

Operating instructions

Stop valves

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1. General

This instruction is valid for handoperated globe valves except DVGW-modul.

These valves are marked in accordance with DIN EN 19 as follows: Nominal diameter (DN), nominal pressure (PN), body material, manufacturer's mark, heat number and arrow for flow direction or according to type standard.

For installation and use of the valves the relevant and valid technical rules e. g. AD and TRD-leaflets, DIN-standards and other competent codes must be considered. It is assumed that the user has the knowledge of these impositions and commitments. In case of doubt the user shall contact the valve manufacturer before the installation of the valve.

Operation of stop valves is done within the limits of the pressure and temperature ranges according to the leaflet!

Pay attention to reduction of pressure cause temperature.

Assembly, operating, maintenance and repair work may only be done by reliable personnel who are suited and have been instructed by the head of the company! In cases of fittings for oxygen, the requirements and stipulations of the accident prevention directive "Oxygen – VBG 62" are to be complied with. Ensure permanent requested freedom of oil and grease.

When the customer does not specify differently each valve is submitted in the factory to a final pressure and leak test according to DIN 3230 Part 3 "Technical conditions of delivery of valves.



2. Assembly

Normally, handoperated globe valves can be installed in each desired position, however, the mounting with vertically aligned spindle and operation element atop should be preferred.

Before installation all valves shall be examined on possible damages. In case of doubts the valves shall not be mounted into the system. After removal of the protecting plugs the valves shall be inspected to ensure that there are no remaining components/particles inside the valve such as packaging agents and similars.

The pipes themselves must be clean and free of foreign particles. An eventual blow-down or cleansing of the pipes for the final cleaning shall be done before installation of the valves, especially for such types with bellow seal, to avoid damages on the sealing areas of body and bellows (see also point 4, section 2,3)

Globe valves are installed under strict observation of the flow arrow punched on body. Pipes must be installed in such a manner that the valves shall be free from negative influences due to torsion or bending loads.



2.1. Valves with nipple connection according to DIN 16284

The connection of the stop valves on the inlet side is done by a nipple connection according to DIN 16284 (nipple connections for pressure-measuring devices and their accessories). Tube recommendation: seamless precision tubes corresponding to welding and soldering requirements and fulfilling the valid stipulations of the relevant VdTÜV material sheets when used within the meaning of the Pressure Tanks Ordinance.

Work steps:

- Cut tube off at right angles, de-bur slightly on the inside, prepare welding seam or solder joint to match the planned jointing process
- Place nipple cap nut on the nipple shaft and weld or solder it axially flush to the prepared end of the tube
- Remove weld or solder residue from point of connection
- Select a washer to DIN 16258 observing the corrosive influence of the operating medium and place on the sealing surface of the nipple
- Screw cap nut on by hand until the washer fits tightly and then tighten by $\frac{1}{4}$ to $\frac{1}{2}$ revolution with a suitable assembly tool

The connection on outlet side is done as a rule by means of a coupling sleeve to DIN 16283. Selection of washer according to the inlet side.

The admissible operation temperature of 120°C corresponds to the stipulation for connection shanks for pressure-measuring devices to E DIN EN837-1 and takes the demand that the valves and pressure-measuring devices are to be protected against heating by hot measuring materials with sufficiently long measurement lines or siphons to DIN 16282 into account.

2.2. Valves with flanges

Flanges on valves and pipes shall be in true alignment. Deviations from coaxial, parallel or right angled positions shall be avoided.

Flanged valves are fixed to the counter flange of the pipe system by bolts and nuts that will be tightend crosswise. During this assembling the fitter must care for a perfect alignment of the gasket.

2.3. Valves with weld ends

Weld ends on valves and pipes shall be in true alignment. Deviations from coaxial, parallel or right angled positions shall be avoided.

Weld end connections require a scrupulous cleanliness of the contact areas. It shall be ensured that during the weld process no impurities can enter into the valve. Otherwise damages on sealing and guiding surfaces cannot be excluded. During the welding the valve disc shall be in open position to avoid a heat build-up and damages on the inner sealing areas and to enable a continuous sweeping of the protecting gas.

For valves in sizes smaller DN 65 the weld procedure must be performed with temperatures lying under the maximal admitted material temperature. After each weld seam there must be given sufficient time for a cooling down of the valve's body before starting to apply the next weld seam.

Weldings shall only be performed by qualified welders and using exclusively the correct filler materials.

2.4. Valves with connection cone box according DIN 3865

Recommendable pipes: Precision-steal-pipes without seam according to DIN 1630 and DIN 2391

Recommendable material: DIN 3859

Work steps:

- Cut tube off at right angles, de-bur slightly inside, prepare welding seam match the planned welding process
- Place cap nut on the shaft of the cone box and screw it on with the piece of valve.
- Prepared end of pipe and cone box shall be weld in axially alignment.
- Oil the sealing areas, conical connection to cone box and the thread of cap nut.
- Screw cap nut on until fitting of cone box in the piece.
- Screw on cap nut by $\frac{1}{4}$ to $\frac{1}{2}$ revolution.

2.5. Valves with screw cutting ring according DIN 2353

Recommendable pipes and material: like type of screw
„Cone box“

Work steps:

- Cut tube off at right angles, de-bur slightly inside and outside.
- Oil slightly thread of connection piece, cone inside and cutting ring outside.
- Put on cap nut and cutting ring on pipe, pay attention to the position of cutting ring (the conical end has turn towards to cap nut.)
- Put the end of pipe into the cone inside, press front side of pipe against fitting in connection piece and screw by hand the cap nut until fitting of cutting ring.
- Screw on cap nut 1,5 revolution, at that safe the pipe against twist. At pipes with thin walls screw cap nut only 1 revolution on.
- Loosen cap nut, check the bulg in front of the cutting border on pipe. The cutting ring may turn around on pipe. A cut in cone inside of connection piece will be the result of false installation. (possible reason: Strength of pipe material).
Change damaged parts!
- After sightcheck screw again by hand the cap nut until fitting and screw on ¼ revolution. At that pay attention to axial position of pipe.

2.6 Compression fittings

The rotary movement of the nut through the clamping ring is converted into axial motion along the tube during the assembly. Sealing at the front clamping ring takes place through axial pressing instead of rotation. So the tube has no grooves on the surface or material tensions.

Tube selection:

- Same materials for tube and screw connections shall be used, reason being the same thermal coefficient of expansion and equal corrosion resistance.
- Usage of adequate lubricants and sealing compounds is decisive for leak-proof connections of conical male threads.
- The tube shall have a lower grade of hardness than the screw connection in order to ensure perfect sealing. As for stainless steel: annealed, seamless tubes with a grade of hardness of HB 80 or less is recommended - such that are suitable for bending and flaring. As for copper: high quality seamless drawn tubes, annealed or equivalent is recommended.
- Tubes shall be free from grooves, scratches and soiling and must be flexible as well as expandable.
- Tube ends must not be chromed and oval. Tubes shall be cut perpendicularly and fins removed.

Operations:

- The tube shall be pushed carefully and smoothly up to the stop into the screw connection of the valve, without unscrewing it. First rotate the connection nut finger-tight. Then fix it with a suitable installation wrench 1¼ turns.
- Compression fitting to be unscrewed and retightened several times as long as sealing surfaces kept clean and undamaged.
- The tube shall never be pushed powerful into the clamping rings. It shall slide smoothly inside, otherwise the tube may not be deburred or could be oval.

3. Operation

It is normal fact that during the commissioning of new plants or an overhaul of existing ones deposits, residues and/or foreign particles (e. g. welding tears, shavings etc.) will accumulate inside the valve. To eliminate these components the lines will be subject to a cleansing or blow-through procedure.

Operation is done by turning the operating element by hand. If it is turned in a clockwise direction, the valve is closed. Do not tighten it further than is necessary to achieve tightness. Otherwise, there is excessive wear on the valve seat and in the flanks of the spindle thread. Ancillaries may not be used for this purpose. Globe valves shall be either totally opened or closed. For intermedium positions e. g. for throttling tasks, the use of valves with regulating discs is recommended.

In the same way, may by stop valves with ventilation the venting screw, which enables a drop in pressure in the outlet area and venting when filling the system with the fittings stopped, not be closed too tightly.

Attention: Do not open (or only slightly open) the venting screw with the fitting open and under pressure because the medium escapes via the thread or there is a risk of a thread tear after a certain opening distance and the medium is released when the internal pressure is applied.

Fittings for oxygen must be operated slowly and without jolts!

4. Maintenance

All valves are nearly maintenance free as far as design and assembling is concerned. Movable parts like spindles, couplings, and similar items shall be greased with suitable longtime greasing agents to guarantee their function. Valves which are not regularly operated shall be tested in defined intervall periods on their functional efficiency to guarantee their operational safety. The checking intervals are a function of the operating conditions (pressure, temperature, frequency of operation).

The maintenance of the valves entails adjusting the packing. To avoid losses by leaks, the stuffing box nut or -union nut must be tightened if necessary. The packing may not be tightened further than absolutely necessary to seal the spindle. Tightening it too much results in unnecessary wear on the packing and makes operation more difficult.

Therefore, we recommend loosening the gland cap nut set to nominal pressure in the commissioning of new valves and resetting it to the existing operating pressure.

5. Repairs

For repairs, the fittings must be free of pressure and empty and also be at room temperature. Repairs are regarded as a change of spindle and the packing. For this purpose, loosen the gland cap nut and unscrew the spindle including the packing. After operating element dismantling, the worn parts are replaced by new ones. The valve spindle is to be provided with new suitable lubricant in the thread and in the area of the packing. Assembly is done in reverse order. Setting of the packing according to the "Maintenance" section.

Data Sheets and Operating Instructions *online*

The latest versions of our data sheets are available as PDF in the download area on our websites

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