



The World, Chinese Valve Manufacturer

Ball valve series

球阀系列



球阀概述

球阀是20世纪50年代问世的一种阀门，是近几十年来发展最快的阀门品种之一。它不仅结构简单，密封性好，而且在一定的公称通径范围内体积小、重量轻、材料耗用少、安装尺寸小，并且驱动力矩小，操作简便，易实现快速启闭。几十年的时间里，球阀已经发展成为一种主要的阀类。球阀主要用于截断或接通介质，也可用于流体的调节与控制，而V型球阀能够进行比较精确的流量调节与控制。球阀广泛用于工况严格且需求大的石油、天然气、精炼、化工、船舶、电厂以及管线工业。本公司生产的球阀完全符合API、ANSI、BS、DIN、GB。球阀样本中包含一体式下装式浮动球阀、一体式上装式浮动球阀、两片式浮动球阀、两片式固定球阀、三片式固定球阀、金属硬密封球阀。

球阀的结构特点

1. 流体阻力小：球阀是所有阀类中流体阻力最小的一种，即使是缩径球阀其流体阻力也相当小。
2. 开关迅速、方便：只要阀杆转过90°，球阀就可以完成了全关或全开动作，很容易实现快速启闭。
3. 密封性能好：球阀阀座密封圈一般采用聚四氟乙烯等弹性材料制造，易于密封，而且球阀的密封里随着介质压力的增加而增大。
4. 阀杆密封可靠：球阀启闭时阀杆只作旋转运动，因此阀杆的填料密封不易被破坏，而且阀杆倒密封的密封力随着介质压力的增加而增大。
5. 球阀的启闭只做90°转动，故容易实现自动化控制和远距离控制，球阀可配置气动装置、电动装置、蜗轮装置、气液联动装置或电液联动装置。
6. 球阀通道平整光滑，不易沉积介质，可以进行管线通球。

浮动式球阀特点

浮动式球阀结构简单，对于压力150Lb到600Lb的球阀密封性能好，在各种管道中很容易实现快速启闭。由各种材料制成的阀门适用于水、蒸汽、油品、天然气、气体、酸、氧化物等介质。一体式球阀，浮动式球阀符合API 608、BS 5351以及其它设计标准，防火测试符合API 607的要求，压力范围：150Lb-600Lb。工作温度范围：-196℃-540℃；尺寸：NPS 1/2-NPS 8。

防火结构设计

如球阀现场发生火灾，因为高温分解，非金属密封材料被破坏，球阀设计的金属对金属辅助密封结构可以有效控制介质的内泄和外泄，确保管道系统的安全。

General

Since 1950 Ball valve has been available as a valve, and become one of the fastest-growing varieties of the valves in the last decades. Ball valve is not only of simple structure, good sealing, but also of smaller size, lighter weight, lower cost, easier installation, less driving torque value, easier operation, quicker opening and closure to a certain nominal range. During the past 50 years, Ball has developed into one of the main valve of the category. Ball valve can be used to cut off or access medium, and also control or regulate the fluid, while the V-ball valve can achieve more precise flow regulation and control. As one of the leading Chinese manufacturers of industrial valves, is well capable of the production for various types of industrial valves. Ball valves have been serving in a wide range of rigorous conditions and demand of oil, natural gas, refining, petrochemicals, ships, power plants, as well as Pipeline Industry. production of the ball valve is in full compliance

The ball valve structure

1. Small fluid resistance: The ball valve is of least fluid resistance in all types of valves, even reduced bore ball valve, the fluid resistance is quite small.
2. Quick and easy opening and closing: as long as the stem turns 90°, the ball valve will be able to complete the full open or closure actions.
3. Good sealing performance: the general use of ball valve seat ring, such as PTFE flexible materials, is easy to achieve sealing performance, and the sealing capability increases with the power of the medium pressure.
4. Reliable stem sealing: because of the rotation actions of the operation, the stem packing seals will not be easily destroyed, and the sealing capability increases with the power of the medium pressure.
5. Easy remote control: since the control of the ball valve needs only 90° rotation, it is easy to control and automate the remote control, so the ball valve can be mounted with pneumatic actuator, electrical actuator, hydraulic actuator, gas-liquid interaction actuator, or electro-hydraulic interaction actuator.
6. Smooth channel disables easy medium deposition, ensures smooth pipeline transit.

Floating ball valve features

Floating ball structure is simple and a good seal for class 150~class 600 pressure class to cut off or access the medium in all kinds of pipeline. Ball valve with different materials, can be applied to water, steam, oil products, liquefied natural gas, gas, nitric acid, acetic acid, such as oxidizing medium. One-piece ball valve includes: one-piece type, and forged split body type. All the floating ball are in accordance with API 608/BS 5351, and other standard design, fire test to meet the requirements of API 607, pressure range: class 150 ~ class 600; operating temperature range: -196 °C ~ 540 °C; size range: nps 1/2 ~ nps 8.

Fire Safe Design

When the ball valve site happens to be on fire, and non-metallic sealing materials are destroyed after pyrolysis, ball valve with specially designed metal to metal seal auxiliary structure, can achieve effective control of valve in and out leakage.

描述 Description

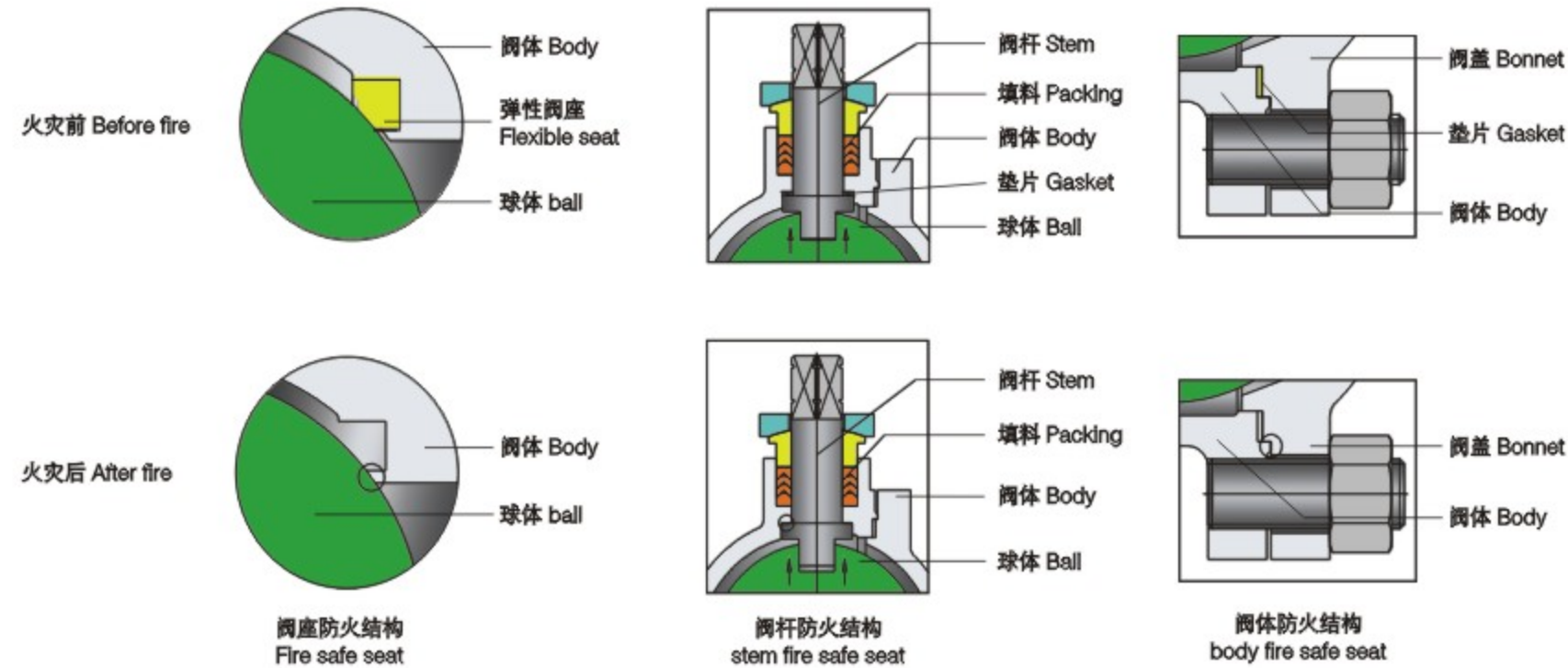


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一体式、侧装式、浮动球 One-piece, side-entry, floating ball



阀杆防吹出结构的设计

阀杆采用防吹出结构设计, 即使在阀腔异常升压及填料压板失效等极端情况下, 也能保证阀杆不会被介质吹出。它嵌入阀体内部, 具有倒密封的功能, 倒密封的密封力随着介质压力的增高而增大, 故能在各种压力下均能确保阀杆的可靠密封。

Stem blow-out proof design

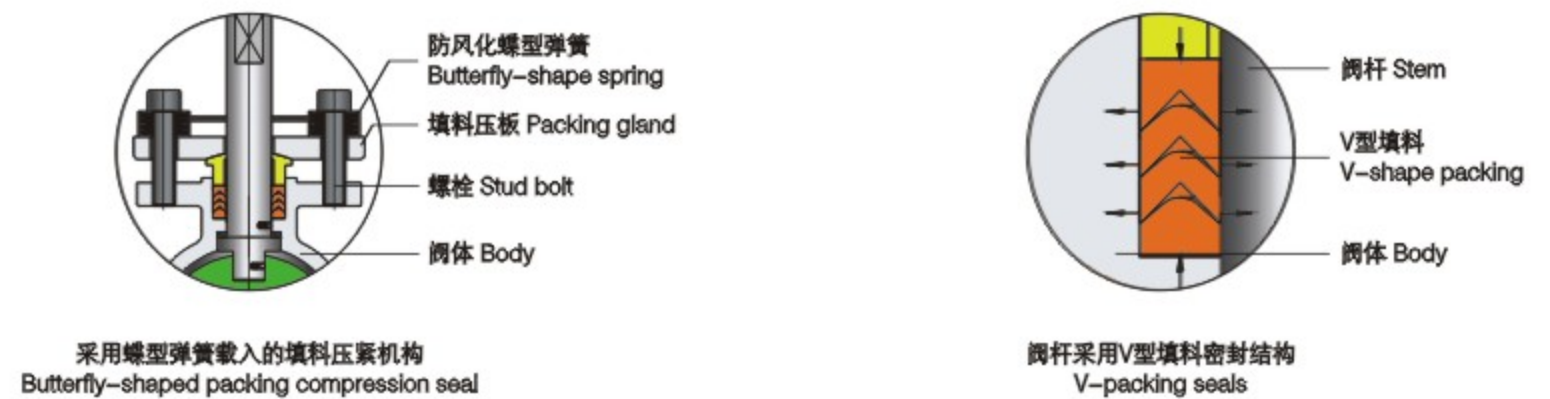
Stem blow-out proof adopts the structural design of the T-shaped structure as a whole, even if the valve chamber is in the unusual pressure arising condition, as well as extreme cases like gland failure, the design can guarantee that stem will not be blown out by the medium. With the stem installed deep inside the valve body, it can function as the backseat which increases with the medium pressure and achieves reliable sealing in a variety of pressure conditions.

低泄漏结构的设计

采用动载压板设计和V型填料密封结构, 具有持续加载力的压板设计能够保证压板对填料保持持续的压紧力从而保证阀杆填料部位持久紧密密封, 防止介质逃逸泄漏。而V型填料压盖的压紧力及介质力有效的转化成阀杆的密封性。

Fugitive emission design

adopts dynamic loading gland design and the V-packing seals that ensures continuous loading to the gland and guarantees lasting close sealing, prevents medium from leaking. Meanwhile the V-fill packing gland can compress the power and medium power effectively into the valve stem sealing.



防静电结构的设计

浮动式球阀防静电结构采用弹簧-钢球式静电引出装置, 是球体与阀体之间直接形成静电通道 (NPS≤1的球阀) 或通过阀杆使球体与阀体之间形成静电通道 (NPS≥1-1/2的球阀), 从而可将球体与阀座开关过程中摩擦产生的静电通过阀体引到大地, 避免静电火花可能引起的火灾或爆炸等危险。

Anti-static design

Floating ball valve anti-static design adopts anti-static spring structure or steel static extraction device, so that the body between the ball forms an electrostatic channel (NPS = 1 of the ball) or through the stem between the valve body and the ball forms a static channel (NPS = 1-1/2 of the ball), and thus ensures the static electricity generated by friction in the process be grounded into the earth through the body, to avoid static electricity sparks that could cause an explosion or fire danger and so on.

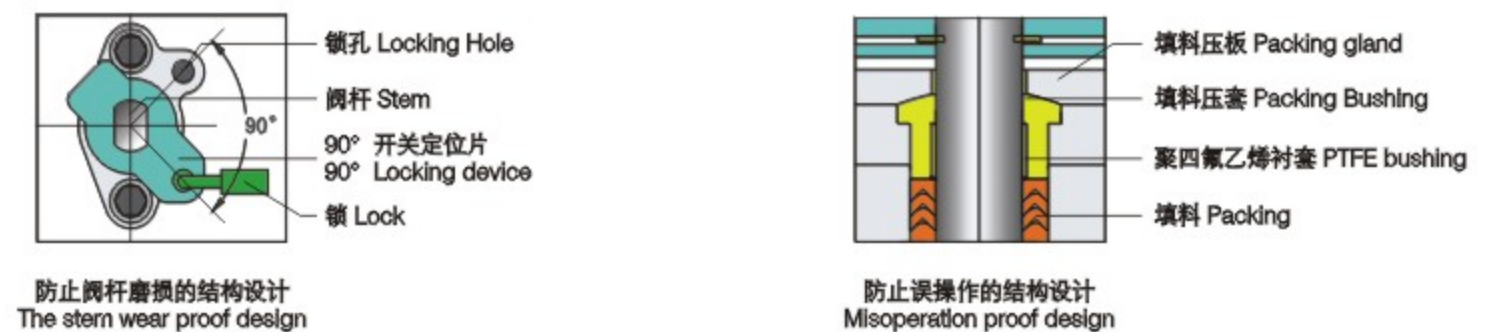


防止阀杆的磨损和误操作的设计

将传统的填料压盖改进为填料压板和填料压套两体式结构设计, 压板和压套采用z球型接触, 确保压套始终垂直, 并在压套内部设置了聚四氟乙烯衬套, 避免了阀杆与压套的磨损, 并减小了阀门的操作力矩。而防止误操作的结构设计则是设置了带锁孔的90° 开关定位片, 可以加锁, 防止误操作。阀杆头部采用扁形设计, 阀门开启时, 手柄与管路平行; 阀门关闭时, 手柄与管路垂直, 确保阀门开关指示不会发生错误。

The stem wear proof and misoperation proof

Design has changed the traditional packing gland into packing gland and bushing with spherical contact to ensure that the bushing always stay vertical. Inside the bushing there sets a PTFE bush to avoid the wear and reduce torque valve operation. The structural design to prevent the misoperation is set up with the approach of the 90° position locking device that can be locked to prevent the misoperation. Stem head adopts flat head design, when opening the valve, the handle is parallel to the pipeline; when closing the valve, the handle is vertical to the pipeline, to ensure that the prevention of misoperation.



一体式、侧装式、浮动球 One-piece、side-entry、floating ball



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设计规范

设计及制造标准: API 608/BS 5351/API 6D
结构长度: ASME B16.10
法兰尺寸: ASME B16.5
阀体壁厚: BS 5351
测试标准: API 598

主要零件材质 Material List

序号 No	名称 Parts	材质 Material
1	阀体 Body	ASTM A216 Gr.WCB
2	阀座 Seat	PTFE
3	球体 Ball	304 S.S.
4	钢球 Steel Ball	304 S.S.
5	弹簧 Spring	304 S.S.
6	垫片 Gasket	304S.S.+Graphite
7	填料 Packing	Graphite
8	阀杆 Stem	ASTM A182 F6a
9	填料压套 Bushing	ASTM A276 410
10	填料压板 Gland	ASTM A216 Gr.WCB
11	限位块 Gauge Block	AISI 1010Zinc-coated
12	手柄 Handle	ASTM A216 Gr.WCB
13	螺母 Nut	ASTM A193 Gr.B7
14	挡圈 Retaining Ring	304 S.S.
15	阀体耐火垫 Body Fire Safe Ring	304 S.S.
16	阀盖 Bonnet	ASTM A216 Gr.WCB

备注: 阀体材质有ASTM A216 WCB、A352 LCB、A217WC1、WC6、WC9、C5、A351 CF8 CF8M、CF3、CF3M 本表仅以ASTM A216 WCB为例。

结构特点

一体式浮动球阀, 在介质的压力作用下, 球体能产生一定的位移并紧压在阀座的密封面上, 保证密封。浮动式球阀的结构简单, 密封性好, 但由于球体承受工作介质的载荷全部传给了出口密封圈, 使其在使用压力和通径上受到一定的限制。一般适用于中低压小口径阀门。公司在多年的球阀制造经验的基础上, 研制开发出的一体式侧装球阀, 具有结构简单轻巧, 操作力矩小, 密封性能安全可靠, 多种阀座材料适应不同的温度范围等特点。

尺寸和重量 Dimensions & Weights

Class 150

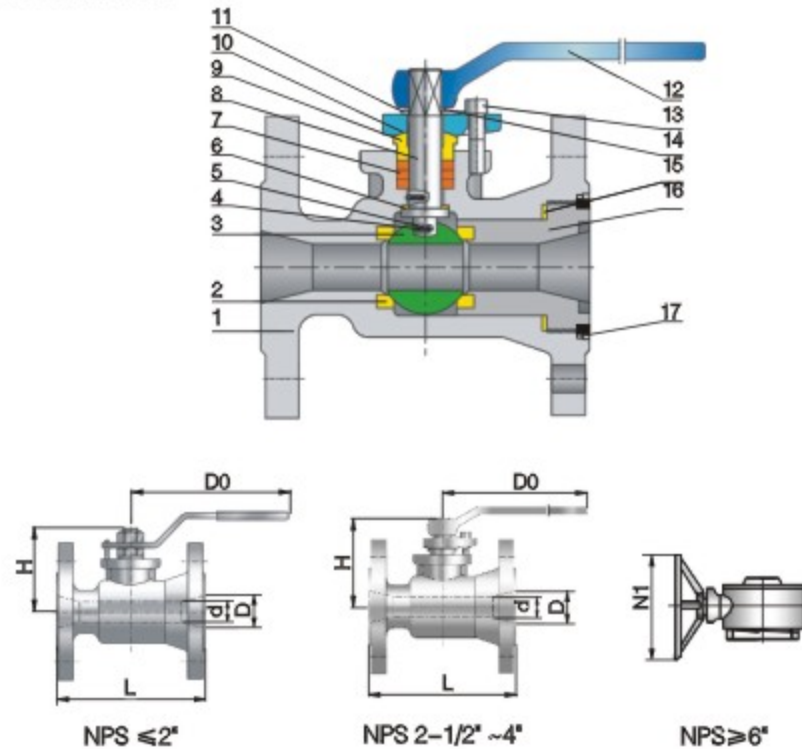
通径 NPS(in)	L(mm)	D(mm)	d(mm)	H(mm)	W(mm)	W1(mm)	重量 Weight(KG)
1/2	108	12.7	9.5	54	140	---	2.1
3/4	117	19	12.7	59	140	---	3
1	127	25.4	19	64	160	---	4.1
1-1/2	165	38	30	90	160	---	6.5
2	178	51	38	102	260	---	9
2-1/2	190	64	51	112	260	---	11.2
3	203	76	64	121	260	---	15.3
4	229	102	76	166	320	---	28.6
6	267	152	114	208	---	450	53
8	292	203	144	246	---	660	81
10	330	254	187	303	---	660	150

Class 300

通径 NPS(in)	L(mm)	D(mm)	d(mm)	H(mm)	W(mm)	W1(mm)	重量 Weight(KG)
1/2	140	12.7	9.5	54	140	---	2.8
3/4	152	19	12.7	59	140	---	3.6
1	165	25.4	19	64	160	---	4.9
1-1/2	190	38	30	90	160	---	10.4
2	216	51	38	102	260	---	12
2-1/2	241	64	51	112	260	---	16.1
3	282	76	64	121	260	---	23
4	305	102	76	166	320	---	39.5
6	403	152	114	208	---	450	82
8	419	203	144	246	---	660	124
10	457	254	187	303	---	660	206

Standards:

Face-to-Face dimension: ASME B16.10
Design and manufacture: API 608/BS 5351/API 6D
Flanged End: ASME B16.5
Shell Wall Thickness: BS 5351
Valve Test: API 598



Features

Under medium pressure, the ball can have a certain amount of displacement and be pressed at the valve seat ring exit and achieves sealing. Floating ball valve structure is simple and of good seal, but since the full load from the ball under pressure is transferred to the ring at exit, its use is restricted in a certain range of pressure size. Generally floating ball valve is applicable to low pressure in small size valve. one-piece ball valve was developed from many years of manufacturing experience, it's of side entry, simple structure, light weight, good sealing, low torque value, and different sealing materials that can meet different temperature range.



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设计规范

设计及制造标准: API 608/BS 5351/API 6D
结构长度: ASME B16.10
法兰尺寸: ASME B16.5
阀体壁厚: BS 5351
测试标准: API 598

主要零件材质 Material List

序号No	部件 Parts	材质 Material
1	阀体 Body	ASTM A216 Gr.WCB
2	球体 Ball	304 S.S.
3	弹簧 Spring	304 S.S.
4	螺母 Nut	ASTM A194 Gr.2H
5	螺栓 Stud	ASTM A193 Gr.B7
6	螺钉 Nut	ASTM A193 Gr.B7
7	限位块 Gauge Block	AISI 1010Zinc-coated
8	手柄 Handle	ASTM A216 Gr.WCB
9	挡圈 Gland	304 S.S.
10	填料压板 Packing Gland	ASTM A216 Gr.WCB
11	填料压套 Packing Bushing	ASTM A276 410
12	填料 Packing	PTFE
13	阀杆 Stem	ASTM A182 F6a
14	阀盖 Bonnet	ASTM A216 Gr.WCB
15	垫片 Gasket	PTFE
16	阀座密封圈 Seat Seal	PTFE
17	内部防火金属环 Inner-firesafe Metal	ASTM A276 410
18	外部防火金属环 Outer-firesafe Metal	ASTM A276 410

备注: 阀体材质有ASTM A216 WCB、A352 LCB、A217WC1、WC6、WC9、C5、A351 CF8 CF8M、CF3、CF3M 本表仅以ASTM A216 WCB为例。

结构特点

该系列球阀, 它可广泛的用于石油、化工、冶金、电力、医药等工艺部门的仪表和工艺管道上, 除适用于一般介质外, 还可以适用于其他阀门无法适用的污水和含纤维、微颗粒状、高粘度的流体介质。双斜面式球阀, 在弹簧的作用下, 具有自动调整阀座与阀体、球体之间的密封性, 使之在中、低压工况下均具有良好的密封性能, 而阀杆与阀盖接触部位的密封采用填料平面与阀杆、阀盖的凸肩平面间压实密封, 有效的减轻了开启力矩, 并且阀门为整体顶装, 可以直接在管道上进行维修或更换零件, 使维修更方便。

防火结构的设计

为了防止火灾中烧损阀座产生大量的泄漏, 防止有害介质漏出, 上装式球阀在阀体和阀座之间设置了防火金属环, 当阀座烧损时, 球体与金属环紧密接触, 起到密封的作用, 有效的控制了介质的泄漏, 确保了系统的安全。

阀杆防吹出结构的设计

为了防止因阀门内腔压力异常升高而发生的阀杆飞出的危险现象发生, 上装式球阀在阀杆下端采用了没有凸肩的阀杆防飞出结构设计, 有效的控制了阀门内腔压力异常升高的情况下, 阀杆被吹出的危险情况发生。

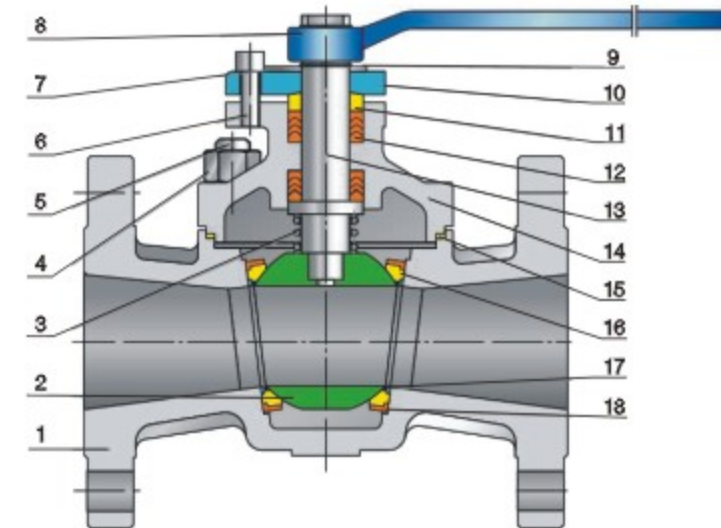
填料平面密封结构的设计

为了减轻阀门的开启力矩, 使阀门的操作更加方便快捷, 上装式球阀在阀杆伸出阀盖处的密封结构上, 改变了以往填料缠绕于阀杆上的压实形式, 采用了填料之间的平面和阀杆、阀盖的凸肩平面, 靠弹簧的预紧力使平面间压实密封, 有效的减轻了阀门的开启力矩。

一体式、上装式、浮动球 One-piece、top-entry、floating ball

Standards:

Design and Manufacture: API 608/BS 5351/API 6D
Face-to-Face dimension: ASME B16.10
Flanged End: ASME B16.5
Shell Wall Thickness: BS 5351
Valve Test: API 598



Features

Self-developed dual-slope ball valve, it can be widely used in the petroleum, chemical, metallurgical, electricity, medicine and technology sectors such as technology and instrumentation on the pipeline, and serves for general medium and also sewage containing fiber, micro-granular, high viscosity of the fluid medium. Dual-slope ball valve under the performance of the spring, can automatically adjust the seal among the seat, valve body, and the ball to ensure reliable sealing under low and medium pressure conditions. The sealing between the stem and bonnet contact area comes from the compaction sealing from the stem and bonnet convex against the packing surface which effectively reduces the torque for opening and valves. This type also applies top entry design that makes easier to carry out repair or replacement of parts directly on the pipeline to achieve more convenient maintenance.

Fire Safe Design

To prevent from a large amount of leakage when the seat material is damaged in the fire, dual-slope ball valve applies a fire safe metal ring between the valve seat, so when the seat is on fire, the ball will contact with the metal ring and save the sealing to ensure the prevention of the medium from leakage and the safety of the pipeline.

Stem blow-out proof Design

To prevent the stem from being blown out by the medium in the unusual pressure arising condition. Dual-slope ball valve adopts a convex with the stem blow-out proof at the bottom of the stem to achieve effective control of the ball valve stem.

Packing flat surface tightness

To reduce the opening torque value, and enable the quick and convenient operation, dual-slope ball valve applies the pre-tightening force of the spring to the surface between the packings and the that between the stem shoulder and the cover shoulder to ensure tightness.