INSTALLATION, OPERATION AND MAINTENANCE OF STANDARD VALVES

BA 10 S.002 GB

PERSTA EUROVALVE

6060.1.08.10

Important Notice!

Industrial valves made by company Stahl-Armaturen PERSTA GmbH are designed according to DIN-Standards, EN-Standards and according to the Technical Rules like AD and the European Pressure Vessel Guideline 97/23/EG.

Design, manufacture and testing of these valves was carried out on condition that the valves are operated under normal operating conditions. Normal operating conditions contain for example the following:

- operation with liquid or gaseous media, without special corrosive, chemical or abrasive influences.
- frequency of temperature-change of app. 3℃ – 6℃ per minute
- usual flow rates, depending on the kind of medium and the range of application of the valve.
- operation without additional outer influences like pipeline-forces, vibrations, wind load stressing, earthquake, corrosive environment, fire, operation load stressing, disintegration pressure of unstable fluide, etc.

If the purchaser expects stresses deviating from the normal operating conditions he has to indicate these requirements unambiguously and completely in the inquiry as well as in the order. This would allow us, as the valve manufacturer, to work out corresponding measures and to suggest them to the customer. These measures could be for example:

- special choose of the body material.
- higher wall-thickness.
- protection of areas which are which are endangered by wear.
- special gaskets and bolt connections.
- special operation instructions depending on the medium and the kind of operation.
- special coatings
- additional equipment to avoid excessive overpressure.
- special design for control operation, etc.

During planning and installation of the pipeline the customer should take measures which minimize additional dangers and pressures on the valves, on the piping system and on the environment, for example by:

installation of vibration dampers
consideration of a security final position in case of breakdown of energy
taking measures to ensure the safe drainage of dangerous media in case of leakage, etc.

By marking the product with the CE-mark we declare the conformity with the European Pressure Equipment Directive 97/23/EG.

Please see our operation instruction BA 10S.002GB for further information and warnings which have to be considered for the operation of industrial valves.

Warning: Use in areas with explosive hazards

The industry fittings we produce were put through a risk-assessment for danger of ignition by us in accordance with the EC directive 94/9/EC (ATEX). It was thereby established that our fittings do not in themselves present any danger as sources of ignition in accordance with the above directive. Before using our fittings in areas with explosive hazards, take note of the points indicated in the risk-assessment for danger of ignition GA004, e.g. the dismantling of the spring on non-return valves and the installing of these fittings with breech covers must be aimed upwards on horizontal conductions, when a potentially explosive medium is introduced into the piping.

CAUTION:
PERSTA valves are designed and manufactured to meet the design pressure and temperature of the piping system in which they are installed. In some cases the valve specification may include different weld-end dimensions and/or body material but in no circumstances should the design pressure and temperature of the system be exceeded.

1. Introduction

Dear Client,

By selecting our valves for your plant you have once again shown confidence in our products, thanks.

The guidance for installation, operation and maintenance of PERSTA Valves contained in this manual, is intended for use with our standard products. It may also be used with special valves provided the special additional instructions are observed. These are available on request.

These instructions should ensure trouble-free fitting and safe operation of our valves, and form also the basis for any guarantee claims that might arise.

Please note :

In terms of their hazard potential, valves and associated fittings should be treated on a par with pressure vessels. Their design, installation and maintenance should therefore be based not just on these instructions but also on the relevant Accident Prevention Regulations, Codes of Practice and specialist literature.

The handling and use of valves and fittings should only be entrusted to properly trained personnel.

2. Transport and Storage

2.1 Transport:

When loading or unloading ensure that the valves are not thrown or subjected to sudden knocks. Large valves should be handled with hemp or synthetic ropes slung to the yoke arms or the bonnet flange. Valves with actuators should be slung using a three-point suspension at the main connection nozzle and the yoke arms or yoke head (note centre of gravity). Special eyebolts must be used when supplied with heavy valves.

2.2 Storage:

On site the valves must be stored so as to be protected against mechanical damage and/or corrosion. The preferable storage condition is in closed rooms with ambient temperature. Flanges or weld ends can be sealed using plugs, lids, plastic caps or oil paper.

Internal surfaces can be treated with preservatives or moisture absorbers.

The protective packaging we provide must be left intact during storage and removed prior to installation or operation respectively.

3. Valve installation

3.1 Planning and Installation:

The designer, contractor and/or end user are basically responsible for positioning, installing and operating the valves in the piping system. Here are some notes for guidance :

Planning and installation errors can affect the proper operation of valves and may even constitute a major hazard potential (e.g. incorrect positioning of check valves, wrong direction of flow in gate valves with relief port etc.). A number of possible causes of damage are described below, but the list does not require to be complete due to the great many possible planning, installation and maintenance errors. If in doubt, ask us.

Permitted operating limits for valves are shown in the relevant pressure-temperature tables.

3.2 Position:

Spindle Operated Valves:

All spindle-operated valves are designed to "shut" when the handwheel is turned clockwise and "open" when the handwheel is turned counter-clockwise.

When the valve is fitted into a horizontal pipe-spool it should be positioned with the spindle vertical or the bonnet flange horizontal so far as possible.

When spindle-operated valves (globe valves, gate valves etc.) are fitted with their spindle on the skew or pointing vertically down, dirt particles can be collected inside the body where the spindle passes through to the packing gland. These particles can cause damage to the spindle, back seal or gland packing and this type of position should therefore be avoided wherever possible.

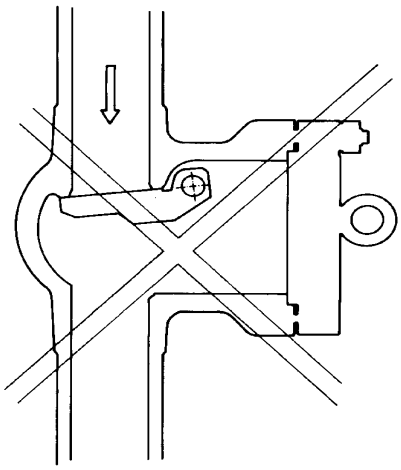
Bellows sealed valves should be fitted vertically if possible. Any other position can cause deposits in the folds of the bellows, and hence premature wear.

Non-return Valves:

Non-return valves can be fitted in pipe systems horizontally, vertically or at an oblique angle. For vertical or oblique fitting the valve will only operate properly when the direction of flow is from bottom to top. For horizontal or oblique positions the bonnet flange must be in a horizontal position in relation to the pipe direction.

In case of check valves with lever and weight or spring to close or damping device which are fitted in a non-horizontal piping it should be assured by reconstruction that the closing or damping device action is not disturbed.

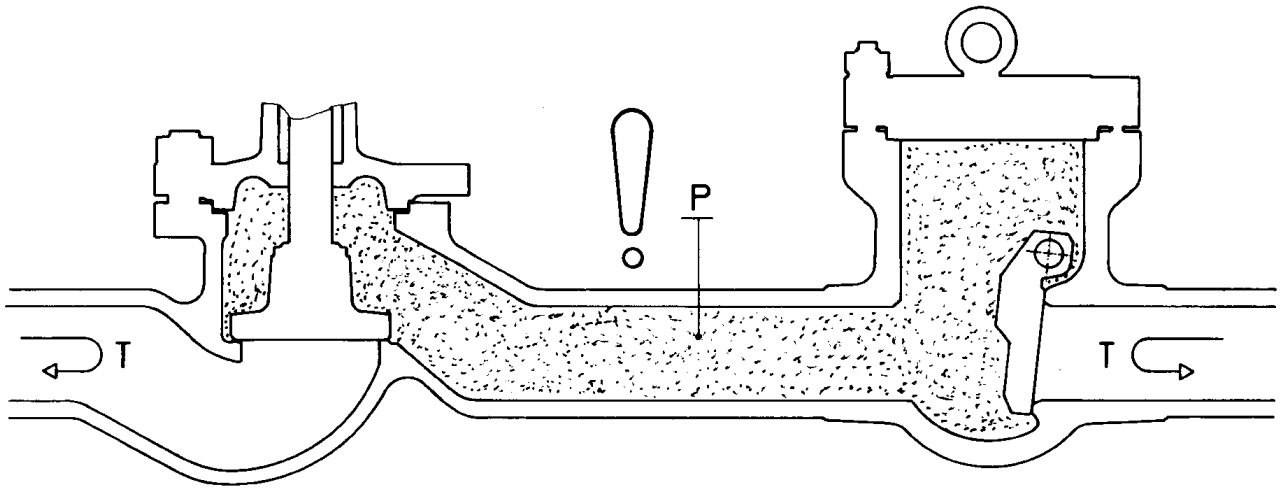
Swing check valves with outside control mechanism, equiped with hinge and counterweight, shock absorber or spring should be positioned in such way that the shut-off functions of these extra devices are always secured.



Three-Way-Valves:

When installing three-way-globe valves it is important to allow for the direction of flow depending on the valve's intended duty. A three way-globe valve has one inlet and two outlet ports, when used as a mixer valve these become two inlet ports and one outlet port.

3.3 Avoiding Excessive Pressure:

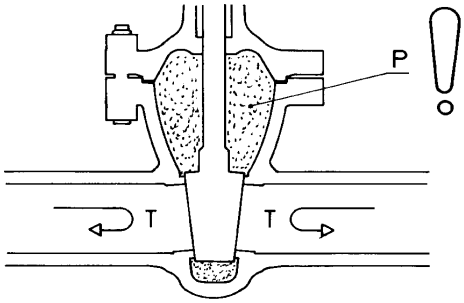


General:

PERSTA Valves are basically only suited for the duties indicated in the relevant pressure- temperature tables, and appropriate steps should be taken to ensure that they are not subjected to any excessive stress caused by their position in the line or any unfavourable operating conditions (e.g. pressure surges).

Gate valves:

In gate valves, for instance, excessive pressure can be caused by a hot medium being trapped in the third body chamber.



Reference literature states that bolted bonnet flanges can solve the overpressure problem by using connecting bolts which elongate to leave a gap between the flanges that in turn relieves the pressure. Practical experience has confirmed this theory, although it is essential to note that a bolted bonnet flange which leaks in this way can blow off uncontrolled in all directions and cause a danger and/or damage the valve.

THESE STRESSES EXCEED THE THEORETICAL SAFE LOADS ANYHOW AND IN SUCH OPERATIONAL CASES NO ASSURANCE OF CORRECT OPERATION CAN BE GIVEN AND NO GUARANTEE ASSUMED.

Extremely rapid temperature and hence pressure rises can under certain circumstances be the cause of a dangerous overload stress on the bonnet flange (material failure).

After every blow-down it must be assumed that the flange seal has been damaged and will have to be immediately replaced to ensure safety. If the seal seating faces on the valve have also been damaged in the process, then we recommend a repair by our skilled personnel.

Finally, an excessive pressure condition in the third body chamber might result in excessive operating torques which can not be covered by handwheels and actuators because they are calculated for normal operation conditions only.

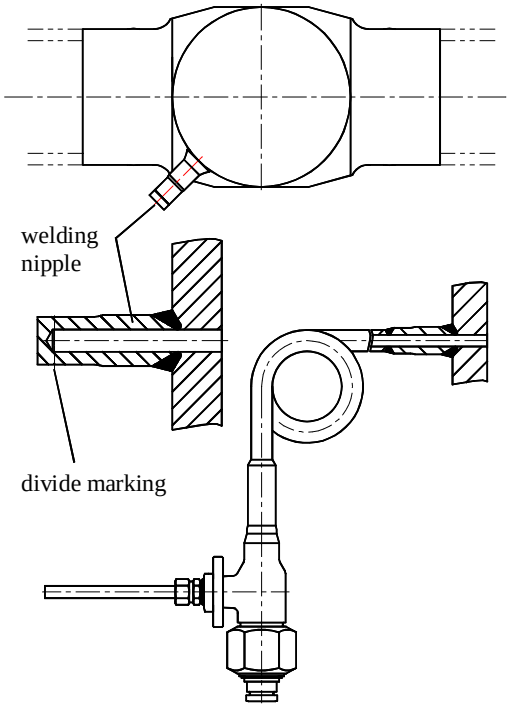
If such high pressures are unavoidable owing to the nature of the plant, then the plant designer and/or plant operator should provide suitable safety features, e.g. :

- drain valves to be used in time
- pressure relief port in the pressure faced disc of the wedge
- bypass from 3rd chamber to pressure - side channel.
- relief valve
- burst discs
- double check valves

or equivalent devices.

Appropriate requirements such as TRD, AD, TRB etc. limit the pressure increase to 10 % of the maximum allowable pressure. In case of valves with pressure sealed bonnets the above described excessive pressure condition can cause explosion. For this type of valve we recommend to always fit an appropriate safety feature. Therefore, we equip gate valves with pressure sealed bonnets on customers request with a closed stud which can be opened to fit a suitable safety feature.

top view



If these valves are ordered with this closed stud and a safety device, we normally deliver the piping and safety device not fitted to the main valve, because we are unknown about the location. The welding of these parts has to be carried out by qualified welders who have experience with the material. In regards of the proper function and direction of the safety valve you have to follow the operation and maintenance instructions.

Appropriate measures have to be taken in order to avoid accidents as a result of safety devices under blow off conditions. In case of a one-way-flow direction and on request of the customer a pressure relief port will be drilled in the pressure- respectively flow-faced disc of the wedge. The admissible flow direction will then be indicated on the valve body by an arrow. After an eventual repair one has to make sure that the drilled side of the wedge faces the pressurized side of the pipeline, i.e.: faces the flow direction.

3.4 Differential Pressures

As a rule globe valves are installed such that the shut-off pressure is under the disc. When using our standard globe valves up to PN 160, ensure that the maximum allowable shut-off differential pressure (pressure under the disc) corresponds to DIN 3356 Part 3. For greater shut-off differential pressures these valves must be fitted with pre-lift disc and installed such that the pressure is above the disc.

Opening of the pre-lift disc pressurizes the connected system. Once the pressure is balanced, the valve's main shut-off disc can be opened.

Our High-Pressure valve range HD 91 (PN 320) and HD 92 (PN 630) in sizes DN 10-50 are designed to operate under full shut-off differential pressure from below the valve disc, according to the relevant pressure-temperature tables.

Also our standard gate valves including pressure class PN 160, are designed to operate under full differential pressures in accordance to the relevant pressure-temperature tables.

Lastly the PERSTA High-Pressure gate valve with pressure sealed bonnet is also suitable for high shut-off differential pressures. For these special cases we should however be consulted.

In order to avoid undesirable pressure surges when opening large valves with high differential pressures, or to warm up gradually the connected pipelines, suitable bypasses opened before the main valve should be provided.

3.5 Temperature Changes:

To prevent damage and leakage due to rapid heating, the valves should be provided with properly designed bypasses or drains that open at the right time. The usual temperature rise rates in power station duties for example are of the order of 3-6 degrees C per minute. If more rapid warming rates are anticipated, we should be consulted regarding the appropriate measures to be taken.

Frequent operation through broad temperature ranges at high rates of temperature change can lead to premature fatigue (relaxation) of the bonnet flange bolts among other components. If in doubt, ask our advice.

3.6 Additional Instructions for Installation

As a general rule the direction of flow is marked by arrows in accordance with DIN EN 19. In case of doubt, refer to the relevant sectional drawings.

Always allow for adequate access clearance in the planning and installation phase for easy assembly and disassembly of internal valve parts.

Valves should never be taken as fixed reference points within pipe systems, and substantial pipe loadings on valves should therefore be avoided. Exceptions to this rule are subject to our specific approval for each individual case. It has to be on a case-by-case basis because the forces resulting, for example, from shear, bending and torsional stresses as well as temperature gradients vary according to duty and installation, and occur in a variety of combinations. We are therefore not able to make any generalizations.

Before fitting the valve in position, remove the flange- or butt weld end protectors and moisture absorbers, if provided. The valve must be free from foreign matter of any nature.

Cleanliness is the cardinal rule when fitting valves. If the pipe ends require machining, chips and other foreign matter must be carefully removed. The pipe ends must be properly aligned so as to prevent the valve being subjected to unnecessary strain.

Bricklaying or painting should not be carried out in the vicinity of installed valves until stuffing boxes, spindles and valve position indicators (if fitted) have been properly protected against soiling.

Valves are despatched from our works with a high shut-seal property. This is a quality feature that can only be maintained if care is taken during installation and subsequent operation to prevent the ingress of foreign matter into the valve and hence damage to seats and other areas.

3.7 Flanged Valves:

The sealing faces of flanged valves must be clean and in good condition. Before bolting-down, flanges must be correctly aligned. When bolting-down, all flange boreholes must be used at all times. For initial fitting, threads can be smeared with graphite or molybdenumdisulphide to stop seizure - do not use oils or greases. Never use damaged parts such as bolts, nuts or washers. Make sure that materials are suitable and correct for the job.

Tighten bolts evenly and in cross-sequence using the correct tools to the correct torques (see point 4.1).

3.8 Valves with Butt Weld or Socket Weld Ends:

The piping contractor is responsible for welding the valves into the pipeline and any necessary heat treatment. To prevent effects of thermal stress, we suggest that valves are opened before being welded in.

Never attach the welding cable (opposite pole) to the bonnet, spindle or any other places on the valve assembly!

This could cause spots of arcing on the spindle or seat faces. The weld cable should be attached to a bright area on the valve body or, even better, to the pipe itself. For valves with socket weld ends, the socket depth of the pipe ends should be selected in accordance with codes of practice, and unacceptable weld seam stresses prevented by leaving a gap between pipe end and socket seat.

3.9 Valves with Back Gears and Actuators:

These valves must be fitted with their spindles vertical, otherwise the drive must be additionally supported in such

a way that it is able to follow any changes in position of the valve during operation (caused by the piping system).
If no extra support or suspension is desired, this must have our specific approval for the case in question.
The direction of rotation: clockwise = shut; counterclockwise = open, also applies for backgear handwheels and the manual emergency operation of electric actuators.

The specific torques of electric actuators normally are set in the factory.The closing of PERSTA gate- and globe valves is controlled by torque switches, eventually additionally secured by limit switches. Opening of the valve is generally controlled by limit switches only.

Wiring diagrams for the actuators are present in their connection boxes. The guidelines of the actuator manufacturer always have to be respected. In case of gate valves with pressure sealed bonnets an endstop installed on the stem will prevent the wedging of the discs in case of a too high closing torque of the actuator.The shut-off action of the electric actuator in the closing direction is controlled by travel limitation; - the torque switch gives additional security.

3.10 Insulation:

If valves are insulated, care must be taken to ensure that the stuffing box area and pressure relief devices remain accessible for checks during operation.

3.11 External moving parts

Valves with external moving parts e.g. swing check valves with hinge and counterweight, always have to be secured by means of protective caps.

4. Valve Operation

4.1 Bolt Torques, Shutting and Opening Torques:

If required, we will give advice on the bolt tightening torques as well as the opening and closing forces of valves depending on type and duty (pressure, temperature).

4.2 Cleaning (Pickling):

Owing to the wide variety of pickling processes it is not possible to make any generalization on this point. Suffice it to say that the process must be selected in accordance with the materials to be pickled. The pickling contractor will be responsible for the pickling medium and process. The valve should be fully opened during pickling to prevent the pickling medium penetrating the packing area. Flushing should be done with the valve half-shut to facilitate thorough flushing of the internal surfaces.

4.3 Venting:

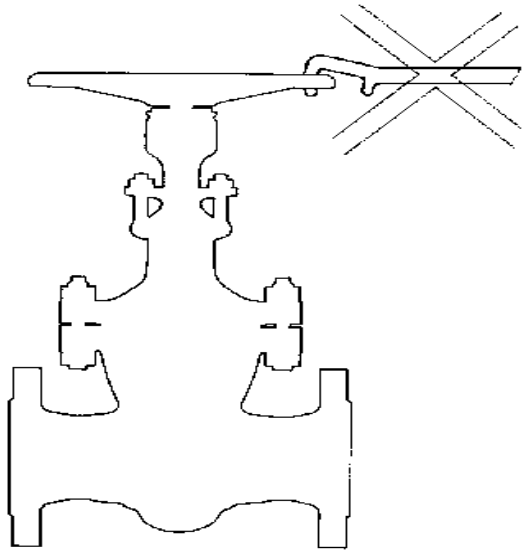
In accordance with the relevant Accident Prevention Regulations (UVV) valves and fittings should be vented by means of specially fitted vent pipes or stuffing box connections. Venting by slackening off the bonnet flange or the stuffing box gland is not permitted and can cause danger. If vents are required as non-standard extra, we recommend that these be fitted in our works.

4.4 Heating and Cooling Rates

To avoid damaging the valve body material or flange connections the normal plant-related heating and cooling rates must be observed. If in doubt, consult us (see point 3.5)

4.5 Additional Operating Rules:

Manual shut-off valves are right-hand or clockwise shutting. Back gears and remote drives are designed to retain this direction of rotation. Because valves are frequently subjected to high temperatures and develop surface and radiated heat as a result, protective clothing (especially gloves) should be worn. This is also recommended when operating valves where leaks can allow hazardous media (e. g. steam, acids) to escape. Handwheels of electric actuators are for emergency operation only; they are disengaged during normal operations and can be engaged when required.



VALVES WITH HANDWHEELS MUST ONLY EVER BE MANUALLY OPERATED. THE USE OF BARS OR PIPES TO INCREASE LEVERAGE CAN DAMAGE THE UNIT AND CAUSE AN ACCIDENT THROUGH SLIPPAGE OR FAILURE, AND IS NOT PERMITTED.

Where bypasses or drain valves are fitted to prevent temperature shocks to piping downstream or for other reasons, these secondary fittings must be operated before the main valve. For setting, maintenance and operation of actuators, refer to the manufacturer's instruction manual.

4.6 Function Testing:

After installation, the valve must be function tested prior to initial operation. The valve, whether manually operated or driven, should be opened and shut at least once.

4.7 Checking During and After Operation:

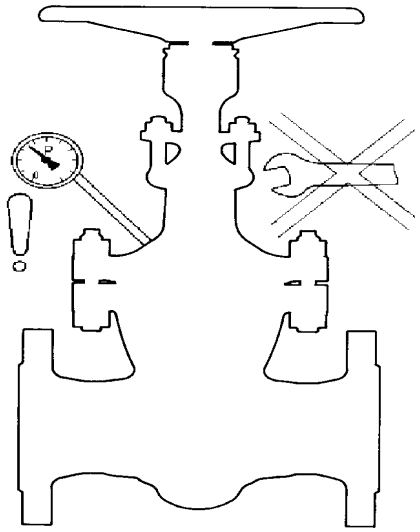
During operation the tightness of the stuffing box and bonnet flange as well as the pipe connection flanges must

be monitored.

If necessary bolts should be further tightened (see points 3.7 and 4.1). Left unattended, leaks can cause erosion of the seal faces and seals and hence lead to permanent leakage.

Seal tightness should be checked after a while since seals and bolts etc. are apt to settle during initial operation, especially at high temperatures.

BOLTED CONNECTIONS MUST NEVER BE SLACKENED ON VALVES UNDER PRESSURE AND ONLY TIGHTENED IN CASES OF EMERGENCY (E. G. LEAKAGE) IN ACCORDANCE WITH ACCIDENT PREVENTION REGULATIONS (UVV), PERMITTED TORQUE AND UNDER EXPERT SUPERVISION USING THE PROPER TOOLS.



Spring loaded stuffing boxes must also be checked for tightness during operation, and tightened as necessary (see point 4.1). It should be noted that the stuffing box must seal without a major increase of friction at the spindle. We recommend that regular checks be carried out during operation.

5. Valve Maintenance:

Because of their hazard potential valves are comparable with other pressure vessels and as such are governed by the relevant Accident Prevention Regulations (UVV). Before undertaking maintenance and assembly work, make sure that the valve is not under pressure or temperature and that the system before and after the valve is completely blocked of.

Valves must be regularly serviced to ensure trouble free operation. Typical maintenance points include checking glands, lubricating spindles, function checks.

At less frequent intervals valves should be closely inspected for wear and shut down to change lubricants and gland packings. It is not feasible to recommend specific intervals owing to the wide variety of unknown factors involved, such as the position of the valve within the plant configuration, the medium, operating cycle, temperature change loadings and so forth. The user should call upon his experience as plant operator to specify inspection and maintenance intervals.

We recommend that our skilled engineers are commissioned for this work.

5.1 Gland Packings, Bonnet flange Seals and Replacement:

The gland seals the gap between body and spindles against loss of medium.

The packing materials are selected to suit the particular requirements - as far as known to us -and long life can normally be anticipated. If packing does require replacement however, proceed as follows :

The packing cavity must be opened in accordance with the Accident Prevention Regulations (UVV) with the valve at ambient temperature and not under pressure. The old packing must be removed completely before the new one is fitted.The empty cavity and gland contact faces must be thoroughly cleaned. Ensure that the turndown bolts on the gland ring are eased.

If using slotted packing rings, the ring gaps must be offset by 120-180 degrees to one another. Once repacking is complete, operate the valve several times and if necessary the gland bolts further tightened down (see point 4.1).

The gland must be checked for tightness during operation. If required it should be re-tightened since a leaking packing can be quickly destroyed by erosion.

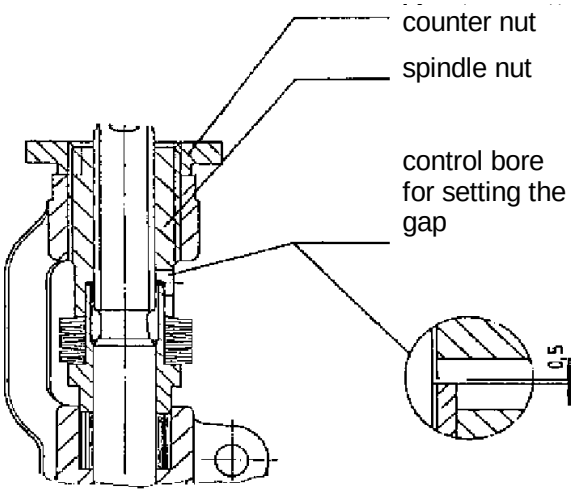
It is not allowed to repack a valve when the valve is under pressure. Even when the valve has a backseat device.

SINCE THE SEALING EFFECT OF THIS BACK SEAT CAN BE GREATLY REDUCED AFTER A SHORT TIME OF OPERATION THROUGH DIRT; WEAR OR CORROSION HOWEVER WITH AN ATTENDANT HAZARD FOR FITTERS WHEN SLACKING OFF THE GLAND SCREWS.

5.2 Stuffing boxes according to TA-Luft (clean air act).

Regulation according to TA-Luft (edition 1986) for toxic products, imposes the use of bellows seals with back-up of stuffing boxes - or equal - on valve spindles.
There is however a potential problem with bellows seals. Because of the inherently complex design and fluid exposure, failures caused by dirt, polymerising or cracking media and even by excessive inner pressure, can occur.
Therefore in practice; often special stuffing box arrangements are used to comply with the above. An approval of TÜV Rheinland from 05.05.1993, accepts the use of spring loaded stuffing boxes.

This arrangement guaranties a good sealing during a longer period of maintenance intervals, taken into account special maintenance precautions.

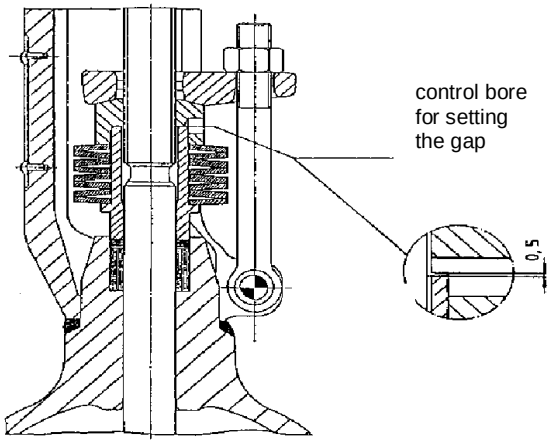


Persta recommends to follow up the frequency of operation. After ± 500 cycles, the stuffing box should be retightened as follows.

The nuts of the packing adjustment screws have to be tightened uniformly until, through the adjustment gap or through increasing tightening forces, indication is given that the gland flange makes metal to metal contact with the gland.

Thereafter the nuts have to be tightened uniformly by another 1 to 1.5 revolution, thus completely compressing the packing.

The next step is to loosen the nuts by one revolution, in order to reset the adjustment gap to 0.5 mm. In case of valves with a rising turning spindle, it is sufficient to tighten the nuts by 0.5 to 1 revolution in order to achieve full packing compression again.



After this maintenance, another 100 cycles of the valve are possible, staying within the leakage rates determined by TA-luft. The next shutdown should then be used to exchange and reset the packing. For this replacement we recommend that the new packing be installed and pre-compressed with a proper tool (f.e. a copper bar) following above mentioned and general maintenance rules.

5.3 Recommended Lubricants:

We recommend standard lubricants to DIN 51825.
Never use mineral oils as lubricants.

In case where stemnuts are equiped with ball or needle bearings the use of lubricants containing solids (graphite, copper etc.) is not allowed. The solid particles can damage the bearings.

For lubrication of actuators, we refer to the manufacturer's instructions.

5.4 Lubrication of spindle thread:

The frequency of spindel lubrication will depend on the valve operation cycle, its ambient conditions (pollution, temperature) and the influence of the valve heat on the grease point. The spindle thread should first be cleaned if heavily soiled, and the gland area protected accordingly.

For hand operated valves, the spindle thread should be brush-greased beneath the yoke head (valve shut) and above the handwheel (valve open).

For valves with back gear or electric actuator, the foregoing lubrication is carried out through the hollow shaft of the actuator.

After spindle lubrication, manual and electric operated valves should be operated a number of times, and lubrication repeated if necessary. It is for the valve operator to specify the intervals for lubrication of the spindle thread and of the thread bushing (depending on the operating conditions of the valve).

6. Fault Finding:

PERSTA Valves are renowned for their sturdy construction. Problems can still arise however due to operating error, incorrect maintenance or inappropriate use.

Repairs should be carried out in accordance with the relevant Accident Prevention Regulations (UVV) and with reference to points 4.1 and 4.7 of these instructions. We recommend that repairs are undertaken by our skilled personnel.

6.1 Leaks across the Gate

Possible causes are :

1. Solid particles in the medium that have damaged the seat.
2. Deformation of the seat face through excessive tightening of the valve or through thermal stress.
3. Erosion or corrosion caused for instance by incorrect selection of valve ND or valve material.

Remedy : regrind seats, use spare parts if required.

Seat regrinding is a skilled operation requiring special tools

in order to achieve a perfectly smooth surface finish.
When regrinding the valve seats, care should be taken to get a perfectly equal surface.

Seats of valves with a sharp sealing edge have to be absolutely round. When regrinding gate valve seats, particular attention must be paid to maintaining the wedge angle. Due to the limited amount of hard-facing possible, we suggest that extensively damaged seatings are repaired in our workshops.

6.2 Leaks through Bonnet Flange

Possible causes are :

- Settling of the bonnet flange bolts caused by extreme temperature fluctuations or vibration.
- Excessive pressure stresses on the bonnet flange bolting.
- Inadequate maintenance.
- External influences.
- Failure of seal as a result of insufficient resistance to temperature or medium.

Remedy : Retighten connecting bolts, see points 4.1, 4.7 and 5.1.

If this does not achieve the desired result, the seal will need to be replaced. The sealing faces of the valve body and valve flange must be handled with great care, and any residual seal material completely removed. The seal faces must be bright, undamaged and smooth, and the surface structure to equal the original one.

The remachining of seal seat faces (valve body, bonnet etc.) should only be carried out by skilled personnel using the correct tools.

When reassembling valves it is important to retighten the bolts progressively and crosswise. The required applicable torques are available on simple request.

6.3 Leaks Through Gland :

Possible causes are :

1. Inadequate maintenance,
2. Wear of packing material,
3. Failure of gland caused by the use of a packing material without sufficient resistance to temperature or the medium.

Remedy: Retighten, repack or replace packing (see Points 4.1, 4.7 and 5.1).

6.4 Failure of Actuators:

For causes of trouble and remedial action, refer to the manual supplied by the actuator manufacturer.

We strongly recommend that limit switches or torque limiters are reset by properly skilled personnel only.

6.5 Customer Service:

For rapid and precise fault finding and rectification, or any other requirements, ask for PERSTA Service.

7. Spare parts

With their sturdy construction and use of high-quality materials, PERSTA Valves have a long service life. Nevertheless certain components can wear or fail because of :

- extremely frequent operation,
- excessive vibration in the piping system,
- excessive external stress on the valve, or
- inadequate maintenance.

Spare parts for components which the Client is able to fit himself using standard tooling are available from PERSTA. For storage and fitting we recommend close attention to the catalogue documents and drawings.

In terms of storage, it must be remembered that soft seals, certain plastics and lubricants can deteriorate over long storage periods and will not function as required. For best results, store these products in dry rooms at a temperature of approx. 20℃ to achieve a storage life of 4 to 5 years.

When ordering spare parts, you should specify: Type of valve, year of manufacture, diameter nominal, pressure rating, material, drawing number and - where possible - the Purchase Order Number under which the valve was first supplied.