

Operating instructions
Circulation pressure control and relief regulator VAR



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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 01.14

The following chapters have been changed:

- Checking the usage
- Certification

Checking the usage

VAR

Circulation pressure control and relief regulator for maintaining constant pressure and eliminating brief pressure surges in gas appliances.

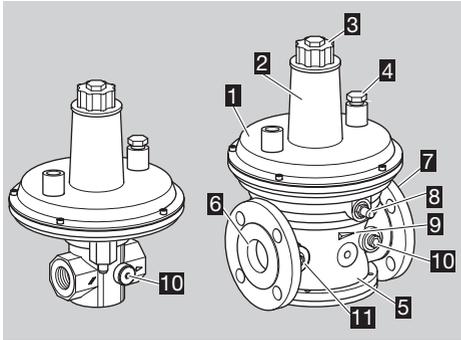
This function is only guaranteed when used within the specified limits—see pages 3 (Checking the function) and 13 (Technical data). Any other use is considered as non-compliant.

Type code

Code	Description
VAR	Circulation pressure control and relief regulator
25–100	Nominal size
R	Rp internal thread
F	Flange to ISO 7005
05	Inlet pressure $p_{u \text{ max.}}$ = 500 mbar
-1	Opening pressure p_{as} = 10–150 mbar
-2	Opening pressure p_{as} = 151–340 mbar

Part designations

VAR 25, VAR 40



- 1** Housing cover
- 2** Spring dome
- 3** Cap
- 4** Breather screw
- 5** Lower housing section
- 6** Inlet
- 7** Outlet
- 8** Pressure test point
- 9** Arrow of direction of flow
- 10** Outlet p_d measuring connection
- 11** Inlet p_u measuring connection

Type label

Max. inlet pressure $p_{u \text{ max.}}$, set opening pressure p_{as} , valve seat diameter and ambient temperature: see type label.

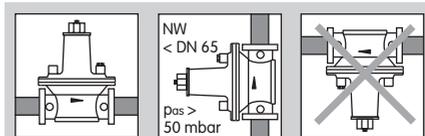


Installation

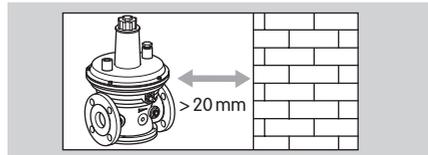
! CAUTION

Please observe the following to ensure that the VAR is not damaged during installation:

- Sealing material and dirt, e.g. thread cuttings, must not be allowed to get into the regulator housing.
 - We recommend installing a filter upstream of the VAR in order to protect the regulator against impurities in the pipe.
 - The installation location must be dry. Do not store or install the VAR in the open air.
 - Install the VAR in the pipe free of mechanical stress.
 - Do not clamp the unit in a vice. On the VAR..R, only secure the housing by holding the octagon with a suitable spanner. Risk of external leakage.
 - Note the max. inlet pressure $p_{u \text{ max.}}$ of 500 mbar.
 - Check max. ambient temperature – see type label.
- ▷ Installation position: in horizontal pipelines with spring dome pointing vertically upwards.
 - ▷ With opening pressures of > 50 mbar and nominal sizes < DN 65, the VAR can be installed in vertical pipelines.

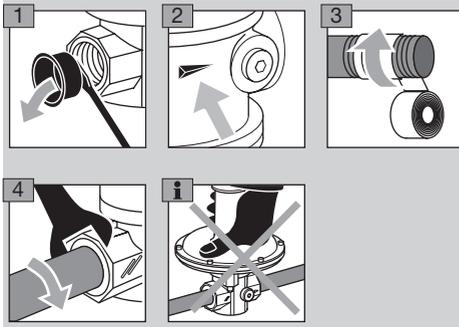


- ▷ The housing must not be in contact with masonry. Minimum clearance 20 mm. Ensure that there is sufficient space for installation and adjustment.



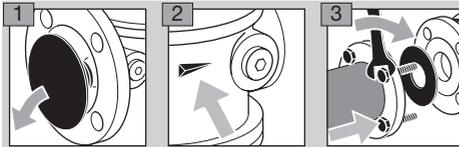
VAR..R

- ▷ VAR..R: seal pipe with approved sealing material only.



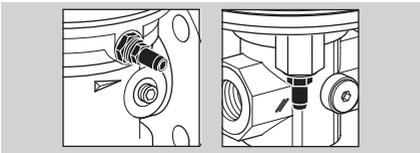
VAR..F

- ▷ VAR..F: insert seal between pipe and unit.



Test point for inlet pressure p_u

- ▷ The VAR is delivered with a test nipple fitted to the side to measure the inlet pressure p_u or opening pressure p_{as} .
- ▷ The pressure test nipple must be pointing forwards in the direction of flow.



Tightness test

! CAUTION

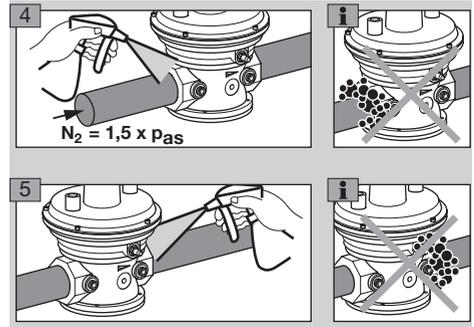
Please observe the following to ensure that the VAR is not damaged during the tightness test:

- Test pressure $\leq 1.5 \times$ set opening pressure p_{as} , see type label.

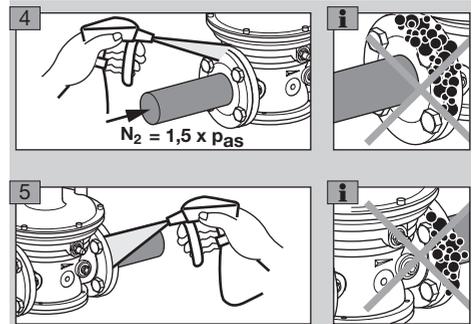
VAR

- 1** Vent the system. The VAR is closed when no pressure is applied.
- 2** Block the pipeline at the inlet and outlet.
- 3** Slowly bring up to test pressure ($1.5 \times$ opening pressure p_{as}) at the inlet side using a hand pump. If the opening pressure p_{as} is exceeded, the VAR opens. Check the inlet and outlet connections of the regulator simultaneously for tightness.

VAR..R



VAR..F



VAR

- 6** Tightness OK: continue with function check.

Checking the function

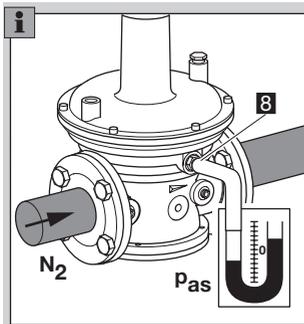
! CAUTION

Please observe the following to ensure that the regulator is not damaged during the function check:

- Do not exceed the maximum inlet pressure p_u of the regulator.

Checking the opening pressure p_{as}

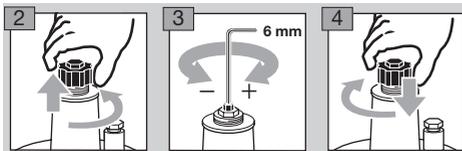
- 1** Vent the system. The VAR is closed when no pressure is applied.
- 2** Block the pipeline at the inlet.
- 3** Connect the measuring instrument to the pressure test point .
- 4** Bring the regulator slowly up to test pressure using a hand pump.
 - ▷ Test pressure: up to $0.9 \times$ opening pressure p_{as} , the pressure must remain stable and the VAR must remain closed, regulator lock-up function.
 - ▷ Test pressure: as of $1.1 \times$ opening pressure p_{as} , the VAR must open, regulator relief function.



Adjusting the opening pressure p_{as}

1 Set the inlet pressure p_u to the required opening pressure p_{as} and adjust the regulator spring accordingly.

- ▷ Test pressure: up to $0.9 \times$ opening pressure p_{as} , the pressure must remain stable and the VAR must remain closed, regulator lock-up function.
- ▷ Test pressure: as of $1.1 \times$ opening pressure p_{as} , the VAR must open, regulator relief function.



5 Clearly mark the adjusted value of the opening pressure p_{as} on the type label.

- ▷ If the required opening pressure p_{as} cannot be adjusted: choose a spring from the spring table according to the opening pressure range – see page 14 (Spring table).

Replacing the spring

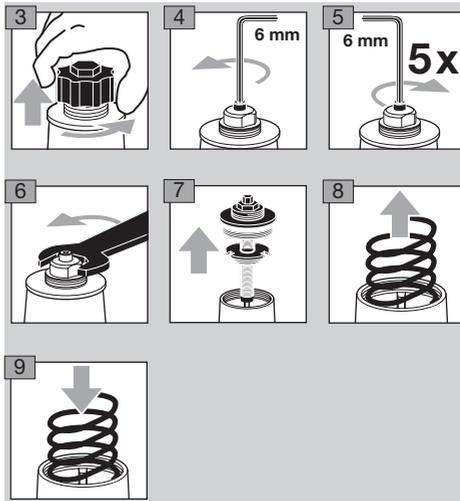
⚠ WARNING

Risk of injury! The spring is compressed and can pop out when opening the spring dome.

- First turn the adjusting screw as far as it will go, as shown in steps **4** and **5**, to decompress the spring and then turn it back again 5 turns in order not to lock the spring counter bearing.

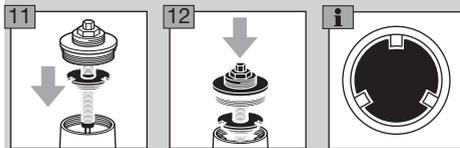
VAR

- 1** Choose a spring from the spring table, see page 14 (Spring table).
- 2** Vent the system.



VAR 25 to 50

10 Turn down the spring counter bearing slightly.



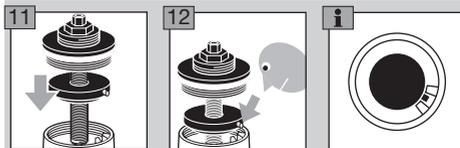
VAR 65 to 100

! CAUTION

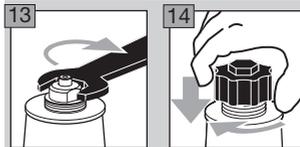
Please observe the following to ensure that the VAR is not damaged during subsequent operation:

- Install the spring counter bearing in the correct position. Ensure that the guide groove and the pin engage in each other.

10 Turn down the spring counter bearing slightly.



VAR



15 After inserting the spring: take label from the kit bag and stick it below the type label on the pressure regulator.

16 Adjust the required opening pressure, see page 4 (Adjusting the opening pressure p_{as}).

Maintenance/Replacing spare parts

- ▷ The inspection frequency is determined by the respective operating conditions and the gas quality.
- ▷ In order to ensure smooth operation: check the tightness, see page 3 (Tightness test), and function, see page 3 (Checking the function), every year, or every six months if operated with biogas.
- ▷ Document the measurement results from the inspection.
- ▷ In the case of malfunctioning or leaks, the unit is to be serviced.
- ▷ It is essential to observe the following before carrying out maintenance work:

VAR 25 to 100

⚠ WARNING

Risk of injury! The spring is compressed and can pop out when opening the spring dome.

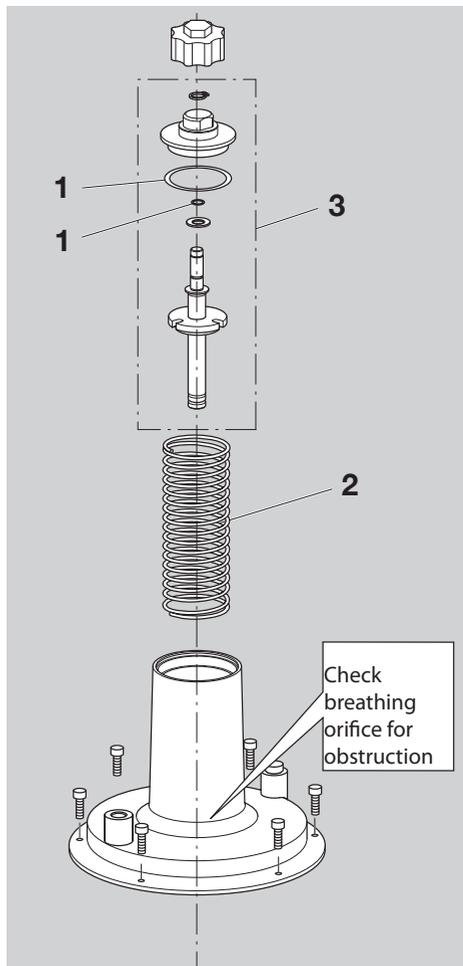
- Decompress the spring, see page 4 (Replacing the spring), steps **3** to **5**. First turn the adjusting screw as far as it will go to decompress the spring and then turn it back again 5 turns in order not to lock the spring counter bearing.
 - Vent the system before carrying out the maintenance work.
- ▷ The drawings on the following pages are exploded diagrams of the structure of the different VAR variants.
 - ▷ Note the order of components for disassembly and subsequent reassembly.
 - ▷ Check and clean the disassembled components.
 - ▷ Replace damaged components as well as disassembled seals and aluminium washers.
 - ▷ Spare parts can be ordered as a kit (VAR 25 to 50) or separately (VAR 65 to 100).
 - ▷ Selection of spare parts in the PartDetective. Request a free copy of the PartDetective DVD at: www.kromschroeder.com → Products → DVD → PartDetective (D/GB).
 - ▷ The numbers in the drawings correspond to the spare part numbers from the PartDetective.
 - ▷ The following tools are required for the maintenance work:
 - Set of Allen keys
 - Spanner set
 - Circlip pliers
 - ▷ Check all joints that have been opened for leaks.

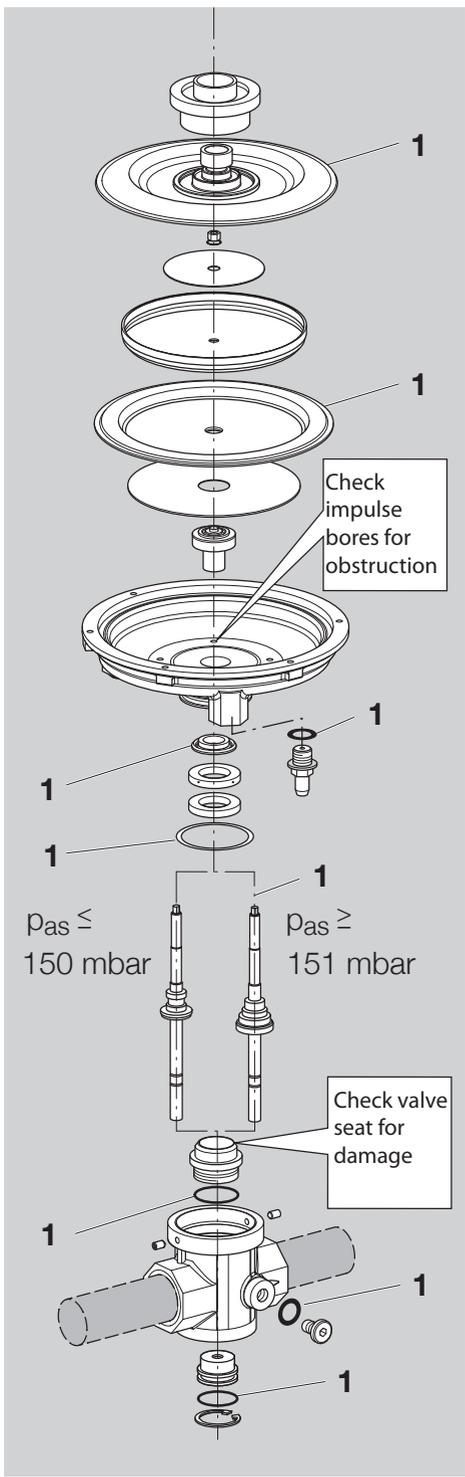
VAR 25

⚠ WARNING

Risk of injury! The spring is compressed.

- Decompress the spring, see page 4 (Replacing the spring), steps **3** to **5**. First turn the adjusting screw as far as it will go to decompress the spring and then turn it back again 5 turns in order not to lock the spring counter bearing.
 - Vent the system before carrying out the maintenance work.
- ▷ We recommend replacing the entire spare parts kit when servicing the VAR 25.

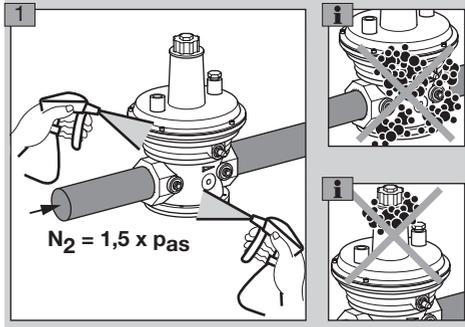




- ▷ Check the valve seat: if the valve seat is damaged, dismantle the unit and send it to the manufacturer.

Tightness test after maintenance work

- ▷ Check all joints that have been opened for leaks.



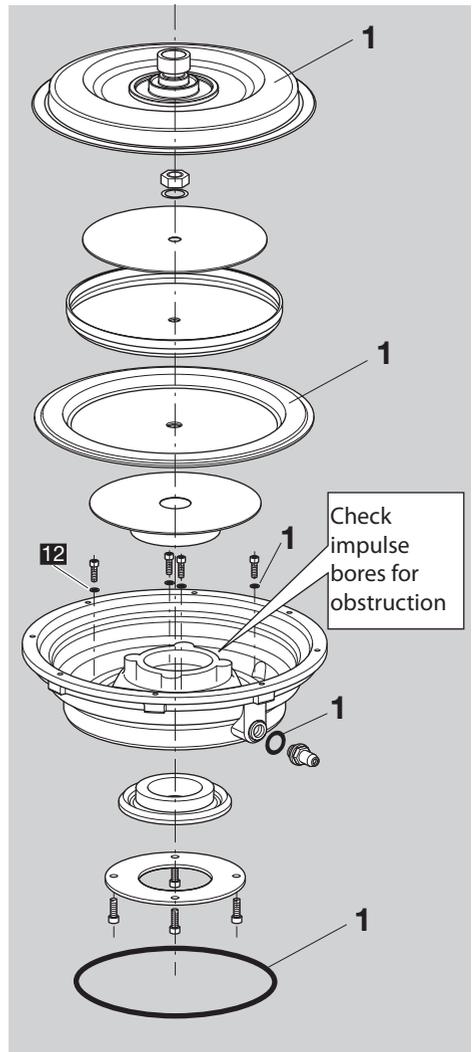
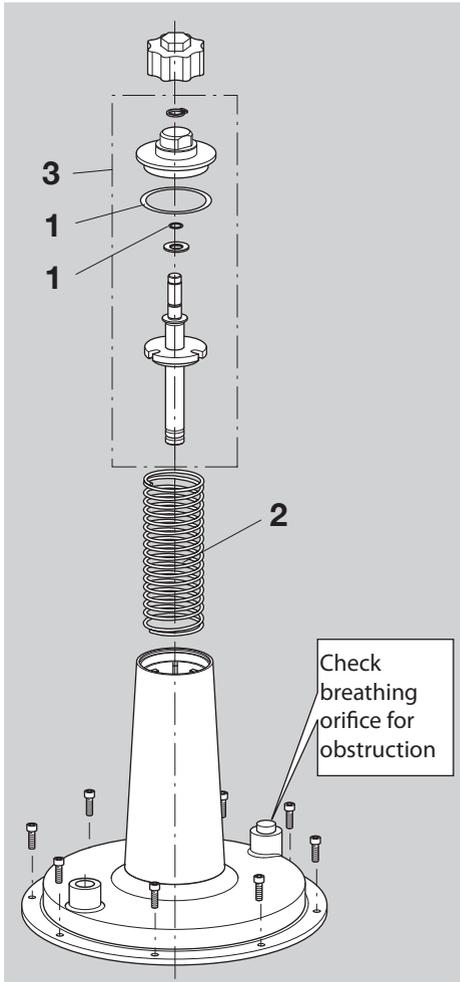
- ▷ Adjust the required opening pressure p_{as} , see page 4 (Adjusting the opening pressure p_{as}).
- ▷ Check the opening pressure p_{as} , see page 3 (Checking the opening pressure p_{as}).

VAR 40 to 50

⚠ WARNING

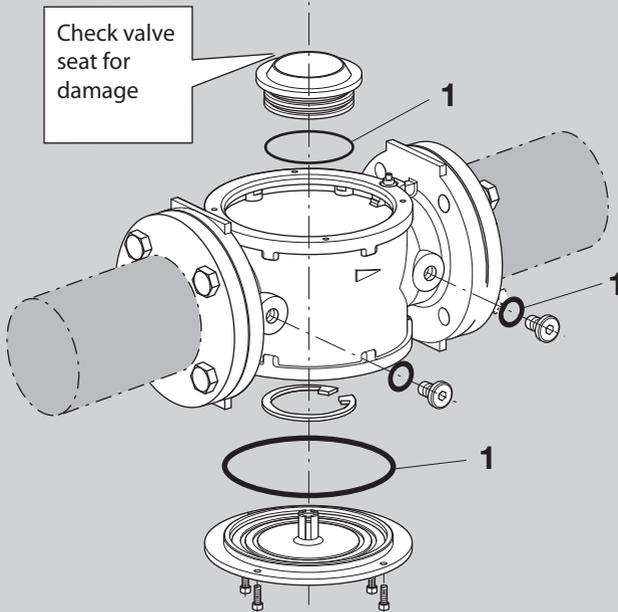
Risk of injury! The spring is compressed.

- Decompress the spring, see page 4 (Replacing the spring), steps **3** to **5**. First turn the adjusting screw as far as it will go to decompress the spring and then turn it back again 5 turns in order not to lock the spring counter bearing.
 - Vent the system before carrying out the maintenance work.
- ▷ On variants VAR 40R05-1 and VAR 50R05-1, it is not possible to disassemble the valve seat.
- ▷ We recommend replacing the entire spare parts kit when servicing VAR 40 – 50.
- ▷ Replace the aluminium washers **12** each time the unit is disassembled.



$p_{as} \leq 150 \text{ mbar}$

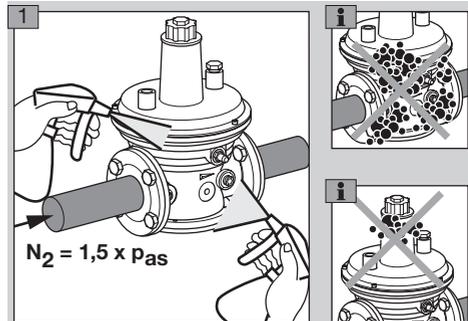
$p_{as} \geq 151 \text{ mbar}$



- ▷ Check the valve seat: if the valve seat is damaged, dismantle the unit and send it to the manufacturer.

Tightness test after maintenance work

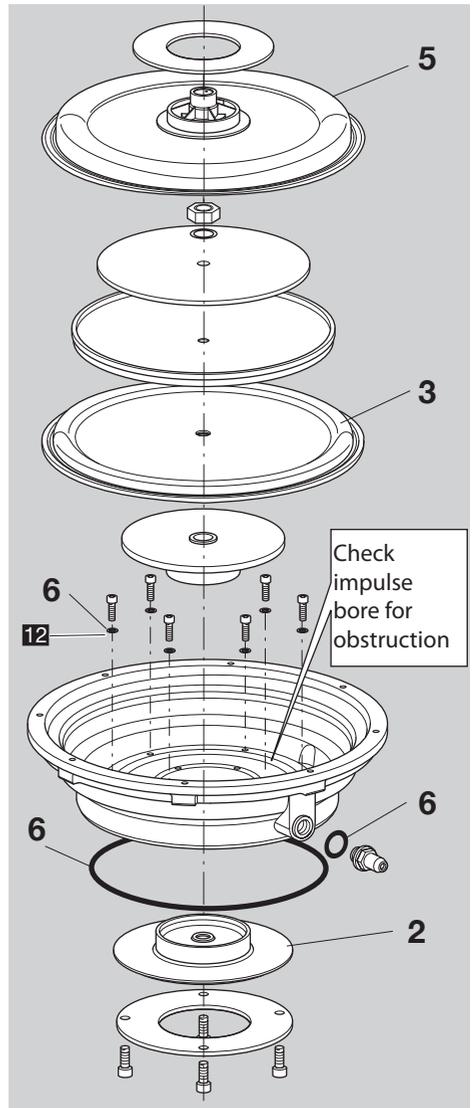
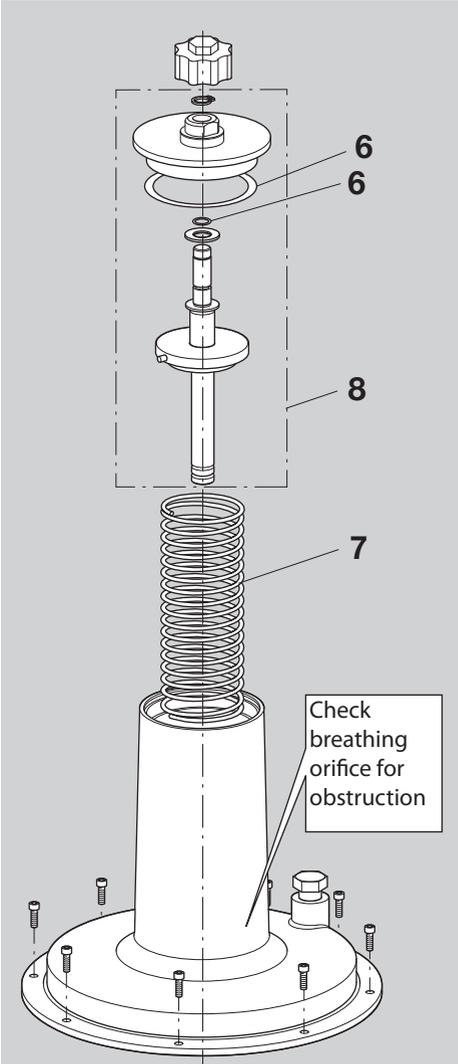
- ▷ Check all joints that have been opened for leaks.
- ▷ Adjust the required opening pressure p_{as} , see page 4 (Adjusting the opening pressure p_{as}).
- ▷ Check the opening pressure p_{as} , see page 3 (Checking the opening pressure p_{as}).



⚠ WARNING

Risk of injury! The spring is compressed.

- Decompress the spring, see page 4 (Replacing the spring), steps **3** to **5**. First turn the adjusting screw as far as it will go to decompress the spring and then turn it back again 5 turns in order not to lock the spring counter bearing.
 - Vent the system before carrying out the maintenance work.
- ▷ The spare parts are available separately. See free PartDetective DVD.
- ▷ Replace the six aluminium washers **12** each time the unit is disassembled.



$p_{as} \leq 150 \text{ mbar}$

$p_{as} \geq 151 \text{ mbar}$

1

1

Check valve seat for damage

6

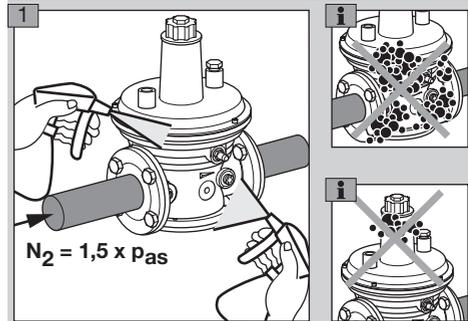
6

6

- ▷ Check the valve seat: if the valve seat is damaged, dismantle the unit and send it to the manufacturer.
- ▷ Install the spring counter bearing in the correct position, see page 4 (VAR 65 to 100).

Tightness test after maintenance work

- ▷ Check all joints that have been opened for leaks.
- ▷ Adjust the required opening pressure p_{as} , see page 4 (Adjusting the opening pressure p_{as}).
- ▷ Check the opening pressure p_{as} , see page 3 (Checking the opening pressure p_{as}).

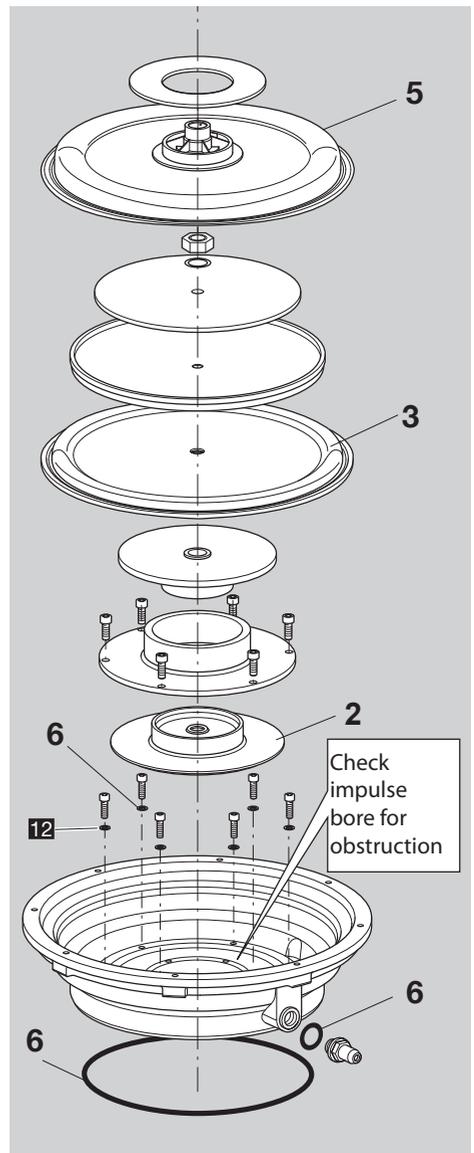
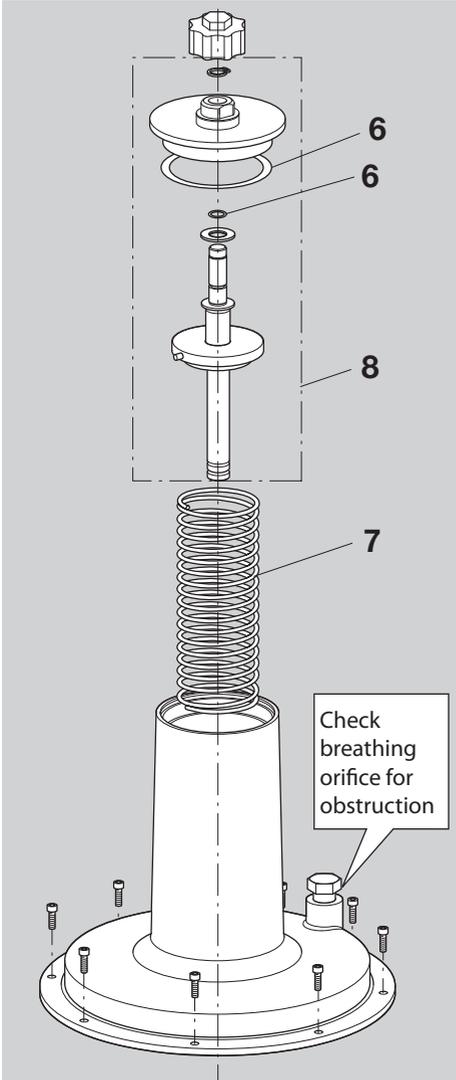


VAR 80 to 100

⚠ WARNING

Risk of injury! The spring is compressed.

- Decompress the spring, see page 4 (Replacing the spring), steps **3** to **5**. First turn the adjusting screw as far as it will go to decompress the spring and then turn it back again 5 turns in order not to lock the spring counter bearing.
 - Vent the system before carrying out the maintenance work.
- ▷ The spare parts are available separately. See free PartDetective DVD.
- ▷ Replace the six aluminium washers **12** each time the unit is disassembled.



$p_{as} \leq 150 \text{ mbar}$

$p_{as} \geq 151 \text{ mbar}$

1

1

Check valve seat for damage

6

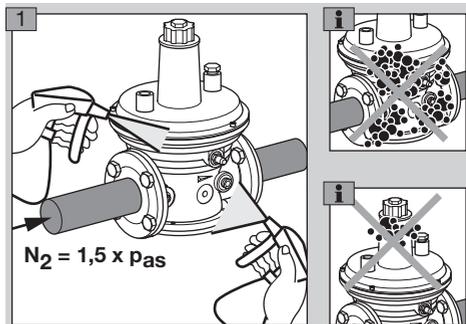
6

6

- ▷ Check the valve seat: if the valve seat is damaged, dismantle the unit and send it to the manufacturer.
- ▷ Install the spring counter bearing in the correct position, see page 4 (VAR 65 to 100).

Tightness test after maintenance work

- ▷ Check all joints that have been opened for leaks.
- ▷ Adjust the required opening pressure p_{as} , see page 4 (Adjusting the opening pressure p_{as}).
- ▷ Check the opening pressure p_{as} , see page 3 (Checking the opening pressure p_{as}).



Technical data

Gas types: town gas, natural gas, LPG (gaseous) and biogas (max. 0.02 %-by-vol. H₂S). The gas must be dry in all temperature conditions and must not contain condensate.

Inlet pressure p_u max.: 500 mbar.

Ambient temperature: -15 to +60°C.

Internal thread: Rp to ISO 7-1,

Flanged connection: PN 16 to ISO 7005.

Housing: aluminium,

diaphragms: Perbunan,

valve seat: aluminium,

valve stem: aluminium,

valve disc: Perbunan seal.

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 and EN 88 for VAR: 15 years.

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 13 (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

The regulator complies with the essential health and safety requirements of the corresponding chapters in Annex 2 of the Machinery Directive 2006/42/EC in conjunction with EN 13611.

Eurasian Customs Union



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

Spring table

▷ Various opening pressure ranges can be achieved by using different springs on the VAR.

- 1 Choose a spring according to the required opening pressure range p_{as} .

Spring table

Opening pressure range p_{as} [mbar]	Marking	Order No.				
		VAR 25, VAR 40	VAR 50	VAR 65	VAR 80	VAR 100
10–25	red	7 542 197 1	7 542 204 1	7 542 617 0	7 542 624 0	7 542 632 0
26–40	yellow	7 542 198 0	7 542 205 1	7 542 618 0	7 542 625 0	7 542 633 0
41–55	green	7 542 199 0	7 542 206 1	7 542 619 0	7 542 626 0	7 542 634 0
56–70	blue	7 542 200 0	7 542 207 1	7 542 620 0	7 542 627 0	7 542 635 0
71–85	black	7 542 201 0	7 542 208 1	7 542 621 0	7 542 628 0	7 542 636 0
86–100	white	7 542 202 0	7 542 209 1	7 544 622 0	7 542 629 0	7 542 637 0
101–150	black/red	7 543 897 8	7 543 898 1	7 544 632 9	7 543 898 4	7 543 898 7
151–220	black/yellow	7 543 897 9	7 543 898 2	–	7 543 898 5	7 543 898 8
221–340	black/green	7 543 898 0	7 543 898 3	–	7 543 898 6	7 543 898 9

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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