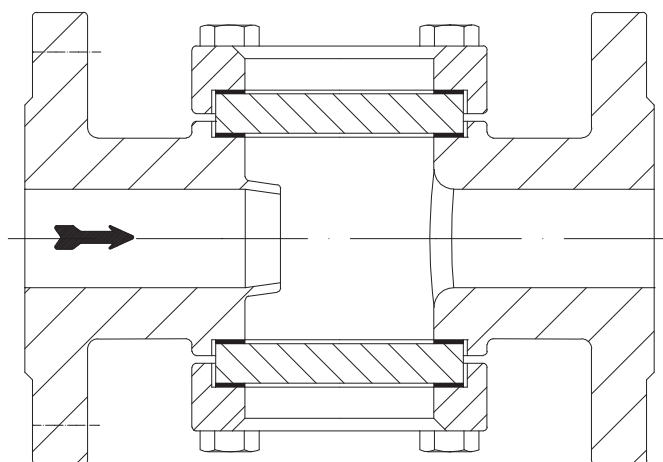




Operating and installation instructions

Double window sight glasses (PN16 / 40)



PN16 / PN40

- with flanges (BR 660....1)
- with screwed sockets (BR 660....2)
- with butt weld ends (BR 660....4)

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1.0 General information on operating instructions

These operating instructions provide information on mounting and maintaining the valves. Please contact the supplier or the manufacturer in case of problems which cannot be solved by reference to the operating instructions.

They are binding for transport, storage, installation, start-up, operation, maintenance and repair.

The notes and warnings must be observed and adhered to.

- Handling and all other work must be carried out by expert personnel or all activities supervised and checked.

It is the owner's responsibility to define areas of responsibility and competence and to supervise personnel.

- In addition, current regional safety requirements must be applied and observed when taking the valves out of service as well as when maintaining and repairing them.

The manufacturer reserves the right to introduce technical modifications or improvements at any time.

These operating instructions comply with the requirements of EU Directives.

2.0 Notes on possible dangers

2.1 Significance of symbols



Warning of general danger.

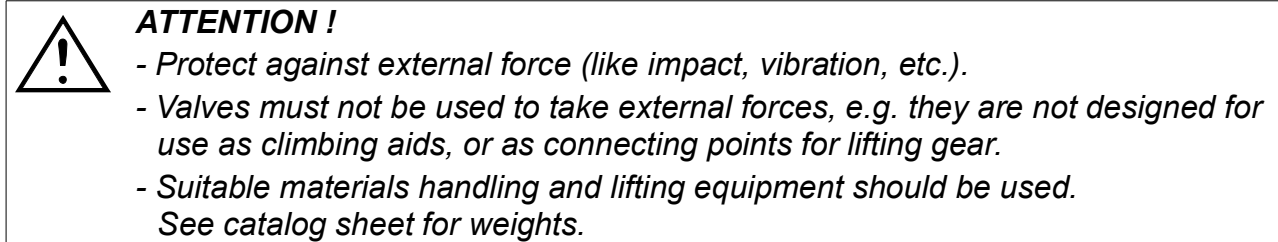
2.2 Explanatory notes on safety information

In these operating and installation instructions dangers, risks and items of safety information are highlighted to attract special attention.

Information marked with the above symbol and "**ATTENTION !**" describe practices, a failure to comply with which can result in serious injury or danger of death for users or third parties or in material damage to the system or the environment. It is vital to comply with these practices and to monitor compliance.

All other information not specifically emphasised such as transport, installation, operating and maintenance instructions as well as technical data (in the operating instructions, product documentation and on the device itself) must also be complied with to the fullest extent in order to avoid faults which in turn can cause serious injury to persons or damage to property.

3.0 Storage and transport



- At -10°C to +40°C in a clean and dry room.
- The transport must only be carried out by qualified personnel.
- The sight glasses should be professionally packed and protected from dirt and moisture during transport and storage.

- The glass plates must be protected against impact and scratching.
- After storage time of max. 36 months. the gaskets must be checked and possibly be replaced.
- The protective caps should first be removed shortly before fitting to avoid damage to the sealing surfaces.
- The paint is a base coat to protect against corrosion during transportation and storage. Do not damage paint protection. Avoid condensation at all costs.

4.0 Description

4.1 Scope of applications

Double window sight glasses are used for the checking of media flow in pipelines and the monitoring of apparatus and system function.



ATTENTION !

- Refer to the data sheet for applications, limits on use and possibilities.
- Certain media require or preclude the use of special materials.
- The valves are designed for standard operating conditions. If conditions exceed these requirements, e.g. aggressive or abrasive media, the operator should state the higher requirements when ordering.
- Valves made from grey cast iron are not authorised for use in systems subject to TRD 110.

The information complies to the Pressure Equipment Directive 2014/68/EU.

It is the responsibility of the machine planner to ensure compliance.

The special markings on the valve must be taken into account.

Refer to the catalogue sheet to see which materials are used in standard versions.

Please contact the supplier or the manufacturer if you have any questions.

4.2 Operating principles

(refer to Fig. 2 page 4)

The double window sight glass allows visual inspection of flow in pipelines.

It has no moving parts.

The double window sight glass is installed in the pipeline upstream of the steam trap.

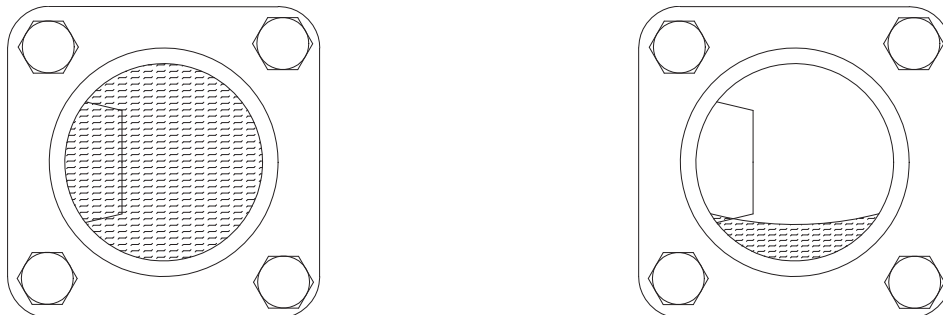


Fig. 1

Back pressure of condensate

If the pipeline is flooded due to back pressure, condensate (will back up) fill the glass with liquid.

Steam flow

On steam flow, the liquid level is lowered. Intensive mixture of water and steam can lead to an intensive bubbling.

4.3 Diagram

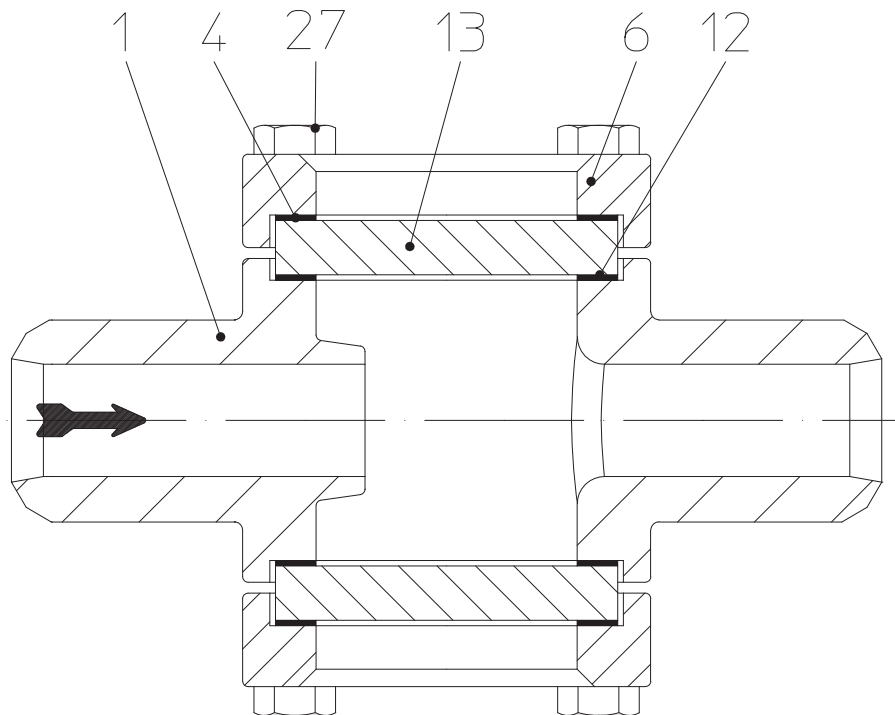


Fig. 2: Double window sight glass - series 660 PN16/40
DN 6 - 200

Refer to the data sheet for information about materials with designations and figure numbers.

4.4 Technical data - remarks

for

- Principal dimensions,
- Pressure-temperature-ratings, operating limits,
- Valves with different types of connection , etc.
refer to datasheet.

4.5 Marking

Details of CE marking on valve:

CE CE-marking

0036 Notified body

Noris Manufacturer

Typ Type

Bj. Year of manufacture

According to the Pressure Equipment Directive appendix 2 diagram 7 valves acc. to article 1 paragraph 2.1.2 (pipes) only show the CE-marking from DN40 onwards.

5.0 Installation

5.1 General notes on installation

The following points should be taken into account besides the general principles governing installation work:



ATTENTION !

- *Remove flange covers if present.*
- *The interior of valve and pipeline must be free from foreign particles.*
- *Installation in any position. Note installation position with reference to flow, see mark on valve.*
- *Steam line systems should be designed to prevent water accumulation.*
- *Lay pipelines so that damaging transverse, bending and torsional forces are avoided.*
- *Protect valves from dirt during construction work.*
- *Connection flanges must mate precisely.*
- *Valves must not be used to take external forces, e.g. they are not designed for use as climbing aids, or as connecting points for lifting gear.*
- *Suitable materials handling and lifting equipment should be used.*
See data sheet for weights.
- *Centre gaskets between the flanges.*
- *Precautions against freezing should be taken in any facilities susceptible to frost.*
- *Protective caps should first be removed shortly before fitting to avoid damage to the sealing surfaces.*

- Planners / construction companies or operators are responsible for positioning and installing products.
- The valves are designed for application, not influenced from weather.
- For application outside or in adverse environments like corrosion-promoting conditions (sea water, chemical vapours, etc.), special constructions or protective measures are recommended.

5.2 Installation the sight glass plate

- Fit the new inner (body-side) gasket and new sight glass plate of the correct dimensions and quantity exactly centrally. The gasket must not protrude into the window diameter of the sight glass. The glass plate must have a largely equal gap, which should be approx. 1.0 - 1,5 mm, to the cylindrical sight glass recess over the entire outer diameter. Under no circumstances must there be any contact between the glass plate and the metal body! This would lead to damage and failure of the glass plates due to the different expansion coefficients!
- Place the outer (cover-side) intermediate layer and the sight glass cover exactly central on the glass plate. It is also essential to ensure the above-mentioned circumferential gap of approx. 1.0 - 1,5 mm between the glass plate and the cover flange.
- To ensure defined friction values, apply temperature-resistant thread paste (for example, OKS 250 Allroundpaste) to the fastening screws, screw in carefully and tighten lightly by hand.
- Now, using a torque wrench, tighten all fastening screws in several small steps and crosswise to the tightening torques given in the table (see point 7.1). All screws must have exactly the same tightening torque to avoid glass stresses! The torques depend primarily on the gasket material used.



5.3 Installation instructions

(refer to Fig. 2 page 4)

The responsibility for this lies with the system owner.

5.3.1 Flange connection

Piping flanges must be concentric and parallel. The flange size and the shape of the sealing surface must match the sight glass.

Clearance of the pipe flanges = overall length of the sight glasses + 2 x gasket thickness.

5.3.2 Female thread connection

The internal thread of the sight glasses must match the external pipe thread according to thread type, size and pitch. When screwing in the NORIS sight glass, it is essential to hold it directly at the end to be screwed in using a suitable open-ended spanner or pliers. Do not hold the sight glass by the sight glass cover, as otherwise glass breakage may result.

5.3.3 Butt weld ends

Before welding, the welding ends of sight glasses and pipes must be thoroughly cleaned and checked to ensure that they fit together (diameter, welding bevel, etc.).

Welding must only be carried out by qualified personnel using suitable welding processes and filler materials in accordance with the valid rules of technology. Arc welding is to be preferred.

Please refer to the catalogue sheet for information on type and instructions relating to welding socket weld ends/butt weld ends.

When welding products to the pipeline system these should be adequately cooled to prevent any adverse effect on the sight glass plate (Pos. 13), the interlayer (Pos. 4) and the flat gasket (Pos. 12). The heat-affected zone should be restricted to the immediate weld seam area!

Note pre- and post-welding heat treatment in accordance with Material Fact Sheet DIN EN 10222.

5.4 Installation position

(refer to Fig. 2 page 4)

The double window sight glass can be operated in a horizontal and vertical installation position without modification.

It should be installed upstream of the steam trap.

6.0 Putting the valve into operation



ATTENTION !

- Before putting the valve into operation, check the material, pressure, temperature and direction of flow.
 - Regional safety instructions must be adhered to.
 - Residues in piping and valves (dirt, weld beads, etc.) inevitably lead to leakage and / or damage.
 - Touching the valve when it is operating at high ($> 50\text{ °C}$) or low ($< 0\text{ °C}$) media temperatures can cause injury.
Affix a warning notice or provide protective insulation as appropriate.
- Before putting a new plant into operation or restarting a plant after repairs or modification, always make sure that:
- All work has been completed correctly.
 - The valve is in the correct position for its function.
 - Safety devices have been attached.

Note

- Although highly durable, sight glass plates in accordance with DIN 8902 and DIN 7080 are wearing parts with a limited service life. This is highly dependent on the specific stress during operation. With increasing temperature and increasing pH value of the medium, the glass abrasion increases exponentially. Severe glass abrasion can have a very negative impact on operational safety. In the event of visible glass abrasion (for example, becoming "milky"), all sight glass plates with gaskets must be replaced.
- It is advisable to document the specific duration of use of the glass plates so that empirical values can be collected on the service life in the specific case of use. This means that the timely and routine replacement of the glass plates can be adequately and well planned.

7.0 Care and maintenance

Sight glasses require no special maintenance.

Maintenance and maintenance-intervals have to be defined by the operator according to the requirements.



ATTENTION !

- refer to item 10.0 and 12.0 prior to dismantling and repair work!
- refer to item 6.0 before restarting the plant !

Prior to installation, threads should be coated with temperature-stable lubricant (e.g. OKS 250 Allroundpaste).

Similarly, renewal of the sight glass plates is necessary if they are attacked by flow or aggressive media and show a fissured surface (loss of strength!).

Sight glass plates removed after operational use must not be reused.

If the sight glass plates are dirty on the outside, they can be cleaned carefully. The glass surfaces must not be scratched under any circumstances (loss of strength!). Commercially available cleaning agents, in particular special glass cleaning agents, may be used. Use clean, soft cloths!

If sight glasses are replaced, the seals (Pos. 12) of suitable quality and interlayer (Pos. 4) should be replaced at the same time (refer to Fig. 2 page 4).

After start-up the sight glass unions (Pos. 27) should be carefully retightened finally with the following tightening torques (refer to item 7.1).

7.1 Tightening torques

Tighten all nuts (fastening screws) in several little steps and crosswise (refer to Fig. 3) with a torque wrench to the torques mentioned in the below table. All fastening screws must show exactly the same torque to avoid glass tensions.

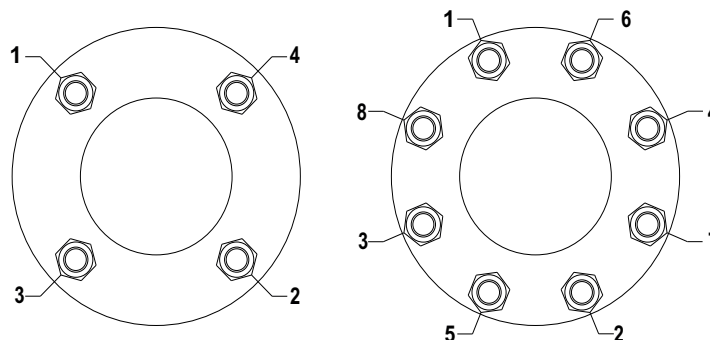
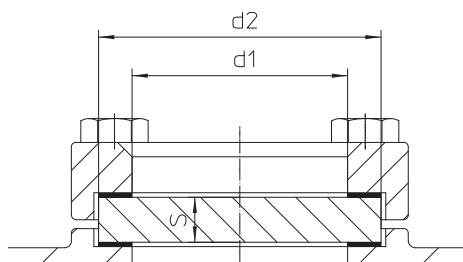


Fig. 3



Glass Ø d2 in mm	View Ø d1 in mm	Torque (Nm)							
		4 × M10		4 × M12		4 × M16		8 × M16	
		5.6	A4-70	5.6	A4-70	5.6	A4-70	5.6	A4-70
45	32	15	20						
63	48			30	30				
80	65					40	40		
100	80					60	60	30	40
125	100							50	60
150	125							65	70
175	150							70	80
200	175							80	90

Table 1: Torques of cover flange screws for lubricated fastening screws and for standard seals made of graphite with stainless steel reinforcement

Correction values for other sealing materials:

PTFE:	above mentioned values × 1.0
Aramid fibre:	above mentioned values × 0.7
FKM, Silicone, EPDM etc.	above mentioned values × 0.6
Other materials	on request

Second opposite glass plate side is to be disassembled and assembled again as described above.

Finally the sight glass fitting is to be checked for thickness (e.g. with compressed air [approx. 2 - 6 bar] under water).

After first restarting the cover flange screws must be controlled absolutely with the above described torques in cold and pressureless condition to meet the „settling“ of the new seals.

8.0 Troubleshooting

In the event of malfunction or faulty operating performance check that the installation and adjustment work has been carried out and completed in accordance with these Operating Instructions.



ATTENTION !

It is essential that the safety regulations are observed when identifying faults.

If malfunctions cannot be eliminated with the help of the following table “9.0 Troubleshooting table”, the supplier or manufacturer should be consulted.

9.0 Troubleshooting table



ATTENTION !

- refer to item 10.0 and 12.0 prior to dismantling and repair work!
- refer to item 6.0 before restarting the plant !

Fault	Possible cause	Corrective measures
No flow	Flange covers not removed	Remove flange covers
Little flow	Piping system clogged	Check piping system
External leakage	Hexagon nuts (Pos. 28) or fastening screws (Pos. 27) on cover not properly tightened	Tighten; see 7.1

10.0 Dismantling the sight glass plate



ATTENTION !

The following points must be observed:

- Pressureless pipe system.
- Medium must be cool.
- Plant must be drained.

- Loosen the fastening screws of the cover flanges crosswise in several steps.
- Remove the cover flanges.



- Remove the sight glass plate as well as the inner gasket and the cover-side intermediate layer.
- Carefully clean off gasket residues from the sealing surface on the body as well as the contact surface in the cover flange and check for damage (grooves, washouts, impact points, etc.). Both surfaces must be absolutely clean, flat and without damage!

11.0 Disposal

Note

Danger to the environment due to incorrect disposal!

- *Only dispose of the double window sight glasses properly and when completely empty of any residue.*
- *Double window sight glasses that have come into contact with hazardous media must be decontaminated before disposal.*
- *The operator of the applicable statutory regulations for proper, environmentally friendly disposal must be observed.*

12.0 Warranty / Guarantee

The extent and period of warranty cover are specified in the "Standard Terms and Conditions of Albert Richter GmbH & Co. KG" valid at the time of delivery or, by way of departure, in the contract of sale itself.

We guarantee freedom of faults in compliance with state-of-the-art technology and the confirmed application.

No warranty claims can be made for any damage caused as the result of incorrect handling or disregard of operating and installation instructions, technical data sheets and relevant regulations.

This warranty also does not cover any damage which occurs during operation under conditions deviating from those laid down by specifications or other agreements.

Justified complaints will be eliminated by repair carried out by us or by a specialist appointed by us.

No claims will be accepted beyond the scope of this warranty. The right to replacement delivery is excluded.

The warranty shall not cover maintenance work, installation of external parts, design modifications or natural wear.

Any damage incurred during transport should not be reported to us but rather to the competent cargo-handling depot, the railway company or carrier company immediately or else claims for replacements from these companies will be invalidated.



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Operating and installation instructions Double window sight glasses

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