

Q44F 三通球阀

Q44F Three-way Ball Valve

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书



开维喜阀门集团有限公司  
Kaiweixi Valve Group Co., Ltd.

## Q44F 三通球阀

型号: Q44F-16C/25C/16P/25P/16R/25R

公称压力: PN16, PN25

适用温度:  $\leq 300^{\circ}\text{C}$

连接方式: 法兰

其他参数: 制造标准按 GB/T 12237

规格: DN15-DN300

适用介质: 水、蒸汽、油品及腐蚀性介质

阀体材质: 碳钢、不锈钢

驱动方式: 手动、电动、气动、涡轮

## Q44F Three-way Ball Valve

Model: Q44F-16C/25C/16P/25P/16R/25R

Specifications: DN15-DN300

Nominal Pressure: PN16, PN25

Applicable Media: Water, steam, oil and corrosive media

Applicable Temperature:  $\leq 300^{\circ}\text{C}$

Body Material: Carbon steel, stainless steel

End Connection : Flange

Operation: Manual, pneumatic, electric

Other Parameters: Manufacturing standard according to GB/T 12237.

### Q44F 三通球阀概述

Q44F 三通球阀是一种采用法兰连接、具有三个通道的流向控制阀门，通过球体绕轴线作 90 度或 180 度旋转，实现介质的分流、合流或流向切换。阀体主要采用铸钢或不锈钢材质，其核心部件为具有 L 型或 T 型通道的球体，配合聚四氟乙烯（PTFE）等弹性阀座实现密封。该阀门设计紧凑，可在无需安装多台阀门或改变管道布局的情况下，灵活改变介质流动路径，广泛应用于石油化工、制药、食品、水处理等行业的管道系统中，满足复杂的工艺流向控制需求。

### Q44F Three-way Ball Valve Overview

Q44F three-way ball valve is a flow control valve with flange connection and three channels. By rotating the ball 90 or 180 degrees around the axis, it can achieve the diversion, merging or flow switching of the medium. The valve body is mainly made of cast steel or stainless steel, and its core component is a sphere with an L-shaped or T-shaped channel, which is sealed with elastic valve seats such as polytetrafluoroethylene (PTFE). This valve has a compact design and can flexibly change the flow path of the medium without the need to install multiple valves or change the pipeline layout. It is widely used in pipeline systems in industries such as petrochemicals, pharmaceuticals, food, and water treatment to meet complex process flow control requirements.



Q44F 三通球阀产品图  
Q44F Three-way Ball Valve Product Image

#### Q44F 三通球阀特点

1. 灵活的多向控制：具备 L 型（直角三通）和 T 型（直通三通）两种流道形式，通过一个阀门即可实现两种介质的分流、两种介质的合流、或介质流向的切换，简化了管路设计。
2. 可靠的密封性能：球体与阀座之间采用软密封结构，密封面通常覆盖 PTFE 等材料，确保在各个流向位置均能实现良好的双向密封，有效防止内漏与串流。
3. 紧凑结构与稳固连接：整体结构设计紧凑，采用标准法兰连接，安装稳固便捷，能有效节省安装空间并承受管道应力。
4. 操作便捷迅速：仅需将手柄旋转 90 度或 180 度即可完成流路切换，操作轻便、直观且迅速，便于实现流程的快速转换。
5. 多功能与高适应性：适用于水、蒸汽、油品、气体及某些腐蚀性介质，能满足多种工业流程中对介质分配、混合或切换的复杂控制要求，用途广泛。

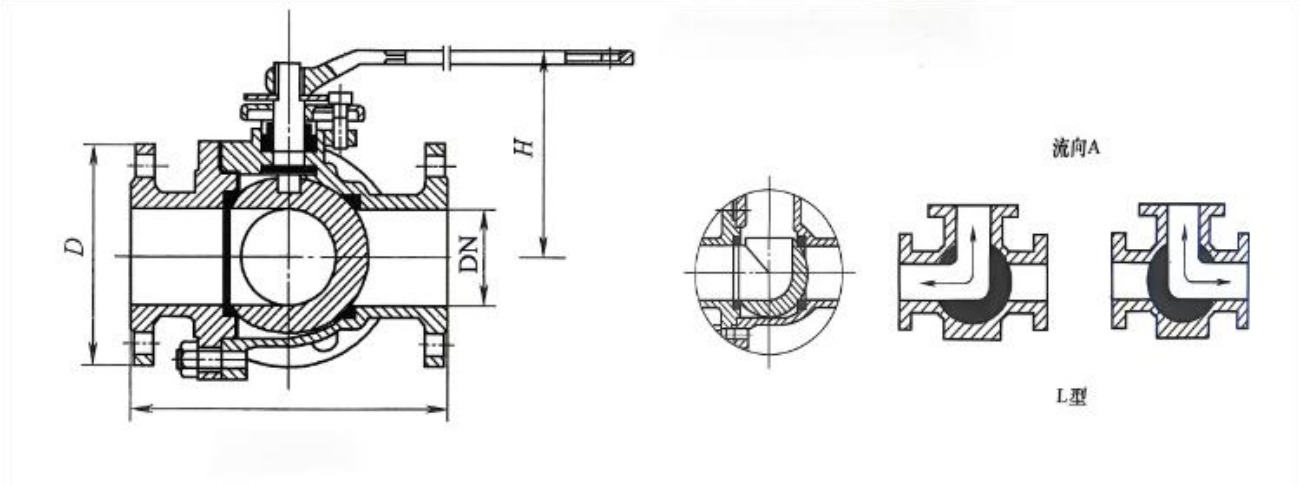
#### Q44F Three-way Ball Valve Features

1. Flexible multi-directional control: It has two flow channel forms, L-shaped (right angle tee) and T-shaped (straight tee), which can achieve the diversion of two media, the merging of two media, or the switching of media flow direction through one valve, simplifying pipeline design.
2. Reliable sealing performance: A soft sealing structure is used between the ball and the valve seat, and the sealing surface is usually covered with materials such as PTFE, ensuring good bidirectional sealing in all flow directions and effectively preventing internal leakage and flow.
3. Compact structure and stable connection: The overall structural design is compact, using standard flange connections for stable and convenient installation, which can effectively save installation space

and withstand pipeline stress.

4. Convenient and fast operation: Simply rotate the handle 90 or 180 degrees to complete the flow path switching. The operation is lightweight, intuitive, and fast, making it easy to achieve rapid process conversion.

5. Multifunctional and highly adaptable: Suitable for water, steam, oil, gas, and certain corrosive media, it can meet the complex control requirements for medium distribution, mixing, or switching in various industrial processes, and has a wide range of applications.



Q44F 三通球阀结构图  
Q44F Three-way 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      | 密封圈 sealing ring | 聚乙烯四氟 PTFE                           |
| 4      | 填料 packing       | 柔性石墨 flexible graphite               |
| 5      | 阀杆 Stem          | 2Cr13、不锈钢 stainless steel            |

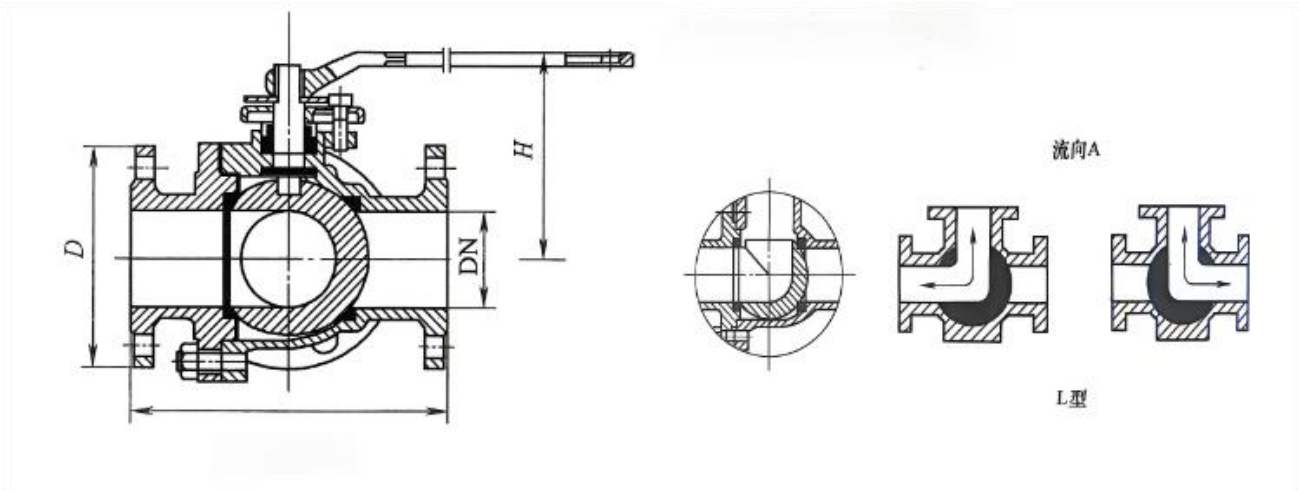
| 性能规范表 Performance Specification |           |     |
|---------------------------------|-----------|-----|
| 公称压力 Nominal Pressure           | 1.6/2.5   | Mpa |
| 强度试验压力 Shell Test               | 2.4/3.75  |     |
| 密封试验压力 Seal Test                | 1.76/2.75 |     |
| 适用温度 Suitable Temp.             | ≤300      | ℃   |

#### 外形尺寸标准要求

- 1、阀门的结构长度按 GB/T 12221 的标准
- 2、连接法兰按 GB/T 9113 的标准

#### Dimensions Standard Requirements

1. The structural length of the valve shall conform to the standard GB/T 12221.
2. The connecting flange shall conform to the standard GB/T 9113.



Q44F 三通球阀外形图  
Q44F Three-way Ball Valve View Drawing

Q44F 三通球阀外形尺寸表

Q44F Three-way Ball Valve Dimensions Table

|    |     |     |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|-----|-----|
| DN | 15  | 20  | 25  | 32  | 40  | 50  | 65  |
| L  | 150 | 160 | 180 | 200 | 220 | 240 | 260 |
| D  | 95  | 105 | 115 | 135 | 145 | 160 | 180 |
| H  | 95  | 110 | 120 | 144 | 152 | 182 | 193 |
| DN | 80  | 100 | 125 | 150 | 200 | 250 | 300 |
| L  | 280 | 320 | 380 | 440 | 550 | 670 | 720 |
| D  | 195 | 215 | 245 | 280 | 335 | 405 | 460 |
| H  | 217 | 245 | 282 | 319 | 380 | 460 | 520 |

### Q44F 三通球阀安装、使用与维护说明书

#### 安装指南

1. 安装前准备：核对阀门型号、通道形式（L 型或 T 型）、压力等级及连接方式（法兰或螺纹）是否符合管路设计要求。彻底清洁阀门内腔及各连接端口，确保无残留异物。
2. 流向确认与端口连接：根据阀门阀体上铸造的流向箭头或“L”、“T”标识，明确各端口功能（如一进两出、两进一出或流向切换）。将管道与对应端口牢固连接，确保介质流向与设计意图一致。
3. 紧固与对中：采用对角线顺序分步均匀拧紧连接螺栓（法兰式）或螺纹接头，确保各接口密封可靠，防止因受力不均导致内漏或阀体变形。阀门宜安装在易于观察和操作的位置。
4. 操作空间预留：安装时必须保证手柄或执行机构有足够的旋转空间，并能清晰观察到指示标志，以准确判断阀门当前流向状态。

5. 系统测试：在系统压力试验前，建议先将阀门切换至一个通路位置。测试时检查各密封部位有无泄漏。

#### 使用操作

1. 启闭与切换操作：通过旋转手柄 90 度或 180 度（视通道形式而定）来实现流路的切换。操作应平稳到位，感受明确的限位感。严禁在未达到限位时强行操作，以防损坏内部密封结构。
2. 状态清晰辨识：操作时需对照阀门上的流向示意图或铭牌说明，明确当前手柄位置所对应的介质流向（如：L 型三通阀通常为 90 度切换，实现流向改道；T 型三通阀可 180 度操作，实现分流、汇流或关闭）。
3. 功能正确应用：根据工艺需求正确选择阀门功能。严禁将阀门用于调节流量，仅作为流向切换或截断使用，以避免密封面因长期节流冲刷而损坏。
4. 带压操作注意事项：在系统带压状态下切换流向时，应缓慢操作并注意系统压力变化，防止因流向突然改变引起系统压力波动或水击。

#### 维护保养

1. 定期检查：定期检查各端口连接处有无外漏，阀杆填料处是否渗漏，并观察阀门外部有无腐蚀或损伤。确认手柄指示标志清晰完好。
2. 内漏处理：若阀门出现内部串漏或关闭不严，首先可尝试在完整行程内反复操作数次，利用介质冲刷可能卡阻在密封面上的杂质。若无效，则需进行拆解检查。
3. 拆卸维修（适用于可拆卸结构）：维修前必须完全隔离系统并泄压。拆卸时需标记阀体与连接盖的相对位置。重点检查球体密封面及阀座是否磨损、划伤，密封圈是否老化，并及时更换损坏件。重新组装时需确保零件对位准确，并均匀紧固螺栓。
4. 流向标识保护：维护过程中应注意保护阀体上的永久性流向标识，若标识磨损应及时补全，以防止日后误操作。
5. 长期停用：若阀门长期停用，应将其置于一个不承受单侧压力的通路位置，排空阀内积液，并对各端口进行封堵保护。定期活动阀杆以防卡死。

## Q44F Three way Ball Valve Installation, Use and Maintenance Manual

### Installation Guide

1. Preparation before installation: Check whether the valve model, channel form (L-shaped or T-shaped), pressure rating, and connection method (flange or thread) meet the pipeline design requirements. Thoroughly clean the valve cavity and all connecting ports to ensure that there are no residual foreign objects.
2. Flow confirmation and port connection: Based on the flow arrows or "L" and "T" markings cast on the valve body, clarify the functions of each port (such as one in two out, two in one out, or flow switching). Connect the pipeline firmly to the corresponding port to ensure that the flow direction of the medium is consistent with the design intent.
3. Tightening and centering: Use diagonal sequence to evenly tighten the connecting bolts (flange type) or threaded joints step by step, ensuring reliable sealing of each interface and preventing internal leakage or valve body deformation caused by uneven stress. Valves should be installed in positions that are easy to

observe and operate.

4. Reserved operating space: During installation, it is necessary to ensure that the handle or actuator has sufficient rotational space and that the indicator signs can be clearly observed to accurately determine the current flow direction of the valve.

5. System testing: Before conducting the system pressure test, it is recommended to switch the valve to a path position. Check for leaks in all sealing parts during testing.

#### Usage and Operation

1. Opening, closing, and switching operations: The flow path can be switched by rotating the handle 90 degrees or 180 degrees (depending on the channel form). The operation should be smooth and precise, with a clear sense of limit. It is strictly prohibited to forcefully operate before reaching the limit to prevent damage to the internal sealing structure.

2. Clear identification of status: During operation, it is necessary to refer to the flow diagram or nameplate instructions on the valve to clarify the flow direction of the medium corresponding to the current handle position (e.g. L-shaped three-way valves usually switch 90 degrees to achieve flow direction diversion; The T-shaped three-way valve can be operated 180 degrees to achieve diversion, convergence, or closure.

3. Correct application of functions: Select valve functions correctly according to process requirements. It is strictly prohibited to use valves for regulating flow, only for switching or cutting off flow direction, to avoid damage to the sealing surface due to long-term throttling erosion.

4. Precautions for pressurized operation: When switching the flow direction in the pressurized state of the system, operate slowly and pay attention to changes in system pressure to prevent pressure fluctuations or water hammer caused by sudden changes in flow direction.

#### maintenance

1. Regular inspection: Regularly check whether there is any leakage at the connection of each port, whether there is leakage at the valve stem packing, and observe whether there is corrosion or damage on the outside of the valve. Confirm that the handle indicator is clear and intact.

2. Internal leakage treatment: If the valve has internal leakage or is not tightly closed, first try repeatedly operating it several times throughout the entire stroke, using the medium to flush out impurities that may be stuck on the sealing surface. If it is ineffective, it needs to be disassembled and inspected.

3. Disassembly and maintenance (applicable to detachable structures): The system must be completely isolated and depressurized before maintenance. When disassembling, mark the relative position of the valve body and the connecting cover. Focus on checking whether the sealing surface and valve seat of the sphere are worn or scratched, whether the sealing ring is aging, and replace damaged parts in a timely manner. When reassembling, it is necessary to ensure accurate alignment of the parts and evenly tighten the bolts.

4. Flow direction identification protection: During maintenance, attention should be paid to protecting the permanent flow direction identification on the valve body. If the identification is worn, it should be promptly completed to prevent future misoperation.

5. Long term shutdown: If the valve is not in use for a long time, it should be placed in a passage position that does not bear unilateral pressure, the accumulated fluid in the valve should be drained, and all ports should be sealed and protected. Regularly move the valve stem to prevent it from getting stuck.

非常感谢您的阅读！

Thank you very much for reading!

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