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D671F 气动对夹蝶阀系列

D671F Pneumatic Wafer Butterfly Valve Series

使用说明书

Operating Instruction

开维喜阀门集团有限公司

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D671F 气动对夹蝶阀

D671F Pneumatic Wafer Butterfly Valve

型号： D671F　　规格：DN50-DN1200
公称压力：PN10~PN16　　适用介质：水、油品及各种酸碱介质
适用温度：≤ 150 ℃　　阀体材质：铸铁、球墨铸铁、铸钢、不锈钢+衬胶、衬氟
连接方式：对夹　　驱动方式：气动

Model: D671F
Size: DN50-DN1200
Nominal Pressure: PN10-PN16
Applicable Medium: Water, oil, and various acid and alkaline media
Applicable Temperature: ≤150° C
Body Material: Cast iron, ductile iron, cast steel, stainless steel + rubber lining, fluorine lining
Connection Type: Wafer
Actuation Type: Pneumatic

概述

D671F 气动对夹蝶阀是一种采用对夹式连接，以压缩空气为动力驱动蝶板作 90° 旋转，实现管路介质快速启闭或调节的自动化阀门。该阀门通过气动执行机构将气压转换为旋转力矩，直接驱动阀杆与蝶板在阀体内转动。蝶板密封面通常包覆有氟橡胶（FKM）、三元乙丙橡胶（EPDM）等高性能弹性材料，与阀体内部结构形成过盈配合的软密封结构。对夹式设计使阀体结构紧凑，可直接夹装在两端管道法兰之间，安装简便快捷。气动对夹蝶阀具有启闭迅速、操作简便、可实现远程和自动化控制等特点，广泛应用于食品、医药、水处理、化工等行业的流体控制系统中。

Overview

The D671F Pneumatic Wafer Butterfly Valve is an automated valve designed for rapid on/off operation or flow regulation of pipeline media. It utilizes a wafer-type connection and is powered by compressed air to actuate a 90-degree rotation of the disc. The valve operates by converting pneumatic pressure from its actuator into rotary torque, which directly drives the valve stem and disc assembly within the valve body. The sealing surface of the disc is typically lined with high-performance elastomeric materials such as Fluorocarbon Rubber (FKM) or Ethylene Propylene Diene Monomer (EPDM), forming an interference-fit soft seal against the internal valve seat. The wafer design features a compact body that can be directly clamped between two pipeline flanges, ensuring simple and quick installation. Known for its quick response, ease of operation, and compatibility with remote and automated control systems, this pneumatic wafer butterfly valve is widely used in fluid control applications across industries such as food and beverage, pharmaceuticals, water treatment, and chemical processing.

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D671F 气动对夹蝶阀产品图

D671F Pneumatic Wafer Butterfly Valve Product Illustration

特点

1、气动快速执行：配备双作用或单作用气动执行器，利用压缩空气驱动阀门快速启闭（最快可在 0.5-2 秒内完成），实现远程自动控制，适用于需要频繁操作的工况。

2、对夹紧凑结构：采用对夹式连接设计，结构长度短、重量轻，安装空间要求小，可紧密夹装于管道法兰之间，便于在紧凑环境中使用。

3、软密封零泄漏：蝶板密封圈采用高性能氟橡胶、三元乙丙橡胶等材质，具有良好的弹性和耐介质性能，能实现双向密封，泄漏等级可达 VI 级（零泄漏）。

4、低流阻设计：阀门全开时蝶板与介质流向平行，流阻系数极低，能有效降低管道系统压力损失，节约能源。

5、多种材质选择：阀体可采用球墨铸铁、不锈钢、碳钢等材质，内腔及密封材料可根据介质特性选择，具备良好的耐腐蚀性和适应性。

6、维护便捷：结构简单，拆卸方便，密封圈更换无需特殊工具，可实现在线维修，降低维护成本和时间。

7、智能控制兼容：可配备电磁阀、定位器、限位开关等附件，与 PLC、DCS 等自动化系统无缝集成，实现精确的开关控制或比例调节。

8、使用寿命长：密封面采用耐磨弹性材料，结合精密的气动执行机构，保证阀门在频繁启闭工况下仍具有长久的使用寿命。

Features

1、Rapid Pneumatic Actuation: Equipped with double-acting or single-acting pneumatic actuators, the valve utilizes compressed air for rapid opening and closing (fastest operation within 0.5-2 seconds), enabling remote automatic control. It is ideal for applications requiring frequent operation.

2、Compact Wafer Design: The wafer-type connection provides a short face-to-face length and lightweight construction, minimizing installation space requirements. The valve is easily clamped between pipeline flanges, making it suitable for confined environments.

3、Soft Seal, Zero Leakage: The disc seal ring is made of high-performance materials such as Fluorocarbon Rubber (FKM) or Ethylene Propylene Diene Monomer (EPDM), offering excellent elasticity and media resistance. It ensures bidirectional sealing, achieving a leakage class up to VI (zero leakage).

4、Low Flow Resistance Design: When fully open, the disc aligns parallel with the media flow

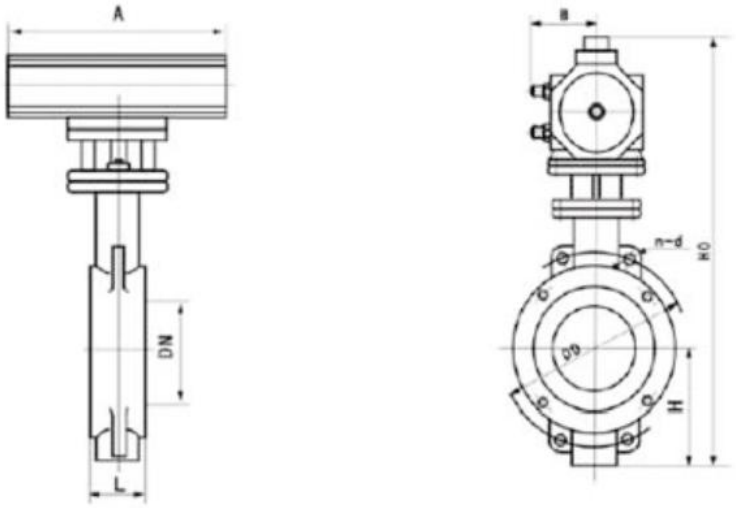
direction, resulting in minimal flow resistance. This effectively reduces pressure loss within the pipeline system and conserves energy.

5、Multiple Material Options: The valve body is available in materials including ductile iron, stainless steel, and carbon steel. Internal components and sealing materials can be selected based on media characteristics, ensuring excellent corrosion resistance and adaptability.

6、Easy Maintenance: Its simple design allows for easy disassembly. The seal rings can be replaced without specialized tools, enabling online maintenance and reducing downtime and costs.

7、Compatibility with Smart Control: The valve can be fitted with accessories such as solenoid valves, positioners, and limit switches for seamless integration with automation systems like PLC and DCS, enabling precise on/off control or proportional regulation.

8、Long Service Life: The sealing surfaces employ wear-resistant elastomeric materials, combined with precision-engineered pneumatic actuators, ensuring extended service life even under conditions of frequent cycling.



D671F 气动对夹蝶阀结构图

Structural Diagram of D671F Pneumatic Wafer Butterfly Valve

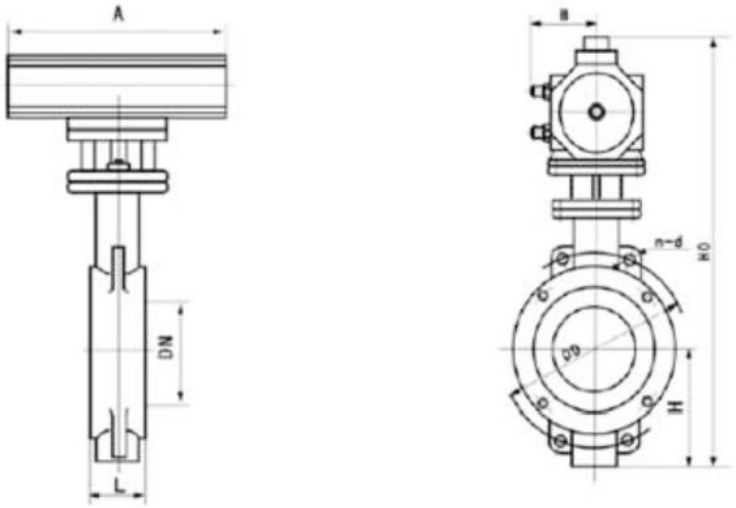
零部件名称材料表 Component Name & Material List

名称 Name	材料 Materials
气动执行器 Pneumatic Actuator	铝合金（缸体）+ 碳钢（附件） Aluminum Alloy (Cylinder Body) + Carbon Steel (Accessories)
阀杆 Valve Stem	不锈钢（316，耐腐蚀型） Stainless Steel (Grade 316, Corrosion-Resistant)
蝶板 Disc	碳钢（基底）+ 聚四氟乙烯（PTFE 衬层） Carbon Steel (Base) + Polytetrafluoroethylene (PTFE Lining)
密封件 Sealing Element	聚四氟乙烯（PTFE）或氟橡胶 Polytetrafluoroethylene (PTFE) or Fluoroelastomer

阀座 Valve Seat	聚四氟乙烯（PTFE） Polytetrafluoroethylene (PTFE)
螺栓 / 螺母 Bolt / Nut	不锈钢（316，耐腐蚀型） Stainless Steel (Grade 316, Corrosion-Resistant)
阀体 Valve Body	铸铁、球墨铸铁、铸钢、不锈钢+衬胶、衬氟 Cast iron, ductile iron, cast steel, stainless steel + rubber lining, fluorine lining

性能规范表 Performance Specification Table

性能规范表 Performance Specification Table		
公称压力 Nominal Pressure	1.0/1.6	MPa
强度试验压力 Strength Test Pressure	1.5/2.4	
密封试验压力 Sealing Test Pressure	1.1/1.76	
适用温度 Operating Temperature	≤150	℃



D671F 气动对夹蝶阀外形尺寸图

D671F Pneumatic Wafer Butterfly Valve Overall Dimension Drawing

D671F 气动对夹蝶阀外形尺寸表
D671F Pneumatic Wafer Butterfly Valve overall dimension table

DN	主要外形尺寸 Principal Overall Dimensions					主要连接尺寸 Principal Connection Dimensions					
	L	H	HO	A	B	0.6MPa		1.0MPa		1.6MPa	
						D0	n–d	D0	n–d	D0	n–d
50	43	63	315	180	65	110	4–14	125	4–18	125	4–18
65	46	70	330	180	65	130	4–14	145	4–18	145	4–18
80	46	83	390	245	72	150	4–18	160	8–18	160	8–18
100	52	105	431	240	72	170	4–18	180	8–18	180	8–18
125	56	115	455	240	72	200	8–18	210	8–18	210	8–18
150	56	137	626	350	93	225	8–18	240	8–22	240	8–22
200	60	164	720	350	93	280	8–18	295	8–22	295	12–22
250	68	206	800	550	350	335	12–18	350	12–22	355	12–26
300	78	230	860	600	350	395	12–22	400	12–22	410	12–26
350	78	248	883	600	350	445	12–22	460	16–22	470	16–26
400	102	289	972	600	350	495	16–22	515	16–26	525	16–30
450	114	320	1043	750	380	550	16–22	565	20–26	585	20–30
500	127	343	1098	750	380	600	20–22	620	20–26	650	20–33
600	154	413	1236	750	380	705	20–26	725	20–30	770	20–36
700	165	478	1431	750	380	810	24–26	840	24–30	840	24–36
800	190	525	1488	750	380	920	24–30	950	24–33	950	24–39
900	203	620	1615	1250	380	1020	24–30	1050	28–33	1050	28–39
1000	216	725	1765	1500	580	1120	28–30	1160	28–36	1170	28–42
1200	254	780	1976	1500	580	1340	32–33	1380	32–39	1390	32–48

安装与维护须知

一、 安装说明

安装前检查：

核对验证： 仔细核对阀门铭牌上的型号（D671F）、公称通径（DN）、压力等级（PN）及阀体材质，确认其与管道设计要求一致。核对阀体上的流向箭头，确保与介质流向匹配。

外观与内部检查：　检查阀门及气动执行器外观，确认无运输损伤。清除阀腔内及氟塑料密封面（阀座/蝶板边缘）上的所有防护涂层、油脂及杂物，避免损伤软密封面。
手动功能测试：将执行机构上的手动操作装置切换至“手动”模式，手动操作阀门，确认蝶板启闭全程灵活、无任何卡阻感。测试后，将蝶板置于微开状态（约 10%-15%开度），以方便安装对中。操作完毕切换回“自动”模式。

安装位置与方向：

阀门可安装于水平或垂直管道上。安装位置应充分考虑空间，便于气路连接、附件调试、手动操作及日常观察。
流向确认：必须确保阀体上标示的箭头方向与管道中介质的预期流向一致。对夹式阀门通常为单向密封，反向安装可能导致密封失效。

管道对接要求：

本阀门为对夹式连接，需通过一组长螺栓、螺母夹持在两片管道法兰之间。
严禁使用阀门螺栓来强行纠正管道法兰之间的错口、不同心或间隙。安装前，应首先确保两片管道法兰端面平行对正，且内孔与管道中心线对齐，法兰间距应与阀门厚度匹配。

安装步骤：

将阀门置于两片法兰之间，穿入少量螺栓（如 2-4 颗）进行初步定位。
通过手动机构将蝶板旋转至完全开启位置（与管道平行），以最大限度地减少阀门对管道内径的阻挡，方便后续对中和避免损坏密封圈。
均匀、对称、分步拧紧：使用合适的扳手，严格按照对角、交叉的顺序，分 2-3 轮逐步均匀地拧紧所有对夹螺栓至规定扭矩值。此步骤至关重要，可防止阀体因受力不均而变形，导致氟塑料密封面无法均匀贴合而泄漏。

气动执行机构安装与调试：

执行机构通常已预装于阀门上。阀门在管道上紧固后，再进行气路和电气连接。
气源连接：　连接洁净、干燥、稳定的气源至执行机构进气口。气源压力须符合执行器要求，建议在气路中安装过滤减压阀，确保空气质量。
初始手动操作：通气前，务必确认执行机构处于“手动”模式。

行程与限位调试（关键步骤）：
a. 切换至“自动”模式，通气使阀门关闭。
b. 调节执行机构上的关向限位螺钉（通常标记“CLOSE”），使蝶板达到预设的全关位置，并确保密封效果。
c. 通气使阀门开启。
d. 调节执行机构上的开向限位螺钉（通常标记“OPEN”），使蝶板达到全开位置（通常为 90°）。
e. 反复进行数次完整的开关循环，观察动作是否平稳、终点位置是否准确且无泄漏。

附件调试：　若配备定位器、电磁阀、限位开关等附件，严格按其说明书进行接线、参数设定和功能测试。

二、 使用与操作说明

开启与关闭操作：

首次或长期停用后启用：　建议在系统压力较低或介质未完全充满管道时，通过手动机构或低速气动控制，缓慢、轻柔地进行数次全开全关操作，以使氟塑料密封面得到初步磨合。
正常自动操作：　通过控制系统信号进行。操作时应平稳，避免因快速启闭产生水锤效应。
手动操作：　在气源故障或维护时使用。操作前必须切换至“手动”模式。手动操作力应均匀，到达全开或全关位置有明显阻力感时即停止，切勿使用加力杆超限操作，以防损坏执行机构内部齿轮或阀门密封件。

开度调节：

当配置气动定位器时，本阀门可用于流量或压力调节。通过输入连续的控制信号，可实现蝶板在 0° 至 90° 间的任意角度定位。
避免长期小开度节流：　严禁将本阀门长期用作节流阀并停留在极小开度（通常<15°），以免高速流体对软密封面造成严重的气蚀和冲蚀破坏，导致密封迅速失效。
定期全行程操作：　若长期用于调节工况（非全开状态），应每周或每月定期进行一次全行程开关操作，以防止密封面局部沉积结垢或产生粘滞。

重要注意事项：

介质与温度限制：　确认阀门主体材质及氟塑料密封材料（如 PTFE、FEP 等）是否适用于工作介质及温度范围。严禁超温、超压或接触不相容介质使用。
高温工况：　用于高温介质时，冷态安装并首次通入热介质升温后，必须在热态下对所有对夹连接螺栓进行热态再紧固，以补偿材料热膨胀差异，防止泄漏。
气源保护：　保持气源清洁干燥，防止水分和杂质进入执行机构。

三、 维护与保养说明

日常维护：

定期巡检阀门外部、法兰连接处及气路接口有无泄漏。
保持阀门和执行机构清洁，特别是阀杆伸出部位。
定期检查气源处理元件，排放冷凝水。
观察阀门动作是否正常，有无异响或迟滞。

定期检查：

根据使用频率和工况，建议每 6 至 12 个月进行一次全面检查。
阀门部分：　检查阀杆转动是否灵活、有无泄漏；检查法兰螺栓紧固状态；重点评估氟塑料密封面的磨损、老化或压痕情况（如有检查口或拆卸机会）。
执行机构与附件部分：　检查执行器外观及紧固件；检查手动机构功能；对需润滑部位加注指定润滑脂；检查定位器、电磁阀等附件工作是否正常。

存放要求：

长期存放时，阀门应处于微开状态（蝶板开启约 5°-10°），使软密封面避免长期受压变形或粘连。
封闭阀门两端通道口。
将执行机构切换至“手动”模式。
断开气源和电源，对接口进行防尘保护。
存放于干燥、通风的室内，避免阳光直射、极端温度和腐蚀性环境。

常见故障与处理：

泄漏（关闭不严）：
检查并重新调整关向限位，确保关到位。
检查密封面是否有异物卡塞或损伤。
检查管道法兰是否平行，对夹螺栓是否均匀紧固。
阀门不动作或动作缓慢：
检查气源压力、管路是否正常。
检查电磁阀、定位器是否故障。
切换至手动模式，检查阀门是否因内部卡涩（如密封圈膨胀、杂质）导致扭矩过大。

操作扭矩增大：
检查是否有内部卡阻或介质结晶。
检查润滑是否失效。
检查密封件是否老化膨胀。

重要提示： 氟塑料密封圈（阀座）和蝶板密封层是核心易损件。其更换工作需要专业知识和技能，涉及拆卸、清洁和正确安装。如无经验，建议联系专业技术人员或阀门生产厂家进行处理，以保证维修后的密封性能和使用安全。

Installation and Maintenance Instructions

I. Installation Guide

Pre-Installation Inspection:

Verification: Carefully verify that the model (D671F), nominal diameter (DN), pressure rating (PN), and body material on the valve nameplate match the pipeline design specifications. Confirm that the flow direction arrow on the valve body corresponds to the intended media flow.
Visual and Internal Inspection: Inspect the exterior of the valve and pneumatic actuator for any shipping damage. Remove all protective coatings, grease, and debris from the valve cavity and the fluoroplastic sealing surfaces (valve seat/disc edge) to prevent damage to the soft seals.
Manual Function Test: Set the manual override device on the actuator to the "MANUAL" position. Operate the valve manually to ensure smooth, unrestricted movement of the disc throughout its full travel. After testing, position the disc in a slightly open state (approximately 10%-15% open) to facilitate alignment during installation. Return the actuator to the "AUTO" mode upon completion.

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Installation Position and Orientation:

The valve can be installed in horizontal or vertical pipelines. The installation location should provide adequate space for pneumatic connection, accessory adjustment, manual operation, and routine observation.

Flow Direction Confirmation: It is imperative that the arrow marked on the valve body aligns with the intended direction of media flow in the pipeline. Wafer-style valves are typically designed for unidirectional sealing; reverse installation may compromise sealing integrity.

Pipeline Connection Requirements:

This valve features a wafer-type connection and must be clamped between two pipeline flanges using a set of long bolts and nuts.

DO NOT use the valve bolts to compensate for pipe flange misalignment, non-concentricity, or excessive gaps. Before installation, ensure the two pipeline flanges are parallel, properly aligned, and that the distance between them matches the valve's face-to-face dimension.

Installation Steps:

Place the valve between the two flanges and insert a small number of bolts (e.g., 2-4) for preliminary positioning.

Use the manual override to rotate the disc to the fully open position (parallel to the pipe), minimizing obstruction to facilitate final alignment and prevent damage to the seal.

Even, Symmetrical, and Progressive Tightening: Using an appropriate wrench, tighten all wafer bolts progressively and uniformly to the specified torque value in 2-3 stages, following a diagonal/crosswise pattern. This step is critical to prevent body distortion from uneven force, which could lead to uneven contact of the fluoroplastic sealing surfaces and subsequent leakage.

Pneumatic Actuator Installation and Commissioning:

The actuator is typically pre-mounted on the valve. Pneumatic and electrical connections should be made after the valve is securely fastened in the pipeline.

Air Supply Connection: Connect a clean, dry, and stable air supply to the actuator's inlet port. The air supply pressure must comply with actuator specifications. Installing a filter-regulator in the air line is recommended to ensure air quality.

Initial Manual Check: Before applying air, confirm the actuator is in the "MANUAL" position.

Stroke and Limit Adjustment (Critical Steps):

a. Switch to "AUTO" mode, supply air to close the valve.

b. Adjust the close limit stop screw (typically marked "CLOSE") on the actuator to set the disc at the desired fully closed position, ensuring effective sealing.

c. Supply air to open the valve.

d. Adjust the open limit stop screw (typically marked "OPEN") on the actuator to set the disc at the fully open position (typically 90°).

e. Perform several complete open-close cycles, observing for smooth operation, accurate endpoint positioning, and absence of leakage.

Accessory Commissioning: If equipped with accessories such as a positioner, solenoid valve, or limit switches, follow their respective manuals strictly for wiring, parameter setting, and functional testing.

II. Operation Instructions

Opening and Closing Operation:

Initial Start-up or After Prolonged Shutdown: It is recommended to perform several gentle, full open-close cycles slowly (via manual operation or low-speed pneumatic control) while system pressure is low or before the pipeline is fully pressurized. This allows for initial bedding-in of the fluoroplastic sealing surfaces.

Normal Automatic Operation: Controlled via the control system signal. Operation should be smooth to avoid water hammer caused by rapid actuation.

Manual Operation: Used during air supply failure or maintenance. Must switch to "MANUAL" mode before operating. Apply force evenly; stop when significant resistance is felt at the full open or full close position. DO NOT use levers to force beyond the stops, as this may damage internal actuator gearing or valve seals.

Positioning / Throttling:

When equipped with a pneumatic positioner, this valve can be used for flow or pressure regulation. By supplying a continuous control signal, the disc can be positioned at any angle between 0° and 90° .

Avoid Long-term Throttling at Small Openings: This valve must not be used as a throttle valve for extended periods, especially at very small openings (typically < 15°). High-velocity flow in this condition can cause severe cavitation and erosion damage to the soft seals, leading to rapid failure.

Regular Full-Stroke Cycling: If used for extended periods in a modulating (non-full open) application, perform a complete full-stroke open-close cycle weekly or monthly to prevent localized deposit buildup or sticking on the sealing surfaces.

Important Operational Notes:

Media and Temperature Limits: Confirm that the valve body materials and fluoroplastic sealing materials (e.g., PTFE, FEP) are suitable for the working media and temperature range. DO NOT use under conditions exceeding pressure/temperature ratings or with incompatible media.

High-Temperature Service: For high-temperature media, tighten all wafer connection bolts hot (after the system has reached operating temperature) following cold installation and initial heat-up. This compensates for differential thermal expansion and prevents leakage.

Air Supply Protection: Maintain a clean, dry air supply to prevent moisture and contaminants

from entering the actuator.

III. Maintenance and Service Instructions

Routine Maintenance:

Periodically inspect the valve exterior, flange connections, and pneumatic connections for any signs of leakage.
Keep the valve and actuator clean, particularly the stem extension area.
Regularly check air supply treatment units and drain condensate.
Observe valve operation for normal function, unusual noises, or sluggish response.

Periodic Inspection:

Depending on usage frequency and service conditions, a comprehensive inspection is recommended every 6 to 12 months.
Valve Inspection: Check for smooth stem rotation and any leakage. Verify the tightness of flange bolts. Critically assess the condition of the fluoroplastic sealing surfaces for wear, aging, or indentation (if inspection ports are available or during disassembly).
Actuator and Accessory Inspection: Inspect the actuator exterior and fasteners. Verify manual override function. Lubricate points as specified. Check proper operation of accessories like positioners and solenoid valves.

Storage Requirements:

For long-term storage, the valve should be left in a slightly open position (disc approximately 5° -10° open) to prevent permanent deformation or adhesion of the soft seals under constant pressure.
Seal off the valve's pipe ends.
Set the actuator to the "MANUAL" position.
Disconnect air and power supplies, and protect connection ports from dust.
Store in a dry, ventilated indoor area, protected from direct sunlight, extreme temperatures, and corrosive atmospheres.

Common Troubleshooting:

Leakage (Failure to Seal Tightly):

Check and readjust the close limit stop to ensure the valve fully closes.
Inspect sealing surfaces for foreign object obstruction or damage.
Check for parallelism of pipe flanges and even tightening of wafer bolts.
Valve Does Not Operate or Operates Slowly:
Check air supply pressure and line integrity.
Check for malfunctions in the solenoid valve or positioner.
Switch to manual mode to check if the valve is internally stuck (e.g., due to seal swelling, debris) causing excessive torque.

Increased Operating Torque:

Check for internal binding or media crystallization.
Check for lubrication failure.
Check for swelling or hardening of sealing elements.

Important Notice: The fluoroplastic seat ring and disc seal lining are critical, consumable components. Their replacement requires specialized knowledge and skills, involving disassembly, cleaning, and precise re-assembly. Without proper experience, it is strongly advised to contact qualified technical personnel or the valve manufacturer for service to ensure restored sealing performance and operational safety.

非常感谢您的阅读！
Thank you very much for reading!

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