Instruction and Operation Manual

Ball Valves

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Contents

1. Usage and features

1.1 The product is pipeline ball valve designed and manufactured according to API 6D, functioned in gas, liquid pipes as open and close device. The product has the feature of advanced sealing structure, low resistance, swift opening and closure, secure and long working time.

1.2 Specifications

NPS			In
Class			Lb
Pressure Testing	Shell testing		MPa
	Low pressure sealing testing		
	High pressure sealing testing		
Temperature			℃
Flow coefficient			m^2
Opening torque			N.M
Applicable medium		One way mediums such as Oil, Liquid nature gas, Acid gas, Coal gas and two way mediums such as coal slurry etc.	

1.3 Construction features

The product is trunnion mounted manual operated ball valve; the main components are main body, left and right body, ball, seat, stem and worm gear.

1.3.1 The seat is double sealing, each seat can function separately to cut off the medium of inlet and outlet to achieve double cut, meanwhile, when the fluid medium in the valve gasified as the temperature is rising which also causes the rapid rising in pressure, The medium in valve body can push the seat by its self function to decrease the pressure and ensure the safety of the valve. (See chart 17)

1.3.2 Blow-out proof stem structure: An opening ring is placed at the middle of the stem to prevent stem blow out which may caused by the rapid rising of pressure (See chart 41)

1.3.3 Anti static structure: release the static to the ground to ensure the safety of the valve.

1.3.4 Drain structure: Draining device is designed at the bottom of the main body, and venting device is also designed at the top of the main body. (See chart 5)

1.3.5 Packing gland no leaking design: the sealing gasket is placed in between the main body and the left and right body, stainless steel graphite spiral wounded gasket which ensures the sealing of the packing gland even if the O ring is failed to function. (See chart 26)

1.4 Main dimensions and connection dimensions

DN	Worm Gear Type	L	H1	H2	D1	D2	D	N- ϕ	b	f	Weight (KG)
16"	Type 7	991	970	440	603	470	686	20-41	77	6.4	1800
18"	Type 8	1092	1100	530	654	533	743	20-41	83	6.4	2400
20"	Type 9	1194	1200	560	724	584	813	24-44	89	6.4	3000
24"	Type 10	1397	1480	692	838	692	940	24-52	102	6.4	5400

2. Main standards

1. Design and manufacture according to API 6D and PED.
2. Main dimensions according to API 6D
3. Flange dimensions according to ASME B16.5
4. Testing and inspection according to API 6D
5. Marking according to API 6D
6. Pressure – Temperature rating according to ASME B16.34

3. Main Construction material

Left, right body and main body	WCB	Seat	PTFE / POM
Ball	A351 CF8	Bolts	A193 B7
Stem	A276 410	Nuts	A194 2H
Packing	Graphite	Spring	17-7Ph
Gasket	304/Graphite	Worm Gear	Manufacture Standard

4. Safekeeping, Installation, Usage, Check-up

4.1 Safekeeping

a. The valve should be stored in dry, ventilated room, placed in order, especially lightly lay the stem.

b. During keeping and storing, the valve should be closed and make the double-side flanges close down.

c. During storing, we should use easily cleaning out antirust for valve surface.

d. If the valve is stored for long-term (over 1 year), it should be checked before installation, wash the dirt and paint antirust. It is recommended to retest in accordance with relevant code(API 6D) before installation

4.2 Installation

a、 The valve could be installed in any positions

b、 Before installation, we should carefully check whether the valve mark and nameplate is commensurate with the requirement of the condition.

c、When start installation, the valve should be cleaned inside cavity and sealing face, check sealing face、bolt connection、packing screw、stem rotating is flexible or not.

d、Hand wheel and gearing are not allowed to lift usage.

e、When installation, should evenly screw the bolts symmetrically.

f、After finishing installation, the valve should be completely opened to test pipeline and system pressure.

4.3 Usage

a. Valve usage conditions should be commensurate with nameplate and usage specifications.

b. Using the valve, only allowed to fully opened or closed not to regulating flux resulting in attainting sealing face.

c. Opened or closed the valve only by rotating hand wheel, other assistant level or power could not available.

4.4 Check-up

1. During using valve we should timely check following items, find out the problems and solve it in time.

a. Whether the tight fittings are evenly equipped or not.

b. Whether the packing is badly attrited, gasket is damaged or not. (Stop working and repairing)

c. Whether the driver is lightly, flexible or not.

d. Whether sealing face is attrited or badly damaged. (stop working and repairing)

e. Whether body is badly corrosive or attrited resulting in clearly becoming thin even appear leakage. If it occurred, the valve should be discarding (stop working and repairing)

f. Regular check wall thickness when the valve is used under corrosive environment.

2. After be checked、repaired and installed, the valve should have a pressure test according to corresponding standards. And write down the records in order to be checked.

5. Installation and operation

1. The valve should be installed in the place which is easy to maintain, inspect and operate.
2. The marks on the valve should be checked before its installation to ensure the valve is applicable
3. The impurities and damages caused during the transportation should be cleaned and repaired before its installation.
4. The valve should be with the same direction as indicated in the worm gear when the valve is in open position.
5. The valve should be kept with two ends covered; valves should not be stacked when it is in full opening position and should be kept in room with adequate vitalization.
6. The valve should be regularly checked during the preserve and operating, the failure should be solved when it is found.
7. The valve internal should be kept clean; cleaning should be taken when it is needed.
8. The valve must be operated as full opening or full close, can not be operated as adjusting valve.
9. The valve is open and close by the control of wheel; it should not be operated by lever or other kind of power.
10. If there is sediment in the internal or unusual pressure rising is found when the valve is closing, the sediment or gas (liquid) can be drained out by the draining device in the main body.
11. Try to avoid the stress that produced by its accessories and the environment.
12. Do not use the valve for high corrosive or large granule and unsteady medium

6. Possible failure and solutions.

Performance Failure	Causes	Solutions
The stem can not be turned	1. The back seat is assembled too tight. 2. There are damages or impurities in between the stem and its accessories.	1. loose the nut and re-adjust 2. De-assembly the valve and repair. 3. De-assembly the valve and clean the impurities.
Leakage in between ball and gasket or gasket and valve body	1. Without adequate tightening 2. Damages or impurities on the sealing face 3. The sealing face is deformed or failed to function.	1. Tight the valve with adequate tightening 2. Repair and burnish the sealing face and clean the impurities 3. Replace the gasket
Leakage in back seat	1. Packing is not properly tighten 2. The gasket is working over time and defected.	1. Readjust bolts and nuts 2. replace the gasket
Leakage in packing	1. Packing is not properly tighten 2. the gasket is working over time and defected	1. readjust bolts and nuts 2. replace the packing
Leakage in packing gland	bolts of packing gland is loosing	Tightening the bolts

7. Attention

1 Please implement proper heat isolation treatment to prevent danger when the external temperature of valve exceeds 140 °F.

2 To prevent abrasion of valve internal wall, Mediums with wearing chrematistics are prohibited.

3 The supporting tray is for transportation purpose only, user should replace with proper supporting structure by them when the supporting is needed on the working site.

4 The valve can not be used in direct heating place, and doesn't go through antistatic testing, Special transportation conditions, like, earthquake, wind, snow are not considered when designing, please specify in the contract if any.