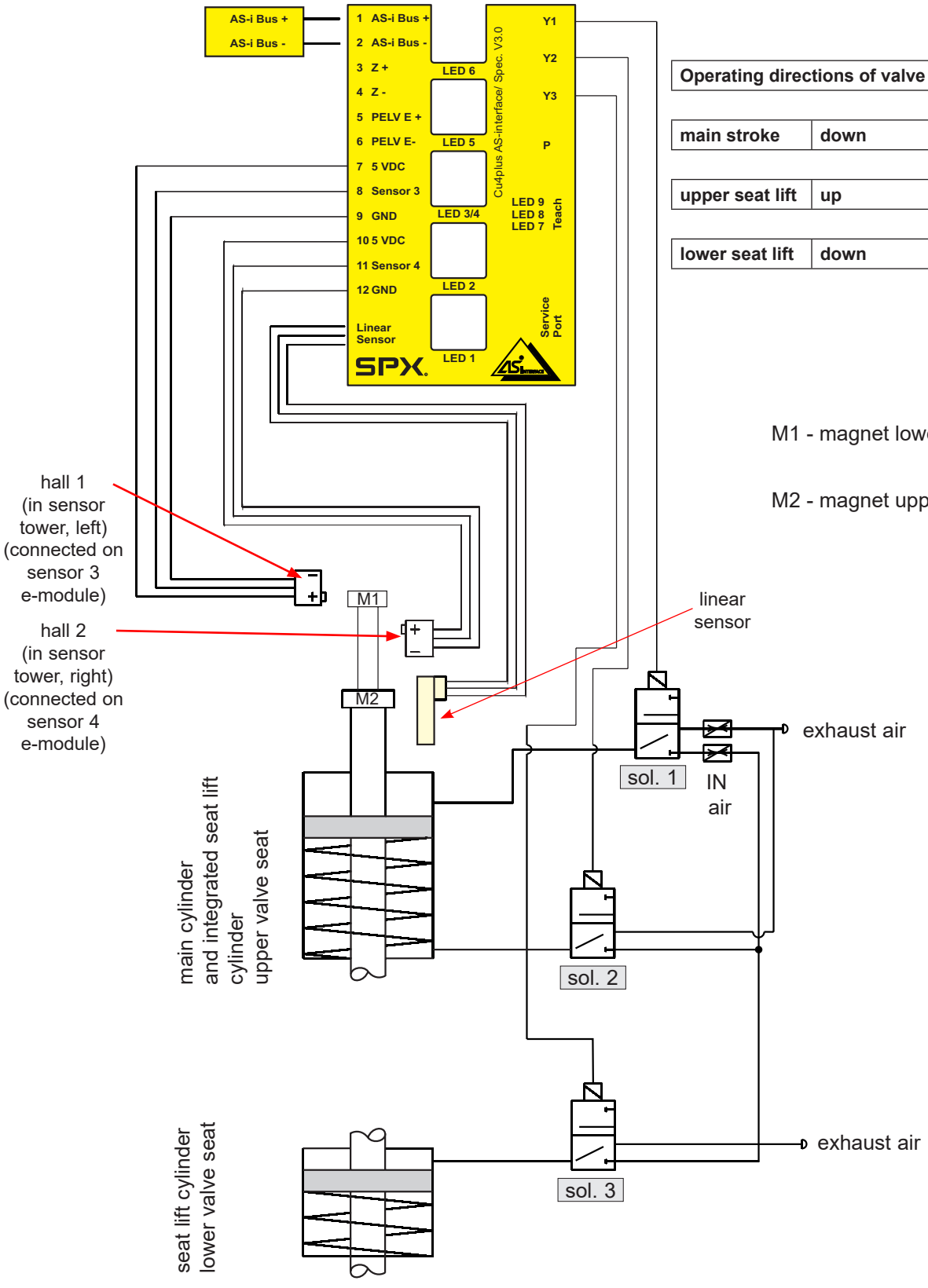
4.4.4. CU41plus-D4-V2 for D4 double seat mix proof valves



4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

4.4.5. CU43plus-D4-V1 for D4 SL double seat mix proof valves



Operating directions of valve targets		
main stroke	down	M1 + M2
upper seat lift	up	M2
lower seat lift	down	M1

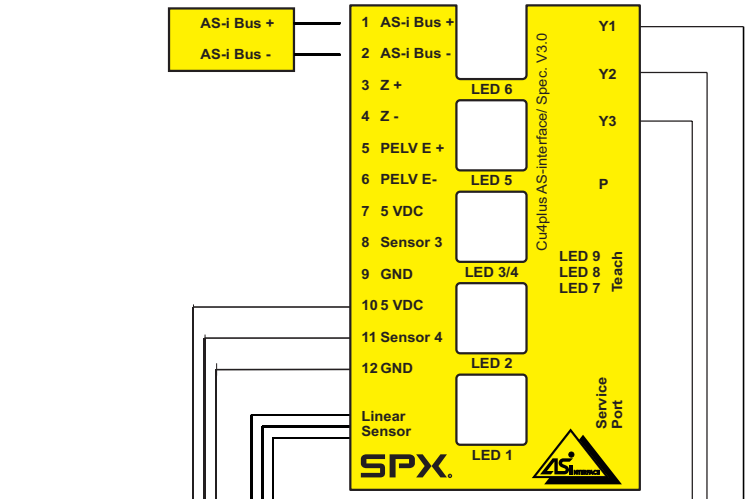
M1 - magnet lower shaft

M2 - magnet upper shaft

4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

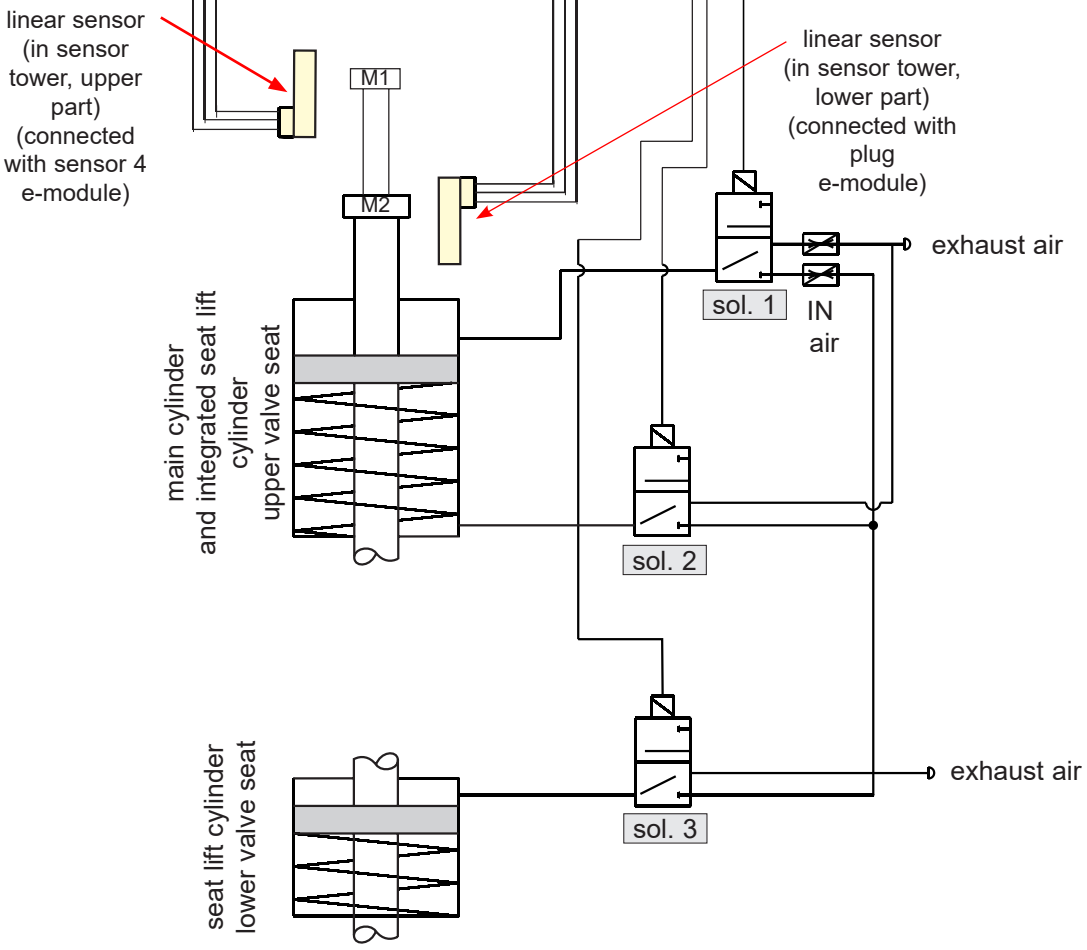
4.4.5. CU43plus-D4-V2 for D4 SL / D4 PMO double seat mix proof valves



Operating directions of valve targets		
main stroke	down	M1 + M2
upper seat lift	up	M2
lower seat lift	down	M1

M1 - magnet lower shaft

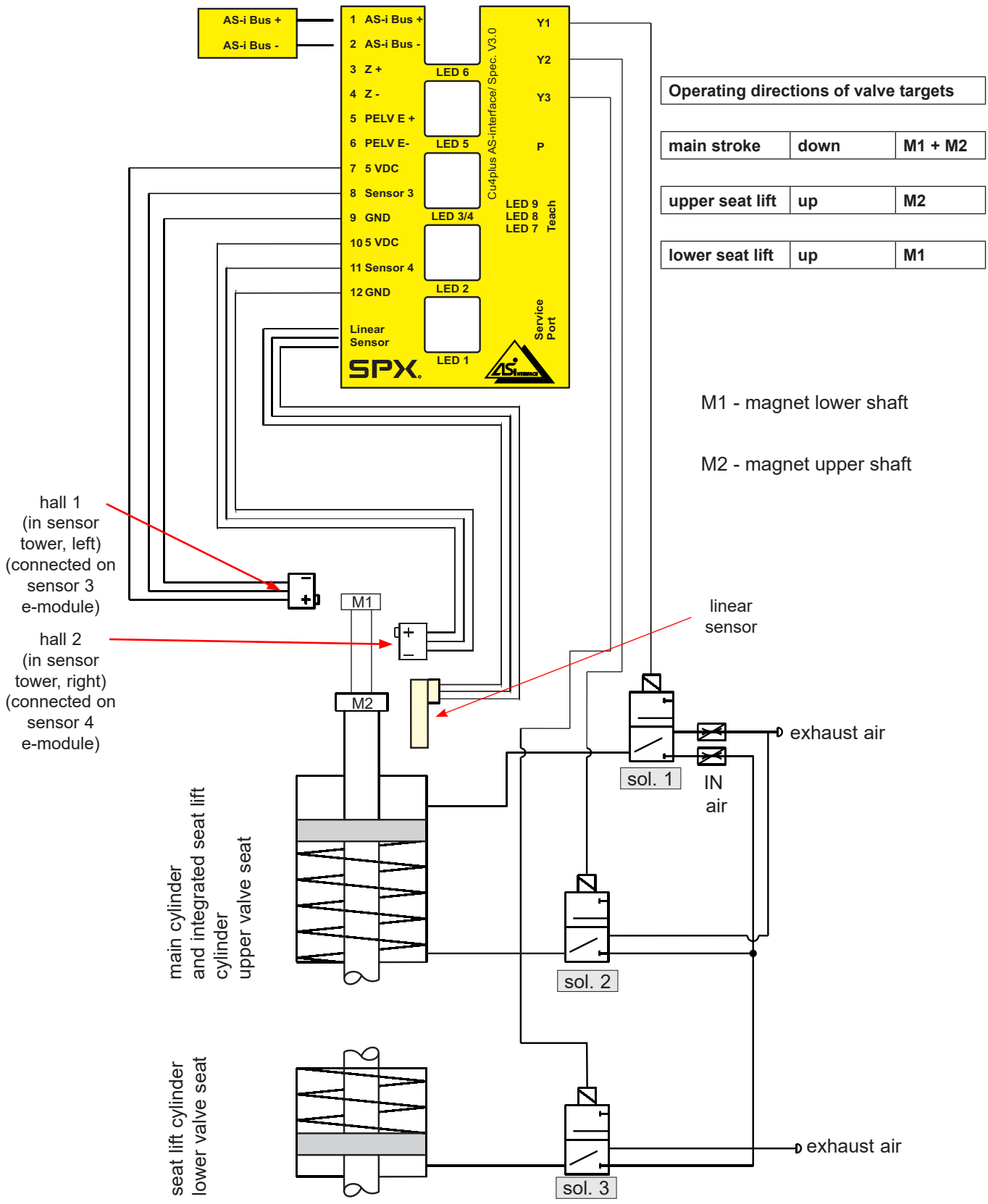
M2 - magnet upper shaft



4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

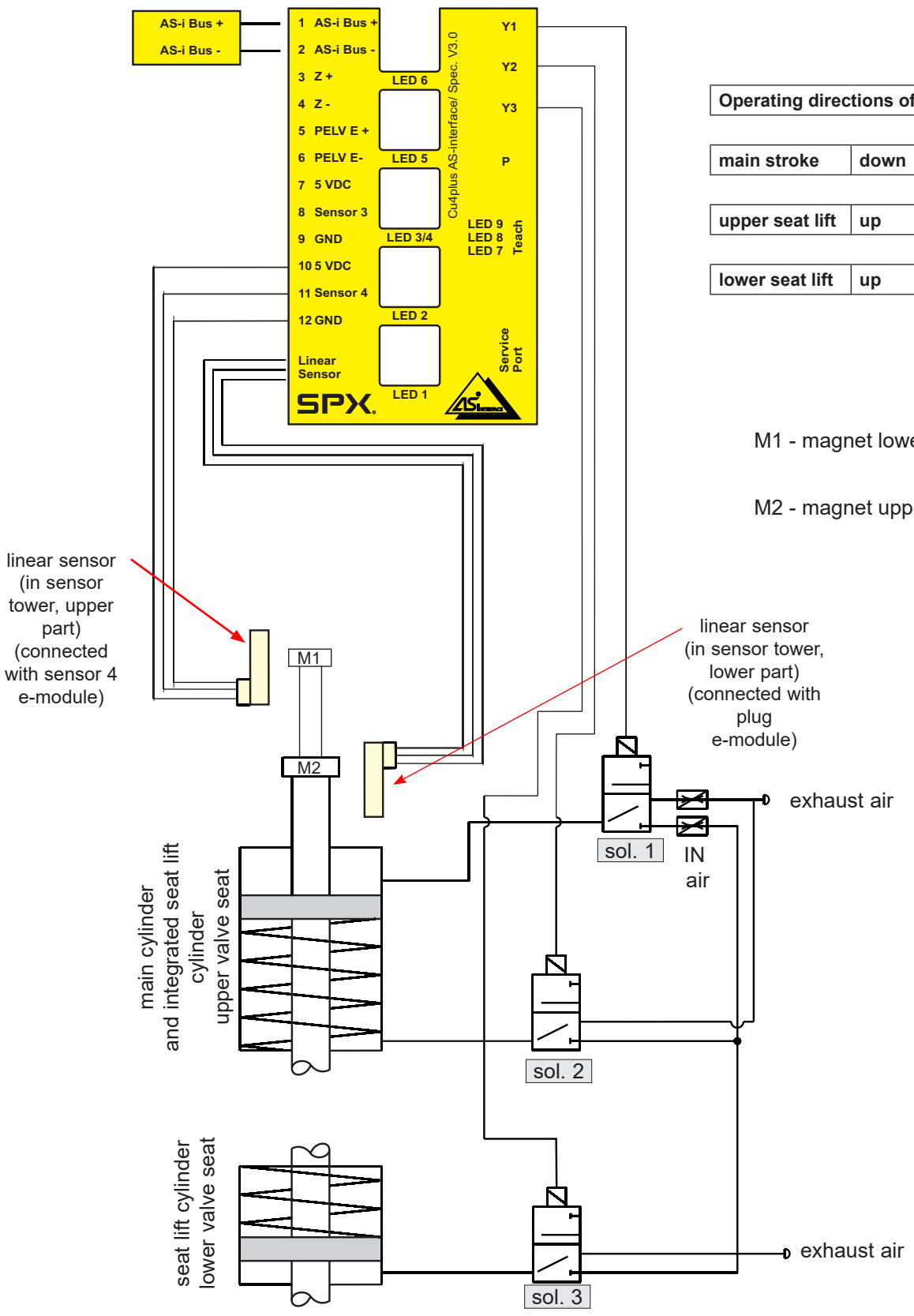
4.4.6. CU43plus-D4-V1 for DA4 double seat mix proof valves



4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

4.4.6. CU43plus-D4-V2 for DA4 double seat mix proof valves

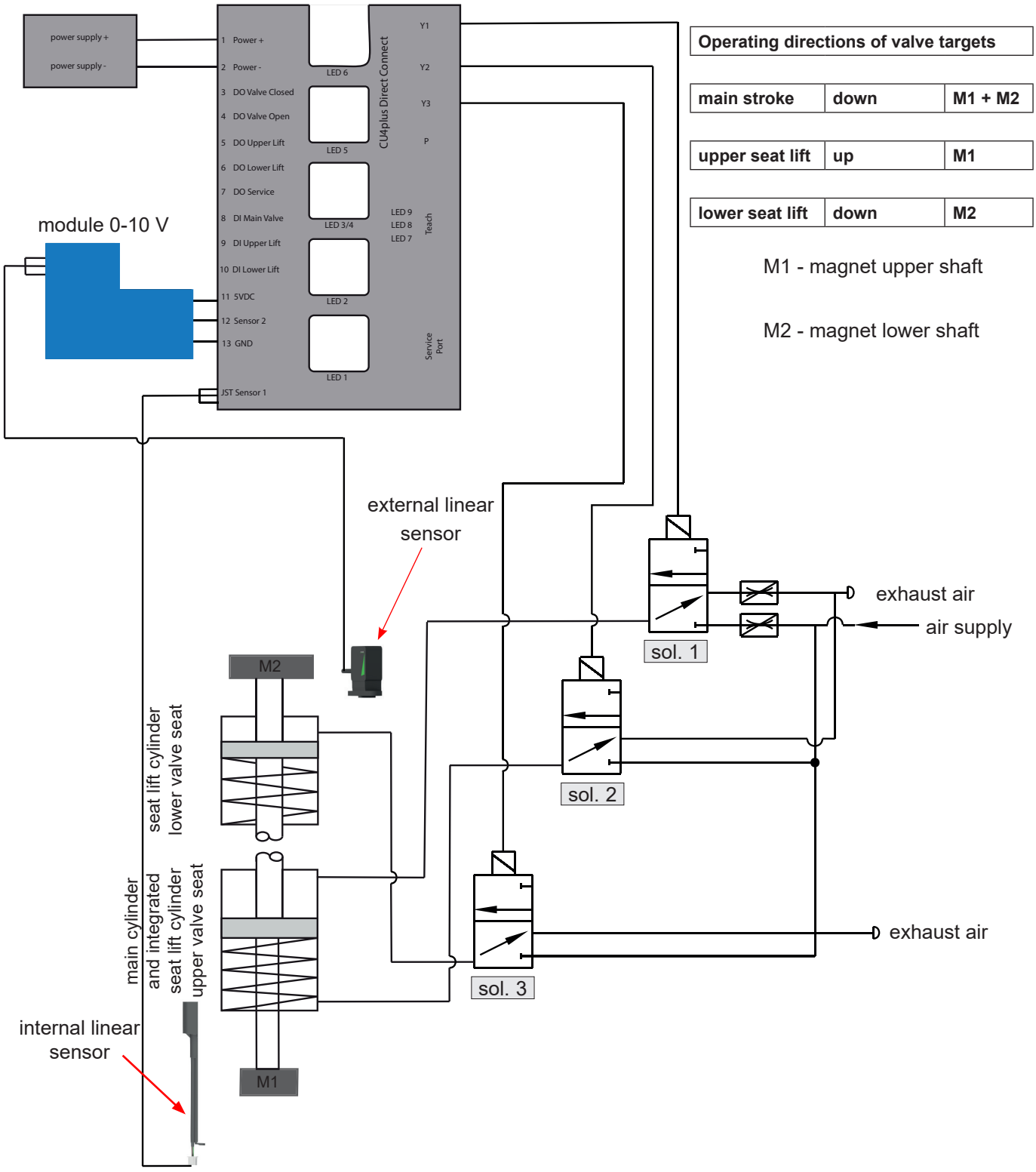


Operating directions of valve targets		
main stroke	down	M1 + M2
upper seat lift	up	M2
lower seat lift	up	M1

4. Mechanics and Pneumatics

4.4. Functional description - block diagrams

4.4.7. CU43plus-D4-V2 for DT4 SL double seat tank outlet valves



4. Mechanics and Pneumatics

4.5. Technical data / Standards

Material: PA6.6/PA12

Ambient temperature: -20 to +70 °C, -4 to +158 °F

EU: EMC 2014/30/EU (89/336/EEC)

Standards and environmental audits:
protective class IP 67 EN 60529/
complies with NEMA 6
EMV interference resistance EN 61000-6-2
EMV emitted interference EN61000-6-4
AS-interface certification according to specification V3.0

vibration/oscillation EN60068-2-6

safety of machinery DIN EN ISO 13849-1

Air hose: 6 mm / ¼" OD

Pressure range: 6–8 bar

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

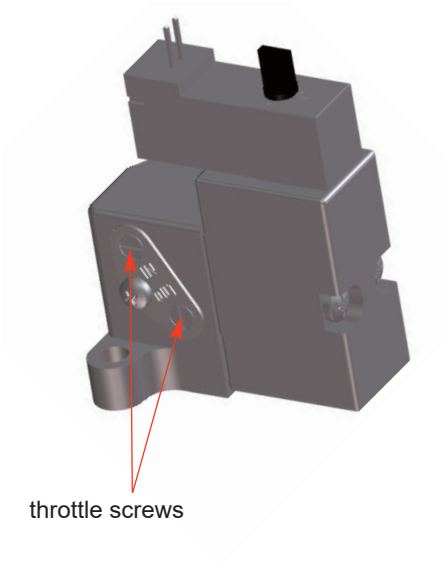
- **content of solid particles:** quality class 3,
  max. size of solid particles per m³
  10000 of 0,5 µm < d < 1,0 µm
  500 of 1,0 µm < d < 5,0 µm

- **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/m³

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 slided into the air connection until it stops in order to open the non-return valve.

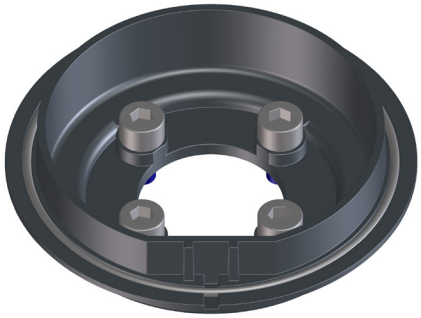
The NOT element is also used for air/air - actuators.

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

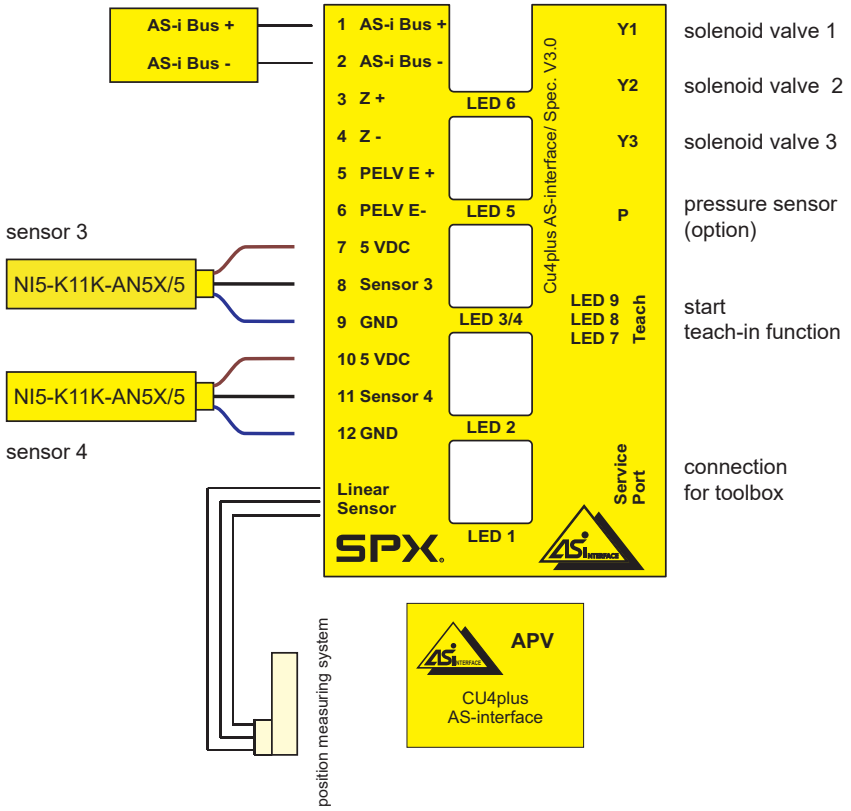
6.1. Function/block diagram

The CU4plus AS-i control unit is a slave for the fieldbus system AS-Interface according to specification V3.0. The profile is S-7.A.*.E (3 outputs and 2/4 inputs).

The CU4plus AS-i is designed for the extended address range. With these devices in the extended address range up to 62 slaves (formerly known as 2.1) can be connected with one AS-Interface cable.
Attention: Consider cumulative power input and simultaneity factor!

With the CU4plus AS-i energy supply of the control valves can be effected via the AS-i bus or via separate auxiliary energy lines. Thus, it is possible to realize an EMERGENCY STOP function: If the auxiliary voltage is safely shut off by conventional means, the control valves are deprived of electric energy and they fall into a safe position. The function of the inputs is preserved even if auxiliary energy is shut off.
The control of the solenoid valves is undertaken in energy-saving mode via the pwm signals.

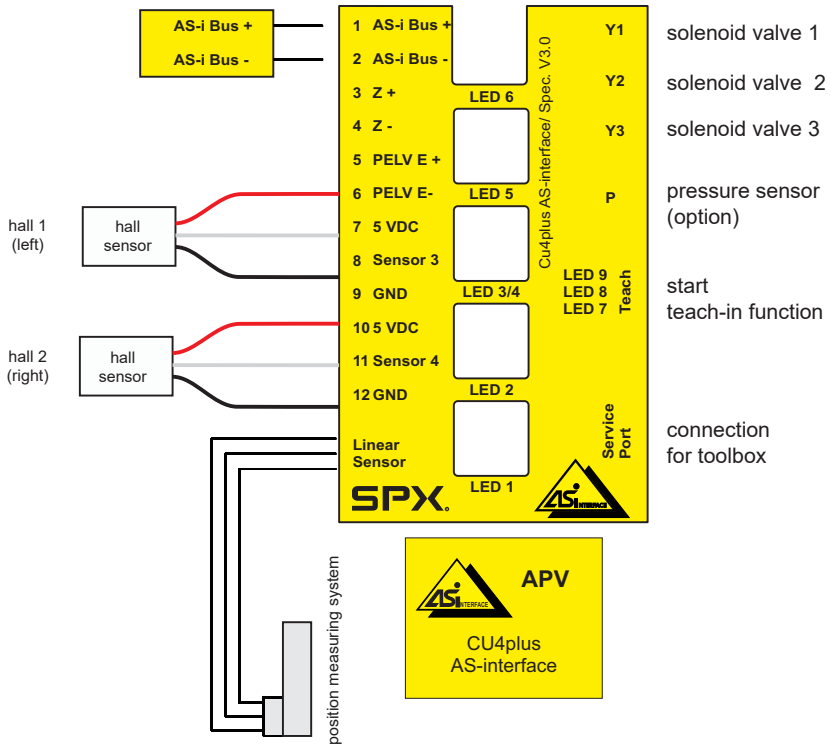
6.1.1. CU43plus AS-i SLD



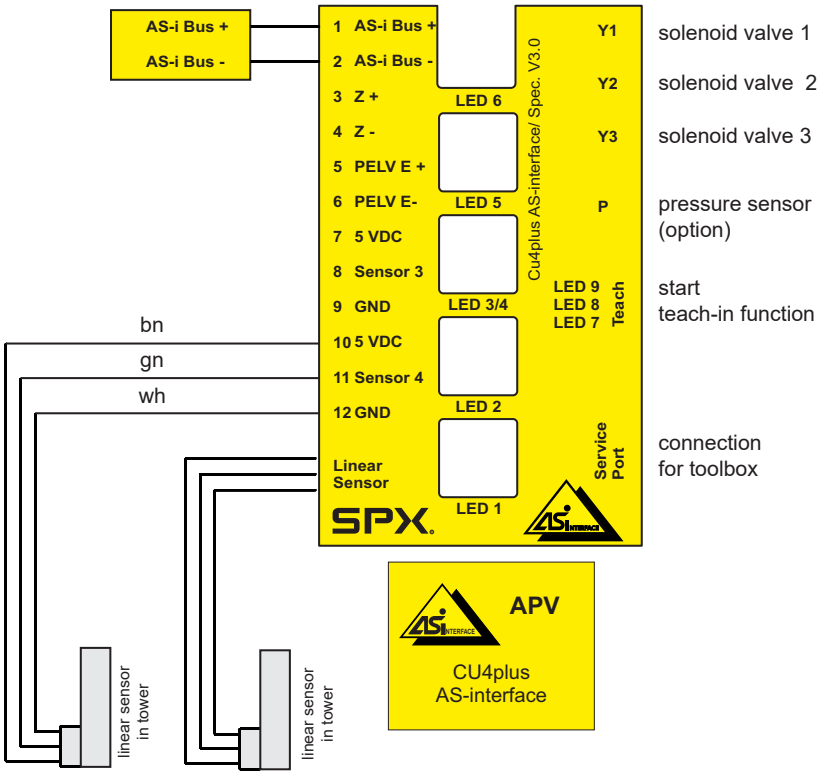
6. Electronic Module

6.1. Function/block diagram

6.1.2. CU41plus-D4-V1
CU43plus-D4-V1



6.1.2. CU41plus-D4-V2
CU43plus-D4-V2

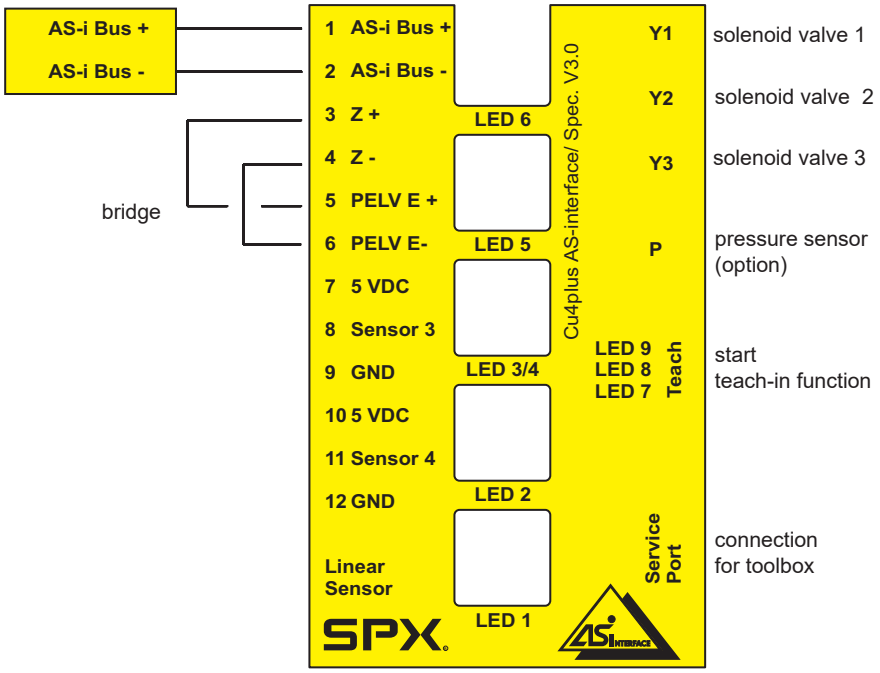


6. Electronic Module

6.1. Function/block diagram

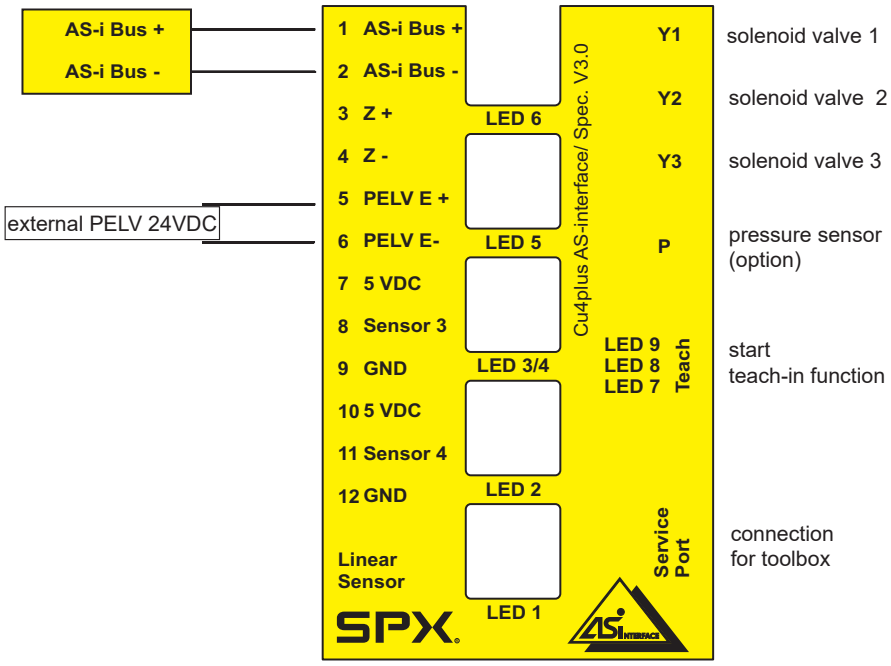
6.1.3. Standard Function

Voltage supply of solenoid valves via AS-i bus



6.1.4. Safety Stop Function

Voltage supply of solenoid valves via additional auxiliary energy



6. Electronic Module

6.2. Functional description of connections

6.2.1. Functional description of connections - Version V1

Terminal	Designation	Functional Description
1	AS-i +	connection AS-i network
2	AS-i -	connection AS-i network
3	Z +	bridge Z+ / PELV E+ (in case of energy supply for solenoid valves via AS-i bus)
4	Z -	bridge Z- / PELV E - (in case of energy supply for solenoid valves via AS-i bus)
5	PELV E+	separate auxiliary energy PELV 24VDC + (for EMERGENCY STOP function, only)
6	PELV E-	separate auxiliary energy PELV 24VDC - (for EMERGENCY STOP function, only)
7	5 VDC	voltage supply for proximity switches
8	Sensor 3	signal sensor 3 (evaluation of logic table for appropriate valve type)
9	GND	mass potential for sensor voltage supply
10	5 VDC	voltage supply for proximity switches
11	Sensor 4	signal sensor 4 (evaluation of logic table for appropriate valve type)
12	GND	mass potential for sensor voltage supply
linear sensor		linear sensor for valve position detection (for suitable SPX FLOW sensor, only!)
Y1		solenoid valve 1 (main valve)
Y2		solenoid valve 2 (upper seat lift)
Y3		solenoid valve 3 (lower seat lift)
P		optional connection - pressure sensor
service port		connection serial/USB converter for CU4plus toolbox software

6.2.2. Functional description of connections - Version V2

Terminal	Designation	Functional Description
1	AS-i +	connection AS-i network
2	AS-i -	connection AS-i network
3	Z +	bridge Z+ / PELV E+ (in case of energy supply for solenoid valves via AS-i bus)
4	Z -	bridge Z- / PELV E - (in case of energy supply for solenoid valves via AS-i bus)
5	PELV E+	separate auxiliary energy PELV 24VDC + (for EMERGENCY STOP function, only)
6	PELV E-	separate auxiliary energy PELV 24VDC - (for EMERGENCY STOP function, only)
7	5 VDC	voltage supply for proximity switches
8	no sensor	
9	GND	mass potential for sensor voltage supply
10	5 VDC	voltage supply for proximity switches
11	sensor 4	linear sensor for valve position detection (for suitable SPX FLOW sensor, only!)
12	GND	mass potential for sensor voltage supply
linear sensor		linear sensor for valve position detection (for suitable SPX FLOW sensor, only!)
Y1		solenoid valve 1 (main valve)
Y2		solenoid valve 2 (upper seat lift)
Y3		solenoid valve 3 (lower seat lift)
P		optional connection - pressure sensor
service port		connection serial/USB converter for CU4plus toolbox software

6. Electronic Module

6.3. Technical data / AS-interface

AS-interface-profile:	S-7.A.*.E
Extended address mode:	is supported
Serial communication mode:	no
Inverse-polarity protection:	exists
Indication "Power":	LED 3 (green)
Indication "Fault":	LED 4 (red)
AS-interface voltage range:	26.5…31.6 V
External voltage supply PELV	24 VDC
max. current consumption:	100 mA
(in case of supply of actuators from auxiliary energy)	150 mA
(in case of supply of actuators from AS-interface)	
Input delay time:	< 1 s
AS-interface specification:	V3.0
Supply of solenoid valves:	pwm signal from electronic module
Short-circuit protection:	yes
Excess voltage protection:	100 mA
Induction protection:	yes
Status indication of outputs:	LED on board
Response time of watchdog:	--- (watchdog not activated)

Short-circuit or excess voltage of actuator supply or cable break at valves is signalled to the master via the peripheral failure bit (profile S-7.A.*.E only). Simultaneously, LED 3/4 flashes according to AS-interface specification alternately red/green.

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 – 1,5 mm² (with conductor sleeve) complying with AWG 20-16

AS-interface communication / data: see 6.7.

6. Electronic Module

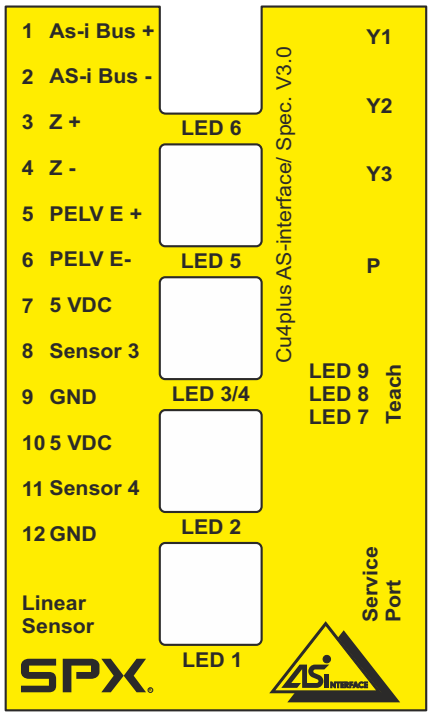
6.4. Connections

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

6.5. LED indications

The meanings of the different colors of the LED indication are described in table 6.5.1. LED indications / Indicator lights.



6. Electronic Module

6.5.1. LED indication / Indicator lights				
LED 1	solenoid valve 2 / upper seat lift	blue, 1 blink		solenoid valve 2 controlled upper seat * **lifted**
	solenoid valve 3 / lower seat lift	blue, 2 blinks		solenoid valve 3 controlled lower seat * **lifted**
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 - AS-i status indication
		red, green blink		peripheral failure (short circuit, excess voltage, cable break) - teach-in requested, flash data failure, valve failure, wrong number of valves, overload of sensor voltage supply
		red, permanent light		AS-i communication failure - no data interchange with master - master in stop mode - slave cannot read master commands - master in protect mode and slave not in protect mode
		green, blink		AUX voltag missing (connect either PELV or bridge Z/PELV)
		green, permanent light red, blink = red-yellow blink		slave address = 0
		red, blink		duplicate addresses recognized
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 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. Adjustement 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	V2 - Mix proof valve DA4	2 internal linear sensors	fixed +/- 1 mm	NC only	possible	always 3
1	V2 - Mix proof valve D4	2 internal linear sensors	fixed +/- 1 mm	NC only	possible	always 1
2	V2 - Mix proof valve D4 SL	2 internal linear sensors	fixed +/- 1 mm	NC only	possible	always 3
3	V1 - Mix proof valve DA4	internal linear sensor and 2 hall sensors	fixed +/- 1 mm	NC only	possible	always 3
4	V1 - Mix proof valve D4	internal linear sensor and 1 hall sensor	fixed +/- 1 mm	NC only	possible	always 1
5	V1 - Mix proof valve D4 SL	internal linear sensor and 2 hall sensors	fixed +/- 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 +/- 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 +/- 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 1,2,3
9	Seat valve / butterfly valve with internal feedback detection	internal linear sensor	+/-1 mm +/- 3 mm +/-5 mm	NC / NO	possible	optional 1,2,3
A	Double seat tank outlet valve DT4 SL	1 internal linear sensor 1 external linear sensor	fixed +/- 1 mm	NC only	not possible	always 3
B	V2 - Mix proof valve D4 PMO	2 internal linear sensors	fixed +/- 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 with seat lift detection (SLD) profile is adjusted.

AS-i address: 0 LED 4 (red) ON
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. AS-i communication / 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.)			
AS-i Communication Input Data / IDI	**valve state**	**sensor 1**	**sensor 2**
		signal generated by teach-in (position of position sensor)	signal generated by teach-in (position of position sensor)
DI0	closed	**1**	0
DI1	open	0	**1**
DI2	not occupied	**1**	**1**
DI3	not occupied	**1**	**1**
AS-i Communication Output Data / ODI	**solenoid 1 Main**	**solenoid 2**	**solenoid 3**
DO0	**1**	0	0
DO1	0	**1**	0
DO2	0	0	**1**
DO3	not occupied	not occupied	not occupied

NO - normally open			
Application: single seat / butterfly valve with internal feedback detection (SW4, SD4, MS4, SVS, SV etc.)			
AS-i Communication Input Data / IDI	**valve state**	**sensor 1**	**sensor 2**
		signal generated by teach-in (position of position sensor)	signal generated by teach-in (position of position sensor)
DI0	closed	0	**1**
DI1	open	**1**	0
DI2	not occupied	1	1
DI3	not occupied	1	1
AS-i Communication Output Data / ODI	**solenoid 1 Main**	**solenoid 2**	**solenoid 3**
DO0	**1**	0	0
DO1	0	**1**	0
DO2	0	0	**1**
DO3	not occupied	not occupied	not occupied

6. Electronic Module

6.7. AS-i communication / 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)					
AS-i Communication Input Data / IDI	**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)
DI0	closed	1	1	0	1
DI1	open	0	0	1	0
DI2	upper seat lifting	0	1	0	1
DI3	lower seat lifting	1	1	0	0
The appropriate AS-i signal for 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 IDI AS-i signals. Further ajdustments are not required!					

AS-i Communication Output Data / ODI	**solenoid 1 main**	**solenoid 2 upper seat lift**	**solenoid 3 lower seat lift**
DO0	1	0	0
DO1	0	1	0
DO2	0	0	1
DO3	not occupied	not occupied	not occupied

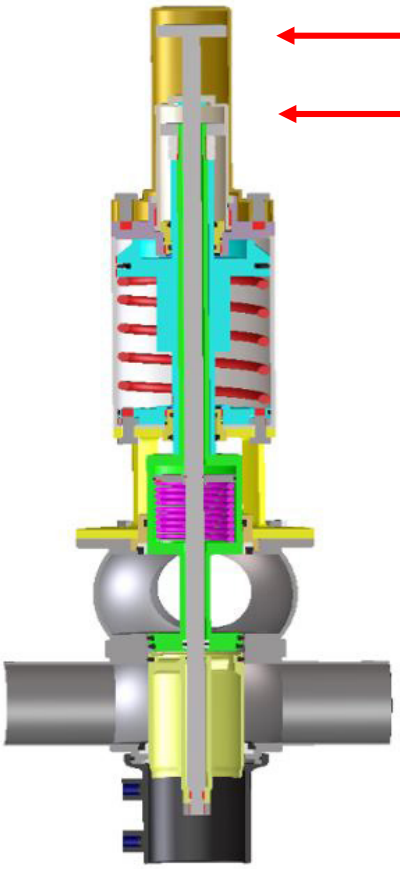
When replacing a CU3 control unit, use the following profile:
Double seat mix proof valve with seat lift detection (SLD) CU3 compatible mode
(all signals similar to CU3) - see instruction manual of CU3 Control Unit.

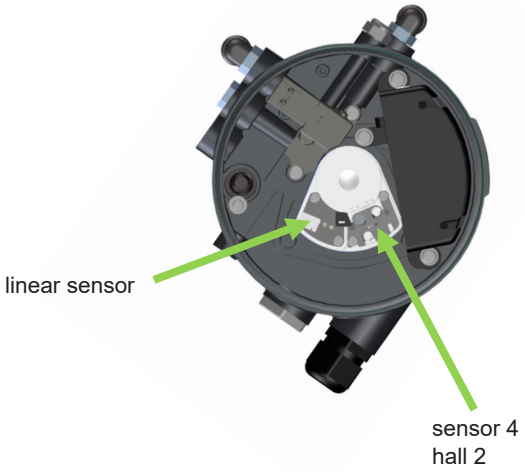
6. Electronic Module

6.7. AS-i communication / Data signals

6.7.3. Mix proof valve D4 - V1

operating	main stroke downwards		
main stroke	valve operating direction: downwards		
lower shaft	signal S3 signal S4	internal hall sensors	valve target M1
upper shaft	signal S2 signal S1	linear sensor	valve target M2





AS-i input data	valve status	linear sensor / (teach data)		internal hall sensors		tolerance band
		sensor signal S1	sensor signal S2	sensor signal S3	sensor signal S4	
DI0	closed	1	0	not used	0	+1 mm, -1 mm
DI1	open	0	0	not used	1	+1 mm, -1 mm
DI2						
DI3						

AS-i output data	solenoid 1 Main	solenoid 1 upper seat lift	solenoid 1 lower seat lift
DO0	1	0	0
DO1			
DO2			

6. Electronic Module

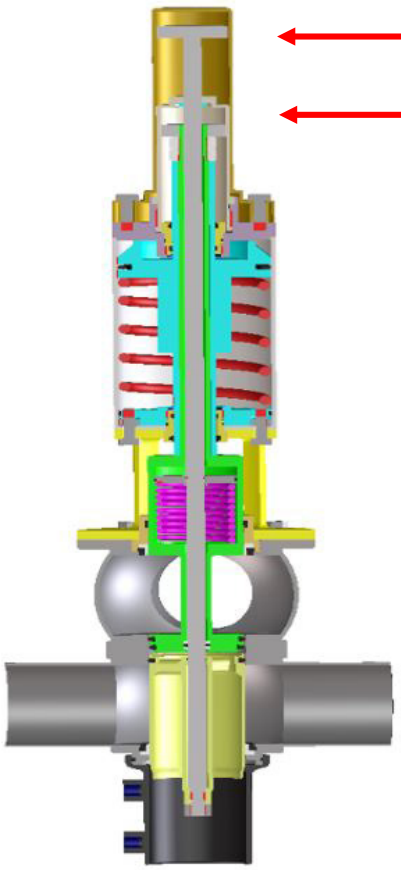
6.7. AS-i communication / Data signals

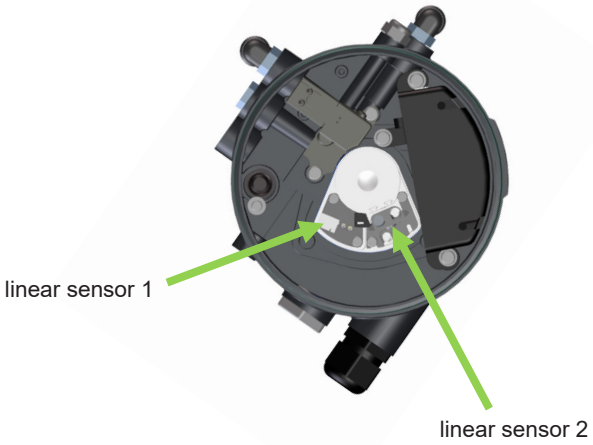
6.7.3. Mix proof valve D4 - V2

operating	main stroke downwards	

main stroke	valve operating direction: downwards	

lower shaft	signal S3 signal S4	linear sensor 1	valve target M1
upper shaft	signal S2 signal S1	linear sensor 2	valve target M2





AS-i input data	valve status	linear sensor 2 / (teach data)		linear sensor 1 / (teach date)		tolerance band
		sensor signal S1	sensor signal S2	sensor signal S3	sensor signal S4	
DI0	closed	1	0	not used	0	+1 mm, -1 mm
DI1	open	0	0	not used	1	+1 mm, -1 mm
DI2						
DI3						

AS-i output data	solenoid 1 Main	solenoid 1 upper seat lift	solenoid 1 lower seat lift
DO0	1	0	0
DO1			
DO2			

6. Electronic Module

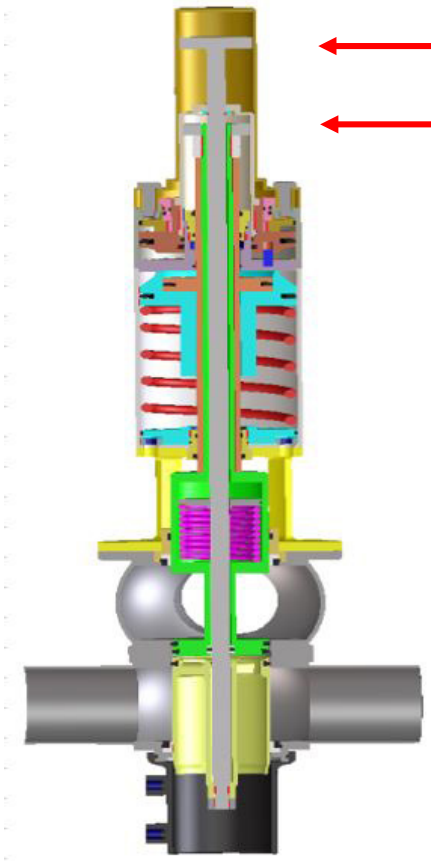
6.7. AS-i communication / Data signals

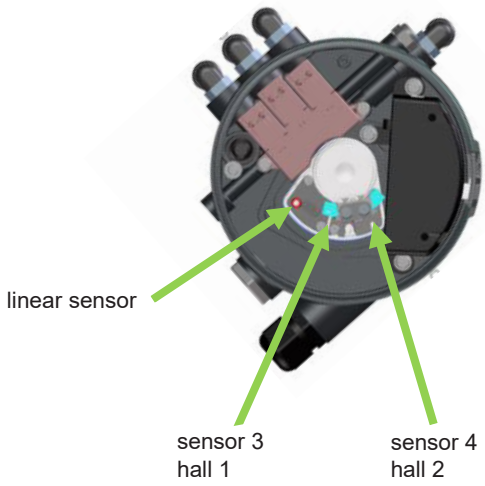
6.7.4. Mix proof valve D4 SL - V1

operating	main stroke downwards upper seat lift upwards lower seat lift downwards	

main stroke	valve operating direction: downwards	

lower shaft	signal S3 signal S4	internal hall sensors	valve target M1
upper shaft	signal S2 signal S1	linear sensor	valve target M2





AS-i input data	valve status	linear sensor / (teach data)		internal hall sensors		tolerance band
		sensor signal S1	sensor signal S2	sensor signal S3	sensor signal S4	
DI0	closed	1	0	1	0	+1 mm, -1 mm
DI1	open	0	0	0	1	+1 mm, -1 mm
DI2	upper seat lift	0	1	1	0	+1 mm, -1 mm
DI3	lower seat lift	1	0	0	0	+1 mm, -1 mm

AS-i output data	solenoid 1 Main	solenoid 2 upper seat lift	solenoid 3 lower seat lift
DO0	1	0	0
DO1	0	1	0
DO2	0	0	1

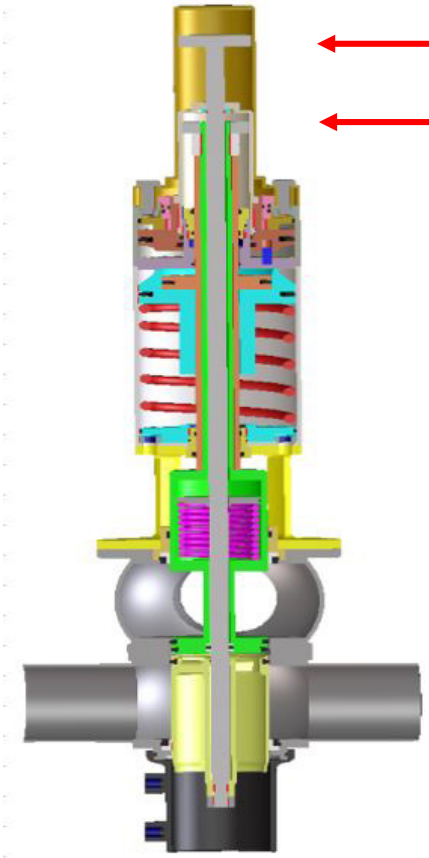
6. Electronic Module

6.7. AS-i communication / Data signals

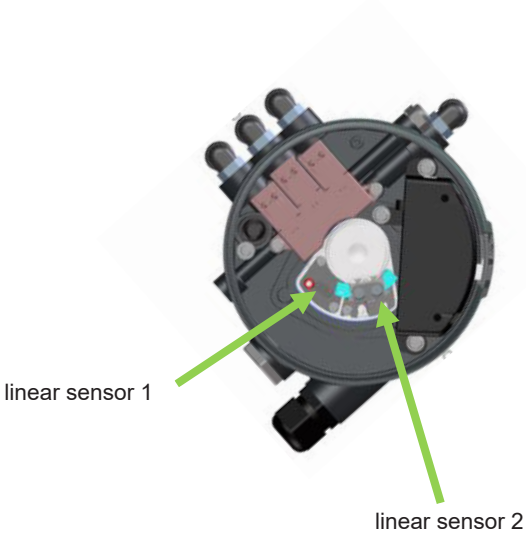
6.7.4. Mix proof valve D4 SL - V2

operating	main stroke downwards upper seat lift upwards lower seat lift downwards	

main stroke	valve operating direction: downwards	



lower shaft	signal S3 signal S4	linear sensor 1	valve target M1
upper shaft	signal S2 signal S1	linear sensor 2	valve target M2



AS-i input data	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	
DI0	closed	1	0	1	0	+1 mm, -1 mm
DI1	open	0	0	0	1	+1 mm, -1 mm
DI2	upper seat lift	0	1	1	0	+1 mm, -1 mm
DI3	lower seat lift	1	0	0	0	+1 mm, -1 mm

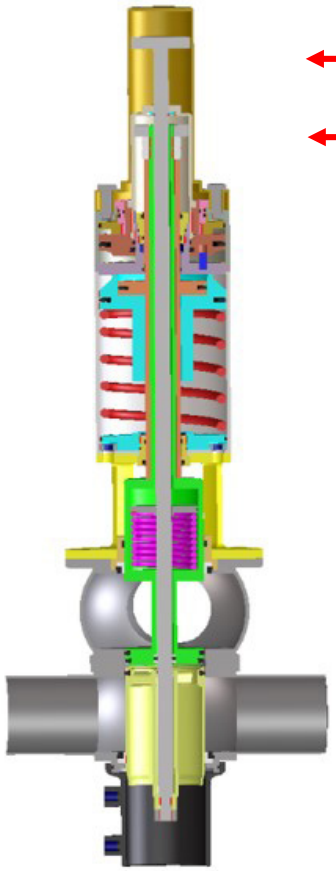
AS-i output data	solenoid 1 Main	solenoid 2 upper seat lift	solenoid 3 lower seat lift
DO0	1	0	0
DO1	0	1	0
DO2	0	0	1

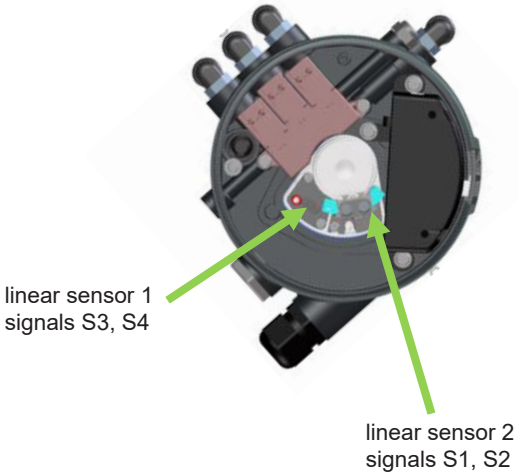
6. Electronic Module

6.7. AS-i communication / Data signals

6.7.5. Mix proof valve D4 PMO - V2

operating	main stroke downwards upper seat lift upwards lower seat lift downwards		
main stroke	valve operating direction: downwards		
lower shaft	signal S3 signal S4	linear sensor 1	electronic module terminal block 10,11,12
upper shaft	signal S2 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

AS-i input data	DI0	DI1	DI2	DI3
no logical combination of sensor signals, just raw data combination table has to be implemented in PLC software during seat lift - the opposite valve shaft stays in closed position, this can be monitored by watching the appropriate signal				

AS-i output data	solenoid 1 Main	solenoid 2 upper seat lift	solenoid 3 lower seat lift
DO0	1	0	0
DO1	0	1	0
DO2	0	0	1

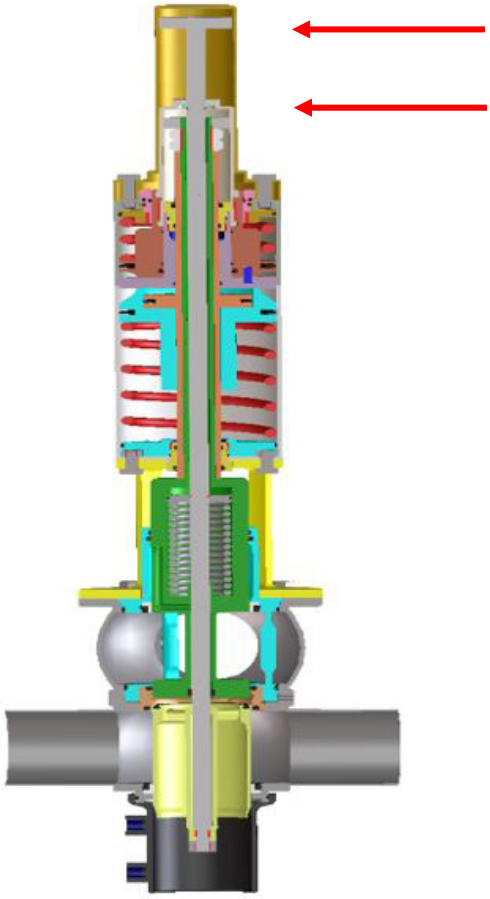
6. Electronic Module

6.7. AS-i communication / Data signals

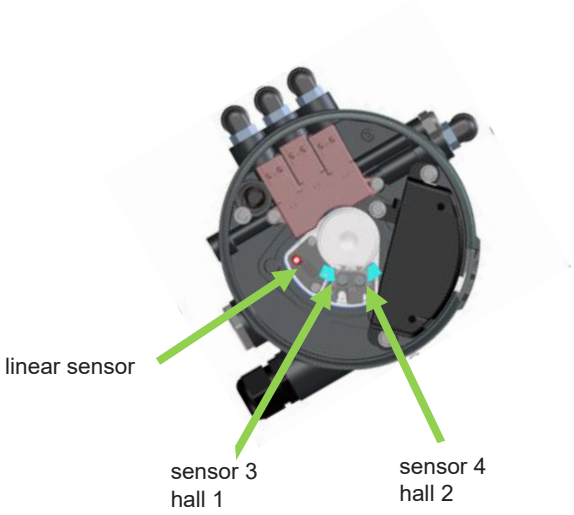
6.7.6. Mix proof valve DA4 - V1

operating	main stroke downwards upper seat lift upwards lower seat lift upwards	

main stroke	valve operating direction: downwards	



lower shaft	signal S3 signal S4	internal hall sensors	valve target M1
upper shaft	signal S2 signal S1	linear sensor	valve target M2



AS-i input data	valve status	linear sensor / (teach data)		internal hall sensors		tolerance band
		sensor signal S1	sensor signal S2	sensor signal S3	sensor signal S4	
DI0	closed	1	0	0	0	+1 mm, -1 mm
DI1	open	0	0	0	1	+1 mm, -1 mm
DI2	upper seat lift	0	1	0	0	+1 mm, -1 mm
DI3	lower seat lift	1	0	1	0	+1 mm, -1 mm

AS-i output data	solenoid 1 Main	solenoid 2 upper seat lift	solenoid 3 lower seat lift
DO0	1	0	0
DO1	0	1	0
DO2	0	0	1

6. Electronic Module

6.7. AS-i communication / Data signals

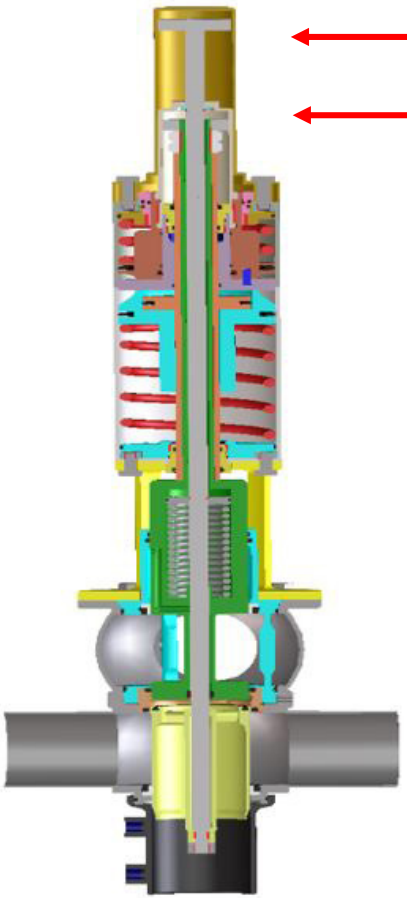
6.7.6. Mix proof valve DA4 - V2

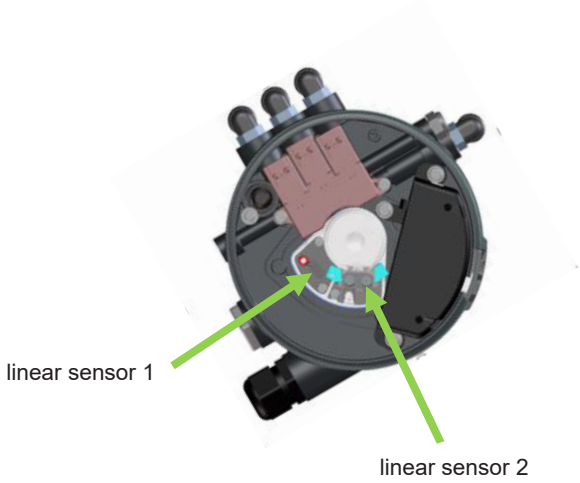
operating	main stroke downwards upper seat lift upwards lower seat lift upwards	

main stroke	valve operating direction: downwards	

lower shaft	signal S3 signal S4	linear sensor 1	valve target M1

upper shaft	signal S2 signal S1	linear sensor 2	valve target M2





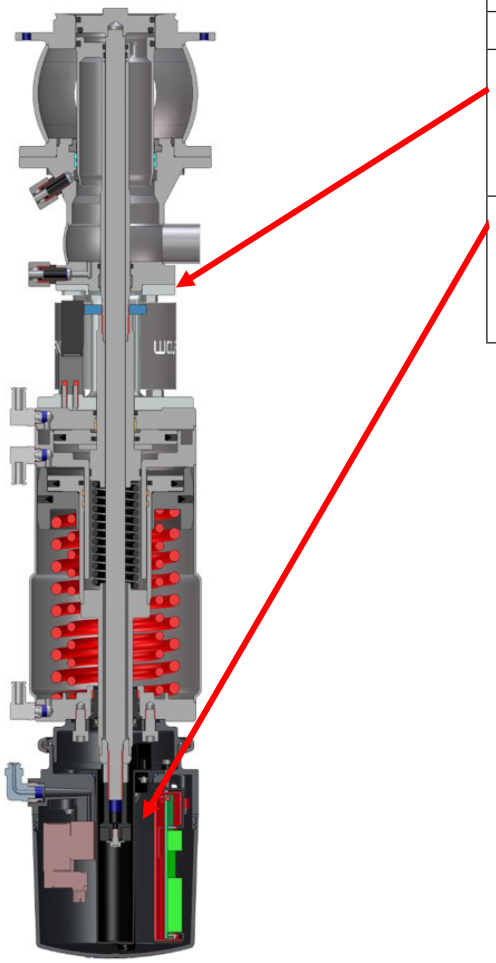
AS-i input data	valve status	linear sensor 2 / (teach data)		linear sensor 1 / (teach data)		tolerance band
		sensor signal S1	sensor signal S2	sensor signal S3	sensor signal S4	
DI0	closed	1	0	0	0	+1 mm, -1 mm
DI1	open	0	0	0	1	+1 mm, -1 mm
DI2	upper seat lift	0	1	0	0	+1 mm, -1 mm
DI3	lower seat lift	1	0	1	0	+1 mm, -1 mm

AS-i output data	solenoid 1 Main	solenoid 2 upper seat lift	solenoid 3 lower seat lift
DO0	1	0	0
DO1	0	1	0
DO2	0	0	1

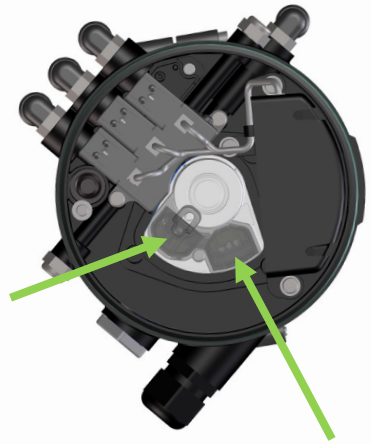
6. Electronic Module

6.7. AS-i communication / Data signals

6.7.7. Double seat tank outlet valve DT4 SL - V2



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



AS-i input data	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	
DI0	closed	1	0	0	0	+1 mm, -1 mm
DI1	open	0	1	0	0	+1 mm, -1 mm
DI2	upper seat lift	0	0	1	0	+1 mm, -1 mm
DI3	lower seat lift	1	0	0	1	+1 mm, -1 mm

AS-i output data	solenoid 1 Main	solenoid 1 upper seat lift	solenoid 1 lower seat lift
DO0	1	0	0
DO1	0	1	0
DO2	0	0	1

6. Electronic Module

6.7. AS-i communication / Data signals

6.7.8. AS-i parameter data / status / diagnosis

AS-i parameter data (inverted)			
inputs		outputs	
PI3	not occupied	**PO3**	not occupied
PI2	Teach mode	**PO2**	not occupied
PI1	Aux. Voltage	**PO1**	not occupied
PI0	Service requ.	**PO0**	not occupied

AS-i status	
inputs	
S3	EEPROM error
S2	Automatic "unique" duplicate address detection
S1	Periphery fault
S0	Address not permanently stored

AS-i diagnosis	
inputs	
0	Air pressure availed
1	Teach-in-successfully completed

6.8. Service and Maintenance Software CU4plus Toolbox

APV

For the parameterization of the CU4plus AS-i 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 plusation 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

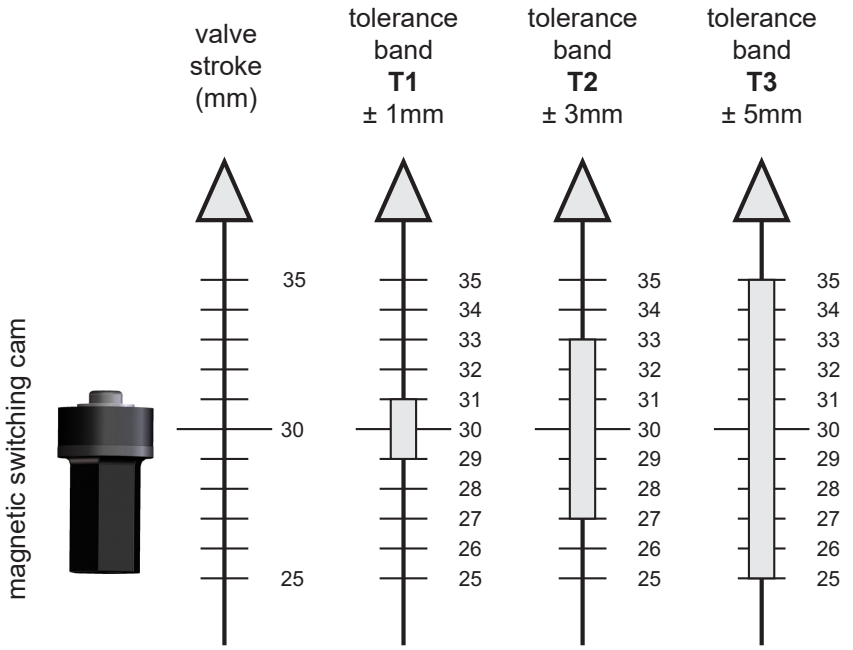
7.1. Continuously measuring valve position measuring system

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
T2	+/- 3 mm	e.g. SW4, MS4
T3	+/- 5 mm	e.g. SV, SVS, DKR

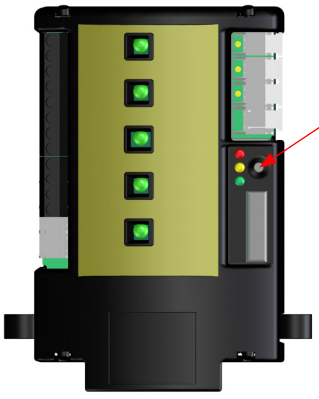


7. Valve Position Indication

7.3. Adjustment of valve position indication / Teach-in

The continuously measuring valve position measuring system is tought 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 blink	Delivery status Waiting for teach-in	Start teach-in press teach-in for at least 3 seconds
LED 9 OFF LED 3/4 blink	Teach-in active	Wait Do not control valve via PLC.
LED 9 OFF	Successful teach-in	Valve can be controlled by PLC.
LED 9 ON	Valve service carried out	Start teach-in / press teach-in key for 3 sec.
LED 9 blink	Teach-in not successful, repetition required. Possible reasons for teach-in failure: Compressed air is missing. Supply voltage missing. Switching logic does not fit to valve.	Start teach-in / press 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 AS-i control unit is not duly installed on the valve. ist ordnungsgemäß auf dem Ventil installiert.
- 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 DA3+ SLD).

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!

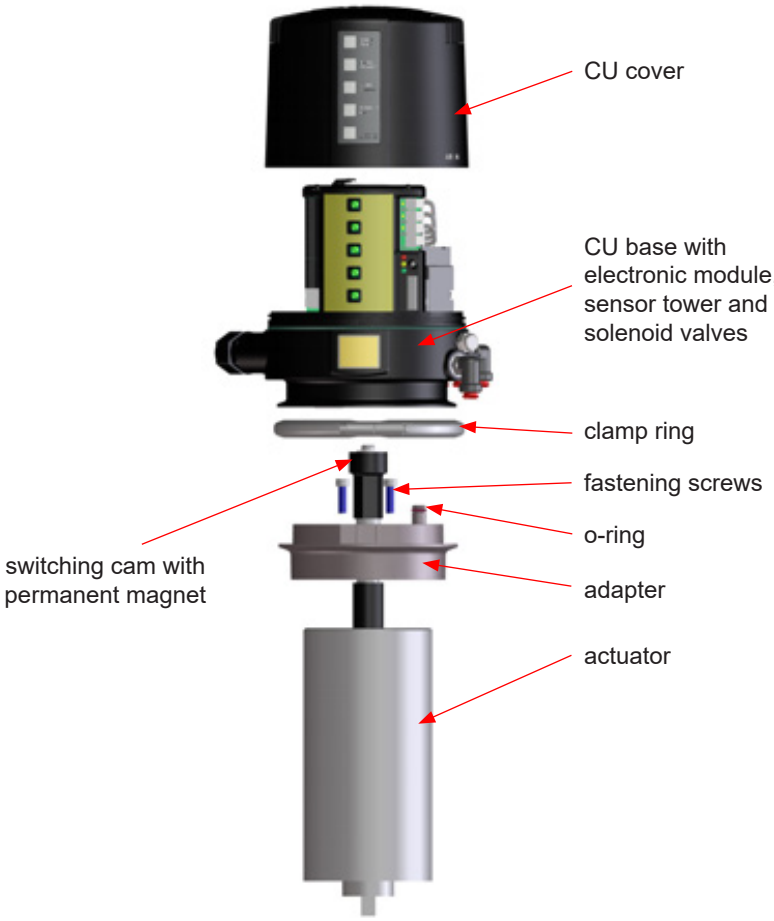
If these instructions are not observed, process failures, product loss or personal injury may occur!

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 AS-i.

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!

See to a professional execution and installation of the AS-interface network.
Observe the Safety Instructions specified in chapter 2.

8.1.3. Startup

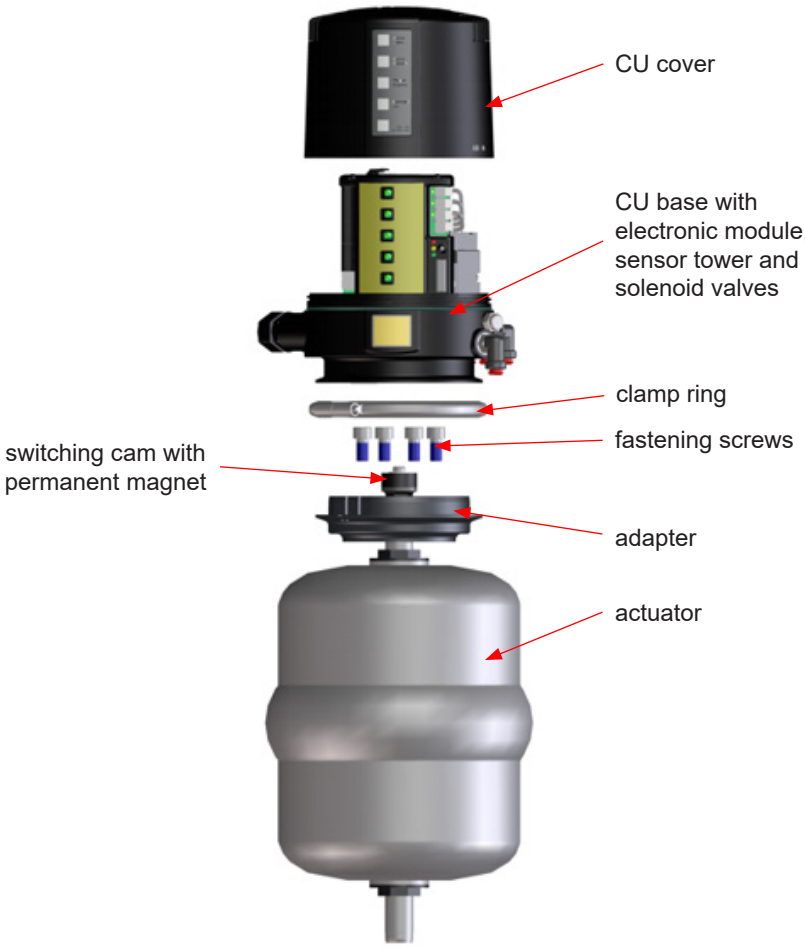
After proper assembly and installation of the control unit, startup can be undertaken as described below:

1. Switch on the air supply.
2. Switch on the voltage supply.
3. Adjust AS-i address at the CU4plus AS-i.
4. 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.

See to a professional execution and installation of the AS-interface network.
Observe the Safety Instructions specified in chapter 2.

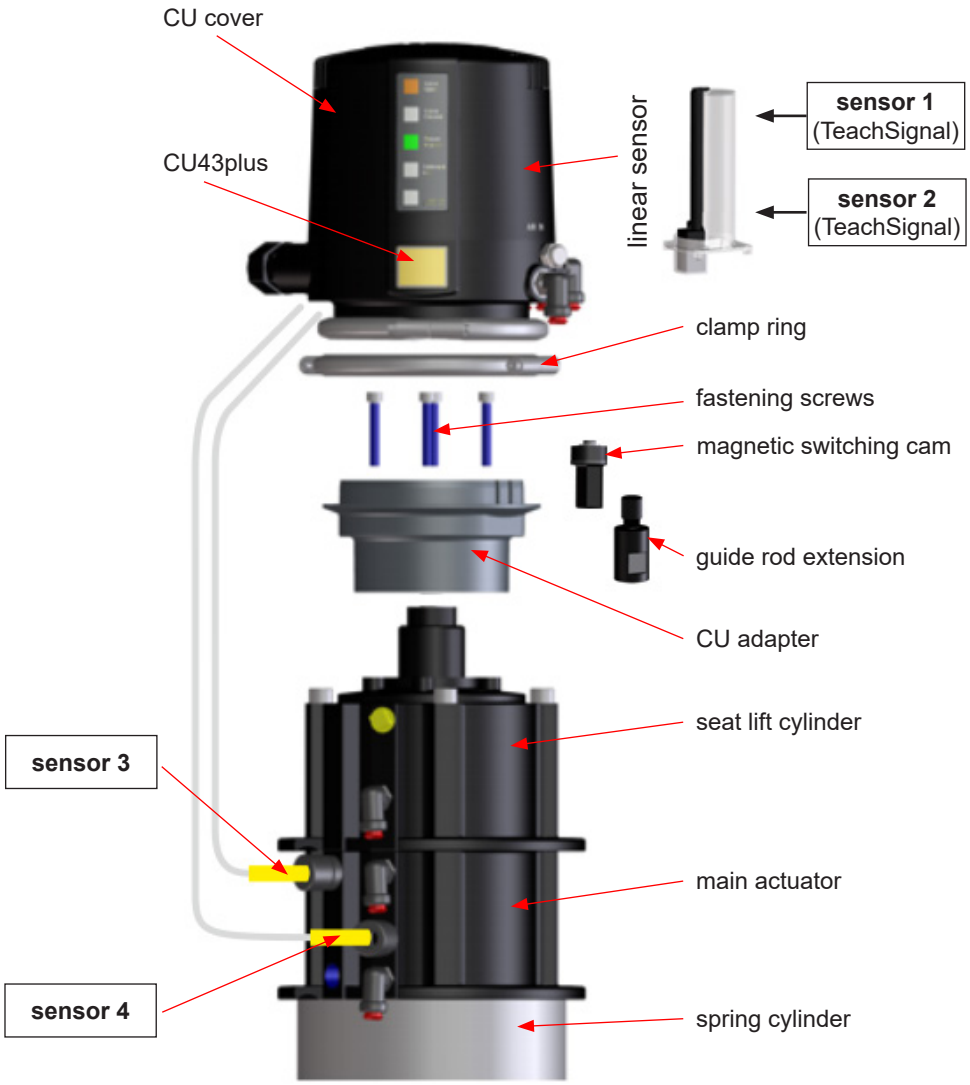
8.2.3. Startup

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 AS-i address at the CU4plus AS-i.
4. Adjust corresponding logic profile in accordance with the process valve used (if this has not been determined for the delivery status).
5. 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 hosed 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.

See to a professional execution and installation of the AS-interface network.
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

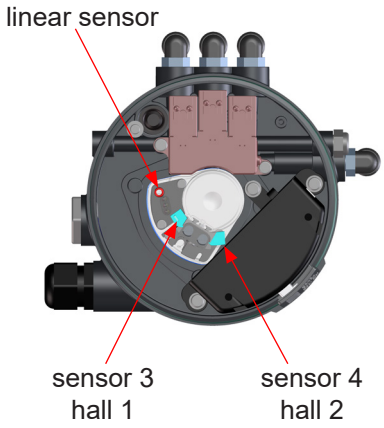
After proper assembly and installation of the control unit, startup can be undertaken as described below:

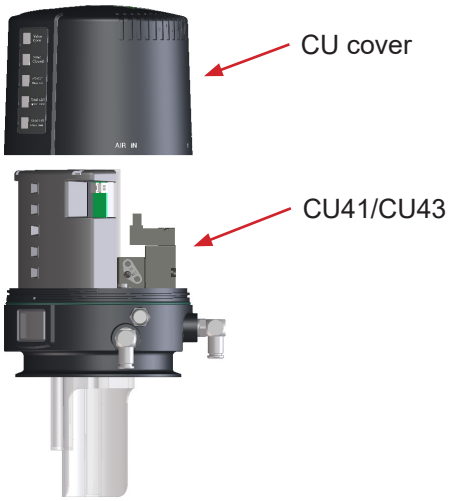
1. Switch on the air supply.
2. Switch on the voltage supply.
3. Adjust AS-i address at the CU4plus AS-i.
4. Adjust corresponding logic profile in accordance with the process valve used (if this has not been determined for the delivery status).
5. Start Teach-In. It is mandatory to observe the corresponding prerequisites (**see chapter 7.3.**).

8. CU Assembly and Startup

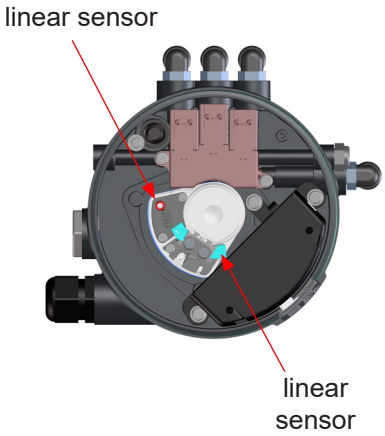
8.4. Double seat mix proof valves D4, D4 SL, D4 PMO, DA4

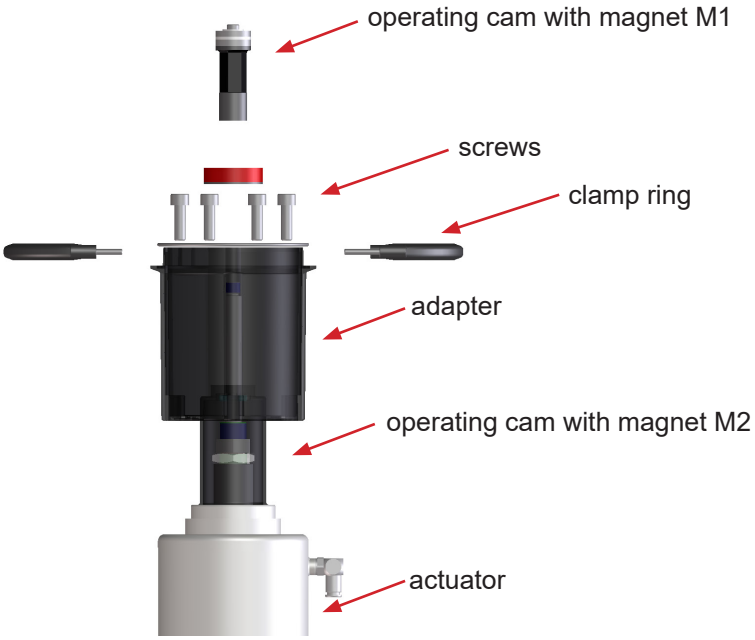
V1





V2





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

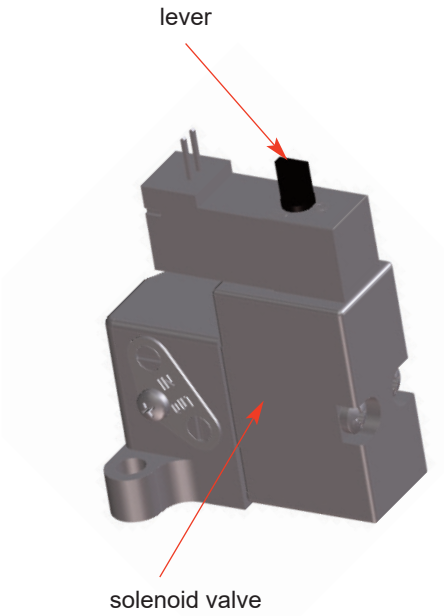
Exhaust air:
As a standard, the exhaust air connections **A1** and **A2** are equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hosed separately when it must be led off to the exterior, for example.

8.4.2 Electric connection

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

See to a professional execution and installation of the AS-interface network.
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

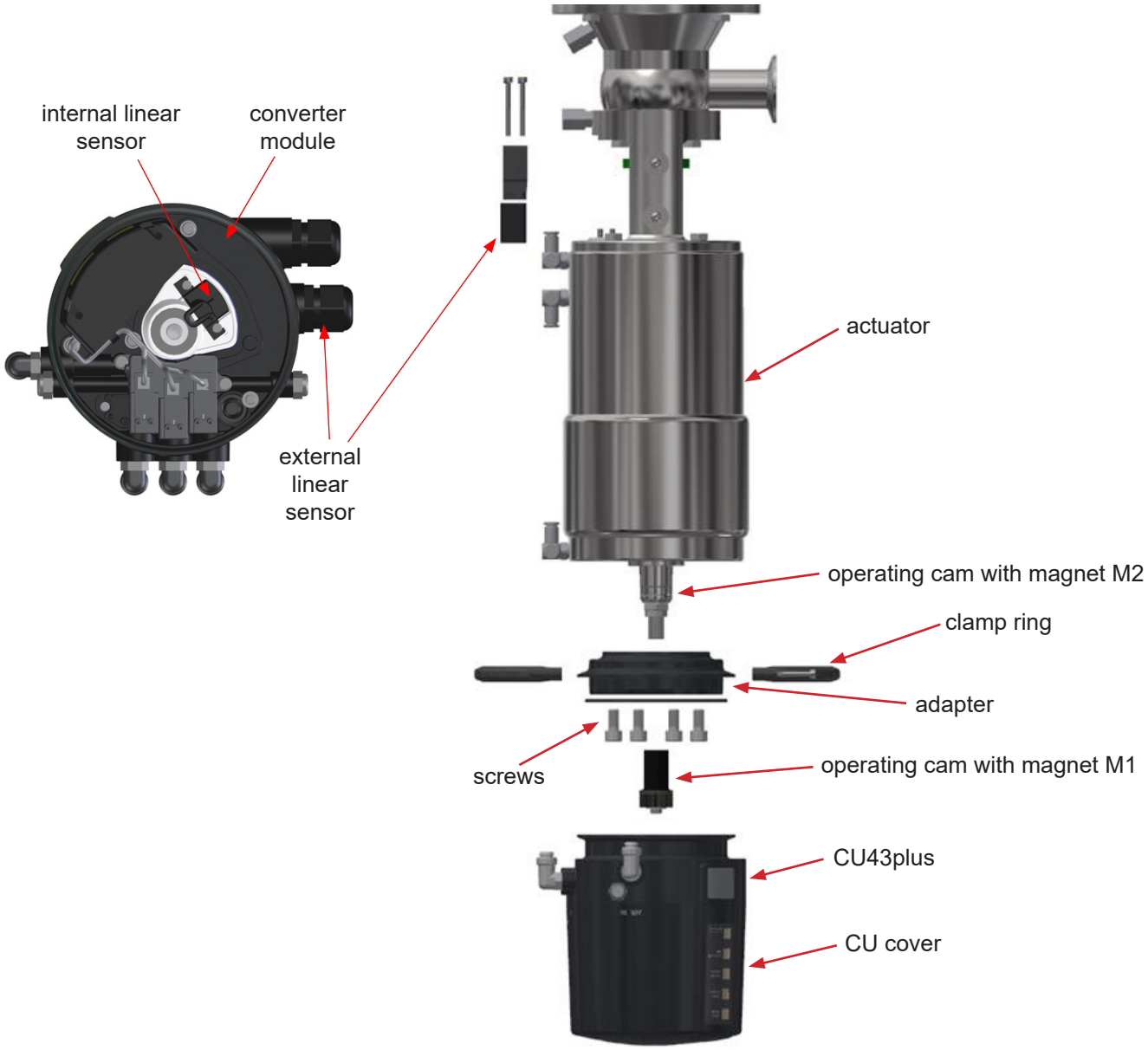
1. Switch on the air supply
2. Switch on the voltage supply.
3. Check the solenoid valves by turning the lever on the upper side by 90°.
4. For final adjustments of the feedback position switches please use the Teach function.

   V1 version:
   Before starting the Teach function, observe and carry out the steps for pre-setting as described on pages 58, 59, 60.

   V2 version:
   No pre-settings required.
   Select the appropriate valve profile.
   Start Teach-In (see chapter 7.3.).

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

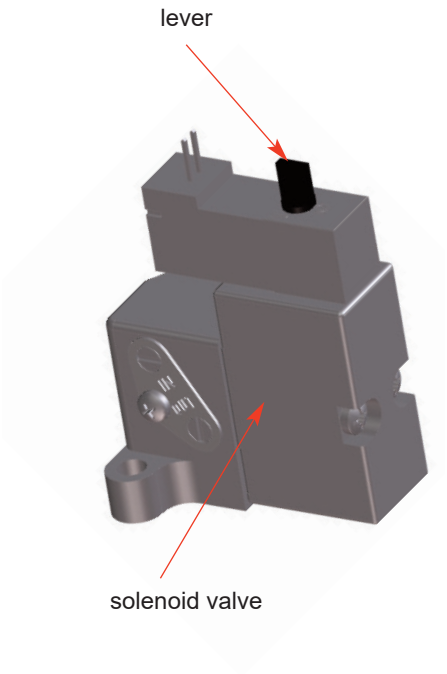
Exhaust air:
As a standard, the exhaust air connections **A1** and **A2** are equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hosed separately when it must be led off to the exterior, for example.

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.

8. CU Assembly and Startup

8.6. Pre-settings

8.6.1. Pre-settings of CU4plus AS-i on D4 mix proof valve V1

Step	Description
1	assembly of adapter
2	assembly of CU4plus connect air hoses with CU and D4 valve actuator - Air out 1 / main actuator - Air out 2 / upper seat lift actuator - Air out 3 / lower seat lift actuator
3	CU4plus AS-i power ON switch compressed control air supply ON
4	connect CU4 Toolbox
5	start Toolbox software with password access - also see: CU4 Toolbox manual
6	open pull down menu "Valve settings" adjust valve profile D4 and write settings to CU
7	CU signalizes "no teach data" LED 3/4 - perifault blink together with LED 5/6/9 blink
8	adjust hall sensors S3 (Toolbox) = tower spindle 1 S4 (Toolbox) = tower spindle 2
8a	sensor S3 / tower spindle 1 - not used
8b	adjust S4 / tower spindle 2 manually activate solenoid 1 - valve to open turn tower spindle 2 until blue LED at hall sensor is ON turn tower spindle 2 counter clockwise until blue LED is just OFF turn tower spindle 2 clockwise 2 times (LED should still be ON) manually de-activate solenoid 1 - valve to return into closed position
9	start teach routine press teach button (next to LED 9) until LED 9 is ON teach routine proceeds automatically to learn every valve position after successful teach the valve closed position is indicated (orange LED 5)

8. CU Assembly and Startup

8.6. Pre-settings

8.6.2. Pre-settings of CU4plus AS-i on D4 SL mix proof valve V1

Step	Description
1	assembly of adapter
2	assembly of CU4plus connect air hoses with CU and D4 valve actuator - Air out 1 / main actuator - Air out 2 / upper seat lift actuator - Air out 3 / lower seat lift actuator
3	CU4plus AS-i power ON switch compressed control air supply ON
4	connect CU4 Toolbox
5	start Toolbox software with password access - also see: CU4 Toolbox manual
6	open pull down menu "Valve settings" adjust valve profile D4SL and write settings to CU
7	CU signalizes "no teach data" LED 3/4 - perifault blink together with LED 5/6/9 blink
8	adjust hall sensors S3 (Toolbox) = tower spindle 1 S4 (Toolbox) = tower spindle 2
8a	adjust S3 / tower spindle 1 no solenoid active turn tower spindle 1 until blue LED at hall sensor is ON continue turning tower spindle 1 until LED at hall sensor is OFF turn tower spindle 1 2 times counter clockwise (LED should still be ON) manually activate solenoid 3 - lower seat lift, LED at hall sensor OFF manually deactivate solenoid 3 - lower seat lift, LED at hall sensor is ON
8b	adjust S4 / tower spindle 2 manually activate solenoid 1 - valve to open turn tower spindle 2 until blue LED at hall sensor is ON turn tower spindle 2 counter clockwise until blue LED is just OFF turn tower spindle 2 clockwise 2 times (LED should still be ON) manually de-activate solenoid 1 - valve to return into closed position
9	start teach routine press teach button (next to LED 9) until LED 9 is ON teach routine proceeds automatically to learn every valve position after successful teach the valve closed position is indicated (orange LED 5)
10	check if valve positions are correct either use manual override at the solenoid or CU4Toolbox to activate the valve postions open, upper seat lift, lower seat lift and check the appropriate output signals and LED

8. CU Assembly and Startup

8.6. Pre-settings

8.6.3. Pre-settings of CU4plus AS-i on DA4 mix proof valve V1

Step	Description
1	assembly of adapter
2	assembly of CU4plus connect air hoses with CU and D4 valve actuator - Air out 1 / main actuator - Air out 2 / upper seat lift actuator - Air out 3 / lower seat lift actuator
3	CU4plus AS-i power ON switch compressed control air supply ON
4	connect CU4 Toolbox
5	start Toolbox software with password access - also see: CU4 Toolbox manual
6	open pull down menu "Valve settings" adjust valve profile DA4 and write settings to CU
7	CU signalizes "no teach data" LED 3/4 - perifault blink together with LED 5/6/9 blink
8	adjust hall sensors S3 (Toolbox) = tower spindle 1 S4 (Toolbox) = tower spindle 2
8a	adjust S3 / tower spindle 1 manually activate solenoid 3 - lower seat lift turn tower spindle 1 until blue LED at hall sensor is ON turn tower spindle 1 further clockwise until LED just is OFF turn tower spindle 1 2 times counter clockwise (LED should still be ON) manually de-activate solenoid 3 - valve to return into closed position
8b	adjust S4 / tower spindle 2 manually activate solenoid 1 - valve to open turn tower spindle 2 until blue LED at hall sensor is ON turn tower spindle 2 counter clockwise until blue LED is just OFF turn tower spindle 2 clockwise 2 times (LED should still be ON) manually de-activate solenoid 1 - valve to return into closed position
9	start teach routine press teach button (next to LED 9) until LED 9 is ON teach routine proceeds automatically to learn every valve position after successful teach the valve closed position is indicated (orange LED 5)
10	check if valve positions are correct either use manual override at the solenoid or CU4Toolbox to activate the valve positions open, upper seat lift, lower seat lift and check the appropriate output signals and LED

8. CU Assembly and Startup

8.7. Replacement of CU3 versions

Replacement of a standard CU3 AS-i
All CU41 variants can substitute a CU3 control unit without changing the signal routing. When replacing the CU3, the larger dimensions of the CU4 control unit must, however, be considered. If a CU43 is to replace a CU33 control unit, the change of the seat lifting signals must be observed.
The following table shows the details.

AS-interface output data bit	CU33	CU43
DO0	main valve	main valve
DO1	lower seat lifting	upper seat lifting
DO2	upper seat lifting	lower seat lifting

In order to prevent the activation of the wrong seat lift after CU replacement, the following adaptions can be carried out:

- Change in the control software. – or -
- The interchange of the electrical connections of the pneumatic valves 2 and 3 at the electronic module of CU43. In this case, the signals of CU43 as well as of CU33 can be controlled.

Note!
The air hoses leading to the actuators MUST NOT be exchanged. For the lower seat lift, the CU is equipped with a separate exhaust air channel due to the larger volume of the actuator. A mix-up of the air hoses can lead to disruption in operation.

Replacement of a standard CU33 AS-i SLD
Adjust the compatibility mode with the ToolBox software.
The CU43plus AS-i will work in the same manner as the CU33 AS-i SLD.

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

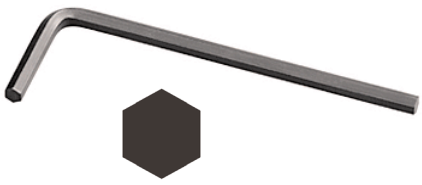
Loctite semi-solid

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 anticlockwise 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 anticlockwise 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 AS-i bus communication.
	Check cabeling to the electronic module.
LED indication is missing.	Check AS-i bus communication.
	Check cabeling 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 AS-i
	Check valve movement with manual at solenoid valve.
	Check cabeling 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
Control Unit CU41 installed on Single seat, Double seal and Double seat valves	
Valve position movement is missing with actuated solenoid valve.	Check if right control unit is installed. Check label in type window of control unit: CU41plus-S AS-i CU41Nplus-S AS-i CU41plus-M AS-i CU41plus-D4-V1-V2 AS-i
	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.
Control Unit CU43 installed on Double seat valves with SLD	
Valve position movement is missing with actuated solenoid valve.	Check if right control unit is installed. Check label in type window of control unit: CU43plus-M AS-i CU43plus-D4-V1-V2 AS-i
	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 CU43 and the DA3 / DA4 / D4 SL / D4 PMO actuator.

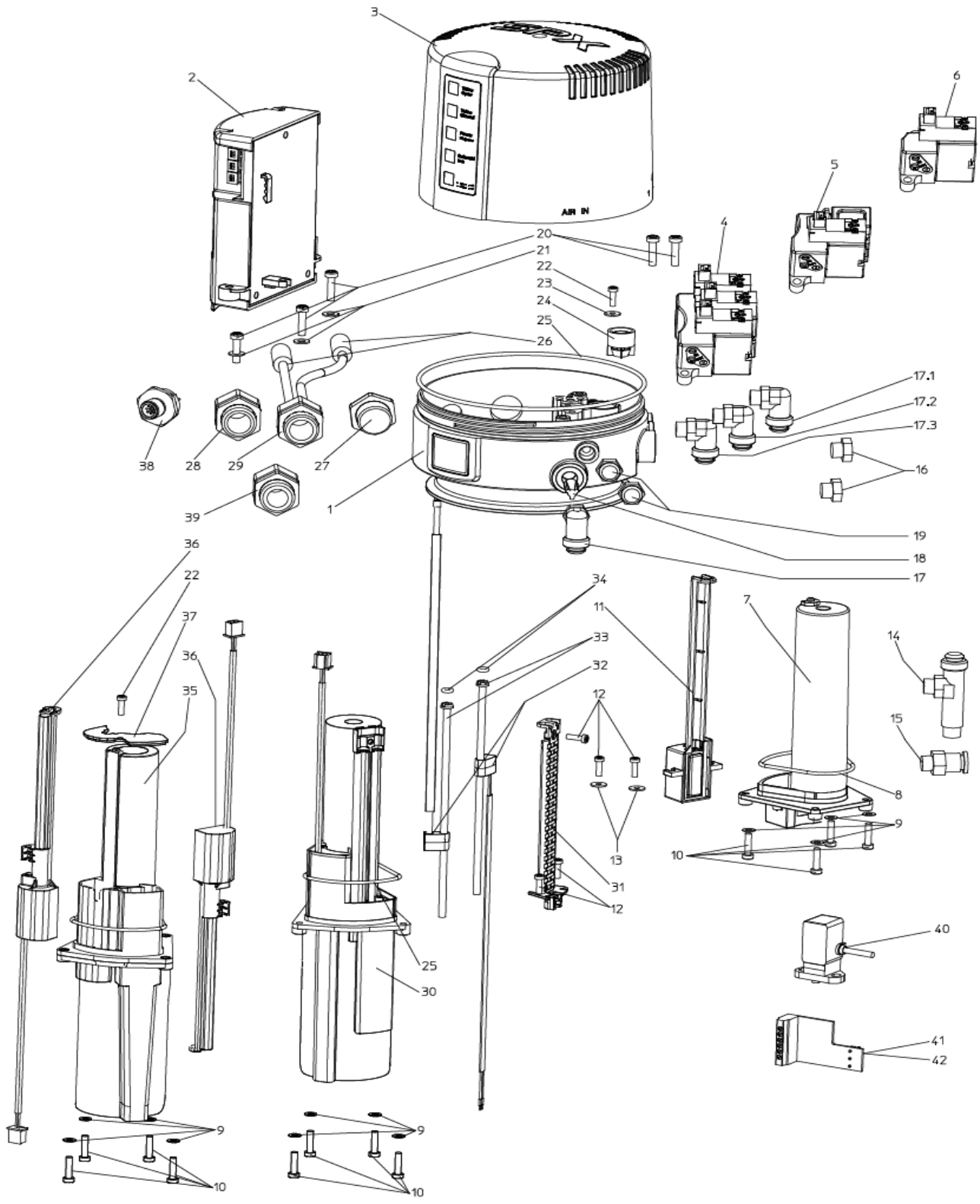
12. Spare Parts Lists

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.



Datum:	04.01.16	16.05.19	07.08.20	29.03.21							**SPX FLOW**
Name:	Trytko	C.Keil	C.Keil	C.Keil							
Geprüft:	Schulz			C.Keil							

Ersatzteilliste: spare parts list

Control Unit CU4plus AS-i extended

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	04.01.16	16.05.19	07.08.20	
Name:	Trytko	C.Keil	C.Keil	
Geprüft:	Schulz			

SPX FLOW

Datum:				
Name:				
Geprüft:				

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RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	CU41plus-S AS-i extended WS-Nr. ref.-no.	CU41plus-T AS-i extended WS-Nr. ref.-no.	CU41plus-M AS-i extended WS-Nr. ref.-no.	CU41Nplus-S AS-i extended WS-Nr. ref.-no.	CU41Nplus-T AS-i extended WS-Nr. ref.-no.	WS-Nr. ref.-no.
		CU41plus AS-i extended kpl. (6x1) CU41plus AS-i extended cpl. (6x1)	PA 6.6 GF30 schwarz	08-45-350/93 H333118	08-45-351/93 H333119	08-45-356/93 H335237	08-45-352/93 H333120	08-45-353/93 H333121	
		CU41plus AS-i extended kpl. (1/4" OD) CU41plus AS-i extended cpl. (1/4" OD)	PA 6.6 GF30 schwarz	08-45-360/93 H333124	08-45-361/93 H333125	08-45-366/93 H335238	08-45-362/93 H333126	08-45-362/93 H333127	
1	1	CU41-Base CU41-Base	GRILON TSG30 schwarz	08-46-552/93 H319853	08-46-553/93 H319854	08-46-554/93 H319855	08-46-552/93 H319853	08-46-553/93 H319854	
2	1	CU4plus AS-i-SLD E-Modul CU4plus AS-i-SLD E-Modul	Zytel 70G33L schwarz	08-46-915/93 H333117					
3	1	CU4 Haube kpl. mit solenoid LED CU4 cap cpl. with solenoid LED	PA12/Grilamid LV-3H schw. GF30	08-46-659/93 H325602					
4	1	Magnetventilblock 1 EMV soninoid valve 1EMV	PPS	08-46-578/93 H319950			----- -----	----- -----	
5	1	Magnetventilblock 1 EMV + NOT-Element solinoid valve 1 EMV + NOT-element	PPS	----- -----	----- -----	----- -----	08-46-579/93 H319951		
6	1	Magnetventilblock 3 EMV solinoid valve 3 EMV	PPS						
7	1	CU4plus Sensortower CU4plus Sensortower	Grilamid TR90	08-46-584/93 H321498					
8	1	O-Ring OR 47,29 x 2,62 O-ring	NBR 70 Shore A	58-06-218/83 H320401					
9	4	Scheibe DIN125 A=3,7 Washer	A2	67-01-004/13 H323771					
10	4	Ejot Delta PT Schraube WN 5451 Ejot Delta PT screw 35 x 14	A2	65-17-122/13 H320364					
11	1	CU4 techno Sensor kpl. mit Anschlusskabel CU4 techno sensor cpl. With connec. cable		08-46-620/93 H324877					
12	2	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					
13	2	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					
14	1	Druckreduzierventil 5 bar Pressure reducer valve 5 bar	Ms / vern.	----- -----	----- -----	----- -----	08-60-766/93 H208841		

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	04.01.16	16.05.19	07.08.20	
Name:	Trytko	C.Keil	C.Keil	
Geprüft:	Schulz			

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Datum:				
Name:				
Geprüft:				

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RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	CU41plus-S AS-i extended WS-Nr. ref.-no.	CU41plus-T AS-i extended WS-Nr. ref.-no.	CU41plus-M AS-i extended WS-Nr. ref.-no.	CU41Nplus-S AS-i extended WS-Nr. ref.-no.	CU41Nplus-T AS-i extended WS-Nr. ref.-no.	WS-Nr. ref.-no.
15	1	Steckverschraub. gerade selbstabsperr. IQSK Connection direct automatic lock	Ms / vern.	----- -----	----- -----	----- -----	08-63-241/99 H320551		
16.1	1	Blindstopfen G1/8" mit O-Ring Plug G1/8" with o-ring	Ms / vern.	----- -----	08-60-051/99 H320482	----- -----	----- -----	08-60-051/99 H320482	
16.2	1	Blindstopfen G1/8" mit O-Ring Plug G1/8" with o-ring	Ms / vern.	08-60-051/99 H320482			----- -----	----- -----	
17	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.1	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825	----- -----	08-60-750/93 H208825		----- -----	
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732	----- -----	08-60-811/93 H312732		----- -----	
17.2	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	----- -----					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	----- -----					
17.3	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	----- -----					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	----- -----					
18	1	CU4 Luftfilter CU4 air filter	PE-porös- hydrophob	08-10-005/93 H320223					
19	1	Schalldämpfer sound reducer	Ms / vern.	08-60-751/93 H208826					
20	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 40 x 16	A2	65-17-131/13 H320365					
21	3	Scheibe DIN125 I=4,3 Washer	A2	67-01-003/13 H79576					
22	1	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	04.01.16	16.05.19	07.08.20	
Name:	Trytko	C.Keil	C.Keil	
Geprüft:	Schulz			

Datum:				
Name:				
Geprüft:				

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RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	CU41plus-S AS-i extended WS-Nr. ref.-no.	CU41plus-T AS-i extended WS-Nr. ref.-no.	CU41plus-M AS-i extended WS-Nr. ref.-no.	CU41Nplus-S AS-i extended WS-Nr. ref.-no.	CU41Nplus-T AS-i extended WS-Nr. ref.-no.	WS-Nr. ref.-no.
23	1	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					
24	1	CU4 Überströmventil Rv-Patrone OF-15-HAT CU4 overflow valve Rv-cartridge OF-15-HAT	PPS	08-46-037/93 H320352					
25	1	O-Ring OR 120,32 x 2,62 O-ring	NBR 70 Shore A	58-06-533/83 H320402					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	04.01.16	16.05.19	07.08.20	
Name:	Trytko	C.Keil	C.Keil	
Geprüft:	Schulz			

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Datum:				
Name:				
Geprüft:				

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pos. item	Menge quantity	Beschreibung description	Material material	CU43plus-S AS-i exteded WS-Nr. ref.-no.	CU43plus-M-SLD AS-i exteded WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
		CU43plus AS-i extended kpl. (6x1) CU43plus AS-i extended cpl. (6x1)	PA 6.6 GF30 schwarz	08-45-355/93 H333123	08-45-354/93 H333122				
		CU43plus AS-i extended kpl. (1/4" OD) CU43plus AS-i extended cpl. (1/4" OD)	PA 6.6 GF30 schwarz	08-45-365/93 H333129	08-45-364/93 H333128				
1	1	CU41-Base CU41-Base	GRILON TSG30 schwarz	08-46-556/93 H319857					
2	1	CU4plus AS-i-SLD E-Modul CU4plus AS-i-SLD E-Modul	Zytel 70G33L schwarz	08-46-915/93 H333117					
3	1	CU4 Haube kpl. mit solenoid LED CU4 cap cpl. with solenoid LED	PA12/Grilamid LV-3H schw. GF30	08-46-659/93 H325602					
4	1	Magnetventilblock 1 EMV soninoid valve 1EMV	PPS	----- -----	----- -----				
5	1	Magnetventilblock 1 EMV + NOT-Element solinoid valve 1 EMV + NOT-element	PPS	----- -----	----- -----				
6	1	Magnetventilblock 3 EMV solinoid valve 3 EMV	PPS	08-46-580/93 H319952					
7	1	CU4plus Sensortower CU4plus Sensortower	Grilamid TR90	08-46-584/93 H321498					
8	1	O-Ring OR 47,29 x 2,62 O-ring	NBR 70 Shore A	58-06-218/83 H320401					
9	4	Scheibe DIN125 A=3,7 Washer	A2	67-01-004/13 H323771					
10	4	Ejot Delta PT Schraube WN 5451 Ejot Delta PT screw 35 x 14	A2	65-17-122/13 H320364					
11	1	CU4 techno Sensor kpl. mit Anschlusskabel CU4 techno sensor cpl. With connec. cable		08-46-620/93 H324877					
12	2	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					
13	2	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					
14	1	Druckreduzierventil 5 bar Pressure reducer valve 5 bar	Ms / vern.	----- -----	----- -----				

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	04.01.16	16.05.19	07.08.20	
Name:	Trytko	C.Keil	C.Keil	
Geprüft:	Schulz			

SPX FLOW

Datum:				
Name:				
Geprüft:				

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RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	CU43plus-S AS-i exteded WS-Nr. ref.-no.	CU43plus-M AS-i exteded WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
15	1	Steckverschraub. gerade selbstabsperr. IQSK Connection direct automatic lock	Ms / vern.	----- -----	----- -----				
16.1	1	Blindstopfen G1/8" mit O-Ring Plug G1/8" with o-ring	Ms / vern.	08-60-051/99 H320482	----- -----				
16.2	1	Blindstopfen G1/8" mit O-Ring Plug G1/8" with o-ring	Ms / vern.	----- -----	----- -----				
17	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	----- -----	08-60-750/93 H208825				
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	----- -----	08-60-811/93 H312732				
17.1	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.2	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.3	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
18	1	CU4 Luftfilter CU4 air filter	PE-porös- hydrophob	08-10-005/93 H320223					
19	1	Schalldämpfer sound reducer	Ms / vern.	08-60-751/93 H208826					
20	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 40 x 16	A2	65-17-131/13 H320365					
21	3	Scheibe DIN125 I=4,3 Washer	A2	67-01-003/13 H78576					
22	1	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	04.01.16	16.05.19	07.08.20		**SPX FLOW**
Name:	Trytko	C.Keil	C.Keil		
Geprüft:	Schulz				
Datum:					Blatt 7 von 16
Name:					**RN 01.044.6**
Geprüft:					

pos. item	Menge quantity	Beschreibung description	Material material	CU43plus-S AS-i exteded WS-Nr. ref.-no.	CU43plus-M AS-i exteded WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
23	1	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					
24	1	CU4 Überströmventil Rv-Patrone OF-15-HAT CU4 overflow valve Rv-cartridge OF-15-HAT	PPS	08-46-037/93 H320352					
25	1	O-Ring OR 120,32 x 2,62 O-ring	NBR 70 Shore A	58-06-533/83 H320402					
26	2	Initiator Ni5 K11K-AN 5X/5 Proximity switch Ni5 K11K-AN 5X/5		----- -----	08-60-769/93 H208844				
27	1	Blindstopfen V-NE-SD M20x1,5 Plug V-NE-SD M20x1,5	PA schwarz RAL 9005	08-60-053/93 H324895	----- -----				
28	1	Kabelverschraubung M20x1,5 Kabel ø5-9 Screwed cable gland M20x1,5 Kabel ø5-9	PA schwarz	08-46-041/93 H320372					
29	1	Kabelverschraubung M20x1,5 Kabel ø2x5 Screwed cable gland M20x1,5 Kabel ø2x5	PA schwarz	----- -----	08-46-040/93 H320371				

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	16.05.19	07.08.20		
Name:	C.Keil	C.Keil		
Geprüft:				

SPX FLOW

Datum:				
Name:				
Geprüft:				

RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	CU41 Plus D4 AS-i ext. V1 WS-Nr. ref.-no.	CU43 Plus D4 AS-i ext. V1 WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
		CU4plus D4 AS-i ext. V1		08-45-555/93	08-45-556/93				
		CU4plus D4 AS-i ext. V1		H338819	H338820				
		CU4plus D4 AS-i ext. V1 (1/4"OD)		08-45-559/93	08-45-560/93				
		CU4plus D4 AS-i ext. V1 (1/4"OD)		H338823	H338824				
		CU4plus D4 AS-i ext. V1 M12		08-45-339/93	08-45-341/93				
		CU4plus D4 AS-i ext. V1 M12		H338864	H338865				
		CU4plus D4 AS-i ext. V1 (1/4"OD) M12		08-45-340/93	08-45-342/93				
		CU4plus D4 AS-i ext. V1 (1/4"OD) M12		H338868	H338869				
1	1	CU4-Base CU4-Base	GRILON TSG30 schwarz	08-46-554/93 H319855	08-46-556/93 H319857				
2	1	CU4plus AS-i-SLD E-Modul CU4plus AS-i-SLD E-Modul	Zytel 70G33L schwarz	08-46-915/93 H333117					
3	1	CU4 Haube kpl. mit solenoid LED CU4 cap cpl. with solenoid LED	PA12/Grilamid LV-3H schw. GF30	08-46-659/93 H325602					
4	1	Magnetventilblock 1 EMV soninoid valve 1EMV	PPS	08-46-578/93 H319950	----- -----				
6	1	Magnetventilblock 3 EMV solinoid valve 3 EMV	PPS	----- -----	08-46-580/93 H319952				
8	1	O-Ring OR 47,29 x 2,62 O-ring	NBR 70 Shore A	58-06-218/83 H320401					
9	4	Scheibe DIN125 A=3,7 Washer	A2	67-01-004/13 H323771					
10	4	Ejot Delta PT Schraube WN 5451 Ejot Delta PT screw 35 x 14	A2	65-17-122/13 H320364					
12	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					
13	2	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	16.05.19	07.08.20		
Name:	C.Keil	C.Keil		
Geprüft:				

SPX FLOW

Datum:				
Name:				
Geprüft:				

RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	CU41 Plus D4 AS-i ext. V1 WS-Nr. ref.-no.	CU43 Plus D4 AS-i ext. V1 WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
17	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.1	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.2	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	----- -----	08-60-750/93 H208825				
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	----- -----	08-60-811/93 H312732				
17.3	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	----- -----	08-60-750/93 H208825				
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	----- -----	08-60-811/93 H312732				
18	1	CU4 Luftfilter CU4 air filter	PE-porös- hydrophob	08-10-005/93 H320223					
19	1	Schalldämpfer sound reducer	Ms / vern.	08-60-751/93 H208826					
20	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 40 x 16	A2	65-17-131/13 H320365					
21	3	Scheibe DIN125 I=4,3 Washer	A2	67-01-003/13 H78576					
22	1	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					
23	1	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					
24	1	CU4 Überströmventil Rv-Patrone OF-15-HAT CU4 overflow valve Rv-cartridge OF-15-HAT	PPS	08-46-037/93 H320352					
25	1	O-Ring OR 120,32 x 2,62 O-ring	NBR 70 Shore A	58-06-533/83 H320402					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	16.05.19	07.08.20		
Name:	C.Keil	C.Keil		
Geprüft:				

SPX FLOW

Datum:				
Name:				
Geprüft:				

RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	**CU41 Plus D4 AS-i ext. V1** WS-Nr. ref.-no.	**CU43 Plus D4 AS-i ext. V1** WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
27	1	Blindstopfen V-NE-SD M20x1,5 Plug V-NE-SD M20x1,5	PA schwarz RAL 9005	08-60-053/93 H324895					
28	1	Kabelverschraubung M20x1,5 Kabel ø5-9 Screwed cable gland M20x1,5 Kabel ø5-9	PA schwarz	08-46-041/93 H320372					
30	1	D4 Sensortower Kmpl. D4 sensor tower cmpl.	Grilamid TR55	08-46-816/93 H336746		----- -----			
31	1	CU4 Hall Sensorabdeckung D4 CU4 Hall sensor bracket D4	Grillamid TR90	08-46-932/93 H336041		----- -----			
32	2	CU4 Hall Sensor D4 CU4 Hall sensor D4	Grilamid TR55	08-46-589/93 H337014		----- -----			
33	2	Zylinder Schraube ISO 1207 M4x140 Cylinder head screw ISO 1207 M4x140	A2	65-03-294/13 H337011		----- -----			
34	2	O-Ring 3x2 O-ring 3x2	NBR	58-06-043/83 H208644		----- -----			

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	07.08.20				**SPX FLOW**
Name:	C.Keil				
Geprüft:					
Datum:					Blatt 11 von 16
Name:					**RN 01.044.6**
Geprüft:					

pos. item	Menge quantity	Beschreibung description	Material material	CU41 Plus D4 AS-i ext. V2 WS-Nr. ref.-no.	CU43 Plus D4 AS-i ext. V2 WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
		CU4plus D4 AS-i ext. V2		08-45-557/93	08-45-558/93				
		CU4plus D4 AS-i ext. V2		H338821	H338822				
		CU4plus D4 AS-i ext. V2 (1/4"OD)		08-45-561/93	08-45-562/93				
		CU4plus D4 AS-i ext. V2 (1/4"OD)		H338825	H338826				
		CU4plus D4 AS-i ext. V2 M12		08-45-343/93	08-45-345/93				
		CU4plus D4 AS-i ext. V2 M12		H338866	H338867				
		CU4plus D4 AS-i ext. V2 (1/4"OD) M12		08-45-344/93	08-45-346/93				
		CU4plus D4 AS-i ext. V2 (1/4"OD) M12		H338870	H338871				
1	1	CU4-Base CU4-Base	GRILON TSG30 schwarz	08-46-554/93 H319855	08-46-556/93 H319857				
2	1	CU4plus AS-i-SLD E-Modul CU4plus AS-i-SLD E-Modul	Zytel 70G33L schwarz	08-46-915/93 H333117					
3	1	CU4 Haube kpl. mit solenoid LED CU4 cap cpl. with solenoid LED	PA12/Grilamid LV-3H schw. GF30	08-46-659/93 H325602					
4	1	Magnetventilblock 1 EMV soninoid valve 1EMV	PPS	08-46-578/93 H319950	----- -----				
6	1	Magnetventilblock 3 EMV solinoid valve 3 EMV	PPS	----- -----	08-46-580/93 H319952				
8	1	O-Ring OR 47,29 x 2,62 O-ring	NBR 70 Shore A	58-06-218/83 H320401					
9	4	Scheibe DIN125 A=3,7 Washer	A2	67-01-004/13 H323771					
10	4	Ejot Delta PT Schraube WN 5451 Ejot Delta PT screw 35 x 14	A2	65-17-122/13 H320364					
12	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					
13	2	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	07.08.20			
Name:	C.Keil			
Geprüft:				

Datum:				
Name:				
Geprüft:				

SPX FLOW

RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	CU41 Plus D4 AS-i ext. V2 WS-Nr. ref.-no.	CU43 Plus D4 AS-i ext. V2 WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
17	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.1	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.2	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	----- -----	08-60-750/93 H208825				
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	----- -----	08-60-811/93 H312732				
17.3	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	----- -----	08-60-750/93 H208825				
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	----- -----	08-60-811/93 H312732				
18	1	CU4 Luftfilter CU4 air filter	PE-porös- hydrophob	08-10-005/93 H320223					
19	1	Schalldämpfer sound reducer	Ms / vern.	08-60-751/93 H208826					
20	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 40 x 16	A2	65-17-131/13 H320365					
21	3	Scheibe DIN125 I=4,3 Washer	A2	67-01-003/13 H78576					
22	2	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					
23	1	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					
24	1	CU4 Überströmventil Rv-Patrone OF-15-HAT CU4 overflow valve Rv-cartridge OF-15-HAT	PPS	08-46-037/93 H320352					
25	1	O-Ring OR 120,32 x 2,62 O-ring	NBR 70 Shore A	58-06-533/83 H320402					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus AS-i extended

Datum:	07.08.20			
Name:	C.Keil			
Geprüft:				

SPX FLOW

Datum:				
Name:				
Geprüft:				

RN 01.044.6

pos. item	Menge quantity	Beschreibung description	Material material	**CU41 Plus D4 AS-i ext. V2** WS-Nr. ref.-no.	**CU43 Plus D4 AS-i ext. V2** WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
27	1	Blindstopfen V-NE-SD M20x1,5 Plug V-NE-SD M20x1,5	PA schwarz RAL 9005	08-60-053/93 H324895					
28	1	Kabelverschraubung M20x1,5 Kabel ø5-9 Screwed cable gland M20x1,5 Kabel ø5-9	PA schwarz	08-46-041/93 H320372					
35	1	CU4plus Sensortower D4 V2 CU4plus sensortower D4 V2	Tritan TX 2001 PET	08-46-593/93 H339461		----- -----			
36	2	CU4plus Sensor V2 CU4plus Sensor V2	Noryl 731 S schwarz	000 08-46-594/93 H339463		----- -----			
37	1	Kappe CU4plus Sensor Tower cap CU4plus sensor tower	Noryl 731 S schwarz	000 08-46-592/93 H339432		----- -----			
38	1	Flush-type connector M20x1,5 Flush-type connector M20x1,5	1.4404	08-46-632/99 H338108		----- -----			

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Ersatzteilliste: spare parts list

Control Unit CU4 plus Direct Connect

Datum:	29.03.21				**SPX FLOW**
Name:	C.Keil				
Geprüft:					
Datum:					Blatt 14 von 16
Name:					**RN 01.044.7**
Geprüft:					

pos. item	Menge quantity	Beschreibung description	Material material	CU43 Plus DT4 AS-i ext. WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
		CU43plus DT4 AS-i		08-45-4/93			-----		
		CU43plus DT4 AS-i		H342423			-----		
		CU43plus DT4 AS-i (1/4"OD)		08-45-4/93			-----		
		CU43plus DT4 AS-i (1/4"OD)		H342424			-----		
		CU43plus DT4 AS-i M12		08-45-4/93			-----		
		CU43plus DT4 AS-i M12		H342421			-----		
		CU43plus DT4 AS-i (1/4"OD) M12		08-45-4/93			-----		
		CU43plus DT4 AS-i (1/4"OD) M12		H342422			-----		

1	1	CU4-Base CU4-Base	GRILON TSG30 schwarz	08-46-556/93 H319857			----- -----		
2	1	CU4plus AS-i-SLD E-Modul CU4plus AS-i-SLD E-Modul	Zytel 70G33L schwarz	08-46-915/93 H333117			----- -----		
3	1	CU4 Haube kpl. mit solenoid LED CU4 cap cpl. with solenoid LED	PA12/Grilamid LV-3H schw. GF30	08-46-659/93 H325602			----- -----		
4	1	Magnetventilblock 1 EMV soninoid valve 1EMV	PPS	----- -----			----- -----		
6	1	Magnetventilblock 3 EMV solinoid valve 3 EMV	PPS	08-46-580/93 H319952			----- -----		
8	1	O-Ring O-ring OR 47,29 x 2,62	NBR 70 Shore A	58-06-218/83 H320401			----- -----		
9	4	Scheibe Washer DIN125 A=3,7	A2	67-01-004/13 H323771			----- -----		
10	4	Ejot Delta PT Schraube WN 5451 Ejot Delta PT screw 35 x 14	A2	65-17-122/13 H320364			----- -----		
12	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363			----- -----		
13	2	Scheibe Washer DIN9021 A=3,2	A2	67-01-001/12 H320404			----- -----		

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Ersatzteilliste: spare parts list

Control Unit CU4 plus Direct Connect

Datum:	29.03.21				**SPX FLOW**
Name:	C.Keil				
Geprüft:					
Datum:					Blatt 15 von 16
Name:					**RN 01.044.7**
Geprüft:					

pos. item	Menge quantity	Beschreibung description	Material material	CU43 Plus DT4 Direct Connect WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
17	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.1	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.2	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
17.3	1	W-Verschraubung G1/8" 6x1 Elbow connector G1/8" 6x1	1.4301 / PA	08-60-750/93 H208825					
		W-Verschraubung G1/8" 1/4"OD Elbow connector G1/8" 1/4" OD	1.4301 / PA	08-60-811/93 H312732					
18	1	CU4 Luftfilter CU4 air filter	PE-porös- hydrophob	08-10-005/93 H320223					
19	1	Schalldämpfer sound reducer	Ms / vern.	08-60-751/93 H208826					
20	5	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 40 x 16	A2	65-17-131/13 H320365					
21	3	Scheibe DIN125 I=4,3 Washer	A2	67-01-003/13 H78576					
22	1	Ejot Delta PT Schraube WN 5452 Ejot Delta PT screw 30 x 10	A2	65-17-110/13 H320363					
23	1	Scheibe DIN9021 A=3,2 Washer	A2	67-01-001/12 H320404					
24	1	CU4 Überströmventil Rv-Patrone OF-15-HAT CU4 overflow valve Rv-cartridge OF-15-HAT	PPS	08-46-037/93 H320352					
25	1	O-Ring OR 120,32 x 2,62 O-ring	NBR 70 Shore A	58-06-533/83 H320402					

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Ersatzteilliste: spare parts list

Control Unit CU4 plus Direct Connect

Datum:	29.03.21			
Name:	C.Keil			
Geprüft:				

Datum:				
Name:				
Geprüft:				

SPX FLOW

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RN 01.044.7

pos. item	Menge quantity	Beschreibung description	Material material	**CU43 Plus DT4 Direct Connect** WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
28	1	Kabelverschraubung M20x1,5 Kabel ø6-12 Screwed cable gland M20x1,5 Kabel ø6-12	PA schwarz	08-46-042/93 H323199	-----				
38	1	Flush-type connector M20x1,5 Flush-type connector M20x1,5	1.4404	08-46-632/99 H338108	-----				
39	1	Kabelverschraubung M20x1,5 Kabel ø5-9mm Screwed cable gland M20x1,5 Kabel ø5-9mm	PA schwarz	08-48-697/93 H320372	-----				
40	1	Balluff Lin.sensor BIP AD2-T017-04-BP02 Balluff lin.sensor BIP AD2-T017-04-BP02	PUR	08-60-424/93 H343141	-----				
41	1	CU4plus Adapter Sensor 0-10V CU4plus Adapter Sensor 0-10V	PA schwarz	08-48-697/93 H342434	-----				

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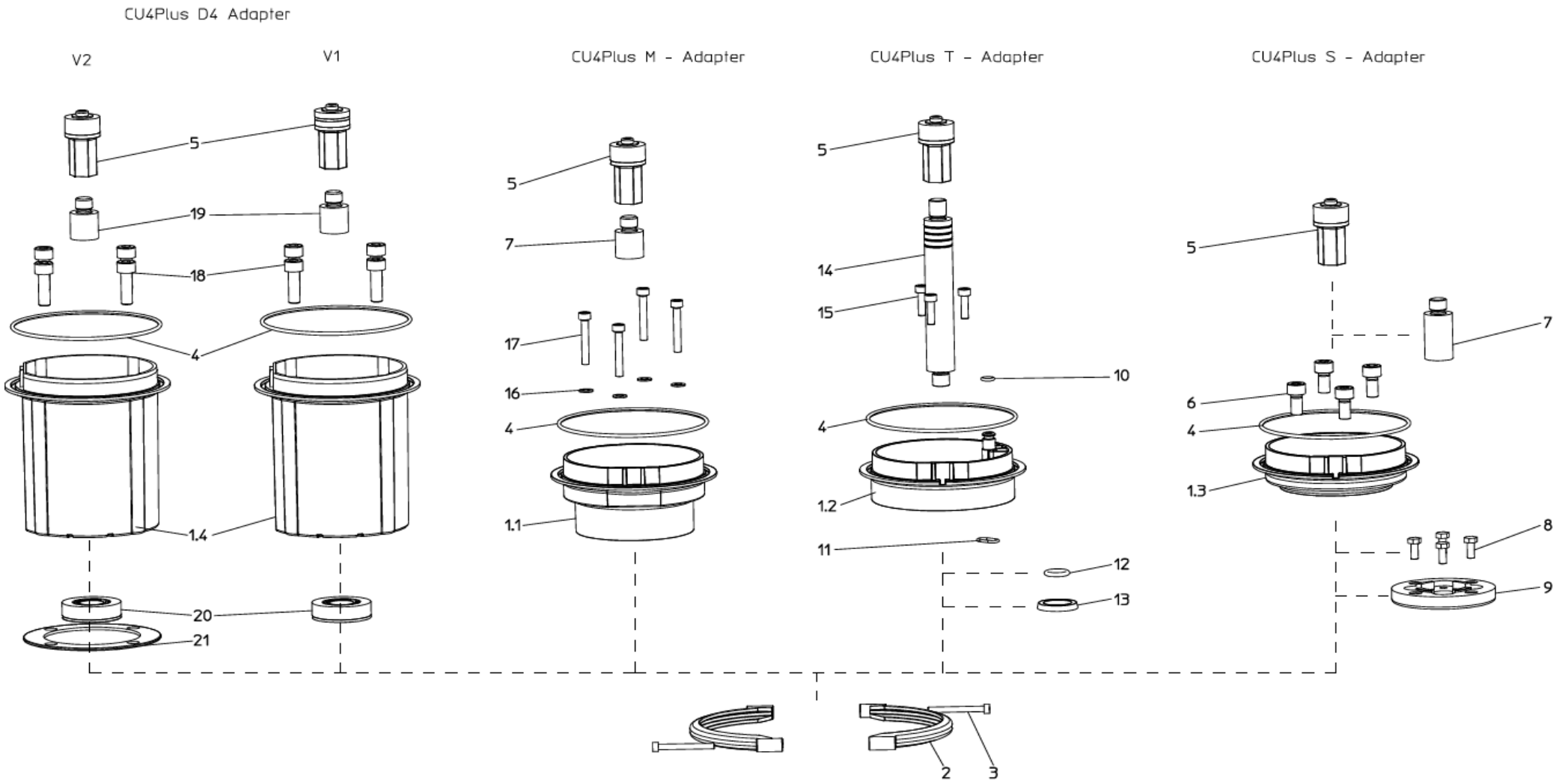
Ersatzteilliste: spare parts list

CU4plus Adapter

Datum:	26.01.16	04.04.16	20.05.19	09.11.19	
Name:	Trytko	Trytko	C.Keil	C.Keil	**SPX FLOW**
Geprüft:	Schulz	Schulz	C.Keil	C.Keil	
Datum:	26.01.21				Blatt 1 von 6
Name:	C.Keil				
Geprüft:	C.Keil				**RN01.044.3-1**



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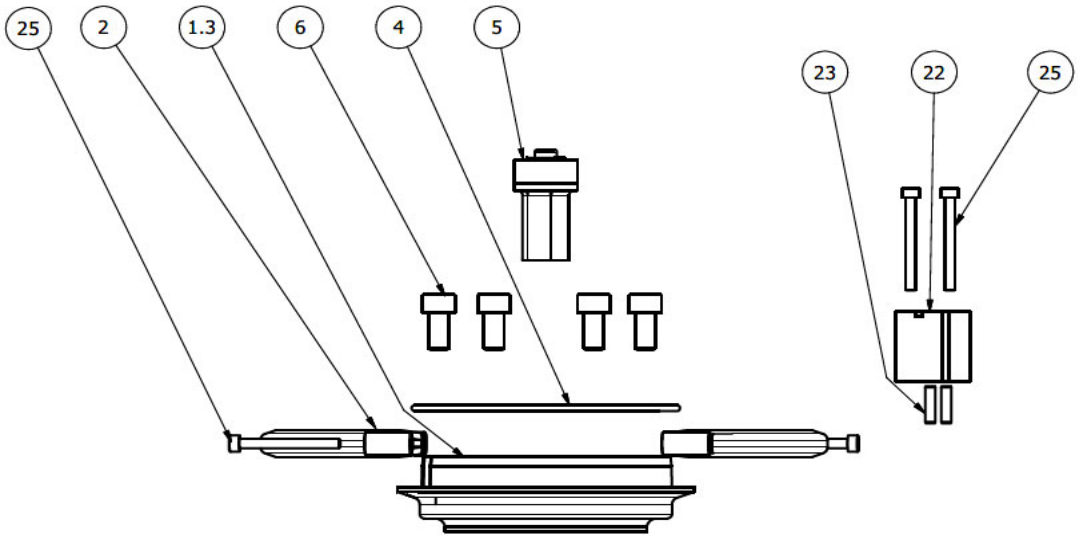
Ersatzteilliste: spare parts list

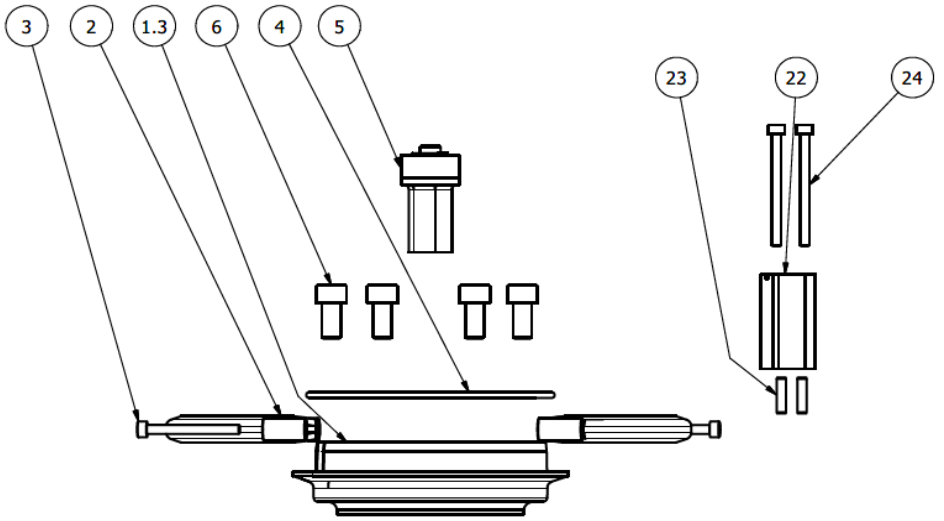
CU4plus Adapter

Datum:	26.01.16	04.04.16	20.05.19	09.11.19	
Name:	Trytko	Trytko	C.Keil	C.Keil	**SPX FLOW**
Geprüft:	Schulz	Schulz	C.Keil	C.Keil	
Datum:	26.01.21				Blatt 2 von 5
Name:	C.Keil				**RN01.044.3-1**
Geprüft:	C.Keil				

CU4Plus DT4 -62 Adapter



CU4Plus DT4 -92 Adapter



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Ersatzteilliste: spare parts list

CU4plus Adapter

Datum:	26.01.16	04.04.16	20.05.19	
Name:	Trytko	Trytko	C.Keil	
Geprüft:	Schulz	Schulz	C.Keil	

SPX FLOW

Datum:				
Name:				
Geprüft:				

Blatt 3 von 6

RN01.044.3-1

pos. item	Menge quantity	Beschreibung description	Material material	CU4plus - S	CU4plus - S Langhub ø165	CU4plus-Smini	CU4plus-Smax	CU4plus - T	CU4plus-Tmax
				WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.	WS-Nr. ref.-no.
		CU4 Adapter kpl. CU4 adapter cpl.		08-48-690/93 H333143	08-48-696/93 H335312	08-48-691/93 H333144	08-48-692/93 H333145	08-48-693/93 H333146	08-48-694/93 H333147
1.1	1	CU4 Adapter M CU4 adapter M	Zytel 70G33L schwarz						
1.2	1	CU4 Adapter T CU4 adapter T	Zytel 70G33L schwarz					08-46-571/93 H319875	
1.3	1	CU4 Adapter S CU4 adapter S	Zytel 70G33L schwarz	08-46-570/93 H319874					
2	2	CU4 Clamphalbschale kpl. CU4 clamp cpl.	Grivory GH-5H1	08-46-569/93 H319873					
3	2	Zylinderschraube DIN EN ISO 4762 M4x40 Cyl. Screw	A2-70	65-05-040/13 H320360					
4	1	O-Ring OR 101,27x2,62 O-ring	NBR	58-06-493/83 H148389					
5	1	CU4 Magnetschaltnocke kpl. CU4 magnet switch cam cpl.	Zytel HTN	08-46-767/93 H333099					
6	4	Zylinderschraube DIN EN ISO 4762 Cyl. Screw	A2-70	65-05-120/13 M8x16 H79012	65-05-122/13 M8x25 H79014	65-05-120/13 M8x16 H79012	65-05-129/13 M8x60 H315760		
7	1	Zugstangenverlängerung Guide rod extension	PA6			15-26-070/93 H208096	15-26-058/93 H327149		
8	4	Skt. Schraube DIN EN 24017 M5x12 Hex. screw	A2-70			65-01-033/15 H78737			
9	1	CU Adapter SW4 CU adapter SW4	PA6		08-48-359/93 H330879	08-48-355/93 H207570	08-48-361/93 H327150		
10	1	O-Ring OR 6x2 O-ring	NBR					58-06-059/83 H320505	
11	1	O-Ring OR 11x2 O-ring	NBR					58-06-034/83 H321897	
12	1	O-Ring OR 11x3 O-ring	NBR						58-06-039/83 H208632

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Ersatzteilliste: spare parts list

CU4plus Adapter

Datum:	26.01.16	04.04.16	20.05.19	
Name:	Trytko	Trytko	C.Keil	
Geprüft:	Schulz	Schulz	C.Keil	

Datum:				
Name:				
Geprüft:				

SPX FLOW

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RN01.044.3-1

pos. item	Menge quantity	Beschreibung description	Material material	CU4plus - S WS-Nr. ref.-no.	CU4plus - S Langhub ø165 WS-Nr. ref.-no.	CU4plus-Smini WS-Nr. ref.-no.	CU4plus-Smax WS-Nr. ref.-no.	CU4plus - T WS-Nr. ref.-no.	CU4plus-Tmax WS-Nr. ref.-no.
13	1	V-Dichtung V-sealing	NBR						58-06-039/83 H171060
14	1	CU4 Schaltstange CU4 guide rod	1) PA6.6 2) 1.4301					08-60-905/93 1) H320480	08-60-906/12 2) H321990
15	3	Zylinderschraube DIN EN ISO 4762 M5x16 Cyl. Screw	A2-70					65-05-054/13 H79000	
16	4	Scheibe DIN EN ISO 7092 9x5,48 Washer	A2						
17	4	Zylinderschraube DIN EN ISO 4762 M5x35 Cyl. Screw	A2-70						

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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

SPX FLOW

Datum:	26.01.21			
Name:	C.Keil			
Geprüft:	C.Keil			

Blatt 5 von 6

RN01.044.3-1

pos. item	Menge quantity	Beschreibung description	Material material	CU41plus - M CU4-M is used WS-Nr. ref.-no.	CU43plus - M WS-Nr. ref.-no.	CU4plus - D4 V1 WS-Nr. ref.-no.	CU4plus - D4 V2 WS-Nr. ref.-no.	CU4plus DT4-62 WS-Nr. ref.-no.	CU4plus DT4-92 WS-Nr. ref.-no.
		CU4 Adapter kpl. CU4 adapter cpl.		08-48-602/93 H320476	08-48-695/93 H333148	08-48-666/93 H336441	08-48-668/93 H341891	08-48-699/93 H343619	08-48-700/93 H343620
1.1	1	CU4 Adapter M CU4 adapter M	Zytel 70G33L schwarz	08-46-572/93 H319876					
1.2	1	CU4 Adapter T CU4 adapter T	Zytel 70G33L schwarz						
1.3	1	CU4 Adapter S CU4 adapter S	Zytel 70G33L schwarz					08-46-570/93 H319874	
1.4	1	CU4 Adapter D4 CU4 Adapter D4	PA6.6 GF30			08-46-940/93 H336038			
2	2	CU4 Clamphalbschale kpl. CU4 clamp cpl.	Grivory GH-5H1	08-46-569/93 H319873					
3	2	Zylinderschraube DIN EN ISO 4762 M4x40 Cyl. Screw	A2-70	65-05-040/13 H320360					
4	1	O-Ring OR 101,27x2,62 O-ring	NBR	58-06-493/83 H148389					
5	1	CU4 Magnetschaltnocke kpl. CU4 magnet switch cam cpl.	Zytel HTN		08-46-767/93 H333099				
6	4	Zylinderschraube DIN EN ISO 4762 Cyl. Screw	A2-70					65-05-120/13 M8x16 H79012	
7	1	Zugstangenverlängerung Guide rod extension	PA6		08-46-920/93 H333136				
8	4	Skt. Schraube DIN EN 24017 M5x12 Hex. screw	A2-70						
9	1	CU Adapter SW4 CU adapter SW4	PA6						
10	1	O-Ring OR 6x2 O-ring	NBR						
11	1	O-Ring OR 11x2 O-ring	NBR						

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Ersatzteilliste: spare parts list

CU4plus Adapter

Datum:	26.01.16	04.04.16	20.05.19	09.11.19	**SPX FLOW**
Name:	Trytko	Trytko	C.Keil	C.Keil	
Geprüft:	Schulz	Schulz	C.Keil	C.Keil	
Datum:	26.01.21				Blatt 6 von 6
Name:	C.Keil				**RN01.044.3-1**
Geprüft:	C.Keil				

pos. item	Menge quantity	Beschreibung description	Material material	**CU41plus - M CU4-M is used** WS-Nr. ref.-no.	**CU43plus - M** WS-Nr. ref.-no.	**CU4plus - D4 V1** WS-Nr. ref.-no.	**CU4plus - D4 V2** WS-Nr. ref.-no.	**CU4plus DT4-62** WS-Nr. ref.-no.	**CU4plus DT4-92** WS-Nr. ref.-no.
12	1	O-Ring O-ring OR 11x3	NBR						
13	1	V-Dichtung V-sealing	NBR						
14	1	CU4 Schaltstange CU4 guide rod	1) PA6.6 2) 1.4301						
15	3	Zylinderschraube Cyl. Screw DIN EN ISO 4762 M5x16	A2-70						
16	4	Scheibe Washer DIN EN ISO 7092 9x5,48	A2	08-60-767/15 H208842					
17	4	Zylinderschraube Cyl. Screw DIN EN ISO 4762 M5x35	A2-70	65-06-056/13 H79028					
18	4	Zylinderschraube M8 Cyl. screw M8	A2-70			65-05-122/13 H79014	65-05-123/13 H173568		
19	1	D4 Zugstangen Adapter für CU4 D4 guide rod adapter for CU4	PA6.6			08-46-824/93 H336934			
20	1	D4 Magnet CU4plus kpl. D4 magnet CU4plus cpl.				08-46-924/93 H336935			
21	1	CU4plus V2 distanzring CU4plus V2 distance washer	NBR				08-46-941/93 H342644		
22		Balluff Adapter Balluff adapter	PA6.6					08-20-158/12 H342080	08-20-161/12 H343618
23		Zylinder Stift Parallel Pin DIN EN ISO 2338 4x16	A1					08-49-074/12 H343581	
24		Zylinder Schraube Cap screw DIN EN ISO 4762 M4x50	A2-70						65-05-051/13 H343617
25		Zylinder Schraube Cap screw DIN EN ISO 4762 M4x40	A2-70					65-05-040/13 H320360	

CU4plus AS-interface V1 - V2

CONTROL UNIT

SPXFLOW®

SPX FLOW

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