

Q61N 锻钢焊接球阀

Q61N Forged Steel Butt-Weld Ball Valve

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开 维 喜 阀 门 集 团 有 限 公 司
Kaiweixi Valve Group Co., Ltd.

Q61N 锻钢焊接球阀

型号: Q61N	规格: DN10-DN100
公称压力: 16Mpa, 32Mpa	适用介质: 水、气、油
适用温度: $\leq 350^{\circ}\text{C}$	阀体材质: 锻钢、锻不锈钢
连接方式: 焊接	驱动方式: 气动、电动、手动
其他参数: 制造标准按 GB/T12237	

Q61N Forged Steel Butt-Weld Ball Valve

Model: Q61N	Specifications: DN10-DN100
Nominal Pressure: 16Mpa, 32Mpa	Applicable Media: water, gas, oil
Applicable Temperature: $\leq 350^{\circ}\text{C}$	Body Material: forged steel, forged stainless steel
End Connection : welded	Operation: Manual, pneumatic, electric
Other Parameters: Manufacturing standard according to GB/T12237.	

Q61N 锻钢焊接球阀概述

Q61N 锻钢焊接球阀是一种采用整体锻钢阀体、对焊端连接的永久性密封高性能球阀。阀体由 A105 等锻钢材料锻造而成，两端为对焊接口，与管道直接焊接成一体，彻底消除了法兰连接处的泄漏风险。阀门采用固定球或浮动球结构，密封副通常为金属硬密封或高性能软密封，通过阀杆驱动球体实现 90 度可靠启闭。该阀门专为高温、高压、剧毒或易燃易爆等苛刻工况设计，广泛应用于石油化工、天然气长输管线、电站及关键工艺装置中，是要求绝对密封安全的关键管段的核心截断设备。

Q61N Forged Steel Butt-Weld Ball Valve Overview

The Q61N Forged Steel Butt-Weld Ball Valve is a high-performance, permanently sealed ball valve featuring an integrally forged steel body and butt-weld ends. The valve body is forged from materials such as A105 steel, with both ends designed for direct butt-welding to the pipeline, creating an integral connection that completely eliminates leakage risks associated with flanged joints. Utilizing a fixed-ball or floating-ball design, the valve typically incorporates metal hard seats or high-performance soft seats, achieving reliable 90-degree on/off operation through stem-driven rotation of the ball. This valve is specifically engineered for demanding service conditions involving high temperatures, high pressures, toxic fluids, or flammable and explosive media. It is widely used in critical applications across petrochemical plants, long-distance natural gas pipelines, power stations, and key process systems, serving as the essential isolation device for pipeline segments requiring absolute sealing integrity and operational safety.



Q61N 锻钢焊接球阀产品图
Q61N Forged Steel Butt-Weld Ball Valve Product Image

Q61N 锻钢焊接球阀特点

1. 全焊接无泄漏结构：阀体与管道对焊连接，实现永久性密封，从根本上杜绝了外漏风险，尤其适用于不允许泄漏的危险介质管路。
2. 锻钢阀体超高压性能：整体锻造成型，材料致密均匀，机械强度极高，能够可靠承受超高压、高温及频繁的压力冲击。
3. 硬质密封耐苛刻工况：采用金属硬密封或特种合金密封，耐冲刷、耐高温、耐腐蚀，适用于含颗粒介质及极端温度压力条件。
4. 防火安全与长寿命：通常符合 API 607 等严格的防火安全标准。全焊接结构耐腐蚀和应力腐蚀，设计寿命与管线同步。
5. 专业安装要求高：安装依赖专业焊接与热处理工艺，一旦就位维护难度大，故适用于长期稳定运行、对可靠性要求极高的关键场合。

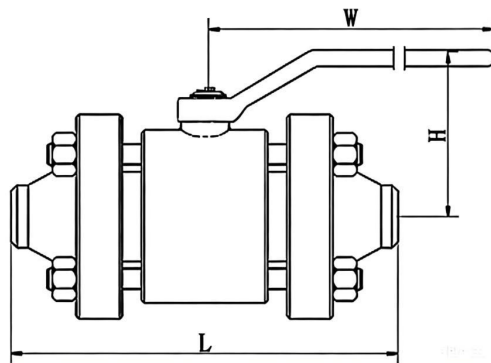
Q61N Forged Steel Welded Ball Valve Features

1. Fully Welded Leak-Free Structure: The valve body is directly welded to the pipeline, providing a permanent seal that fundamentally eliminates external leakage risks, making it particularly suitable for hazardous media pipelines where leakage is strictly prohibited.
2. Forged Steel Body for Ultra-High-Pressure Performance: Made from integrally forged steel with dense and uniform material composition, it exhibits extremely high mechanical strength, reliably withstanding ultra-high pressures, high temperatures, and frequent pressure surges.
3. Hard Seals for Harsh Conditions: Utilizes metal hard seals or special alloy seals that resist erosion,

high temperatures, and corrosion, making it suitable for media containing particles and extreme temperature and pressure environments.

4. Fire Safety and Long Service Life: Typically complies with stringent fire safety standards such as API 607. The fully welded structure offers excellent corrosion and stress corrosion resistance, with a design lifespan matching that of the pipeline.

5. High Professional Installation Requirements: Installation relies on specialized welding and heat treatment processes, making maintenance difficult once installed. It is thus suitable for critical applications requiring long-term stable operation and exceptionally high reliability.



Q61N 锻钢焊接球阀结构图

Q61N Forged Steel Butt-Weld Ball Valve Structure Diagram

零部件名称材料表

Parts Name Material List

序号 NO.	名称 Name	材料 Material
1	阀体 body	碳钢、不锈钢 carbon steel, stainless steel
2	球体 ball	不锈钢 stainless steel
3	密封垫 seal gasket	PTFE
4	填料 packing	PTFE
5	阀杆 stem	1CR13

性能规范表 Performance Specification

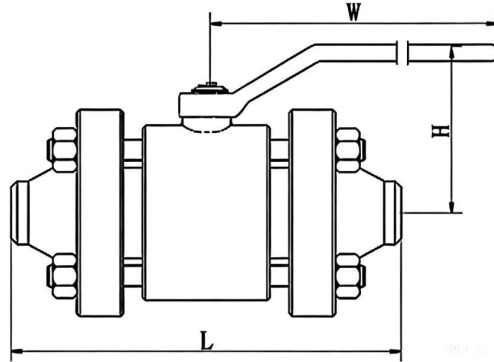
公称压力 Nominal Pressure	16/32	Mpa
强度试验压力 Shell Test	24/48	
密封试验压力 Seal Test	17.6/35.2	
适用温度 Suitable Temp.	350	℃

外形尺寸标准要求

1、阀门的结构长度按 GB/T12221 的标准

Dimensions Standard Requirements

1. The structural length of the valve shall conform to the standard GB/T12221.
2. The connecting flange shall conform to the standard GB9113.



Q61N 锻钢焊接球阀外形图

Q61N Forged Steel Butt-Weld Ball Valve View Drawing

Q61N 锻钢焊接球阀外形尺寸表

Q61N Forged Steel Butt-Weld Ball Valve Dimensions Table

DN	10	15	20	25	32	40	50	65	80	100
A(法兰)	210	230	240	260	300	400	400	490	580	620
L(对焊)	150	170	190	205	230	260	330	360	380	430

Q61N 锻钢焊接球阀安装、使用与维护说明

安装指南

1. 安装前准备：核对阀门型号、压力等级、焊接端规格及锻钢材质（如 A105）是否符合高压管道设计要求。清洁阀门内腔及管道坡口，确保无油污、铁锈等杂质。检查阀门密封面完好。
2. 对焊连接操作：焊接必须由合格焊工严格按照评定合格的焊接工艺规程（WPS）执行。焊接时阀门应处于全开位置。必须对阀体采取持续有效的强制冷却措施（如循环水冷却套），防止焊接高温传入阀体内部，导致密封件失效或材料性能下降。
3. 安装方向与支撑：安装时应考虑阀门操作和维护的便利性。对于大口径或重型阀门，应在下游管道设置适当支撑，以承受部分重量并减少管道应力。
4. 焊后处理与检验：焊接完成后，应根据材料规范要求进行焊后热处理以消除应力。必须对焊缝进行 100% 外观检查及规定的无损检测（如射线 RT 或超声波 UT），确保焊缝质量合格。
5. 系统压力测试：阀门焊接安装后参与管道系统的强度试验和严密性试验。试验压力需符合 ASME B16.34 等设计规范，试验过程应平稳缓慢升压，试验后全面检查。

1. 启闭操作：通过阀杆顶部的操作机构（如手轮、执行器）进行平稳的 90 度旋转操作。操作应到位，达到全开或全关的机械限位感后即停止，严禁超程操作。
2. 状态确认：通过执行器反馈信号或阀杆顶部指示器明确判断阀门开关状态。关键管线应设置永久性的状态标识牌。
3. 常规运行：本阀门设计用于高压工况的全开或全关闭断，严禁用作流量调节阀。长期处于全开状态时，建议定期进行全行程开关操作以保持灵活性。
4. 注意事项：在系统带压操作时，若感觉操作扭矩异常增大，应立即停止操作，检查系统压力是否超标或阀门内部是否存在卡阻、结垢等情况。

维护保养

1. 定期检查：定期检查阀门外表面及焊缝区域有无腐蚀、裂纹或泄漏迹象。检查阀杆填料处密封情况。所有检查应记录在案。
2. 阀杆密封维护：若阀杆填料处出现轻微外漏，可尝试均匀适度拧紧填料压盖螺母。若无效或泄漏严重，需在系统完全泄压后，更换适用于高压工况的专用填料。
3. 内部检修的特殊性：由于是全焊接阀门，内部检修意味着阀门需从管线切割下线。任何内部检修（如更换阀座、密封面修复）都必须在系统停车、泄压、冷却后，由专业人员在车间条件下进行。
4. 密封性能失效处理：若阀门出现严重内漏且无法通过外部调整解决，则需整体更换阀门。对于配有注脂系统的型号，可按规程尝试注入密封脂进行临时性封堵，并计划停车更换。
5. 长期停用与存放：阀门长期停用应处于全开或全关位置。排空阀内积液，保持内部干燥。对阀杆等外露金属表面涂抹防锈脂。重新启用前，必须进行全面的压力试验和功能检查。

Q61N Forged Steel Butt-Weld Ball Valve - Installation, Operation & Maintenance Instructions

Installation Guide

1. Pre-Installation Preparation: Verify that the valve model, pressure rating, butt-weld end specifications, and forged steel material grade (e.g., A105) comply with the high-pressure piping design requirements. Thoroughly clean the valve's inner cavity and pipe bevels to ensure they are free of oil, grease, rust, and other contaminants. Inspect the valve's sealing surfaces for integrity.
2. Butt-Weld Connection Procedure: Welding must be performed by a qualified welder strictly following a qualified Welding Procedure Specification (WPS). The valve must be in the fully OPEN position during welding. Continuous and effective forced cooling measures for the valve body (e.g., a circulating water cooling jacket) are mandatory to prevent welding heat from transferring into the valve interior, which could damage seals or degrade material properties.
3. Installation Orientation and Support: Consider ease of operation and future maintenance when positioning the valve. For large-diameter or heavy valves, provide adequate support on the downstream

piping to bear part of the weight and reduce pipeline stress.

4. **Post-Weld Treatment and Inspection:** Upon completion of welding, perform Post Weld Heat Treatment (PWHT) for stress relief as required by the applicable material specification. Conduct 100% visual inspection and specified Non-Destructive Examination (NDE), such as Radiographic Testing (RT) or Ultrasonic Testing (UT), on the welds to ensure quality compliance.
5. **System Pressure Testing:** After installation and welding, the valve shall participate in the piping system's strength (hydrostatic) and leak tests. Test pressures must comply with design codes such as ASME B16.34. Apply pressure smoothly and gradually. Perform a comprehensive inspection of the valve and welds after testing.

Operation

1. **Opening/Closing Operation:** Operate the valve via a smooth 90-degree rotation using the actuation mechanism (e.g., handwheel, actuator) at the top of the stem. Rotate fully until a positive mechanical stop is felt in the fully open or closed position. Do not over-torque or force beyond these stops.
2. **Position Indication:** Positively determine the valve status (open/closed) via actuator feedback signals or the position indicator at the top of the stem. Critical pipelines should have permanent status identification tags installed.
3. **Normal Service:** This valve is designed for ON/OFF isolation service in high-pressure conditions. It must NOT be used for flow throttling or regulation. For valves remaining in the fully open position for extended periods, periodic full-stroke cycling is recommended to maintain free movement.
4. **Precautions:** When operating the valve under system pressure, if an abnormal increase in operating torque is detected, stop operation immediately. Investigate potential causes such as excessive system pressure or internal obstruction/scale buildup within the valve.

Maintenance

1. **Periodic Inspection:** Regularly inspect the valve exterior and weld areas for signs of corrosion, cracks, or leakage. Check the stem packing for sealing performance. Document all inspection findings.
2. **Stem Seal Maintenance:** If minor external leakage occurs at the stem packing, attempt to correct it by evenly and moderately tightening the gland nuts. If leakage persists or is severe, the system must be completely depressurized to replace the stem packing with a type suitable for high-pressure service.
3. **Specifics of Internal Maintenance:** As this is a fully welded valve, any internal maintenance requires the valve to be cut out of the pipeline. Internal repairs (e.g., seat replacement, seal reconditioning) must only be performed after the system is shut down, depressurized, and cooled, by qualified personnel under workshop conditions.
4. **Handling Seal Failure:** If the valve develops significant internal leakage that cannot be resolved by external adjustment, the valve must be replaced entirely. For valves equipped with a sealant injection

system, temporary sealing can be attempted by injecting sealant according to the procedure, while planning for a future shutdown and replacement.

5. Long-Term Storage/Out-of-Service: Valves taken out of service for extended periods should be left in either the fully open or fully closed position. Drain any residual fluid and keep the interior dry. Apply anti-corrosion grease to exposed metal surfaces such as the stem. Full pressure testing and functional checks are mandatory before returning the valve to service.

非常感谢您的阅读！

Thank you very much for reading!

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