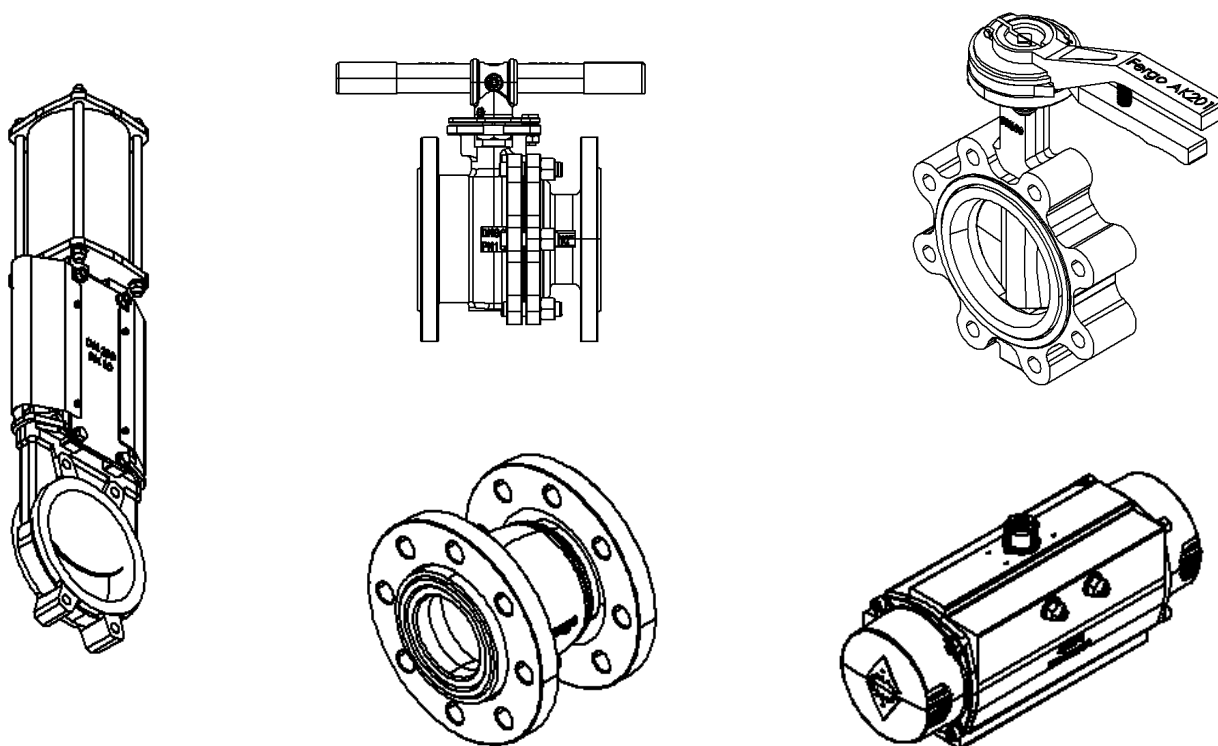


Installation, Operation & Maintenance Instruction

Bellows Sealed Globe Valve VG440 & VG460

English



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1. SCOPE

This manual provides the users all the necessary information for the correct installation and operation of bellow sealed globe valve type VG440 and VG460.

Before installing the valve, please READ CAREFULLY these instructions.

User is responsible for the safe use of these products, according to present instructions for use and specific technical documentation of the device.

2. GENERAL INFORMATION

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

They are binding on the transport, storage, installation, operation, maintenance and repair. The notes and warnings must be observed and adhered to:

- Handling and all work must be carried out by expert personnel or all activities must be supervised and checked. It is the owner's responsibility to define areas of responsibility and competence and to monitor the personnel.
- In addition, current regional safety requirements must be applied and observed when taking the fittings out of service as well as when maintaining and repairing them.
- The manufacturer reserves the right to introduce technical modifications at any time.
- These Operating Instructions comply with the requirements of EU Directives.
- Notes on possible dangers.



ATTENTION!

Warning of danger.

3. 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.

4. STORAGE & TRANSPORT



ATTENTION!

- Protect against external force (like impact, vibration, etc.).
- Valve mountings like actuators, handwheels, hoods must not be used to take external forces.
- Suitable materials handling and lifting equipment should be used.
- The valve shall be stored indoor with dry and well-ventilated environment at -20°C to +65°C, the ends of the port shall be plugged by covers.
- The valve stored for a long time shall be checked periodically and cleaned to be free from stain. Especially clean the sealing ring to protect sealing surface against damage and coat corrosion-resistant oil on the machined surface.
- If the stored time exceeds 12 months, the valve shall be tested to ensure structural and functional integrity. A record is needed.
- The paint is a base coat to protect against corrosion during transportation and storage. Do not damage paint protection.

5. DESCRIPTION

5.1 Scope of applications

Valves are used for "shut-off and/or throttling of medium".

This series valves are designed and manufactured in accordance with **EN13709**.

The relevant standard are as follows:

- **EN12266-1** Industrial valves, testing of valve, pressure tests, test procedures and acceptance criteria. (Mandatory requirements).
- **EN12266-2** Industrial valves, testing of valve, pressure tests, test procedures and acceptance criteria. (Supplementary requirements).
- **EN 558-1** Industrial valves face-to-face and centre-to-face dimensions of metal valves for use in flanged pipe systems-part 1:PN-designated valves.
- **EN 12627** Industrial valve - butt welding ends for steel valves.
- **EN1092** Flanges and their joints-circular flanges for pipes, valves, fittings and accessories. PN designated-part 1:steel flanges.
- **MSS-SP 117** Bellows Seals for Globe and Gate Valves.

ATTENTION!



- Refer to the data sheet for applications, limits on use and possibilities.
- Certain medium 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 medium, the operator should state the higher requirements when ordering.

The information complies to the Pressure Equipment Directive 97/23/EC. 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 manufacturer if you have any questions.

5.2 Operating principles

- The valve is closed by turning the hand wheel clockwise.
- The valve stem is sealed by a bellow and an outer safety stuffing box. The packing is PTFE or graphite.
- Tighten the safety stuffing box if required.

ATTENTION!



- Do not use the unsuitable tools to increase the torque on the handwheel.

6. INSTALLATION

6.1 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.
- Assure the packing does not hamper the movement of the stem before installation.
- The interior of valve and pipeline must be free from foreign particles.
- Note installation position with reference to flow, see mark on valve.
- Steam line systems should be designed to prevent water accumulation.
- If the pipeline has enough strength to resist the valve weight and the operation torque, the support isn't needed. Otherwise, the valve should have support point.
- Protect valves from dirt during construction work.
- Connection flanges must mate exactly.
- Valve mountings such as actuators, handwheels, hoods must not be used to take external forces.
- Suitable materials handling and lifting equipment should be used.
- The best installed position is horizontal and stem is vertical.
- The valve must be fully open during pressure testing of the pipeline system after installation.

- Planners/construction companies or operators are responsible for positioning and installing products.
- The valves are designed for application, not influenced from weather.
- For application outdoor or in adverse environments like corrosion-promoting conditions (sea water, chemical vapours, etc.), special constructions or protective measures are recommended.
- Bellow seal out of media flow path. Especially for pulsating, turbulent flow directly behind pumps, elbows, junctions etc.

6.2 Installing valves with butt weld ends

- Please note that only qualified persons using appropriate equipment and working in accordance with technical rules are allowed to install fittings by welding.
- The responsibility for this lies with the system owner.
- The valves must be welded in closed position.

6.3 Installing valves with pressure balancing plugs



ATTENTION!

- The stop valves must be equipped with pressure balancing plugs if the differential pressures listed in the table below are exceeded in the closed state.
- Valves with pressure balancing plugs should be installed so that the pressure of the medium acts on the plug and the stem is vertically upright.

- Valves with pressure balancing plugs have to be installed with medium flowing over the plug as indicated by flow direction arrow on valve body.
- **Working principles:** When the valve is closed, anticlockwise rotation of the hand wheel lifts the pilot plug off the larger balancing plug. This allows the medium to pass through the plug and equalizes the pressure of the medium under the plug. After the pressures have been equalized within the values stated in the table below, the valve can be opened by turning the valve further.

Balancing plug	DN	125	150	200	250	300	350	400
Pressure drop (bar)	ΔP	25	21	14	9	6	4,5	3,5

- Pressure balancing plugs are fully effective only in closed line section.
- The pressures of the medium on either side of the plug cannot be equalized if the medium is discharged into "open air".
- If adequate pressure equalisation cannot be achieved using a pressure balancing plug, other design solutions must be used instead (e.g. a bypass line).

6.4 Installation data on valves with loose plugs

The data given above applies to the maximum differential pressure. The set pressure is 0,05 bar. The valve should only be installed in horizontal lines in an upright position.

7. VALVE OPERATION



ATTENTION!

- Before putting the valve into operation, check 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.
- Touching the valve when it is operating at high ($> 50^{\circ}\text{C}$) or low ($< 0^{\circ}\text{C}$) media temperatures can cause injury.
- Before putting a new plant into operation or restarting a plant after repairs or modification, always make sure that:
 - All works has been completed.
 - The valve is in the correct position for its function.
 - Safety devices have been attached.

8. CARE & MAINTENANCE

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

- Observe safety instructions for more information.
- Keep the stem well greased.



ATTENTION!

- Pay attention, the lubricant must be suitable for the medium.

- If the stem starts leaking, tighten the bolted gland until leaking stops. Replace bonnet at earliest opportunity.



ATTENTION!

- Retighten the stuffing box packing if required and re-pack it in good time.
- For safety reasons we recommend that valves only be repacked when depressurised.
- Replace stuffing box packings only after the system has cooled down and the pressure in the plant has been relieved. In the case of corrosive or aggressive mediums, drain and ventilate the valve before replacing the packing.

- Dismantling the valve or the top part.



ATTENTION!

The following points must be observed.

- Pressureless pipe system.
- Medium must be cool.
- Plant must be drained.
- Purge piping systems in case of caustic, inflammable, aggressive or toxic medium.

- Mounting of the bonnet:
- Before reassembling the unit, remember that the bearing surface must be cleaned and 2 new gaskets must be inserted.
- Set the cover in place.
- Tighten the hexagon nuts evenly crosswise.
- Tightening nuts / screws.

9. 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.

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

Bellow Seal Globe Valve Troubleshooting Table

Fault	Possible Causes	Corrective Measures
No flow	Valve closed	Open valve
	Flange covers not removed	Remove flange covers
Little flow	Valve not sufficiently open	Open valve
	Dirt sieve clogged	Clean / replace sieve
	Piping system clogged	Check piping system
Valve difficult to move or cannot be opened	Stem dry	Grease stem
	Wrong direction of rotation	Turn in correct direction
	Lubricating nipple / locking screw tightened	Loosen lubricating nipple / locking screw
Valve stem leaking	Bellows seal damaged	Replace top of bellows seal at earliest opportunity!
	Gland screw slack	Tighten gland screw until leakage stops; Replace bonnet at earliest opportunity
Leakage across valve seat	Valve not properly closed	Pull hand wheel tight without tools
	Seat/disc damaged by foreign particles	Replace valve or rework sealing surfaces
	Pressure difference too high	Use a valve with pressure balancing disc
	Medium contaminated (suspended solids)	Clean valve; Install a strainer upstream of valve
Flange broken between valve and piping	Bolts tightened unevenly; Mating flanges not properly aligned	Re-align piping and fit new valve

10. GUARANTEE

Guarantee is indicated in the edition of „General Business Conditions of FERGO Armaturen GmbH“ valid at the date of delivery or is indicated differing from this in the contract of sale.

For damages, which occur by improper handling or disregard of these fitting and operating instructions, of the standards EN, DIN, VDE and other standards, no guarantee claims can be enforced. Damages which occur during operating caused by working conditions different to those of data sheet or other agreements are also no subject for guarantee. Claims which exceed the guarantee are also excluded. Claims for spare delivery do not exist.

The installation of external parts, changes of the construction as well as natural wear and tear are also excluded from the guarantee. We are not responsible for any transport damage, this must be reported immediately to your freight forwarder, railway company or carrier to avoid the loss of any claims for compensation against such companies.