BALL VALVE FOR TRANSFORMERS Fig. 15245

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1. INTRODUCTION

The purpose of this manual is to provide the essential information for the installation, commissioning and maintenance of transformer valves.
These valves follow the Quality system, in compliance with the ISO 9001 standard, for the development and implementation.
Perfect operation is guaranteed with correct installation and regular maintenance and repair.
This device is suitable for use in the open or closed position, it should not be used in the flow regulation service.
If the dimensions permit, the valves bear identification of the nominal diameter, pressure and body material of construction.
The reader is referred to the identification of his product and the correct operating conditions, possibly referring to the data sheet.
The manufacturer declines all liability for damage caused by improper use of the product, even if partial, and does not comply with the information contained in this manual.

Note:
During operation, the valves may not exceed the limit values set out in the instruction manual/sales documentation/data sheet. Use outside of 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, please refer to the dedicated data sheets or contact Valvomec S.r.l.

3. RISK ANALYSIS

These transformer valves are suitable for indoor and outdoor use. The technical characteristics of the valves, such as valve type, size, maximum operating pressure, minimum and maximum operating temperature, fluids, material, flanges and seat type can be found on the data sheet.
Ball valves are designed for loads appropriate to their intended use and other foreseeable operating conditions that are considered reasonable. In particular, the following factors must be considered:

1. The pressure load must not exceed the specified pressure range. Appropriate measures should be taken to avoid overpressure or pressure impacts. For test purposes, the valve can be tested according to DIN EN 1226-1.
2. Transformer oil must comply with 1ZBA 117 006 / IEC 60296 or equivalent properties

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

1. The valves are not equipped with devices against internal overpressures, created by manoeuvring errors, incorrect procedures or the presence of fluids/liquids subject to an increase in volume and therefore pressure (the preparation of these devices must take place upstream of the valve and by the end user).
2. The valves are not equipped with safety devices in the event of a 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 loads on piping structures.
5. The valves do not accept the presence of ice inside (in this case the user must insulate the valves avoiding any residue of product inside the valve).

6. The compatibility between the valve materials and the fluids used is evaluated by the user who can request the technical support of Valvomec S.r.l. In any case, it remains the sole responsibility of the user to verify fluid/material compatibility.
7. The valves can be painted using suitable products on the external surfaces. It will be customer's responsibility to check the integrity of the seals after assembly.

Valvomec S.r.l. declines any responsibility for damage resulting from improper assembly of the product and that does not comply with the instructions provided.

1. *Failure to comply this instructions can cause damage to things and people, for example:*
2. *Accidents due to fluid leakage (cooling/overheating, hazardous, pressurized).*
3. *Malfunction or serious damage to the valve.*

The instruction manual does not cover:
1. *Events that may occur during assembly, operation and maintenance.*
2. *The on-site safety rules that the plant manager must ensure that the installation personnel comply with.*

4. TRANSPORT AND STORAGE/WAREHOUSING

4.2 Transport

Ball valves are supplied in suitable packaging to ensure adequate protection during transport and handling. As it cannot be ruled out that the product may be accidentally damaged during transport, it is recommended that it be checked carefully upon receipt before storing it in storage. Then check that the packaging, when received, is intact, without damage due to bumps or falls during transport. Also check that the product you receive corresponds exactly to the one requested. The handling of packaging on pallets wrapped in film does not require special precautions; If the packaging is damaged, check for any damage to the product any deficiencies.
If heavy valves need to be lifted during handling, remember not to lift the valve by supporting the fluid passage area, as this is where the sealing seat is located. If the valve is supported or lifted from this area, the surface and seat can be damaged, and leakage can occur during valve operation.
All handling operations must be carried out with appropriate equipment 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 the protective packaging. Keep the valves in their packaging during storage. Store the valves in a closed and dry environment.
If the valves are not packaged, they must be protected to prevent liquids or anything else from getting into them 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 opening and closing cycle. Polymer gaskets are subject to natural aging, losing their characteristics: for this reason, after storage periods of more than two years, it is advisable to perform a functional check and a leak check before mounting the valve in the system. In addition, it is advisable to comply with the storage requirements of elastomers.

5. INSTALLATION

Before installing the valve in-line, check its condition, ensuring the integrity of all parts. Also check the indications on the technical data sheet and marked on the valve, to ensure correct operating conditions. Replace any guards, if any, at the ends to preserve the inside of the valve during handling.
Piping should be laid in a manner that safeguards the valve body from any twisting and pushing that could damage it during installation or operation and cause leaks, deformation, or impermissible stress to the valve body.

5.1 Handling

The handling of the valves must be carried out by experienced persons, equipped with adequate protection systems and in compliance with the laws and regulations in force at the place of installation.
For valves weighing less than 25 kg, handling can also be done manually. For valves with a total weight of more than 25 kg, handling must be carried out with suitable gripping means. In the absence of eyelets or eyebolts, the ends, suitably harnessed, can be used to move the valve. Be careful not to damage the machined surfaces with chains or hooks. Always use approved lifting devices (hooks, straps, etc.) to support the weight of the valve; This weight is indicated on the data sheet. However, avoid handling loads suspended above people or in places where a fall could cause damage.

5.2 Assembly

The valve must be installed in accordance with the provisions (laws, regulations and standards) in force at the place of installation.
To avoid personal injury and any other type of damage (to factories, valve, etc.) we recommend that you follow the instructions below:

1. The personnel who deal with the installation or operation of the devices must be qualified and trained.
2. Use the appropriate personal protective equipment (PPE) (gloves, safety shoes, goggles, ...).
3. Completely isolate the valve from the system and place a warning sign to let you know that you are working on it. Depressurize the system.

To prevent damage and protect the inside of the valve, remove the guards, if any, only when installing into the system. Make sure the inside of the pipeline is clean and free of foreign objects that could damage parts of the valve. Unless otherwise stated, the valves are bidirectional and can be mounted on either side. In case the valve is one-way, an arrow clearly indicates the direction of flow. In this case, make sure that the direction of the flow coincides with that of the arrow.
The responsibility for the valve-line coupling is entirely the responsibility of the installer. In the case of a ball valve, place the valve in the fully open or closed position, to avoid damaging the sealing surface of the seats. Verify that the valve and tubing surfaces are parallel and properly mated with seals that are compatible with the fluid being used.
Incorrect location or installation can cause deformation in the valve body, resulting in malfunction and seat tightness.
In addition, the valve is not equipped with pressure limiting devices, therefore, it will be the responsibility of the installer to ensure that the operating pressure of the unit on which it is installed never exceeds the maximum permissible pressure (PS) value. Peaks with a value of 1.1xPS 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 system. It must also prepare the system with adequate venting or drainage systems to relieve the pressure and fluid contained in the system before proceeding with any maintenance activities.

During handling and transport the gland nuts may loosen and need to be tightened again.
Once the valve has been installed in the pipeline and pressurized, it is very important to check for leaks to the outside.
The reaction forces and moments in relation to support elements, pipe fixings, etc., must not exceed the moments specified in DIN EN 13774. The valves are manufactured with an ISO 5211 compliant mounting bracket for actuator use. The assembly and operating instructions of actuators, solenoids, limit switch boxes must be adhered to.

Appropriate methods of support, fixation and alignment should be used to prevent the risk of overstress, e.g. by impermissible movement or excessive force on the valves. In the case of gaseous fluids that form condensate, suitable dewatering systems must be provided to prevent damage caused by water shock and corrosion. Due consideration must be given to the risk of fatigue caused by vibrations in the piping system.
These ball valves are supplied in the "Open" position. The ball valve must be properly assembled in the open position. The direction of flow and the side of the transformer are marked and must be considered. The pressure compensation hole should face the side of the transformer.
The dust protection cap must be removed. Appropriate sealing materials and screws must be used to seal flange connections. After assembly, flange connections must be tested for leaks. Care must be taken during assembly that no dirt gets into the ball valve.

5.3 Operating device

To close: Turn the control lever 90° clockwise. To open: Turn the control lever 90° counterclockwise. The groove on the top of the switch pin indicates the position of the ball: Open/Closed. The ball valve can only be operated in the Open or Closed position. Intermediate positions (control function) can damage the ball seal. This can cause leakage in the shut-off function.

6. MAINTENANCE

The efficiency of the product is the result of good and careful maintenance. Check annually for leaks from the valve. Wear depends mostly on the fluid, the frequency of switching and thermal stress. For this reason, depending on the specific application, different wear factors can occur, which require very different repair intervals.
To avoid personal or property damage when carrying out maintenance activities, it is recommended to follow
The instructions below:

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

<u>If the drain is free, without conveying pipes, it must be positioned in such a way as not to endanger the physical safety/integrity of people, in the event of accidental opening.</u>

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

7. DISPOSAL OF END-OF-LIFE PRODUCTS

Once the end of its operating life has been reached, the valve can be removed from the system 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 with an adequate washing cycle and the residues disposed of according to current regulations. Once removed from the system, protect the ends and any openings by means of an adequate closure system, to avoid dispersion into the environment and contact with any pollutants or dangerous substances, which remain inside the valve. In the event of fluid leaking from the inside of the valve, it is necessary to intervene promptly, remediate and secure the contaminated environment, as required by the regulations and legislation in force. The personnel in charge of dismantling and disposal/recovery must be qualified and equipped with adequate personal protective equipment (PPE) according to the size, type and service for which the valve was intended (polluting, corrosive, etc.).

Once disassembled and packaged, the valve must be transported 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 governed by the regulations in force in the country in which the product is installed, in any case the following general indications are reported:

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