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krom//schroder

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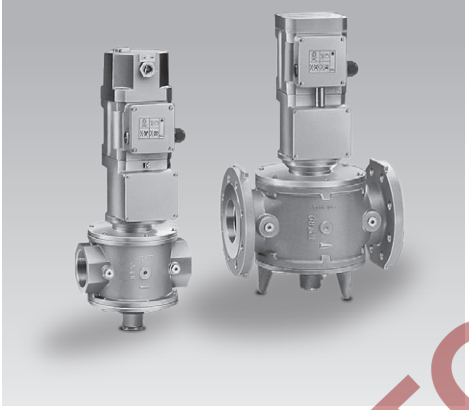
# Operating instructions
# Motorized valve for gas VK



## Contents



## 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 08.12

The following chapters have been changed:
– Fully revised version
– New layout (DIN A5)

GB

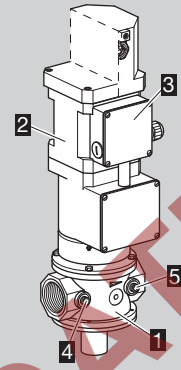
## Checking the usage

**Intended use**

Motorized valve for gas for safeguarding, regulating and controlling air and gas on various appliances. This function is only guaranteed when used within the specified limits – see page 8 (Technical data). Any other use is considered as non-compliant.

| Code | Description |
|---|---|
| VK | Motorized valve for gas |
| 40-250 | Nominal size |
| /100 | Reduced to 100 mm |
| R | Rp internal thread |
| F | Flange to ISO 7005 |
| 02 | $p_u$ max. 230 mbar |
| 04 | $p_u$ max. 400 mbar |
| 05 | $p_u$ max. 500 mbar |
| 06 | $p_u$ max. 600 mbar |
| 10 | $p_u$ max. 1 bar |
| 15 | $p_u$ max. 1.5 bar |
| 20 | $p_u$ max. 2 bar |
| 24 | $p_u$ max. 2.4 bar |
| 31 | $p_u$ max. 3.1 bar |
| 40 | $p_u$ max. 4 bar |
| 60 | $p_u$ max. 6 bar |
| 80 | $p_u$ max. 8 bar |
| Z | 2-stage |
| T5 | Mains voltage: 220/240 V AC, 50 Hz |
| T5/K | Mains voltage: 220 V AC, 50 Hz / 24 V DC |
| W5 | Mains voltage: 230 V AC, 50 Hz |
| Q6 | Mains voltage: 120 V AC, 60 Hz |
| W6 | Mains voltage: 230 V AC, 60 Hz |
| M | Mains voltage: 110 V AC, 50/60 Hz |
| P | Mains voltage: 100 V AC, 50/60 Hz |
| Y | Mains voltage: 200 V AC, 50/60 Hz |
| H | Stronger drive |
| X | Explosion-proof version, IP 65 |
| A | Valve housing made of AlSi |
| G | Valve housing made of GGG 40 complying with TRD 412 and GUV |
| 4 | Terminal connection box, IP 65 |
| 6 | Terminal connection box with 4-pin standard socket, IP 54 |
| 6L | Terminal connection box with 4-pin standard socket with lamp, IP 54 |
| 9 | Metal terminal connection box, IP 54 |
| 3 | Screw plugs at the inlet and outlet |
| D | Flow adjustment |
| S | Closed position switch |
| S2 | 2 closed position switches |
| V | Viton valve seal |
| F | Viewing window |

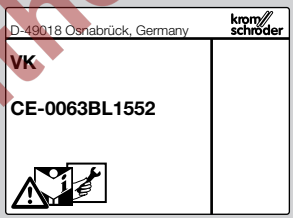
**Part designations**




1 Housing
2 Motor actuator
3 Connection box
4 Plug for inlet pressure $p_u$
5 Plug for outlet pressure $p_d$

**Type label**

Inlet pressure, mains voltage, electrical power rating, ambient temperature, enclosure and installation position: see type label.



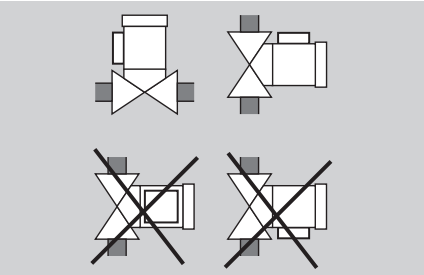

## Installation

**! CAUTION**

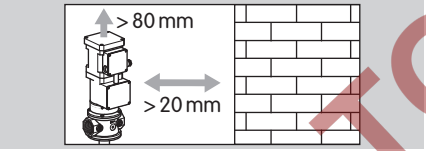
Please observe the following to ensure that the VK is not damaged during installation and operation:

- Do not clamp the unit in a vice. Only secure the flange by holding the octagon with a suitable spanner. Risk of external leakage.
- Do not use the motor actuator as a lever.
- Sealing material and dirt, e.g. thread cuttings, must not be allowed to get into the valve housing.
- Install a filter upstream of every system.
- Continuous operation at high temperatures accelerates the ageing of elastomer materials.
- Do not install or store the unit in the open air.
- Check max. ambient temperature – see type label.
- Check max. inlet pressure – see type label.

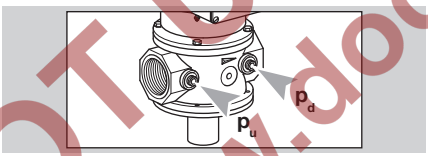
▷ Installation position: motor actuator in the vertical upright position or tilted up to the horizontal, not upside down. The connection box must point upwards if the device is installed in an “Actuator horizontal” position.



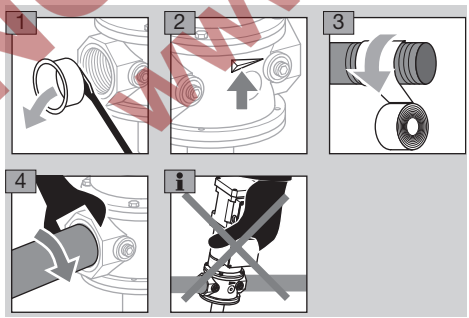
▷ The motorized valve for gas VK must not be in contact with masonry. Minimum clearance 20 mm.



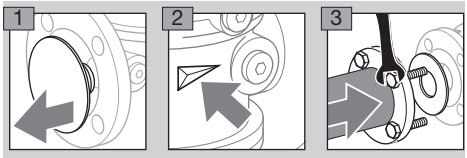

▷ Ensure that there is sufficient space for installation and adjustment.
▷ Use a suitable spanner.
▷ The inlet pressure $p_u$ and the outlet pressure $p_d$ can be measured at the appropriate pressure test points.




**VK..R**




**VK..F**




## Wiring

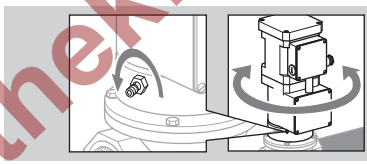
### ⚠ WARNING

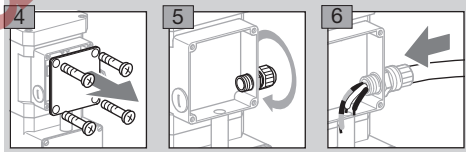
Attention! Please observe the following to ensure that no damage occurs:

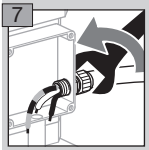
– Electric shocks can be fatal! Before working on possible live components, ensure the unit is disconnected from the power supply.

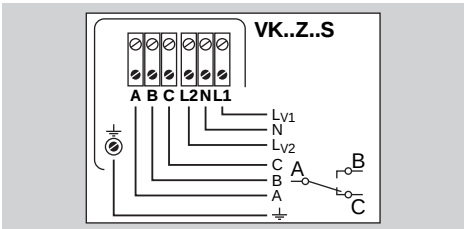
▷ Use temperature-resistant cable (> 80°C/176°F).
▷ Wiring to EN 60204-1.
▷ The data on the type label must comply with the mains voltage (tolerance: + 10%, - 15%).

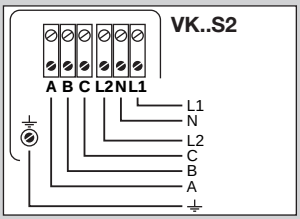
**1** Disconnect the system from the electrical power supply. Install a double-pole switch – isolating link fused main switch or fused spur box – with a contact gap of at least 3 mm upstream.
**2** Shut off the gas supply.
**3** To turn the motor actuator into the correct position, undo four nuts and grub screws, turn the motor actuator so that the connection box is accessible and then re-tighten the grub screws and nuts.

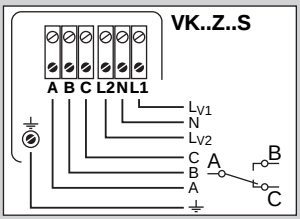


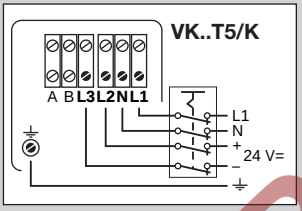


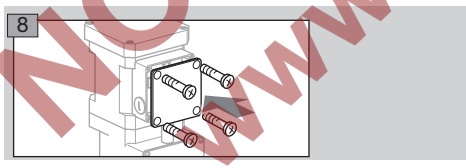



L1 = phase
N = neutral conductor
$L_{V1}$ = phase for the 1st stage
$L_{V2}$ = phase for the 2nd stage

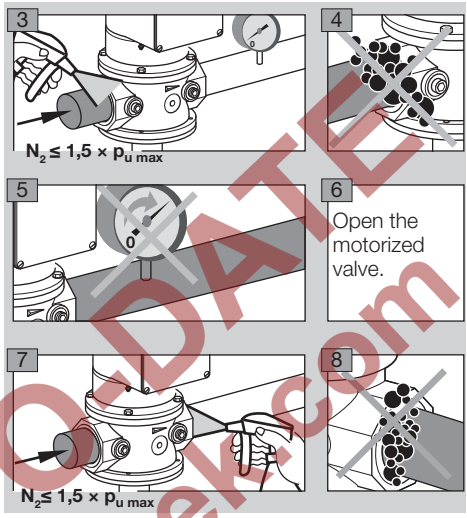
▷ On VK..T5/K: in order to close the valve, both power supply points must be switched off.




▷ When the electric circuit is open, the valve is closed.
▷ When the electric circuit is closed, the valve is open.
▷ For two-stage motorized valves: the second stage cannot be set until the first stage has been completed.

## Tightness test

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

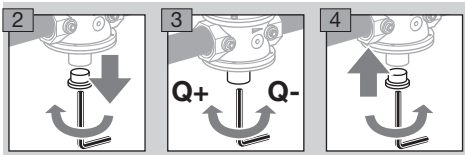



9 Tightness OK: open the pipeline.
▷ Unit leaking: remove the VK and return it to the manufacturer.

## Commissioning

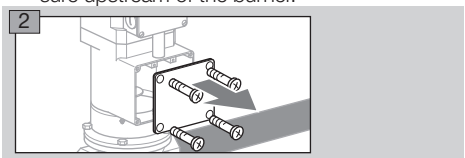
### Setting the flow rate

▷ Flow rate adjustable up to and including nominal size DN 100.
▷ At the factory, the motorized valve for gas is adjusted for maximum flow rate Q.
▷ Connect a pressure gauge if necessary.
▷ Measure the pressure upstream of the burner.
1 Close the valve. The throughput adjusting screw can then be turned more easily.



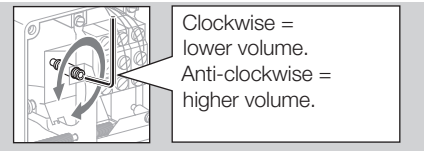

### Setting the start gas rate on VK..Z..S and adjusting the closed position switch on VK..S

1 Connect a pressure gauge to measure the pressure upstream of the burner.

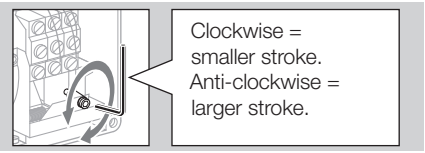



▷ For the VK..Z..S, set the burner control unit by hand to the first stage (start gas rate).

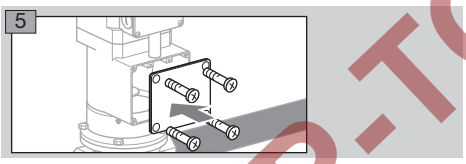
**3** Set the first stage (start gas rate) on the VK..Z..S as specified by the burner manufacturer using an Allen key.




**4** Adjust the VK with an Allen key until the switch is actuated with the required stroke – on the VK..S to indicate valve position “Closed” or on the VK..Z..S as a stage indicator:

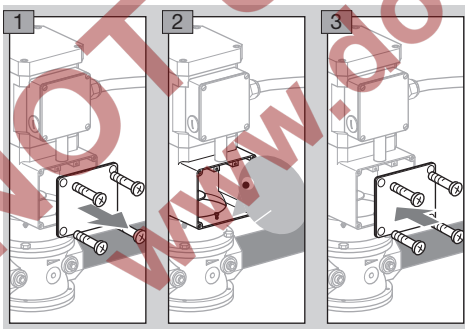



▷ Factory setting of the closed position switch: valve closed.




## Checking the motor actuator

▷ The motor actuator must be checked once per year for oil leaks.




**4** If there is oil on the upper housing cover (more than a few drops), remove the motor actuator and send it to the manufacturer.

## Checking the hydraulic system

▷ If the motor switches on more than 10 times per hour in continuous operation (repumping), remove the motor actuator and send it to the manufacturer.

## Maintenance

**! CAUTION**

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

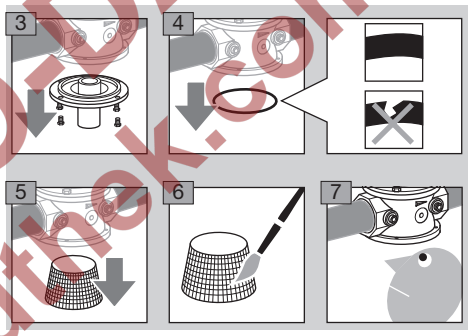
– Once per year, twice per year in the case of biogas; check for internal and external tightness, see page 4 (Tightness test).
– Check electrical installations once a year in line with local regulations; pay particular attention to the PE wire, see page 3 (Wiring).

▷ If the flow rate has dropped, clean the strainer.

**1** Disconnect the system from the electrical power supply.

**2** Shut off the gas supply.

▷ The lower housing cover is highly prestressed.




▷ For biogas, check spring for corrosion and replace lower housing cover if necessary, see page 7 (Spare parts).

▷ Check the valve disc for signs of damage.

**8** Once the seals have been replaced, follow the reverse procedure to reassemble the unit.

**9** Then check the unit for internal and external tightness, see page 4 (Tightness test).

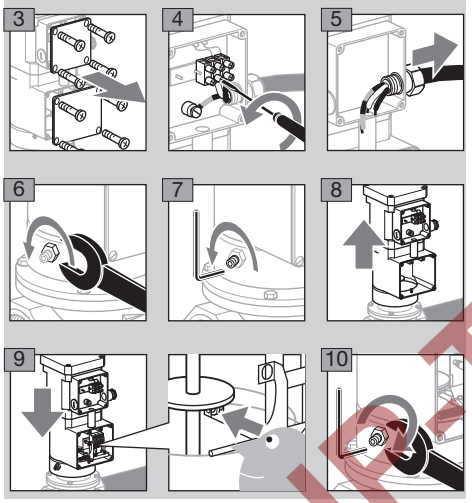
## Converting VK into VK..S or VK..Z..S

**⚠ DANGER**

Risk of explosion! The valve stem may not be pressed downwards either “manually” or using a tool after the motor actuator has been removed.

**1** Disconnect the system from the electrical power supply.

**2** Shut off the gas supply.




**11** Follow the reverse procedure when reassembling.

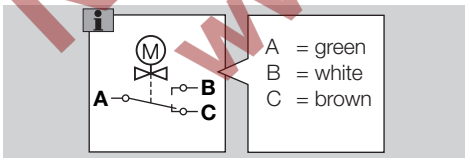
**12** Connect the VK to the electrical power supply, see page 3 (Wiring).

## Installing a closed position switch

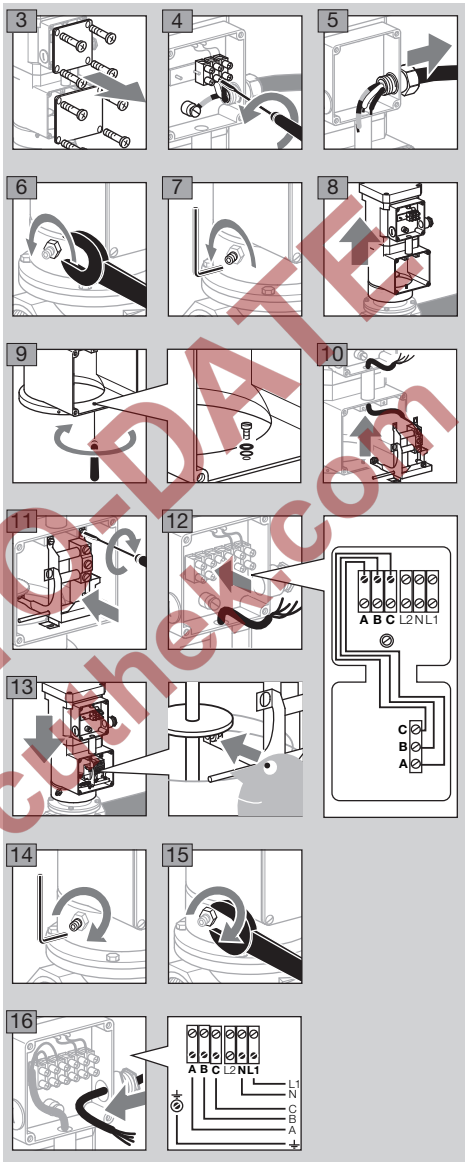
**1** Disconnect the system from the electrical power supply.

**2** Shut off the gas supply.

▷ The circuit diagram shows the closed valve.

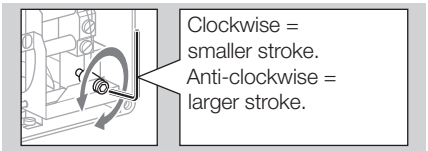



▷ A–B closes as soon as the valve is open.




**17** Switch on the system.

**18** Turn the screw with an Allen key until the switch is actuated when the valve is open:

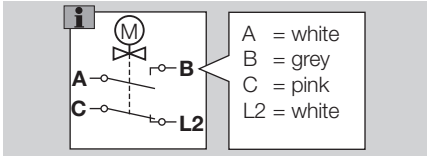



**19** Replace the cover and screw into place.

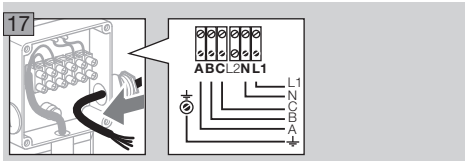
**20** Release the gas supply.

## Installing two closed position switches

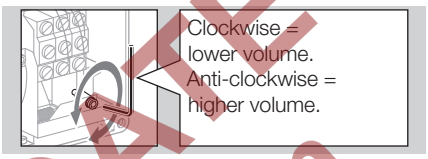
**1** Disconnect the system from the electrical power supply.
**2** Shut off the gas supply.
▷ The circuit diagram shows the closed valve.



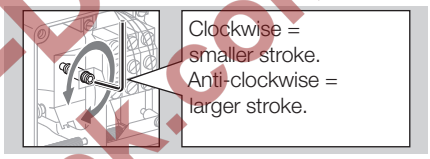

▷ C–L opens as soon as the motorized valve starts to open.
▷ A–B closes as soon as the valve is open.


**18** Switch on the system.
**19** Turn the screw with an Allen key until the required start gas rate has been reached:




**20** Turn the screw with an Allen key until the switch is actuated with the required stroke:




**21** Replace the cover and screw into place.
**22** Release the gas supply.

## Spare parts

### Lower housing cover

| Lower housing cover, complete | Order No. |
|---|---|
| VK 40..A | 74915792 |
| VK 50..A | 74915793 |
| VK 50..G | 74918553 |
| VK 65..A | 74915794 |
| VK 65..G | 74918554 |
| VK 80..A | 74915795 |
| VK 80..G | 74918555 |
| VK 100..A | 74915796 |
| VK 100..G | 74918556 |
| VK 125..A | 74915797 |
| VK 125..G | 74918557 |
| VK 150..A | 74915798 |
| VK 150..G | 74918558 |
| VK 150/100..G | 74918559 |
| VK 200..A | 74915799 |
| VK 200..G | 74918560 |
| VK 200/100..G | 74918591 |

## Technical data

Gas types: natural gas, town gas, LPG (gaseous), biogas, landfill gas or clean air; other gases on request. The gas must be dry in all temperature conditions and must not contain condensate.

Opening time:

| Nominal size | Opening time t VK | Opening time t VK..H |
|---|---|---|
| DN 40 | 5 s | - |
| DN 50–65 | 8 s | 12 s |
| DN 80–100 | 10 s | 18 s |
| DN 125–200 | 13 s | 24 s |
| DN 250 | - | 24 s |

Closing time: < 1 s.
Ambient temperature:
VK.., VK..H, VK..Z: -15°C to +60°C,
VK..X, VK..HX: -15°C to +40°C.
Storage and transport temperature:
-20°C to +40°C.
Safety valve: Class A, Group 2 pursuant to EN 161.
Mains voltage:
220/240 V AC, +10/-15%, 50 Hz (standard),
230 V AC, +10/-15%, 50 Hz,
230 V AC, +10/-15%, 60 Hz,
220 V AC, +10/-15%, 50 Hz, 24 V DC,
200 V AC, +10/-10%, 50/60 Hz,
120 V AC, +10/-15%, 60 Hz,
110 V AC, +10/-15%, 50/60 Hz,
100 V AC, +10/-5%, 50/60 Hz.
Power consumption:
when opening: 90 VA, 50 W,
open: 9 VA, 9 W.
Electrical connection:
– plug with socket to EN 175301-803,
– cable gland: M20,
– connection terminal: 2.5 $mm^2$.
Enclosure: IP 54.
Duty cycle: 100%.
Safety class 1.
Valve housing: aluminium, GGG 40 (coated inside and outside with epoxy powder coating).
Valve disc: Perbunan, Viton.
Motor actuator: AlSi.
Internal thread: Rp to ISO 7-1.
Flange: ISO 7005, PN 16.

**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 161 for VK:

| Type | Designed lifetime | |
|---|---|---|
| | Switching cycles | Time [years] |
| VK 40–80 | 100,000 | 10 |
| VK 100–125 | 50,000 | 10 |
| VK 150–250 | 25,000 | 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 8 (Technical data).
Storage time: 6 months 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 product VK, marked with product ID No. CE-0063BL1552, complies with the requirements of the listed Directives and Standards.

Directives:

– 2009/142/EC – GAD (valid until 20 April 2018)
– 2014/68/EU
– 2014/30/EU
– 2014/35/EU

Regulation:

– (EU) 2016/426 – GAR (valid from 21 April 2018)

Standards:

– EN 161

The relevant product corresponds to the type tested by the notified body 0063.

The production is subject to the surveillance procedure pursuant to Directive 2009/142/EC Annex II paragraph 3 (valid until 20 April 2018) and to Regulation (EU) 2016/426 Annex III paragraph 3 (valid from 21 April 2018).

Elster GmbH

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

**AGA approved**

Australian Gas Association, Approval No.: 2726
www.aga.asn.au/product_directory

**Eurasian Customs Union**

The product VK 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.

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