# BALL VALVES

# 球阀系列

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球阀型号编制说明

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**①公称通径代号**
英制系列以A ×× in值表示；公制系列以G×× mm值表示。

**②驱动方式代号 (手柄或杠杆传动省略此代号)**
3—手动操作器； 6—气动； 6S—气动弹簧复位； 6A—气动调节 5—伞齿轮传动
7—液动； 8—气液联动； 8H—气液联动带紧急切断； 9—电动

**③阀类代号**
FB—浮动球阀； TB—固定球阀

**④公称压力代号**
1—PN16 class150； 2—PN25； 3—class300； 4—PN40 class400； 6—PN64 class600
9—class900； 10—PN100； 15—class1500； 16—PN160； 20—PN200； 25—class2500;

**⑤连接弄式代号**
R F—凸面法兰； FF—全平面法兰； MFM—凹凸面法兰； TG—榫槽面法兰
RJ—环接面法兰； BW—对接焊； SW—承插焊； NPT—螺纹连接

**⑥结构形式代号**
1—全径直通； 2—缩径直通； 3T—T型三通； 3L—L形三通； 4—四通
5—整体上装式(全径)； 5A—整体止装式(缩径) 6—轨道球阀(全径)； 6A—轨道球阀(缩径)
7H—偏心半球； 7F—偏心全球； 8—全焊接(全径) 8A—全焊接(缩径)

**⑦壳体材料代号**
C—WCB； C5—C5； C6—WC6； C9—WC9； BL—LCB； CL—LCC
8—CF8； 8MCF8M； 3—CF3； 3M-CF3M； ML—MONEL

**⑧球阀材料代号**
1—WCB； 2—CF8； 3—CF8M； 4—CF3； 5—CF3M
1F—A105或25； 2F—304； 3F—316； 4F—304L； 5F—316L

**⑨阀座材料代号**
F—聚四氟乙烯； (PTFE) N—尼龙； (NyLon) G—碳纤维； P—对位聚苯PPL； E—PEEK； M—MOLON

注：*抗硫化氢、加长杆、氧气专用、夹套球阀等阀门，在阀类代号前分别加“K”、“E”、“O”、“J”。
示例：A8“3TB3RF1C2F表示API 8”蜗轮传固定球阀300Lb凸面法兰全通径阀体材料WCB球体材料CF8阀座F4
*在后面所提及的图号中不涉及中径及阀门的材料编号，由用户给定。

## 球阀技术规范

| 技术规范 | API系列 | GB系列 |
|---|---|---|
| 设计规范 | API6D、API608、BS5351 | GB/T12237、JB/T7745 |
| 压力温度等级 | ASME B16.34 | GB/T9124 |
| 结构长度 | ASME B16.10 | T12221、GB/T15188.1 |
| 法兰型式尺寸 | ASME B16.5、ASME B16.47 | GB/T9113、JB/T79 |
| 对焊端连接 | ASME B16.25 | GB/T12224 |
| 承插焊连接 | ASME B16.11 | / |
| 螺纹端连接 | ASME B16.1.20 | / |
| 检验与试验 | API598、API6D | JB/T9092、GB/T13927 |

Ball Valve Model Schedule Iiiustration

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

**①Codes of Nominal Diameter**
British series indicated by A XX in value,and metric series indicated by G XX mm value.

**②Codes of Driving Modes (For handle or lever drive,this code can be omitted.)**
3—Manual Operator； 6—Pneumatic;； 6S—Pneumatic Spring Return； 6A—Pneumatic Control; 5—Bevel Gear Drive;
7—Hydraulic； 8—Airdraulic； 8H—Airdraulic with Emergency Cutoff； 9—Ekectruc

**③Codes of Valve Types**
FB—Float Ball Valve； TB—Fixed Ball Valve

**④Codes of Nominal Pressure Class**
1—PN16 class150； 2—PN25； 3—class300； 4—PN40 class400； 6—PN64 class600
9—class900； 10—PN100； 15—class1500； 16—PN160； 20—PN200； 25—class2500;

**⑤Codes of Connecting Modes**
R F—Raised Face Flange； FF—Fully Flat Face Flange； MFM—Male and Female Flange； TG—Tongued and Grooved Flange；
RJ—Ring Junctioon Flange； BW—Butt Welding； SW—Socket Welding； NPT—Threaded Connection

**⑥Codes of Structural Modes**
1—Full Bore Straightway； 2—Reducing Straightway； 3T—T-shaped Three-Way； 3L—L-shaped Three-way；
4—Four-way 5—Overall Top Installed(Full Bore)； 5A—Overall Top Installed(Reducing) 6—Track Ball Valve(Full Bore)；
6A—Track Ball Valve(Reducing) 7H—Eccentric Half Ball； 7F—Eccentric Full Ball； 8—All Welded(Full Bore)
8A—All Welded(Reducing)

**⑦Codes of Casing Materials**
C—WCB； C5—C5； C6—WC6； C9—WC9； BL—LCB； CL—LCC
8—CF8； 8MCF8M； 3—CF3； 3M-CF3M； ML—MONEL

**⑧Codes of Ball Materils**
1—WCB； 2—CF8； 3—CF8M； 4—CF3； 5—CF3M
1F—A105或25； 2F—304； 3F—316； 4F—304L； 5F—316L

**⑨Codes of Seat Materials**
F—PTFE； (PTFE) N—Nylon； G—Carbon Fiber； P—PPL； E—PEEK； M—MOLON

Note:*The letters of "K"、"E"、"O"and"J"are placed in front of the codes of valve types, respectively representing hydrogen sulphide redsistant, ectension bar, oxygen, and jacketed ball valve.
Example:A8"TB3RF1C2F means API 8" worm gear drive, fixed ball valve,300Lb, raised face flange, full bore, body material WCB, ball material CF8,and seat of F4.
*The figures mentioned hereunder don't have the codes of caliber and valve material, they are to be specified by users.

## 球阀技术规范

| Technical Specifications | API Series | GB Series |
|---|---|---|
| Design Specifications | API6D、API608、BS5351 | GB/T12237、JB/T7745 |
| Pressure and Temperature Class | ASME B16.34 | GB/T9124 |
| Face-to-face | ASME B16.10 | T12221、GB/T15188.1 |
| Flange Type and Dimensions | ASME B16.5、ASME B16.47 | GB/T9113、JB/T79 |
| Butt Welded | ASME B16.25 | GB/T12224 |
| Socket Welded | ASME B16.11 | / |
| Threaded | ASME B16.1.20 | / |
| Inspection and Test | API598、API6D | JB/T9092、GB/T13927 |

## 结构特点

浮动球阀系我公司在消化吸收国内外先进技术的基础生产出的优良产品，它具有更新的设计特点，能满足一般工业标准的安全和方便需要。

**1、手动浮动球阀的开、关指示：**

球体、阀杆、手柄是阀门的运动部件，是一个装配单元，阀杆头部采用扁方结构，能从手柄所处位置很容晚辨出阀门是处于开启位置或关闭位置。当手柄或阀杆扁方与管道轴线平行时，阀门处于开启位置；当手柄或阀杆扁方与管道轴线垂直时，阀门处于关闭位置；

**2、阀门锁定装置：**

为防止误操作阀门，在阀门的全开和全关位置可用锁锁定阀门，特别是安装在野外和阀门或当工艺流程不允许开或关阀门时，为防止其他人员错误操作阀门，将阀门位置锁定是很重要的，因此根据用户的需要在阀门设计时加装带锁孔定位片可满足用户的工艺要求。

**3、阀杆防飞出结构**

当介质通阀门时，阀体中腔的压力可能将阀杆推出 (或者在维修阀门时，如果中腔有压力，拆卸阀门时阀杆、介质容易飞出，误伤人员) 。为防止这种情况发生，在阀杆下部设置一凸台结构。这样，即使火灾时，填料、止推轴承被烧损或其它原因引起填料等损坏，阀体内的介质压力将使阀杆凸台与阀体上密封面紧密接触，防止介质大量从损坏的填料部位处泄漏。

**4、防静电装四置**

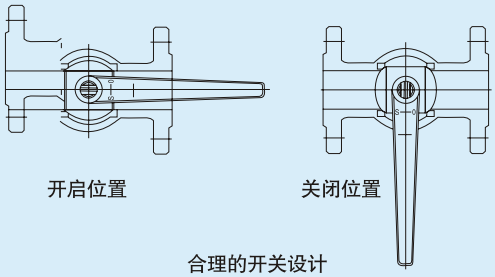
当操作阀门时，由于球体和聚四氟乙烯等非金属材料阀座之间的摩擦，会产生静电电荷并聚积在球体上。为防止产生静电火花，特在阀门上设置防静电装置，将积聚在球体上的电荷通过球体与阀杆、阀杆与阀体之间的静电通道导出。

**5、防火结构**

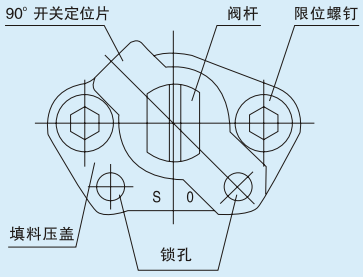
当发生火灾时，填料、阀座等非金属(非防炎材料)将被烧坏，大量泄漏的介质可能会更加促使火势蔓延，扩大，这时阀门的防火结构可阻挡介质大量泄漏。如图，一旦阀座被烧损，球体将直接与阀体上的金属面接触，从而阻止介质大量从烧损的阀座处泄漏。防火防静电的结构设计应符合API607、JB/T6899和BS6755第二部分的要求。

**6、中部法兰无外漏结构**

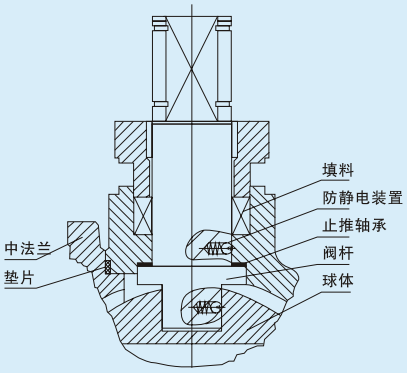
阀体与左体的联接部位是靠垫片密封，为防止由于火灾、高温或震动等因素引起的该处密封泄漏，特设计为阀体与左体金属–金属接触，形成止口法兰，保证无外漏。



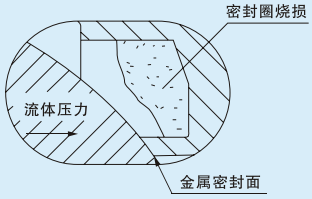

合理的开关设计




90° 开关带锁孔定位片




阀杆防飞出结构
阀杆防静电装置
中法兰无外漏结构




浮动球阀防火结构

Structural Features

Float ball valves are superior products developed upon theadva–nced technology home and abroad.Provided with updated design ideas,they meet the requirements on safety and conven ience in general industrial standards.

**1. Switch Indication of Hand Operated Float Ball Valve**
As the moving parts of valve,ball,valve stem and handle are and assembly unit,The head of valve stem is shaped a diploid, thus to ea–sily distinguish whether valve is in the 'ON' position or 'OFF' position from handle position.When handle or stem diploid is in parallel with the pipe axis,valve is in 'ON' position;when handle or stem diploid is vertical to the pipe axis,valve is in 'OFF' position.

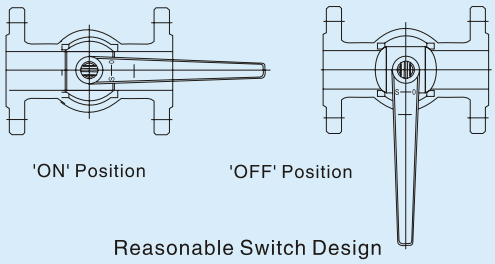
**2. Valve Locking Device**
To prevent misoperation,the fully opened or closed position of valve can be locked up, especially when valves are mounted outdoors or when valves are not allowed to be opened or closed by technical process.To prevent misoperation by other persons, it seems very important to have valve position locked up. Thereby, lockhole locating ab is designed if requested by users to meet the technological requir–ements of users.

**3. Anti–flyout Structure of Valve Stem**
When medium passes through the valve,the pressure in valve body may possibly push the stem out, or when the valve is in repair,if there is pressure in the middle cavity, the stem or medium seems to easily fly out upon disassembling the valve,which can cause injuries to human beings. To prevent these possibilities, a dummy club is placed at the lower part of the stem. In this way, even if there is fire, packing and thrust bearing are burnt or packing is damaged due to other caus–es, the pressure of medium in valve body will make the dummy club of valve stem in lose contact with the upper seal face of valve body,thus valve stem in close contact with the upper seal face of valve body, thus to prevent medium leaking out form the damaged packing position.

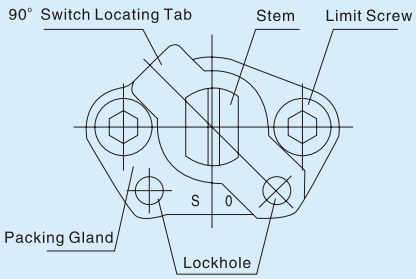
**4. Antistatic Device**
When operating the valve, the friction between the ball and the nonmetal seat, like PTFE or etc. Will produce electrostatic charge that can be accumulated on the ball. To prevent static spark, and antistatic device is placed on the valve to devive the electric charge accumulated on the ball from the statice channel between the ball and the stem ,or between the stem and valve body.

**5. Fire Protection Structure**
In case of fire, the nonmetal packing or seat (non–fireproof material) will be burnt, the considerable medium leakage may possibly cause fire spread, Here, the fire protection structure functions to prevent medium from mass leakage. As shown in the figure, once the seat is burnt,the ball will directly contact the metal face on valve body, thus to prevent medium leaking out from the burnt seat. The design of fire protection and antistatic structure shall conform to the requirements of API607,JB/T6899 and the second part of BS 6755.

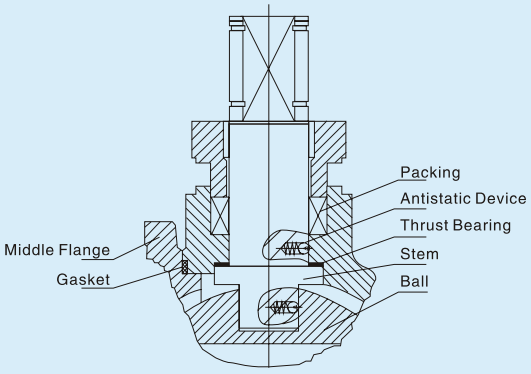
**6. Middle Flange Leak–tight Strictire**
The connection between valve body and the left body is sealed by gasket.To prevent seal leakage resulted from fire,high temperature or vibration etc.,the valve body and the left body is designed metal to–metal contacted,thus to form up a seal flange to ensure leak–tightness.



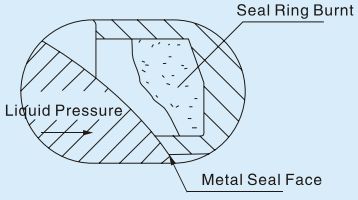
Reasonable Switch Design



90° Switch with Locating Locating Tab



Stem Anti–flyout Structure
Stem Antistatic Device
Middle Flange Leak–tight Structure

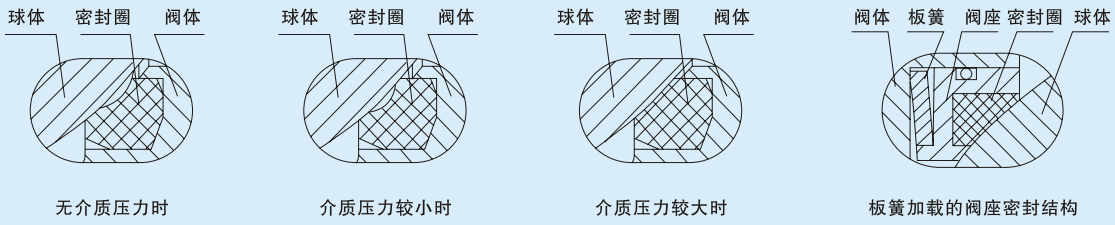


Fire Protection Structure of Float Ball Valve

结构特点

**7、可靠的阀座密封结构**

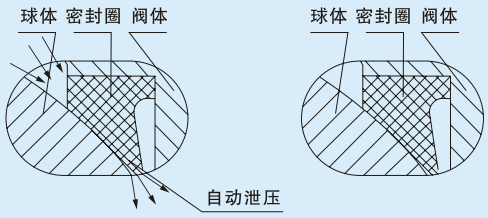
公司多年业的球阀制造经验与国际先进技术的结合而设计的双线密封结构，可自然泄压阀座，能保证高、低压和真空状态下可靠密封，当介质压力运行在低压区时，阀座密封圈与球体接触面积较小，故有较大的密封比压，确保阀座可靠密封。当介质压力运行在较高位进，阀座密封圈与球体接触面积增大，故阀座密封圈能承受较大的介质推力而不会损坏。对于工作压力很低的球阀，考虑到介质压力不能确保阀座的可靠密封，而预紧力长期使用后会衰减，故对于低压，超低压或真空工况用球阀，采用板簧加载的阀座密封结构，确保球阀长期可靠的密封。中、高温球阀的阀座密封结构，采用对位聚苯作为密封圈可用于300℃的温度，而采用金属密封耐高温组合材料结构设计的球阀可用于更高的温度。这种结构具有单向密封功能。




浮动球阀的双斜面弹性密封圈

**8、自动泄压结构**

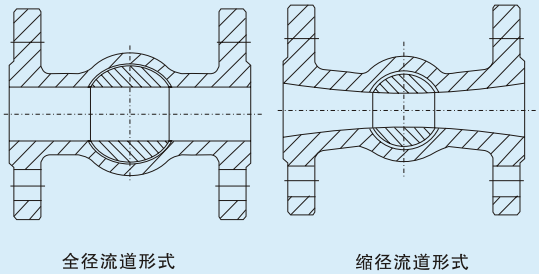
当滞留在阀门中腔的介质由于管道系统压力或介质温度等因素引起的变化，从而出现中腔压力异常升高时，中腔介质能依靠本身的推力推动阀座而自动泄压，从而确保阀门的安全。




浮动球阀 V 形槽弹性密封圈

**9、全径和缩径**

我公司球阀有全径和缩径两个系列，以满足用户的不同需要。全通径球阀的通道内径与管线内径一致，流体阻力最小，并便于管道清扫。而缩径系统球阀的重理只有相同口径全通径球阀的70%左右，能有效降低成本和价格，而其流体阻力系数只有相同口径截止阀的 1/7 左右，故缩径球阀在国外得到广泛的使用。



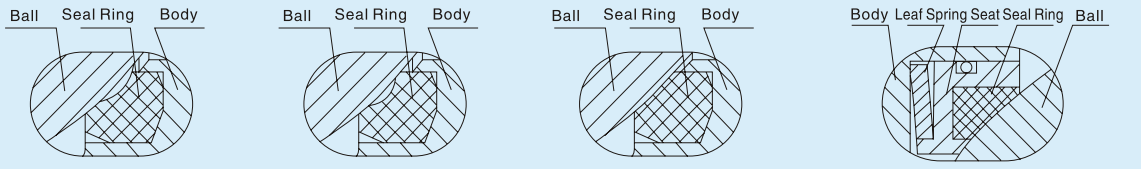
Structural Features

**7. Dependable Seating Structure**

The two–wau sealing structure embodying the years of our manufacturing experience in ball valves and the interationally advanced technology can release the pressure at valve seat and ensure reliable seal under high or low pressure and vacuum state.When the pressure of medium is low, the contact area between valve seat insert and baal is relatively small, thus providing high sealing load to ensure dependableseating seal. When the pressure of medium is high, the cotact area between valve seat insert and ball is relatively large, so that the valve seat insert can endure the considerable medium thrust and connot be damaged.

Regarding ball valves of very low working pressure, in consideration that the pressure of medium cannot guarantee the dependable seal of valve seat, and that the pretightening force will decrease after a long time of servie, so we apply leaf spring loaded seating strucgture for vlave working under low and ultralow pressure of under vacuum conditions, thus to ensure persistent and dependable seal.

The seating structure of medium and hith temperature ball valve use PPL for seal ring that can serve a temperature of 300℃. Ball vlaves with metal seal and high temperature resisting materials can be used to deal with even higher temperature.This sturcture takes the function of one–way seal.

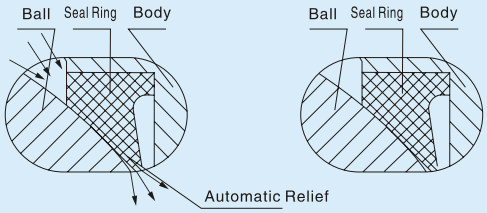



No Pressure of Medium　Low Pressure of Medium　High Pressure of Medium　Leaf Spring Loaded Seating Structure

Double Bevel Elastic Seal Ring of Float Ball Valve

**8. Self–relieving Structure**

In case of abnormal rise of pressure in the middle cavity of valve resulted from the medium left there suffered from changes of pipeline pressure or medium temperature,automatic pressure relief of valve seat can be effected under the pressure of the medium it self, thus to guarantee the safety of valve.

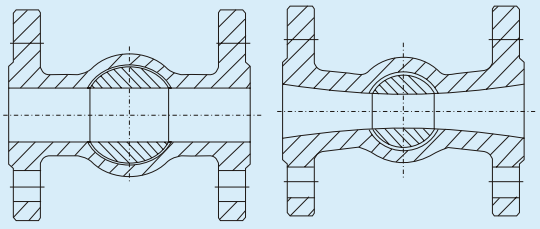



Low Pressure of Medium　High Pressure of Medium

V–slot Elastic Seal Ring of Float Ball Valve

**9. Full and Reduced Bore**

We have ball valves of full and reduced bore to meet users' diff–erent needs. Full–bore ball valves have the same inside diameter as that of pipeline. With the lowest fluid resitance for the convenience of cleaning the pipeline. While reduced–bore bal valves weighs only 70% of the full–bore ball valve with the same caliber,a saver of cost and price,and its fluid resistance coefficient is only 1/7 ot that of the globe valve with the same caliber, so that reduced–bore valves are widely used abroad.

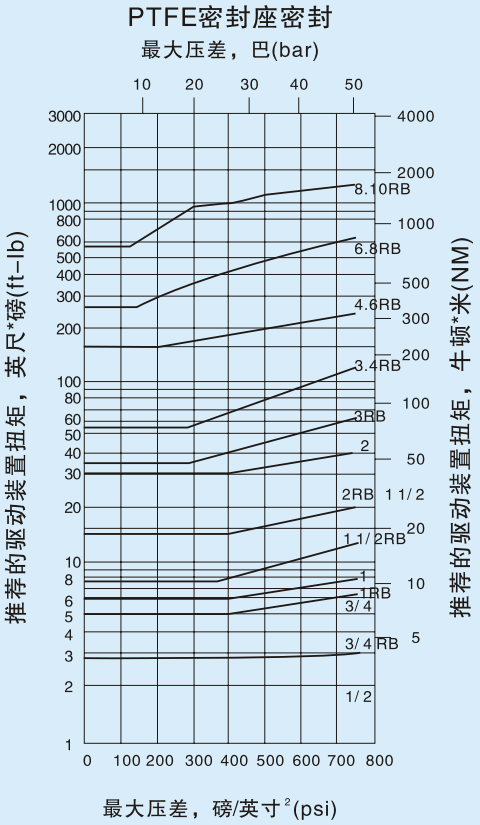


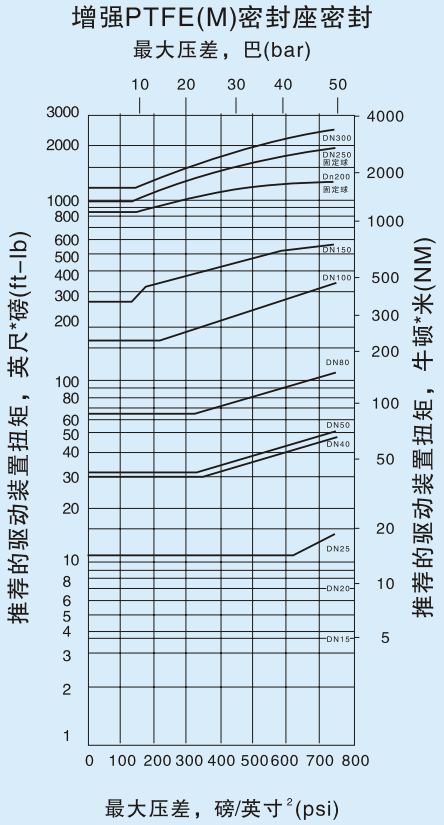
Full–bore Channel Type　Reduced–bore Channel Type

## 浮动球阀参考力矩

下表和图形扭矩供选择驱动装置时参考。根据介质的特性，内件及阀门的开启频率尚需作额外因素考虑。使用防腐内件的阀门，用于清洁润滑介质，扭矩可降低20%。而对于苛刻介质，如料浆，颗料性介质，以及用氧气，扭矩可能要增50%。

The table and graphic torques below are for reference to choose a drive device. According to the properties of medium, trims and the open frequency of valve shall be considered as extra factors.Valves with corrosion-resistant trime to deal with clean lubricating mediums,their torque may be lowered by 20%. Howvever, to deal with stringent mediums like slurry, granular medium and oxygen,the torque may be increased by 50%.




### 力矩表(N.m)

| 压力 \ 通径(mm) | 15 | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PN1.6Mpa | 3 | 5 | 10 | 16 | 25 | 50 | 65 | 125 | 250 | 340 | 485 |
| PN2.5Mpa | 3 | 5 | 11 | 18 | 30 | 60 | 80 | 140 | 300 | 400 | 680 |
| PN4.0Mpa | 5 | 10 | 24 | 35 | 50 | 100 | 150 | 250 | 450 | 585 | 996 |
| PN6.4Mpa | 15 | 30 | 50 | 80 | 100 | 200 | 300 | 400 | / | / | / |
| PN10.0Mpa | 19 | 35 | 68 | 130 | 190 | 360 | 460 | 770 | / | / | / |

注：表中所列数据未经实际测定，仅供参考

| 压力 \ 通径(mm) | 1/2 | 3/4 | 1 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Class 150 | 3 | 5 | 11 | 16 | 25 | 50 | 65 | 125 | 250 | 410 | 700 |
| Class 300 | 7 | 12 | 26 | 38 | 60 | 120 | 160 | 280 | 600 | 950 | 1550 |
| Class 400 | 15 | 30 | 50 | 90 | 140 | 240 | 350 | 540 | / | / | / |
| Class 600 | 19 | 35 | 68 | 130 | 190 | 360 | 460 | 770 | / | / | / |

注：表中所列数据未经实际测定，仅供参考

## 流量数据表

阀门的流量系数是衡量阀门流通能力的指标，流量系数值越大说明流体流过阀门时的压力损失越小。流量系数值随阀门的尺寸、型式、结构而变化，不同类型和不同规格的阀门都要分别进行试验，才能确定该种阀门的流量系数值。对二同样结构的阀门，流体流过阀门的方向不同，流量系数值也有变化。这种变体一般是由于压力恢复不同而造成的

下表为浮动球阀的流量系。［Cv值表示在1磅/英寸2(0.00689475Mpa)压降下+60°F(+16℃)的水，每分钟流过阀门的美国加伦数。

Flow coefficient is and index to measure the flow capacity of a valve. A higher value of flow coefficient means less pressure loss of fluid passing through the valve. The value of flow coefficient varies according to the dimensions, type and structure of valve. Valves same structure, flow coefficient varies according to the flow direction of fluid through the valve. Generally, these differences are caused ty different pressure re coveries.
The table below is the flow coefficient of float ball valve, 'Cy' stands for the American gallons flowing through the valve per minute under 1pound/inch2(0.006984757Mpa) pressure drop++60oF(+16℃) water.

## Cv值

| 公称 in | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 通径 mm | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
| 缩径 | 9 | 19 | 45 | – | 125 | 165 | 270 | 350 | 550 | 670 | 765 | 1890 |
| 全径 | 25 | 50 | 100 | – | 270 | 490 | 950 | 1160 | 2200 | 3800 | 5100 | 9300 |

### 压力—温度额定值

球阀的压力温度额定值不仅与壳体的材料有关，而且与阀座、填料、垫片等密封件有联系。密封件可以是高分子材料、石墨石棉或橡胶等；密封件材料的选择取决于阀门所输送的介质成分、工作温度、工作压力和流速。

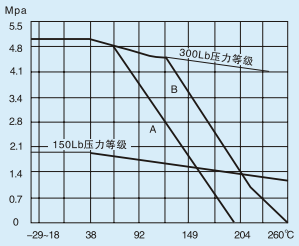
对于各种不可预知的工况，要准确的确定阀门压力温度额定值是极为困难的。根据我公司长期的阀门制造经验和用户的反馈的宝贵意见，为此我们为你提供阀门在稳定工况下的压力温度额定值。

### Pressure–Temperature Rating

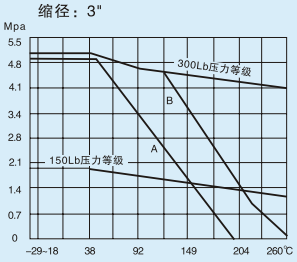
The pressure–temperature rating of ball valve is not only related to shell materials, but also to the sealing parts of seat, packing and gasket etc. The materials of sealing parts may be high molecular material, graphite asbestos or rubber etc.,Which depends on the com–position of the medium to be handled, working tem–perature, working pressure and flow velocity.

It is rather difficult to accurately make out the pressure temperature rating of valve under various unpredictable manufacturing experience and the precious feedback of users,we can offer you the pressure–temperature rating of valve under stable working conditions.

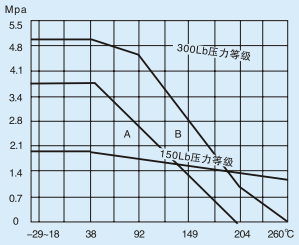
全通径：1/2"&3/4"



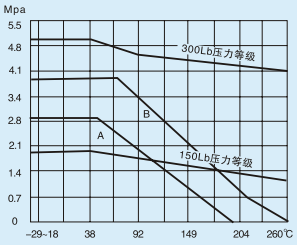

全通径：1"& 21/2"
缩径：3"



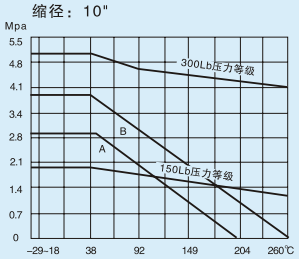

全通径：3"&4"
缩径：4"&5"




全通径：5"&6"
缩径：6"&8"




全通径：8"
缩径：10"




A：纯PTFE
B：增强PTFE
图中阀体的压力温度曲线为WCB材料，其余壳体材料的压力温度曲线请查询ASMEB16.34最新版本。

供货范围

| 公称通径 | | 公称压力PN(Mpa) | | | | | 压力等级class | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DN | In | 1.6 | 2.5 | 4.0 | 6.3 | 10.0 | 150 | 300 | 400 | 600 |
| 15 | 1/ 2 | ●/△ | | | | | ●/△ | | | |
| 20x15 | 3/ 4x1/ 2 | ●/△ | | | | | ●/△ | | | |
| 20 | 3/ 4 | ●/△ | | | | | ●/△ | | | |
| 25x20 | 1x3/ 4 | ●/△ | | | | | ●/△ | | | |
| 25 | 1 | ●/△ | | | | | ●/△ | | | |
| 32 | 1 | – | | | | | – | | | |
| 40x32 | 1 1/ 2x1 1/ 4 | ●/△ | | | | | ●/△ | | | |
| 40 | 1 1/ 2 | ●/△ | | | | | ●/△ | | | |
| 50x40 | 2x1 1/ 2 | ●/△ | | | | | ●/△ | | | |
| 50 | 2 | ●/△/★ | | | | | ●/△/★ | | | |
| 65x50 | 2 1/ 2x2 | ●/△/★ | | | | | ●/△/★ | | | |
| 65 | 2 1/ 2 | ●/△/★ | | | | | ●/△/★ | | | |
| 80x65 | 3x2 1/ 2 | ●/△/★ | | | | | ●/△/★ | | | |
| 80 | 3 | ●/△/★ | | | | | ●/△/★ | | | |
| 100x80 | 4x3 | ●/△/★ | | | | | ●/△/★ | | | |
| 100 | 4 | ●/△/★ | | | | | ●/△/★ | | | |
| 125x100 | 5x4 | ●/△/★ | | | / | | ●/△/★ | | / | |
| 125 | 5 | ●/△/★ | | | / | | ●/△/★ | | / | |
| 150x100 | 6x4 | ●/△/★ | | | | | ●/△/★ | | | |
| 150 | 6 | ●/☆/△/★ | | | / | | ●/☆/△/★ | | / | |
| 200x150 | 8x6 | ●/☆/△/★ | | | / | | ●/☆/△/★ | | / | |
| 200 | 6 | ●/☆/△/★ | | | / | | ●/☆/△/★ | | / | |

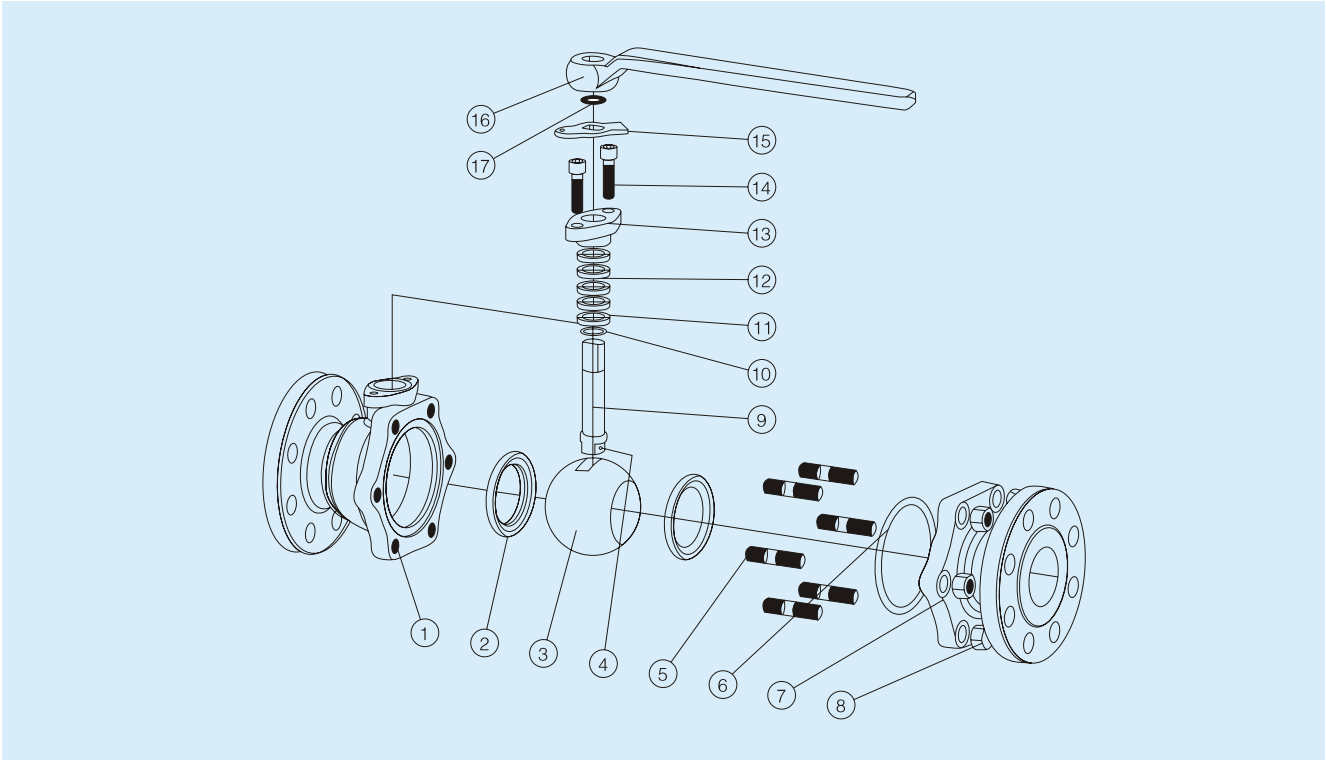
注：●表示手柄操作阀门；☆表示齿轮操作阀门；
△表示气动操作阀门；★表示电动操作阀门；
/ 表示没有此选项，
表中未涉及的可按用户的要求制造。

Note：●stabds for handle operated valves；
☆stabds for gearbox operated valves；
△stabds for aix operated valves；
★stabds for electrcally operated valves；
/ stands for no option of this.
Those not covered in the bable can be
custom made to users'requirements.

## 产品性能规范

| 性能规范 | | 公称压力(Mpa) | | | | | 压力等级class | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.6 | 2.5 | 4.0 | 6.4 | 10.0 | 150 | 300 | 400 | 600 |
| 试验压力 (Mpa) | 强度试验 | 2.4 | 3.75 | 6.0 | 9.6 | 15.0 | 2.93 | 7.58 | 10.0 | 15.0 |
| | 密封试验 | 1.76 | 2.75 | 4.4 | 7.04 | 11.0 | 2.07 | 5.52 | 7.31 | 11.03 |
| | 气压试验 | 0.6Mpa | | | | | | | | |
| 适用温度 | | –196℃~550℃(注：不同工况温度，选用不同的材质) | | | | | | | | |
| 适用介质 | 普通型 | 水、蒸汽、石油、液化气、天然气等 | | | | | | | | |
| | 抗硫型 | 含H2S、CO的天然气、石油等 | | | | | | | | |

浮动球阀结构示意图




## 主要零部件材料

| 序号 | 零件名称 | 碳钢系列 | 不锈钢系列 | 低温钢系列 | 抗硫系列 | |
|---|---|---|---|---|---|---|
| | | | | | 碳钢系列 | 不锈钢系列 |
| 1 | 阀　体 | A216 WCB | A351-CF8、CF8M、CF3、CF8M | A352 LCB、LCC | GB/T 12229 A216 WCB | A351 CF8M |
| 2 | 阀　座 | | PTFE、RPTFE、烧结碳纤维、金属+橡胶组件 | | | |
| 3 | 球　体 | A105+ HCr/ENP | A351-CF8、CF8M、CF3、CF3M | A352 LCB、LCC+ENP | A105+ HCr/ENP | A351 CF8M+ENP |
| 4 | 弹　簧 | | INCONEL 750 | | | |
| 5 | 螺　柱 | A193 B7 | A193 B8、B8M | A320 L7 | A193 B7M | A193 B8M |
| 6 | 垫　片 | | 柔性石墨+不锈钢 | | | |
| 7 | 螺　母 | A194 2H | A194 8M | A194 4 | A194 2HM | A194 8M |
| 8 | 阀　盖 | A216 WCB | A351 Cf8、CF8、CF3、CF3M | A352 LCB、LCC | GB/T 12229 A216 WCB | A351 CF8M |
| 9 | 阀　杆 | A182 F6a | A182 F304、316 | A182 F6a | A182 F304 | A182 F316 |
| 10 | 轴　衬 | | 金属衬PTFE；烧结碳纤维 | | | |
| 11 | 填 料 垫 | A182 F6a | | A182 F6a | A182 F6a | |
| 12 | 填　料 | | 柔性石墨、PTFE | | | |
| 13 | 填料压盖 | A216 WCB | A351 CF8、CF8M | A351 CF8M | GB/T 12229 A216 WCB | A351 CF8M |
| 14 | 螺　钉 | A193 B7 | A193 B8、B8M | A320 L7 | A193 B7M | A193 B8M |
| 15 | 定 位 片 | GB/T 700 Q235A+Zn(Cr) | | | | |
| 16 | 挡　圈 | GB/T 1222 65Mn | | | | |
| 17 | 手　柄 | A216 WCB | | | | |

阀门驱动装置选配表

| SIZE | | PN16、150Lb | | PN25、PN40、300Lb | | PN64、PN100、400Lb、600Lb | |
|---|---|---|---|---|---|---|---|
| DN | NPS | 气动 | 电动 | 气动 | 电动 | 气动 | 电动 |
| 15 | 1/ 2 | AG06D | / | AG06D | / | AG09S | / |
| 20x15 | 3/ 4x1/ 2 | AG06D | / | AG06D | / | AG06D | / |
| 20 | 3/ 4 | AG09S | / | AG09S | / | AG09D | / |
| 25x20 | 1x3/ 4 | AG09S | / | AG09S | / | AG09S | / |
| 25 | 1 | AG09D | / | AG09D | / | AG09D | / |
| 40x32 | 1 1/ 2x1 1/ 4 | AG09D | / | AG09D | / | AG09D | / |
| 40 | 1 1/ 2 | AG13S | / | AG13D | / | AG09D | / |
| 50x40 | 2x1 1/ 2 | AG13S | / | AG13S | / | AG09D | / |
| 50 | 2 | AG13S | LQA5-1 | AG13S | LQA5-1 | AG13D | LQA40-1 |
| 65x50 | 2 1/ 2x2 | AG13S | LQA5-1 | AG13S | LQA5-1 | AG09D | LQA40-1 |
| 65 | 2 1/ 2 | AG13S | LQA10-1 | AG13S | LQA10-1 | AG13D | LQA40-1 |
| 80x65 | 3x2 1/ 2 | AG13S | LQA10-1 | AG13S | LQA10-1 | AG13D | LQA40-1 |
| 80 | 3 | AG13D | LQA10-1 | AG13D | LQA10-1 | AW13S | LQA80-1 |
| 100x80 | 4x3 | AG13D | LQA10-1 | AG13D | LQA10-1 | AW13D | LQA80-1 |
| 100 | 4 | AW13S | LQA20-1 | AW13S | LQA20-1 | AW17S | LQA80-1 |
| 125x100 | 5x4 | AW13S | LQA20-1 | AW13S | LQA20-1 | / | / |
| 125 | 5 | AW17S | LQA40-1 | AW17S | LQA40-1 | / | / |
| 150x100 | 6x4 | AW13S | LQA20-1 | AW13S | LQA20-1 | AW17S | LQA80-1 |
| 150 | 6 | AW17S | LQA40-1 | AW17S | LQA40-1 | / | / |
| 200x150 | 8x6 | AW17S | LQA40-1 | AW17S | LQA40-1 | / | / |
| 200 | 6 | AW20S | LQA80-1 | AW20S | LQA80-1 | / | / |

注：表中气动装置型号为阿尔法公司生产的型号；电动装置型号为天津北方阀门控制设备公司生产的型号。

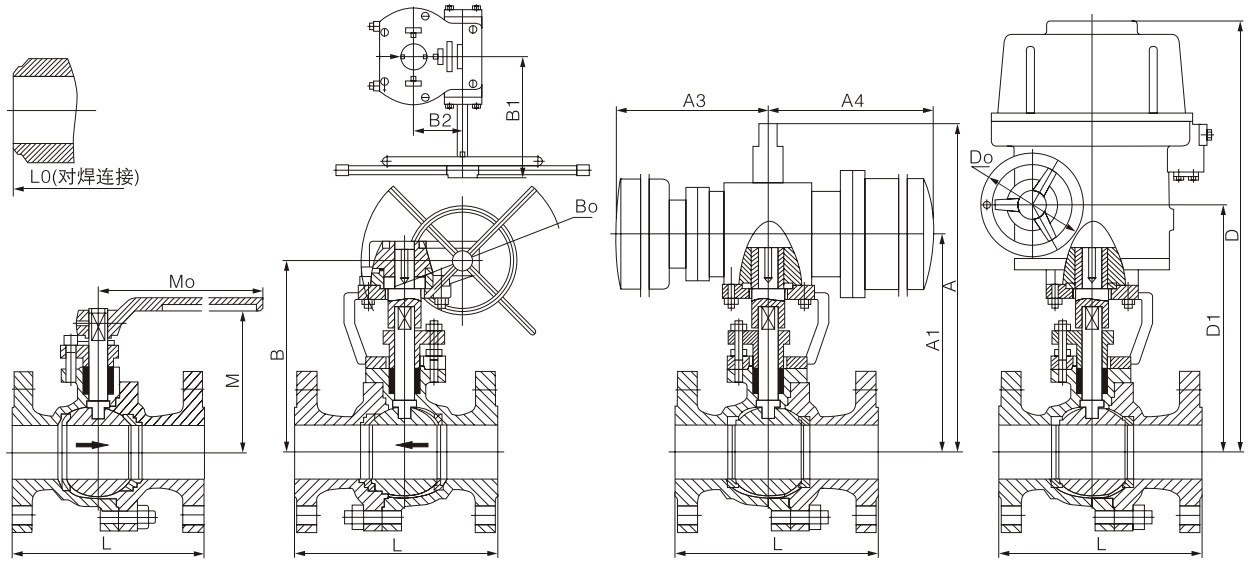
## 电动装置输出扭矩值(NM)

| 型号 | 输出转矩 | 阀杆直径 | 输出转速 | 电机功率 |
|---|---|---|---|---|
| LQA5-1 | 50 | 20 | 1r/min | 0.016kw |
| LQA10-1 | 100 | 20 | 1r/min | 0.03kw |
| LAQ20-1 | 200 | 20 | 1r/min | 0.06kw |
| LAQ40-1 | 400 | 35 | 1r/min | 0.09kw |
| LAQ80- | 800 | 35 | 1r/min | 0.18kw |

## 气动装置型规格

| 双动作型 | 单动作型(弹簧复位式) | | |
|---|---|---|---|
| | 标准型 | 高出力型 | 低压型 |
| AG06 | AG06S | AG06D | AG06R |
| AG09 | AG09S | AG09D | AG09R |
| AG13 | AG13S | AG13D | AG13R |
| AW13 | AW13S | / | AW13L |
| AW17 | AW17S | / | AW17L |
| Aw20 | Aw20S | / | Aw20L |

注：气动装置的输出扭矩按照生产厂家的产品样本所提供的数据。




手柄操作　蜗轮操作　气动操作　电动操作

Figure No .

A(G)FB1RF1
A(G)FB1BW1

A(G)3FB1RF1
A(G)3FB1BW1

A(G)6FB1RF1
A(G)6FB1BW1

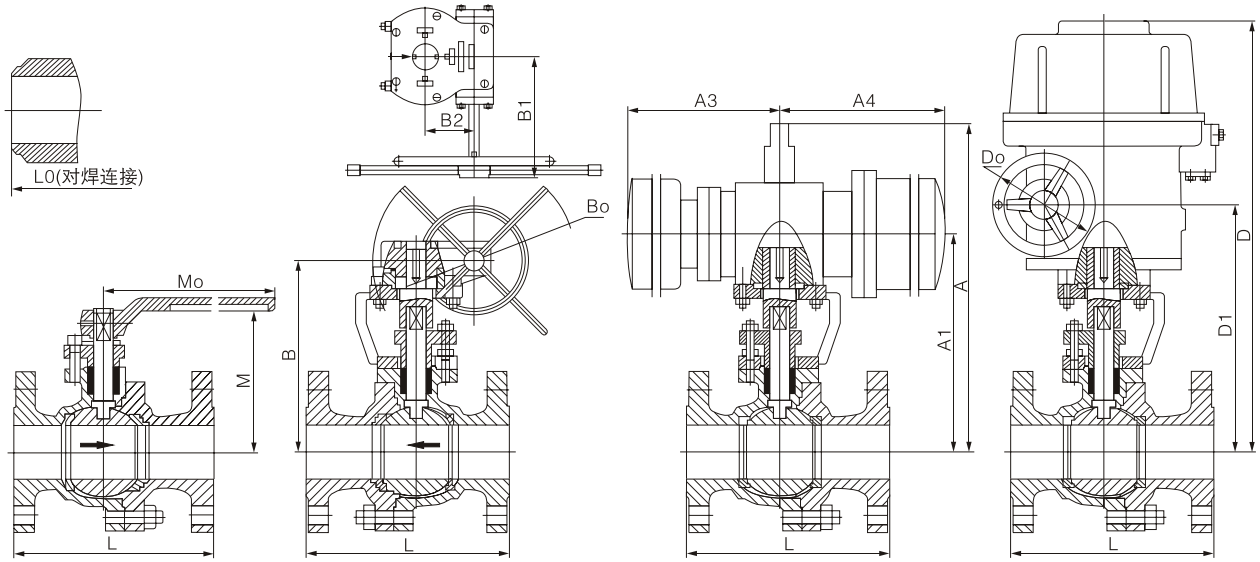
A(G)9FB1RF1
A(G)9FB1BW1

## 主要外形尺寸 PN1.6Mpa CLASS 150

mm

| DN | mm | 15 | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NPS | in | 1/ 2 | 3/ 4 | 1 | 11/2 | 2 | 21/2 | 3 | 4 | 5 | 6 | 8 |
| L | R F | 108 | 117 | 127 | 165 | 178 | 190 | 203 | 229 | 356 | 394 | 457 |
| Lo | BW | 140 | 152 | 165 | 190 | 216 | 241 | 283 | 305 | 381 | 457 | 521 |
| 手 动 | M | 59 | 63 | 75 | 95 | 107 | 142 | 152 | 178 | 252 | 272 | 342 |
| | M0 | 130 | 130 | 160 | 230 | 230 | 400 | 400 | 650 | 1050 | 1050 | 1410 |
| 蜗 轮 蜗 杆 | B | / | / | / | / | / | / | / | / | / | 292 | 398 |
| | B0 | / | / | / | / | / | / | / | / | / | 400 | 600 |
| | B1 | / | / | / | / | / | / | / | / | / | 350 | 350 |
| | B2 | / | / | / | / | / | / | / | / | / | 115.5 | 115.5 |
| 气 动 | A | 200 | 204 | 257 | 264 | 340 | 370 | 389 | 594 | 646 | 646 | 781 |
| | A1 | 122 | 126 | 162 | 169 | 209 | 239 | 258 | 337 | 437 | 437 | 537 |
| | A3 | 326 | 326 | 347 | 420 | 426 | 426 | 590 | 523 | 610 | 610 | 885 |
| | A4 | 136 | 136 | 181 | 181 | 257 | 257 | 257 | 287 | 378 | 378 | 530 |
| 电 动 | D | / | / | / | / | 472 | 486 | 579 | 595 | 650 | 739 | 799 |
| | D1 | / | / | / | / | 377 | 391 | 484 | 500 | 500 | 589 | 649 |
| | D0 | / | / | / | / | 190 | 190 | 190 | 190 | 400 | 400 | 400 |
| 重 量 Kg (RF) | 手动 | 2.5 | 3 | 5 | 7 | 10 | 15 | 19 | 33 | 58 | 93 | 160 |
| | 气动 | 10 | 15.7 | 19.5 | 42.8 | 46.9 | 50.5 | 70 | 92.7 | 160.7 | 183.5 | 276 |
| | 电动 | / | / | 1 | / | 32 | 35.6 | 44 | 55 | 93 | 128 | 195 |

注：连接法兰尺寸、焊接端尺寸见附录(A、E)




手柄操作　蜗轮操作　气动操作　电动操作

Figure No .

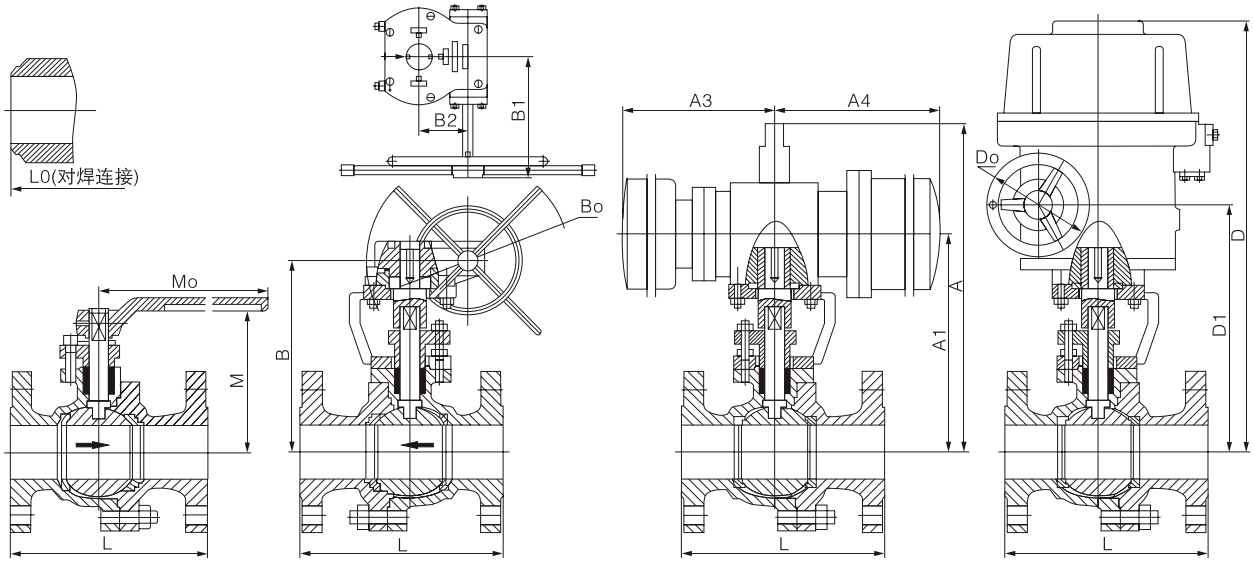
| 手柄操作 | 蜗轮操作 | 气动操作 | 电动操作 |
|---|---|---|---|
| A(G)FB2(3、4)RF1<br>A(G)FB2(3、4)BW1 | A(G)3FB2(3、4)RF1<br>A(G)3FB2(3、4)BW1 | A(G)6FB2(3、4)RF1<br>A(G)6FB2(3、4)BW1 | A(G)9FB2(3、4)RF1<br>A(G)9FB2(3、4)BW1 |

## 主要外形尺寸 PN2.5、4.0Mpa CLASS 300

mm

| DN | mm | 15 | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NPS | in | 1/ 2 | 3/ 4 | 1 | 11/2 | 2 | 21/2 | 3 | 4 | 5 | 6 | 8 |
| L | R F | 140 | 152 | 165 | 190 | 216 | 241 | 283 | 305 | 381 | 403 | 502 |
| Lo | BW | 140 | 152 | 165 | 190 | 216 | 241 | 283 | 305 | 381 | 457 | 521 |
| 手 动 | M | 59 | 63 | 75 | 95 | 107 | 142 | 152 | 178 | 252 | 272 | 342 |
| | M0 | 130 | 130 | 160 | 230 | 230 | 400 | 400 | 650 | 1050 | 1050 | 1410 |
| 蜗 轮<br>蜗 杆 | B | / | / | / | / | / | / | / | / | / | 292 | 398 |
| | B0 | / | / | / | / | / | / | / | / | / | 400 | 600 |
| | B1 | / | / | / | / | / | / | / | / | / | 350 | 421 |
| | B2 | / | / | / | / | / | / | / | / | / | 115.5 | 171 |
| 气 动<br>液 动 | A | 200 | 204 | 257 | 264 | 340 | 379 | 452 | 594 | 646 | 744 | 920 |
| | A1 | 122 | 126 | 162 | 169 | 209 | 248 | 295 | 375 | 437 | 500 | 615 |
| | A3 | 326 | 326 | 347 | 420 | 426 | 426 | 590 | 523 | 610 | 610 | 885 |
| | A4 | 136 | 136 | 181 | 181 | 257 | 257 | 257 | 287 | 378 | 378 | 530 |
| 电 动 | D | / | / | / | / | 472 | 486 | 579 | 595 | 650 | 739 | 799 |
| | D1 | / | / | / | / | 377 | 391 | 484 | 500 | 500 | 589 | 649 |
| | D0 | / | / | / | / | 190 | 190 | 190 | 190 | 400 | 400 | 400 |
| 重 量<br>Kg<br>(RF) | 手动 | 3 | 4 | 6 | 11 | 15 | 24 | 30 | 55 | 81 | 118 | 200 |
| | 气动 | 10 | 15.7 | 19.5 | 40.9 | 43.9 | 51.9 | 68 | 99.4 | 177.5 | 204.5 | 381 |
| | 电动 | / | / | 1 | / | 29 | 37 | 42 | 77 | 116 | 143 | 235 |

注：连接法兰尺寸、焊接端尺寸见附录(A、E)




手柄操作　蜗轮操作　气动操作　电动操作

Figure No .
A(G)FB6RF1
A(G)FB6BW1

A(G)3FB6RF1
A(G)3FB6BW1

A(G)6FB6RF1
A(G)6FB6BW1

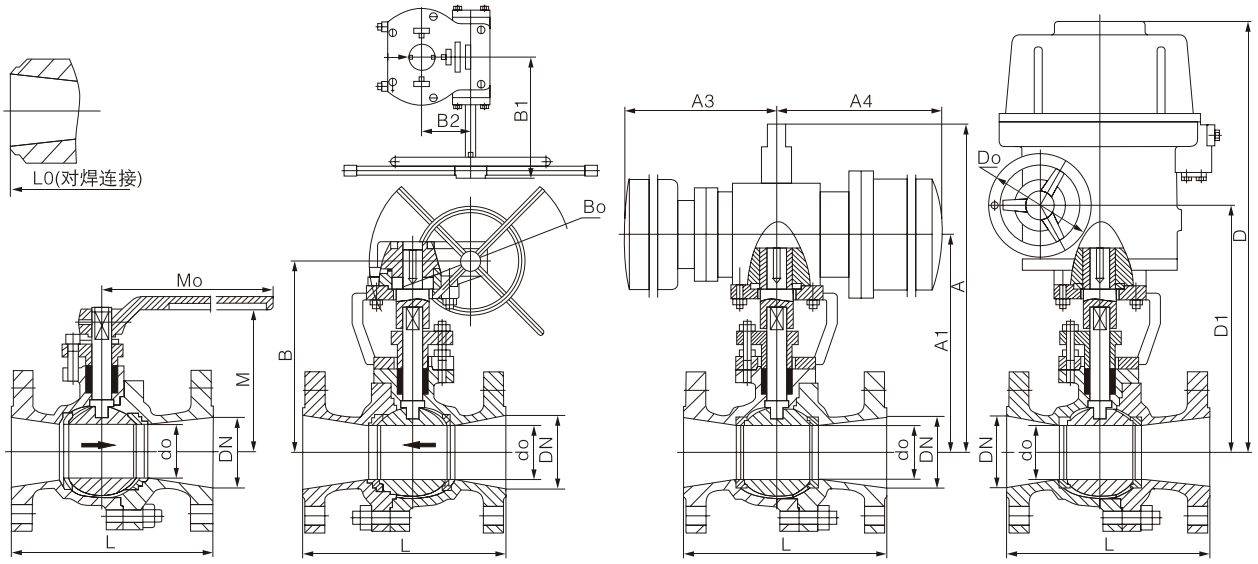
A(G)9FB6RF1
A(G)9FB6BW1

## 主要外形尺寸 PN6.4、1 0.0Mpa CLASS 400、600

mm

| DN | mm | 15 | 20 | 25 | 40 | 50 | 65 | 80 | 100 |
|---|---|---|---|---|---|---|---|---|---|
| NPS | in | 1/ 2 | 3/ 4 | 1 | 11/2 | 2 | 21/2 | 3 | 4 |
| L | R F | 165 | 190 | 216 | 241 | 292 | 330 | 356 | 406(432) |
| Lo | BW | 165 | 190 | 216 | 241 | 292 | 330 | 356 | 406(432) |
| 手 动 | M | 59 | 63 | 75 | 95 | 142 | 154 | 184 | 209 |
| | M0 | 160 | 160 | 230 | 400 | 400 | 650 | 650 | 1050 |
| 蜗 轮 蜗 杆 | B | / | / | / | / | / | / | 292 | 398 |
| | B0 | / | / | / | / | / | / | 400 | 600 |
| | B1 | / | / | / | / | / | / | 350 | 421 |
| | B2 | / | / | / | / | / | / | 115.5 | 171 |
| 气 动 液 动 | A | 200 | 204 | 241 | 264 | 340 | 379 | 452 | 584 |
| | A1 | 122 | 145 | 146 | 169 | 209 | 248 | 295 | 375 |
| | A3 | 383 | 283 | 283 | 350 | 590 | 590 | 523 | 610 |
| | A4 | 136 | 181 | 181 | 181 | 257 | 257 | 287 | 378 |
| 电 动 | D | / | / | / | / | 472 | 599 | 599 | 632 |
| | D1 | / | / | / | / | 377 | 4491 | 449 | 472 |
| | D0 | / | / | / | / | 190 | 190 | 190 | 190 |
| 重 量 Kg (RF) | 手动 | 8 | 11 | 15 | 19 | 25 | 32 | 48 | 76 |
| | 气动 | 17.2 | 21 | 24 | 32 | 68 | 75 | 101.3 | 177.5 |
| | 电动 | / | / | / | / | 60 | 67 | 83 | 111 |

注：表中()括号内尺寸为PN10.0(CLASS 600)的结构长度。连接法兰尺寸、焊接端尺寸见附录(A、E)




手柄操作　蜗轮操作　气动操作　电动操作

Figure No .

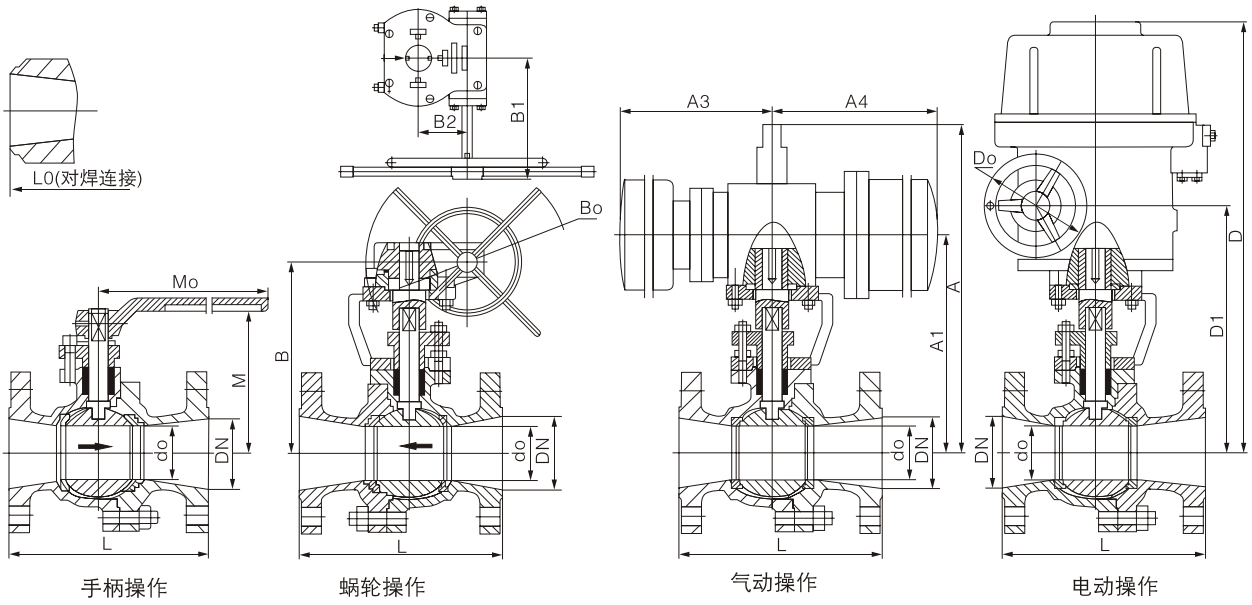
| 手柄操作 | 蜗轮操作 | 气动操作 | 电动操作 |
|---|---|---|---|
| A(G)FB1RF2<br>A(G)FB1BW2 | A(G)3FB1RF2<br>A(G)3FB1BW2 | A(G)6FB1RF2<br>A(G)6FB1BW2 | A(G)9FB1RF2<br>A(G)9FB1BW2 |

## 主要外形尺寸 PN1.6Mpa CLASS 150

mm

| DN | mm | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NPS | in | 3/ 4 × 1/2 | 1 × 3/4 | 11/2 × 11/4 | 2 × 11/2 | 21/2 × 2 | 3 × 21/2 | 4 × 3 | 5 × 4 | 6 × 4 | 5 × 6 |
| do | | 15 | 20 | 32 | 40 | 50 | 65 | 80 | 100 | 100 | 150 |
| L | R F | 117 | 127 | 165 | 178 | 190 | 203 | 229 | 356 | 394 | 457 |
| Lo | BW | 152 | 165 | 190 | 216 | 241 | 283 | 305 | 381 | 457 | 521 |
| 手 动 | M | 59 | 63 | 75 | 95 | 107 | 142 | 152 | 178 | 178 | 272 |
| | M0 | 130 | 130 | 160 | 230 | 230 | 400 | 400 | 650 | 650 | 1050 |
| 蜗 轮 蜗 杆 | B | / | / | / | / | / | / | / | / | / | 292 |
| | B0 | / | / | / | / | / | / | / | / | / | 400 |
| | B1 | / | / | / | / | / | / | / | / | / | 350 |
| | B2 | / | / | / | / | / | / | / | / | / | 115.5 |
| 气 动 | A | 200 | 204 | 257 | 264 | 340 | 370 | 389 | 594 | 594 | 646 |
| | A1 | 122 | 126 | 162 | 169 | 209 | 239 | 258 | 337 | 337 | 437 |
| | A3 | 326 | 326 | 347 | 420 | 426 | 426 | 590 | 523 | 523 | 610 |
| | A4 | 136 | 136 | 181 | 181 | 257 | 257 | 257 | 287 | 287 | 378 |
| 电 动 | D | / | / | / | / | 472 | 486 | 579 | 595 | 595 | 738 |
| | D1 | / | / | / | / | 377 | 391 | 484 | 500 | 500 | 589 |
| | D0 | / | / | / | / | 190 | 190 | 190 | 190 | 190 | 400 |
| 重 量 Kg (RF) | 手动 | 3 | 4 | 7 | 9 | 14 | 19 | 25 | 32 | 40 | 84.0 |
| | 气动 | 10 | 15.7 | 21 | 40.9 | 45.9 | 50.9 | 68 | 87.4 | 95.4 | 186.5 |
| | 电动 | / | / | / | / | 31 | 36 | 42 | 49 | 57 | 119 |

注：连接法兰尺寸、焊接端尺寸见附录(A、E)




手柄操作　蜗轮操作　气动操作　电动操作

Figure No .

A(G)FB2(3、4)RF2
A(G)FB2(3、4)BW2

A(G)3FB2(3、4)RF2
A(G)3FB2(3、4)BW2

A(G)6FB2(3、4)RF2
A(G)6FB2(3、4)BW2

A(G)9FB2(3、4)RF2
A(G)9FB2(3、4)BW2

## 主要外形尺寸 PN2.5、4.0Mpa CLASS 300

mm

| DN | mm | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NPS | in | 3/ 4 × 1/2 | 1 × 3/4 | 11/2 × 11/4 | 2 × 11/2 | 21/2 × 2 | 3 × 21/2 | 4 × 3 | 5 × 4 | 6 × 4 | 5 × 6 |
| do | | 15 | 20 | 32 | 40 | 50 | 65 | 80 | 100 | 100 | 150 |
| L | R F | 152 | 165 | 190 | 216 | 241 | 283 | 205 | 381 | 403 | 502 |
| Lo | BW | 152 | 165 | 190 | 216 | 241 | 283 | 305 | 381 | 457 | 521 |
| 手 动 | M | 59 | 63 | 75 | 95 | 107 | 142 | 152 | 178 | 178 | 272 |
| | M0 | 130 | 130 | 160 | 230 | 230 | 400 | 400 | 650 | 650 | 1050 |
| 蜗 轮 蜗 杆 | B | / | / | / | / | / | / | / | / | / | 292 |
| | B0 | / | / | / | / | / | / | / | / | / | 400 |
| | B1 | / | / | / | / | / | / | / | / | / | 350 |
| | B2 | / | / | / | / | / | / | / | / | / | 115.5 |
| 气 动 液 动 | A | 200 | 204 | 257 | 264 | 340 | 379 | 452 | 594 | 594 | 744 |
| | A1 | 122 | 126 | 162 | 169 | 209 | 248 | 295 | 375 | 375 | 500 |
| | A3 | 326 | 326 | 347 | 420 | 426 | 426 | 590 | 523 | 523 | 610 |
| | A4 | 136 | 136 | 181 | 181 | 257 | 257 | 257 | 287 | 287 | 378 |
| 电 动 | D | / | / | / | / | 472 | 486 | 579 | 595 | 595 | 738 |
| | D1 | / | / | / | / | 377 | 391 | 484 | 500 | 500 | 589 |
| | D0 | / | / | / | / | 190 | 190 | 190 | 190 | 190 | 400 |
| 重 量 Kg (RF) | 手动 | 3 | 4 | 7 | 9 | 14 | 19 | 25 | 32 | 40 | 84.0 |
| | 气动 | 10 | 15.7 | 21 | 40.9 | 45.9 | 50.9 | 68 | 87.4 | 95.4 | 186.5 |
| | 电动 | / | / | / | / | 31 | 36 | 42 | 49 | 57 | 119 |

注：连接法兰尺寸、焊接端尺寸见附录(A、E)

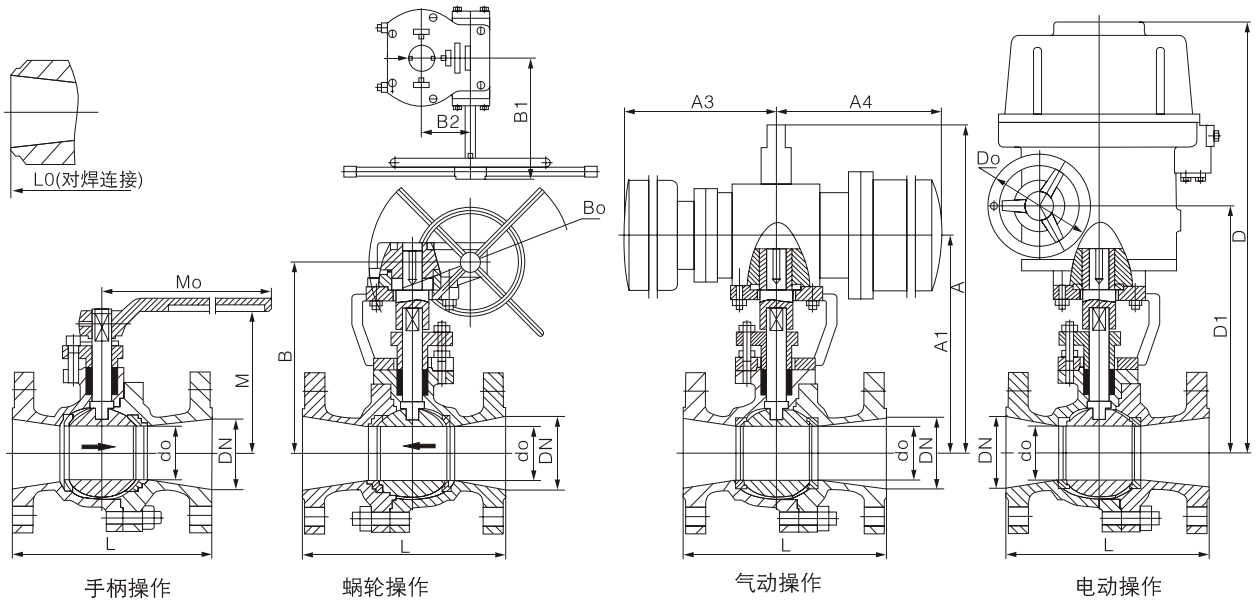



Figure No .

| | | | |
|---|---|---|---|
| A(G)FB2(3、4)RF2<br>A(G)FB2(3、4)BW2 | A(G)3FB2(3、4)RF2<br>A(G)3FB2(3、4)BW2 | A(G)6FB2(3、4)RF2<br>A(G)6FB2(3、4)BW2 | A(G)9FB2(3、4)RF2<br>A(G)9FB2(3、4)BW2 |

## 主要外形尺寸 PN6.4、10.0MPa CLASS 400、600

mm

| DN | mm | 20 | 25 | 40 | 50 | 65 | 80 | 100 | 150 |
|---|---|---|---|---|---|---|---|---|---|
| NPS | in | 3/ 4 × 1/2 | 1 × 3/4 | 11/2 × 11/4 | 2 × 11/2 | 21/2 × 2 | 3 × 21/2 | 4 × 3 | 6 × 4 |
| do | | 15 | 20 | 32 | 40 | 50 | 65 | 80 | 100 |
| L | R F | 190 | 216 | 241 | 292 | 330 | 356 | 406(432) | 495(559) |
| Lo | BW | 190 | 216 | 241 | 292 | 330 | 356 | 406(432) | 495(559) |
| 手动 | M | 59 | 63 | 75 | 95 | 142 | 154 | 184 | 209 |
| | M0 | 160 | 160 | 230 | 400 | 400 | 650 | 650 | 1050 |
| 蜗轮蜗杆 | B | / | / | / | / | / | / | 292 | 398 |
| | B0 | / | / | / | / | / | / | 400 | 600 |
| | B1 | / | / | / | / | / | / | 350 | 421 |
| | B2 | / | / | / | / | / | / | 115.5 | 171 |
| 气动 | A | 200 | 204 | 241 | 264 | 340 | 379 | 452 | 584 |
| | A1 | 122 | 145 | 146 | 169 | 209 | 248 | 295 | 375 |
| | A3 | 283 | 283 | 283 | 350 | 590 | 590 | 523 | 610 |
| | A4 | 136 | 181 | 181 | 181 | 257 | 257 | 287 | 378 |
| 电动 | D | / | / | / | / | 472 | 599 | 599 | 632 |
| | D1 | / | / | / | / | 377 | 4491 | 449 | 472 |
| | D0 | / | / | / | / | 190 | 190 | 190 | 190 |
| 重量 Kg (RF) | 手动 | 8 | 11 | 15 | 19 | 25 | 48 | 76 | 85 |
| | 气动 | 15 | 22.7 | 29 | 33 | 39 | 91 | 119 | 187.5 |
| | 电动 | / | / | / | / | 60 | 83 | 111 | 120 |

注：表中( )括号内尺寸为PN10.0(CLASS 600)的结构长度。连接法兰尺寸、焊接端尺寸见附录(A、E)

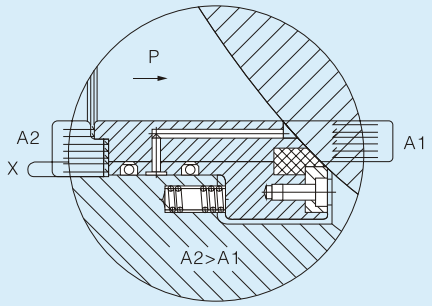
固定球阀结构特点

系列固定式球阀主要适用于天然气、油品、化工、冶金、城建、环保、制药、食品等行业，其中抗硫系列产品适用于含硫化氢介质、杂质多、腐蚀严重的天然气长输管线。

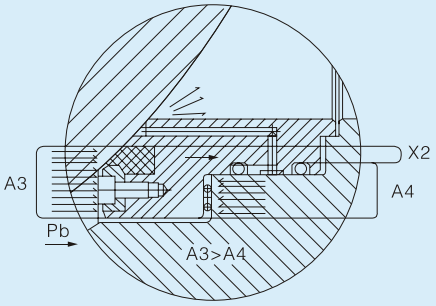
## 系列固定式球阀结构特点为：

**1) 独特的阀座密封结构** 固定式球阀根据压力的大小、介质性质及密封要求的不同而选择球前密封结构、球后密封结构或球前球后双密封结构。

**▲球前密封结构** 阀座采用球前密封设计结构，此结构具有双向密封和中腔自动泄压功能。如图所示，镶嵌有合适的聚合材料(高分子材料NYLON、MOLON、DELRIN或PEEK)的密封座是浮动的，它由弹簧加载，在关闭位置时，密封面始终与球体保持紧密接触，确保阀门在高、低压差下均能达到无泄漏的密封。上游：阀座沿阀门轴向运动，施加于A2面上的上游(进口)压力P,在A1面上产生一个方向力，由于A2面大于A1面，A2−A1=X，因此X面上的压力将阀座推向球体达到上游的紧密密封。下游：一旦阀腔内的压力Pb升高，作用在A3面上的力大于A4面上的力，A3−A4=X2，在X2面上形成的压差就克服弹簧力使阀座与球体脱开，阀腔的压力向下游排放，之后在弹簧的作用下阀座重新与球体密合。

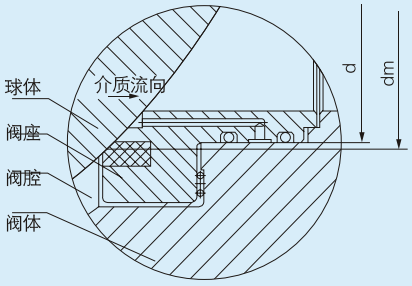



进口侧



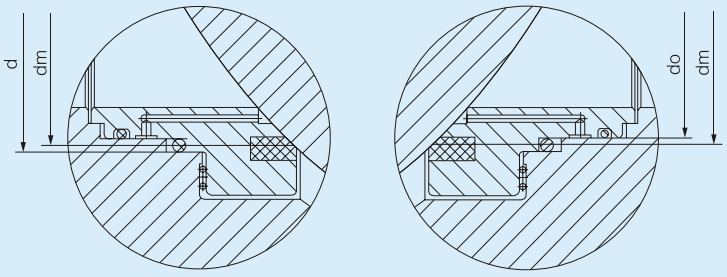

出口侧

**▲球后密封结构** 阀座由d和dm(见右图)的面积差形成的活塞效应，在阀体中腔介质的作用下，使阀座密封圈与球体紧密接触而密封。




出口侧

**▲球前、球后密封结构** 进口侧，阀座由d和dm的面积差形成的活塞效应，在上游介质的作用下，使阀座密封圈与球体紧密接触而密封。出口侧，有do和dm的面积差形成的活塞效应，在阀体中腔的介质压力作用下，使阀座密封圈与球体紧密接触而密封。




进口侧　　出口侧

球前球后密封结构

固定球阀结构特点

**2) 自动泄压结构** 当中腔压力出现异常升高现象时，单密封结构的球阀具有自动泄压机能，而双密封结构的球阀则由阀体上的附加泄压装置进行泄压。

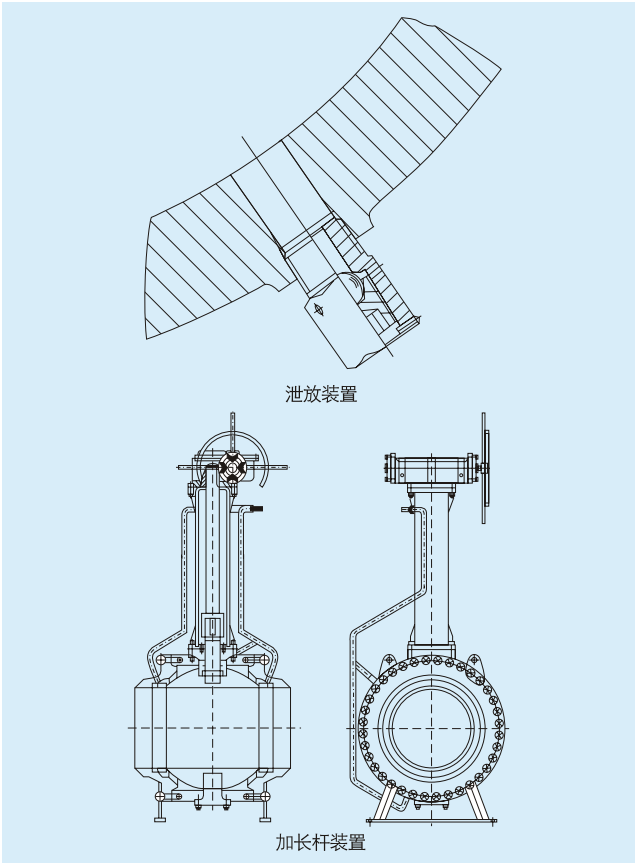
**3) 密封的紧急救护** 阀门设计有辅助的阀座紧急密封系统，如图所示。一旦软密封受损，或出现紧急情况下而不能密封的，通过向辅助密封系统注射相应的密封剂即可进行紧急密封。紧急密封装置在必要时也可用来对阀座区域进行冲洗润滑，以保持其清洁。同样阀杆也可设计有辅助的紧急密封系统。

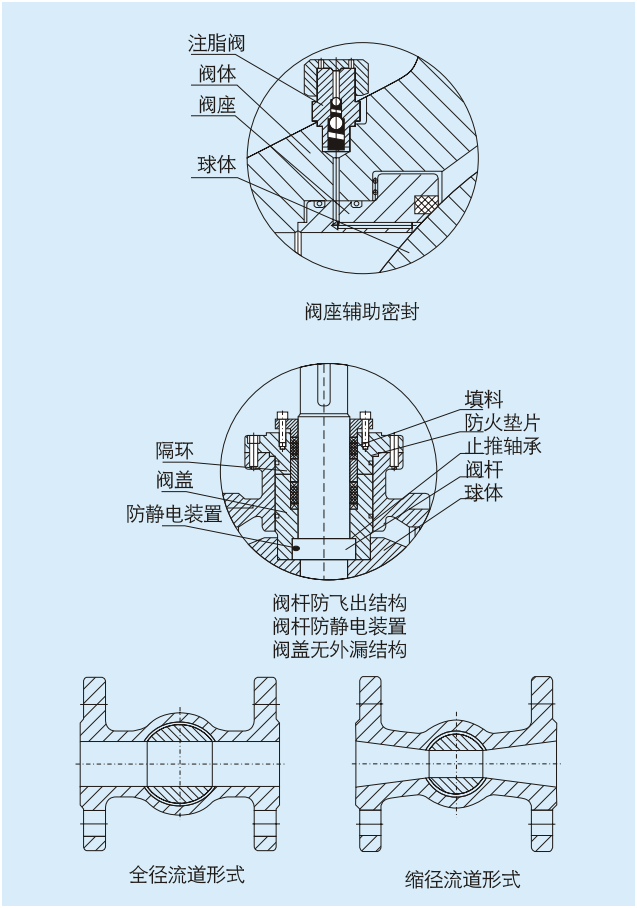
**4) 防火结构** 根据工况及用户的需要，球阀可设计为防火结构。球阀的耐火设计执行API 607及JB/T6899等标准的规定，一旦发生火灾而使软密封圈烧损时，球阀的防火结构可阻止介质的大量泄漏，防止火灾的进一步扩大。

**5) 防静电结构** 当操作阀门时，由于球体和阀座之间的摩擦，会产生静电电荷并积聚在球体上。为防止产生静电火花，特在阀门上设置防静电装置，将积聚在球体上的电荷导出(如图所示)。

**6) 锁定装置** 在手动球阀的全开、全闭两点位置上设计可上锁的结构，这样，可防止误操作以及不可预知的线路振动而产生的不应有的开关现象，特别是在可燃性介质的石油类和化学药品的生产线，以及阀门在室外配管时，这种设计体现出的优点和实际效果特别好。

**7) 全通径结构及缩径结构** 为满足用户的不同需要，本公司球阀产品有全通径及缩径两种系列(如图所示)。全通径球阀的通道内径与管道内径一致，便于管道清扫，而缩径系列球阀的重量相对较轻，但流体阻力仅为相同口径截止阀的1 / 7左右，故缩径系列球阀的应用前景较为广阔。




**8) 阀体的泄放装置** 根据用户要求或装置系统要求，球阀的阀体上安装有排泄阀。一旦阀门的两端被密封，阀腔内的积压可通过阀体的排泄阀进行排放，它具有双截止与泄放(DBB)功能。阀体的泄放阀的另一种功能是通过它可对阀体内的长期淤积物进行冲洗与排放。

**9) 防腐蚀** 阀体壁厚设计时留有一定的腐蚀余量，碳钢阀门阀杆、固定轴、球体、阀座及底盖均按ASTM B733和B656进行表面化学镀层。此外尚有多种防腐蚀材料供用户选择。阀门外表使用international c o. 的油漆，满足了各种环境条件的要求。

**10) 抗硫化应力裂化** 我公司生产系列抗硫球阀，阀门接触介质的材料(包括紧固件)都是按美国腐蚀工程师协会标准NACE Mr0175的要求进行选择，并在制造过程中作严格的质量控制和质量检测，以求完全符合标准的规定，并满足硫化环境工况的工艺要求。

**11) 加长杆装置** 对于埋地球阀，可提供接长装置，接长装置包括阀杆、注油脂阀、排泄阀等的接长。如右图，用户应在订单中说明接长要求和长度(长度一般是指阀门通道中心操作装置中心的距离)。

Structural Features of Fixed Ball Valve

Fixed Ball Valve are mainly used in the industries of natural gas, oil products, chemicals, metallirgy, urban construction, environmental protection, pharmaceuticals. Foodstuff and etc. Among them. the sulfur–resisting series products are applicable for seriously corrosive natural gas pipeline containing hydrogen sulphide mediums and impurities.

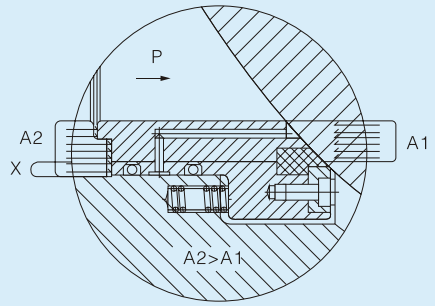
## Structural Features of Fixed Ball Valve Series:

**1) DISTINCTIVE SEATING STRUCTURE**
According to the extent of pressure, medium properties and sealing requirements, fixed ball valves may be made to front seal structure, back seal structure, or front–back dual seal structure.

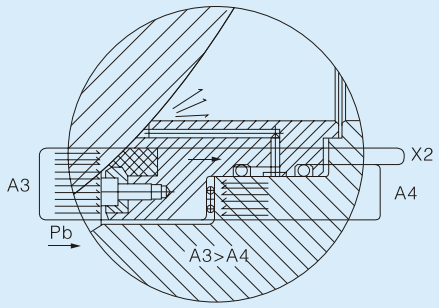
**▲FRONT SEAL STRUCTURE**
The front seal structure of valve seat gives the functions of two way seal and self–relieving functionat middle ca–vity. As shown in the figure, the sealing socket inlaidwith appropriate polymeric material (high molecular material of NYLON, MOLON, DELRIN or PEEK) is float. With sping loaded, when closed, the sea–ling face remains always in close contact with the ball, thus to ensure leak–tig–htness under whatever high or low differential pressure. Upstream: valve seat moves axially along with the valve, the upstream (inlet) pressure P applied to A2 produces a directional force on A1. As A2 is larger than A1, A2–A1 =X, so the pressure on X will push the valve seat toward the ball to actualize close seal at upstream. Downstream: in case the pressure inside valve cavity Pb rises, the force acted upon A3 will be greater than that upon A4, A3–A4=X2. The differential pressure formed up on X2 will overcome the spring force and make valve seat se–parated from ball, and then, the valve seat will be closed to the ball again under sping action.

**▲BACK SEAL STRCTURE**
The piston effect at valve seat produced by the area difference between 'd' and 'dm' (see figure on the right) will make seating seal ring and ball closely contacted and sealed under the medium action at the middle ca–vity of valve body.

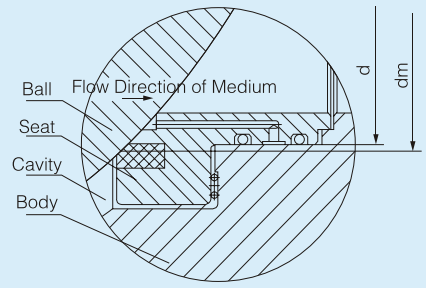
**▲FRONT–BACK SEAL STRUCTURE**
At the inlet inside, the piston effect at valve seat pro–duced by the area differece between 'd' and 'dm' will make seating seal ring and ball closely contacted and sealed under the medium action ay upstream. At the outlet side, the pisoton effect produced by the area differece between 'do' and 'dm' will make seating seal ring and ball closely contacted and sealed under the action of medium pressure at the middle cavity of valve body.



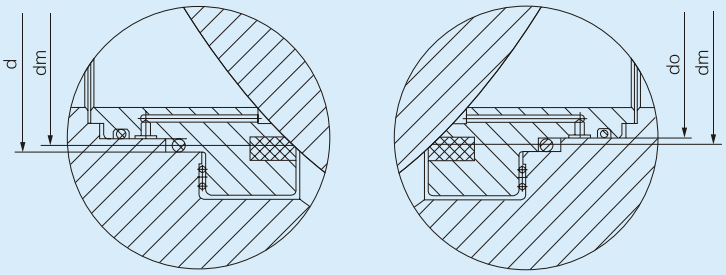
Inlet Side



Outlet Side



Outlet Side



Inlet Side Outlet Side

Front–Back Seal Structure

# 固定球阀TRUNNION MOUNTINED BALL VALVE

## 固定球阀结构特点

**2) SELF–RELIEVING STRUCTURE**
In case of abnormal rise of pressure at middle cavity, ball valve of single sal struc–ture is provided with self–relieving function, while ball valve of dual seal structure uses the au–xiliary perssure relief device on valve body to carry out pressure relief.

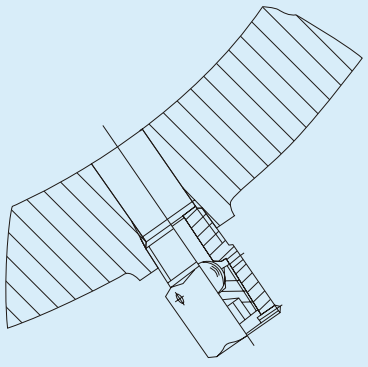
**3) FIRST AID OF SEAL**
The valve is designed with an auxiliary seating emergency seal system, as shown in the figure. In case if soft sal damaged, or failure of seal in an emergency circu–mstances, emergency sal may be effected by injecting in sealant through auxiliary sealing system. If needed, emergency seal assembly can be used ti rinse and lu–bricate the seating area. Plus, valve stem can also be designed with an auxiliary emergency sealing system.

**4) FIRE PROTECTION STRCTURE**
If requested by working conditons and users, ball valve may be designed to fire–proof. The fireproofing design of ball valve is to the thest andards of API 607 and JB/T6899. In case of soft ring burnt in fire, the fire protection structure of ball valve functions to prevent mediums from massleakage, thus to avoid fire spreading.

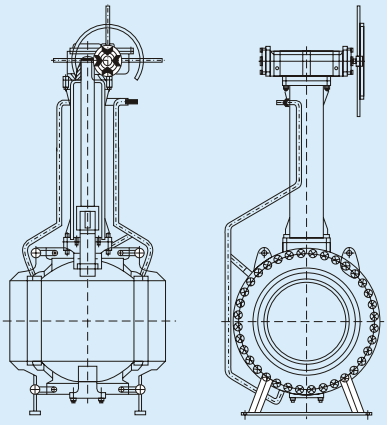
**5) ANTISTATIC STRUCTURE**
When operating the valve, the friction between the ball and seat will produce ele–ctrostatic charge that can be accumulated on the ball. To prevent static spack, an antistatic device is placed on the valve to derive the elec–tric charge accumulated on the ball (as shown in the figure).

**6) LOCKING DEVICE**
To prevent misoperation and the unexpected open or closecaused by the unpred–icted circuit vibration, a locking device is desgned at the fully opened and closed positions of hand operated ball valve. This design is provenespecially good and effective in the production line of inflammable mediums of petroleum anf chemicals, or when valves are mounted outdoors.

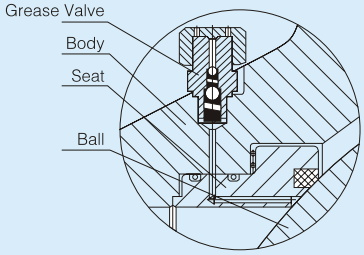
**7) FULL AND REDUCED BORE STRUCTURE**
to meet the dofferent requirements of users, we have full and reduced bore ball valves series (as shown tin the figure).The inside diameter of full–bore ball valve is in conformity that of the pipe for the concenience of cleaning, while reduced–bore series ball valve is comparatively lighter in weight, but its fluid resistance is only 1/7 of that globe valve the same caliber. So, reduce– bore ball valves boast of broader prospects.



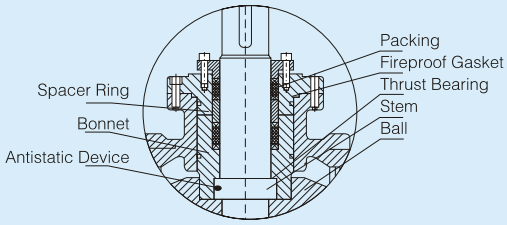
Discharge Device



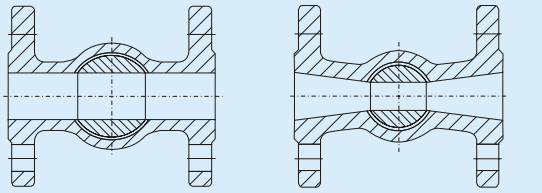
Extension bar device




Seating Auxiliay Seal




Stem Anti–flyout Structure
Stem Antistatic Device
Bonnet Leak–tight Structure



Full–bore Channel Type　　Reduced–bore Channel Type

**8) DISCHARGE DEVICE ON VALVE BODY**
If requested byuser or by system, discharge valve may be mounted on the body of ball valve. In case the two ends of valve have been sealed, the pressure in valve will be reeased through the discharge valve on the body. Besides the function of DBB, this discharge valve also functions to rinse and blow out the depostits inside valve body.

**9) CORROSION RESISTANCE**
Corrosion allowance is left for the design of body thickness, the stem, ficed shaft, ball, seat and bottom cover of carbon steel valve are all chemical plated in surface to ASTM B733 and B656. Use of paint from international company to deal with all kinds of conditions.

**10) SULFIDE STRESS CRACKING RESISANCE**
Thematerials exposed to fluid of our sulfur resisting ball valves, including fastening components, are all selected to NACE Mr0175. Rigorous quality control and inspection is implemented in the manufacturing process to make our products conformed to the standard and suitanle for vulvanizing conditions.

**11) EXTENSION BAR DEVICE**
Extension device may be procided foe buried ball valves. Which include the extension of valve stem, greasing valve and discharge valve. As shown in the figure on the right, users shall specify the requirements and length to be extended (The length is generally the distance from the center of valve channel to the venter of operating device).

固定球阀力矩表 (N.M)

下列所列的扭矩值供选择驱动装置时，介质的特性，内件及阀门的开启频率尚需作额外因素考虑。如使用防腐内件，用于清洁润滑介质的阀门，扭矩可降低20%。而对于苛刻介质，如料浆、颗粒性介质，以及用于氧气，扭矩可能要增加50%。对于缩径阀门的操作扭矩按其缩口所对应的通径的阀门操作扭矩选用。

The torque ratings listed below are for the reference to choose a drive drivce. The properties of medium, trims and valve open frequency shall be considered as extra factors. For instance, valves with corrosion–resistant trims to deal with clean lubricating mediums, their torque may be lowered by 20%. However, to deal with stringent mediums like slurry, granular medium and oxygen, the torque may be increased by 50%. The operating torque of drawing–down valves os subject to the corresponding diameter to their neckings.

| 通径 | | 压力PN(Mpa) | | | | | CLASS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN | in | 1.6 | 2.5 | 4.0 | 6.4 | 10.0 | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| 50 | 2 | 25 | 30 | 50 | 100 | 190 | 57 | 99 | / | 168 | 228 | 390 | 589 |
| 65 | 2'/2 | 50 | 60 | 100 | 200 | 360 | / | / | / | / | / | / | / |
| 80 | 3 | 65 | 80 | 150 | 300 | 460 | 122 | 212 | / | 360 | 512 | 831 | 1577 |
| 100 | 4 | 125 | 140 | 250 | 400 | 770 | 192 | 335 | 467 | 572 | 946 | 1524 | 1965 |
| 125 | 5 | 250 | 300 | 450 | 650 | 1050 | / | / | / | / | / | / | / |
| 150 | 6 | 340 | 400 | 585 | 890 | 1980 | 274 | 544 | 650 | 912 | 1784 | 2934 | 5501 |
| 200 | 8 | 485 | 680 | 996 | 1500 | 3280 | 832 | 1250 | 1806 | 2177 | 4116 | 7215 | 11786 |
| 250 | 10 | 810 | 1140 | 1690 | 2560 | 5250 | 1105 | 1736 | 2638 | 3093 | 5910 | 11128 | 13222 |
| 300 | 12 | 1310 | 1870 | 2800 | 4290 | 7200 | 1502 | 2388 | 2929 | 4282 | 10137 | 16103 | 20075 |
| 350 | 14 | 1910 | 2740 | 4110 | 6320 | 9860 | 1946 | 3224 | 3971 | 7458 | 14141 | 24518 | / |
| 400 | 16 | 2860 | 4150 | 6300 | 9750 | 14500 | 3164 | 5139 | 6307 | 9310 | 18866 | 29630 | / |
| 450 | 18 | 4500 | 6500 | 8900 | 13500 | 16900 | 3793 | 6194 | 7609 | 14639 | 22400 | 34392 | / |
| 500 | 20 | 5860 | 7800 | 12000 | 19660 | 19000 | 4769 | 7826 | 9623 | 20011 | 28544 | 40918 | / |
| 550 | 22 | / | / | / | / | / | 5695 | 9454 | 11651 | 24785 | 42427 | / | / |
| 600 | 24 | 8920 | 13210 | 20380 | 31820 | 42500 | 7529 | 12958 | 15900 | 31226 | 43276 | 65351 | / |
| 650 | 26 | / | / | / | / | / | 8693 | 14394 | 17727 | 35184 | 47580 | / | / |
| 700 | 28 | 13320 | 19380 | 30670 | 48020 | 58000 | 9832 | 15620 | 20182 | 38987 | 52486 | / | / |
| 750 | 30 | / | / | / | / | / | 11172 | 18703 | 23086 | 41832 | 56210 | / | / |
| 800 | 32 | 24000 | 35420 | 55200 | 68830 | 82000 | 12494 | 21030 | 25985 | 45199 | 60849 | / | / |
| 850 | 34 | / | / | / | / | / | 21148 | 31558 | 33000 | 48401 | 65244 | / | / |
| 900 | 36 | 34960 | 52870 | 82700 | 134000 | / | 22987 | 34170 | 36045 | 52262 | 70355 | / | / |
| 1000 | 40 | 43420 | 66700 | 102820 | 162210 | / | 26059 | 39115 | 43990 | 60197 | / | / | / |
| 1050 | 42 | / | / | / | / | / | 28149 | 42414 | 50300 | 65496 | / | / | / |
| 1200 | 48 | / | / | / | / | / | 42776 | 71868 | 80302 | 118938 | / | / | / |
| 1350 | 54 | / | / | / | / | / | 70276 | 91238 | 116000 | 144342 | / | / | / |
| 1400 | 56 | / | / | / | / | / | 85654 | 108550 | 129900 | 169230 | / | / | / |
| 1500 | 60 | / | | / | | / | 116000 | 122820 | 178200 | 216270 | / | / | / |

## 产品性能规范

| 性能规范 | | 公称压力(Mpa) | | | | | 压力等级class | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1.6 | 2.5 | 4.0 | 6.4 | 10.0 | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| 试验压力 (Mpa) | 强度试验 | 2.4 | 3.75 | 6.0 | 9.6 | 15.0 | 2.93 | 7.58 | 10.0 | 15.0 | 22.5 | 37.5 | 63.0 |
| | 密封试验 | 1.76 | 2.75 | 4.4 | 7.04 | 11.0 | 2.07 | 5.52 | 7.31 | 11.03 | 16.5 | 27.5 | 46.2 |
| | 气压试验 | 0.6Mpa | | | | | | | | | | | |
| 适用温度 | | –196℃~550℃(注：不同工况温度，选用不同的材质) | | | | | | | | | | | |
| 适用介质 | 普通型 | 水、蒸汽、石油、液化气、天然气等 | | | | | | | | | | | |
| | 抗硫型 | 含H2S、CO的天然气、石油等 | | | | | | | | | | | |

## 固定球阀流量系数数据表

阀门的流量系数是衡量阀门流通能力的指标，流量系数值越大说明流体流过阀门时的压力损失越小。流量系数值随阀门的尺寸、型式、结构而变化，不同类型和不同规格的阀门都要分别进行试验，才能确定该种阀门的流量系数值。对于同样结构的阀门，流体流过阀门的方向不同，流量系数值也有变化。这种变化一般是由于压力恢复不同而造成的。

下表为固定球阀的流量系数。Cv值表示在1磅/英寸2 (0.006894757MPa) 压降下-60° F(+16℃) 的水，每分钟流过阀门的美国加伦数。

Flow coeffcient is an index to measure the flow capacity of a valva. A higher value of flow coefficient means less pressure loss when fluid passing through the valve. The value of flow coefficient varies according to the dimensions, type and strucrure of valve. Valves of different types and specifications shall be tested separately to make sure of their values of flow coefficient. Regarding valves of the same stricture, flow coefficient varies caaording to the flow direction of fluid through the valve. Generally, these differences are caused by differe pressure recoveries.

The table below is the flow coefficient of fixed ball valve. 'Cv' stands for the American gallons flowing through the vlave per minute under 1 pound/inch$^2$ (0.006894757MPa) pressure drop +60° F(+16℃) water.

### Cr值

| 口径 | | 2” FB | 3” RB | 3” FB | 4” RB | 4” FB | 6” RB | 6” FB | 8” RB |
|---|---|---|---|---|---|---|---|---|---|
| | | 50 | 80 × 50 | 80 | 100 × 80 | 100 | 150 × 100 | 150 | 200 × 150 |
| 压力等级 | 150 | 500 | 180 | 1350 | 545 | 2500 | 790 | 5300 | 1945 |
| | 300 | 500 | 195 | 1350 | 535 | 2500 | 765 | 5300 | 1945 |
| | 600 | 500 | 180 | 1350 | 550 | 2500 | 745 | 5300 | 2220 |
| | 900 | 500 | 187 | 1350 | 512 | 2500 | 740 | 5300 | 2035 |
| | 1500 | 330 | 187 | 1350 | 510 | 2500 | 742 | 4167 | 2033 |
| | 2500 | 301 | 180 | 743 | 505 | 1460 | 735 | 2603 | 150 |
| 口径 | | 8” FB | 10” RB | 10” FB | 12：RB | 12” FB | 14” RB | 14” FB | 16” RB |
| | | 200 | 250 × 200 | 250 | 300 × 250 | 300 | 350 × 300 | 350 | 400 × 300 |
| 压力等级 | 150 | 10500 | 4050 | 17500 | 6900 | 26300 | 13100 | 31850 | 14600 |
| | 300 | 10500 | 4040 | 17500 | 7100 | 26300 | 13200 | 30050 | 14580 |
| | 600 | 10500 | 4065 | 17500 | 7150 | 26300 | 14350 | 28400 | 14350 |
| | 900 | 10500 | 4061 | 17500 | 7136 | 26300 | 14290 | 268036 | 14313 |
| | 1500 | 8013 | 4051 | 13309 | 7117 | 17073 | 14180 | 24276 | 14247 |
| | 2500 | 5370 | 3198 | 8631 | 5767 | 12503 | / | / | / |
| 口径 | | 16” FB | 18” RB | 18” FB | 20 “RB | 20” FB | 22” FB | 24” RB | 24” FB |
| | | 400 | 450 × 400 | 450 | 500 × 400 | 500 | 550 | 600 × 500 | 600 |
| 压力等级 | 150 | 43300 | / | 57300 | 27750 | 74500 | 89700 | 44700 | 112300 |
| | 300 | 41700 | / | 55370 | 28050 | 72300 | 85350 | 44650 | 109150 |
| | 600 | 38150 | / | 50950 | 29500 | 65600 | 77600 | 48900 | 98150 |
| | 900 | 36705 | / | 48703 | 29443 | 62504 | / | 48713 | 86252 |
| | 1500 | 33215 | / | 43402 | 29253 | 55931 | / | / | / |
| 口径 | | 26” FB | 28” FB | 30” RB | 30” FB | 32” FB | 34” FB | 36” RB | 36” FB |
| | | 550 | 700 | 750 × 600 | 750 | 800 | 850 | 900 × 750 | 900 |
| 压力等级 | 150 | 128300 | 151750 | 76000 | 179300 | 199750 | 225000 | 123000 | 258300 |
| | 300 | 123050 | 146050 | 75900 | 171200 | 187700 | 214900 | 121550 | 243500 |
| | 600 | 114050 | 136500 | 73850 | 158900 | 175000 | 196500 | 118300 | 226300 |
| | 900 | 102940 | 121201 | 71500 | 140093 | 159420 | 181137 | 103083 | 226033 |
| 口径 | | 40” FB | 42” FB | 48” FB | 54” FB | 56” FB | 60” FB | / | / |
| | | 1000 | 1050 | 1200 | 1350 | 1400 | 1500 | / | / |
| 压力等级 | 150 | 323000 | 343000 | 480500 | / | / | / | / | / |
| | 300 | 309000 | 340000 | 460300 | / | / | / | / | / |
| | 600 | 28500 | 309000 | 438500 | / | / | / | / | / |
| | 900 | / | / | / | / | / | / | / | / |

供货范围

| 公称通径 | | 公称压力PN(MPa) | | | | | 压力等级 class | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DN | in | 1.6 | 2.5 | 4.0 | 6.3 | 10.0 | 150 | 300 | 400 | 600 | 900 | 1500 | 2500 |
| 50 | 2 | | | ●/△ | | | | | ●/△ | | | ☆/△ | |
| 65 | 21/2 | | | ●/△ | | | | | ●/△ | | | ☆/△ | |
| 80×50 | 3×2 | | | ●/△ | | | | | ●/△ | | | ☆/△ | |
| 80 | 3 | | | ●/△ | | | | | ☆/△ | | | ☆/△ | |
| 100×80 | 4×3 | | | ●/△ | | | | | ●/△ | | | ☆/△ | |
| 100 | 4 | | | ●/△ | | | | | ●/△ | | ☆/△ | | |
| 125 | 5 | | ●/△ | | ●/☆/△ | △ | | ●/△ | ●/☆/△ | △ | / | | |
| 150×100 | 6×4 | | | ●/△ | | | | | ●/△ | | ☆/△ | | |
| 150 | 6 | | ●/☆/△/★ | | | ☆/△/★ | | ●/☆/△/★ | | ☆/△/★ | ☆/△/★ | | |
| 200×150 | 8×6 | | ☆/△/★ | | ●/☆/△/★ | | | ☆/△/★ | ●/☆/△/★ | | ☆/△/★ | | |
| 200 | 8 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 250×200 | 10×8 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 250 | 10 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 300×250 | 12×10 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 300 | 12 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 350×300 | 14×12 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 350 | 14 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 400×300 | 16×12 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 400 | 16 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 450 | 18 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 500×400 | 20×16 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 500 | 20 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 600×500 | 24×20 | | | ☆/△/★ | | | | | ☆/△/★ | | | | |
| 600 | 24 | | | ☆/△/★ | | | | | ☆/△/★ | | | | ☆/★ |
| 650 | 26 | | | ☆/△/★ | | | | | ☆/△/★ | | | ☆/★ | / |
| 700 | 28 | | | ☆/△/★ | | | | | ☆/△/★ | | | ☆/★ | / |
| 750×600 | 30×24 | | | ☆/△/★ | | | | | ☆/△/★ | | | | / |
| 750 | 30 | | ☆/△/★ | | | ☆/★ | | ☆/△/★ | | ☆/★ | | | / |
| 800 | 32 | | ☆/△/★ | | | ☆/★ | | ☆/△/★ | | ☆/★ | | | / |
| 850 | 34 | | | ☆/★ | | | | | ☆/★ | | | | / |
| 900×750 | 36×30 | | | ☆/△/★ | | | | | ☆/△/★ | | ☆/★ | | / |
| 900 | 36 | | | ☆/★ | | | | | ☆/★ | | | | / |
| 1000 | 40 | | ☆/★ | | / | ☆/★ | | ☆/★ | / | ☆/★ | | / | |
| 1050 | 42 | | ☆/★ | | / | ☆/★ | | ☆/★ | / | ☆/★ | | / | |
| 1200 | 48 | | ☆/★ | | / | ☆/★ | | ☆/★ | / | ☆/★ | | / | |
| 1350 | 54 | | / | | | ☆/★ | | / | | ☆/★ | | / | |
| 1400 | 56 | | ☆/★ | | / | ☆/★ | | ☆/★ | / | ☆/★ | | / | |
| 1500 | 60 | | ☆/★ | | / | ☆/★ | | ☆/★ | / | ☆/★ | | / | |

注：●表示手柄操作阀门；☆表示齿轮箱操作阀门；
△表示气动操作阀门；★表示电动操作阀门；
/ 表示没有此选项，
表中未涉及的可按用户的要求制造。

Note：●stand for handle operated valves；☆stand for gearbox operated valves；
△stand for air operated valves；★stand for electrically operated valves；
/ stand for no option of this.
Those not covered in the table can be custom made to users' requirements.