



TECHNICAL MANUAL

Technical specification

Products: Fluorine lined ball valve



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1. Precautions

- (1) In all cases, keep people safe first.
- (2) This valve should be used according to the pressure-temperature rating of GB/T 12224.
- (3) The selected material should be guaranteed to resist corrosion or wear under the working condition.
- (4) When the fluid is flammable and explosive, the operating temperature should be limited.
- (5) Ensure that valves are decompressed and drained during service/maintenance.
- (6) For power driven valves, ensure that the power system (electrical, hydraulic, and gas) is disconnected before any operation.
- (7) Appropriate protection should be used during repair/maintenance, such as protective clothing, oxygen masks, gloves, etc.
- (8) Do not smoke, do not use non-explosion-proof electric devices and do not use open flames without permission while on site during the repair/maintenance process.
- (9) Valves must be inspected regularly:
 - Whether the bolt/female connection is tight (body/cap, platen, flange connection)
 - Corrosion/wear hazards (impact, pitting, loss of thickness)
 - Make sure the valve is fully open/fully closed
- (10) Hazards and precautions



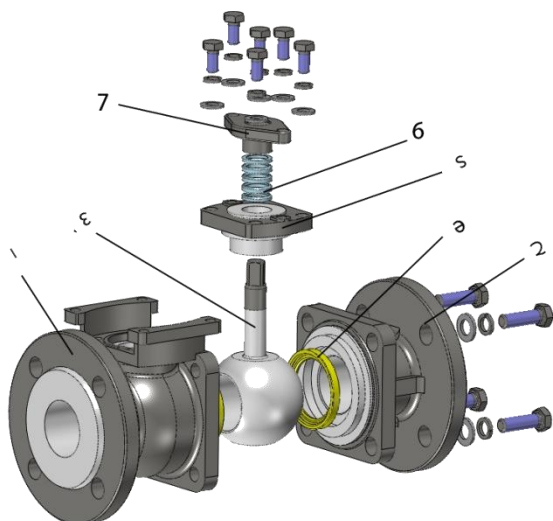
Hazards	Precautions
Accidental exposure to hazardous media Cause: Packing failure of gasket	Replace gaskets and fillers after failure (with correct and suitable materials)
Accidental contact with hazardous media during service/disassembly	1, after removing from the line, open or close the valve to ensure the pressure relief of the chamber 2, before disassembly, use the appropriate device to discharge residual fluid or other substances
Contact with dangerous media, explosion or fire source causes the structure of the valve body to yield	1, take precautions to avoid additional force acting on the valve 2, if necessary, install preventive devices to avoid the occurrence of water shock, such as: buffer device 3, avoid excessive vibration of the valve 4, avoid sudden changes in temperature or pressure
Accidental contact with hot or cold parts	1. The valve should be pre-installed with appropriate insulation 2. Install warning signs in places where there is a risk of burns 3, for low temperature environment can only use low temperature lengthened valve
Flammable fluid medium combustion and explosion	1. Only explosion-proof electric devices can be installed in the use area 2. All power supplies should be cut off during maintenance in the use area
The explosion of oxygen-containing medium	1. Only explosion-proof electric devices can be installed 2. Only completely degreased valves can be used 3. Only materials suitable for oxygen-containing media can be used (In the use area)

* Hazardous fluid media include: toxic, corrosive, flammable, high or low temperature fluid media.

2. Product introduction

Fluorine lined ball valve is a ball with a round through hole as the opening and closing parts, the ball with the valve stem around the center line of the valve body rotation to achieve valve opening and closing. By using a special molding process, the sealing surface is compact and good, and the V-type PTFE packing combination makes the valve reach zero leakage; The ball and the valve stem are cast as one, which eliminates the possibility of the valve stem bursting out of the bearing part due to pressure changes, and fundamentally ensures the safety in use; The whole plastic lining process is used to resist the strong corrosion of the medium. Now widely used in chemical industry, petroleum, metallurgy, medicine and other industrial sectors, to

achieve the production process of strong acid, alkali and other strong corrosive medium regulation or cut off, applicable temperature :PTFE $\leq$ 120°C, FEP $\leq$ 150°C, PFA $\leq$ 180°C. (According to the lining material)



2.1 How It Works

The valve is full diameter floating ball type, lined with fluorine plastic. The ball is integrated into the stem, eliminating the rotation Angle difference. The valve stem has good anti-flying performance, good sealing performance, safe and reliable. Its action and sealing principle: the actuator drives the valve stem (with the handle ball) to rotate 90°, the ball and the valve stem are the whole structure, so the ball also rotates to

achieve the purpose of opening and closing. The 90° Angle is controlled by the special positioning block. The ball and F4 seat are tightly sealed, with zero leakage function, and can use its plastic deformation to automatically compensate for the error caused by wear, to achieve good sealing performance and long service life. In order to ensure the sealing of the valve stem, V-shaped packing group and gland are added to the valve stem for sealing.

2. Product structure



Id.	Structure
1	Main body
2	Auxiliary valve body
3	Ball core
4	Sealing ring
5	Valve cover
6	Packing
7	Stuffing gland

4. Installation of the valve

4.1 Cleaning and precautions before and after installation

- (1) Before the valve is installed, it should be carefully checked whether the operating conditions of the pipeline are consistent with the specified scope of use of the valve, and the inner cavity should be cleaned to prevent the dirt from blocking or damaging the sealing parts.
- (2) Carefully disassemble the packaging of the valve, check the list of materials, specifications and specifications, and check the label and label. Check whether the selected valve model, connection size, structure length and system pressure, temperature, connection mode and other conditions are suitable;
- (3) Check whether the inside of the valve is clean, there is no foreign matter and harmful corrosion, if yes, please clean it after installation;
- (4) The hand wheel or transmission mechanism is not allowed to be used for lifting, and collision is strictly prohibited.
- (5) After the valve is installed, please carefully clean the pipeline and remove the debris that may be brought by the installation to prevent the sealing surface from being scratched;
- (6) If the operating space allows, the fluorine lined ball valve can be installed in any direction of the pipeline.
- (7) Ensure that the valve is closed during installation.

4.2 Flange connection valve and pipe installation

- (1) Check the flange mating surface: If the defect that may cause leakage is found, it should be installed after repair;
- (2) Check whether the size, length and material of studs and nuts are suitable for the requirements;
- (3) Whether the material and size of the gasket meet the requirements of relevant standards;
- (4) Check whether the gasket is defective or damaged;
- (5) Apply the appropriate lubricant to the bolt threads. The bolts should be tightened symmetrically and evenly during assembly (see diagram of bolt tightening sequence in Figure 1), so that the initial contact between the flange and the gasket is as smooth and parallel as possible. Use a torque wrench to ensure that the flange bolts are correctly connected and evenly tightened.

Note: Flange connections are tightened using a torque wrench. If the torque of a bolt in the tightening process sometimes gradually increases, sometimes remains unchanged or slightly increased, the bolt has been bent, should be replaced and scrapped in time.

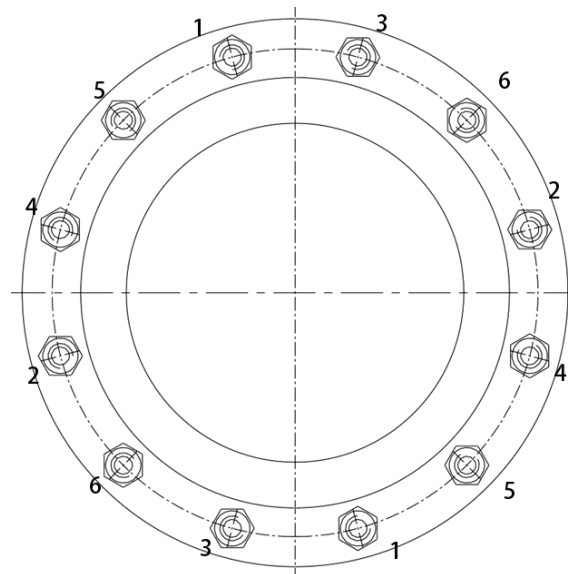


FIG. 1 Schematic diagram of bolt tightening sequence

Note: The valve is installed on the pipeline to avoid the situation that the valve supports the pipeline.

5. Use and maintenance of the valve

- (1) After the valve assembly and system pressure test, the valve is required to be fully opened or fully closed in use, and it is not recommended to partially open the valve in order to adjust the flow rate or reduce the sudden pressure. The company is not responsible for the damage, loss and additional costs caused by exceeding the specified use conditions.
- (2) Generally, ball valves do not have an insulated structure. Do not touch the surface of the valve when the medium is a high or low temperature fluid.
- (3) Valve surface, valve stem and other parts are easy to adhere to dust, oil and residual media, easy to produce wear and corrosion of the valve, and even because of friction heat and explosive gas danger, so should often clean the valve to ensure that it is in normal working condition.
- (4) It is not recommended that the user maintain the pressure of the valve part for maintenance. If the pressure maintained part has been used for a long time, and an accident may occur, affecting the safety of the user, the user should replace the new valve in time. The valve on the pipeline is not allowed to be knocked on, walked on and used as any load-bearing material. And the fluorine-lined valve is not allowed to be used under negative pressure conditions, nor is it allowed to do any high-temperature welding work on the fluorine-lined valve.
- (5) When fluorine-lined valves are connected with pipelines, gaskets are generally no longer used alone, but when connected with dissimilar materials (metal surfaces, etc.) flanges, appropriate gaskets should be used to protect the PTFE flanges.
- (6) Fluorine-lined valve in the use of the system, such as leakage at a higher temperature,

should first reduce the system temperature to room temperature, after identifying the cause, maintenance.

- (7) When manually operating the valve, the auxiliary lever should not be used to force the valve to switch on and off, so as to prevent the torque from being too large and damaging the drive parts or sealing parts.
- (8) When the valve is operated electrically, it is necessary to check whether the power supply is normal and whether there is a large voltage fluctuation, and when debugging, manually switch 3 to 5 strokes first to simulate.
- (9) Pneumatic operation of the valve, to check whether the air pressure is normal, such as pressure lower than the design requirements, may lead to leakage in the valve. When debugging, you should manually switch 3 to 5 strokes first for simulation.
- (10) When giving the signal switch, someone must observe whether the valve is running normally nearby. If the operation is abnormal, it should be stopped immediately, otherwise it is easy to cause damage to the valve.

6. Storage and maintenance

- (1) The valve should be stored in a dry and ventilated room, and stacking is strictly prohibited. The channels at both ends of the inventory valve must be sealed, and the opening and closing parts should be in a micro open state.
- (2) Usually the ball valve does not have an adiabatic structure, when the medium is high temperature or low temperature fluid, do not touch the valve surface.
- (3) Valve surface, valve stem and other parts are easy to adhere to dust, oil and residual media, easy to produce wear and corrosion of the valve, and even because of friction heat and explosive gas danger, so should often clean the valve to ensure that it is in normal working condition.

7. Troubleshooting

1. After the valve is installed on the pipeline, it needs to be checked and maintained regularly. If any abnormality is found, please follow the following instructions for handling.

Check Items		Routine inspection (1 time/month)	Process downtime (Equipment overhaul)	Emergency maintenance
Overall appearance	1、 Valve and actuator surface protective coating is damaged, cracked.	●		Repaint to prevent further damage
	2. Whether the fasteners of the valve (valve body, valve body and actuator) are loose or loose.	●		re-tighten
	3. Whether the valve body and actuator have abnormal cracking or cracking; Whether there is abnormal impact deformation.	●		△
	4. Whether there is serious corrosion, surface oxidation or abnormal surface phenomenon on the surface of the valve body or the actuator.	●	●	△
Leakage Phenomena	1. Check whether there is leakage or leakage at the valve shaft packing.	●	●	Lock the packing gland
	2. Check whether there is leakage or leakage at the structural connection of the valve body.	●	●	Lock the packing gland
Actuators Performance	1, check the manual device performance (manual switch for at least two cycles).		●	Check for card material
	2. Remotely operate the valve switch for two cycles.		●	
	3. Whether there is abnormal sound in the actuator and whether the switch is smooth.	●		△

	4. Whether there is leakage of the pneumatic actuator.	●		△
	5, whether the pneumatic actuator can be fully executed in place.		●	△
Signal feedback and status indication	1, check the local indicator display.	●		On-site installation and maintenance
	2, check whether the remote signal feedback is normal.	●		On-site installation and maintenance
	3, manual switch, check whether the local indication is normal.		●	△
	4. When manually switching, check whether the signal feedback is normal.		●	△
Accessories	1. Check the surface condition of the filter pressure reducing valve.	●		Apply for maintenance and replacement
	2, check the filter pressure reducing valve pressure setting function.		●	Apply for repair and replacement
	3, check whether the limit switch installation is loose.	●		△
	4. Check whether the support accessories are loose and damaged.	●		△
	5, check whether the cable is damaged, damaged, and check whether the cable sealing device is normal.	●		On-site installation and maintenance
	6. Check whether there is water, corrosion and other abnormalities inside the electric actuator and limit switch box.		●	△
Valve	1, whether the valve can be completely switched in place.		●	△

performance	2. When the valve stem moves or rotates, the surface is worn, twisted and deformed.		●	
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2. Due to the special structure of the fluorine lined ball valve, the valve should be carefully treated in the selection, use and maintenance of the corresponding working conditions and site environment.

Cause of the problem		Avoid or solve
High solids content in the medium	Angle stroke valve chamber is easy to accumulate material stuck	In addition to the fine slurry, the solid content should be controlled within 5 '10%. The pipes need to be flushed regularly.
The size of solid contained in the medium is too large	The sealing surface is damaged, and the inner wall of the runner is eroded excessively.	The front end of the pipeline should be filtered and cleaned.
Excessive operating pressure	The butterfly valve seat is too contracted to rebound, and the ball surface of the ball valve is irrecoverable.	Type selection to avoid, choose the appropriate lining material.
Operating temperature is too low	Excessive shrinkage of lining material and loss of valve density	To avoid when selecting, choose the appropriate lining material.
High operating temperature	Lining material super mechanical performance critical point, light will produce permanent plastic deformation, heavy will soften.	The selection should be avoided and the appropriate lining material should be selected.
Do not operate for a long time	Opening and closing stuck, even unable to move.	Need to do the necessary switch operation regularly.
The actuator size is too small	Cannot open and close properly	Select a reasonable actuator safety factor according to the medium.
The field air source pressure is too small	Cannot open and close properly	Control the instrument air source within a reasonable range.

8. Quality assurance and service

Valve Quality Assurance The valve quality guarantee period promised by the company is 12 months after delivery. This includes defects in materials or manufacturing processes that may occur under proper use. The Company will not be liable for any defects arising from incorrect operation, incorrect installation, repair, modification or alteration. The customer shall immediately notify the Company of any defects or possible defects in the product, and the Company shall have the right to verify the authenticity of such defects. The following are our company's responsibilities within the scope of the warranty:

- Maintenance of parts
- Replacement of parts
- Reimbursement at the purchase price or recovery of defective products from the original customer in the event of unexpected natural disasters, such as earthquakes, typhoons and other causes outside the product itself, the company will not be liable.
- If the contract stipulates, the manufacturer can provide on-site installation and commissioning. The manufacturer will track the quality of the valves provided and provide various services according to the requirements of users.

9. Ordering instructions

When users choose this product, please try to clarify the following requirements, so that we can provide better service:

- (1) 2. Medium name and status (gas, liquid, solid, crystal slurry, slurry, suspension).
- (2) Operating temperature and operating pressure of the medium.
- (3) Valve connection form.
- (4) Nominal pressure rating of the pipe.
- (5) Operation mode.
- (6) Special material requirements.
- (7) Ambient temperature.
- (8) Is it explosion-proof? Explosion-proof rating?
- (9) Special qualification, certification requirements.