

1. Description of the valve:

This manual applies to all the valves manufactured by STRAHMAN VALVES.

The detailed description of the valve is given by the corresponding GA drawing, which is part of the manufacturing file.

Any modification of the valve done by others will disengage the liability of Strahman Valves.

The marking as well as the identification plate must remain visible and readable during the entire life of the equipment.

All specific requirements that would pertain to a certain type of valve are listed into the "specific requirements" annex. If further requirements / instructions are needed, a specific IOM maybe issued for the valve.

2. Storage instructions:

Valves should be stored in a clean and dry place and protected against possible shocks.

All internal parts are clean and dry; end openings and flange facings are covered by protection which must be kept until valve installation.

Valves are delivered with gate or disk in the close position and must remain in that position until installation to avoid risk of dirt or foreign bodies penetrating during storage and handling.

3. Safety information:

These valves have been designed and calculated in accordance with the design temperature and pressure indicated on the GA drawing. Regardless the existing safety margins, the installation that these valves will be fitted to must be equipped with pressure and temperature limiting devices to prevent transcending the specified values.

The material grade has been chosen and validated by the customer who, knowing the exact fluid composition and behaviour, is liable to determine their adequacy. Consequently, STRAHMAN Inc. cannot be considered liable and responsible for any issue coming from the material choice.

All the jacketed valves must be protected to prevent any burn due to the hot surfaces.

When the valve is actuated using a single acting cylinder, it contains loaded springs that would blow out if disassembled incorrectly. Never disconnect or disassemble such a cylinder. Please contact STRAHMAN Inc. before any maintenance operation.

The following risks, unless duly called out by the customer, have not been taken into account when designing the valve:

- Snow effects, because the size of the valve would not hold a significant quantity of snow that could affect its resistance
- Wind effects, because the size of the valve that would potentially be subjected to the wind would generate a negligible force compared to the rigidity of the connections.
- Pipe loadings, because a valve is not designed to withstand the piping loads.
- Fatigue because, unless specified, the valves are not subjected to cycles.
- Low temperature embrittlement, because the minimum design temperature is higher than the embrittlement limit.
- High temperature creeping, because the design temperature remains lower than the creep range.
- Vibrations, because no information is available.
- Bolting over torque, because the safety coefficients used at the design stage address torque requirements.
- Vacuum crushing, because the wall thicknesses are always at levels that exceed the vacuum crushing force.
- Local corrosion and valve materials compatibility with flowing fluids, because the material selection remains a customer responsibility based on his knowledge of the media handled by the valve.
- Erosion / abrasion, because no specific data is available and usually a corrosion allowance is called out by the customer to cover all potential damage to the wall thicknesses.
- Cavitation, because this is not covered by the specifications and therefore data are not available.

- Fire resistance because our valves are not suitable for fire resistance as a standard.
- Earthquakes because this is not a case covered by the specifications and therefore data are not available.
- Water hammers because this is not a case covered by the specifications and therefore data are not available.

On special request, STRAHMAN Inc. can quote and provide any complementary service regarding the above cited topics.

4. Operating conditions:

The design, operating and testing conditions are indicated on the GA drawing. Any other use will disengage the liability of the manufacturer. It is up to the end-customer to protect the valve from the fire, the vibrations, water hammers, and any other unexpected load that could deteriorate the valve.

Caution:

Some valves can be flanged according to a specific rating for piping standard reasons but not be full rated valves. In any case, this would be mentioned in the title block as " i.e.: Valve DN25 Flanged PN50". In any case, the reference information is given by the pressure and temperature specified in the title block.

5. Installation:

Prior to any assembly or disassembly, the installation must have been shut off; pressure released, at room temperature, and be cleaned from any process fluid.

Make sure that no dirt has come in contact with the valves during storage. Our valves are delivered with their ends blanked by plugs and their flange facings protected. The protective plugs must be taken off before valve assembly. The pipes that the valve will be connected to must also be cleaned.

Check that the pipes are aligned; check that the distance between the flanges matches the valve dimension and that they are parallel. It is very important that the valves are not subject to stress caused by the pipes.

Whenever possible, the valves should be assembled in a vertical position, if this is not possible, contact STRAHMAN VALVES France Engineering Department to examine the possibility of providing a support. If the valve drawing clearly indicates the intended installation position, DO respect that installation position when installing the valve on site. When the valve is unidirectional, an arrow is marked on the valve and/or on GA drawing, indicating the direction of flow. The valve must be installed in the proper direction.

Ensure that no foreign bodies (welding wire, bolts etc) have penetrated into the valve.

Flanged valves should be assembled in closed position, valves with butt or socket weld ends in the open position. It is recommended that jacketed valves be installed with the jacket connections placed at the lowest end of the valve.

Caution before installation:

- If the valve is connected with screwed flanges, make sure that the complete female threaded area is engaged on the male matching thread.
- Only use the hanging zones defined on the GA drawing for lifting, carrying or supporting the valve.

The bolts must be tightened using standard wrenches only. Do not over torque the bolting as it would jeopardize the lifetime of the valve.

If necessary, the user should adjust the gland packing to obtain good sealing during service.

If the material has been stored for more than 6 months, we recommend greasing the mechanical parts (see §8.2).

Before the use and the operating of the valve, make sure that this piece of equipment has not been damaged during transportation and installation. In case of shock marks or abnormal deformations, contact STRAHMAN before pressurizing or heating the installation.

If valve is used with a high temperature fluid or if it is heated, we advise to insulate all surfaces with a minimum of 50mm thick insulating material to avoid the burning risk due to hot surfaces.

6. Operation:

If the valve is used at a high temperature, the heating gradient must remain appropriate.

The end user must ensure that during the cleaning phases, the fluid used complies with the valve materials (gaskets) and that the cleaning conditions fall into the design conditions range.

Our valves are designed to close by turning the handwheel clockwise (except if valve drawing specifies something else).

Manual opening: open completely and turn the handwheel a quarter-turn in the closing direction to avoid risk of wedging.

Manual closing: close completely without tightening, open a quarter-turn to eliminate dirt on the seat, and then close completely and firmly.

7. Misuse:

Strahman valves are designed to standards and specifications for specific uses. Any misuse or using the valves in a manner that the valves were not intended to be used will void all warranties. STRAHMAN Inc. cannot be considered liable and responsible for any issue coming from the Misuse of our valves.

User must not change valve settings (torque, air pressure supply...) without asking for Strahman approval. User must not overtorque handwheel and crank handle (operator must never use extension bars or similar means to apply a higher torque). Replacement of manual actuator (handwheel, lever, crank handle...) or automatic actuator (electric motor, air cylinder, air motors ...) by oversized ones is strictly forbidden.

These valves must not be subjected to flame.

It is forbidden to weld, screw, stick or attach anything to the valve without a written permission from The Strahman valves engineering department.

It is also completely forbidden to erase or tamper the original indications attached by the manufacturer to the valve.

8. Maintenance and inspection:

All the persons who work on the valve and are supposed to disassemble it for maintenance or whatever reason must have been enabled and qualified by STRAHMAN prior to any operation.

In normal use, the valve doesn't require any special maintenance operation.

8.1. Inspections:

The stuffing boxes must be checked regularly regarding a possible leak, and the nuts must be tightened when necessary. If this doesn't stop the leakage, then replace the packing rings with new ones supplied by Strahman.

If body is made of more than one part, the body gasket(s) must be checked regularly and body bolting must be tightened or gasket replaced if necessary.

When a risk of stagnation and condensation exists into the valve or the jacket, we draw your attention to a possible local corrosion that could start and ruin the valve. The valve must be regularly inspected to check these areas.

Generally speaking, the valve must be inspected so that nothing can block the actuation

Periodically, the operator must ensure and control the minimum thickness of pressurized equipment (maximum corrosion thickness of 1.6 mm).

Periodically, the operator must ensure that the equipment is in good working order. It falls under the end-user's responsibility to proceed to all the mandatory inspections required by the applicable laws and regulations applying to the country of installation.

8.2. Lubrication:

Greases used (except customer specific requirements: low temp / high temp / oxygen service...):

- MOLYKOTE P-74 for valve stem, yoke nut, packing nut and bolts, other nut and bolts
- MOLYKOTE G-0102 for bearings

8.2.1.1/ HANDWHEEL ACTUATION

Grease the stem, yoke nut and bearings. Grease every 100 strokes / 6 month whatever comes first.

8.2.2.2/ GEAR OR MOTORISED ACTUATION

Grease the stem, bearings and yoke nut. Grease every 100 strokes/ 6 month whatever comes first. For actuators and gearboxes, respect the greasing interval and grease type given by actuator/gearbox manufacturer.

8.2.3.3/ PNEUMATIC ACTUATION

Only use lubricated air and grease stem bushing. Check regularly the lubricator oil level to guarantee that the actuator air supply is not dry.

When using an air motor with gearbox: fill up oil gearbox before starting it up and check its level regularly.

8.3. Spare parts:

All the spare parts must be supplied by Strahman to guarantee the quality of the valve, except on special agreement.

The recommended spare parts are as follows:

- * packing braids for repacking the stuffing-box
- * stem and obturator
- * yoke nut and its thrust washers
- * set of gaskets: body gasket, valve gasket, gaskets for pneumatic jacks

8.4. Preventive maintenance:

All the dynamic gaskets must be replaced periodically (a dynamic gasket is a gasket used on a moving part). Elastomeric gaskets (O-rings, air cylinder gaskets ...) must be renewed at least every 2 years to prevent leaks due to ageing.

For the accessories (actuators, gearboxes, switches...) fitted to the valve, refer to their documentation to apply the recommended operations to those equipments.

8.5. Cleaning:

When cleaning and/or flushing the equipment, the operator must ensure that the cleaning products are compatible with the equipment material and that the operating conditions are respected during the cleaning process.

Regarding dust, we advise to clean the outer surfaces regularly so that no accumulation of dust can occur.

9. European regulations:

When the valve is equipped with an electric, pneumatic, or hydraulic actuator, it must be integrated into a 89/392/CE Directive compliant installation.

9.1. Directive 97/23 CE (also named PED as "Pressure Equipment Directive"):

All the information regarding the PED are indicated into the title block of the GA drawing and on the tag plate attached to the valve body. In compliance with the PED, the article 3.3 relevant valves **do NOT** wear any CE marking.

Explanation note on marking:

- PS assigns the **Maximum allowable pressure at 20°C** that the valve can withstand.

If the valve is intended to work at a temperature below 20°C, this pressure remains valid.

If the valve is used beyond 20°C, and without any contradictory mentioned on the GA drawing, the maximum allowable pressure is governed by the applicable rules and standards yet depending upon the PN or Class rating indicated in the title block and the body material.

- TS gives the maximum and minimum temperatures that the valve can be submitted to; Would the valve be submitted to a temperature out of this range, it might cause irreversible damage. In such case, please contact STRAHMAN Inc. as soon as possible.

Caution:

Some valves can be flanged according to a specific rating for piping standard reasons but not be full rated valves. In any case, this would be mentioned in the title block as " i.e.: Valve DN25 Flanged PN50". In any case, the reference information are given by the pressure PS and temperature TS specified in the title block.

9.2. Directive 94/9 CE (ATEX):

All previous instructions must be carefully followed as any deviation to those previous instructions may create explosion and/or leakages risks.

Installation / maintenance of valve in Atex area must be endorsed by people trained to follow Atex safety rules (use of non sparking tools, dust cleaning ...).

9.2.1. Manual valves

Referring to §5.2.1 of the 4th edition of Atex guidelines (2012) edited by European commission, manual valves are out of 94/9/EC scope.

It is the user's responsibility to consider electrostatic ignition risk as well as other general risks that exists for all components installed in Atex area (dust accumulation, lightning...).

Strahman can fit the valves with options like body ground connection, grounding braid between piston and body... if specifically requested by customer. Valve must be connected to ground if it has been ordered with such feature(s).

9.2.2. Automated valves

It is considered that adding an actuator to a valve (except on spray rinse valves where rotation in packing area create heat) or other electrical components (switches...) does not create any additional ignition hazard (cf § 3.7.3 of Atex guidelines).

Such valves are considered as assemblies (cf § 3.7.5 case 2.a of Atex guidelines). The actuator or electrical equipment will then be supplied with its own Atex declaration of conformity. Valve is still considered to be out of 94/9/EC scope. Please refer to the Installation, Operation and Maintenance manual from the manufacturer as user may take care of some specific precaution to install, use and maintain those equipments safely.

The end-user must ensure that the area where the valve is installed into duly complies with the conditions it has been designed to. Hence, the temperatures of the fluids flowing throughout the valve must stay in the range defined by the temperature class (T1 to T6).

9.2.3. Spray rinse valves

Spray rinse valves can be classified Ex II2GD TX upon customer order.

Piston rotation in packing area generates heat. The maximum temperature reached at packing is ambient temperature + 80K (if valve is not insulated and with natural air flow convection).

Body must not be insulated in packing area; air flow must not be restricted to guarantee a good air convection.

The end-user must ensure that the area where the valve is installed into duly complies with the conditions it has been designed to. Hence, the temperatures of the fluids flowing throughout the valve must stay in the range defined by the temperature class less 80K (to compensate maximum valve packing temperature rise).

Temperature class	Max fluid temperature Group II G
T6	Installation forbidden
T5	Installation forbidden
T4	55°C
T3	120°C
T2	220°C
T1	370°C

Max fluid temperature Group II D
Temperature restricted to the specific combustible dust for the considered area less 80K

Installation:

User must ensure that Atex marking on valve complies with the minimum Atex requirement of the intended installation area. User must not install the valve if that condition is not fulfilled.

Roller bearings and one-way clutch:

To prevent explosion risks of roller bearing or clutch failure due to wear, user must replace those components every 1000 strokes or 5 years whatever comes first.

Grounding:

All Atex valves are fitted with ground connection. User must ensure that the valve is grounded during installation on site to avoid electrostatic discharge. If valve is fitted with grounding braid between valve mobile and fixed parts, user must check every 6 month that the braid is still performing well.

Painting / coating:

Total paint thickness on parts must not exceed 2 mm for group IIA, IIB, IIG and 0.2 mm for group IIC to avoid risk of electrostatic discharge. User must ensure that this condition is fulfilled if he wishes to paint / repaint the valve.

9.3. Machinery directive 89/392/EEC:

The automatic valves may contain unprotected moving parts. These valves must be installed in a specific area or installation that complies with the above cited Directive. This is to either restrict the access to this area or to add specific protecting devices to prevent any injury.

On special request, Strahman can supply the optional protecting devices that can be attached to the valves and will prevent any finger trapping or typical accidents to occur. In this case, please contact our sales department for a specific quotation

ANNEX FOR SPECIFIC REQUIREMENTS PERTAINING TO VALVE TYPES

PISTON CHECK VALVES	
	the bonnet must remain in a vertical plane, pointing upwards with a maximum angulation of 45° to the vertical
	The check valves do not have any actuation system in normal conditions.
	The Machine Directive 89/392/CE does not apply to check valves because there is no automatic actuation system on them.
WEDGE GATE VALVES	
	No specific requirement
METAL OR DUAL SEATED PISTON VALVES	
	No specific requirement
SOFT SEATED PISTON VALVES (ROD SEAL)	
	For soft seated piston valve, the gland must be tightened ONLY when the piston is in closed position.
SPRAY RINSE VALVES	
	The stuffing box is a critical component with regards to the rotating type spray rinse valves. The packing bolting must be torqued down regularly as well as the packing rings must be renewed frequently (every time that the equivalent height of one packing ring has been consumed).
POPPET VALVES	
	No specific requirement
BALL VALVES	
	No specific requirement
LINE BLIND	
	Strahman recommend changing gaskets at every valve operation. Some kind of gaskets cannot be reused at all (graphite gaskets...).