GESTRA Steam Systems

VK 14
VK 16

GB

Installation Instructions 818577-01

Vaposcope Sightglass
VK 14, VK 16

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Important Notes

Usage for the intended purpose

VK 14, VK 16:
Use the Vaposcope sightglass only as sight flow indicator for monitoring flow in pipes.
Use this equipment only within the specified pressure and temperature ratings and check corrosion resistance and chemical suitability for the application in question.

Safety note

The equipment must only be installed and commissioned by qualified staff.

Maintenance and service work must only be performed by adequately trained persons who have a recognised level of competence.

Danger

The equipment is under pressure during operation.

When loosening flanged connections or sealing plugs, hot water or steam may escape.

This presents the danger of severe scalds to the whole body.

The equipment becomes hot during operation.

This presents the risk of severe burns to hand and arms. Installation and maintenance work should only be carried out at room temperatures.

Before servicing the equipment or loosening flanged connections or sealing plugs make sure that all connected lines are depressurised (0 bar) and the equipment has cooled down to room temperature.

Sharp edges on internals present a danger of cuts to hands. Always wear industrial gloves for installation and maintenance work.

Attention

The name plate specifies the technical features of the equipment.
Note that any piece of equipment without its specific name plate must neither be commissioned nor operated.

Pressure Equipment Directive (PED)

The equipment fulfills the requirements of the Pressure Equipment Directive PED 97/23/EC.
For applications with fluids of group 2.
With CE marking (apart from equipment according to section 3.3).

ATEX (Atmosphère Explosible)

The equipment does not have its own potential source of ignition and is therefore excluded from the scope of the ATEX Directive 94/9/EC.

Applicable in Ex zones 0, 1, 2, 20, 21, 22 (1999/92/EC). The equipment is not Ex marked.

Explanatory Notes

Scope of supply

VK 14
1 Vaposcope sightglass VK 14
1 Installation manual

VK 16
1 Vaposcope sightglass VK 16
1 Installation manual

Description

The GESTRA Vaposcope is a sight flow indicator specially designed for monitoring flow conditions in pipelines. If installed upstream of steam traps the Vaposcope can be used for checking the traps for steam loss or for banking up of condensate.

- **VK 14** sightglass PN 16
- **VK 16** sightglass PN 40

Function

Steam and condensate flow in a pipe in separate phases towards the steam trap. The regulator of a properly working steam trap is adjusted in such a way that only condensate but not steam is discharged. The condensate in the sightglass VK … flows under the deflector which remains immersed, or at least touches the condensate surface. Due to this siphon effect condensate is continuously moved to the steam trap where it is evacuated. **Fig. 1**

Complete flooding of the Vaposcope VK … indicates banking-up of condensate. This may be done on purpose or because the steam trap is either undersized or failing to work correctly. **Fig. 2**

If the water level in the sightglass VK … is being considerably depressed during normal operation, it is a sure sign that the steam trap is passing live steam. The regulator of the steam trap is probably failing or the cleaning valves are open. **Fig. 3**

Fig. 1

Fig. 2

Fig. 3

Technical Data

Corrosion resistance

When used for its intended purpose the safe functioning of the equipment will not be impaired by corrosion.

Sizing

The body must not be subjected to sharp increases in pressure. The dimensional allowances and anti-corrosive additives reflect the latest state of technology.

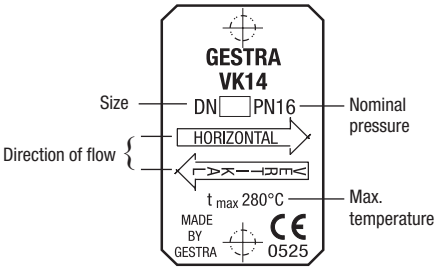
Name plate / marking

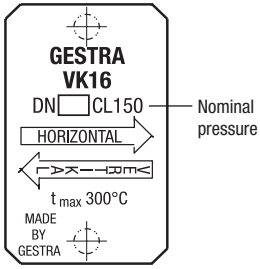
For pressure and temperature ratings see indications on body or specifications on the name plate.

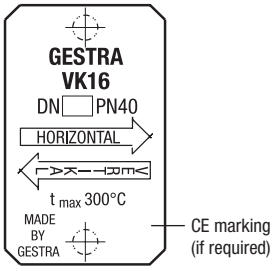
For more information refer to GESTRA technical literature, such as data sheets and Technical Information.

According to EN 19 the following indications are stated on the name plate and the body:

- Manufacturer's logo
- Type designation: VK 14 / VK 16
- Pressure class PN
- Marking according to ATEX: The equipment is not Ex marked
- Material number
- Max. temperature
- Max. pressure
- Direction of flow
- Stamp on body, e. g. $\frac{1}{05}$ specifies the quarter and the year of production (Example: 1st quarter 2005).







Design

VK 14, VK 16

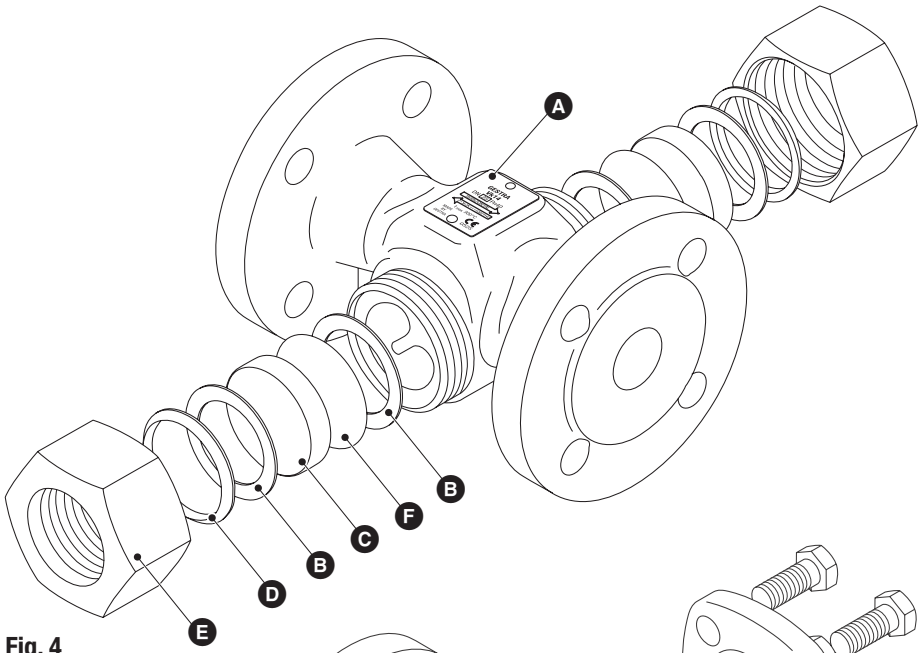


Fig. 4
VK 14, DN 15-25

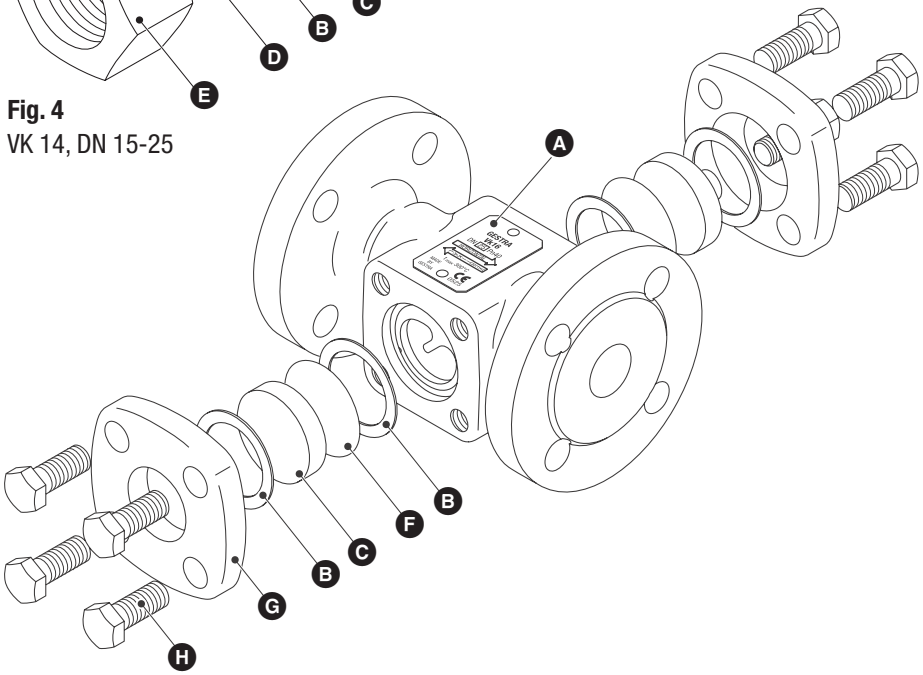


Fig. 5 VK 14, DN 40, 50, VK 16, DN 15–50

Design – continued –

Key

- **A** Name plate
- **B** Sightglass gasket
- **C** MAXOS® safety sightglass
- **D** Spherical washer
- **E** Union nut
- **F** Mica disk
- **G** Flange
- **H** Hexagon-head cap screw

MAXOS® is a registered trademark of SCHOTT AG, Grünenplan, Deutschland

Installation

Danger

The equipment is under pressure during commissioning and operation.
The equipment is hot during operation.
This presents the risk of severe burns to hands and arms.

Do not install or service the equipment unless the system pressure is verified to be 0.
The lines upstream and downstream of the equipment must be depressurised.

VK 14, VK 16

The Vaposcope should be installed in accordance with the flow direction arrow and **upsteam** of the steam trap with the deflector pointing downwards. The equipment can be used in horizontal or vertical pipelines without any modification.

Design with flanges

1. Take position of installation into account.
2. Observe the direction of flow. The flow arrow is on the name plate.
3. Consider space required for opening or servicing the equipment. When the Vaposcope is installed a minimum space of **70 mm** is required for replacing the sightglass ⓒ.
4. Remove plastic plugs. They are only used as transit protection.
5. Clean seating surfaces of both flanges.
6. Install Vaposcope.

Design with screwed sockets

1. Take position of installation into account.
2. Observe the direction of flow. The flow arrow is on the name plate.
3. Consider space required for opening or servicing the equipment. When the Vaposcope is installed a minimum space of **70 mm** is required for replacing the sightglass ⓒ.
4. Remove plastic plugs. They are only used as transit protection.
5. Clean threads of screwed sockets.
6. Install Vaposcope.

Installation – continued –

Design with socket-weld ends

1. Take position of installation into account.
2. Observe the direction of flow. The flow arrow is on the name plate.
3. Consider space required for opening or servicing the equipment. When the Vaposcope is installed a minimum space of **70 mm** is required for replacing the sightglass **C**.
4. Remove plastic plugs. They are only used as transit protection.
5. Clean socket-weld ends.
6. Apply arc welding processes 111 and 141 in accordance with ISO 4063.

Attention

- Only qualified welders certified e. g. according to EN 287-1 may weld the equipment into pressurised lines.
- It is not necessary to remove the sightglasses before welding the equipment in place. Only if an annealing process is applied remove the sightglasses beforehand.

Commissioning

Make sure that the flanged connections of the VK 14, VK 16 are tightly bolted and leakproof.

Operation

With some operating modes VK 14 and VK 16 must be serviced. For more information see section **“Maintenance”**.

Maintenance

The GESTRA sightglass Vaposcope VK 14/VK 16 does not require special maintenance. However, if used in new installations which have not been rinsed the equipment should be checked and cleaned after the commissioning procedure.

VK 14, DN 15, 20, 25: Replacing MAXOS® safety sightglass

1. Observe danger note on page 4.
2. Carefully unscrew union nuts Ⓔ and remove spherical washers Ⓓ, old sightglass gaskets Ⓑ, old safety sightglasses Ⓒ and mica disks Ⓕ.
3. Carefully remove all old sightglass gaskets Ⓑ from the sealing surfaces of the body.
4. Remove dirt and deposits from the sightglass body.
5. Insert new sightglass gaskets Ⓑ in the body.
6. Insert spherical washers Ⓓ, new sightglass gaskets Ⓑ, new MAXOS® safety sightglasses Ⓒ and new mica disks Ⓕ in the union nuts Ⓔ.
7. Screw in union nuts Ⓔ and tighten them with the torque indicated in table “Torques for tightening”.

VK 14, DN 40, 50: Replacing MAXOS® safety sightglass

1. Observe danger note on page 4.
2. Unscrew hexagon-head cap screws Ⓗ and remove flange Ⓖ, old sightglass gaskets Ⓑ, old safety sightglasses Ⓒ and mica disks Ⓕ.
3. Carefully remove all old sightglass gaskets Ⓑ from the sealing surfaces of the body.
4. Remove dirt and deposits from the sightglass body.
5. Insert new sightglass gaskets Ⓑ in the body.
6. Apply heat-resistant lubricant to hexagon-head cap screws Ⓗ (e. g. WINIX 2150).
7. Mount new sightglass gaskets Ⓑ, new MAXOS® safety sightglasses Ⓒ and new mica disks Ⓕ with flanges Ⓖ and hexagon-head cap screws Ⓗ.
8. Screw in hexagon-head cap screws Ⓗ and tighten them with the torque indicated in table “Torques for tightening”.

VK 16, DN 15, 20, 25, 40, 50: Replacing MAXOS® safety sightglass

1. Observe danger note on page 4.
2. Unscrew hexagon-head cap screws Ⓗ and remove flange Ⓖ, old sightglass gaskets Ⓑ, mica disks Ⓕ and old safety sightglasses Ⓒ.
3. Carefully remove all old sightglass gaskets Ⓑ from the sealing surfaces of the body.
4. Remove dirt and deposits from the sightglass body.
5. Insert new sightglass gaskets Ⓑ in the body.
6. Apply heat-resistant lubricant to hexagon-head cap screws Ⓗ (e. g. WINIX 2150).
7. Mount new sightglass gaskets Ⓑ, new mica disks Ⓕ and new MAXOS® safety sightglasses Ⓒ with flanges Ⓖ and hexagon-head cap screws Ⓗ.
8. Screw in hexagon-head cap screws Ⓗ and tighten them with the torque indicated in table “Torques for tightening”.

WINIX® 2150 is a registered trademark of WINIX GmbH, Norderstedt

Maintenance – continued –

Tools

- Combination spanner A. F. 60, DIN 3113, form B
- Combination spanner A. F. 24, DIN 3113, form B
- Combination spanner A. F. 18, DIN 3113, form B
- Torque spanner 25 – 130 Nm, ISO 6789

Torques required for tightening VK 14

Item	Designation	Torque [Nm] DN 15 – 25	Torque [Nm] DN 40 – 50
E	Union nut	130	
H	Hexagon-head cap screws		60

All torques are based at 20 °C room temperature.

Torques required for tightening VK 16

Item	Designation	Torque [Nm] DN 15 – 25	Torque [Nm] DN 40 – 50
H	Hexagon-head cap screws	30	60

All torques are based at 20 °C room temperature.

Spare Parts

Spare parts list VK 14

Item	Designation	Stock code # DN 15 – 25	Stock code # DN 40, 50
Ⓒ, Ⓑ, Ⓕ	Sightglass incl. gaskets and mica disks	703489	
Ⓒ, Ⓑ	Sightglass incl. gaskets		703488

Spare parts list VK 16

Item	Designation	Stock code # DN 15 – 25	Stock code # DN 40, 50
Ⓒ, Ⓑ, Ⓕ	Sightglass incl. gaskets and mica disks	703489	703490

Decommissioning

Danger

Risk of severe burns and scalds to the whole body!

Before loosening flanged connections or sealing plugs, make sure that all connected lines are depressurised (0 bar) and cooled down to room temperature (20 °C).

Disposal

Dismantel the equipment and separate the waste materials.

For the disposal of the equipment observe the pertinent legal regulations concerning waste disposal.

Annex

CE Declaration of Conformity

We hereby declare that the equipment **VK 14** and **VK 16** conform to the following European Directive:

- EC Pressure Equipment Directive (PED) No. 97/23 of 29 May 1997 (apart from equipment according to section 3.3)

Applied conformity assessment procedure: Annex III, Module H, verified by the Notified Body 0525.

This declaration is no longer valid if modifications are made to the equipment without consultation with us.

Bremen, 2nd February 2004
GESTRA AG

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