

售前服务:

我们提供专业的低温球阀售前服务:根据介质、温度、压力及工况需求,快速匹配最优产品方案

We offer professional pre-sales services for cryogenic ball valves: quickly matching the optimal product solution based on medium, temperature, pressure, and operational requirements



售后服务:

我们提供完善的低温球阀售后服务:建立专属客户档案,提供终身技术支持;产品质保期内免费维修或更换非人为损坏的零部件;接到故障报修后,快速响应并制定解决方案;

We provide comprehensive after-sales service for cryogenic ball valves: establishing exclusive customer files and offering lifelong technical support; providing free repair or replacement of non-artificially damaged parts during the product warranty period; responding promptly to fault reports and formulating solutions.



凯泰阀门(集团)有限公司
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石油 Oil

天然气 Gas

船舶 Ship

电力 Power

轨道 Rail

*Cryogenic
Ball Valve*

低温球阀



浮动侧装/上装球阀

固定侧装/上装球阀

*Floating side mounted/upper mounted ball valve
Fixed side mounted/upper mounted ball valve*

Low-temperature Ball Valve Manufacturer 低温球阀制造商



凯泰阀门集团总部位于上海宝山市工业区, 占地35000多平方米。凭借30多年的经验, 我们专注于为各个行业设计、制造和销售阀门。我们的产品包括球阀、蝶阀、闸阀、截止阀、止回阀和旋塞阀等, 尺寸从1/2英寸到48英寸 (DN15到DN1200) 不等, 压力从150Lb到2500Lb (PN1.0Mpa到PN42.0Mpa) 不等。我们的材料种类繁多, 确保了多功能性。

KATA Valve Group, headquartered in Baoshan City Industrial Zone, Shanghai, occupies over 35,000 square meters. With 30+ years of experience, we specialize in designing, manufacturing, and marketing valves for various industries. Our products include Ball, Butterfly, Gate, Globe, Check, and Plug valves, among others, ranging from 1/2" to 48" (DN15 to DN1200) in size and 150Lb to 2500Lb (PN1.0Mpa to PN42.0Mpa) in pressure. Our materials cover a wide range, ensuring versatility.

30多年阀门行业经验
30+ years in valves

350000平方米的工厂
350,00 Sq.m. factory

5个制造工厂
5 Manufacturing plants.

300+员工
300+ Employee

200多项专利荣誉
200+ patented honors

·API Q1
·ISO9001
·ISO14001
·ISO45001
·API 6D
·CE
·ISO15848-1
·API 6FA
·API 607

凯泰因其在工业阀门领域的卓越贡献, 获得了社会的广泛认可与赞誉。

KATA has received significant recognition and accolades from society for its outstanding contributions in the field of industrial valves.



Manufacturing Facilities And Equipment

制造车间和设备

凯泰专注于低温球阀的研发与制造, 打造了行业一流的生产基地与精良设备。作为创新与品质的巅峰之作, 我们的生产基地配备尖端设备与精密生产工艺。

KATA specializes in the R&D and manufacturing of cryogenic ball valves, and has built a world-class production base equipped with sophisticated equipment. As a pinnacle of innovation and quality, our production base is furnished with cutting-edge facilities and precise production technologies.



凯泰制造车间配备了多台进口龙门加工中心、卧式加工中心和高精度数控设备, 确保产品加工的精密密度犹如艺术品形成一致性。以严谨的生产工艺和现代化技术为支撑, 公司致力于打造高质量、高可靠性的球阀产品, 为行业树立标杆, 成就每一台球阀的传奇。

KATA manufacturing workshop is equipped with multiple imported gantry machining centers, horizontal machining centers, and high-precision CNC equipment, ensuring that the precision of product processing is consistent like a work of art. Supported by rigorous production processes and modern technology, the company is committed to creating high-quality and highly reliable ball valve products, setting a benchmark for the industry and achieving the legend of every ball valve.



Quality Control

质量控制

我们实施严格的质量控制措施, 以确保每一件产品都符合最高标准。我们的质检团队对每一步进行监控和测试, 以确保产品的卓越性和可靠性。

At KATA, we implement strict quality control measures to ensure that each product meets the highest standards. Our quality inspection team monitors and tests every step to ensure product excellence and reliability.

我们拥有完善的综合检测设备与规范, 从高精度进口可移动三维测量仪到先进的光谱设备检测系统, 涵盖了产品制造过程中的全方位质量控制。

We have comprehensive testing equipment and standards, ranging from high-precision imported movable 3D measuring instruments to advanced spectral equipment testing systems, covering comprehensive quality control in the product manufacturing process.



低温检测流程

Low Temperature Detection Process

①介质供给与预冷

左侧的杜瓦瓶(或低温储罐)提供液氮等低温介质。通过管路和阀门控制介质进入测试腔体,对阀门进行预冷,模拟低温工况。

Medium supply and pre cooling

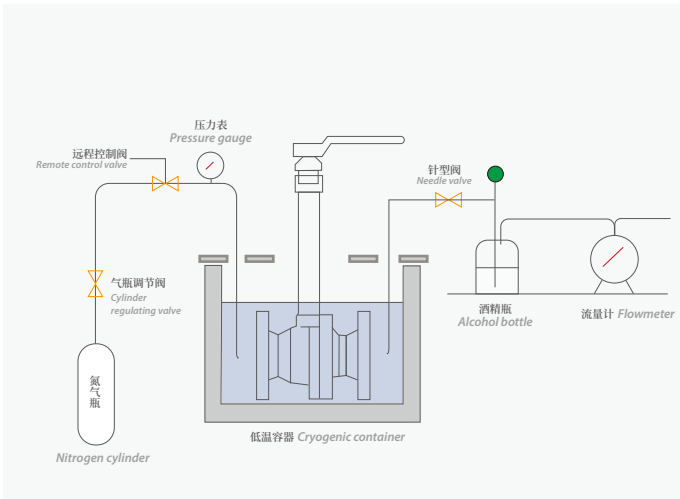
The Dewar flask (or low-temperature storage tank) on the left provides low-temperature media such as liquid nitrogen. Control the medium to enter the testing chamber through pipelines and valves, pre cool the valves, and simulate low-temperature conditions.

②测试腔体与阀门安装

中间的大型低温腔体是核心测试区域,待测阀门安装在其中。腔体配有控温系统,可维持稳定的低温环境。

Testing chamber and valve installation

The large low-temperature chamber in the middle is the core testing area, where the valve to be tested is installed. The chamber is equipped with a temperature control system to maintain a stable low-temperature environment.



低温试验装置布置图
Layout Drawing of Cryogenic Test Device

Low Temperature Conditions

低温工况

液化天然气(LNG)是为方便储存或运输而被转化为液体形式的天然气。LNG在大气压下的温度为-162°C(260°F),主要由甲烷组成。它含有乙烷、丙烷、丁烷和氮气,密度高于天然气(1/600)。业内普遍认可的超低温温度始于-150°C(238°F)。此外,某些气体被认为是超低温气体则是因为无法光靠增加压力来压缩其体积。按照凯泰的界定, -29°C(-20.2°F)以下属于低温工况, -101°C(-149.8°F)以下属于超低温工况;凯泰提供各种类型的经过测试的低温阀门。



Liquefied natural gas (LNG) is natural gas that is converted into liquid form for convenient storage or transportation. The temperature of LNG at atmospheric pressure is -162°C (260°F), mainly composed of methane. It contains ethane, propane, butane, and nitrogen, with a density higher than natural gas (1/600). The widely recognized ultra-low temperature in the industry starts at -150°C(238°F). In addition, some gases are considered ultra-low temperature gases because their volume cannot be compressed solely by increasing pressure. According to the definition of KATA, temperatures below -29°C(-20.2°F) belong to low-temperature conditions, while temperatures below -101°C(-149.8°F) belong to ultra-low temperature conditions; KATA offers various types of tested low-temperature valves.

CO2	-78.3 °C \ -109 °F
Methane	-161.5C\ -259°F
LNG	-168 °C \ -270 °F
Oxygen	-183°C\ -297°F
Argon	-186 °C \ -303 °F
Fluorine	-188°C \ -306°F
Air	-194.5 °C \ -318 °F
Nitrogen	-196°C \ -259°F
Hydrogen	-253.8 °C \ -109 °F
Helium	-269°C \ -259°F



Low Temperature Testing 低温检测



Low Temperature Laboratory 低温实验室



凯泰专注低温工况球阀研发与检测,以严苛实验标准、精密测试设备,筑牢超低温流体控制产品性能底线,为工业安全与高效运行提供硬核技术支撑。

KATA focuses on the research and testing of low-temperature ball valves, using rigorous experimental standards and precision testing equipment to establish the bottom line of performance for ultra-low temperature fluid control products, providing hardcore technical support for industrial safety and efficient operation.

Design And
Development Team

设计研发团队

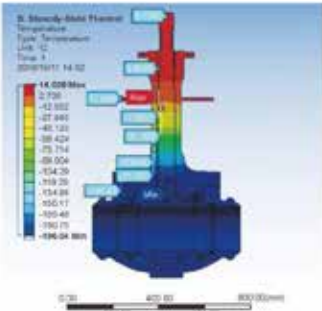
无论您的项目要求如何，我们都准备为您的阀门解决方案需求提供专业支持。加入我们的合作伙伴关系，迎来阀门技术的新时代！

"We are prepared to provide professional support for your valve solution needs, regardless of the requirements of your project. Join us in a partnership to usher in a new era of valve technology!"



采用先进的计算机仿真分析技术,分析阀门的应力、温度、流场等参数及其分布,对工况下阀门的服役性能进行评估,优化解决阀门应用中的相应问题,从源头上保证产品性能,最大的将价值传递给客户。

By adopting advanced computer simulation analysis technology, the stress, temperature, flow field and other parameters and their distribution of the valve are analyzed to evaluate the service performance of the valve under working conditions, optimize and solve corresponding problems in valve application, ensure product performance from the source, and maximize value transmission to customers.



开启状态时的温度场分布
temperature field distribution when opening



关闭状态时的温度场分布
temperature field distribution when closing

Design Standards For
Ultra-low Temperature Ball Valves

超低温球阀设计标准

设计和制造标准

- 1.ASME B16.34 法兰、螺纹和焊接连接阀门
- 2.GB/T 24925 低温阀门技术条件
- 3.BS 6364低温用阀门
- 4.ISO 28921-1 低温用隔离阀设计、制造、和生产试验
- 5.MSS SP-134 低温阀门及其阀体/阀盖加长体的要求
- 6.SHELL SPE 77/200低温及超低温用阀门

检验标准

- 1.API 598 阀门的检查与试验
- 2.BS 6364 低温用阀门
- 3.SHELL SPE 77/200低温及超低温用阀门
- 4.SHELL SPE 77/312 产品低泄漏测试
- 5.ISO 15848 产品低泄漏测试
- 6.GB/T 26481 阀门的逸散性试验
- 7.ISO 28921-1 低温用隔离阀设计、制造、和生产试验

Inspection Standard

- 1.API 598: Valve Inspection and Test
- 2.BS 6364: Specification for valves for cryogenic service
- 3.SHELL SPE 77/200: Low temperature and cryogenic valves
- 4.SHELL SPE 77/312: Product Low-Leakage Testing
- 5.ISO 15848: Industrial valves—Measurement, test and qualification procedures for fugitive emissions
- 6.GB/T 26481: Industrial valves—Test for fugitive emissions
- 7.ISO 28921-1: Industrial valves—Isolation valves for cryogenic service—Part 1: Design, manufacture and production testing

Design and Manufacturing Standards

- 1.ASME B16.34: Valves—Flanged, Threaded, and Welded End
- 2.GB/T 24925-2019: Low temperature valve—Technical specifications
- 3.BS 6364: Specification for valves for cryogenic service
- 4.ISO 28921-1: Industrial valves—Isolation valves for cryogenic service—Part 1: Design, manufacture and production testing
- 5.MSS SP-134: Valves for cryogenic service including requirements for body/bonnet extensions
- 6.SHELL SPE 77/200: Low temperature and cryogenic valves

Product Range

产品范围

产品类型 Product Type	磅级 Pound class	口径 Size	产品类型 Product Type	磅级 Pound class	口径 Size
超低温 固定球阀 Fixed ball valve	Class 150	2”—24”	超低温 浮动球阀 Floating Ball Valve	Class 150	1/2”—8”
	Class 300	2”—24”		Class 300	1/2”—8”
	Class 600	2”—24”		Class 600	1/2”—4”
	Class 900	2”—24”		Class 900	1/2”—3”
	Class 1500	2”—20”		Class 1500	1/2”—2”
	Class 2500	1 1/2”—12”		Class 2500	1/2”—1”

Sealing Material

密封材料

技术参数 Technical Specifications			
密封形式 Sealing type	压力范围 (MPa)	弹簧材料 Spring material	主要应用场合 Main application scenarios
	150~900	SS316 Elgiloy Inconel 718	静止工况, 低速旋转及往复工况, 超低温工况, 真空工况, 对密封性要求较高的地方 Static working conditions, low-speed rotating and reciprocating working conditions, ultra-low temperature working conditions, vacuum working conditions, and areas with high sealing requirements
	150~2500		静止工况, 双向密封工况, 密封要求较高的工况, 超低温工况 Static working condition, bidirectional sealing working condition, working condition with high sealing requirements, ultra-low temperature working condition
	150~900		静止工况, 双向密封工况, 常温、部分超低温工况 Static working condition, bidirectional sealing working condition, normal temperature and some ultra-low temperature working conditions
	150~2500		静止工况, 压力较高的工况 Static working conditions, working conditions with high pressure
	150~2500		静止工况, 压力较高的工况 Static working conditions, working conditions with high pressure
	150~900		低温静止工况, 低温旋转工况 Low temperature static working condition, low temperature rotating working condition
	150~900		适用于无背压场合 Suitable for situations without back pressure
	150~1500		根部加厚, 适用于无背压场合, 更高压力场合 Root thickening, suitable for non back pressure situations and higher pressure situations
	150~2500		根部加挡圈, 适用于无背压, 根部间隙较大或压力较高的场合 Root with retaining ring, suitable for situations with no back pressure, large root clearance or high pressure
	150~900		加前支撑, 适用于有背压存在的场合 Add front support, suitable for situations with back pressure
	150~2500		加前支撑和根部挡圈, 适用于有背压存在, 根部间隙较大或压力较高的场合 Add front support and root retaining ring, suitable for situations with back pressure, large root clearance or high pressure

Structural Characteristics Of Ultra-low Temperature Ball Valve

超低温球阀结构特点

1. 阀体采用侧装式, 阀盖加长设计, 将填料抬高, 加滴水板, 防止填料低温下结冰;

The valve body adopts a side mounted design, with an extended valve cover. The packing is raised and a drip board is added to prevent the packing from freezing at low temperatures;

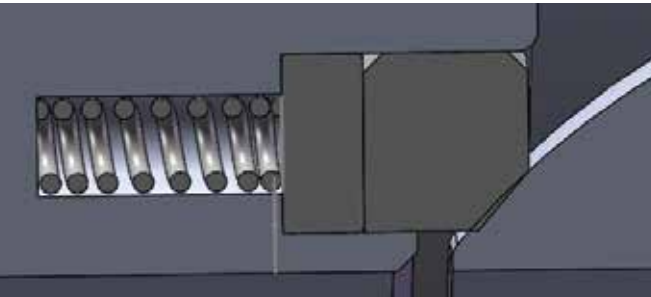


2. 浮动球阀在球体上设置泄压孔, 当阀门关闭后中腔压力升高时, 介质可通过泄压孔排到上游, 防止因介质气化导致压力异常升高;

The floating ball valve is equipped with a pressure relief hole on the ball body. When the pressure in the middle chamber increases after the valve is closed, the medium can be discharged upstream through the pressure relief hole to prevent abnormal pressure increase caused by medium gasification;

3. 浮动球阀采用弹簧加载, 具有自动补偿功能, 在实际使用过程中不会因为阀座磨损而造成无法密封。

The floating ball valve adopts spring loading and has automatic compensation function, which will not cause sealing failure due to valve seat wear during actual use.



4. 阀座可根据客户要求采用不同的密封方式, 如DBB, DIB-1、DIB-2, 密封性能满足国际标准。

The floating ball valve adopts spring loading and has automatic compensation function, which will not cause sealing failure due to valve seat wear during actual use.

5. 阀杆采用多重密封, 一道LIP-SEAL唇形密封, 二道1组低泄漏填料密封, 确保低泄漏要求。

The valve stem adopts multiple seals, with one LIP-SEAL lip seal and two sets of low leakage packing seals to ensure low leakage requirements.

6. 填料位置采用活载荷设计, 管道运行过程中靠活载预紧力能进行补偿密封, 确保阀杆处密封的可靠性。

The packing position adopts live load design, and during pipeline operation, compensation sealing can be carried out by the pre tightening force of live load to ensure the reliability of the sealing at the valve stem.

7. 阀体与阀盖、阀体与加长支架之间均采用两道密封, 一道LIP-SEAL唇形密封, 二道金属缠绕垫片密封。

Two seals are used between the valve body and the valve cover, as well as between the valve body and the extended bracket. One is a LIP-SEAL lip seal, and the other is a metal wrapped gasket seal.

8. 防静电结构: 阀体与阀杆, 阀杆与球体间导通电阻小于10欧姆, 有效防止静电积蓄, 确保阀门的使用安全。

Anti static structure: The electrical resistance between the valve body and valve stem, as well as between the valve stem and the ball, is less than 10 ohm, effectively preventing static electricity accumulation and ensuring the safe use of the valve.

9. 防火设计: 符合API 607标准, 在发生火灾时仍能保持一定的密封性能。

Fireproof design: Complies with API 607 standard and can maintain a certain degree of sealing performance in the event of a fire.

10. 防阀杆吹出结构: 阀杆配备防飞出装置, 防止腔内压力异常升高导致阀杆飞出。

Anti-blowout Structure for Valve Stem: The valve stem is equipped with an anti-ejection device to prevent the valve stem from being blown out due to abnormal pressure rise inside the valve cavity.

11. 阀杆表面硬化处理能有效防止阀杆擦伤, 降低了阀门使用故障率;

The surface hardening treatment of the valve stem can effectively prevent stem scoring and reduce the failure rate of the valve during operation.

12. 端部连接形式可按法兰, 焊接端, 或一端法兰一端焊接。

End connection types can be flanged, welded end, or one flanged end and one welded end.

13. 联接盘上带有限位槽确保阀门开关有效限位。

The coupling disc is provided with limit grooves to ensure effective positioning of valve opening and closing.

14. 驱动方式可手柄、蜗轮、电动、气动。

The driving mode can be handle, worm gear, electric, or pneumatic.

15. 阀体与加长支架之间有阀体定位槽和圆柱销双重定位、加长支架和联接盘之间有卡槽和圆柱销双重定位, 确保阀门在使用过程中不会错位。

There is a valve body positioning groove and cylindrical pin dual positioning between the valve body and the extended bracket, and a card groove and cylindrical pin dual positioning between the connecting plates of the extended bracket to ensure that the valve will not be misaligned during use.

Structural Characteristics Of Ultra-low Temperature Ball Valve

超低温球阀结构特点

防止压力积聚

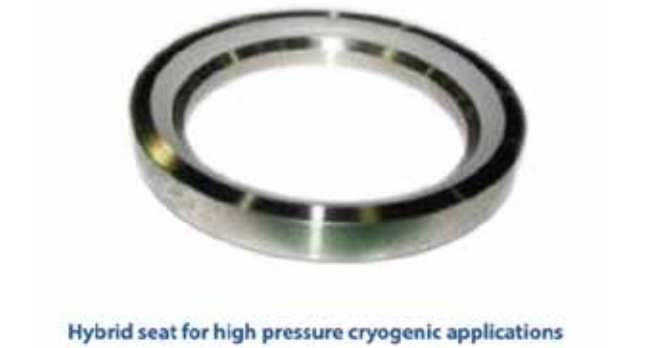
凯泰低温球阀采用无滞留腔设计, 其腔室泄压孔朝向流体上游, 可消除因热膨胀导致的压力积聚问题。

Pressure buildup prevention
The KATA cryogenic ball valve is designed with no trapped cavities. A cavity relief hole faces upstream and eliminates pressure buildup caused by thermal expansion.

阀体与阀盖的连接结构

本系列低温球阀采用了所有防火安全阀门通用的榫槽式设计。这种独特的迷宫式结构可彻底杜绝向大气的泄漏。此外, 该设计还能让封装式阀体密封实现完全压缩, 并确保阀门所有承压部件精准对中。

Connection Structure of Valve Body and Bonnet
The cryogenic valve series implements the tongue & groove design that is used in all fire safe valves. This unique labyrinth design eliminates leakage to the atmosphere. Furthermore, this design allows full compression of the encapsulated body seal and accurate alignment of all valve pressure-containing parts.



Hybrid seat for high pressure cryogenic applications

单向装配设计

阀杆的一个平面上加工有一体成型的凸筋, 与球体上朝向泄压孔的凹槽精准匹配; 阀杆顶端的“T”形标识用于指示泄压孔方向。这两项设计确保了阀门只能单向装配, 为运行与维护提供安全保障。

One-way assembly
An integral rib is machined at one of the stem flats to match a groove in the ball that faces the relief hole. A "T" mark on the stem tip shows the relief hole direction. These two features ensure a one-way assembly for safe operation and maintenance.



阀座与密封

在低至 - 200°C/-328°F 的工况下, 使用 TFM 1600™或 PTFE 阀座, 可降低操作扭矩、适配更小的执行机构, 并实现高性价比。

在低至 - 269°C/-452°F 的超低温工况下, 使用 PCTFE (KEL-F) 材质阀座。

针对高压低温应用场景, 采用不锈钢外壳内嵌 PCTFE (KEL-F) 的复合阀座。

当选用 PCTFE 阀座时, 阀座PCTFE固定在金属阀座支承圈内, 能有效防止松动, 确保了阀门的密封性能。

Seats and seals
Using TFM 1600 at temperatures as low as -200 °C/-328 °F™ Or PTFE valve seat, which can reduce operating torque, adapt to smaller actuators, and achieve high cost-effectiveness.
Under ultra-low temperature conditions as low as -269 °C/-452 °F, use PCTFE (KEL-F) material valve seat.
For high-pressure and low-temperature applications, composite valve seats with a stainless steel outer shell and embedded PCTFE (KEL-F) are adopted. When PCTFE seats are selected, the PCTFE seats are fixed in the metal seat retainers, which effectively prevents loosening and ensures the sealing performance of the valve.



Floating Side-mounted Ball Valve

浮动侧装球阀



产品规格

压力范围: 150Lb~2500Lb (PN10~PN420)

尺寸范围: 1/2"~8" (DN15~DN200)

产品壁厚执行标准: ASME B16.34

阀体结构形式: 锻造或者铸造成型

试验温度: 低温测试 - 196°C (-320°F)

防火设计执行标准: API 607

Product specifications

Pressure range: 150Lb~2500Lb (PN10~PN420)

Size range: 1/2 "~8" (DN15~DN200)

Product wall thickness execution standard: ASME B16.34

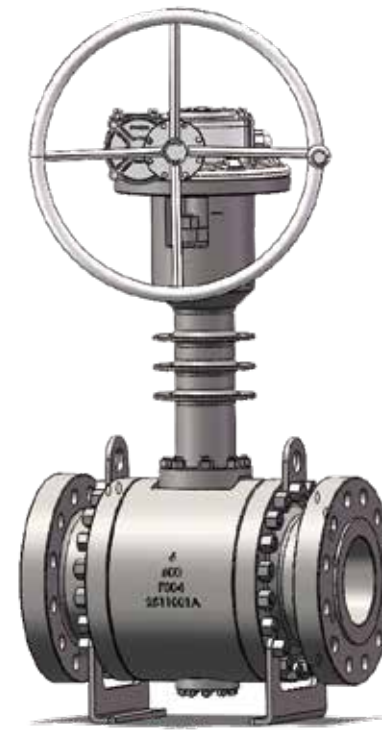
Valve body structure form: forged or cast into shape

Test temperature: Low temperature test -196 °C (-320 °F)

Fire Protection Design Execution Standard: API 607

Fixed Side Mounted Ball Valve

固定侧装球阀



产品规格

压力范围: 150Lb~2500Lb (PN10~PN420)

尺寸范围: 1 1/2"-24"

产品壁厚执行标准: ASME B16.34

阀体结构形式: 锻造或者铸造成型

试验温度: 低温测试 - 196°C (-320°F)

防火设计执行标准: API 607

Product specifications

Pressure range: 150Lb~2500Lb (PN10~PN420)

Size range: 1/2 "~8" (DN15~DN200)

Product wall thickness execution standard: ASME B16.34

Valve body structure form: forged or cast into shape

Test temperature: Low temperature test -196 °C (-320 °F)

Fire Protection Design Execution Standard: API 607

Floating Upper Ball Valve

浮动上装球阀



产品规格

压力范围: 150Lb~2500Lb (PN10~PN420)

尺寸范围: 1/2"~8" (DN15~DN200)

产品壁厚执行标准: ASME B16.34

阀体结构形式: 锻造或者铸造成型

试验温度: 低温测试 - 196°C (-320°F)

防火设计执行标准: API 607

Product specifications

Pressure range: 150Lb~2500Lb (PN10~PN420)

Size range: 1/2 "~8" (DN15~DN200)

Product wall thickness execution standard: ASME B16.34

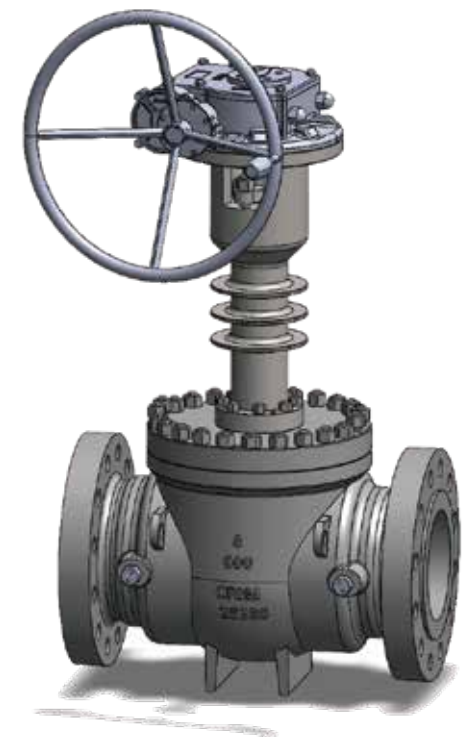
Valve body structure form: forged or cast into shape

Test temperature: Low temperature test -196 °C (-320 °F)

Fire Protection Design Execution Standard: API 607

Fixed Upper Ball Valve

固定上装球阀



产品规格

压力范围: 150Lb~2500Lb (PN10~PN420)

尺寸范围: 1 1/2"-24"

产品壁厚执行标准: ASME B16.34

阀体结构形式: 锻造或者铸造成型

试验温度: 低温测试 - 196°C (-320°F)

防火设计执行标准: API 607

Product specifications

Pressure range: 150Lb~2500Lb (PN10~PN420)

Size range: 1/2 "~8" (DN15~DN200)

Product wall thickness execution standard: ASME B16.34

Valve body structure form: forged or cast into shape

Test temperature: Low temperature test -196 °C (-320 °F)

Fire Protection Design Execution Standard: API 607