

CU4 Direct Connect Control Unit

SAFETY AGAINST EXPLOSION - FOR ATEX ZONE 2 GAS APPLICATIONS



FORM NO.: H345315 REVISION: GB-0

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



EU Declaration of Conformity SPXFLOW



Product

: Control Unit Nomenclature Model / Type : CU4, CU4plus

Variants : AS-interface, Direct Connect

Manufacturer

Name SPX FLOW Technology Poland sp.z o.o.

Stanisława Jana Rolbieskiego 2, PL-85-862 Bydgoszcz, Poland Address

Design Center

Name SPX FLOW Technology Germany GmbH

Address: Gottlieb-Daimler-Straße 13, D-59439 Holzwickede, Germany

Applicable EU Harmonisation Legislation

EU Declaration of Conformity in accordance with

ATEX Directive 2014/34/EU

- Essential Health and Safety Requirements have been met by complying with the harmonised standard/s - EN 60079-0:2018, EN 60079-7:2015+A1:2018 and EN 60079-18:2015+A1:2017.
- Equipment Marking: II 3 G Ex ec mc IIC T4 Gc 0 °C ≤ Ta ≤ +55 °C

This declaration of conformity is issued under the sole responsibility of the manufacturer and design center. It will lose its validity if the product is modified without the written permission from the manufacturer and/or if the safety instructions specified in the instruction manual are not being followed.

Authorised Signatory:

Signature: Ppa. Baumbock

Date: 14.09.2021

Frank Baumbach, Regional Engineering Manager - F&B Components. SPX FLOW, Gottlieb-Daimler-Str. 13, D-59439 Holzwickede, Germany.

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SPX FLOW_CU4 Direct Connect_ATEX Zone 2_GB-0_092021.indd

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NOTE:

In addition to D4 and D4 SL double seat valves and different other process valve ranges, also other SPX FLOW process valves are in preparation for ATEX Zone 2 application requirements.



0. ATEX Specific Instructions

0.1. General Information

These ATEX Specific Safety Instructions apply for CU4 / CU4 plus ATEX Control Units used in Potentially Explosive Atmospheres according to **Zone 2 ATEX, GAS** applications (according to Directive 2014/34/EU), **ONLY**.

These instructions shall be read carefully by the competent operating and maintenance personnel.

We point out that we will not accept any liability for damage or malfunctions resulting from the non-compliance with these instructions.

0.2. ATEX Specific Symbol



DANGER! WARNING! CAUTION!

This symbol draws your attention to important directions which have to be observed for the operation in explosive areas.

Failure to observe the warning may result in fatal or serious injury as well as damage to property!

0.3. Authorized Use

The CU4 / CU4plus ATEX Control Unit is designed to be mounted to pneumatic actuators of process valves for the control of media as used in the food and beverage industries as well as in pharmaceutical and chemical applications.

The control unit is installed on a pneumatic actuator of a process valve. The process valve and the actuator must have at least the ATEX approval of the control unit.

SPX FLOW will be held responsible only for the control units supplied and selected according to the operating conditions indicated by the customer or end user and as stated in the order confirmation. If in doubt, contact your local supplier.

Observe the admissible data, operating conditions and conditions of use as specified in the contract documents, instruction manuals and on the type label.

The control unit must only be used with SPX FLOW valves and components recommended and authorized by SPX FLOW.

Adequate transport, storage and installation, careful handling and maintenance are essential for a faultless and reliable function of the control unit.

Observe the intended use of the control unit.



0. ATEX Specific Instructions

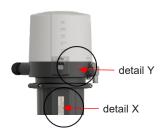
0.4. Specific Safety Instructions



Removing the electric plug

Remove the electric circular plug or disconnect terminal connections only after the power supply has been separated.

lead seal



Opening the device

- Do not open the control unit in the presence of explosive atmosphere.
- Do not install and set the proximity switches in the presence of explosive atmosphere.
- Before startup, secure the cover with the enclosed lead seal. Opening the cover without tools must be prevented.

$\langle \epsilon_x \rangle$

Electrostatic discharge

- In case of sudden discharge from electrostatically charged devices or individuals, risk of explosion in the explosive area exists.
- Prevent the occurance of electrostatic discharges by suitable measures.
- Clean the control unit surface by gently wiping it with a damp or antistatic cloth, only.

electrostatic risk





In order to prevent the emergence of explosion risks observe the safety instructions of the instruction manual and adhere to the following:

- Observe information on temperature classes, ambient temperatures, degree of protection and voltage on the approval ID label.
- Do not use control units in areas subject to gas with lower ignition temperatures than indicated on the approval ID label.
- Installation, operation and maintenance may only be performed by qualified personnel.
- Observe the applicable international and national safety regulations as well as the general rules of technology for construction and operation.
- Do not repair the control unit yourself. Replace it by an equivalent device.
- Repairs may only be performed by the manufacturer.
- Do not expose the control unit to mechanical and/or thermal loads which may exceed the limits described in the instruction manual.
- Only use cable and/or line entry points approved for the respective application area and which are screwed in place according to the respective installation instructions.
- The cable glands may be used for fixed installations, only.
- Close all unnecessary cable glands with locking screws approved for the explosive area.
- The required degree of protection (IP67) is guaranteed only in connection with suitable adaption sets. All pneumatic and electrical connections must be equipped with suitable connectors.

detail X: electrostatic risk label CU4 ATEX 3G



detail Y: type label CU4 ATEX 3G

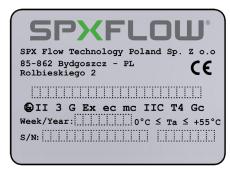




0. ATEX Specific Instructions

0.5. Identification of CU4 / CU4plus control units for use in ATEX environment

ATEX - identification:



Equipment group II

Explosion subcategory / Equipment marking II 3 G Ex ec mc IIC T4 Gc

Ambient temperature 0 °C ≤ Tamb ≤ +55 °C

0.6. Responsibilities



It is within the operator's responsibility to ensure that the specified product temperatures are not exceeded and that regular inspections and maintenance are carried out to provide for proper function of the control unit and valve.

The following pages show the operating instructions for the standard control unit for non-ATEX applications.



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
PWM Pulse-width modulation
Y Pneumatic Air Connection

2. Safety Instructions

2.1. Sentinels

Meaning:



Danger! Direct danger which can lead to severe bodily harm

or to death!



Caution! Dangerous situation which can lead to bodily harm

and/or material damage.



Attention! Risk as a result of electric current.



Note! Important technical information or recommendation.

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



2. Safety Instructions

2.2. Intended Use

The CU4 control unit is only intended for use as described in chapter 3.1. Use beyond that described in chapter 3.1. does 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 electric 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 electric or pneumatic supply, ensure a defined and controlled re-start of the process!
- If these instructions are not observed, SPX FLOW 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 installations in which control units are installed and connected. If welding is nonetheless required, earthing of the electric 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.
- The 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 skilled in electrics!

2.6. Warranty

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



Note!

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



3. General Terms

3.1. Purpose of use

The CU4 Direct Connect Control Unit is designed for the control of process valves used in the food and related industries.

The CU4 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 integrated and external 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 indiciation of the valve positions.

3.2. Design of CU4 Direct Connect (fig. 3.2.)

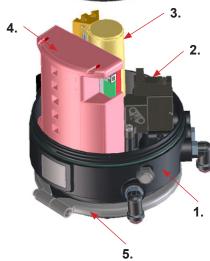
The CU4 Direct Connect Control Unit mainly consists of the following components:

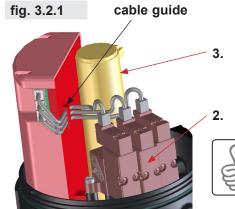
- 1. The Control Unit base with integrated air channels and electric and pneumatic connections as well as viewing windows with type label.
- **2.** 1 or 3 solenoid valves for the control of the valve actuators and for the seat lifting of double seat valves.
- 1 solenoid valve with 1 logic NOT element for the control of the valve actuators.
- **3.** Sensor module with 2 integrated Hall sensors or 2 external proximity switches to detect the valve position.
- **4.** Electronic module for the electric supply, communication with the control, evaluation of feedback signals and control of solenoid valves as well as the valve position indication through LED.
- 5. Clamp ring to fasten the CU4 on the adapter.
- 6. Cover with LED optics.

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 valve types, see **chapter 5**. Adapter. The snap connectors for supply air and pneumatic air to the individual cylinders of the valves are located at the outside of the control unit. In case of 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**.

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 are 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 has 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. Depending on the control type, different modules are available, e.g. Direct Connect, AS-interface, Profibus and DeviceNet. The CU4 Direct Connect module described herein provides for the direct parallel wiring of the control.

A feedback unit is required to detect the valve position. The CU4 Direct Connect is equipped with 2 adjustable Hall effect sensors.

These are activated by a valve control rod installed on the operating cam. In this way, the **open** and **closed** valve position can be detected.

The 2 Hall effect sensors are continuously adjustable over an additional range. Thus, feedback messages for different valves with different stroke lengths can be adjusted properly. Alternatively, external proximity switches can be connected instead of the integrated Hall effect sensors when the valve position indication is undertaken direct at the process valve.



3. General Terms

3.3. Function of the individual components

The luminous diodes are arranged at the front side of the electronic module. Their signals are visibly indicated to the outside by an optical window in the cover of 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 6.5.** "LED indication" contains more details.

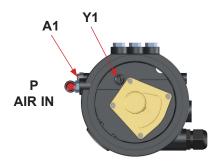
The complete control unit has been designed on the building block principle. By exchange of the electronic module, the control type can be changed, e.g. from direct control (Direct Connect) to communication with AS-interface.



Note! Wiring must also be changed.



4.1. Air connection for valves with turning actuators



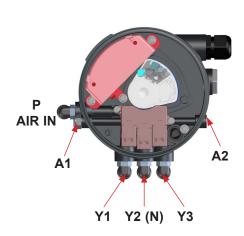
4.1.1. Function

CU41-T-DC

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

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

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



4.2.1. Function

CU41-S-DC / CU41-D4

design for seat valves and double seat mix proof valves without seat lift

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

CU41N-S-DC

design for seat valves with NOT element

- P air supply with integrated particle filter
- Y1 control 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 exhaust silencer

CU43-D4

design for double seat mixproof valves with seat lift

- 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

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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 vents into the clearance between the base and the adapter of the control unit.

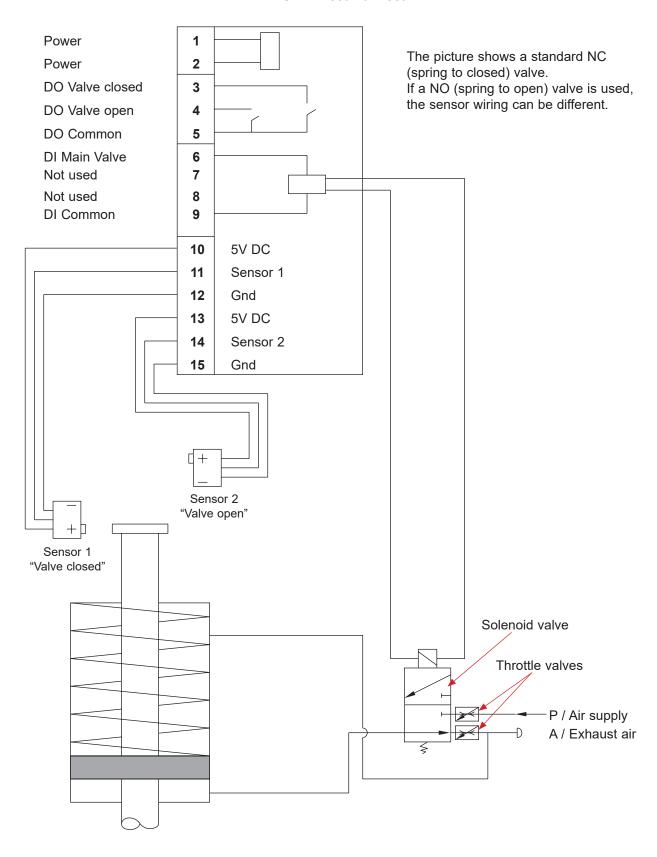


The pressure relief valve must not be mechanically blocked under any circumstances.



4.4 Functional description - block diagrams

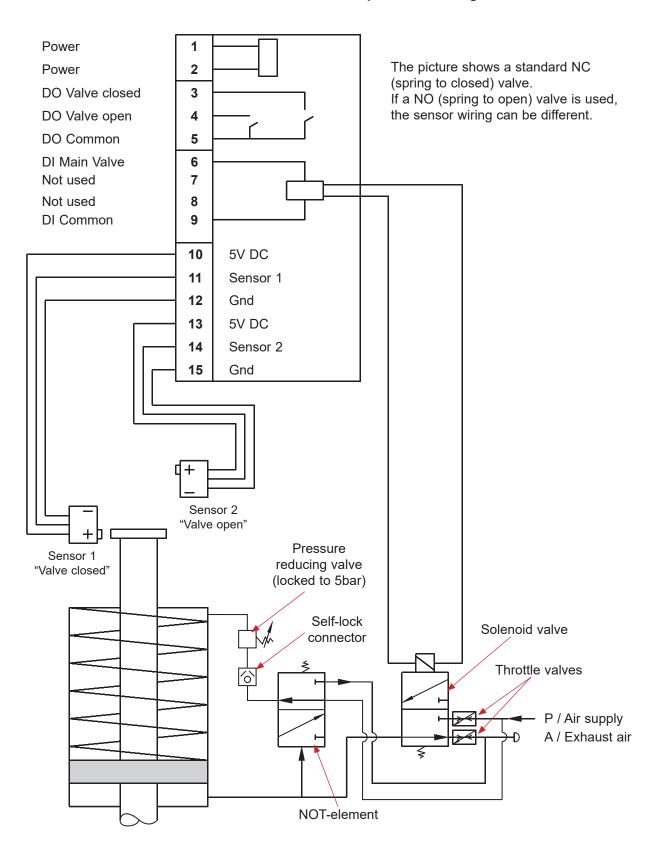
4.4.1. CU41 Direct Connect





4.4.2. CU41N Direct Connect

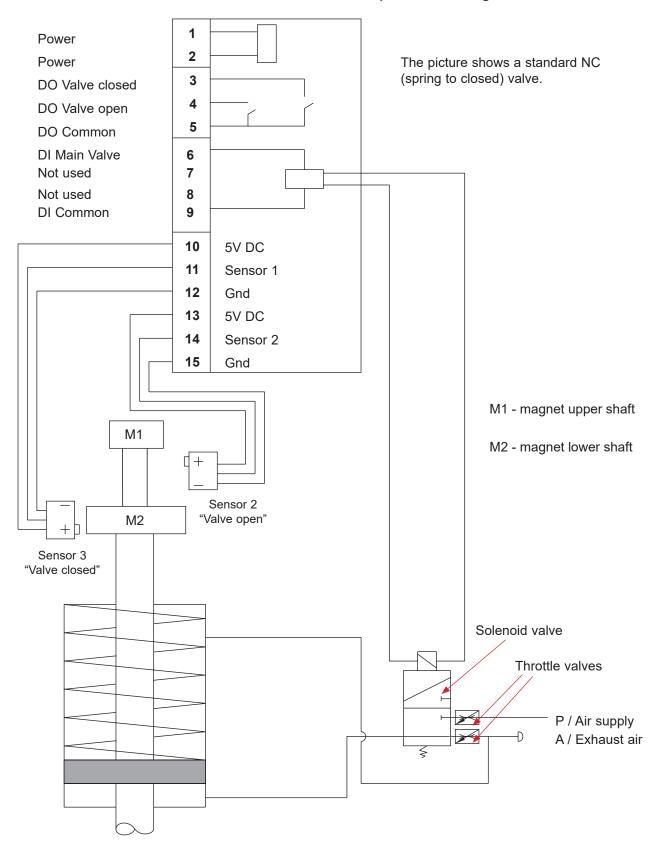
Functional description - block diagram





4.4.3. CU41-D4 Direct Connect for D4 double seat mix proof valve

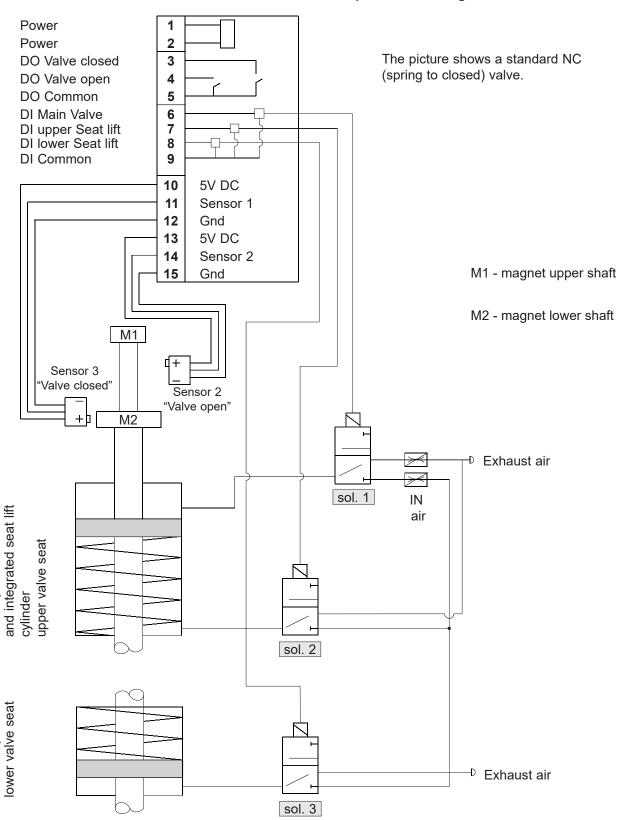
Functional description - block diagram





4.4.4. CU43-D4 Direct Connect for DA4 / D4 SL double seat mix proof valves

Functional description - block diagram



main cylinder

seat lift cylinder



4. Mechanics and Pneumatics

4.5. Technical Data / Standards

Material: PA6.6

Ambient temperature: 0°C to +55°C (limitation due to

ATEX application)

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

Standards and

environmental audits: protection class IP 67 EN 60529 /

complies with NEMA 6
EMC interference resistance

EN 61000-6-2

EMC emitted interference

EN 61000-6-4

vibration/oscillation EN 60068-2-6

safety of machinery DIN EN ISO 13849-1

Air hose: 6 mm / 1/4" 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 μ m < d < 1,0 μ m 500 of 1,0 μ m < d < 5,0 μ m

content of water: quality class 3,

max. dew point temperature -20°C

For installations at lower

temperatures or at higher altitudes, consider additional measures 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.

throttling screws



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 connectors.

control: effected by 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 valves



5.2. Single seat valves



5.3. Double seat mix proof valves D4, D4 SL, DA4

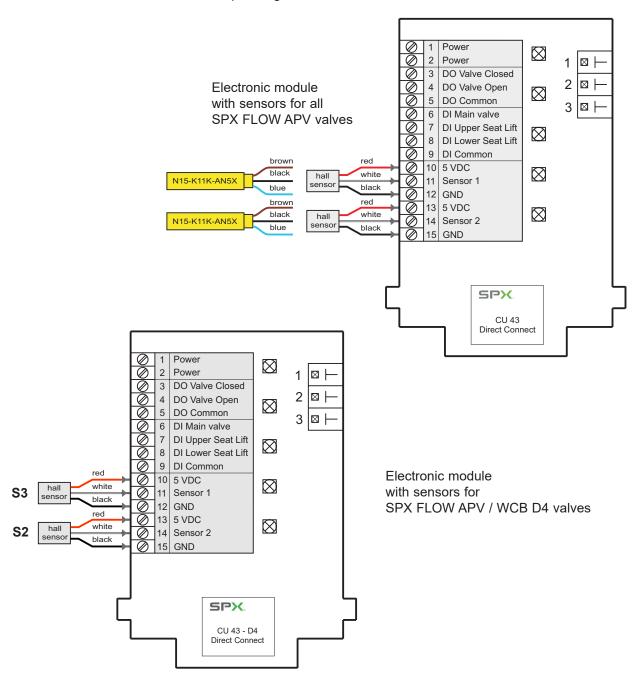




6. Electronic module

6.1 Function / Block diagram

The electronic module CU4 Direct Connect operates as interface between superordinated control (PLC) and is connected direct by parallel wiring, i.e. every individual signal is on a separate line. The large input voltage range from 15 to 48VDC provides for versatile connections. All operating ranges within the electronic module such as the control of the solenoid valves, position feedback and LED indication are separated galvanically and can, thus, be operated with different voltages. Control of the solenoid valves is effected in energy-saving manner via pwm-signals.



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6. Electronic module

6.2. Functional description of connections

Terminal	CU41 M12-5-pol. plug pin	CU43 M12-8-pol. plug pin	Designation	Functional description for all valve types	Functional description for D4, D4 SL and DA4 valve types
1	1 brown	2 brown	Power	Operating voltage	Operating voltage
2	3 blue	7 blue	Power	Operating voltage	Operating voltage
3	2 white	3 green	DO Closed Valve	Digital potential-free output for closed valve position	Digital potential-free output for closed valve position
4	5 grey	1 white	DO Open Valve	Digital potential-free output for open valve position	Digital potential-free output for open valve position
5	Bridge to Terminal 1	Bridge to Terminal 1	DO Common	Common potential for digital output to valve position indication	Common potential for digital output to valve position indication
6	4 black	6 pink	DI Main Valve	Digital input to control 1st solenoid valve (valve open)	Digital input to control 1st solenoid valve (valve open)
7		4 yellow	DI Upper Seat Lift	Digital input to control 2nd soleno- id valve (seat lifting of upper valve seat)	Digital input to control 2nd solenoid valve (seat lifting of upper valve seat)
8		8 red	DI Lower Seat Lift	Digital input to control 3rd soleno- id valve (seat lifting of lower valve seat)	Digital input to control 3rd solenoid valve (seat lifting of lower valve seat)
9	Bridge to Terminal 2	5 grey	DI Common	Common potential for digital inputs to control valve	Common potential for digital inputs to control valve
10			5 VDC	Voltage supply for valve sensor	Voltage supply for valve sensor
11			Sensor 1	Sensor signal 1 (closed valve position)	Connection Hall sensor 3 (closed valve position)
12			GND	Mass potential for sensor supply	Mass potential for sensor supply
13			5 VDC	Voltage supply for valve sensor	Voltage supply for valve sensor
14			Sensor 2	Sensor signal 2 (open valve position)	Connection Hall sensor 2 (open valve position)
15			GND	Mass potential for sensor supply	Mass potential for sensor supply

25



6. Electronic module

6.3. Technical data for electronic module

CU4 Direct Connect

Operating voltage: 15 – 24VDC

Supply of

solenoid valve: pwm-signal from electronic module

Dig. input (DI): 15 – 48VDC

Imax. 1mA/24VDC

Dig. output (DO): Umax. 48VDC

Imax. 150mA

RI 5,60hm / 100mA

Voltage supply

of sensors: 5VDC (+/-5%)

Power consumption

Minimum about 20mA, at 24VDC

(Power ON, 2 LED, no solenoid valve)

Typically about 35mA, at 24VDC

(Power ON, 2 LED, 1 solenoid valve)

Maximum about 55 mA, at 24VDC

(Power ON, 3 LED, 2 solenoid valves)

Connecting terminals: conductor cross section

0,5-1,5 mm²

(with conductor sleeve) complying with AWG 20-16

l)

Note!

Observe that only one cable should

be installed. If more than one cable is required, follow the max. cross

section limitations!

Torque for screw terminal: 0,8 Nm +/- 0,1



6. Electronic module

6.4. Connections

Sensors to detect the valve positions:

Internal sensors: Hall effect sensors

(APV valves): H320385

(APV / WCB D4 valves): H337014

UB 4,75-5,25 VDC

operating distance according to SPX FLOW specification

External sensors: Inductive proximity switches: H208844

UB 4,75-5,25 VDC

operating distance according to SPX FLOW specification

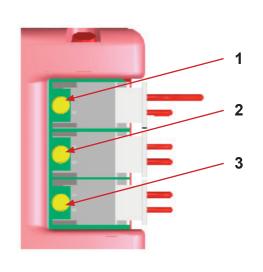


6. Electronic module

6.5. LED indication

External luminous displays						
Valve Open		colour green, permanent light		valve in open position		
Valve Closed		colour orange, permanent light		valve in closed position		
Power Diagnose		colour green, permanent light		operating voltage at module - faultless		
		colour green, flashing		failure solenoid valve (wire fracture)		
Solenoid Main		colour blue, permanent light		main solenoid valve (1) controlled		
Solenoid Main ○ upper seat ○○ lower seat		colour blue, 1 blink		solenoid valve (2) for upper seat lift controlled		
		colour blue, 2 blinks		solenoid valve (3) for lower seat lift controlled		
		colour blue, permanent blink	••••	solenoid valves (2) + (3) for diagnosis, only		
Internal luminous displays						
Luminous diode	1			1st solenoid valve (1) controlled		
Luminous diode	2			2nd solenoid valve (2) controlled		
Luminous diode	3			3rd solenoid valve (3) controlled		



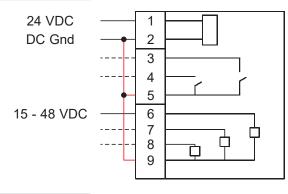




6. Electronic module

6.6. Wiring examples

Example 1



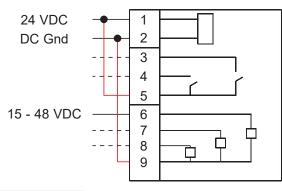
Power
Power
DO Valve closed
DO Valve open
DO Common
DI Main Valve
DI upper seat lift

DI lower seat lift

DI Common

5/7 cable required DC supply DC valve signal 2 feedback to SPS common DC mass

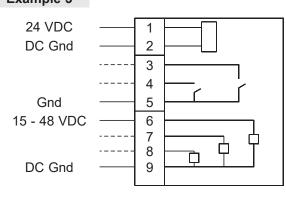
Example 2



Power
Power
DO Valve closed
DO Valve open
DO Common
DI Main Valve
DI upper seat lift
DI lower seat lift
DI Common

5/7 cable required DC supply DC valve signal 2 feedback to SPS common DC mass

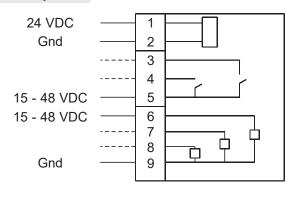
Example 3



Power
Power
DO Valve closed
DO Valve open
DO Common
DI Main Valve
DI upper seat lift
DI lower seat lift
DI Common

7/9 cable required
DC supply
DC valve signal
2 feedback to SPS
separated DC mass, functional units
galvanically isolated

Example 4



Power
Power
DO Valve closed
DO Valve open
DO Common
DI Main Valve
DI upper seat lift
DI lower seat lift
DI Common

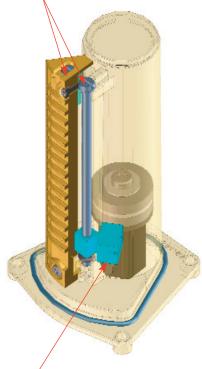
7/9 cable required
DC supply
DC valve signal
2 feedback to SPS
separated DC mass, functional units
galvanically isolated



7. Feedback unit

Feedback unit for SPX FLOW APV valves





Hall effect sensor

Feedback unit for SPX FLOW APV / WCB D4 valves

7.1. General terms

For the internal registration of the valve position indication, the feedback unit with 2 Hall effect sensors is applied. It is used when single seat and butterfly valves are installed.

The control of these sensors is effected by magnets assembled on the valve shaft rod. The Hall effect sensors are installed on a movable threaded rod. By means of this assembly, the sensors can be adjusted via a large range, in accordance with the valve stroke.

7.2. Sensors

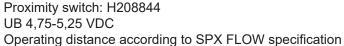
Hall effect sensors (APV valves): H320385
Hall effect sesonrs (APV / WCB D4 valves): H337014
UB 4,75-5,25 VDC
operating distance according to SPX FLOW specification

7.3. Adjustment of valve position feedback

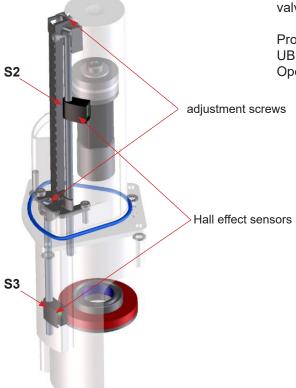
By turning of the adjustment screws on which the Hall effect sensors are installed, the sensors can be moved into the respectively required position to detect the valve position. The o-rings on the adjusting srews prevent accidental displacement of these positions. After the installation of the control unit, check the correct adjustment of the position of the Hall sensor.

7.4. Use of external sensor

Instead of the internal Hall effect sensors, also 2 external proximity switches can be connected to the CU4 DC, e.g. for the valve position indication at double seat valves.

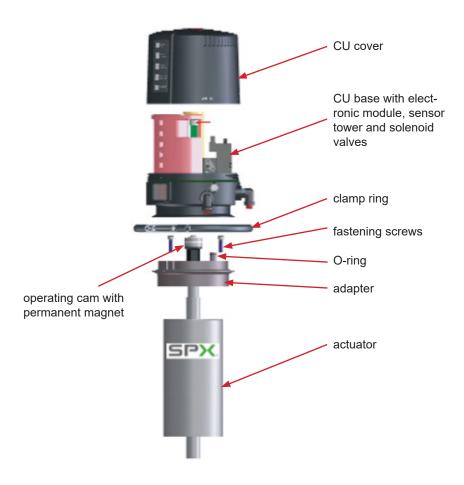


operating distance descraing to of X1 2011 opening to





8.1. Valves with turning actuator, e.g. butterfly valves





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

- 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 operating 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.



8.1.1. 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 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 required.

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!

Make sure that the operating voltage is correct!

After determining the connecting variant according to chapter 6.6. Wiring Examples, select the corresponding cable.

Guide the cable through the cable gland and connect it according to the Wiring Diagram. Preferably use wire terminations!

Tighten the cable gland in order to ensure the corresponding protective class.



8.1.3 Startup

After proper assembly and installation of the control unit, start-up 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 handle on the upper side of the valve by 90°.
- Check the valve position indicator and adjust feedbacks for open and closed valve position as described below.

For valves in normally closed (air-to-raise, spring-to-lower) /normally open (air-to-lower, spring-to-raise) design with turning actuator, the following allocation applies:

Closed valve position feedback - sensor 1 controlled

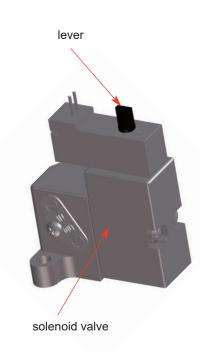
For the adjustment, Hall sensor 1 with non-controlled (controlled) solenoid valve 1 is moved into the required position by turning the adjustment screw 1. The **LED Valve Closed** lights up.

Open valve position feedback - sensor 2 controlled

For the adjustment of Hall sensor 2, at first, the (non-controlled) solenoid valve 1 is controlled. This can optionally be made manually or electrically. The open valve position and the corresponding feedback can be adjusted. This is undertaken by turning the adjustment screw 2 until the required position is reached and the **LED Valve Open** lights up.

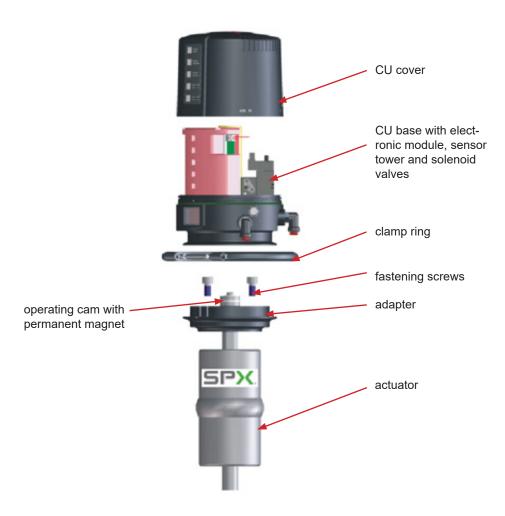


Observe the switching hysteresis of the Hall effect sensors! Therefore, adjust the switch-point of the sensors with overlap in order to permit small variations and, thus, to prevent failures!





8.2. Single seat valves





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 operating cam 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

8.2.1. 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 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.

Take note of 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.

Make sure that the operating voltage is correct!

After determining the connecting variant according to chapter 6.6 Wiring Examples, select the corresponding cable.

Guide the cable through the cable gland and connect it according to the Wiring Diagram. Preferably use wire terminations! Tighten the cable gland in order to ensure the corresponding protective class.



8.2.3. Startup

After proper assembly and installation of the control unit, start-up 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 handle on the upper side of the valve by 90°.
- Check the valve position indicator and adjust feedbacks for open and closed valve position as described below.



Closed valve position feedback - sensor 1 controlled

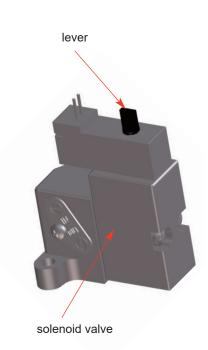
For the adjustment, Hall sensor 1 with non-controlled (controlled) solenoid valve 1 is moved into the required position by turning the adjustment screw 1. The **LED Valve Closed** lights up.

Open valve position feedback - sensor 2 controlled

For the adjustment of Hall sensor 2, at first, the (non-controlled) solenoid valve 1 is controlled. This can optionally be made manually or electrically. The open valve position and the corresponding feedback can be adjusted. This is undertaken by turning the adjustment screw 2 until the required position is reached and the **LED Valve Open** lights up.



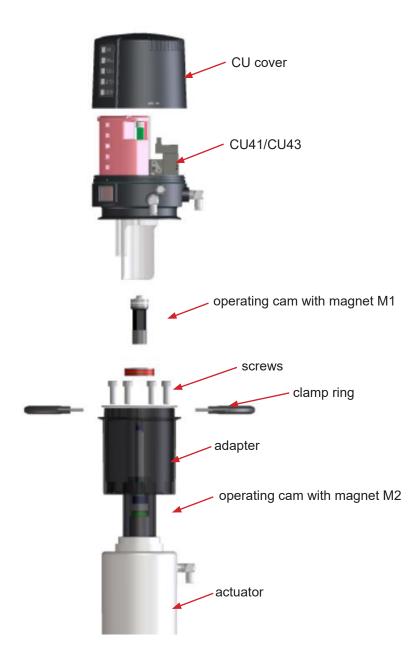
Observe the switching hysteresis of the Hall effect sensors! Therefore, adjust the switch-point of the sensors with overlap in order to permit small variations and, thus, to prevent failures!





8. CU Assembly and Startup

8.3. Double seat mix proof valves D4, D4 SL, DA4



Assembly of the Control Unit on the valve

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



8. CU Assembly and Startup

8.3.1 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.

8.3.2 Electric connection



Attention!

Electric connections shall only be carried out by qualified personnel!

Make sure that the operating voltage is correct!

After determining the connecting variant according to chapter 6.6. Wiring Examples, select the corresponding cable.

Guide the cable through the cable gland and connect it according to the Wiring Diagram. Preferably use wire terminations!

Tighten the cable gland in order to ensure the corresponding protective class.



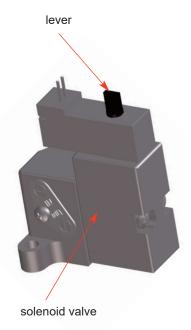
8. CU Assembly and Startup

8.3.3 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 6.1.

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!



8.3.4 Startup

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

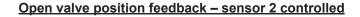
- 1. Switch on the air supply
- 2. Switch on the voltage supply.
- 3. Check the solenoid valves by turning the handle on the upper side of the valve by 90°.
- **4.** Check the valve position indicator.

The proximity switches are installed at the double seat valves with a mechanical stop.

Adjustment is not required!

The following allocation applies for double seat valves:

Closed valve position feedback - sensor 3 controlled





Check the proper fit of the proximity switches to provide for the accurate transfer of the signals for the corresponding valve position.



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 M13

Assembly/disassembly - pressure relief valve:

torx wrench TX10

Loctite semi-solid



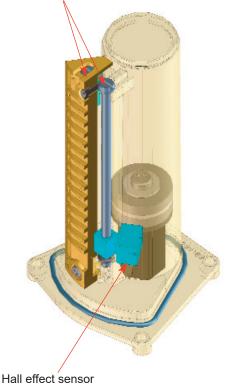
SPXFLOW_CU4DirectConnect_ATEXZone2_GB-0_092021.indd



10. Service

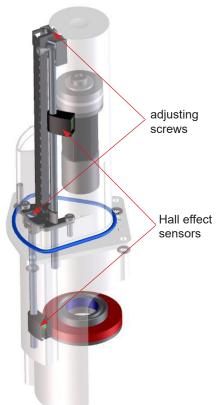
Feedback unit for SPX FLOW APV valves

adjusting screws



i idii ellect selisoi

Feedback unit for SPX FLOW APV / WCB D4 valves



10.1. Disassembly

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 switched off!

- + 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 switched off!

- + Open the cover.
- + Release the cable for the Hall effect 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.

Hall effect sensors

The Hall effect sensors can only be replaced at the dismantled feedback unit.

- + Remove the 3 screws (14) TX10.
- + Remove the tower lid (13).
- + Remove the O-ring (11)
- + Dismantle the sensors by turning the adjusting screw (12).

To simplify adjustment of feedbacks:

- + Mark the position of the sensor on the adjusting screw!
- + Assembly in reverse order.
- + Check the correct position of the Hall effect sensors and their functions as described in **chapter 8** "CU assembly and start-up".



11. Trouble Shooting

General Failures	Remedy
Valve position is not indicated.	Re-adjust Hall sensors.
	Check fastening of magnetic operating cam.
	Check cabeling of the Hall sensors to the electronic module.
Feedback via proximity switches is missing	Check positioning of proximity switches.
	Check operating voltage.
	Check cabeling to the electronic module.
LED indication is missing	Check operating voltage.
	Check cabeling to the electronic module.

Failure	Remedy
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: CU41-T-Direct Connect (1 EMV/solenoid valve)
	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.

SPXFLOW_CU4DirectConnect_ATEXZone2_GB-0_092021.indd

SPX FLOW



11. Trouble Shooting

Failure	Remedy
Control Unit CU41 installed on Single seat and Double	e 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: CU41-S-Direct Connect (1 EMV/solenoid valve) CU41-D4-Direct Connect
	Check valve movement with manual lever 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	
Valve position movement is missing with actuated solenoid valve.	Check if right control unit is installed. Check label in type window of control unit: CU43-D4-Direct Connect
	Check valve movement with manual lever 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 DA4 / D4 SL actuator.

SPX FLOW





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
- reference number
- parts designation

Data are subject to change.

RN ATEX 01.044-4 SPX FLOW (3) Page 13.09.21 C.Keil C.Keil (17.1) Reviewed: Reviewed: Name: Name: Date: Date: (2) 14 (22 on the part of SPX FLOW, Inc.. No part of this document may be reproduced or transmitted in any form or by any nformation contained in this document is subject to change without notice and does not represent a commitment means, electronic or mechanical, including photocopying and recording, for any purpose, without the express II 3 G Ex ec mc IIC T4 Gc **CU4 Direct Connect** (H) (H) (H) **ATEX 3G - Zone 2** (8) (8) written permission of SPX FLOW, Inc.. (=) (2) (1 (2) \overline{a} (%) (7) (-) Spare Parts list

Spare parts list

II 3 G Ex ec mc IIC T4 Gc Zone 2 **CU4 D4 Direct Connect**



Page

SPX FLOW

13.09.21 C.Keil C.Keil

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CU41 E-module Direct Connect CU41 Zyel 70538, back H327194 CR P CU414 E-module Direct Connect CU414 Zyel 70538, back H327195 P <th< td=""><td>←</td><td>CU43 Ex Base M cpl.</td><td>CU43</td><td>PA6.6 GF30 +PA12</td><td>H344232</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	←	CU43 Ex Base M cpl.	CU43	PA6.6 GF30 +PA12	H344232							
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CU41+43 Lexan 945AU H337948 29 1 D4 sensor tower cmpl. CU41+43 Grillamid TR55 AZ CU41 PPS H319950 30 1 Cylinder head screw ISO 1207 M4x10 CU41+43 AZ AZ CU41+43 PPS H319950 32 1 Cylinder head screw ISO 1207 M4x10 CU41+43 AZ CU41+43 PPS H319952 32 2 CU4 Hall sensor bracket D4 CU41+43 Grillamid TR50 CU41+43 AZ H320401 35 1 Blind plug V-inox FPM ex. M20x1.5 CU41+43 Grillamid TR50 CU41+43 AZ H320464 35 1 Female Flange M12x1.5. 8 Pin CU41+43 Ms / nickel-plated CU41+43 AZ H320462 36 1 ATEX CU4 lype label AZ Paus CU41+43 Ms / nickel-plated H320482 36 4 Washer A=3,7 CU41+43 AZ AZ CU41+43 Ms / nickel-plated H320825 CU44+43 CU44+43 AZ <t< td=""><td>_</td><td>CU43 E-module Direct Connect</td><td>CU43</td><td>Zytel 70G33L black</td><td>H327195</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	_	CU43 E-module Direct Connect	CU43	Zytel 70G33L black	H327195							
Solenoid valve 1 sol. CU41 PPS H319950 30 1 Oylinder head screw ISO 1207 MAX:140 CU41443 A2 A2 Solenoid valve 3 sol. CU43 PPS H319952 33 1 Cylth dell sensor D4 CU41443 A2 A2 Solenoid valve 3 sol. CU41+43 NBR H320401 33 1 Sind Hall sensor D4 CU41+43 Grillamid TR90 A2 A2 O-ring 45,6 x 2,4 CU41+43 NBR H320364 35 1 Female Flange M1241,5 S Pin CU41+43 Grillamid TR90 O-ring 3x2 CU41+43 NBR H208844 36 1 Female Flange M1241,5 S Pin CU41+43 PA O-ring 3x2 CU41+43 NBR H20884 36 1 ATEX CU label - Electrostatic risk Glu 41+43 Fevus Tevus Billing blug G1/6" CU41+43 Ms / nickel-plated H320482 36 1 ATEX CU4 type label Tevus Tevus Elbow connector G1/6" 6x1 CU41+43 Ms / nickel-plated H320	_	CU4 cover translucent	CU41+43	Lexan 945AU	H337948	29	1	D4 sensor tower cmpl.		CU41+43	Grilamid TR55	H338146
Solenoid valve 3 sol. CU443 PPS H319952 32 CU4 Hall sensor D4 CU41443 Gillamid TRS5 CU41443 Gu41443 Gu41443 Gu414443 Gu414443 Gu414443 Gu414443 Gu414443 Gu414443 Gu41444 H320826 Gu41443 Gu41444 Gu41444 H320826 Gu41443 H320826 Gu41443 H320826 Gu41443 H320826 Gu41443 H320826 Gu41443 H320826 Gu41444 H320826 H320826	~	Solenoid valve 1 sol.	CU41	Sdd	H319950	30	-	Cylinder head screw ISO 12	207 M4x140	CU41+43	A2	H337011
CU43 PPS H319952 32 2 CU4 Hall sensor D4 CU41+43 Grillamid TR56 CU21+43 Grillamid TR50 CU41+43 Grillamid TR50 CU41+43 Grillamid TR90 CU41+43 Family Sensor bracket D4 CU41+43 PA						31	-	Cylinder head screw ISO 12	207 M4x80	CU41+43	A2	9689EH
CU41+43 NBR H320401 33 2 CU4 Hall sensor bracket D4 CU41+43 Grillamid TR90 CU41+43 A2 H320364 34 1 Blind plug V-inox FPM ex. M20x1.5 CU41+43 PA PA CU41+43 A2 H208644 35 1 Female Flange M12x1.5 - 8 Pin CU41-M12 Ms / nickel-plated Tevus Tevus CU41+43 NBR H208644 36 1 ATEX CU label - Electrostatic risk all versions Tevus Tevus CU41+43 Ms / nickel-plated H320482 4 ATEX CU label - Electrostatic risk all versions Tevus CU41+43 Ms / nickel-plated H320482 4 Washer A=3,7 CU41+43 A2 CU41+43 H208826 H208825 FA TCU4 Adapter A2 CU41+43 H208826 T A2 A4 CU41+43 H208826 T A4 A4 CU41+43 H208826 T A4 A4 CU41+43 Ms / nic	_	Solenoid valve 3 sol.	CU43	Sdd	H319952	32	7	CU4 Hall sensor D4		CU41+43	Grilamid TR55	H337014
CU41+43 NBR H320401 34 1 Blind plug V-inox FPM ex. M20x1.5 CU41+43 PA <						33	2	CU4 Hall sensor bracket	t D4	CU41+43	Grillamid TR90	H336041
CU41+43 A2 H320364 35 1 Female Flange M12x1,5 - 5 Pin CU41-M12 Ms / nickel-plated H208826 Tewale Flange M12x1,5 - 8 Pin CU41-M12 Ms / nickel-plated Ms / nickel-plated Ms / nickel-plated H320482 A TEX CU4 type label all versions Tevus Tevus Tevus CU41+43 A2 H320482 A Masher A=3,7 CU41+43 A2 A2 A2 CU41+43 Ms / nickel-plated H208825 A Masher A=3,7 CU4 Adapter A2 A2 CU41+43 H208825 A Ms / nickel-plated H208825 A Ms / nickel-plated A Msapater spareparts informatic nor be found in a comment: RN 01.044	_	O-ring 45,6 x 2,4	CU41+43	NBR	H320401	34	-	Blind plug V-inox FPM ex	x. M20x1.5	CU41+43	PA	H337788
CU41+43 NBR H208644 36 1 Female Flange M12x1,5 - 8 Pin CU43-M12 Ms / nickel-plated Ms / nickel-plated Ms / nickel-plated CU41+43 Ms / nickel-plated Ms / nicke	4	Ejot Delta PT screw WN5452 35x14	CU41+43	A2	H320364	32	1	Female Flange M12x1,5	5 Pin	CU41-M12	Ms / nickel-plated	H341353
CU41+43 NBR H208644 36 1 ATEX CU label - Electrostatic risk all versions Tevus						32	1	Female Flange M12x1,5	8 Pin	CU43-M12	Ms / nickel-plated	H341354
CU41+43 A2 H320363 A2 A Masher A=3,7 CU41+43 CU41+43 A2 H320482 A2 A2 <td>2</td> <td>O-ring 3x2</td> <td>CU41+43</td> <td>NBR</td> <td>H208644</td> <td>36</td> <td>1</td> <td>ATEX CU label - Electro</td> <td>static risk</td> <td>all versions</td> <td>Tevus</td> <td>H345151</td>	2	O-ring 3x2	CU41+43	NBR	H208644	36	1	ATEX CU label - Electro	static risk	all versions	Tevus	H345151
CU41+43 A2 H320363 A2						37	1	ATEX CU4 type label		all versions	Tevus	H345150
CU41+43 A2 H320363 CU41 Ms / nickel-plated H320482 CU41+43 1.4301 / PA H208825 CU41+43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU41+43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU41+43 PE-porous H32023 CU41+43 Ms / nickel-plated H208826 CU41+43 Ms / nickel-plated H208826 CU41+43 Ms / nickel-plated H208826 CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3						38	4	Washer A=3,7		CU41+43	A2	H323771
CU41 Ms / nickel-plated H320482 Rand Nuckel-plated H320482 CU41+43 1.4301 / PA H208825 CU41+43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU4 Adapter CU43 1.4301 / PA H208825 I / I / CU4 D4 adapter cpl. CU43 1.4301 / PA H208825 I / I / CU4 D4 adapter cpl. CU41+43 Ms / nickel-plated H208826 I / I / CU4 D4 adapter cpl. CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3	4	Ejot Delta PT screw WN5452 30x10	CU41+43	A2	H320363							
CU41+43 Inchel-plated H320482 H208825 CU41+43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU43 Inchel-plated Inchel-plated Inchel-plated Inchel-plated Inchel-plated Inchel-plated Inchel-plated Inchel-plated Inchel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3	_	Blind plug G1/8"	CU41	Ms / nickel-plated	H320482							
CU41+43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU41+43 PE-porous H320223 CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3	_	Blind plug G1/8"	CU43	Ms / nickel-plated	H320482							
CU41+43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU41+43 PE-porous H320223 1 CU4 D4 adapter cpl. all versions CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3												
CU41+43 1.4301 / PA H208825 CU43 1.4301 / PA H208825 CU4 Adapter CU43 1.4301 / PA H208825 I CU4 D4 adapter cpl. all versions I CU4 D4 adapter cpl. all versions CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3	_	Elbow connector G1/8" 6x1	CU41+43	1.4301 / PA	H208825							
or G1/8" 6x1 CU43 1.4301 / PA H208825 CU4 Adapter or G1/8" 6x1 CU41+43 PE-porous H320223 1 CU4 D4 adapter cpl. all versions III versions CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3	-	Elbow connector G1/8" 6x1	CU41+43	1.4301 / PA	H208825							
or G1/8" 6x1 CU43 1.4301 / PA H208825 1 CU4 D4 adapter cpl. all versions all versions CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3	_	Elbow connector G1/8" 6x1	CU43	1.4301 / PA	H208825					A Adaptor		
CU41+43 PE-porous H320223 1 CU4 D4 adapter cpl. all versions all versions CU41+43 Ms / nickel-plated H208826 Adapter spareparts information to be found in document: RN 01.044.3	~	Elbow connector G1/8" 6x1	CU43	1.4301 / PA	H208825				Š	+ Adaptei		
CU41+43 Ms / nickel-plated H208826 CU43 Ms / nickel-plated H208826	~	CU4 air filter	CU41+43	PE-porous	H320223		1	CU4 D4 adapter cpl.		all versions		H337098
CU43 Ms / nickel-plated H208826	Ψ.	Sound reducer	CU41+43	Ms / nickel-plated	H208826			Adanter snarenarts	information	to be found in	document: BN 01 04	4.3
	7	Sound reducer	CU43	Ms / nickel-plated	H208826			Adapter spareparts	IIIOIIIIauoii	to be loaind iii	document. INN 01.04	7.

II 3 G Ex ec mc IIC T4 Gc Zone 2 **CU41 S Direct Connect**

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RN ATEX 01.044-4		Part no.	H320365	H79576	H320404	H320352	H320402	H344599									H341353	H345151	H345150	H323771										14.3
RN A		Material	A2	A2	A2	PPS	NBR	PA black									Ms / nickel-plated	Tevus	Tevus	A2										locument: RN 01.0
	required in	version	CU41	CU41	CU41	CU41	CU41	CU41									CU41-M12	all versions	all versions	CU41								CU4 Adapter		to be found in c
Name: Reviewed:	Doczintion		Ejot Delta PT screw WN5452 40x16	Washer ø4,3 DIN125	Washer A 3,2 DIN9021	CU4 pressure relief valve	O-ring 120,32 x 2,62	Screwed cable gl. M20x1,5 cable ø6-12									Female Flange M12x1,5 - 5 Pin	ATEX CU label - Electrostatic risk	ATEX CU4 type label	Washer A=3,7							Č	0.3		Adapter spareparts information to be found in document: RN 01.044.3
	ntity		2	3	1	1	1	1									1	1	1	4										
	bos.	item	20	21	22	23	24	25									35	36	37	38										
		Part no.	H345513	H345514				H345506	H327194	H337048	0	H319950			H319868	H320401	H320364	H320385	H208644	H320361	H319869	H320363	H320482		H208825	H208825			H320223	HZ08826
Zone 2		Material	PA6.6 GF30	PA6.6 GF30				PA6.6 GF30 +PA12	Zytel 70G33L black	l exan 945AII		PPS			PA12	NBR	A2	Grilamid TR55	NBR	A2-50	PA12	A2	Ms / nickel-plated	-	1.4301 / PA	1.4301 / PA		70	snoind-III	Ms / nickel-plated
Z	required in	version						CU41	CU41	C1141		CU41			CU41	CU41	CU41	CU41	CU41	CU41	CU41	CU41	CU41		CU41	CU41		7	1400	CU41
	Docorintion		CU41 S DC ATEX 3G	CU41 S DC ATEX 3G M12				CU41 Ex Base S cpl.	CU41 E-module Direct Connect	C114 cover translitiont		Solenoid valve 1 sol.			CU4 sensor tower	O-ring 45,6 x 2,4	Ejot Delta PT screw WN5452 35x14	Hall sensor	O-ring 3x2	Cylinder screw M4x100	CU4 tower cover	Ejot Delta PT screw WN5452 30x10	Blind plua G1/8"	-	Elbow connector G1/8" 6x1	Elbow connector G1/8" 6x1		O	1	Sound reducer
	ە. ntity							1	_	_	+	_	_	-	-	_	4) 2	1 2	2 2	3 1	4	2		7	.1	-	4	- •	- -
	.sod	item						1	7	۲	1	4			7	∞	6	10	11	12	13	14	15.2		17	17.1		0,0	≚ (19.1

II 3 G Ex ec mc IIC T4 Gc Zone 2 **CU41 T Direct Connect**

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RN ATEX 01.044-4		Part no.	H320365	H79576	H320404	H320352	H320402	H344599								H341353	H345151	H345150	H323771									14.3
RN A		Material	A2	A2	A2	Sdd	NBR	PA black								Ms / nickel-plated	Tevus	Tevus	A2									locument: RN 01.04
	required in	version	CU41	CU41	CU41	CU41	CU41	CU41+43								CU41-M12	all versions	all versions	CU41							CU4 Adapter		to be found in c
Name: Reviewed:	notringo		Ejot Delta PT screw WN5452 40x16	Washer ø4,3 DIN125	Washer A 3,2 DIN9021	CU4 pressure relief valve	O-ring 120,32 x 2,62	Screwed cable gl. M20x1,5 cable ø6-12								Female Flange M12x1,5 - 5 Pin	ATEX CU label - Electrostatic risk	ATEX CU4 type label	Washer A=3,7))		Adapter spareparts information to be found in document: RN 01.044.3
	ntity	Qua	2	3	1	1	1	1								1	1	1	4									
	pos.	item	20	21	22	23	24	25								35	36	37	38									
		Part no.	H345517	H345518				H345508		H327 194	H337948	H319950		H319868	H320401	H320364	H320385	H208644	H320361	H319869	H320363	H320482	H320482	H208825			H320223	H208826
Zone 2		Material	PA6.6 GF30	PA6.6 GF30				PA6.6 GF30 +PA12		Zytel / UG33L black	Lexan 945AU	Sdd		PA12	NBR	A2	Grilamid TR55	NBR	A2-50	PA12	A2	Ms / nickel-plated	Ms / nickel-plated	1.4301/PA			PE-porous	Ms / nickel-plated
Z	required in	version						CU41	3	0.04	CU41	CU41		CU41	CU41	CU41	CU41	CU41	CU41	CU41	CU41	CU41	CU41	CU41			CU41	CU41
	Description		CU41 T DC ATEX 3G	CU41 T DC ATEX 3G M12				CU41 Ex Base T cpl.		CO41 E-module AS-1 ext.	CU4 cover translucent	Solenoid valve 1 sol.		CU4 sensor tower	O-ring 45,6 x 2,4	Ejot Delta PT screw WN5452 35x14	Hall sensor	O-ring 3x2	Cylinder screw M4x100	CU4 tower cover	Ejot Delta PT screw WN5452 30x10	Blind plug G1/8"	Blind plug G1/8"	Elbow connector G1/8" 6x1			CU4 air filter	Sound reducer
	ە vtitn							1	-	1	-	_	_	1	_	4) 2	1	2		4	7	2 1	1		4	~	-
	bos.	item						_	C	7	3	4		7	8	6	10	11	12	13	14	15.1	15.2	17			18	19.1

II 3 G Ex ec mc IIC T4 Gc **CU41N-S Direct Connect** Zone 2



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RN ATEX 01.044-4		Part no.	H320365	H79576	H320404	H320352	H320402	H344599		H208841						H341353	H345151	H345150	H323771										4.3
RN A		Material	A2	A2	A2	PPS	NBR	PA black		Ms / nickel-plated						Ms / nickel-plated	Tevus	Tevus	A2										locument: RN 01.04
	required in	version	CU41	CU41	CU41	CU41	CU41	CU41		CU41N						CU41-M12	all versions	all versions	CU41								CU4 Adapter		to be found in c
Name: Reviewed:	Doczintion		Ejot Delta PT screw WN5452 40x16	Washer ø4,3 DIN125	Washer A 3,2 DIN9021	CU4 pressure relief valve	O-ring 120,32 x 2,62	Screwed cable gl. M20x1,5 cable ø6-12		Pressure reducing valve						Female Flange M12x1,5 - 5 Pin	ATEX CU label - Electrostatic risk	ATEX CU4 type label	Washer A=3,7							Č			Adapter spareparts information to be found in document: RN 01.044.3
	ntity		2	3	~	7	1	1		-						1	1	1	4										
	bos.	item	20	21	22	23	24	25		78						35	36	37	38										
		Part no.	H345519	H345520				H345506	H327194		H337948		H319951	H319868	H320401	H320364	H320385	H208644	H320361	H319869	H320363		H320551	H208825	H208825		H320223	H208826	
Zone 2		Material	PA6.6 GF30	PA6.6 GF30				PA6.6 GF30 +PA12	Zytel 70G33L black		Lexan 945AU	(Sdd	PA12	NBR	A2	Grilamid TR55	NBR	A2-50	PA12	A2		Ms / nickel-plated	1.4301 / PA	1.4301 / PA		PF-porous	Ms / nickel-plated	
Z	required in	version						CU41	CU41		CU41		CU41N	CU41	CU41	CU41	CU41	CU41	CU41	CU41	CU41		CU41N	CU41	CU41		CI 141	CU41	
	Occurintion		CU41N-S DC ATEX 3G	CU41N-S DC ATEX 3G M12				CU41 Ex Base S cpl.	CU41 E-module Direct Connect		CU4 cover translucent		Solenoid valve 1 sol. + NOT-element	CU4 sensor tower	O-ring 45,6 x 2,4	Ejot Delta PT screw WN5452 35x14	Hall sensor	O-ring 3x2	Cylinder screw M4x100	CU4 tower cover	Ejot Delta PT screw WN5452 30x10		Connector self-locking	Elbow connector G1/8" 6x1	Elbow connector G1/8" 6x1		CU4 air filter	Sound reducer	
	ە. ntity							1	_	-	-		_	_	_	4) 2	1 2	2 2	1	4	\downarrow	-	1 1	1 1	\perp			\coprod
	.sod	item						1	7	١	33		2	7	8	6	10	11	12	13	14		16	17	17.1		18	19.1	5

Spa	are Da	Spare parts list						Date: 13.09.21			
•	-		H -27		7			Name: C.Keil		<i>i</i>	SPX FI OW
		์ วั	CU41N-I Direct Co	Jirect Con	onnect			Reviewed: C.Keil		5	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
			רויא טי אבי אין ווי	_	(<u>^</u> 3)	_			-		
				_				Date:		Page	6 of 6
			7	Zone 2				Name: Reviewed:		RN A	RN ATEX 01.044-4
sod			required in			bos.	ntity	-	required in		
item	Sua Qua	Description	version	Material	Part no.	item	Quai	Description	version	Material	Part no.
	4	CU41N-T DC ATEX 3G		PA6.6 GF30	H345525	20	2	Ejot Delta PT screw WN5452 40x16	CU41	A2	H320365
		CU41N-T DC ATEX 3G M12		PA6.6 GF30	H345527	21	3	Washer ø4,3 DIN125	CU41	A2	H79576
						22	_	Washer A 3,2 DIN9021	CU41	A2	H320404
						23	_	CU4 pressure relief valve	CU41	PPS	H320352
						24	1	O-ring 120,32 x 2,62	CU41	NBR	H320402
_	_	CU41 Ex Base T cpl.	CU41	PA6.6 GF30 +PA12	H345508	25	1	Screwed cable gl. M20x1,5 cable ø6-12	CU41	PA black	H344599
2	1	CU41 E-module Direct Connect	CU41	Zytel 70G33L black	H327194						
						28	_	Pressure reducing valve	CU41N	Ms / nickel-plated	H208841
3	_	CU4 cover translucent	CU41	Lexan 945AU	H337948						
2	_	Solenoid valve 1 sol. + NOT-element	CU41N	Sdd	H319951						
	_										
7	~	CU4 sensor tower	CU41	PA12	H319868						
∞	1	O-ring 45,6 x 2,4	CU41	NBR	H320401						
6	4	. Ejot Delta PT screw WN5452 35x14	CU41	A2	H320364	35	_	Female Flange M12x1,5 - 5 Pin	CU41-M12	Ms / nickel-plated	H341353
10	2	Hall sensor	CU41	Grilamid TR55	H320385	36	1	ATEX CU label - Electrostatic risk	all versions	Tevus	H345151
7			CU41	NBR	H208644	37	-	ATEX CU4 type label	all versions	Tevus	H345150
12	2	Cylinder screw M4x100	CU41	A2-50	H320361	38	4	Washer A=3,7	CU41	A2	H323771
13	1	CU4 tower cover	CU41	PA12	H319869						
14	. 4	. Ejot Delta PT screw WN5452 30x10	CU41	A2	H320363						
15.1	1	Blind plug G1/8"	CU41	Ms / nickel-plated	H320482						
7	<u></u>		1477	-	110001						
16	_	Connector self-locking	CU41N	Ms / nickel-plated	H320551						
17	-	Elbow connector G1/8" 6x1	CU41	1.4301 / PA	H208825						
	_										
	4							į			
ζ	7	CHA air filtar	CLIA1	DE-porolis	H32023			าว	CU4 Adapter		
0 2			004-1	Me, / misliss lasted	H320223						
<u>.</u>	_	Sogila leagacei	400	ivis / illenel-plated	UZ000ZU			Adapter spareparts information to be found in document: RN 01.044.3	to be found in a	document: RN 01.04	4.3

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SPX FLOW	Blatt 1 von 5	RN 01.044.3		
11/10 Schulz Spliethoff			Adapter	
03/09 Trytko	-	C.Keil C.Keil	CU4 S – Adapter	
01/09 Peters	_	Trytko	J	
11/08 Peters Spliethoff	03/13	Trytko		δ
Datum: Name: Geprüft:	Datum:	Name: Geprüft:		
			CU4 T – Adapter	
	CU4 Adapter		CU4 M – Adapter	
Gebrauchsmussereindragung, vorbehalten, Styttuw, Germany Ersatzteilliste: spare parts list			CU4 D4 - Adapter	

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_	Gebrauchsmustereintragung, vorbe	Gebrauchsmustereintragung, vorbehalten. SPX FLOW, Germany								
ш	satzte	Ersatzteilliste: spare parts list				Datum:	11/08	03/00		
		CU4	CU4 Adapter			Name: Geprüft:	Peters t: Spliethoff	Peters I rytko S	Schulz SP Spliethoff	SPX FLOW
						Datum:	03/13	\vdash	Blatt 2	von 5
						Name: Geprüft:	Trytko	Trytko C.Keil C.Keil	RN	RN 01.044.3
bc	pos.	Beschreibung	Material	CU4 - S	CU4 - S Langhub ø165	CU4 - Smini	CU4	CU4 - T	CU4 - Tmax	CU4 - M
ite	yeug Leu Leu	description	material	WS-Nr.						
	N	0		161110.	161110.	00 40 642/02	161110.	161110.	00 40 644/00	161110.
		CU4 Adapter Kpl. CU4 adapter cpl.		U8-48-600/93 H320474	U8-48-633/93 H330897	U8-48-613/93 H321989	U8-48-610/93 H321988	U8-48-601/93 H320475	U8-48-611/93 H321987	U8-48-6UZ/93 H320476
Ψ.	1.1	CU4 Adapter M CU4 adapter M	PA6.6 GF30							08-46-572/93 H319876
Ψ.	1.2	CU4 Adapter T CU4 adapter T	PA6.6 GF30					08-46-571/93 H319875	08-46-571/93 H319875	
Ψ.	1.3	CU4 Adapter S CU4 adapter S	PA6.6 GF30	08-46-570/93 H319874	08-46-570/93 H319874	08-46-570/93 H319874	08-46-570/93 H319874			
Ψ.	1.4 0	CU4 Adapter D4 CU4 adapter D4	PA6.6 GF30							
.,	2 2	CU4 Clamphalbschale kpl. CU4 clamp cpl.	Grivory GH-5H1	08-46-569/93 H319873						
(,)	3 2	Zylinderschraube M4x40 Cyl. screw M4x40	A2-70	65-05-040/13 H320360						
4	4		NBR	58-06-493/83 H148389						
",	5 1		Zytel HTN	08-60-900/93 H320479	08-60-900/93 H320479	08-60-900/93 H320479	08-60-900/93 H320479	08-60-900/93 H320479	08-60-900/93 H320479	
٧	6 4		A2-70	65-05-120/13 H79012	65-05-122/13 H79014	65-05-120/13 H79012	65-05-129/13 H315760			
7	7 1	Zugstangenverlängerung Guide rod extension	PA6			15-26-070/93 H208096	15-26-057/93 H204747			
_ ~	8 4		A2-70			65-01-033/15 H78737				
٥,	9	CU Adapter SW4	PA6		08-48-359/93 H330879	08-48-355/93 H207570	08-48-361/93 H327150			
7	10 1		NBR					58-06-059/83 H320505	58-06-059/83 H320505	
_	11 1		NBR					58-06-034/83 H321897	58-06-034/83 H321897	
_	12 1	O-Ring 11x3 O-ring 11x3	NBR						58-06-039/83 H208632	

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Ersatzteilliste: spare parts list

Gebra	anchsm	Gebrauchsmustereintragung, vorbehalten. SPX FLOW, Germany				-				
Ersa	tztei	Ersatzteilliste: spare parts list				Datum:	11/08	03/09		
						Name:		l rytko		SPX FLOW
		CU4 ,	CU4 Adapter			Gepruft:	Tt: Spliethoff Spliethoff	Peters	Spliethoff	
			•			Datum:	03/13	11/14 05/18	Blatt 3	von 5
						Name: Geprüft:	Trytko	Trytko C.Keil C.Keil	RN (RN 01.044.3
pos.	ə	Beschreibung	Material	CU4 - S	CU4 - S Langhub ø165	CU4 - Smini	CU4	CU4 - T	CU4 - Tmax	CU4 - M
item	նսəլ	description	material	WS-Nr.	WS-Nr.	WS-Nr.	WS-Nr.	WS-Nr.	WS-Nr.	WS-Nr.
	۸ ,	V-Dichtung	0			.0IIII	-EIO.		28-32-010/83	IEIIIO.
13	_		NBR						H171060	
14	_	CU4 Schaltstange CU4 switch rod						08-60-905/93 H320480 - PA6	08-60-906/12 H321990 - 1.4301	
15	3	Zylinderschraube M5x16 Cyl. screw M5x16	A2-70					65-05-054/13 H79000	65-05-054/13 H79000	
16	4	Scheibe 9x5,48 Washer 9x5,48	A2							08-60-767/15 4 x H208842
17	4	Zyl. Schraube M5x35 Cyl. screw M5x35	A2-70							65-06-056/13 H79028
18	0	Zylinderschraube M8x25 Cyl. screw M8x25	A2-70	65-05-122/13 H79014						
19	0	D4 Zugstangen Adapter für CU4 D4 guide rod adapter for CU4	PA6.6	08-46-824/93 H336934						
20	0	D4 Magnet Hall sensor kpl. D4 magnet Hall sensor cpl.		08-46-820/93 H336927						

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מז יי	Ersatzteilliste: spare parts list				Datum:					
	CU4	CU4 Adapter			Name: Geprüft:	Peters Spliethoff	Peters Trytko Spliethoff Peters	ko Schulz ers Spliethoff		SPX FLOW
		<u></u>			Datum:		-	18	Blatt 4	von 5
					Name: Geprüft:	Trytko : Schulz	Trytko C.Keil C.Keil	ei ei	RN	RN 01.044.3
	Beschreibung	Material	CU4 - D4							
	description	material	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.	WS-Nr. refno.		WS-Nr. refno.	WS-Nr. refno.
CU4 Adapter kpl. CU4 adapter cpl.	J.		08-46-646-/93 H337098							
CU4 Adapter M CU4 adapter M		PA6.6 GF30								
CU4 Adapter T CU4 adapter T		PA6.6 GF30								
CU4 Adapter S CU4 adapter S		PA6.6 GF30								
CU4 Adapter D4 CU4 adapter D4)4)4	PA6.6 GF30	08-46-940/93 H336038							
CU4 Clamphalbschale kpl. CU4 clamp cpl.	bschale kpl.	Grivory GH-5H1	08-46-569/93 H319873							
Zylinderschraube M4x40 Cyl. screw M4x40	lbe M4x40 <40	A2-70	65-05-040/13 H320360							
O-Ring 101,27x2,62 O-ring 101,27x2,62	x2,62 (2,62	NBR	58-06-493/83 H148389							
CU4 Magnetschaltnocke kpl. CU4 magnet operating cam o	CU4 Magnetschaltnocke kpl. CU4 magnet operating cam cpl.	Zytel HTN	08-60-900/93 H320479							
Zyl. Schraube Cyl. screw		A2-70								
Zugstangenverlängerung Guide rod extension	rlängerung :nsion	PA6								
Skt. Schraube M5x12 Hex. screw M5x12	M5x12 x12	A2-70								
CU Adapter SW4 CU adapter SW4	V4 V4	PA6								
O-Ring 6x2 O-ring 6x2		NBR								
O-Ring 11x2 O-ring 11x2		NBR								
O-Ring 11x3 O-ring 11x3		NBR								

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Ersatzteilliste: spare parts list

	SPX FLOW	von 5	RN 01.044.3		WS-Nr. refno.												
	SPX	Blatt 5	RN 0		WS-Nr. refno.												
	11/10 Schulz Spliethoff																
	03/09 Trytko Peters	05/18	C.Keil		WS-Nr. refno.												
	01/09 Peters Spliethoff	11/14	Trytko		> -												
	11/08 Peters Spliethoff	03/13	Trytko		WS-Nr. refno.												
	Datum: Name: Geprüft:	Datum:	Name: Gebrüft:		WS-Nr. refno.												
					WS-Nr. refno.												
				CU4 - D4	WS-Nr. refno.						65-05-122/13 H79014	08-46-824/93 H336934	08-46-820/93 H336927				
	CU4 Adapter			Material	material	NBR		A2-70	A2	A2-70	A2-70	9 [.] 984					
Gebrauchsmustereintragung, vorbehalten. SPX FLOW, Germany	Ersatzteilliste: spare parts list CU4 /			Beschreibung	description	V-Dichtung V-seal	CU4 Schaltstange CU4 switch rod	Zylinderschraube M5x16 Cyl. screw M5x16	Scheibe 9x5,48 Washer 9x5,48	Zyl. Schraube M5x35 Cyl. screw M5x35	Zylinderschraube M8x25 Cyl. screw M8x25	D4 Zugstangen Adapter für CU4 D4 guide rod adapter for CU4	D4 Magnet Hall sensor kpl. D4 magnet Hall sensor cpl.				
ebrauchsmu	satztei			8. VJ	dnsu <u>f</u> Weud <u>4</u>	13 0	14 0	15 0	16 0	17 0	18 4	19 1	20 1				
G	Щ			pos.	iţe	_	_	_	_	_	_	_	2				





FOR ATEX ZONE 2 GAS APPLICATIONS

SPXFLOW[®]

SPX FLOW

Design Center

Gottlieb-Daimler-Straße 13 D-59439 Holzwickede, Germany

P: (+49) (0) 2301-9186-0 F: (+49) (0) 2301-9186-300 SPX FLOW, Inc.

611 Sugar Creek Road Delavan, WI 53115, USA

P: (+1) 262 728 1900 or (800) 252 5200 F: (+1) 262 728 4904 or (800) 252 5012

F. (+1) 202 728 4904 01 (800) 232 3012

E: wcb@spxflow.com

SPX FLOW

Production

Stanisława Jana Rolbieskiego 2

PL- Bydgoszcz 85-862, Poland

P: (+48) 52 566 76 00

F: (+48) 52 525 99 09

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