开维喜阀门集团
Kaiweixi valve group
https://www.kaiweixi.com
E-mail：sales@kaiweixi.com

# Q61F 对焊三片式球阀

# Q61F Butt-Weld Three-Piece Ball Valve

# 使用说明书

## 开维喜阀门集团有限公司

## Kaiweixi Valve Group Co., Ltd.

地址：中国 浙江省温州市瓯北街道三桥工业区林下路 1 号　电话：0577-67038872　传真：0577-67198981　邮编：325100

开维喜阀门集团
Kaiweixi valve group
https://www.kaiweixi.com
E-mail：sales@kaiweixi.com

# Q61F 对焊三片式球阀

型号：Q61F
规格： 1/4″- 4″
公称压力：1.6-6.4Mpa
适用介质：水、食品、饮料及卫生级系统。
适用温度：≤350℃
阀体材质：不锈钢
连接方式：对焊
驱动方式：气动、电动、手动
其他参数：制造标准按 GB/T12237

## Q61F Butt-Weld Three-Piece Ball Valve

Model:Q61F
Specifications: 1/4"- 4"
Nominal Pressure:1.6-6.4Mpa
Applicable Media: Water, food, beverage, and hygienic systems
Applicable Temperature: ≤350℃
Body Material: stainless steel
End Connection :butt welded
Operation:Manual, pneumatic, electric
Other Parameters: Manufacturing standard according to GB/T12237.

## Q61F 对焊三片式球阀概述

Q61F 对焊三片式球阀是一种采用整体锻钢阀体、对焊连接与三段式结构的高性能紧凑型球阀。阀体由 A105 等锻钢锻造，通过三部分高强度螺栓连接构成，两端为对焊接口以与高压管道永久连接。阀门通过旋转阀杆带动球体实现 90 度快速启闭，密封副采用 PTFE 等软质材料或金属硬密封。该设计兼具高压承压能力、零泄漏连接与便捷维护性，专为石油化工、电站、高压管线等空间受限且要求高可靠性的小口径高压苛刻工况设计。

## Q61F Butt-Weld Three-Piece Ball Valve Overview

The Q61F Butt-Weld Three-Piece Ball Valve is a high-performance, compact ball valve featuring an integrally forged steel body, butt-weld ends, and a three-piece bolted construction. The valve body, forged from materials such as A105 steel, consists of three sections securely joined by high-strength bolts, with butt-weld ends for permanent, integral connection to high-pressure pipelines. Operation involves a 90-degree rotation of the valve stem to actuate the ball for rapid opening or closing. The sealing assembly utilizes soft materials like PTFE or optional metal hard seats to ensure tight shutoff.This design combines high-pressure integrity, zero-leakage welded connections, and easy in-line maintenance. It is specifically engineered for demanding high-pressure, small-bore applications in confined spaces requiring high reliability, such as in petrochemical plants, power stations, and high-pressure pipeline systems.

Q61F 对焊三片式球阀产品图
Q61F Butt-Weld Three-Piece Ball Valve Product Image

## Q61F 对焊三片式球阀特点

1.对焊连接高压零泄漏：采用对焊接口与管道永久焊接，彻底杜绝连接处泄漏风险，适用于高压、高温及易燃易爆介质工况。

2.三片式结构维护便捷：阀体采用三段式螺栓连接设计，无需从管道切割拆下即可对中段进行内部检修、清洗或密封件更换，大幅减少维护停机时间与成本。

3.锻钢阀体高压紧凑：整体锻钢锻造，材质致密强度高，结构紧凑，是小口径高压管道的理想选择，承压性能优异。

4.密封可靠适应性强：标准软密封确保双向零泄漏，可选金属硬密封以适应高温或含颗粒介质，应用范围广。

5.长寿命经济性好：锻钢材质耐腐蚀，设计寿命长。对焊连接节省法兰成本，三片式结构降低全生命周期维护费用，综合经济性高。

## Q61F Butt-Weld Three-Piece Ball Valve Features

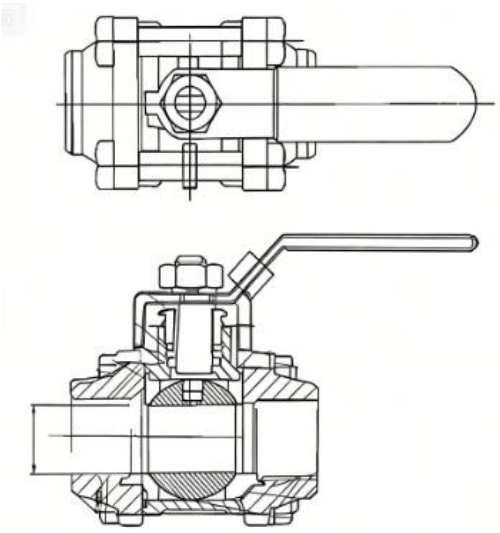
1. Butt-Weld Connection for High-Pressure, Zero Leakage: Featuring permanent butt-weld ends for direct pipeline welding, this design completely eliminates leakage risks at connection points. It is ideally suited for high-pressure, high-temperature, and hazardous fluid (flammable/explosive) service conditions.

2. Three-Piece Structure for Easy Maintenance: The valve body employs a three-piece bolted design. This allows for internal inspection, cleaning, or seal replacement by simply removing the center section, without the need to cut the valve out of the pipeline. This design significantly reduces maintenance downtime and associated costs.

3. Forged Steel Body for High-Pressure & Compact Design: The valve body is forged from solid steel, ensuring high material density, superior strength, and a compact structure. It is an ideal choice for small-bore, high-pressure piping systems, offering excellent pressure-bearing capability.

4. Reliable Sealing & Wide Adaptability: Standard soft seats (e.g., PTFE) ensure bidirectional bubble-tight shutoff. Optional metal hard seats are available to accommodate high-temperature services or media containing particulate matter, providing a wide range of application flexibility.

5. Long Service Life & Cost-Effectiveness: The forged steel construction offers good corrosion resistance and a long design life. The butt-weld connection eliminates flange costs, and the three-piece design reduces lifecycle maintenance expenses, resulting in high overall cost-effectiveness.



Q61F 对焊三片式球阀结构图

Q61F Butt-Weld Three-Piece 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 | 1.6-6.4 | Mpa |
| 强度试验压力 Shell Test | 2.4-9.6 | |
| 密封试验压力 Seal Test | 1.76-7.04 | |
| 适用温度 Suitable Temp. | 350 | ℃ |

开维喜阀门集团
Kaiweixi valve group
https://www.kaiweixi.com
E-mail：sales@kaiweixi.com

## 外形尺寸标准要求

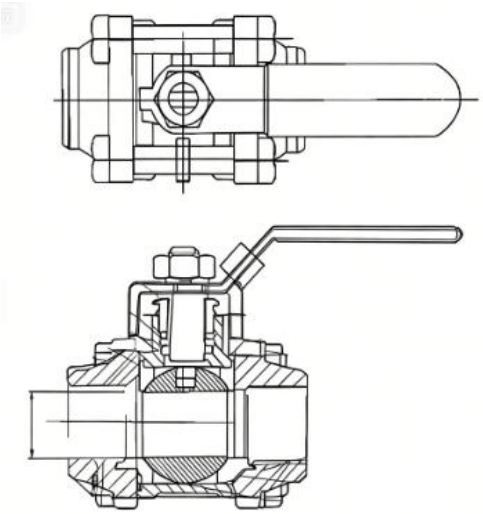
1、阀门的结构长度按 GB/T12221 的标准

2、连接法兰按 GB9113 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.



Q61F 对焊三片式球阀外形图

Q61F Butt-Weld Three-Piece Ball Valve View Drawing

Q61F 对焊三片式球阀外形尺寸表

Q61F Butt-Weld Three-Piece Ball Valve Dimensions Table

| SIZE | 1/4″ | 3/8″ | 1/2″ | 3/4″ | 1″ | 1-1/4″ | 1-1/2″ | 2″ | 2-1/2″ | 3″ | 4″ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| D | 11.6 | 12.7 | 15 | 20 | 25 | 32 | 38 | 50 | 65 | 80 | 100 |
| L | 60 | 60 | 70 | 85 | 95 | 110 | 130 | 150 | 190 | 210 | 268 |
| H | 50 | 50 | 130 | 130 | 165 | 165 | 190 | 190 | 250 | 250 | 280 |
| E | 100 | 100 | 22.7 | 27.5 | 33.5 | 42 | 48.6 | 60.5 | 76.3 | 90 | 106.5 |

Q61F 对焊三片式球阀安装、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、对焊端规格及锻钢材质是否符合高压管道设计要求。清洁阀门内腔及管道坡口，确保无油脂、铁锈等杂质。

2. 对焊连接操作：焊接必须由合格焊工按经评定的焊接工艺规程执行。阀门在焊接时应处于全开位置。需对阀体采取持续有效的冷却措施（如湿布包裹），防止焊接高温传递至内部，损坏密封件。

3. 三片式结构注意事项：安装焊接过程中，严禁拆卸阀门的三段式连接螺栓。需确保阀门在组对和焊接时不受外力扭曲，以防内部密封组件错位。

4. 焊后处理：焊接完成后，应按材料规范要求决定是否进行焊后热处理以消除应力。对焊缝进行外观检查

和无损检测（如 RT 或 UT），确保焊接质量。

5. 系统压力测试：阀门安装焊接后参与管道系统压力试验。试验压力需符合高压设计规范，试验后检查焊缝及阀体各部位有无泄漏。

使用操作

1. 启闭操作：通过手柄或执行器进行 90 度旋转操作。操作应平稳到位，达到全开或全关的机械限位时停止，严禁使用加长杠杆强行操作。

2. 状态确认：通过手柄位置或执行器反馈信号明确判断阀门开关状态。高压管线建议设置永久性状态标识。

3. 常规运行：本阀门设计用于高压工况的全开或全关闭断，不应用于流量调节。长期处于全开状态时，建议定期进行全行程开关操作。

4. 注意事项：在高压系统带压操作时，应缓慢均匀施力。若感觉操作扭矩异常增大，应立即停止并检查系统压力是否超标或阀门内部是否出现卡阻。

维护保养

1. 定期检查：定期检查阀门对焊焊缝区域有无裂纹或泄漏，阀体表面有无异常腐蚀。检查三片式连接螺栓是否紧固。

2. 在线维护（利用三片式结构）：若需检查或更换内部阀座、密封件，可在系统完全泄压后，仅拆卸中段阀体两端的连接螺栓，将中段阀体部分移开进行维护，无需切割管道。

3. 密封系统维护：若阀门出现内漏，可能为阀座密封面磨损。可通过上述方法拆卸中段后，检查并清洗或更换密封组件。

4. 阀杆密封维护：若阀杆处出现外漏，可均匀适度拧紧填料压盖。高压工况下若泄漏持续，需在系统泄压后更换高压专用填料。

5. 长期停用：阀门长期存放应处于全开或全关状态，对阀杆及外露金属表面采取防锈保护。重新启用前需进行全面的压力测试和功能检查。

Q61F Butt-Weld Three-Piece 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 comply with the high-pressure piping design requirements. Thoroughly clean the valve inner cavity and pipe bevels to ensure they are free from oil, grease, rust, and other contaminants.

2. Butt-Weld Connection Procedure: Welding must be performed by a qualified welder in strict accordance with qualified Welding Procedure Specifications (WPS). The valve must be in the fully OPEN position during welding. Implement continuous and effective cooling measures for the valve body (e.g., wrapping with wet rags) to prevent welding heat from transferring internally and damaging the seals.

3. Precautions for Three-Piece Structure: It is strictly forbidden to disassemble the bolts connecting the three pieces of the valve during installation and welding. Ensure the valve is not subjected to external twisting forces during alignment and welding to prevent misalignment of the internal sealing assembly.

4. Post-Weld Treatment: After welding, determine whether Post Weld Heat Treatment (PWHT) is required for stress relief according to the applicable material code specification. Perform visual inspection and Non-Destructive Testing (NDT, e.g., Radiographic Testing - RT or Ultrasonic Testing - UT) on the welds to ensure welding quality.

5. System Pressure Testing: After installation and welding, the valve shall participate in the piping

system pressure test. The test pressure must comply with high-pressure design codes. After testing, inspect all welds and valve body areas for any leakage.

Operation

1. Opening/Closing Operation: Operate the valve through a 90-degree rotation via the handle or actuator. Operation should be smooth and carried to the full open or full closed mechanical stop. Never use an extended lever to force operation.

2. Position Indication: Positively determine the valve status (open/closed) by the handle position or actuator feedback signal. Permanent status identification is recommended for high-pressure pipelines.

3. Normal Service: This valve is designed for ON/OFF isolation service in high-pressure conditions and should 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.

4. Precautions: When operating the valve under high system pressure, apply force slowly and evenly. If abnormal increase in operating torque is felt, stop immediately and check whether system pressure exceeds limits or if internal blockage/jamming has occurred.

Maintenance

1. Periodic Inspection: Regularly inspect the butt-weld area for cracks or leaks, and the valve exterior for abnormal corrosion. Check the three-piece connecting bolts for tightness.

2. In-Line Maintenance (Utilizing Three-Piece Design): If inspection or replacement of internal seats/seals is required, after the system is completely depressurized, only the bolts connecting the center body section at both ends need to be removed. The center body section can then be separated for maintenance without cutting the piping.

3. Sealing System Maintenance: If internal leakage occurs, it may indicate seat seal wear. Using the method above, remove the center section to inspect, clean, or replace the seal assembly.

4. Stem Seal Maintenance: If external leakage occurs at the stem, evenly and moderately tighten the gland/packing follower. Under high-pressure service, if leakage persists, the system must be depressurized to replace the high-pressure rated stem packing.

5. Long-Term Storage/Out-of-Service: Valves intended for long-term storage should be left in either the fully open or fully closed position. Apply rust prevention to the stem and exposed metal surfaces. Before returning to service, perform comprehensive pressure testing and functional checks.

非常感谢您的阅读！

Thank you very much for reading!

开维喜阀门集团有限公司

地址：浙江省温州市永嘉县瓯北街道三桥工业区林下路 1 号

电话：+86 18967796135

网址：https://www.kaiweixi.com

E-mail：yannie@kaiweixi.com

Kaiweixi Valve Group Co., Ltd

Address: No.1 Linxia Road, Sanqiao Industrial Zone, Oubei Street, Yongjia County, Wenzhou City, Zhejiang Province

Phone: +86 18967796135

URL: https://www.kaiweixi.com

E-mail：yannie@kaiweixi.com