开维喜阀门集团
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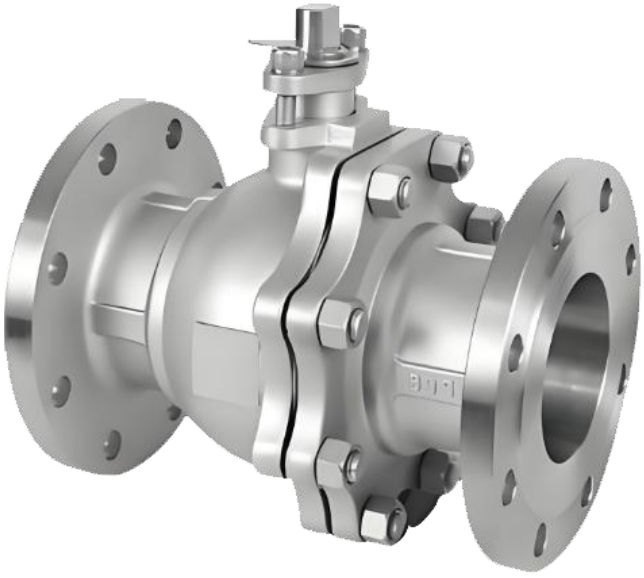
Q41F 美标浮动球阀

Q41F American Standard Floating Ball Valve

使用说明书



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Q41F 美标浮动球阀

型　　号　　：　　Q41F-C1150P/Q41F-C1150/Q41F-C1300P/Q41F-C1150C/Q41F-C1300C/Q41F-C1300C
规格：　DN15-DN500
公称压力：1.6Mpa-4.0Mpa　　适用介质：水、气、油
适用温度：≤550℃　　阀体材质：不锈钢、碳钢
连接方式：法兰　　驱动方式：手动、气动、电动、涡轮
其他参数：制造标准按 API608/API6D

Q41F American Standard Floating Ball Valve

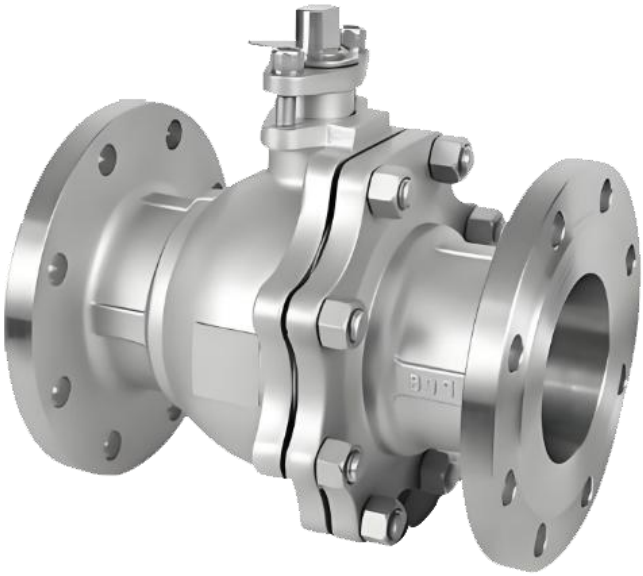
Model:Q41F-Cl150P/Q41F-Cl150/Q41F-Cl300P/Q41F-Cl150C/Q41F-Cl300C/Q41F-Cl300C
Specifications: DN15-DN500
Nominal Pressure:1.6Mpa-4.0Mpa　　Applicable Media: water, gas, oil
Applicable Temperature: ≤550℃　　Body Material: cast steel, stainless steel
End Connection :flange　　Operation:Manual, pneumatic, electric,gear
Other Parameters: Manufacturing standard according to API608/API6D.

Q41F 美标浮动球阀概述

Q41F 美标浮动球阀是一种严格遵循美国 API、ASME 等标准设计制造的法兰连接浮动球阀，采用标准美标法兰接口（RF/RTJ 等）。阀体通常采用 WCB 铸钢、CF8 不锈钢等材料，其球体在介质压力作用下可产生微量浮动位移，紧压出口端阀座实现自紧密封。阀门通过阀杆带动球体作 90 度旋转实现启闭，密封副常采用 PTFE 等软质材料或金属硬密封。该阀门符合 Class 150～Class 600 等压力等级要求，适用于石油、化工、天然气、电力等行业的各类管路系统，是美标体系中实现可靠截断的通用型设备。

Q41F American Standard Floating Ball Valve Overview

The Q41F American Standard Floating Ball Valve is a flanged floating ball valve strictly designed and manufactured in accordance with American standards such as API and ASME, featuring standard American flange connections (e.g., RF/RTJ). The valve body is typically made of materials like WCB cast steel or CF8 stainless steel. The ball within the valve floats slightly under medium pressure, pressing tightly against the outlet seat to achieve a self-sealing effect. The valve is operated by rotating the stem 90 degrees to open or close, with sealing pairs commonly made of soft materials like PTFE or hard metal seals. This valve meets pressure class requirements ranging from Class 150 to Class 600 and is suitable for various pipeline systems in industries such as petroleum, chemical, natural gas, and power. It serves as a versatile and reliable shut-off device within the American standard system.



Q41F 美标浮动球阀产品图
Q41F American Standard Floating Ball Valve Product Image

Q41F 美标浮动球阀特点

1.严格美标体系兼容：设计与制造符合 API 6D、ASME B16.34 等标准，法兰接口与美标管道完全匹配，确保互换性与系统兼容性。

2.浮动球自紧密封结构：利用介质压力推动球体与阀座贴合，实现可靠密封，结构简单紧凑，密封性能优良。

3.操作轻便启闭迅速：90 度旋转即可实现全开或全关，流阻小，操作扭矩低，可配置手动、齿轮箱或气动/电动执行机构。

4.防火与安全设计：通常符合 API 607 防火标准，软密封失效时可形成金属辅助密封。阀杆采用防吹出设计，安全性高。

5.维护简便应用广泛：结构成熟可靠，维护方便。适用于水、蒸汽、油品、天然气及多种腐蚀性介质，是石油化工、能源等领域的常用阀门。

Q41F American Standard Floating Ball Valves Features

1. Strict Compliance with American Standards: Designed and manufactured in accordance with API 6D, ASME B16.34, and other standards. The flange interfaces are fully compatible with American standard piping systems, ensuring interchangeability and system compatibility.

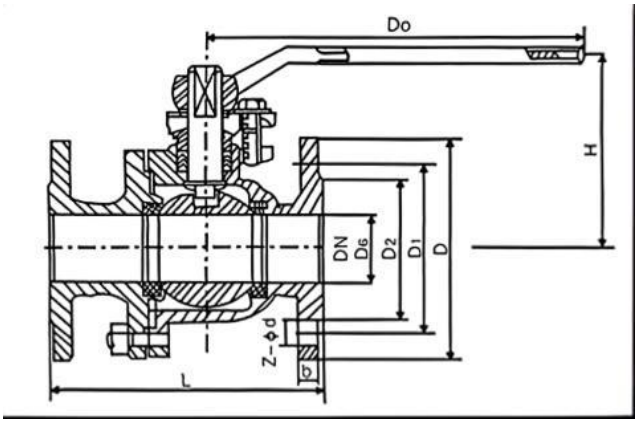
2. Floating Ball Self-Tightening Seal Structure: Utilizes medium pressure to push the ball against the seat, achieving reliable sealing. The structure is simple, compact, and offers excellent sealing performance.

3. Light Operation and Quick Opening/Closing: A 90-degree rotation achieves full opening or closing,

featuring low flow resistance and minimal operating torque. Can be equipped with manual, gearbox, or pneumatic/electric actuators.

4. Fire-Safe and Safety Design: Typically compliant with API 607 fire safety standards, providing a metal auxiliary seal in case of soft seal failure. The stem features an anti-blowout design for high safety.

5. Easy Maintenance and Wide Applicability: Features a mature and reliable structure with convenient maintenance. Suitable for water, steam, oil, natural gas, and various corrosive media. Commonly used in industries such as petrochemicals and energy.



Q41F 美标浮动球阀结构图

Q41F American Standard Floating 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	ZG1Cr18Ni9Ti、CF8、CF3 、CF8M、ZG1Cr18Ni12Mo2Ti
2	球体 ball	1Cr18Ni9Ti、1Cr18Ni12Mo2Ti、304、304L、316
3	密封垫 seal gasket	不锈钢/增强柔性石墨 Stainless Steel / Reinforced Flexible Graphite、PTFE
4	填料 packing	不锈钢/增强柔性石墨 Stainless Steel / Reinforced Flexible Graphite、PTFE
5	阀杆 stem	1Cr18Ni9Ti、1Cr18Ni12Mo2Ti、304、304L、316

性能规范表 Performance Specification		
公称压力 Nominal Pressure	1.6-4.0	Mpa
强度试验压力 Shell Test	2.4-6.0	
密封试验压力 Seal Test	1.76-4.4	
适用温度 Suitable Temp.	550	℃

外形尺寸标准要求

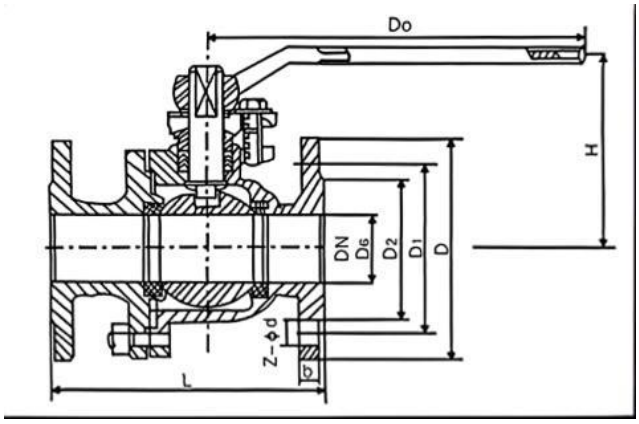
1、阀门的结构长度按 ASME B16.10 的标准

2、连接法兰按 ASME B16.50 的标准

Dimensions Standard Requirements

1. The structural length of the valve shall conform to the standard ASME B16.10.

2. The connecting flange shall conform to the standard ASME B16.50.



Q41F 美标浮动球阀外形图

Q41F American Standard Floating Ball Valve View Drawing

Q41F 美标浮动球阀外形尺寸表

Q41F American Standard Floating Ball Valve Dimensions Table

1.6MPa	DN	L	D	D1	D2	b	n-Φd	H	D0
凸面法兰 RF Q41F Q41PPL 16C 16P 16R	15	130	95	65	45	14	4-14	78	140
	20	140	105	75	55	14	4-14	84	160
	25	150	115	85	65	14	4-14	95	180
	32	165	135	100	78	16	4-18	150	250
	40	180	145	110	85	16	4-18	150	300
	50	200	160	125	100	18	4-18	170	350
	65	220	180	145	120	20	4-18	195	350
	80	250	195	160	135	20	8-18	215	400
	100	280	215	180	155	20	8-18	250	500
	125	320	245	210	185	22	8-18	265	600
	150	360	280	240	210	24	8-23	270	800
	200	400	335	295	265	26	12-23	330	1200
2.5MPa	15	130	95	65	45	16	4-14	103	140
凸面法兰 RF	20	140	105	75	55	16	4-14	112	160
	25	150	115	85	65	16	4-14	123	180

Q41F Q41PPL 25 25P 25R	32	165	135	100	78	18	4-18	150	250
	40	180	145	110	85	18	4-18	156	300
	50	200	160	125	100	20	8-18	172	350
	65	220	180	145	120	22	8-18	197	350
	80	250	195	160	135	22	8-23	222	400
	100	280	230	190	160	24	8-23	253	500
	125	320	270	220	188	28	8-25	275	600
	150	360	300	250	218	30	8-25	286	800
	200	400	360	310	278	34	12-25	340	1200

4.0MPa	DN	L	D	D1	D2	D6	b	n-Φd	H	D0
凹凸法兰 MFM Q41F Q41PPL 40 40P 40R	15	130	95	65	45	40	16	4-14	103	140
	20	140	105	75	55	51	16	4-14	112	160
	25	150	115	85	65	58	16	4-14	123	160
	32	180	135	100	78	66	18	4-18	150	250
	40	200	145	110	85	76	18	4-18	156	250
	50	220	160	125	100	88	20	4-18	172	350
	65	250	180	145	120	110	22	8-18	197	350
	80	280	195	160	135	121	22	8-18	222	450
	100	320	230	190	160	150	24	8-23	253	450
	125	400	270	220	188	176	28	8-25	275	600
	150	400	300	250	218	204	30	8-25	286	800
	200	550	375	320	282	260	38	12-30	340	1200
6.4MPa	15	165	105	75	55	40	18	4-14	105	140
凹凸法兰 MFM Q41F Q41PPL 64 64P 64R	20	190	125	90	68	51	20	4-18	125	160
	25	216	135	100	78	58	22	4-18	135	250
	32	229	150	110	82	66	24	4-23	150	350
	40	241	165	125	95	76	24	4-23	165	350
	50	292	175	135	105	88	26	4-23	175	450
	65	330	200	160	130	110	28	8-23	200	450

	80	356	210	170	140	121	30	8-23	210	600
	100	432	250	200	168	150	32	8-25	250	700
	125	508	295	240	202	176	36	8-30	295	1100
	150	559	340	280	240	204	38	8-34	340	1500

Q41F 美标浮动球阀安装、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（Class）、法兰标准（RF/RTJ）及阀体材质是否符合 API/ASME 标准和管路设计要求。清洁阀门内腔及管道法兰密封面，确保无焊渣、铁锈等杂质。

2. 法兰连接与紧固：使用符合 ASME 标准的垫片及合金钢螺栓。将阀门置于管道法兰之间，确保阀体流向箭头与介质流动方向一致。按十字对称顺序分步均匀拧紧所有螺栓至规定扭矩。

3. 安装方向：阀门可安装于水平或垂直管道，推荐阀杆垂直向上。若垂直安装需确保执行机构固定可靠。

4. 焊接端连接（如适用）：若为对焊端阀门，需由合格焊工按焊接工艺规程施焊。焊接时阀门应处于全开位置，并采取阀体冷却措施。

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 ASME B16.34 等规范，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。检查外部紧固件是否松动。

2. 阀座密封维护：若阀门出现轻微内漏，可通过阀座注脂阀（如配备）注入适量密封脂。若内漏持续，需安排离线检修。

3. 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。

4. 内部检修：需拆卸阀门内部时，应先确认系统已完全泄压。检查球体与阀座密封面磨损情况，必要时更换密封件。浮动球结构应注意球体与阀杆连接状态。

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 Manual for Q41F American Standard Floating Ball Valve

Installation Guide

1. Pre-Installation Preparation: Verify that the valve model, pressure class (Class), flange standard (RF/RTJ), and body material comply with API/ASME standards and the pipeline design requirements. Clean the valve interior and the sealing surfaces of the pipeline flanges to ensure they are free from welding slag, rust, and other debris.

2. Flange Connection and Tightening: Use gaskets and alloy steel bolts that conform to ASME standards. Place the valve between the pipeline flanges, ensuring the flow direction arrow on the valve body aligns with the intended media flow. Tighten all bolts evenly in a crisscross pattern and in stages to the specified torque.

3. Installation Orientation: The valve can be installed in horizontal or vertical pipelines. It is recommended to install with the stem vertical and facing upwards. For vertical installations, ensure the actuator is securely supported.

4. Butt-Weld End Connection (If Applicable): For valves with butt-weld ends, welding must be performed by a qualified welder following approved welding procedure specifications (WPS). The valve must be in the fully open position during welding, and measures should be taken to prevent overheating of the valve body.

5. System Pressure Testing: After installation, the valve must participate in the pipeline system pressure test. The test pressure must comply with specifications such as ASME B16.34. After testing, inspect all connections for any leaks.

Operation

1. Opening/Closing Operation: Operate the valve through a 90-degree rotation using the hand lever, gearbox, or actuator. The operation should be smooth and complete. Stop once the valve reaches the fully open or fully closed position. Avoid applying excessive force to move beyond these positions.

2. Position Verification: Confirm the valve's open/closed status clearly via the hand lever position indicator or the actuator's feedback signal. For critical pipelines, it is recommended to install status tags.

3. Normal Operation: This valve is designed for on/off (block) service and should not be used for throttling (flow regulation). For valves in long-term open service, periodic full-stroke cycling is recommended to maintain seat flexibility.

4. Precautions: If abnormal or increased operating torque is felt during operation under pressure, stop immediately. Check whether system pressure exceeds limits or if there is valve blockage.

Maintenance

1. Regular Inspection: Periodically inspect flange connections for leaks and the valve exterior for abnormal corrosion or damage. Check for loose external fasteners.

2. Seat Seal Maintenance: If minor internal leakage occurs, inject an appropriate amount of sealant (if equipped with seat grease fittings). If leakage persists, offline inspection and repair are required.

3. Stem Packing Maintenance: If leakage occurs around the stem, evenly and moderately tighten the gland follower nuts. If this is ineffective or leakage is severe, the packing must be replaced after system depressurization.

4. Internal Inspection/Repair: Before disassembling the valve interior, ensure the system is fully

depressurized. Inspect the sealing surfaces of the ball and seats for wear and replace sealing components as necessary. For floating ball designs, pay attention to the connection between the ball and the stem.

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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