

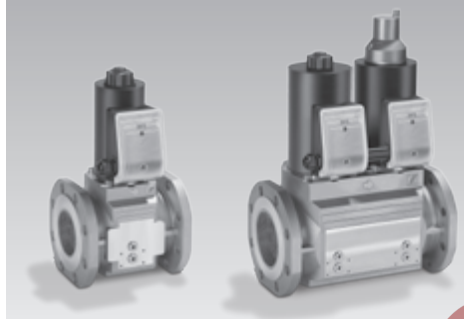
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**krom
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Operating instructions

Solenoid valve for gas VAS 6–9 Double solenoid valve VCS 6–9



Cert. version 07.17

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Safety

Please read and keep in a safe place



Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This unit must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at www.docuthek.com.

Explanation of symbols

■, **1**, **2**, **3**... = Action

▷ = Instruction

Liability

We will not be held liable for damage resulting from non-observance of the instructions and non-compliant use.

Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

DANGER

Indicates potentially fatal situations.

WARNING

Indicates possible danger to life and limb.

! CAUTION

Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

Changes to edition 07.17

The following chapters have been changed:

- Cert. version
- Installation
- Wiring
- Accessories
- Certification

Checking the usage

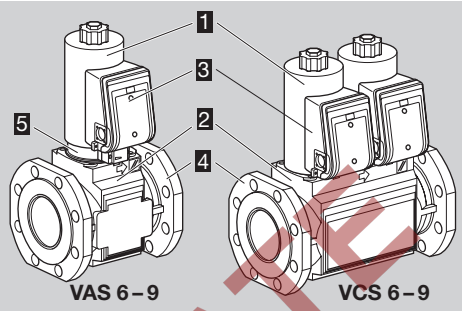
Intended use

Gas solenoid valves VAS for safeguarding gas or air on various appliances. Double solenoid valves VCS are combinations of two gas solenoid valves. This function is only guaranteed when used within the specified limits – see page 11 (Technical data). Any other use is considered as non-compliant.

Type code

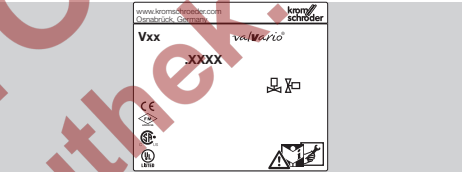
| Code | Description |
|---|--|
| VAS | Gas solenoid valve |
| VCS | Double solenoid valve |
| 6–9 | Sizes |
| T | T-product |
| 65–125 | Inlet and outlet flange nominal size |
| F | Flange to ISO 7005 |
| A | ANSI flange |
| 05 | Inlet pressure $p_{u,max}$ 500 mbar (7 psig) |
| | 1st valve: |
| N | quick opening, quick closing |
| L | slow opening, quick closing |
| | 2nd valve: |
| N | quick opening, quick closing |
| L | slow opening, quick closing |
| | Mains voltage: |
| W | 230 V AC, 50/60 Hz |
| Q | 120 V AC, 50/60 Hz |
| K | 24 V DC |
| A | 120–230 V AC, 50/60 Hz |
| S | With visual position indicator |
| G | and proof of closure switch for 24 V |
| | Viewing side (in flow direction): |
| R | from the right |
| L | from the left |
| 3 | Electrical connection via cable gland |
| B | Basic |
| E | Prepared for adapter plates |
| | Accessories, right, inlet: |
| /P | screw plug |
| /M | pressure test point |
| | Accessories, right, interspace 1: |
| P | screw plug |
| M | pressure test point |
| | Accessories, right, interspace 2: |
| P | screw plug |
| M | pressure test point |
| | Accessories, right, outlet: |
| P | screw plug |
| M | pressure test point |
| The same accessories can be selected for the left- or right-hand side | |

Part designations



- 1 Solenoid actuator
- 2 Flow body
- 3 Connection box
- 4 Connection flange
- 5 Proof of closure switch

Mains voltage, electrical power consumption, ambient temperature, enclosure, inlet pressure and installation position: see type label.



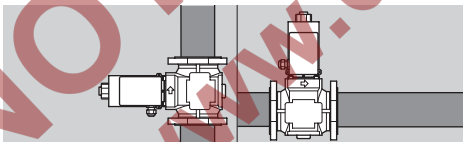
Installation

! CAUTION

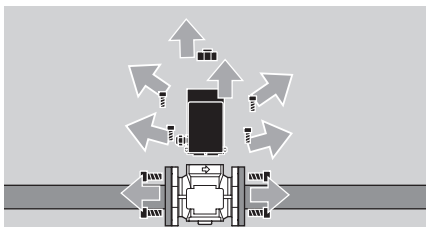
Please observe the following to ensure that the gas solenoid valve is not damaged during installation and operation:

- Important! The gas must be dry in all conditions and must not contain condensate.
- Sealing material and dirt, e.g. thread cuttings, must not be allowed to get into the valve housing.
- A filter must be installed upstream of every system.
- Do not store or install the unit in the open air.
- Dropping the device can cause permanent damage. In this event, replace the entire device and associated modules before use.
- Do not clamp the unit in a vice. Only secure the flange by holding the octagon with a suitable spanner. Risk of external leakage.
- Solenoid valves with overtravel switch and visual position indicator VAS/VCS..S or VAS/VCS..G: actuator cannot be rotated.
- Cleaning work on the solenoid actuator may not be performed using high pressure and/or chemical cleaning agents. This can cause moisture to get into the solenoid actuator and may lead to a dangerous failure.

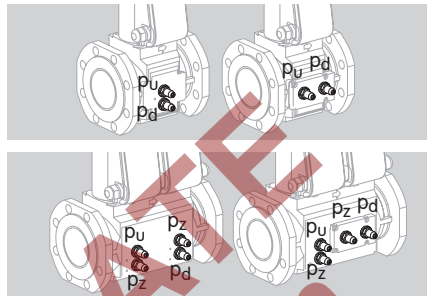
- ▷ Install the unit in the pipe free of mechanical stress.
- ▷ Installation position: black solenoid actuator in the vertical upright position or tilted up to the horizontal, not upside down. In humid environments: black solenoid actuator in the vertical upright position only.



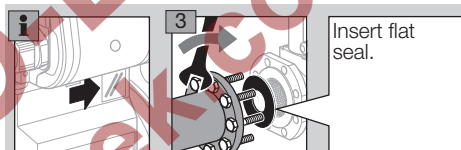
- ▷ The housing must not be in contact with masonry. Minimum clearance 20 mm (0.78").
- ▷ Ensure that there is sufficient space for installation and adjustment.



- ▷ Depending on the device type, the inlet pressure p_u , the interspace pressure p_z and the outlet pressure p_d can be measured using pressure test points, see page 7 (Pressure test points).



- 1 Remove the adhesive label or screw cap from the inlet and outlet flange.
- 2 Note direction of flow.



⚠ WARNING

Attention! Please observe the following to ensure that no damage occurs:

- Electric shocks can be fatal! Before working on possible live components, ensure the unit is disconnected from the power supply.
- The solenoid actuator heats up during operation. Surface temperature approx. 85°C (approx. 185°F).



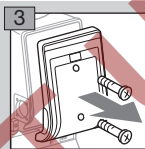
- ▷ Use temperature-resistant cable (> 80°C).

1 Disconnect the system from the electrical power supply.

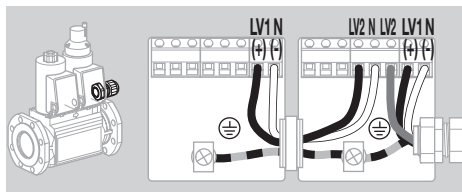
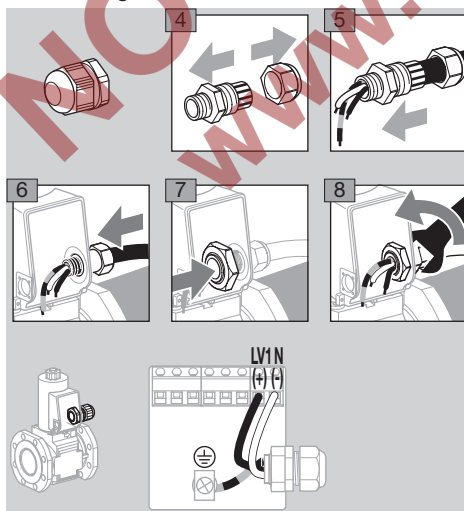
2 Shut off the gas supply.

- ▷ Wiring to EN 60204-1.

- ▷ UL requirements for the NAFTA market. To maintain the UL environmental rating Type 2, the enclosure openings shall be closed with fittings rated UL Type 2; 3; 3R; 3RX; 3S; 3SX; 3X; 4X; 5; 6; 6P; 12; 12K or 13. Gas solenoid valves shall be protected by a branch circuit protective device not exceeding 15 A.



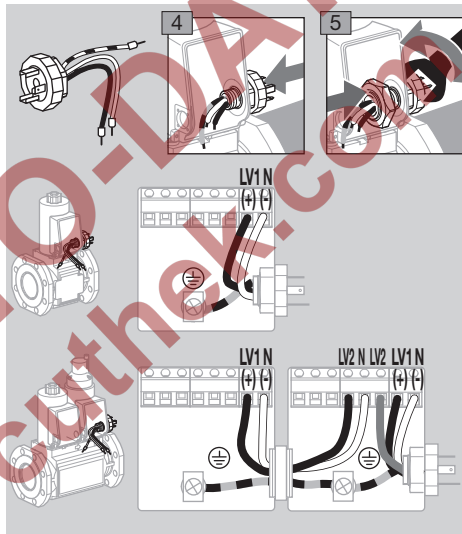
M20 cable gland



Plug

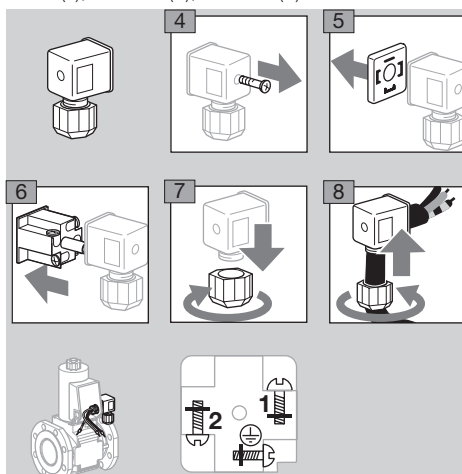
- ▷ 24 V DC: the valve does not open when the connections (+ and -) are reversed. When replacing VG..K by VAS..K/VCS..K, the plug must be rewired.

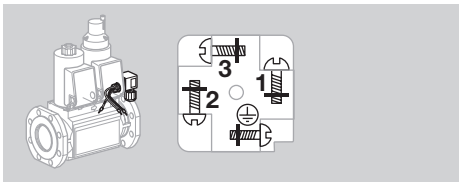
LV1 (+) = black, LV2 (+) = brown, N (-) = blue



Socket

1 = N (-), 2 = LV1 (+), 3 = LV2 (+)





Proof of closure switch

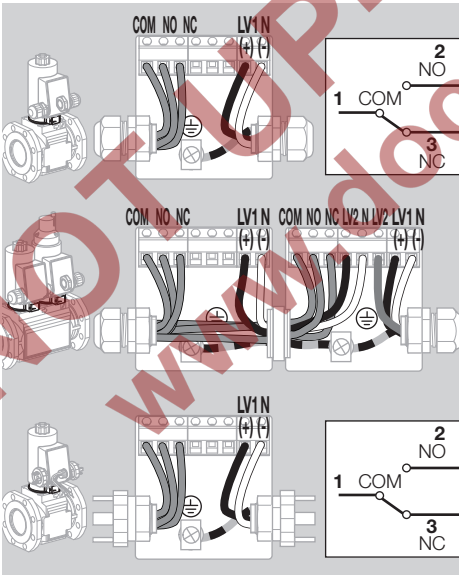
- ▷ VAS/VCS open: contacts **1** and **2** closed,
- VAS/VCS closed: contacts **1** and **3** closed.
- ▷ Indicator of proof of closure switch: red = VAS/VCS closed, white = VAS/VCS open.

! CAUTION

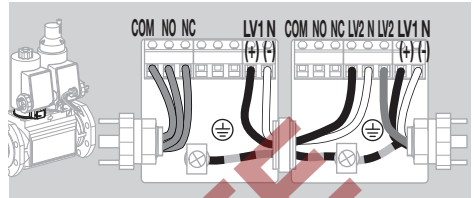
Please observe the following to ensure smooth operation:

- The proof of closure switch is not suitable for frequent cycling operation.
- Route valve and proof of closure switch cables separately through M20 cable glands or use two separate plugs. Otherwise, there is a risk of interference between valve voltage and proof of closure switch voltage.

Valve: LV1 (+) = black, LV2 (+) = brown, N (–) = blue
 Proof of closure switch: **1** = COM (black), **2** = NO (red), **3** = NC (brown or white)



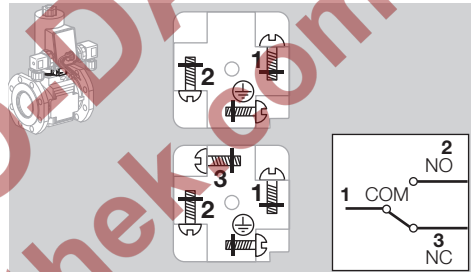
- ▷ Double solenoid valve: if a plug with socket is fitted, only one proof of closure switch can be connected.



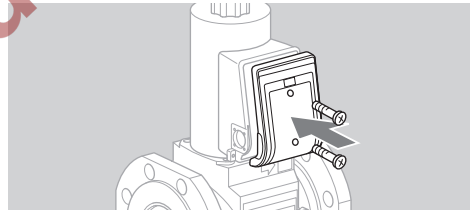
- ▷ When installing two plugs on a VAS with proof of closure switch: label the sockets and plugs to avoid confusion.

Valve: 1 = N (–), 2 = LV1 (+)

Proof of closure switch: **1** = COM, **2** = NO, **3** = NC

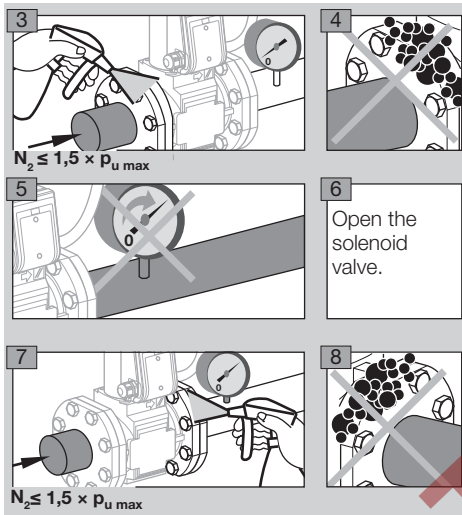


Finishing the wiring



Tightness test

- 1 Close the gas solenoid valve.
- 2 To be able to check the tightness, shut off the downstream pipeline close to the valve.

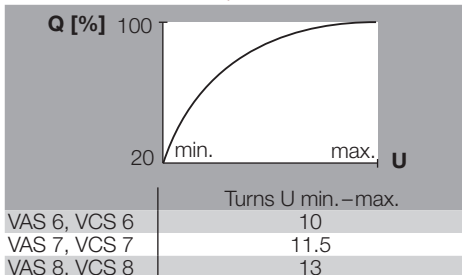
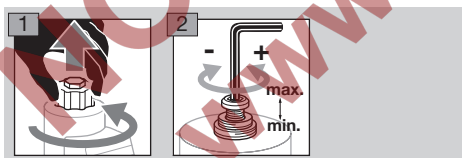


- 9 Tightness OK: open the pipeline.
- ▷ Pipeline leaking: replace flat seal on flange. Then check for tightness once again.
 - ▷ Unit leaking: remove the unit and return it to the manufacturer.

Commissioning

Setting the flow rate

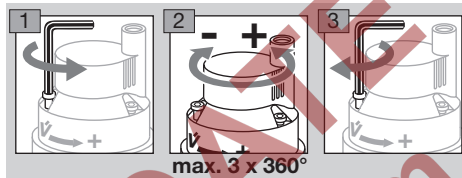
- ▷ At the factory, the gas solenoid valve is adjusted for maximum flow rate Q.
- ▷ Allen key: 6 mm.



- 3 Screw the cap back on tight in order to prevent the actuator from being rotated.

Setting the start gas rate on VAS..L, VCS..L

- ▷ The start gas rate can be set by turning the damping unit a maximum of 3 turns.
- ▷ There must be a period of 20 seconds between switching the valve off and on again so that the damping is fully effective.
- ▷ Use a 3 mm Allen key.
- ▷ Undo the screw at the “V Start” mark by approx. 1 mm, but do not unscrew completely.



Replacing the solenoid actuator, replacing the actuator cartridge

See operating instructions enclosed with spare part or see www.docuthek.com.

Replacing the damping unit

See operating instructions enclosed with spare part or see www.docuthek.com.

Replacing the circuit board

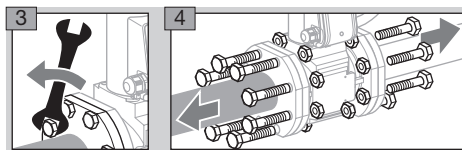
See operating instructions enclosed with spare part or see www.docuthek.com.

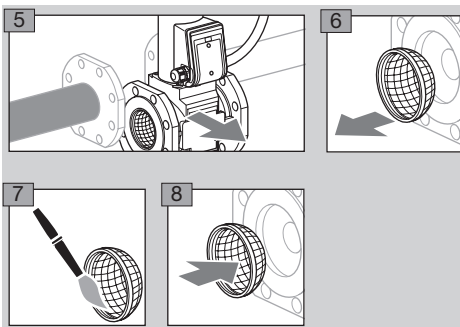
Maintenance

! CAUTION

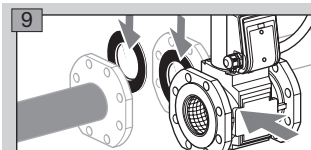
In order to ensure smooth operation, check the tightness and function of the unit:

- Once per year, twice per year in the case of biogas; check for internal and external tightness, see page 6 (Tightness test).
 - Check electrical installations once a year in line with local regulations; pay particular attention to the PE wire, see page 4 (Wiring).
- ▷ If the flow rate has dropped, clean the strainer.
- 1 Disconnect the system from the electrical power supply.
 - 2 Shut off the gas supply.





► We recommend replacing the flat seals.



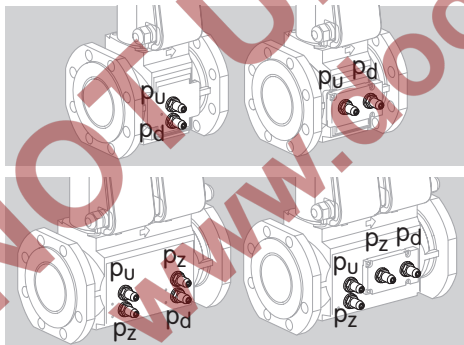
10 Once the flat seals have been replaced, install the unit in the pipeline.

11 Then check the unit for internal and external tightness, see page 6 (Tightness test).

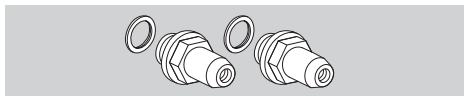
Accessories

Pressure test points

Test points to check the inlet pressure p_u , interspace pressure p_z and outlet pressure p_d .



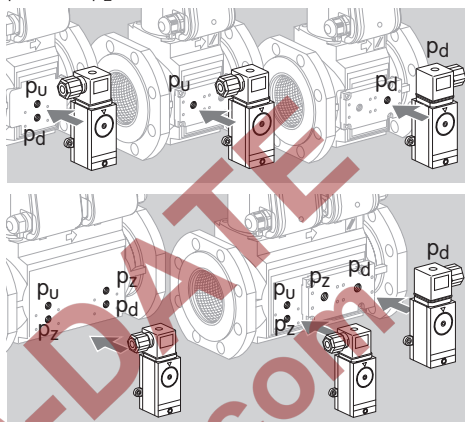
Scope of delivery



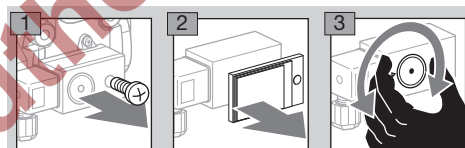
2 x test points with 2 x profiled sealing rings,
Order No. 74923390

Pressure switch for gas DG..VC

The pressure switch for gas monitors the inlet pressure p_u , the outlet pressure p_d and the interspace pressure p_z .



- When retrofitting the pressure switch for gas, see enclosed operating instructions "Pressure switches for gas DG..C", section entitled "Mounting the DG..C on valVario gas solenoid valves".
- The switching point is adjustable via hand wheel.



| | Adjusting range (adjusting tolerance = $\pm 15\%$ of the scale value) | | Mean switching differential at min. and max. setting | |
|----------|--|---------|--|---------|
| | [mbar] | ["WC] | [mbar] | ["WC] |
| DG 17VC | 2–17 | 0.8–6.8 | 0.7–1.7 | 0.3–0.8 |
| DG 40VC | 5–40 | 2–16 | 1–2 | 0.4–1 |
| DG 110VC | 30–110 | 12–44 | 3–8 | 0.8–3.2 |
| DG 300VC | 100–300 | 40–120 | 6–15 | 2.4–8 |

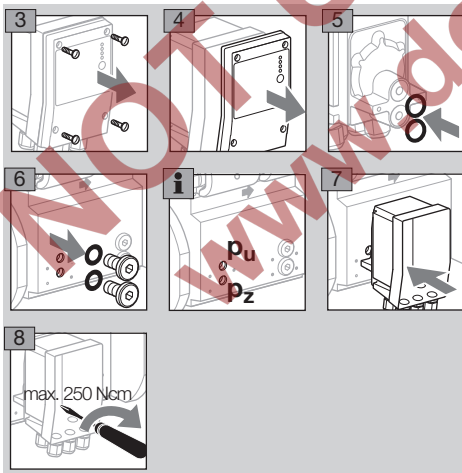
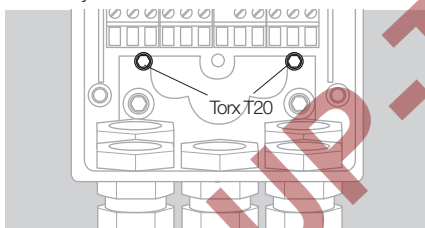
- Deviation from the switching point during testing pursuant to EN 1854 Gas pressure switches: $\pm 15\%$.

Cable gland with pressure equalization element

- To avoid the formation of condensation, the cable gland with pressure equalization element can be used instead of the standard M20 cable gland. The diaphragm in the gland is designed to ventilate the device, without allowing water to enter.
- 1 x cable gland, Order No. 74924686

Tightness control TC 1V

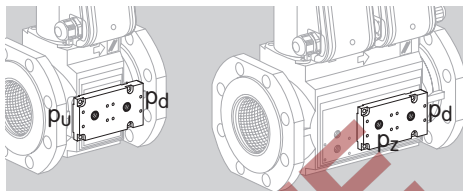
- 1** Disconnect the system from the electrical power supply.
- 2** Shut off the gas supply.
 - ▷ The solenoid actuator cannot be rotated on solenoid valves with proof of closure switch VCx..S or VCx..G.
 - ▷ Connect the TC to the inlet pressure connection p_u and the interspace pressure connection p_z of the inlet valve. Ensure that connections p_u and p_z on the TC and the gas solenoid valve are not reversed.
 - ▷ TC and bypass/pilot gas valve cannot be fitted together on the same side of the double block valve.
 - ▷ In the case of a VCx combination, it is recommended to always install the bypass/pilot gas valve on the rear of the second valve and the tightness control on the viewing side of the first valve, together with the connection box.
 - ▷ The TC is secured using two captive combination Torx screws T20 (M4) inside the housing. Do not undo any other screws!



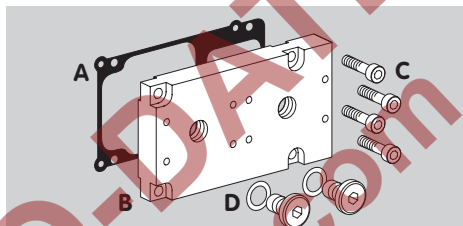
- ▷ For more information on wiring, testing the tightness and commissioning, see enclosed "Tightness control TC 1, TC 2, TC 3" operating instructions.
- 9** After completing the wiring, tightness test and commissioning for the TC, refit the housing cover on the TC.

Measuring adapter

For the connection of the pressure switch DG..C, with a screw plug or pressure test point.



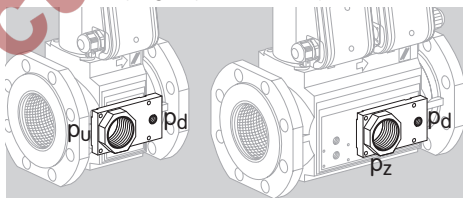
Scope of delivery



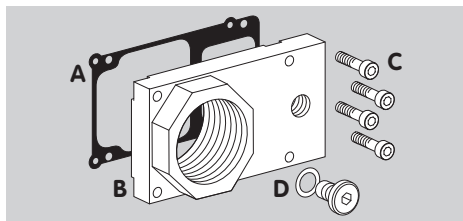
- A** 1 x seal
 - B** 1 x measuring plate
 - C** 4 x set screws M5
 - D** 2 x screw plugs with sealing rings
- Order No. 74923021 for VAS/VCS 6–9,
Order No. 74923022 for VAS..TVCS..T 6–9.

Relief line adapter

For the connection of a relief line (1½ NPT, Rp 1), with a screw plug or pressure test point.

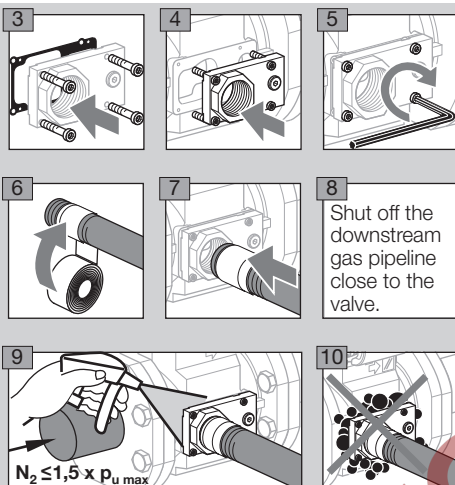


Scope of delivery



- A** 1 x seal
 - B** 1 x flange
 - C** 4 x set screws M5
 - D** 1 x screw plug with sealing ring
- Order No. 74923025 for Rp 1, VAS/VCS 6–9,
Order No. 74923024 for 1½ NPT, VAS..T/
VCS..T 6–9.

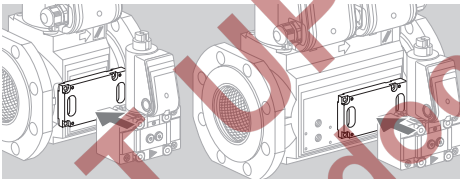
- 1 Disconnect the system from the electrical power supply.
- 2 Shut off the gas supply.



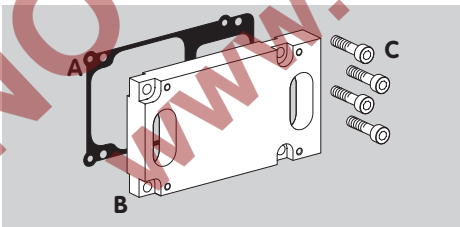
- 11 Tightness OK: open the pipeline.
- ▷ Connection leaking: check seal.

Bypass adapter

For the connection of the bypass/pilot gas valve VAS 1.



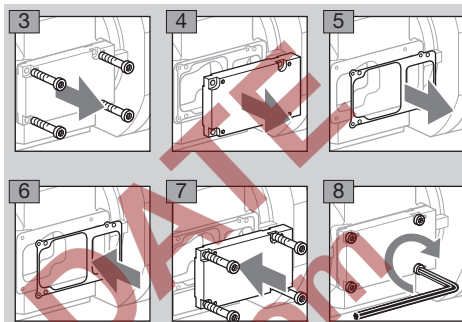
Scope of delivery



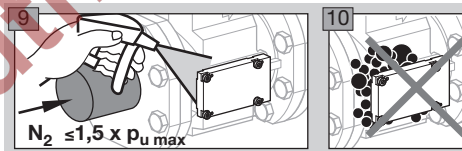
- A 1 x seal
 - B 1 x bypass plate
 - C 4 x set screws M5
- Order No. 74923023

Replacing the adapter plate

- 1 Disconnect the system from the electrical power supply.
 - 2 Shut off the gas supply.
- ▷ We also recommend replacing the seal when replacing the adapter plate.



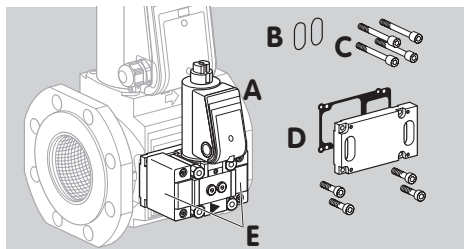
- ▷ Attached the required accessories, e.g. gas pressure switch or pressure test points, as described.
- ▷ If a bypass/pilot gas valve is to be installed, please continue reading as of point 1 in the following section entitled "Bypass/pilot gas valve".
- ▷ To be able to check the tightness, shut off the downstream pipeline as close as possible to the main valve.



- 11 Tightness OK: open the pipeline.
- ▷ Connection leaking: check seals.

Bypass/pilot gas valve

Scope of delivery



A 1 x bypass or pilot gas valve VAS 1

B 2 x flange O-rings

C 4 x connecting screws

D 1 x bypass adapter,
1 x seal,
4 x connecting screws

Bypass valve VAS 1:

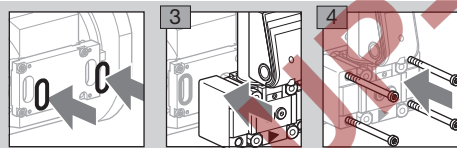
E 2 x adapter flanges

Pilot gas valve VAS 1:

E 1 x adapter flange,
1 x adapter flange with threaded hole

1 Disconnect the system from the electrical power supply.

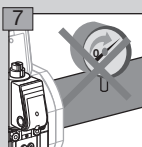
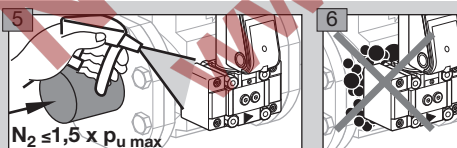
2 Shut off the gas supply.



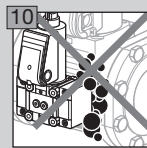
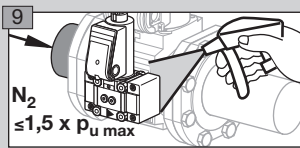
Checking the bypass/pilot gas valve for tightness at the inlet and outlet

- ▷ To be able to check the tightness, shut off the downstream pipeline as close as possible to the main valve.
- ▷ The bypass/pilot gas valve must be closed.

Bypass valve

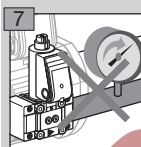
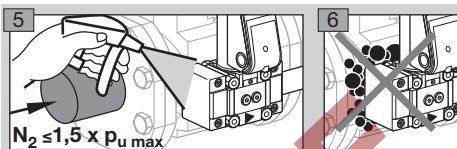


8 Open the bypass valve.

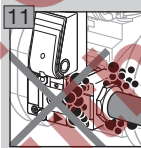
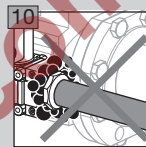
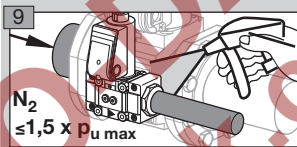


Pilot gas valve

- ▷ **Pilot gas valve:** at the outlet, shut off the downstream pipeline close to the pilot gas valve.
- ▷ **VCS:** open the first VCS valve.



8 Open the pilot gas valve.

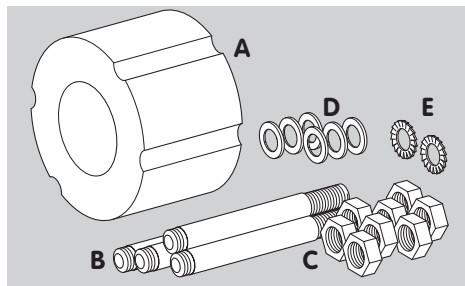


- ▷ Tightness OK: open the pipeline.
- ▷ Connection leaking: check the sealing rings.
- ▷ Unit leaking: remove the valve and return it to the manufacturer.

Adapter for length compensation

For length compensation when replacing VG with VAS 6–9.

Scope of delivery



VAS 6, VCS 6

- A** 1 x adapter for length compensation
- B** 4 x threaded bolts
- C** 8 x nuts
- D** 6 x washers
- E** 2 x serrated lock washers

Order No. 74923271

VAS 7 to 9, VCS 7 to 9

- A** 1 x adapter for length compensation
- B** 8 x threaded bolts
- C** 16 x nuts
- D** 14 x washers
- E** 2 x serrated lock washers

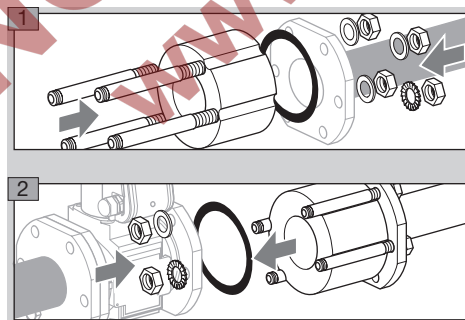
VAS 6, Order No. 74923271,

VAS 7, Order No. 74923272,

VAS 8, Order No. 74923273,

VAS 9, Order No. 74923274.

- ▷ To ensure safe grounding, fit both serrated lock washers to the same threaded bolt under the nuts. The lacquer coat on the flange connections will thus be broken open.
- ▷ Insert a sealing washer at both the inlet and outlet of the adapter for length compensation.



Technical data

Gas types: natural gas, LPG (gaseous), biogas (max. 0.1 %-by-vol. H₂S) or clean air; other types of gas on request.

The gas must be clean and dry in all temperature conditions and must not contain condensate.

Max. inlet pressure p_{U1} :

max. 500 mbar (7.25 psig).

CE and FM approved and UL listed, max. inlet

pressure p_{U1} :

500 mbar (7 psig).

FM approved, non operational pressure:

700 mbar (10 psig).

ANSI/CSA approved:

350 mbar (5 psig).

The flow adjustment facility limits the maximum flow rate:

20 to 100%.

VAS..L, VCS..L: start gas rate adjustment:

0 to 70%.

Opening times:

VAS..N, VCS..N quick opening: ≤ 1 s,

VAS..L, VCS..L slow opening: up to 10 s.

Closing time: quick closing: < 1 s.

Medium and ambient temperatures:

-20 to +60°C (-4 to +140°F).

No condensation permitted.

Long-term use in the upper ambient temperature range accelerates the ageing of the elastomer materials and reduces the service life (please contact manufacturer).

Storage temperature: -20 to +40°C (-4 to +104°F).

Enclosure: IP 65.

Valve housing: aluminium, valve seal: NBR.

ISO flange pursuant to ISO 7005, PN 16, ANSI flange pursuant to ANSI 150.

Class A, Group 2 safety valve pursuant to

EN 13611 and EN 161,

Factory Mutual (FM) Research Class:

7400 and 7411, ANSI Z21.21 and CSA 6.5.

VAS 6 – 8/VCS 6 – 8

Mains voltage:

230 V AC, +10/-15%, 50/60 Hz,

120 V AC, +10/-15%, 50/60 Hz,

24 V DC, $\pm 20\%$.

Switching frequency:

VAS 6 – 8N, VCS 6 – 8N: max. 30 x per minute.

VAS..L: there must be a period of 20 seconds between switching off and on again so that the damping is fully effective.

VAS 9/VCS 9

Mains voltage:

230 V AC, +10/-15%, 50/60 Hz,

120 V AC, +10/-15%, 50/60 Hz.

Switching frequency: max. 1 x per minute.

Max. temperature of solenoid coil:

+20°C (+68°F) above ambient temperature.

Current consumption at 20°C (68°F):

pick-up current: 1.8 A,

holding current: 0.3 A.

VAS 6 – 9/VCS 6 – 9

Duty cycle: 100%.

Power factor of the solenoid coil: $\cos \varphi = 0.9$.

Power consumption:

| Type | Voltage | Power |
|-------|----------|-------------|
| VAS 6 | 24 V DC | 70 W |
| | 120 V AC | 63 W |
| | 230 V AC | 63 W |
| VAS 7 | 24 V DC | 75 W |
| | 120 V AC | 90 W |
| | 230 V AC | 83 W |
| VAS 8 | 24 V DC | 99 W |
| | 120 V AC | 117 W |
| | 230 V AC | 113 W |
| VAS 9 | 24 V DC | – |
| | 120 V AC | 200 (15*) W |
| | 230 V AC | 200 (15*) W |
| VCS 6 | 24 V DC | 140 W |
| | 120 V AC | 126 W |
| | 230 V AC | 126 W |
| VCS 7 | 24 V DC | 150 W |
| | 120 V AC | 180 W |
| | 230 V AC | 166 W |
| VCS 8 | 24 V DC | 198 W |
| | 120 V AC | 234 W |
| | 230 V AC | 226 W |
| VCS 9 | 24 V DC | – |
| | 120 V AC | 400 (30*) W |
| | 230 V AC | 400 (30*) W |

* after opening

Cable gland: M20 x 1.5.

Electrical connection:

electrical cable with max. 2.5 mm² (AWG 12) or

plug with socket to EN 175301-803.

Contact rating of proof of closure switch:

| Type | Voltage | Min. current (resistive load) | Max. current (resis- tive load) |
|-------------------|--------------------------|-------------------------------------|---------------------------------------|
| VAS..S, VCS..S | 12–250 V AC, 50/60 Hz | 100 mA | 3 A |
| VAS..G, VCS..G | 12–30 V DC | 2 mA | 0.1 A |

Switching frequency of proof of closure switch:

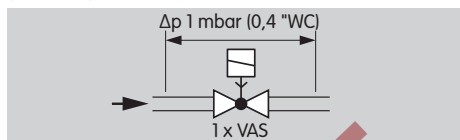
max. 5 x per minute.

| Switching current [A] | Switching cycles* | |
|--------------------------|--------------------|----------------------|
| | $\cos \varphi = 1$ | $\cos \varphi = 0.6$ |
| 0.1 | 500,000 | 500,000 |
| 0.5 | 300,000 | 250,000 |
| 1 | 200,000 | 100,000 |
| 3 | 100,000 | – |

* Limited to max. 200,000 cycles for heating systems.

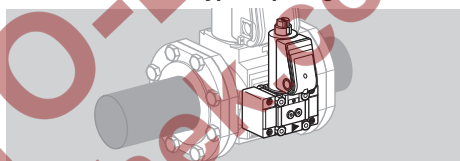
Air flow rate Q

Air flow rate Q for a pressure loss of $\Delta p = 1$ mbar (0.4 "WC)

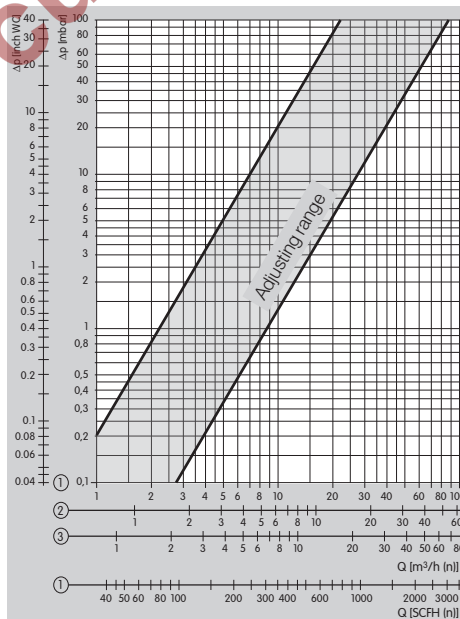


| Type | Air flow rate | |
|-------|-----------------------|----------|
| | Q [m ³ /h] | Q [SCFH] |
| VAS 6 | 66 | 2330 |
| VAS 7 | 95 | 3354 |
| VAS 8 | 144 | 5084 |
| VAS 9 | 215 | 7590 |
| VCS 6 | 52 | 1835 |
| VCS 7 | 74 | 2610 |
| VCS 8 | 111 | 3919 |
| VCS 9 | 165 | 5825 |

Flow rate Q of the bypass/pilot gas valve



The adjusting range for the bypass valve, and pilot gas valve, VAS 1 was determined using the values measured for open flow adjustment ($Q_{\max.}$) and fully reduced flow adjustment ($Q_{\min.}$).



① = natural gas ($\rho = 0.80$ kg/m³)

② = propane ($\rho = 2.01$ kg/m³)

③ = air ($\rho = 1.29$ kg/m³)

Designed lifetime

This information on the designed lifetime is based on using the product in accordance with these operating instructions. Once the designed lifetime has been reached, safety-relevant products must be replaced. Designed lifetime (based on date of manufacture) in accordance with EN 13611, EN 161 for VAS/VCS:

| Type | Designed lifetime | |
|---|-------------------|--------------|
| | Switching cycles | Time [years] |
| VAS/VCS 665 to VAS/VCS 780 VAS/VCS 8100 to VAS/VCS 9125 | 100,000 | 10 |
| | 50,000 | 10 |

You can find further explanations in the applicable rules and regulations and on the afecor website (www.afecor.org).

This procedure applies to heating systems. For thermoprocessing equipment, observe local regulations.

Logistics

Transport

Protect the unit from external forces (blows, shocks, vibration). On receipt of the product, check that the delivery is complete, see page 2 (Part designations). Report any transport damage immediately.

Storage

Store the product in a dry and clean place.
Storage temperature: see page 11 (Technical data).
Storage time: 6 months in the original packaging before using for the first time. If stored for longer than this, the overall service life will be reduced by the corresponding amount of extra storage time.

Packaging

The packaging material is to be disposed of in accordance with local regulations.

Disposal

Components are to be disposed of separately in accordance with local regulations.

Certification

Declaration of conformity



We, the manufacturer, hereby declare that the products VAS/VCS 6 – 9 with product ID No. CE-0063BR1310 comply with the requirements of the listed Directives and Standards.

Directives:

- 2014/35/EU – LVD
- 2014/30/EU – EMC

Regulation:

- (EU) 2016/426 – GAR

Standards:

- EN13611:2015+AC:2016
- EN 161:2011+A3:2013

The relevant product corresponds to the tested type sample.

The production is subject to the surveillance procedure pursuant to Regulation (EU) 2016/426 Annex III paragraph 3.

Elster GmbH

Scan of the Declaration of conformity (D, GB) – see www.docuthek.com

SIL, PL

The solenoid valves VAS 6 – 9 are suitable for single-channel systems (HFT = 0) up to SIL 2/PL d, and up to SIL 3/PL e when two redundant solenoid valves are installed in a double-channel architecture (HFT = 1), provided that the complete system complies with the requirements of IEC 61508/ISO 13849. The safety function value which is actually achieved is derived by taking all components into account (sensor – logic – actuator). For this, the demand rate and structural measures to avoid/detect nonconformity are to be observed (e.g. redundancy, diversity, monitoring).

Characteristic values for SIL/PL: HFT = 0 (1 device), HFT = 1 (2 devices), SFF > 90, DC = 0, type A/category B, 1, 2, 3, 4, high demand mode, CCF > 65, $\beta = 2$.

$$PFH_D = \lambda_D = \frac{1}{MTTF_d} = \frac{0.1}{B_{10d}} \times n_{op}$$

| | |
|-------------|------------------------|
| VAS, VCS | B _{10d} value |
| Sizes 6 – 9 | 6,700,000 |

FM approved



Factory Mutual (FM) Research Class:
7400 and 7411 Safety shut-off valves. Designed for
applications pursuant to NFPA 85 and NFPA 86.

ANSI/CSA approved



Canadian Standards Association –
ANSI Z21.21 and CSA 6.5

VAS 6–8: UL listed



Underwriters Laboratories – UL 429
“Electrically operated valves”.

AGA approved



Australian Gas Association

Eurasian Customs Union



The product VAS, VCS meets the technical specifications of the Eurasian Customs Union.

Directive on the restriction of the use of hazardous substances (RoHS) in China

Scan of the Disclosure Table China RoHS2 – see
certificates at www.docuthek.com

Contact

If you have any technical questions, please contact
your local branch office/agent. The addresses are
available on the Internet or from Elster GmbH.

We reserve the right to make technical modifications
in the interests of progress.

Honeywell

**krom/
schroder**

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