

Operating instructions
Solenoid valve for gas
VG 10/15 – VG 65



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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 09.12

The following chapters have been changed:

- Separate operating instructions for VG 6 – 15/10, see www.docuthek.com → Kromschroder → Products → 03 Valves and butterfly valves → Solenoid valves for gas VG → VG 6 – VG 15/10

Checking the usage

Intended use

Gas solenoid valve for safeguarding gas or air on various appliances.

This function is only guaranteed when used within the specified limits – see page 7 (Technical data). Any other use is considered as non-compliant.

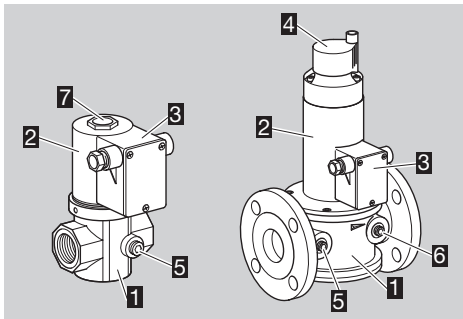
! WARNING

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.

Type code

Code	Description
VG	Gas solenoid valve
10/15–65	Nominal size
R	Rp internal thread
F	Flange to ISO 7005
02	$p_{U \text{ max.}}$ 200 mbar
03	$p_{U \text{ max.}}$ 360 mbar
10	$p_{U \text{ max.}}$ 1 bar
18	$p_{U \text{ max.}}$ 1.8 bar
L	Slow opening, quick closing
N	Quick opening, quick closing
T	Mains voltage: 220/240 V AC, 50/60 Hz
Q	Mains voltage: 120 V AC, 50/60 Hz
K	Mains voltage: 24 V DC
3	Terminal connection box, IP 54
1	Screw plug at the inlet
3	Screw plug at the inlet and outlet
D	With flow adjustment
M	Suitable for biologically produced methane
V	Viton valve disc seal
Z	With rolling diaphragm

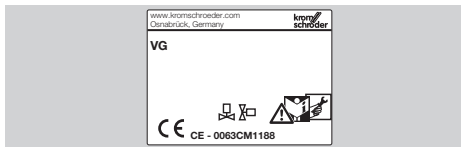
Part designations



- 1** Housing
- 2** Solenoid actuator
- 3** Connection box
- 4** Damping unit
- 5** Screw plug for inlet pressure p_U
- 6** Screw plug for outlet pressure p_D
- 7** VG 10/15–40/32: hexagonal nut (actuator)
VG 40–65: cap

Type label

Rated voltage, electrical power consumption, installation position, max. inlet pressure $p_{U \text{ max.}}$, ambient temperature, enclosure and medium: see type label.



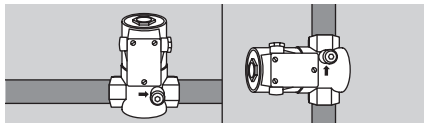
Installation

! CAUTION

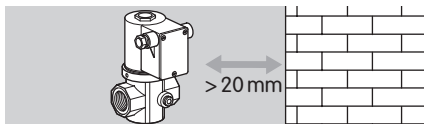
Please observe the following to ensure that the VG is not damaged during installation and operation:

- 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 install or store the unit in the open air.
- Check max. ambient temperature – see type label.
- Check max. inlet pressure – see type label.

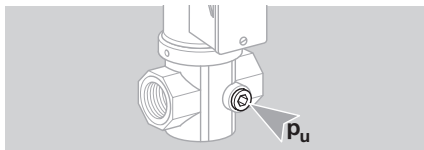
- ▷ Installation position: black solenoid actuator in the vertical upright position or tilted up to the horizontal, not upside down.



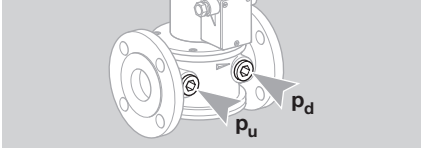
- ▷ The housing must not be in contact with masonry. Minimum clearance 20 mm (0.79").



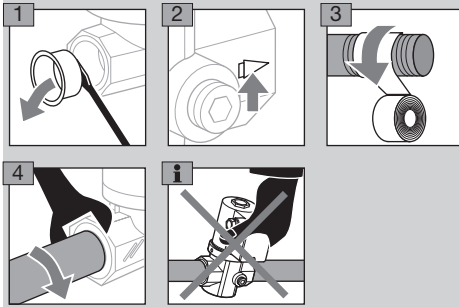
- ▷ Sealing material and dirt, e.g. thread cuttings, must not be allowed to get into the valve housing.
- ▷ Install a filter upstream of every system.
- ▷ Use approved sealing material only.
- ▷ Use a suitable spanner.
- ▷ Ensure that there is sufficient space for installation and adjustment.
- ▷ On VG 10/15–40/32, the inlet pressure p_U can be measured at the pressure test point



- ▷ On VG 40–65, the inlet pressure p_u and the outlet pressure p_d can be measured at the respective pressure test point.

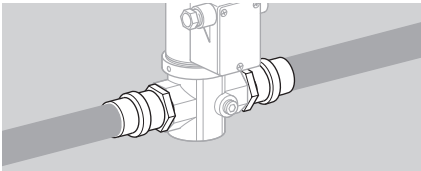


VG..R

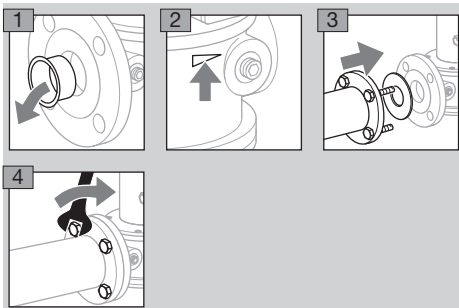


Gas compression fittings

- ▷ The seals in some gas compression fittings are approved for temperatures of up to 70°C (158°F). This temperature limit will not be exceeded if the flow through the pipe is at least 1 m³/h (35.31 SCFH) of gas and the maximum ambient temperature is 50°C (122°F).



VG..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.
- The solenoid actuator heats up during operation. Surface temperature approx. 85°C (approx. 185°F) pursuant to EN 60730-1.

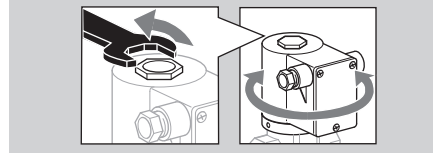


- ▷ Use temperature-resistant cable (> 80°C/176°F).
- ▷ Wiring to EN 60204-1.

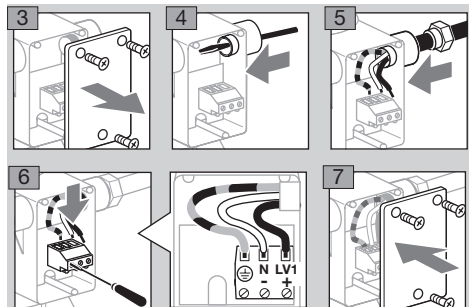
1 Disconnect the system from the electrical power supply.

2 Shut off the gas supply.

- ▷ The solenoid actuator can be rotated to allow it to be repositioned for electrical connection. On VG..N, the hexagonal nut/cap on the solenoid actuator must be loosened for this.



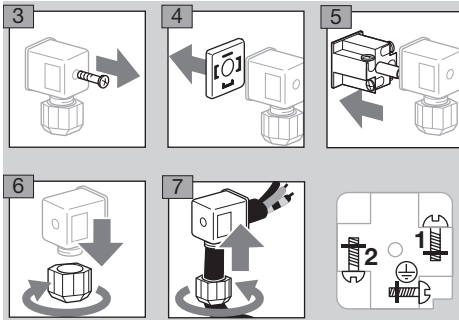
1 = N (-) blue, 2 = LV1 (+) black



- ▷ Set the solenoid actuator to the correct position again and screw the hexagonal nut/cap tight if applicable.

VG with socket

1 = N (-), 2 = LV1V1 (+)



8 Follow the reverse procedure when reassembling.

Tightness test

! CAUTION

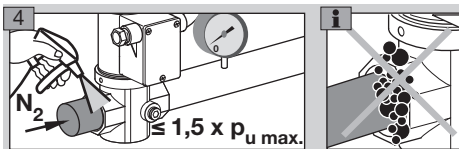
Please observe the following to ensure that the VG is not damaged during the tightness test:

- Check max. inlet pressure – see type label.
- Test pressure $\leq 1.5 \times$ max. inlet pressure.

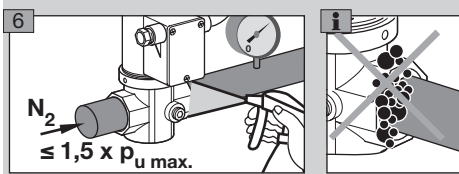
▷ The tightness test procedure on VG is functionally the same for all nominal sizes. The following figures apply to all VG variants by way of example.

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

Checking for external tightness



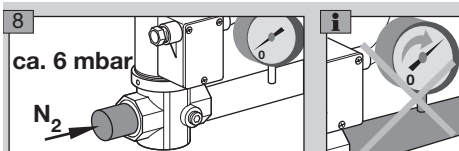
5 Open the solenoid valve.



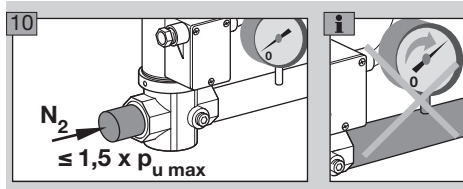
▷ Pipeline leaking: check the seal.

Checking for internal tightness

7 Close the solenoid valve.



9 After 60 seconds, increase the test pressure to $\leq 1.5 \times p_u \text{ max.}$



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

Commissioning

Setting the flow rate

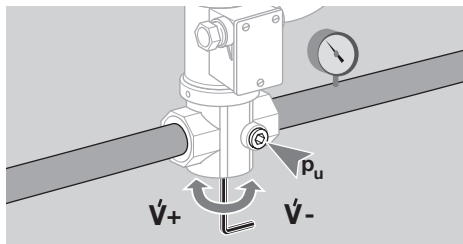
▷ At the factory, the gas solenoid valve is adjusted for maximum flow rate.

VG 10/15–40/32

▷ The minimum and maximum flow rates can be set within half a turn.

VG 40–65

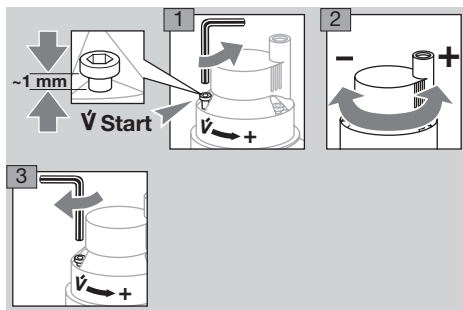
▷ The minimum and maximum flow rates can be set within 20 turns.



Setting the start gas rate

▷ The start gas rate can be set with a maximum of 3 turns.

VG..L



Replacing the solenoid actuator

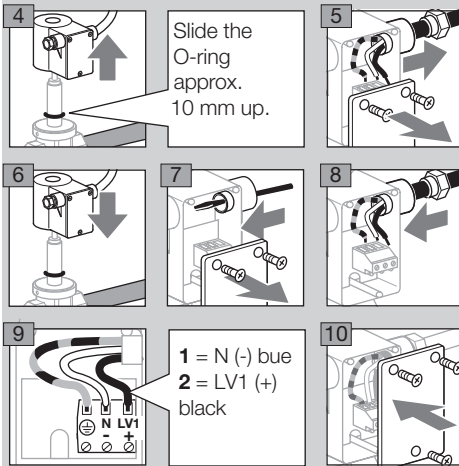
- ▷ We recommend replacing the entire actuator set when replacing the solenoid actuator.
- ▷ The actuator set is available separately as a spare part.

1 Disconnect the system from the electrical power supply.

2 Shut off the gas supply.

VG..N

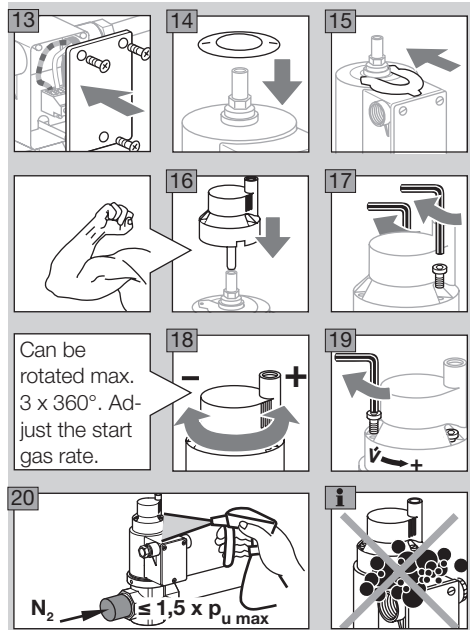
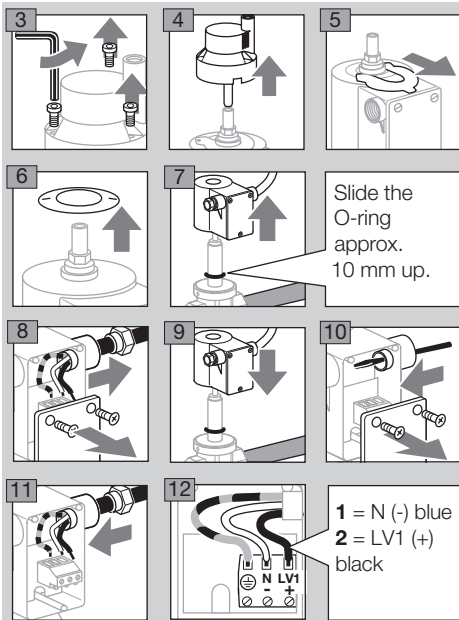
3 To be able to remove the solenoid actuator, loosen the hexagonal nut/cap on the solenoid actuator.



11 Screw the solenoid actuator into place.

12 Release the gas supply.

VG..L

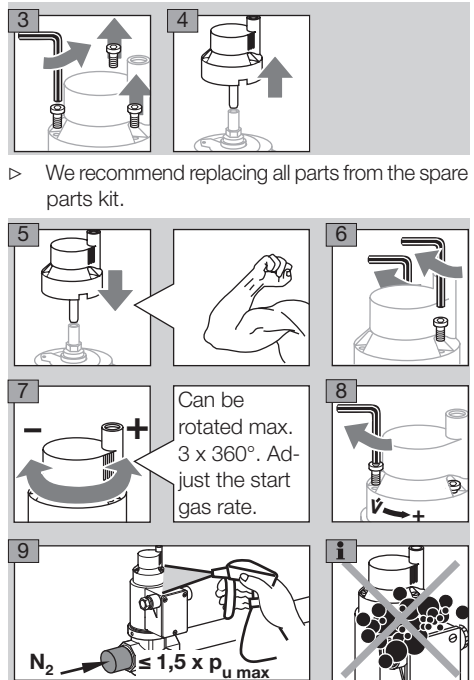


21 Tightness OK: release the gas supply.

Replacing a defective damping unit

1 Disconnect the system from the electrical power supply.

2 Shut off the gas supply.



▷ We recommend replacing all parts from the spare parts kit.

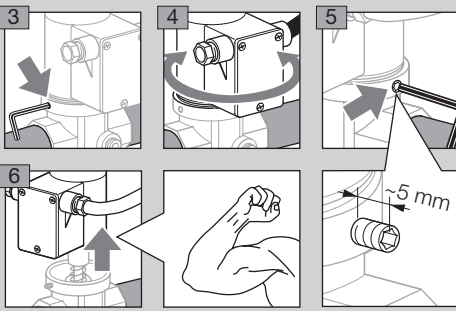
Maintenance

! CAUTION

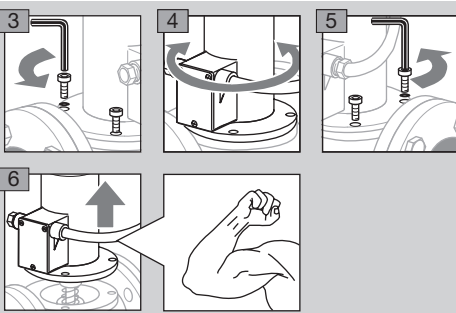
In order to ensure smooth operation: check the tightness and function of the VG every year, or every six months if operated with biologically produced methane.

- 1 Disconnect the system from the electrical power supply.
- 2 Shut off the gas supply.
 - ▷ If the flow rate is correct, see page 4 (Tightness test).
 - ▷ If the flow rate has dropped, clean the strainer.

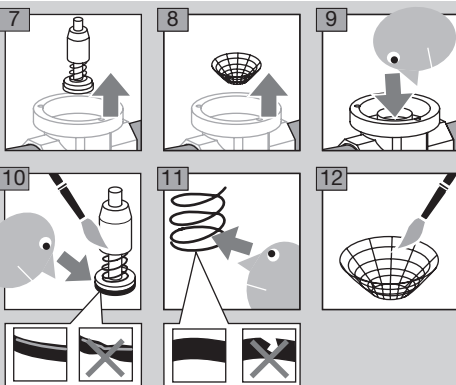
VG 10/15–40/32



VG 40–65



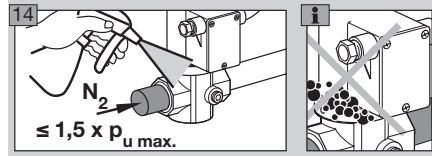
VG 10/15–65



- 13 Follow the reverse procedure when reassembling.

Checking tightness and function

- ▷ When the solenoid actuator is removed, the gas-filled space in the VG is opened. Therefore, check for tightness once the actuator has been reinstalled.



- ▷ In order to determine whether the VG is tight and closes securely, check the internal and external tightness, see page 4 (Tightness test).
- ▷ Check electrical installations in line with local regulations; pay particular attention to the PE wire.

Assistance in the event of malfunction

⚠ WARNING

Electric shocks can be fatal! Before working on possible live components, ensure the unit is disconnected from the power supply. Fault-clearance must only be undertaken by authorized trained personnel. Unauthorized repairs or incorrect electrical connections can cause the solenoid valve to become defective. In this case, our warranty will be rendered void.

? Fault

! Cause

• Remedy

? The solenoid valve does not open, there is no flow downstream of the solenoid valve.

! There is no power supply.

- Have wiring checked by authorized trained personnel.

! Guiding elements bent. Incorrect handling when installing the unit.



- Remove the unit and return it to the manufacturer.

? The solenoid valve does not close securely, the flow downstream of the solenoid valve does not stop.

- ! Valve seat is dirty.
- Clean the valve seat, see page 6 (Maintenance).
- Install a filter upstream of the solenoid valve.
- ! Valve seat is damaged.
- Remove the unit and return it to the manufacturer.
- ! Valve seal is damaged or hardened.
- Remove the unit and return it to the manufacturer.
- ! Guiding elements bent. Incorrect handling when installing the unit.



- Remove the unit and return it to the manufacturer.

Technical data

Gas types: natural gas, town gas, LPG (gaseous), biologically produced methane (max. 0.1 %-by-vol. H₂S, VG..M only) or clean air; other gases on request. The gas must be dry in all temperature conditions and must not contain condensate.

Max. inlet pressure p_U : see type label.

Opening time:

VG..N: quick opening, ≤ 1 s.

VG..L: slow opening, 10 s.

Closing time:

VG..N, VG..L: ≤ 1 s.

Ambient temperature: -20 to +60°C (5 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 (68 to 104°F).

Safety valve:

Class A, Group 2 pursuant to EN 161.

Mains voltage:

220/240 V AC, +10/-15%, 50/60 Hz,

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

24 V DC, +10/-15%.

Electrical connection of VG 10/15–40/32:

plug with socket to EN 175301-803,

cable gland: PG 11,

connection terminal: 2.5 mm².

Electrical connection of VG 40–65:

plug with socket to EN 175301-803,

cable gland: PG 13.5,

connection terminal: 2.5 mm².

Enclosure: IP 54.

Duty cycle: 100%.

Power factor of the solenoid coil: $\cos \varphi = 1$.

Power consumption:

Type	Voltage	
	24 V DC 120 V AC 220 V AC	240 V AC
VG 15	32 VA/W	38 VA/W
VG 15/12R18	31 VA/W	37 VA/W
VG 20, VG 25, VG 40/32	36 VA/W	42 VA/W
VG 40	73 VA/W	86 VA/W
VG 50, VG 65	85 VA/W	99 VA/W

Switching frequency: max. 30/min.

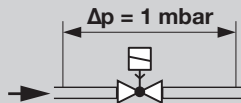
Valve housing: aluminium.

Valve disc: NBR.

Internal thread: Rp to ISO 7-1.

Flange: ISO 7005 (DN 65 to DIN 2501), PN 16.

Air flow rate $\dot{V}(Q)$ for pressure loss $\Delta p = 1$ mbar.



	$\dot{V}(Q)$ [m ³ /h]
VG 10/15	3.0
VG 15	3.8
VG 15/12	2.3
VG 20	8.0
VG 25	10.0
VG 25/15	3.8
VG 40/32	18.0

	$\dot{V}(Q)$ [m ³ /h]
VG 40	24.0
VG 40/33	13.5
VG 50	37.0
VG 50/39	23.0
VG 50/65	48.0
VG 65	57.0
VG 65/49	35.0
VG 80	85.0
VG 100	130.0

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 VG:

Type	Designed lifetime	
	Switching cycles	Time [years]
VG 10/15 – 25	200,000	10
VG 40/32	100,000	10
VG 40 – 80	100,000	10
VG 100	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 7 (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

Certification

Declaration of conformity



We, the manufacturer, hereby declare that the product VG, marked with product ID No. CE-0063BL1553, and valves VG for high pressures (1 – 1.8 bar), marked with product ID No. CE-0063CM1188, comply with the requirements of the listed Directives and Standards.

Directives:

- 2009/142/EC
- 2004/108/EC
- 2006/95/EC

Standards:

- EN 13611
- EN 161

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.

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 according to annex II, paragraph 3.
Elster GmbH

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

Approval for Australia



Australian Gas Association, Approval No.: 3968
www.aga.asn.au/product_directory

Eurasian Customs Union

The product VG meets the technical specifications of the Eurasian Customs Union (the Russian Federation, Belarus, Kazakhstan).



elster
Kromschröder

Elster GmbH
Postfach 28 09, D-49018 Osnabrück
Strothweg 1, D-49504 Lotte (Büren)
T +49 541 1214-0
F +49 541 1214-370
info@kromschroeder.com, www.kromschroeder.com