

## Q41F 法兰三片式球阀

## Q41F Flange 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.

## Q41F 法兰三片式球阀

|                       |                |
|-----------------------|----------------|
| 型号: Q41F              | 规格: DN15-DN100 |
| 公称压力: 1.6Mpa-6.4Mpa   | 适用介质: 水、气、油    |
| 适用温度: ≤350℃           | 阀体材质: 不锈钢、铸钢   |
| 连接方式: 法兰              | 驱动方式: 手动       |
| 其他参数: 制造标准按 GB/T12237 |                |

### Q41F Flange Three-Piece Ball Valve

|                                                                  |                                           |
|------------------------------------------------------------------|-------------------------------------------|
| Model: Q41F                                                      | Specifications: DN15-DN100                |
| Nominal Pressure: 1.6Mpa-6.4Mpa                                  | Applicable Media: Water, Gas, Oil         |
| Applicable Temperature: ≤350℃                                    | Body Material: stainless steel、cast steel |
| End Connection :flange                                           | Operation: Manual                         |
| Other Parameters: Manufacturing standard according to GB/T12237. |                                           |

### Q41F 法兰三片式球阀概述

**Q41F 法兰三片式球阀**是一种采用三片式分体结构、法兰连接的通用型工业球阀。阀体通常由两片端法兰与中间阀体通过高强度螺栓连接构成，材质可为铸钢、不锈钢或铸铁。阀门通过旋转阀杆带动球体实现 90 度快速启闭，阀座采用聚四氟乙烯（PTFE）等软密封材料确保可靠密封。该阀门结构稳固，便于拆卸维护，适用于水、蒸汽、油品及非腐蚀性介质，工作压力范围通常为 PN16-PN40，广泛应用于石油化工、电力、给排水及一般工业管道系统中。

### Q41F Flange Three-Piece Ball Valve Overview

The Q41F Flange Three-Piece Ball Valve is a versatile industrial ball valve featuring a three-piece split-body design with flange connections. The valve body typically consists of two end flanges and a central body section joined by high-strength bolts, and is made from materials such as cast steel, stainless steel, or cast iron. The valve operates by rotating the stem to drive the ball for rapid 90-degree opening and closing. The seat employs soft sealing materials like PTFE to ensure reliable sealing. With a robust structure that facilitates easy disassembly and maintenance, this valve is suitable for media such as water, steam, oil, and non-corrosive fluids, with a typical working pressure range of PN16 to PN40. It is widely used in petroleum and chemical industries, power generation, water supply and drainage systems, and general industrial pipelines.



Q41F 法兰三片式球阀产品图

### Q41F Flange Three-Piece Ball Valve Product Image

#### Q41F 法兰三片式球阀特点

- 1.三片式结构维护便捷：阀体采用三片式螺栓连接设计，无需从管道拆下即可对中间阀体进行内部清洗、检查或密封件更换，大幅降低维护难度和停机时间。
- 2.法兰连接稳固可靠：采用标准法兰连接，安装方便，密封性好，适用于中低压工业管道系统。
- 3.软密封性能优良：PTFE 阀座与球体形成软密封，密封可靠，泄漏率低，启闭扭矩小，操作轻便。
- 4.结构坚固适用性广：阀体结构设计稳固，可承受一定的管道应力。适用于多种非腐蚀性工业介质，通用性强。
- 5.经济实用性价比高：制造成本相对较低，维护简便，使用寿命长，是工业管道系统中经济可靠的截断阀门选择。

#### Q41F Flange Three-Piece Ball Valve Features

##### 1. Easy Maintenance with Three-Piece Structure:

The valve body adopts a three-piece bolted design, allowing internal cleaning, inspection, or seal replacement of the middle section without disassembling the valve from the pipeline. This significantly reduces maintenance difficulty and downtime.

##### 2. Stable and Reliable Flange Connection:

Equipped with standard flange connections for easy installation and excellent sealing performance, suitable for medium- to low-pressure industrial pipeline systems.

##### 3. Excellent Soft Sealing Performance:

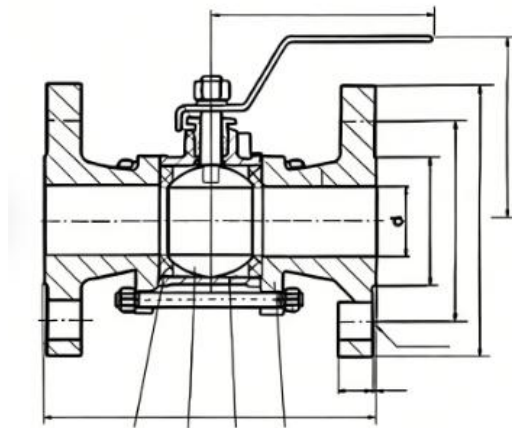
The PTFE seat forms a soft seal with the ball, ensuring reliable sealing with low leakage rates. The low opening/closing torque enables smooth and effortless operation.

#### 4. Robust Structure and Wide Applicability:

The valve body features a sturdy design capable of withstanding certain pipeline stresses. Suitable for various non-corrosive industrial media, offering strong versatility.

#### 5. Cost-Effective and High Value:

Relatively low manufacturing costs, simple maintenance, and long service life make it an economical and reliable shut-off valve choice for industrial pipeline systems.



Q41F 法兰三片式球阀结构图

Q41F Flange 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         | 不锈钢、碳钢 Stainless Steel、carbon steel |
| 2      | 球体 ball         | 不锈钢 Stainless Steel、carbon steel    |
| 3      | 密封圈 seal gasket | PTFE                                |
| 4      | 填料 packing      | PTFE                                |
| 5      | 阀杆 stem         | 不锈钢 Stainless Steel、carbon steel    |

##### 性能规范表 Performance Specification

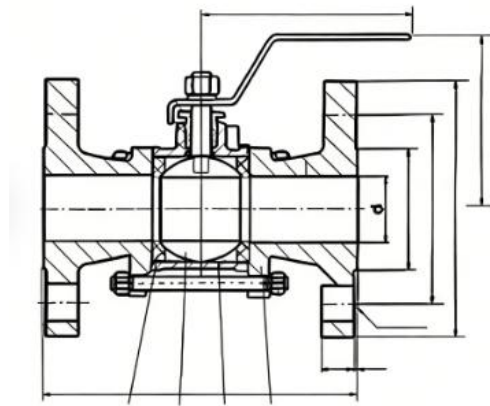
|                       |          |     |
|-----------------------|----------|-----|
| 公称压力 Nominal Pressure | 1.6-6.4  | Mpa |
| 强度试验压力 Shell Test     | 2.4-9.6  |     |
| 密封试验压力 Seal Test      | 1.8-7.04 |     |
| 适用温度 Suitable Temp.   | 425      | ℃   |

## 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.



Q41F 法兰三片式球阀外形图

Q41F Flange Three-Piece Ball Valve View Drawing

## Q41F 法兰三片式球阀外形尺寸表

Q41F Flange Three-Piece Ball Valve Dimensions Table

| SIZE  | 1/2" | 3/4" | 1"   | 1-1/4 | 1-1/2 | 2"   | 2-1/22 | 3"   | 4"   |
|-------|------|------|------|-------|-------|------|--------|------|------|
| d     | 15   | 20   | 25   | 32    | 38    | 50   | 65     | 76   | 100  |
| L     | 130  | 150  | 160  | 180   | 200   | 230  | 290    | 310  | 350  |
| D     | 95   | 105  | 115  | 135   | 145   | 160  | 180    | 195  | 230  |
| D1    | 65   | 75   | 85   | 100   | 110   | 125  | 145    | 160  | 190  |
| D2    | 45   | 55   | 65   | 78    | 85    | 100  | 120    | 135  | 160  |
| b     | 14   | 16   | 16   | 18    | 18    | 20   | 22     | 24   | 24   |
| f     | 2    | 2    | 2    | 3     | 3     | 3    | 3      | 3    | 3    |
| H     | 75   | 95   | 90   | 110   | 130   | 140  | 170    | 180  | 250  |
| w     | 130  | 140  | 140  | 170   | 200   | 220  | 350    | 350  | 550  |
| n-dol | 4-14 | 4-14 | 4-14 | 4-18  | 4-18  | 8-18 | 8-18   | 8-18 | 8-22 |

## Q41F 法兰三片式球阀安装、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、法兰标准及材质是否符合管道设计要求。清洁阀门内腔及管道法兰密封面，确保无杂质。

2. 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，确保阀体流向箭头与介质流向一致。按对角线顺序分步、均匀拧紧所有连接螺栓至规定扭矩，防止单边受力导致阀体变形。

3. 三片式结构注意事项：安装时无需拆卸阀门的三片式连接螺栓。在紧固管道法兰过程中，应确保阀门整体不受扭曲应力，避免内部密封组件错位。

4. 执行机构安装：若配备齿轮箱或执行器，需按制造厂要求安装并确保驱动轴与阀杆对中。安装后检查执行机构行程是否与阀门开关位置匹配。

5. 系统压力测试：阀门安装后参与管道系统压力试验。试验压力需符合设计规范，试验后检查所有连接处有无泄漏。

#### 使用操作

1. 启闭操作：通过手柄、齿轮箱或执行器进行 90 度旋转操作。操作应平稳到位，达到全开或全关位置时停止，避免强行过位操作。

2. 状态确认：通过手柄位置指示器或执行器反馈信号明确判断阀门开关状态。关键管线建议设置状态标识牌。

3. 常规运行：本阀门用于全开或全关闭断，不应用于流量调节。长期全开运行时，建议定期进行全行程开关操作以保持阀座弹性。

4. 注意事项：带压操作时若感觉扭矩异常增大，应立即停止并检查系统压力是否超标或阀门是否有卡阻现象。

#### 维护保养

1. 定期检查：定期检查法兰连接处有无泄漏，阀体表面有无异常腐蚀或损伤。检查所有外部紧固件是否松动。

2. 在线维护（利用三片式结构）：若需检查或更换阀座密封件，可在系统泄压后，仅拆卸中体两端的连接螺栓，将中体部分移开进行维护，无需完全拆卸阀门。

3. 阀座密封维护：若阀门出现内漏，可能是阀座密封面磨损。可通过上述方法拆卸中体后，检查并清洗或更换阀座密封件。

4. 阀杆填料维护：若阀杆处出现外漏，可均匀适度拧紧填料压盖螺母。若无效或泄漏严重，需在系统泄压后更换填料。

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措施。重新启用前需进行压力测试和操作灵活性检查。

#### Installation, Operation and Maintenance Instructions for Q41F Flange Three-Piece Ball Valve Installation Guide

1. Pre-installation Preparation: Verify that the valve model, pressure rating, flange standards, and material comply with pipeline design requirements. Clean the interior of the valve and the sealing surfaces of the pipe flanges to ensure they are free from contaminants.

2. Flange Connection and Tightening: Place the valve between the pipe flanges using a suitable gasket,

ensuring the flow direction arrow on the valve body aligns with the intended media flow. Tighten all bolts evenly and gradually in a diagonal sequence to the specified torque to avoid distortion from unilateral force.

3. Considerations for Three-Piece Design: Do not disassemble the three-piece connection bolts during installation. Ensure the valve is not subjected to torsional stress when tightening the pipe flanges to prevent misalignment of internal sealing components.
4. Actuator Installation: If equipped with a gearbox or actuator, install according to the manufacturer's instructions and ensure proper alignment between the drive shaft and valve stem. After installation, verify that the actuator stroke matches the open/close positions of the valve.
5. System Pressure Testing: After installation, the valve must participate in the pipeline system pressure test. The test pressure must comply with design specifications. Inspect all connections for leaks after testing.

#### Operation

1. Opening/Closing Operation: Operate the valve through a 90-degree rotation using the hand lever, gearbox, or actuator. Operate smoothly and completely to the open or closed position. Avoid forcing the valve beyond its mechanical stops.
2. Position Verification: Confirm the valve's open/closed status clearly via the hand lever position indicator or actuator feedback signal. For critical pipelines, installing position tags is recommended.
3. Normal Operation: This valve is designed for on/off service and should not be used for flow regulation (throttling). For valves in long-term open service, periodic full-stroke cycling is recommended to maintain seat elasticity.
4. Precautions: If abnormal or increased operating torque is felt during operation under pressure, stop immediately. Check whether system pressure exceeds limits or if valve blockage is present.

#### Maintenance

1. Regular Inspection: Periodically inspect flange connections for leaks and the valve exterior for abnormal corrosion or damage. Check all external fasteners for looseness.
2. Inline Maintenance (Utilizing Three-Piece Design): To inspect or replace seat seals, depressurize the system and only remove the bolts connecting the middle section to the end pieces. The center body can then be separated for maintenance without fully removing the valve from the line.
3. Seat Seal Maintenance: If internal leakage occurs, it may indicate worn seat sealing surfaces. Using the method above, remove the center body to inspect, clean, or replace the seat seals.
4. Stem Packing Maintenance: If leakage occurs around the stem, evenly and moderately tighten the gland follower nuts. If ineffective or if leakage is severe, replace the stem packing after depressurizing the system.
5. Long-Term Storage: Valves intended for long-term storage should be left in either the fully open or fully closed position. Apply rust preventive measures to the stem and other exposed metal surfaces. Prior to returning to service, perform a pressure test and check for operational flexibility.

非常感谢您的阅读！

Thank you very much for reading!



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