

Q644F 气动三通球阀

Q644F Pneumatic Three-Way Ball Valve

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

Q644F 气动三通球阀

型号: Q644F-16C/25C/16P/25P/16R/25R	规格: DN15-DN300
公称压力: PN16, PN25	适用介质: 水、蒸汽、油品及腐蚀性介质
适用温度: ≤300℃	阀体材质: 碳钢、不锈钢
连接方式: 法兰	驱动方式: 气动
其他参数: 制造标准按 GB/T 12237	

Q644F Pneumatic Three-Way Ball Valve

Model: Q644F-16C/25C/16P/25P/16R/25R	Specifications: DN15-DN300
Nominal Pressure: PN16, PN25	Applicable Media: water, gas, oil, Corrosive Media
Applicable Temperature: ≤300℃	Body Material: carbon steel, stainless steel
End Connection : flange	Operation: pneumatic
Other Parameters: Manufacturing standard according to GB/T12237.	

Q644F 气动三通球阀概述

Q644F 气动三通球阀是一种由气动执行器驱动、采用法兰连接的三通道流向控制阀门。其内部球体具有 L 型或 T 型流道，通过执行器驱动球体旋转 90 度或 180 度，实现介质的分流、合流或流向切换。阀体通常采用铸钢或不锈钢材质，密封副多为聚四氟乙烯（PTFE）等软质材料。该阀门以压缩空气为动力，接收控制信号即可快速自动动作，适用于需要频繁、远程改变流程的石油化工、制药、食品、水处理及自动化生产线中，实现对液体、气体等介质流向的灵活、可靠控制。

Q644F Pneumatic Three-Way Ball Valve Overview

The Q644F Pneumatic Three-Way Ball Valve is a three-channel flow-direction control valve, driven by a pneumatic actuator and featuring flanged connections. Its internal ball is designed with an L-shaped or T-shaped bore. Through 90-degree or 180-degree rotation of the ball actuated by the pneumatic actuator, it enables the diversion, mixing, or switching of the medium flow path. The valve body is typically made of cast steel or stainless steel, with the sealing pair often consisting of soft materials such as Polytetrafluoroethylene (PTFE). Powered by compressed air, this valve automatically executes rapid actuation upon receiving a control signal. It is suitable for applications requiring frequent, remote flow-path changes, such as in petrochemical, pharmaceutical, food & beverage, water treatment industries, and automated production lines, providing flexible and reliable control over the flow direction of liquids, gases, and other media.



Q644F 气动三通球阀产品图

Q644F Pneumatic Three-Way Ball Valve Product Image

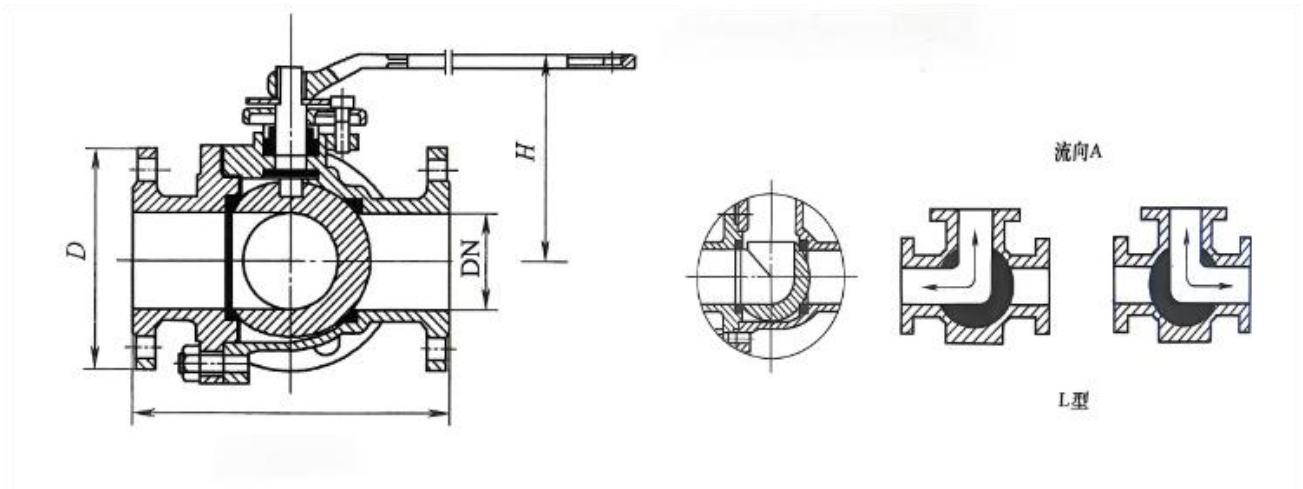
Q644F 气动三通球阀特点

1. 灵活的多流向控制：具备 L 型（直角三通）和 T 型（直通三通）两种流道形式，通过一次旋转即可实现分流、合流或完全切换流向，满足复杂工艺流程需求。
2. 气动驱动快速精准：采用单/双作用气动执行器，动作迅速，响应灵敏，便于接入自动控制系统，实现流程的远程或程序化自动切换。
3. 结构紧凑密封可靠：法兰连接稳固，结构设计紧凑。PTFE 阀座与球体形成软密封，确保在各流位下的可靠密封，有效防止介质内漏与串流。
4. 操作便捷维护简单：执行器通常配备手动操作机构以备应急。阀内流道清晰，若需维护，拆卸相对方便。
5. 适用范围广泛：适用于水、蒸汽、油品、气体及多种腐蚀性介质，在需要对介质进行分配、混合或定期切换的工业场合中表现出高度适应性。

Q644F Pneumatic Three-Way Ball Valve Features

1. Flexible Multi-flow Direction Control: Available in both L-port (90-degree diversion) and T-port (straight-through) configurations. A single rotation enables diversion, mixing, or complete flow path switching, meeting the demands of complex process workflows.
2. Pneumatic Actuation for Fast and Precise Operation: Utilizes single/double-acting pneumatic actuators for rapid and responsive operation, easily integrated into automatic control systems for remote or programmed automatic switching.

3. Compact Structure and Reliable Sealing: Features robust flanged connections and a compact design. The PTFE seats and ball form a soft seal, ensuring reliable sealing in all flow positions and effectively preventing internal leakage and cross-flow of media.
4. Easy Operation and Simple Maintenance: The actuator is typically equipped with a manual override for emergency use. The clear internal flow path facilitates relatively convenient disassembly when maintenance is required.
5. Wide Range of Applications: Suitable for water, steam, oils, gases, and various corrosive media. It demonstrates high adaptability in industrial settings requiring media distribution, mixing, or periodic switching.



Q644F 气动三通球阀结构图

Q644F Pneumatic 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	密封垫 seal gasket	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

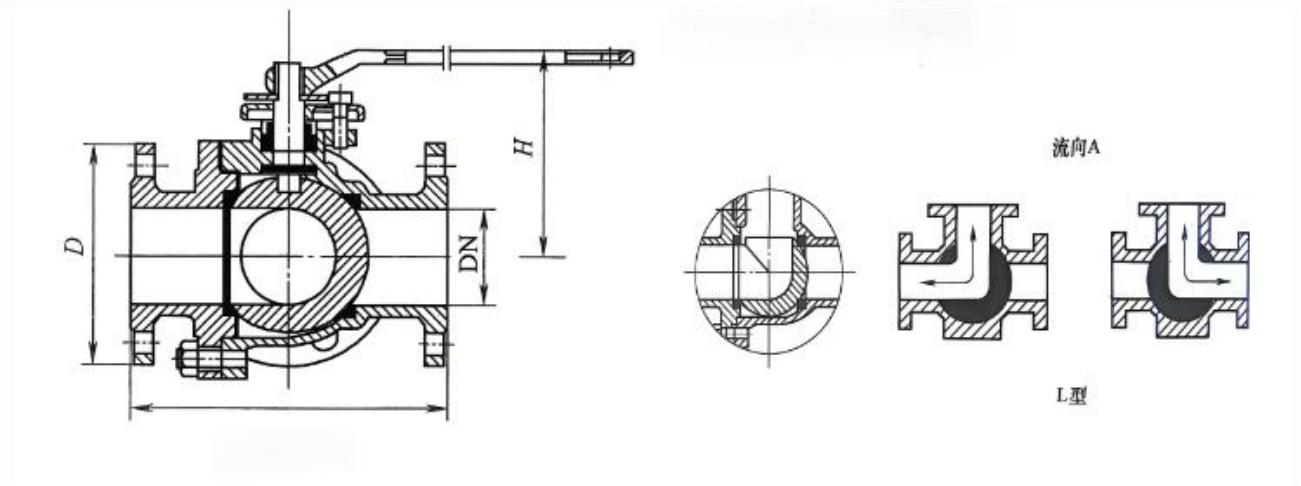
公称压力 Nominal Pressure	1.6/2.5	Mpa
强度试验压力 Shell Test	2.4/3.75	
密封试验压力 Seal Test	1.76/2.75	
适用温度 Suitable Temp.	300	℃

外形尺寸标准要求

- 1、阀门的结构长度按 GB/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.



Q644F 气动三通球阀外形图

Q644F Pneumatic Three-Way Ball Valve View Drawing

Q644F 气动三通球阀外形尺寸表

Q644F Pneumatic 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

Q644F 气动三通球阀安装、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、法兰标准及流向形式（L 型或 T 型）是否符合工艺流程设计要求。清洁阀门内腔及各管道端口，确保无异物。
2. 流向确认与管道连接：仔细对照阀体上的永久性流向示意图，明确各端口功能（如一进两出、两进一出或切换口）。将管道与对应法兰端口牢固连接，确保介质实际流向与设计意图一致。
3. 法兰连接与紧固：使用合适的垫片，将阀门置于管道法兰之间。按对角线顺序分步、均匀地拧紧所有连接螺栓至规定扭矩。

4. 气路与电气连接：连接洁净、稳定的气源管路至执行器接口，建议安装气动三联件。按接线图正确连接电磁阀控制线路及限位开关反馈线路，确保密封与绝缘良好。

5. 操作空间与功能测试：安装时必须保证执行器有充分的旋转空间。接通气源与电源，测试阀门在各个设定位置（如 L 型通路的两种状态或 T 型的分流/合流状态）的切换是否准确、到位。

使用操作

1. 自动切换操作：通过控制系统向电磁阀发送信号，驱动执行器使球体旋转 90 度或 180 度，实现流程的自动切换。操作时应观察执行器动作是否平稳、到位。

2. 手动应急操作：在断电或气源故障时，可切换至执行器上的手动模式进行操作。操作前必须明确目标流向，操作后需恢复自动状态。

3. 状态确认：通过执行器的位置指示器或限位开关的反馈信号，清晰确认阀门当前所处的流向模式，防止误操作导致流程混乱。

4. 常规使用限制：本阀门专为流向切换设计，严禁用作节流阀来调节流量，以免损坏软密封阀座。

维护保养

1. 定期检查：定期检查气源压力是否稳定，三联件需排水、加油。检查各法兰连接处有无外漏，阀杆填料处是否渗漏。

2. 气动系统维护：定期清洁或更换空气过滤器滤芯，检查电磁阀动作是否灵敏，气管及接头有无老化或泄漏。

3. 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切换操作数次，利用介质冲刷可能卡在密封面上的杂质。若无效，则需离线拆解检查。

4. 密封件更换：拆卸阀门后，检查球体密封面及阀座密封圈是否磨损或损伤。更换所有密封件，并确保新密封件材质与介质兼容。

5. 长期停用：计划长期停用时，应将阀门切换至一个对系统无影响的位置，排空阀内积液。切断气源和电源，对气动接口进行保护。重新启用前需全面测试气动与电气功能。

Q644F Pneumatic Three-Way Ball Valve Installation, Operation & Maintenance Instructions

Installation Guide

1. Pre-Installation Preparation: Verify that the valve model, pressure rating, flange standard, and flow pattern (L-port or T-port) comply with the process design requirements. Thoroughly clean the valve's internal cavity and all pipe ends to ensure they are free of debris.

2. Flow Direction Verification and Piping Connection: Carefully check the permanent flow direction diagram on the valve body to identify each port's function (e.g., one inlet/two outlets, two inlets/one outlet, or switching ports). Securely connect the piping to the corresponding flanged ports, ensuring the actual media flow direction matches the intended design.

3. Flange Connection and Tightening: Install a suitable gasket, position the valve between the pipeline

flanges, and tighten all connection bolts gradually and evenly in a crisscross pattern to the specified torque.

4. **Pneumatic and Electrical Connections:** Connect a clean, stable air supply line to the actuator inlet port. Installation of an air filter-regulator-lubricator unit is recommended. Correctly wire the solenoid valve control circuit and limit switch feedback circuit according to the wiring diagram, ensuring proper sealing and insulation.
5. **Operating Space and Functional Testing:** Ensure sufficient clearance for full actuator rotation during installation. Connect the air supply and power, then test the valve to confirm accurate and complete switching between all set positions (e.g., the two states of an L-port or the diverting/mixing states of a T-port).

Operation

1. **Automatic Switching Operation:** Send signals via the control system to the solenoid valve to actuate the pneumatic actuator, rotating the ball 90 or 180 degrees to achieve automated process switching. During operation, observe that the actuator movement is smooth and reaches the intended position.
2. **Manual Emergency Operation:** In case of power or air supply failure, switch the actuator to manual mode for operation. Clearly identify the target flow configuration before manual operation, and restore to automatic mode afterwards.
3. **Position Confirmation:** Clearly determine the current flow configuration of the valve via the actuator's position indicator or limit switch feedback signals to prevent misoperation and process disruption.
4. **Standard Use Limitation:** This valve is designed specifically for flow direction switching. It is strictly prohibited to use it as a throttle valve for flow regulation, as this may damage the soft seat seals.

Maintenance

1. **Regular Inspection:** Periodically check for stable air supply pressure. Drain water and refill oil in the FRL unit as needed. Inspect all flange connections for external leaks and the stem packing for seepage.
2. **Pneumatic System Maintenance:** Regularly clean or replace the air filter element. Check solenoid valves for responsive operation and inspect air tubing and fittings for aging or leaks.
3. **Internal Leakage Handling:** If internal leakage or poor shutoff occurs, first attempt to cycle the valve through its full stroke several times to flush away any debris potentially lodged on the sealing surfaces using the medium. If unsuccessful, offline disassembly and inspection will be required.
4. **Seal Replacement:** After disassembling the valve, inspect the ball sealing surfaces and seat seals for wear or damage. Replace all seals, ensuring new seal materials are compatible with the process media.
5. **Long-Term Storage:** When planning extended out-of-service periods, position the valve in a state that does not affect the system. Drain any residual fluid from the valve. Disconnect and protect the air supply and electrical connections. Conduct a comprehensive test of pneumatic and electrical functionality before

recommissioning.

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