开维喜阀门集团
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Q21F 外螺纹带焊接管三片式球阀

Q21F Three-Piece Ball Valve with External Thread and Welding Pipe

使用说明书

开 维 喜 阀 门 集 团 有 限 公 司

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Q21F 外螺纹带焊接管三片式球阀

型号：Q21F-16P/25P/40P/64P　　规格： DN10-DN25
公称压力：PN16,PN25,PN40,PN64　　适用介质：水、食品、饮料及卫生级系统
适用温度：≤425℃　　阀体材质：不锈钢
连接方式：外螺纹　　驱动方式：手动
其他参数：制造标准按 GB/T12237

Q21F Three-Piece Ball Valve with External Thread and Welding Pipe

Model:Q21F-16P/25P/40P/64P　　Specifications:DN10-DN25
Nominal Pressure:PN16,PN25,PN40,PN64　　Applicable Media:Water, food, beverage, and hygienic systems
Applicable Temperature: ≤425℃　　Body Material: stainless steel
End Connection :NPT　　Operation:Manual
Other Parameters: Manufacturing standard according to GB/T12237.

Q21F 外螺纹带焊接管三片式球阀概述

Q21F 外螺纹带焊接管三片式球阀是一种采用三片式分体结构、兼具外螺纹与焊接管混合连接功能的紧凑型球阀。阀体通常采用黄铜或不锈钢材质，一端为标准外螺纹（如 G 螺纹），另一端为焊接管接口，中间阀体与两端通过螺栓连接构成三片式结构。阀门通过旋转阀杆带动球体实现 90 度启闭，阀座采用聚四氟乙烯（PTFE）等软密封材料。该设计实现了螺纹连接与焊接连接的灵活转换，适用于空间受限或需混合连接方式的管路系统，常见于仪器仪表、小型设备、气动系统及改造项目中。

Q21F Three-Piece Ball Valve with External Thread and Welding Pipe Overview

The Q21F Three-Piece Ball Valve with External Thread and Welding Pipe is a compact ball valve featuring a three-piece split-body design that combines both external thread and welded pipe connection functions. The valve body is typically made of brass or stainless steel, with one end designed as a standard external thread (e.g., G-thread) and the other as a welding pipe interface. The middle valve body is connected to both ends via bolts to form the three-piece structure. The valve operates by rotating the stem to drive the ball for 90-degree opening and closing, and the seat employs soft sealing materials such as PTFE (Polytetrafluoroethylene). This design enables flexible adaptation between threaded and welded connections, making it suitable for pipeline systems with space constraints or requiring hybrid connection methods. It is commonly used in instrumentation, small-scale equipment, pneumatic systems, and retrofit projects.

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Q21F 外螺纹带焊接管三片式球阀产品图
Q21F Three-Piece Ball Valve with External Thread and Welding Pipe Product Image

Q21F 外螺纹带焊接管三片式球阀特点

1.混合连接设计灵活：一端外螺纹、一端焊接管的独特结构，可同时满足可拆卸螺纹连接与永久性焊接连接的需求，适应复杂安装场景。

2.三片式结构维护便捷：阀体采用三片式螺栓连接，无需完全拆卸管道即可对中段阀体进行内部清洗、检查或更换密封件，维护简便。

3.紧凑结构节省空间：整体设计紧凑，特别适合空间受限或管路布局复杂的场合，有效减少管道转换接头数量。

4.密封可靠操作轻便：PTFE 阀座确保软密封性能，摩擦系数小，启闭扭矩低，操作手感顺畅。

5.经济实用适应性强：黄铜或不锈钢材质耐腐蚀，适用于水、油、空气等常规介质。混合连接方式减少了安装配件，降低了综合成本。

Q21F Three-Piece Ball Valve with External Thread and Welding Pipe Features

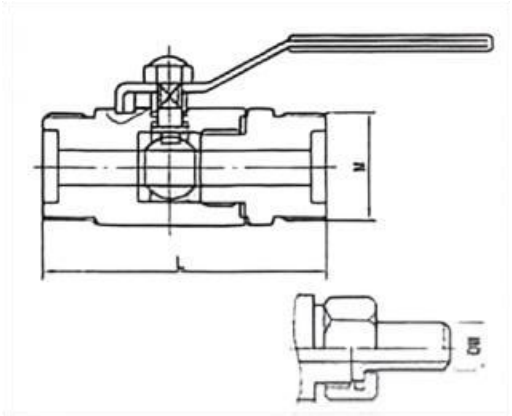
1. Flexible Hybrid Connection Design: The unique structure combines an external thread on one end and a welded pipe connection on the other, simultaneously meeting requirements for detachable threaded connections and permanent welded connections. This adaptability suits complex installation scenarios.

2. Convenient Maintenance with Three-Piece Structure: The valve body features a three-piece bolted design, allowing internal cleaning, inspection, or seal replacement of the central section without completely disassembling the pipeline, simplifying maintenance.

3. Compact Design Saves Space: With an overall compact structure, it is particularly suitable for space-constrained or complex pipeline layouts, effectively reducing the number of pipe adapters.

4. Reliable Sealing and Easy Operation: The PTFE seat ensures soft sealing performance with a low friction coefficient, resulting in minimal opening and closing torque and smooth, effortless operation.

5. Cost-Effective and Versatile: Constructed from corrosion-resistant brass or stainless steel, the valve is suitable for common media such as water, oil, and air. The hybrid connection design reduces the need for additional installation accessories, lowering overall costs.



Q21F 外螺纹带焊接管三片式球阀结构图

Q21F Three-Piece Ball Valve with External Thread and Welding Pipe Structure Diagram

零部件名称材料表

序号NO.	名称 Name	材料 Material
1	阀体 body	不锈钢 Stainless Steel
2	球体 ball	不锈钢 Stainless Steel
3	密封圈 seal gasket	PTFE
4	填料 packing	PTFE
5	阀杆 stem	不锈钢 Stainless Steel

Parts Name Material List

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	1.8-7.04	
适用温度 Suitable Temp.	425	℃

外形尺寸标准要求

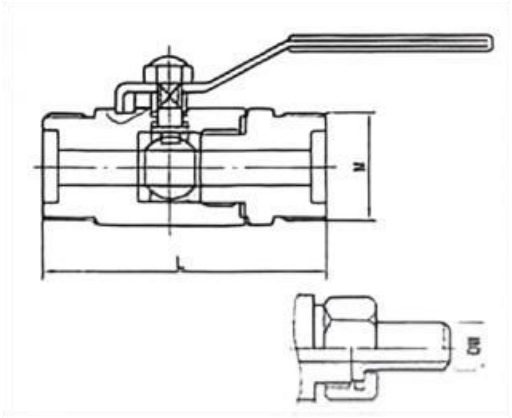
1、阀门的结构长度按 GB/T12221 的标准

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.



Q21F 外螺纹带焊接管三片式球阀外形图

Q21F Three-Piece Ball Valve with External Thread and Welding Pipe View Drawing

Q21F 外螺纹带焊接管三片式球阀外形尺寸表

Q21F Three-Piece Ball Valve with External Thread and Welding Pipe Dimensions Table

产品型号	公称		主要结构尺寸(mm)				
	通径 DN	压力 PN	L	H			M
Q2e1F-1.6-2.5	10	1.6~2.5	85	58			G3/8″
Q2c1F-1.6~2.5	15	1.6~2.5	85	58			G1/2”
Q2c1F-1.6~2.5	20	1.6~2.5	90	62			G3/4″
Q2c1F-1.6~2.5	25	1.6~2.5	100	68			G1″
Q2.1F-4.0-6.4	10	4.0-6.4	85	58			M24×1.5
Q2.1F-4.0-6.4	15	4.0~6.4	85	58			M30×2
Q2.1F-4.0-6.4	20	4.0~6.4	90	62			M36×2
Q2.1F-4.0-6.4	25	4.0~6.4	100	68			M42×2
Q2.1F-4.0-6.4	10	4.0~6.4	85	58			G3/8″
Q2.1F-4.0~6.4	15	4.0~6.4	85	58			G1/2″
Q2.1F-4.0-6.4	20	4.0~6.4	90	62			G3/4”
Q2.1F-4.0-6.4	25	4.0~6.4	100	68			G1″

Q21F 外螺纹带焊接管三片式球阀安装、使用与维护说明

安装指南

1. 安装前准备：核对阀门型号、压力等级及螺纹规格（如 G 螺纹）是否符合管路设计要求。检查阀体、焊接管接头及三片式连接螺栓的完整性，确保无损伤。

2. 螺纹端连接操作：在管道对应外螺纹上缠绕适量聚四氟乙烯生料带或涂抹密封剂。将阀门螺纹端手动旋入管道并初步紧固，确保对正。使用合适工具卡住阀体六角部位均匀拧紧，注意避免单边受力。

3. 焊接管端连接操作：将阀门焊接管端与对应管道对正，由合格焊工按焊接工艺规程进行焊接。焊接时阀门应处于全开位置，并采取阀体冷却措施，防止内部密封件受热损坏。

4. 三片式结构注意事项：安装过程中无需拆卸阀门的三片式连接螺栓。紧固管道连接时应避免对阀体施加扭曲力，防止内部密封组件错位。

5. 安装后测试：手动操作阀门全行程开关数次，检查启闭是否顺畅无卡阻。对螺纹连接处进行密封测试，焊接处进行无损检测，确保无泄漏。

使用操作

1. 启闭操作：通过手柄旋转 90 度实现启闭，手柄与管道轴线平行时为开启，垂直时为关闭。操作应平稳到位，避免强行超程旋转。

2. 状态确认：通过手柄位置可直观判断阀门开关状态。对于不易观察的位置，建议在阀体或手柄上做明显标记。

3. 常规使用：本阀门主要用于管路截断，尤其适用于一端需螺纹连接、另一端需焊接的混合连接工况。不应用于流量调节。

4. 注意事项：在系统带压状态下操作时，应缓慢均匀施力。若操作异常困难，可能内部有杂质或密封件异常，应停止操作并检查。

维护保养

1. 定期检查：定期检查阀门螺纹连接处有无渗漏，焊接接头处有无裂纹或腐蚀。检查阀体表面有无损伤，三片式连接螺栓是否紧固。

2. 内部维护：若阀门出现关闭不严（内漏），可能为阀座密封面磨损或附着杂质。可利用三片式结构，在系统泄压后拆卸中段阀体进行检查、清洗或更换密封件。

3. 阀杆密封维护：若阀杆处出现外漏，可尝试均匀拧紧阀杆压盖螺母。若无效或泄漏严重，需在系统泄压后更换阀杆密封填料。

4. 焊接端维护：焊接接头一般无需特殊维护，但若发现焊缝有泄漏或裂纹，需由专业焊工进行修复并重新检测。

5. 长期存放：阀门长期存放应处于全开或全关状态，对螺纹端及外露金属表面采取防锈措施。定期活动手柄以防卡滞。

Installation, Operation and Maintenance Instructions for Q21F Three-Piece Ball Valve with External Thread and Welding Pipe

Installation Guide

1. Pre-installation Preparation: Verify that the valve model, pressure rating, and thread specifications (e.g., G-thread) comply with pipeline design requirements. Inspect the integrity of the valve body, welded pipe joint, and three-piece connection bolts to ensure no damage.

2. Threaded End Connection Procedure: Wrap an appropriate amount of PTFE thread seal tape or apply

sealant to the corresponding male pipe threads. Hand-tighten the threaded end of the valve onto the pipe for initial alignment, then use suitable tools on the hexagonal flats of the valve body to tighten evenly, avoiding unilateral stress.

3. Welded End Connection Procedure: Align the welded end of the valve with the corresponding pipeline. A qualified welder must perform the welding according to approved welding procedure specifications (WPS). The valve must be in the fully open position during welding, with cooling measures applied to the valve body to prevent thermal damage to internal seals.

4. Considerations for Three-Piece Structure: Do not disassemble the three-piece connection bolts during installation. Avoid applying torsional stress to the valve body when tightening pipeline connections to prevent misalignment of internal sealing components.

5. Post-installation Testing: Manually cycle the valve through its full open/close travel several times to ensure smooth, unhindered operation. Perform a seal test on the threaded connection and non-destructive testing on the welded joint to confirm they are leak-free.

Operation

1. Opening/Closing Operation: Open or close the valve by rotating the handle 90 degrees. The valve is open when the handle is parallel to the pipeline axis and closed when perpendicular. Operate smoothly to the end position without forcing beyond the stops.

2. Position Verification: The valve position (open/closed) can be visually confirmed by the handle orientation. For locations with poor visibility, apply clear markings on the valve body or handle.

3. Normal Use: This valve is primarily designed for on/off service, particularly in applications requiring a hybrid connection (threaded on one end and welded on the other). It must not be used for flow regulation.

4. Precautions: When operating under system pressure, apply force slowly and evenly. If operation becomes abnormally difficult, this may indicate internal contamination or seal issues. Cease operation and investigate immediately.

Maintenance

1. Regular Inspection: Periodically inspect the threaded connection for leaks and the welded joint for cracks or corrosion. Check the valve exterior for damage and ensure the three-piece connection bolts are properly tightened.

2. Internal Maintenance: If the valve fails to seal properly (internal leakage), this may be due to worn seat seals or debris accumulation. Utilizing the three-piece design, depressurize the system, then disassemble the central valve body section for inspection, cleaning, or seal replacement.

3. Stem Seal Maintenance: For minor leakage around the stem, attempt to evenly tighten the stem gland nut. If ineffective or if leakage is severe, replace the stem packing after depressurizing the system.

4. Welded End Maintenance: Welded joints generally require no special maintenance. However, if

leakage or cracks are detected in the weld, professional repair by a qualified welder and subsequent re-inspection are required.

5. Long-term Storage: Valves intended for long-term storage should be left fully open or fully closed. Apply rust protection to the threaded end and exposed metal surfaces. Periodically exercise the handle to prevent seizing.

非常感谢您的阅读！

Thank you very much for reading!

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