



BRONZE TRANSFORMER VALVE

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1. INTRODUCTION

The aim of this manual is to provide the essential information for the installation, start-up and maintenance of the Transformer Valves provided by Valvomec S.r.l.

Valvomec S.r.l. valves, follow for development and realization the Quality system, which complies with ISO 9001.

The perfect functioning is guaranteed against a correct assembly and regular maintenance and repairs.

Transformer valves suitable for use on liquid fluids up to the pressure limit shown on the valve body.

This device is suitable for use in the open or closed position, so it must not be used in flow regulation service.

If allowed by the size, the identification of the nominal diameter, pressure, the construction material of the body and the manufacturer's logo are marked on the valves.

The reader is referred to the identification of his product and of the correct operating conditions, possibly referring to the attached drawings.

The manufacturer declines all responsibility for damage caused by improper use of the product, even if partial, and which does not comply with the information contained in this manual.

Note:

During operation, the valves cannot exceed the limit values established in the instruction manual / sales documentation / data sheet. Use outside the established conditions causes excessive stress and the consequent malfunction of the valve.

2. OPERATING CONDITIONS

For the operating conditions and characteristics of each valve, consult the dedicated technical data sheets or contact Valvomec S.r.l.

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3. RISK ANALYSIS

Transformer valves manufactured by Valvomec S.r.l. are suitable for indoor and outdoor use. The technical characteristics of the valves such as valve type, size, maximum working pressure, are shown on the valve body, while the other technical details such as minimum and maximum operating temperature, fluids, material, flanges and seat type are shown on the technical sheet. Do not use the valves outside the operating conditions (environmental or performance) or outside the characteristics declared by the manufacturer.

The following are the main hazardous conditions that have not been eliminated:

1. The valves, are not equipped with devices against internal overpressure, created by errors in manoeuvring, incorrect procedures or the presence of fluids / liquids subject to increase in volume and therefore pressure (the predisposition of such devices must be upstream of the valve and by the end user).
2. The valves are not equipped with safety devices in case of fire.
3. The valves are not designed to mechanically support loads due to natural / atmospheric events (e.g. wind, earthquakes, etc.).
4. The valves are not designed to withstand fatigue loads, flange loads, or piping structures loads.
5. The valves do not accept the presence of ice inside (in this case the user must provide the insulation of the valves while avoiding any residual product inside the valve).
6. The compatibility between the materials of the valve and the fluids used is evaluated by the user who may request technical support from Valvomec S.r.l. In any case, it remains the sole responsibility of the user to verify the fluid / material compatibility.
7. The valves can be painted using suitable products. If it is necessary to disassemble the valve to perform the painting, it will be the customer's responsibility to check the integrity of the gaskets after assembly. Valvomec S.r.l. will provide all the support necessary for correct assembly to guarantee the seal of the valve once painted.
Valvomec S.r.l. declines all responsibility for damage resulting from improper assembly of the product and which does not respect the information provided.

Failure to comply this instructions can cause damage to things and people, for example:

1. *Accidents due to leakage of liquid (cold / overheated, hazardous, under pressure).*
2. *Malfunctions or serious damage to the valve.*

The instruction manual does not cover:

1. *Events that may occur during assembly, operating and maintenance operations.*
2. *The relevant safety regulations on site that the plant manager must enforce to the installation staff.*

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4. TRANSPORTATION AND STORAGE

4.2 Transport

Valvomec S.r.l. valves are supplied in suitable packaging to ensure adequate protection during transport and handling. Since it cannot be ruled out that the product is accidentally damaged during transport, it is recommended to check it carefully upon receipt, before placing it in the warehouse. Then, verify that the packaging, in the reception phase, is intact, without any damage due to shocks or falls occurred during transport. Also verify that the received product exactly matches what is required. The handling of packaging on pallets wrapped in the film does not require precautions; if the packaging is damaged, check any damage of the product.

If it is necessary to lift the heavy weight valves during handling, use a screwed eyebolt in the head of the stem. In case of alternative solutions, remember not to lift it by supporting the fluid passage area as the sealing seat is in this area. If the valve is supported or lifted from this area, the surface and seat may be damaged, and leakage may occur during valve operation.

All handling operations must be carried out with suitable equipment's and by qualified personnel.

4.2 Storage

For storage choose clean, not excessively humid places with temperatures between -10 and + 60 ° C. If the products are to be stored for long periods, it is preferable not to remove them from their protective packaging. Keep the valves in the packaging during storage.

If the valves are not placed in packs, they must be protected to prevent liquids or other from penetrating during storage and damaging the seals. If it is considered appropriate to apply products for the preservation and protection of the valve, make sure that it is completely dry inside.

It is also recommended to carry out a complete cycle of opening and closing. Seals made of polymeric material are subject to natural aging, losing their characteristics: for this reason, after storage periods longer than two years, it is advisable to perform a functional check and a seal verification before mounting the valve in-line. Furthermore, it is advisable to comply with the elastomer storage requirements.

5. INSTALLATION

Before installing the valve in-line, check its condition, ensuring the integrity of all parts. Also check the indications given on the technical sheet and marked on the valve, to make sure of the correct operating conditions. Replace any protections, if present, at the ends to preserve the inside of the valve during handling.

The pipes must be laid in such a way as to preserve the valve body from any torsions and thrusts which could damage it during installation and operation and cause leaks, deformations or inadmissible stresses for the valve body.

5.1 Handling

The handling of the valves must be carried out by experienced persons with adequate protection systems and according to the law and regulation in force in the place of installation.

For valves weighing less than 25 kg, handling can also be performed manually. For valves with a total weight of more than 25 kg, handling must be carried out using suitable gripping means (such as eyelets, eye bolts, etc.). In the absence of eyelets or eyebolts, the ends, suitably harnessed, can be used to move the valve. Be careful not to damage the surfaces worked with chains or hooks. Always use approved lifting equipment (hooks, belts, etc.) to support the weight of the valve; this weight is indicated in the shipping documents. Avoid, however, to handle suspended loads above people or in places where a fall may cause damage.

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5.2 Assembly

The valve must be installed in compliance with the provisions (laws, regulations and standards) in force in the place of installation.

To avoid personal injury and any other type of damage (to the factories, to the valve, etc.) it is advisable to follow the instructions below:

1. The personnel who take care of the system or the functioning of the devices must be qualified and prepared.
2. Use appropriate Personal Protective Equipment (PPE) (gloves, safety shoes, goggles, ...).
3. Isolate the valve completely from each process and place a warning sign to warn that work is being carried out on it. Depressurize the process.

To avoid damage and protect the inside of the valve, remove the protections, if present, only during installation in the system. Make sure that the inside of the tubing is clean and free from any foreign object or body that could damage the wedge and other parts of the valve. Unless otherwise indicated, the valves are bi-directional and can be mounted on either side. In the case where the valve is monodirectional, an arrow clearly indicates the flow direction. In this case, make sure that the flow direction coincides with the direction of the arrow.

The responsibility of the valve-line coupling is totally at the installer's charge. In case of Gate valve, position the valve in the fully open or closed position, to avoid damage to the sealing surface of the seats and the wedge itself. Check that the surfaces of the valve and the pipe are parallel and properly coupled with the seals compatible with the fluid used.

A bad position or installation can cause deformations in the body of the valve, and this could cause problems of operation and sealing of the seat.

Furthermore, the valve does not have pressure limiting devices, therefore it will be the installer's responsibility to ensure that the working pressure of the unit on which it is installed never exceeds the maximum allowable pressure value (PS). Peaks with a value of $1.1 \times PS$ are allowed for short periods of time.

The user must therefore provide, when he deems it necessary, for the installation of adequate pressure limitation systems on the plant. It will also have to prepare the plant with adequate venting or drainage systems to discharge the pressure and the fluid contained in the system before proceeding with any maintenance activity.

All Valvomec S.r.l. valves they are tested at their factory, but during handling and transport the gland nuts may loosen and may need to be tightened again.

Once the valve is installed in the pipe and pressurized, it is very important to check if there is any leakage of the packing gland outwards.

In the event of a leak, the gland nut must be retightened until the leak disappears, considering that there must be no contact between the gland and the gate. While if the message "Maintenance-free" is present, immediately contact Valvomec S.r.l.

Do not over tighten the tightening. A very high tightening torque in the packing nut can give rise to problems, such as an increase in valve torque, a reduction in the service life of the seal, or a break in the gland packing.

5.3 Operating device

Actuate the valve through the handwheel: normally the closing position is reached by turning to the right, while turning to the left the opening is made. It is not permissible to use additional levers to rotate the handwheel, in order not to generate excessive stresses.

The shut-off valves must be used in a completely open or completely closed position. In the case of rolling, there may be an increase in noise and damage to the seats, causing malfunctions such as leaks.

The Globe valve must be used in a completely open, completely closed position or for regulate the flow. When the disc is fully lowered, the fluid flow is shut off. When the disc is fully raised, the fluid flow is at its maximum rate. When the disc is in raised to less than maximum level, the fluid flow is regulated with proportion to the vertical travel of the disc.

5.4 Installation position (horizontal piping)

In horizontal pipes it is advisable that Valvomec S.r.l. valves are mounted in a vertical position, even if other mounting positions are possible (the image below is purely indicative and does not represent all the transformer valves).

Position number 1: The most recommended.

Position number 8: The valve can be installed in this position, but it is advisable to consult Valvomec S.r.l.

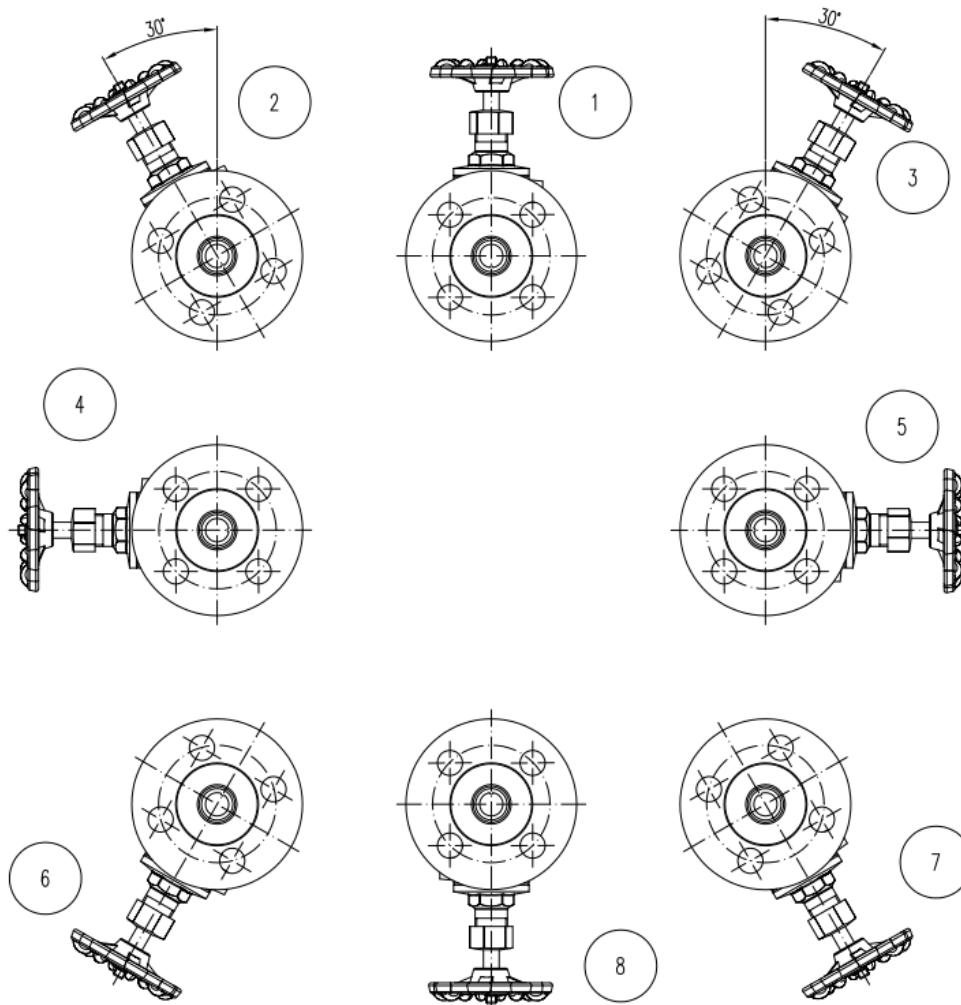
Position number 2, 3, 6 e 7: For bigger valves, the maximum angle with the installation vertical is 30°.

For smaller dimensions the angle can be increased up to 90° (positions Nos. 4 and 5). When it is necessary to install large valves in one of these positions, we advise you to contact Valvomec S.r.l. since in these cases, due to the weight of the actuator assembly, an adequate support should be provided to avoid deformations and operating problems in the valves.

Position number 4 e 5: For valves with small dimensions, the valves can be installed in these positions.

If it is necessary to install large valves in some of these positions, it is advisable to consult Valvomec S.r.l.

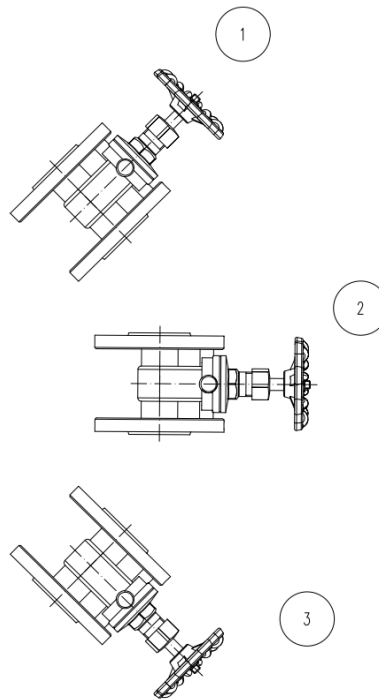
In these cases, due to the weight of the actuator assembly, an adequate support should be provided to avoid deformations and operating problems in the valves.



5.5 Installation position (vertical/inclined piping)

Valvomec S.r.l. valves can be mounted in all positions, even if some aspects need to be taken into consideration (the image below is purely indicative and does not represent all the transformer valves):

Position number 1, 2 e 3: In these positions, it is advisable to make an adequate support, as deformations may occur due to the weight of the valve group, and this can lead to valve malfunction.



6. MAINTENANCE

The efficiency of the product is the result of good and careful maintenance; the only maintenance required in this type of valve is to replace the seal of the headwork assembly, packing / elastomers and gasket between valves and pipe. Check annually for any leaks from the valve. It is advisable to carry out a periodic inspection of the packing every 6 months, while it is absent for elastomers. The life of these seals will depend on the working conditions of the valve, such as: pressure, temperature, number of operations, type of fluid and others.

To avoid personal or material damage when carrying out maintenance activities, we recommend following the instructions below:

1. Personnel who are responsible for the maintenance or operation of the devices must be qualified and prepared.
2. Use appropriate Personal Protective Equipment (PPE) (gloves, safety shoes, goggles, ...).
3. Close all pipelines that adversely affect the valve and place a warning sign to warn that work is being carried out on it.
4. Isolate the valve completely from each process. Depressurize the process.
5. Drain all the fluid in the line from the valve.

If the unloading is free, without piping, it must be positioned so as not to jeopardize the physical safety / integrity of people, in case of accidental opening.

If the valves are damaged due to improper handling or without proper authorization, Valvomec S.r.l. will not take responsibility. Valves must not be modified unless expressly authorized by Valvomec S.r.l.

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7. DISPOSAL OF PRODUCTS AT THE END OF LIFE

Once the valve has reached the end of its working life, the valve can be removed from the system by following the procedure appropriate to the type of valve itself and the operating conditions. If the valve intercepts toxic, corrosive and / or harmful substances, it must first be cleaned by means of an appropriate flushing cycle and the residues disposed of according to the regulations in force. Once removed from the installation, protect the ends and any openings through a suitable closing system, to prevent dispersion in the environment and contact from any polluting or hazardous materials, which remain inside the valve. If fluid leaks from inside the valve occurs, it is necessary to promptly intervene, reclaim and secure the contaminated environment, as required by legislation and current legislation. The personnel responsible for disassembly and disposal / recovery must be qualified and equipped with appropriate personal protective equipment (PPE) according to the size, type and service to which the device was intended (polluting, corrosive, etc.).

Once disassembled and protected, take the valve to a storage site that complies with the requirements of European, national, regional and municipal environmental and safety standards.

The management of waste produced during installation, extraordinary maintenance or following the disposal of the product is regulated by the regulations in force in the country where the product is installed, in any case the following general indications are reported:

- Metal components (bronze / brass) can be recovered as raw material.
- Gaskets / sealing elements (PTFE, PEEK, NBR, EPDM, FKM ...), as contaminated by intercepted fluids and lubrication materials, must be sent for disposal.
- The packaging materials that accompany the product must be assigned to the separate collection system in the area.