müller coax group

OPERATING MANUAL

Extension module for electrosolenoid operated valves with explosion protection of the valve series

2/2-way coaxial direct acting valves

3/2-way coaxial direct acting valves

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1 General

1.1 Additional manual for electro-solenoid actuated Ex-valves

This extension to the general operating instructions applies to electromagnetically actuated valves that are suitable for use in potentially explosive atmospheres of categories "two" and "three". It supplements the installation and operating instructions of the general operating instructions for coaxial valves. Additional information sheets are attached to the instructions for modifications or extensions.

The operating and installation instructions for non-explosion-proof valves and their technical specifications apply unchanged, unless they are excluded or replaced by these instructions. To ensure that our products function properly, the instructions and information in these and the general operating instructions must be followed. Non-compliance will invalidate the warranty and legal liability for the devices.

All electromagnets are manufactured and tested according to recognised industry standards and in accordance with VDE guidelines. They therefore fulfil the general safety regulations.
The solenoids are designed as electromagnetically operated actuators that do not pose any danger when used as intended (e.g. as valve actuators).

1.2 Safety instructions

You must have read and understood the complete operating instructions before installation and commissioning.
Only personnel specially trained in "Explosion protection" may carry out assembly, installation, commissioning and maintenance.
The special conditions described under point **7.4 Repair magnet/ valve** apply to overhaul and repair.

ATTENTION!
The customer is responsible for ensuring compliance with all applicable provisions, regulations, standards and laws that apply to his operating conditions and place of use.

1.3 Note

In order to maintain the flexibility of our valve series, the solenoid has been certified for device category 2G and 2D. The solenoids are designed exclusively for use as electromagnetic actuators that do not pose any danger when used as intended.

The following description applies to all valves in the "K 10" to "K 50" series with a solenoid assembly of type K_. The basic structure of the individual solenoid assembly is identical. The individual solenoid assemblies differ only in their size.

1.4 EU- conformity

If required, the EU type examination certificate can be downloaded from **www.co-ax.com.**

1 General

1.5 Admission according to ATEX and IECEx- Scheme

The valve has been tested and certified in accordance with the ATEX and IECEx standards for potentially explosive atmospheres in accordance with the standards listed under **1.5.2 Used norms**. The number of the certificates is:

TPS 21 ATEX 083811 0009 X
IECEx TPS 21.0005X

1.5.1 Ignition Protection type

Gas: Equipment protection by type of protection eb according to IEC 60079-7 and mb according to IEC 60079-18
Dust: Equipment protection by type of protection mb according to IEC 60079-18 and tb according to IEC 60079-31
Based on the use of encapsulation, the limitation of the maximum surface temperature of the enclosure and the sealing of the enclosure (degree of protection ≥ IP 64) in accordance with IEC 60529.

1.5.2 Used norms

- **EN IEC 60079-0:2018**
  Explosive atmospheres – general requirements
- **EN IEC 60079-7:2015/A1:2018**
  Explosive atmospheres – Equipment protection by increased safety „e“
- **EN 60079-18:2015/A1:2018**
  Explosive atmospheres – Equipment protection by encapsulation „m“
- **EN IEC 60079-31:2024**
  Explosive atmospheres – Equipment dust ignition protection by enclosure „t“
- **IEC 60529:1989/A2:2013/Cor1:2019 (EN 60529:1991/A2:2013/AC:2019-02)**
  Degrees of protection provided by enclosures (IP-Code)

1.6 Equipment Protection Level (EPL)

The electromagnet is approved for use in the following potentially explosive atmospheres:

EN IEC 60079-0		**Richtlinie 2014/34/EU**		**EN 60079-10-X**
EPL	Group	devicegroup	Device category	Zone
Gb	II	II	2G	1
Gc			3G	2
Db	III		2D	21
Dc			3D	22

Table 1: EPL-categorisation / device category

1 General

1.7 Magnet labelling

All necessary data relating to the solenoid can be found on the name plate and in the operating instructions. The labelling of the solenoid type may contain additions that relate to the application (operating conditions of the valve) but have no significance for the solenoid itself or its design.
Example: T_{amb} indicates both the ambient temperature and the medium temperature of the valve. Due to the design, this may be lower than specified in the solenoid approval**.**

1.7.1 Labelling

II 2G Ex eb mb IIC T* Gb
II 2D Ex mb tb IIIC T* °C Db

Breakdown of the labelling:
- II Explosion protection group II
- 2G Equipment category 2 for gas
- 2D Equipment category 2 for dust
- Ex-Symbol
- eb; mb; tb Applied types of protection with a high level of protection b
- IIC Suitable for gas groups IIC
- IIIC Suitable for dust of the groups IIIC
- T4 / T3 Suitable for temperature classes T4 or T3 see name plate (Gas)
- Adjust temperatures for maximum permissible surface temperature see nameplate (dust)
- Gb EPL of group II
- Db EPL of group III
- An asterisk (*) stands for a value that results from the operating conditions and the resulting design

1.7.2 Example of labelling of name plate for ex-magnet

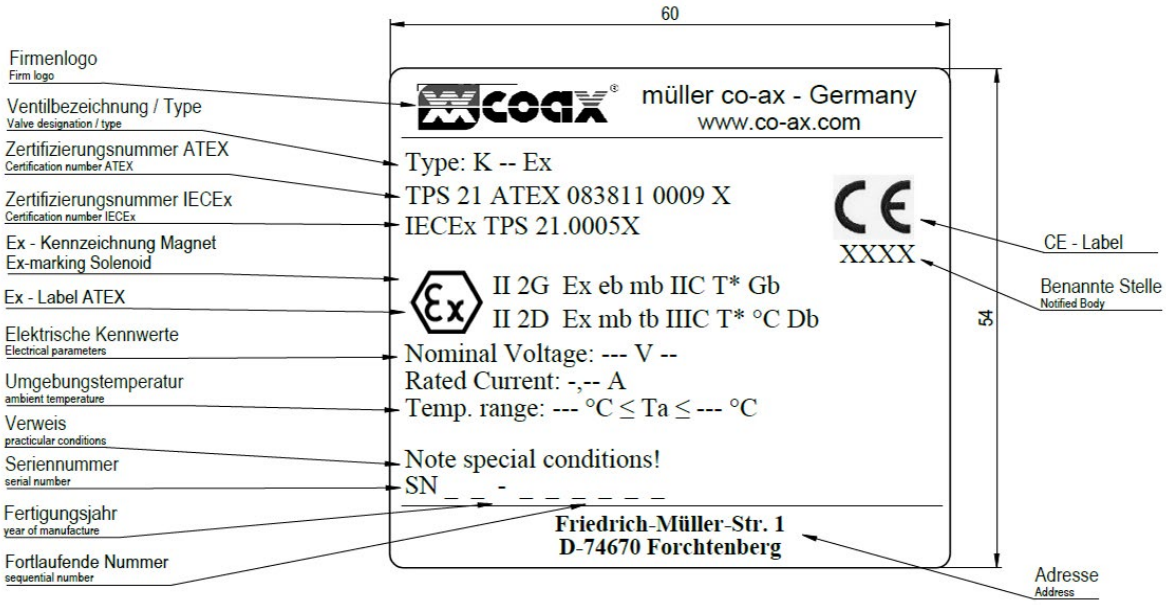

Figure 1.7.1: Nameplate Ex-Magnet with example labelling

The nameplates for valves are described in detail in the "General operating instructions for valves". These can be downloaded at **www.co-ax.com**.

The respective values for voltage and current consumption can be found in section 2.1. The temperature range values apply to T3 from -30°C to 120°C and to T4 from -30°C to 40°C. Other separate temperature ranges can be found in chapter 5.1.3 Temperature and duty cycle limits

2 Electrical characteristics

All necessary information and characteristic values can be found on the type plate or in the following tables in this chapter. The specified values are nominal values and refer to average values at a coil temperature of approx. 20 °C.
A voltage tolerance of +5% and -10% for the rated voltage, for direct current (DC) and alternating current (AC) and a permissible residual ripple of 20% appllies to all explosion-protected DC solenoids. Magnet laballing

2.1 Data for magnet variants

2.1.1 For temperature class T3

K10		
Voltage, V	**Current, A**	**Power, W**
230	0,19	43,0
220	0,24	52,0
210	0,23	47,4
200	0,22	43,0
125	0,45	55,7
120	0,43	51,4
110	0,43	46,9
98	0,53	51,5
48	1,00	48,1
24	1,94	46,5
20	2,62	52,4

K15		
Voltage, V	**Current, A**	**Power, W**
230	0,25	58,4
220	0,24	53,4
210	0,29	60,6
200	0,27	55,0
125	0,50	63,1
120	0,48	58,1
110	0,55	60,1
98	0,60	59,1
48	1,09	52,1
24	2,16	51,7
20	2,29	45,7

K20		
Voltage, V	**Current, A**	**Power, W**
230	0,23	52,8
220	0,28	61,4
210	0,27	56,0
200	0,25	50,8
125	0,44	55,4
120	0,43	51,1
110	0,52	56,9
98	0,54	53,1
48	1,06	51,0
24	2,61	62,5
20	2,99	59,7

K25		
Voltage, V	**Current, A**	**Power, W**
230	0,25	57,6
220	0,30	65,6
210	0,35	73,0
200	0,33	66,2
125	0,50	61,9
120	0,48	57,1
110	0,58	63,7
98	0,63	61,6
48	1,64	78,9
24	2,41	57,8
20	3,23	64,5

K32/40		
Voltage, V	Current, A	Power, W
230	0,34	77,8
220	0,40	87,6
210	0,38	79,8
200	0,46	91,5
125	0,74	92,3
120	0,69	83,2
110	0,79	86,8
98	0,88	86,5
48	1,47	70,6
24	3,33	80,0
20	4,17	83,3

K50		
Voltage, V	Current, A	Power, W
230	0,42	96,2
220	0,50	109,4
210	0,47	99,7
200	0,58	116,1
125	0,90	112,4
120	0,86	103,4
110	0,98	107,3
98	1,07	104,5
48	2,00	96,0
24	3,93	94,4
20	5,02	100,5

2.1.2 For temperature class T4

K10		
Voltage, V	Current, A	Power, W
230	0,19	43,0
220	0,18	39,4
210	0,23	47,4
200	0,22	43,0
125	0,36	44,6
120	0,43	51,4
110	0,43	46,9
98	0,38	37,3
48	1,00	48,1
24	1,94	46,5
20	2,01	40,2

K15		
Voltage, V	Currrent, A	Power, W
230	0,19	44,4
220	0,24	53,4
210	0,23	48,7
200	0,27	55,0
125	0,40	50,0
120	0,38	46,1
110	0,44	48,9
98	0,49	47,7
48	1,09	52,1
24	2,16	51,7
20	2,29	45,7

K20		
Voltage, V	Current, A	Power, W
230	0,23	52,8
220	0,22	48,3
210	0,27	56,0
200	0,25	50,8
125	0,38	47,2
120	0,43	51,1
110	0,39	42,9
98	0,46	45,2
48	1,06	51,0
24	2,05	49,2
20	2,17	43,4

K25		
Voltage, V	Current, A	Power, W
230	0,25	57,6
220	0,30	65,6
210	0,28	59,7
200	0,27	54,2
125	0,41	51,1
120	0,48	57,1
110	0,58	63,7
98	0,52	50,5
48	1,20	57,7
24	2,41	57,8
20	3,23	64,5

K32/40		
Voltage, V	Current, A	Power, W
230	0,34	77,8
220	0,40	87,6
210	0,38	79,8
200	0,36	72,4
125	0,52	65,4
120	0,71	85,1
110	0,79	86,8
98	0,88	86,5
48	1,47	70,6
24	3,33	80,0
20	4,17	83,3

K50		
Voltage, V	Current, A	Power, W
230	0,42	96,2
220	0,50	109,4
210	0,47	99,7
200	0,58	116,1
125	0,90	112,4
120	0,86	103,6
110	0,98	107,3
98	1,07	104,5
48	2,00	96,0
24	3,93	94,4
20	5,02	100,5

K25 HT		
Voltage, V	Current, A	Power, W
230 VAC	0,18	41,9
110 VAC	0,31	34,5
24 VDC	1,86	44,7

3 Device description

The type K _ electromagnet is used to drive directly controlled coaxial valves.
These are manufactured in the basic functions **NC (normally closed)** and **NO (normally open)**.

Version NC
When the rated voltage is applied, the electromagnet pulls the control tube against the pole core and the valve opens. When the supply voltage is switched off, a compression spring closes the valve again.

Version NO
When the rated voltage is applied, the electromagnet presses the control tube against the valve seat and the valve closes. After switching off the supply voltage, a compression spring opens the valve again.

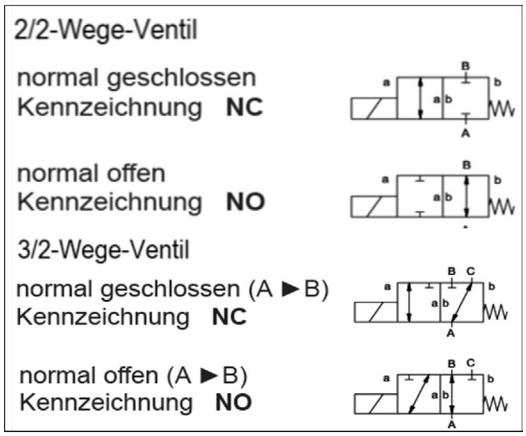

Figure 2.1.1: valve schematic

4 Mounting

4.1 Definition single valve

The minimum distance between the housing surfaces of two neighbouring valves must not be less than 100 mm. If the distance falls below this, the valves are regarded as a valve row.

4.2 Magnet row

The minimum distance between the housing surfaces of two neighbouring valves must not be less than 30 mm. The permissible ambient / medium temperature must be reduced by 10 Kelvin. The distance between two rows of solenoids must be at least 100 mm, as with individual solenoids.

4.3 Valve

The customer must ensure that no heat build-up can occur and that the valve is installed at a minimum distance of 15 mm from the nearest obstacle. If the associated mounting material is used for installation, the minimum distance to the mounting surface is guaranteed. Unhindered air circulation with the surroundings must be ensured.
The valves must be shielded against heat radiation from surrounding objects if their temperature is 10% (up to 60°C) or 5% (from 60°C) above the permissible ambient temperature.

Assembly and installation must be carried out by specialist personnel trained in explosion protection in accordance with the applicable installation standards, e.g. IEC 60079-14. The instructions in the general and additional installation and operating instructions must be followed.
Heat build-up must be avoided under all circumstances, therefore unhindered air circulation with the surroundings must be ensured. The valve must not be superstructed and must be installed at a minimum distance of 15 mm from the nearest obstacle.
Valves must always be installed in such way that
- **the heat generated can be released unhindered into the environment**
- **no external forces act on the valve**
- **the nameplate is easily recognisable**
- **the valve can be inspected from all sides so that any necessary inspections and checks can be carried out**

The customer must ensure that the prescribed distances and installation specifications are observed if space is limited, or several valves are installed next to each other.

If the valves are arranged vertically, the rising heated air must not exceed the permissible ambient temperature under any circumstances.

5 Technical data and operating conditions

The electrical data and the power-dependent data for the operating conditions can be found in **Table 2 Duty cycle** direct current and **Table 3 Duty cycle alternating current**.

If the operating conditions require intermittent operation, the off-time must be calculated according to the duty cycle using the formula in **Figure 5 1.1**.

The following tables contain the electrical and design-dependent data.

T_{amb} indicates the medium and ambient temperature. $T_{amb\ max}$ varies depending on the temperature class, operating mode and the distinction between single valve or valve series.

5.1 Operation mode/ duty cycle

5.1.1 continous

In continuous operation, there is no limit to the duty cycle. In this case, the relative duty cycle (ED%) is 100%.

5.1.2 intermittent

The relative duty cycle depends on the valve series and the ambient / medium temperature. In intermittent operation, the maximum duty cycle is limited to 6 min (360 s). The maximum duty cycle and the ratio of duty cycle to cycle length are specified (see also **Table 2** and **Table 3**).

The required minimum switch-off time (currentless pause) $\mathbf{t_p}$ must be calculated using the formula in **Figure 5.1.1: Formulas for calculating duty cycle**. The calculated time $\mathbf{t_p}$ must always be rounded up to the next full time unit. $\mathbf{t_p}$ $\mathbf{t_i}$

Formulas for calculating the switch-on time and the switch-off time

$$ED\ \% = 100 * \frac{t_i}{t_i + t_p}$$

Relative duty cycle **ED %**
Duty cycle $\mathbf{t_i}$ **[s]**
Required minimum switch-off time $\mathbf{t_p}$ **[s]**

$$t_p = \frac{100 - ED\ \%}{ED\ \%} * t_i$$

Figure 5.1.1: Formulas for calculating duty cycle

Example:
Single valve with switch-on time of 19 Seconds given: ED 30%

$$t_p = \frac{100 - ED\ \%}{ED\ \%} * t_i = \frac{100\ \% - 30\ \%}{30\ \%} * 19\ s = 44{,}33\ s$$

The de-energised break is = **45 seconds.**
It must always be rounded up to the nearest whole number!

5.1.3 Temperature and duty cycle limits

The following values only apply to the use of direct current

Voltage	max. ambient temperature	Duty cycle	Temperature class
DC 20-230 V	40 °C	100 %	T4
DC 24 V - HT[1)]	**70 °C**	**100%**	**T4**
DC 20-230 V	60 °C	50 %	T4
DC 20-230 V	80 °C	30 %	T4
DC 20-230 V	120 °C	100 %	T3

Table 2: Duty cycle direct current

[1)] Applies only to devices with the designation K25 HT

The following values only apply to the use of alternating current

Voltage	max. ambient temperature	Duty cycle	Temperature class
AC > 98 V	40 °C	100 %	T4
AC > 98 V	60 °C	50 %	T4
AC > 98 V	80 °C	30 %	T4
AC 110 V – HT [1)]	**70 °C**	**100%**	**T4**
AC 230 V - HT[1)]	**70 °C**	**100%**	**T4**
AC ⩽ 98 V	40 °C	100 %	T4
AC ⩽ 98 V	60 °C	50 %	T4
AC ⩽ 98 V	80 °C	30 %	T4
AC > 98 V	120 °C	100 %	T3
AC ⩽ 98 V	100 °C	100 %	T3

Table 3: Duty cycle alternating current

[1)] Applies only to devices with the designation K25 HT

CAUTION!

If the distance between two neighbouring valve surfaces is less than 100 mm, these are to be considered as a valve series. In this case, the specifications for the valve series must be applied.

5.2 Terminal box

The terminal box shields the electrical connection and magnet parts against the explosive atmosphere of the environment. If the terminal box is detached, loosened or disassembled from the magnet, this protection is no longer guaranteed and the magnet may no longer be used in explosion-protected areas.

5.2.1.1 Terminal strip

Feed-through terminal blocks with ceramic insulation and screw connection are used to contact the solenoid. The terminal block is designed for wiring and connecting electrical conductors in terminal compartments. The earth conductor connection is made via the terminal blocks in conjunction with the mounting rail and terminal box. If the clamping unit, mounting rail or terminal box are loosened, detached or dismantled, this protection is no longer guaranteed and the solenoid may no longer be used in explosion-protected areas.

Note: The ceramic insulation is very sensitive, which is why lateral pressure must be avoided under all circumstances. The screwdriver head must not protrude sideways over the head of the clamping screw.

5.2.1.2 Protective conductor

The external potential equalisation connection has a clamping capacity of 4 mm². The connecting cable must be approved for the following temperature range:
For T4 from -30°C to +130°C
For T3 from -30°C to +180°C

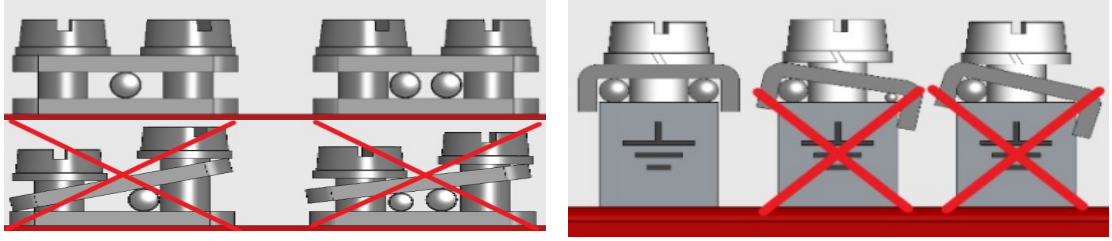

Figure 5.2.1: Connection Potential equalisation outsiden

5.3 Electrical Installation

5.3.1 Terminal connection

In addition to the generally recognised rules of technology, the German Equipment Safety Act and the regulations of the Industrial Safety Regulation (BetrSichV) must be observed. The solenoid is manufactured and supplied by the manufacturer as standard without a connection cable.
The connecting cable must be protected against mechanical damage, laid securely and with appropriate strain relief. The temperature resistance of the connecting cable must correspond to the temperature range of the application. This means a range of -30°C to +130°C for T4 and -30°C to +160°C for T3. If there is a possibility that the cable will come close to or touch the magnetic surface, a connection cable with a temperature resistance of -30°C to +180°C must be used. The cross-section of the connecting cable must not exceed 4mm², but must be at least 0.75mm².
The maximum permissible cable diameter is limited by the installed cable gland. The customer must ensure that the insulation of the wires ends within the terminal insulation at the terminal point. For the permissible current load for the conductor cross-section, see **Table 4**

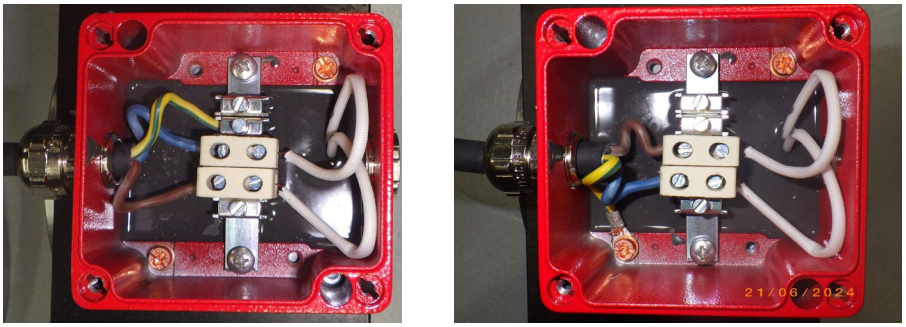

Figure 5.3.1: Terminal box with terminal strips

5.3.2 Connection cable (variant with integrated rectifier board)

For solenoids with an integrated rectifier board, a connection cable with the appropriate cable cross-section and temperature compatibility is soldered on. The strain relief is integrated in a corresponding certified cable entry.

Figure 5.3.2: Terminal box with soldered connection cable

5.3.3 Potential equalisation

If the potential equalisation is not established by the valve installation, the potential equalisation must be connected to the outer terminal of the terminal box.
(see **Figure 5.2.1: Connection Potential equalisation outside**).

5.3.4 Maximum permissible conductor current

Cable cross section	Maximum current
⩾ 0,75 mm²	0,5 A
⩾ 1,0 mm²	1,5 A
⩾ 1,5 mm²	8,0 A

Table 4: Maximum conductor cross-section-dependent amperage

5.3.5 Cable gland

- **If the standard cable gland is not used, the attached instructions must be observed**
- For information on using the cable gland and the outer cable diameter, see **8.1 Mounting of cable in gland**.
- The connection cable must be selected in accordance with the applicable installation standards such as IEC 60079-14 and the specifications under **5.5 Electrical Installation**.
- The outer diameter of the connection cable must be adapted to the sealing area of the cable entry (see **8.1 Mounting of cable in gland**). The connection is made using a cable permanently installed by the customer and the customer must provide appropriate strain relief.
- The connecting cable must be protected against mechanical damage.

5.3.6 Conduit Adapter

The conduit adapter approved by müller co-ax gmbh may also be used as a cable entry. In this case, the connected conduit adapter must be terminated in an enclosure that fulfils a degree of protection of at least IP 54 in accordance with IEC 60079-0.

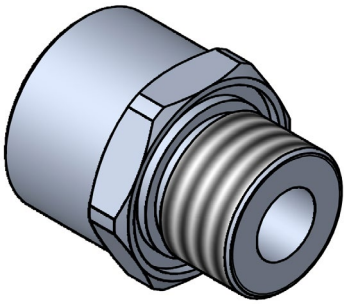

Figure 5.3.3: Conduit adapter, approved proprietary product from müller co-ax gmbh

5.3.7 Special conditions for installation

A fuse corresponding to its rated current (max. 3 x I B in accordance with IEC 60127) or a motor circuit breaker with short-circuit and thermal fast tripping (set to rated current) must be connected upstream of each solenoid as short-circuit protection.
The rated fuse voltage must be equal to or greater than the specified rated voltage of the solenoid. The breaking capacity of the fuse link must be equal to or greater than the maximum short-circuit current to be assumed at the installation location (usually 1500 A).

5.3.8 Connection the power supply

The polarity of the electromagnet is arbitrary. Strip the conductors to the specified length (see technical data). Flexible conductors can be fitted with wire end ferrules. Crimp the ferrules using crimping pliers and ensure that the test requirements in accordance with DIN 46228 Part 4 are met. The length of the copper ferrules must correspond to the specified stripping length of the conductor. Insert the conductor into the clamping point as far as it will go. Tighten the screw of the terminal point, observing the specified torque range.
Recommendation: Tighten all screws, including those of the unused terminal points.

5.3.9 Protective conductor inside

The protective conductor is connected to the terminal box as an earthing screw and as a protective-conductor-terminal-block via the screw connection of the support rail. Strip the conductors to the specified length (see technical data). Flexible conductors can be fitted with wire end ferrules. Crimp the wire end ferrules using crimping pliers and ensure that the test requirements in accordance with DIN 46228 part 4 are met. The length of the copper ferrules must correspond to the specified stripping length of the conductor. Insert the conductor into the clamping point as far as it will go. Tighten the screw of the clamping point and observing the specified torque range.

Recommendation: Tighten all screws, including those of the unused terminal points.
The junction box cover must be connected to the base via a 1.5 mm^2 protective conductor cable.
This connection must not be removed.

6 Commissioning

The valve may only be commissioned when:

- It has been correctly installed and connected into the system.
- It has been checked for proper installation and connection conditions

Before commissioning, the operator of the system must arrange a test that complies with the national regulations for testing before commissioning.

7 Operation and maintenance

- Regular inspections are required in potentially explosive atmospheres in order to maintain proper condition.
- Recommended are:
  - Checking supply lines and valve bodies for corrosion.
  - Checking the pipe connctions for leaks.
  - Checking the electric connection cable for intactness.

7.1 Help with malfunctions

Type of malfunction	Possible cause / remedy	note
Valve does not switch or switches with a delay.	Checking of • Connections, switches, relays and fuses. • Switching voltage and current consumption. For nominal values of the valve, see nameplate	The coil resistance is temperature-dependent. The warmer the valve, the lower the current consumption.
Valve does not switch, switches with a delay or slowly. Voltage and current consumption are OK.	Valve jammed (mechanical fault) caused by • Foreign body in the valve. • the effect of external forces. • Deposits in the valve. • media pressure too high.	Remove the valve for inspection. If possible, flush out foreign bodies and/or deposits with the valve opened. **Attention: Certified valves must not be dismantled or repaired!**
Valve does not switch. Voltage is present, but no current is flowing.	Power supply cut off by: • detached conductor • cable / conductor breakage • Solenoid coil defective	The coil connection cable has come loose or is broken. Solenoid coil is defective.
Valve gets hot	• Process temperature too high • Ambient temperature too high • Insufficient heat radiation due to insufficient distances (see point 4 Mounting) • Winding fault in the coil (replace valve).	Allow the valve to cool down, then measure the current and voltage at temperatures between 15°C and 25°C. Compare the measured values with the values on the nameplate. If the current consumption is too high, this indicates a short circuit in the winding.

Type of malfunction	Possible cause / remedy	note
Valve leaking without current (sealing by spring force) Leakage between seat and control tube.	• Foreign body in the valve. • Effect of external forces. • Deposits in the valve • Medium pressure too high in flow direction BA. • Valve seat or control tube damaged (replace valve) • Spring breakage (replace valve)	Remove the valve for inspection. If possible, flush out foreign bodies and/or deposits with the valve opened. **Attention: Certified valves must not be dismantled or repaired!**
Valve powered and leaking (sealing by magnetic force) Leakage between seat and control tube	• Foreign body in the valve. • Effect of external forces. • Deposits in the valve. • Medium pressure too high in flow direction BA. • Valve seat or control tube damaged (replace valve) • Magnetic force too low (see point Valve does not switch or switches with a delay).	Remove the valve for inspection. If possible, flush out foreign bodies and/or deposits with the valve opened. **Attention: Certified valves must not be dismantled or repaired!**

7.2 Maintenance

The valves in the K valve series are maintenance-free. However, we recommend regularly checking the function and tightness at the following test intervals:

Valve type	Interval after switching cycles		Interval after time (if the switching cycles have not been reached)
	First check after number of switching cycles	Additional checks depending on the number of switching cycles	
K10 – K25	750.000	500.000	At least 1-time in 12 months
K32 – K50	500.000	250.000	At least 1-time in 12 months

The recommendations are based on optimum operating conditions, i.e. operation at room temperature, good filtration of the medium, etc.. In the case of heavier loads, e.g. increased temperatures, abrasive media, etc., the test intervals must be adjusted accordingly at the discretion of the operator.

Performing the functional test:
At least three switching operations, after which the valve must return safely to the home position each time.

NC-Version = Valve (in home position) must close reliably after switching
NO-Version = Valve (in home position) must open reliably after switching

The sealing behaviour must still be present to a sufficient level.
➡ In the event of a malfunction, repair of the valve, reporting back to the manufacturer

Performing the leak test:
Perform a visual inspection for a possible external leak. Use leak detection spray for gaseous media.

7.3 Operation duration

Under optimum operating conditions, i.e. operation at room temperature, good filtration of the medium, etc., a service life of approx. 5 years can be assumed. In the case of heavier loads, e.g. high temperatures, abrasive media, very frequent switching cycles, etc., the service life may be reduced accordingly.

7.4 Repair magner / valve

If solenoids are defective, the complete valves must be replaced, as the complete valve is considered for mechanical explosion protection in accordance with DIN EN ISO 80079-36 and DIN EN ISO 80079-37.

- If a valve is defective, the entire valve must be sent to the manufacturer's factory for repair.
- Spare parts for on-site repairs can only be supplied after consultation with the service centre.
- Maintenance may only be performed by the manufacturer, its authorised representative or under the supervision of authorised experts.

7.4.1 Disassemlby

In general, only the entire valve can be replaced. The operator is responsible for proper removal and installation. The valve may only be removed and replaced when it is de-energised and depressurised.

CAUTION!

- **Relieve the pressure in pressurised lines before removing the valve and drain as far as possible.**
- **In the case of hazardous or environmentally critical media, safety precautions must be taken with regard to the remaining media in the valve.**
- **When reinstalling the valve in the piping system, the seals must be replaced.**

8 Appendix

PFLITSCH

blueglobe HT® Ex-e II
blueglobe HT® Ex-e II

Abb. 1
Fig. 1

Abb. 2
Fig. 2

Ms vernickelt, mit M-Gewinde gemäß EN 60423
Schutzart IP 66, IP 68 bis 15 bar

Brass nickel plated, metric connection thread as per EN 60423
Type of protection IP 66, IP 68 up to 15 bar

Verschraubungskörper
Gland body

Werkstoff* *Material**	Ausführung *Execution*
Ms *Brass*	galv. vernickelt *galv. nickel plated*

* Edelstahl auf Anfrage
** Stainless steel on request*

Dichteinsätze
Sealing inserts

Werkstoff *Material*	Temperaturbereich min./max. *Temperature range min./max.*	Farbe *Colour*
Silikon *Silicone*	-55 °C/+160 °C *-55 °C/+160 °C*	schwarz *black*

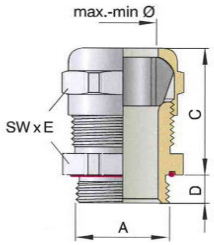

Abb. 3: mit Inlet
Fig. 3: with inlet

Anschlussgewinde/-länge *Connection thread/length* A	D mm	Artikel-Nr. *Art.-No.*	Dichtbereich *Sealing range* max./min. ø mm	Dichtbereich ohne Inlet *Sealing range without inlet* max./min. ø mm	Dichtbereich mit Inlet *Sealing range with inlet* max./min. ø mm	C mm	Schlüsselweite *Spanner width* SW x E mm	
M16x1,5	6,0	bg 216msHTex	11,0 – 4,0	11,0 – 7,0	7,0 – 4,0	25	20x22,2	50
M20x1,5	6,5	bg 220msHTex	14,0 – 5,0	14,0 – 9,0	9,0 – 5,0	29	24x26,5	50
M25x1,5	7,5	bg 225msHTex	20,0 – 11,0	20,0 – 16,0	16,0 – 11,0	29	30x33	50
M32x1,5	8,0	bg 232msHTex	25,0 – 15,0	25,0 – 20,0	20,0 – 15,0	32	36x39,5	25
M40x1,5	8,0	bg 240msHTex	32,0 – 20,0	32,0 – 26,0	26,0 – 20,0	35	45x48	10

Anschlussgewinde-Variante 15 mm
Connection thread variant 15 mm

Anschlussgewinde/-länge *Connection thread/length* A	D mm	Artikel-Nr. *Art.-No.*	Dichtbereich *Sealing range* max./min. ø mm	Dichtbereich ohne Inlet *Sealing range without inlet* max./min. ø mm	Dichtbereich mit Inlet *Sealing range with inlet* max./min. ø mm	C mm	Schlüsselweite *Spanner width* SW x E mm	
M16x1,5	15,0	bg 816msHTex	11,0 – 4,0	11,0 – 7,0	7,0 – 4,0	25	20x22,2	50
M20x1,5	15,0	bg 820msHTex	14,0 – 5,0	14,0 – 9,0	9,0 – 5,0	29	24x26,5	50
M25x1,5	15,0	bg 825msHTex	20,0 – 11,0	20,0 – 16,0	16,0 – 11,0	29	30x33	50
M32x1,5	15,0	bg 832msHTex	25,0 – 15,0	25,0 – 20,0	20,0 – 15,0	32	36x39,5	25
M40x1,5	15,0	bg 840msHTex	32,0 – 20,0	32,0 – 26,0	26,0 – 20,0	35	45x48	10

CE
0102
ATEX

IECEx

Anzugsmomente s. Seite 54.
Tightening torques see page 54.

Bei HT-Dichteinsätzen ist vor dem Anziehen der Druckschraube das Inlet exakt zu positionieren.
Pay attention to exact adjustment of inlet before tightening the pressure screw.

siehe technischer Anhang Seite 62.
see technical attachment on page 62.

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8.1 Mounting of cable in gland

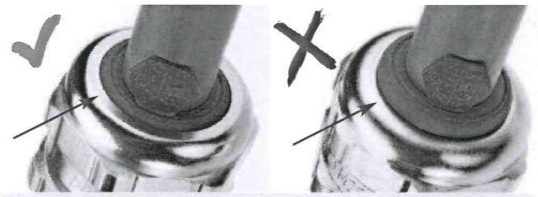
Anzugsmomente von Kabelverschraubungen
Tightening torques of cable glands

Herstellerangaben für Anzugsmomente von Kabelverschraubungen gemäß EN 50262
Für Wandungen mit Innengewinde und bei Durchgangsbohrungen mit Gegenmutter

Manufacturer guideline for tightening torques of cable glands as per EN 50262
Into a housing with inner thread or in case of through holes into the lock nut

*blue***globe® Metrisch**
*blue***globe®** *metric*

Gewindegrößen *Thread size metric*	**Metall** *Metal*	**Kunststoff** *Plastic*
M10	3 Nm	–
M12	5 Nm	1,5 Nm
M16	8 Nm	4,5 Nm
M20	10 Nm	8,0 Nm
M25	15 Nm	10,0 Nm
M32	15 Nm	12,0 Nm
M40	20 Nm	14,0 Nm
M50	30 Nm	25,0 Nm
M63	35 Nm	30,0 Nm
M75	80 Nm	–
M85	100 Nm	–



Druckschraube anziehen, bis Dichteinsatz und Druckschraube auf einer Höhe sind.
Tighten pressure screw visual until pressure screw and sealing insert are at the same level.

Tabellenwerte sind allgemeine Vorgaben. Das Drehmoment hängt vom verwendeten Kabel und der Einsatzdichtung ab, sollte aber die in der Tabelle angegebenen Werte nicht überschreiten.
Table figures are general terms of reference. The torque depends on the cable used and the insert sealing; it should not, however, exceed the figures stated in the table.

Figure 8.1.1: Mounting instructions for cable

PFLITSCH

blueglobe® – Montage
blueglobe® – Installation

blueglobe® mit kleinem Kabeldurchmesser
Bei IP 68 Installationen globemarker® außenliegend

blueglobe® with small cable diameter
With IP 68 installations globemarker® on the outside

Abb. 1
Fig. 1

blueglobe® mit kleinem Kabeldurchmesser
oder globemarker® entfernen

blueglobe® with small cable diameter
or removing globemarker®

Abb. 2
Fig. 2

blueglobe® mit großem Kabeldurchmesser
Bei großem Kabeldurchmesser Inlet entfernen: Schraubendreher senkrecht in Trennnaht einstechen

blueglobe® with large cable diameter
With a large cable diameter – remove inlet. Insert screwdriver vertically into separating seam

Abb. 3
Fig. 3

blueglobe® mit großem Kabeldurchmesser
Inlet aushebeln

blueglobe® with large cable diameter
Lift out the inlet

Abb. 4
Fig. 4

Figure 8.1.2: Mounting instructions for cable

8.2 Torque details

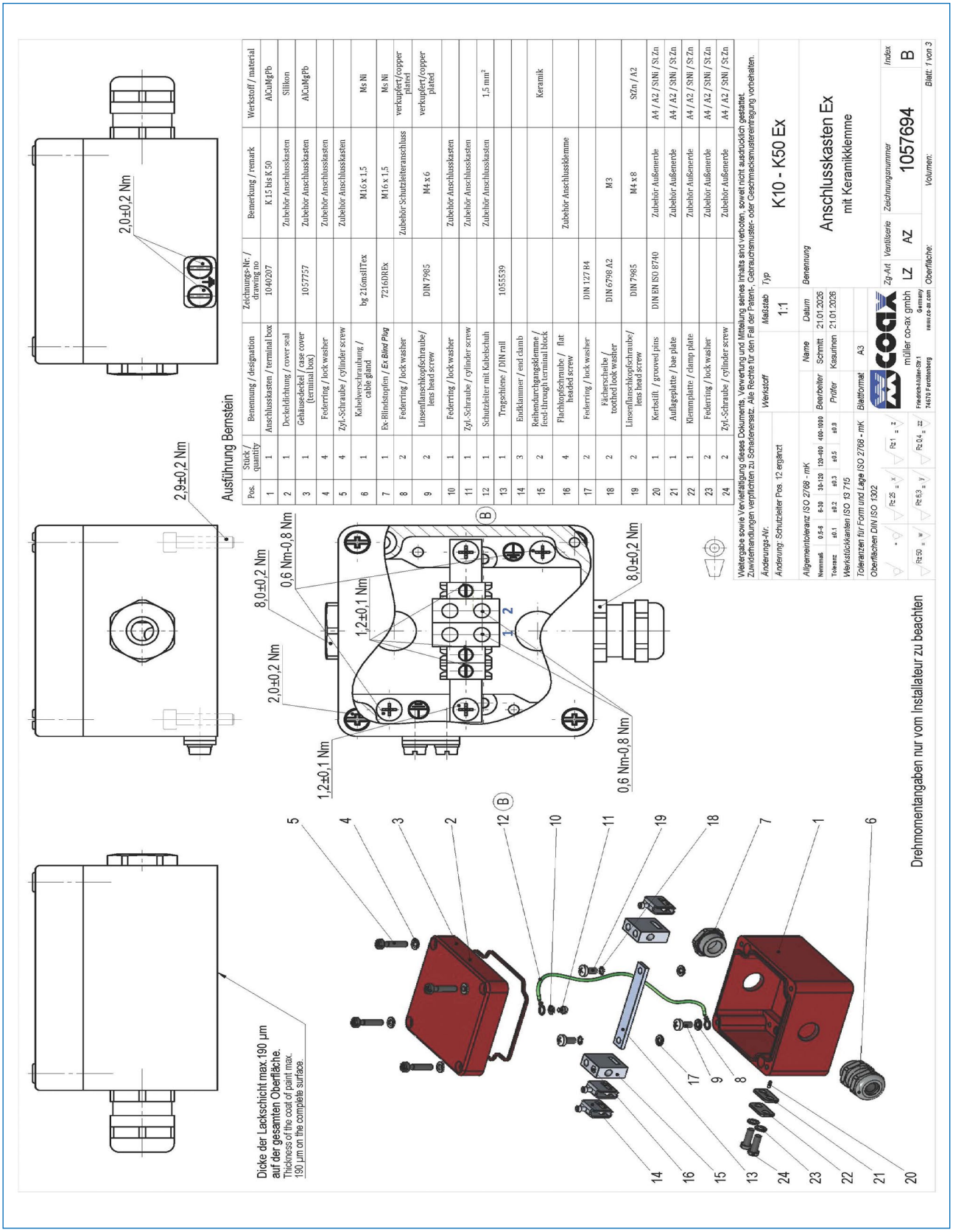


Figure 8.2.1: Torque specifications for installation

9 ATEX-certificate

Homepage: www.co-ax.com

10 IECEx-certificate

Homepage: www.co-ax.com