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D11X 内螺纹蝶阀系列

D11X Series Internal Thread Butterfly Valve

使用说明书

Instruction Manual

开维喜阀门集团有限公司

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D11X 内螺纹蝶阀

D11X Internal Thread Butterfly Valve

型号：D11X　　规格：DN50-DN150
公称压力：PN10-PN16　　用介质：水、消防泡沫、油品、空气等介质
适用温度：-20℃ ~+150℃　　阀体材质：铸铁、球铁、不锈钢
连接方式：内螺纹　　驱动方式：手动

Model: D11X
Size: DN50-DN150
Nominal Pressure: PN10-PN16
Applicable Media: Water, firefighting foam, oil, air, etc.
Applicable Temperature: -20℃ ~ +150℃
Body Material: Cast iron, ductile iron, stainless steel
Connection Type: Internal thread
Drive Mode: Manual

概述

D11X 内螺纹蝶阀依靠蝶板绕固定轴旋转，实现流体的开启、关闭与调节。采用中线对称结构，阀杆置于蝶板与管道中心交汇处。连接方式为沟槽式，阀体两端开有标准沟槽，通过卡箍锁紧连接，免焊接、免法兰，安装快速且对中简便。密封圈多采用 EPDM 等弹性材料，硫化或镶嵌于蝶板/阀体上，利用旋转挤压变形实现零泄漏。阀门通过手柄或蜗轮驱动，旋转 90° 即可快速控制水、消防泡沫等非腐蚀性介质，广泛用于消防、给排水、空调及工业冷却水管路。

Overview

The D11X internal thread butterfly valve operates by rotating the disc around a fixed axis to open, close, and regulate fluid flow. It adopts a concentric symmetric structure, with the valve stem positioned at the intersection of the disc and the pipeline center. The connection type is grooved, with standard grooves machined at both ends of the valve body. The valve is secured using clamps, requiring no welding or flanges, enabling fast installation and easy alignment. The sealing ring is typically made of elastic materials such as EPDM, which is vulcanized or embedded onto the disc or valve body. Zero leakage is achieved through rotational compression and deformation of the seal. The valve is operated by a handle or worm gear, rotating 90° to quickly control non-corrosive media such as water and firefighting foam. It is widely used in fire protection, water supply and drainage, air conditioning, and industrial cooling water pipelines.

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D11X 内螺纹蝶阀产品图

Product Image of D11X Internal Thread Butterfly Valve

特点

1. 安装维护便捷：内螺纹连接，可直接旋入管道，无需法兰焊接。安装空间小、螺栓用量少，特别适合狭窄或禁火现场。结构简单、零件少，拆卸维护成本低。
2. 结构紧凑轻巧：阀体为球墨铸铁（QT450-10），强度高、重量轻。螺纹端设计使阀体体积小、结构长度短，比同口径法兰蝶阀轻便，易于运输和安装。
3. 启闭迅速轻便：旋转 90° 即可全开或全关，操作简单。中线密封结构扭矩小，启闭省力；手柄带自锁定位，可锁定全开、半开、关闭状态，防止误操作。
4. 密封性能可靠：高弹性 EPDM 阀座（含胶率 50%、拉伸强度 16.1MPa），C 型橡胶圈实现三重密封，1 万次启闭后仍无泄漏。双向密封设计，安装无需考虑介质流向。
5. 流体阻力小：蝶板为直线型，全开时与流体方向一致，流道近似直通管。通径与管道基本等径，阻挡小、流量大、压力损失低。
6. 防腐耐用性好：内外表面无毒环氧树脂涂装，耐腐蚀、耐冲蚀。阀轴防吹出设计（带卡簧槽），安全性高；轴密封采用无油轴承与填料结合，实现自密封。
7. 应用范围广泛：阀体可选球墨铸铁、不锈钢等，密封圈可选 EPDM、NBR、硅橡胶等。适用于水、消防泡沫、油品、空气等介质，覆盖给排水、消防、空调、化工、市政、造船等领域。

Features

1.Easy installation and maintenance: Internal thread connection allows direct screwing into the pipeline without flange welding. Small installation space and fewer bolts are required, making it especially suitable for confined spaces or no-fire sites. Simple structure with fewer parts results in low disassembly and maintenance costs.

2.Compact and lightweight: The valve body is made of ductile cast iron (QT450-10), offering high strength and low weight. The threaded-end design ensures a small valve body size and short structural length. It is lighter and more portable than flanged butterfly valves of the same bore size, facilitating transportation and installation.

3.Quick and easy operation: Rotating 90° fully opens or closes the valve, providing simple operation. The concentric sealing structure requires low torque, making opening and closing effortless. The handle has a self-locking position feature, allowing the valve to be locked in fully open, partially open, or closed positions to prevent misoperation.

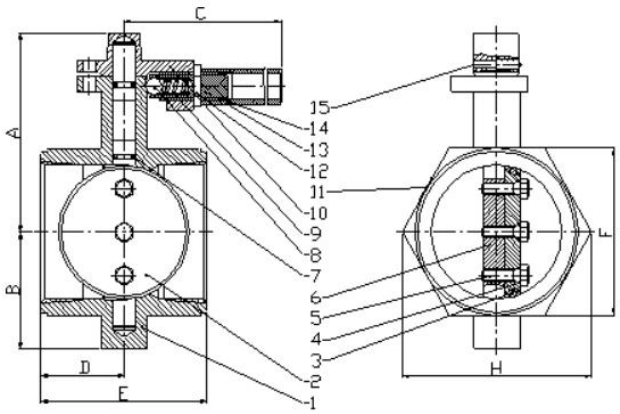
4.Reliable sealing performance: High-elasticity EPDM valve seat (rubber content 50%, tensile

strength 16.1 MPa) with a C-ring design achieves triple sealing, remaining leak-free even after 10,000 opening/closing cycles. Bidirectional sealing design eliminates the need to consider medium flow direction during installation.

5.Low fluid resistance: The disc is linear and aligns with the flow direction when fully open, making the flow path nearly a straight-through pipe. The valve bore is essentially the same diameter as the pipeline, resulting in minimal obstruction, high flow capacity, and low pressure loss.

6.Good corrosion resistance and durability: Internal and external surfaces are coated with non-toxic epoxy paint, providing strong corrosion and erosion resistance. The valve shaft features a blow-out proof design (with a retaining ring groove) for high safety. The shaft seal combines oil-free bearings and packing to achieve self-sealing.

7.Wide range of applications: The valve body can be selected from ductile cast iron, stainless steel, etc. The sealing ring can be made of EPDM, NBR, silicone rubber, etc. It is suitable for water, firefighting foam, oil, air, and other media, covering applications in water supply and drainage, fire protection, air conditioning, chemical engineering, municipal engineering, shipbuilding, and more.



D11X 内螺纹蝶阀结构图

Structural Drawing of D11X Internal Thread Butterfly Valve

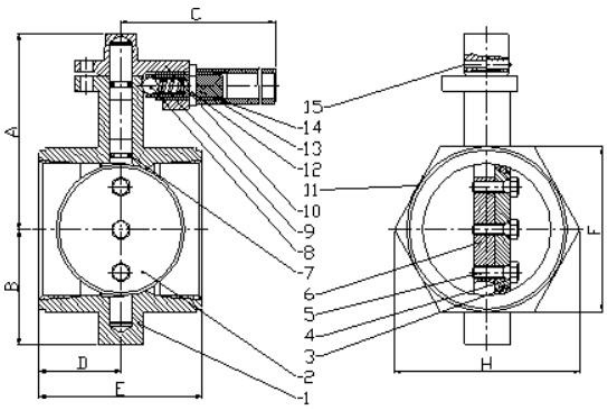
可选的零部件名称材料表 Optional Components Name and Material List

阀体 Valve Body	阀板 Disc	转轴 Shaft	轴套 Bushing	阀座 Seat	工作温度（℃）Working Temperature (℃)
灰铸铁 Grey Cast Iron	球墨铸铁 Ductile Iron	416SS 416 Stainless Steel	润滑青铜 Lubricated Bronze	天然橡胶 Natural Rubber	-20℃-+85℃
球墨铸铁 Ductile Iron	WCB 铸钢 WCB Cast Steel	431SS 431 Stainless Steel	高分子材料符合聚四氟乙烯 Polymer Material with PTFE	海帕伦 Hypalon	-18℃-+135℃
WCB 铸钢	铝青铜	316SS 316	316 不锈钢复合聚	乙丙橡胶 EPDM	-30℃-+110℃

阀体 Valve Body	阀板 Disc	转轴 Shaft	轴套 Bushing	阀座 Seat	工作温度（℃）Working Temperature（℃）
WCB Cast Steel	Aluminum Bronze	Stainless Steel	四氟乙烯 316 Stainless Steel with PTFE		
铝青铜 Aluminum Bronze	不锈钢 Stainless Steel			氯丁橡胶 Neoprene	-7℃-+93℃
不锈钢 Stainless Steel				丁腈橡胶 NBR	-12℃-+82℃
				耐磨橡胶 Wear-resistant Rubber	-10℃-+50℃
				氟橡胶 FKM	-23℃-+150℃
				耐热橡胶 Heat-resistant Rubber	-20℃-+150℃
				聚四氟乙烯 PTFE	+10℃-+150℃

性能规范表 Performance Specification Table

性能规范表 Performance Specification Table		
公称压力 Nominal Pressure (PN)	1.0/1.6	MPa
强度试验压力 Strength Test Pressure	1.5/2.4	
密封试验压力 Seal Test Pressure	1.1/1.76	
适用温度 Suitable Temperature Range	-20 -150	℃



D11X 内螺纹蝶阀外形尺寸图

Overall Dimension Drawing of D11X Internal Thread Butterfly Valve

D11X 内螺纹蝶阀外形尺寸表

Overall Dimension Table of D11X Internal Thread Butterfly Valve

阀门规格 size		A	B	C	D	E	F	H	重量 weight Kg
inch	mm								
2	50	105.41	57.15	203.2	53.98	107.95	76.20	87.88	4.8
3	80	152.91	69.85	203.2	61.72	123.70	103.12	119.13	7.1
4	100	161.04	93.73	203.2	65.02	130.05	134.87	155.70	10.1
6	150	231.24	120.65	330.2	88.90	177.80	196.85	277.33	21.8

D11X 内螺纹蝶阀 安全、安装与维护须知

一、 安全总则

- 使用范围：本产品适用于非腐蚀性的清水、污水、消防水、油品及弱腐蚀性流体（具体以阀体及密封材质为准）。严禁用于与橡胶密封圈及阀体材质发生剧烈化学反应的强酸、强碱或有机溶剂。
- 压力限制：使用时严禁超过阀门铭牌标注的公称压力（PN10/16/25）。水压试验时，阀门必须处于全开状态，切勿利用阀门作为管道盲板进行单侧打压，以免损坏密封副。
- 安全操作：手动操作手柄时严禁使用加长套管或大号扳手强行开关，以防扭断阀杆或压坏密封面。带传动装置（电动/气动）的阀门，在调试或维修时必须切断电源并释放气源。
- 介质防护：若介质中含有硬质颗粒或长纤维杂物，建议在阀门上游安装过滤器，防止杂质卡阻蝶板导致关闭不严或划伤密封面。

二、 安装说明

- 安装前检查：核对阀门型号、通径、压力等级是否与设计一致。检查阀体及橡胶密封面有无划伤，清除管道内的焊渣、铁屑及油污。安装前必须手动将蝶板转动 2 至 3 次，确认无卡滞。安装就位时，建议将蝶板开启 4° 至 5°（微开状态），以便于衬胶密封圈与管道螺纹的吻合。

- 安装方向：常规工况下，D11X 蝶阀具备双向密封功能，安装时可不考虑介质流动方向。若阀门配套了单向设计，则必须按照阀体箭头方向安装。
- 管道对接（关键）：D11X 采用内螺纹连接，安装时需在管螺纹上缠绕生料带或涂抹密封胶，确保螺纹连接紧密。严禁强行拧紧以校正管道的直线度偏差。应先用手将阀门旋入管螺纹数圈，确认无偏斜后，再使用扳手均匀拧紧，切勿用力过猛导致阀体裂纹。
- 驱动装置安装：若安装蜗轮箱或电动头，应确保阀杆与执行机构输出轴同心。手动操作阀门至全关位后，再安装执行机构并调整限位开关，防止过扭矩损坏阀体。

三、 使用与操作说明

- 启闭操作：正常使用时，顺时针旋转手柄为关，逆时针为开。到达全开或全关位置后，需回转半圈，防止卡死并便于下次操作。首次使用时，建议在低压状态下缓慢启闭数次，以磨合橡胶密封面。
- 流量调节：蝶板在 0° 至 90° 内开启，流量特性近似线性，可用于调节流量。严禁长期处于 15° 以下的微小开度工作，否则高速介质流会严重冲蚀橡胶阀座，导致密封失效。
- 高温注意事项：若用于 80℃左右热水工况（需确认阀座耐温等级），在初次通入热介质后，需再次检查并拧紧螺纹连接处，以补偿热膨胀差异。流体温度超过 120℃时，阀门本体需进行保温工程。

四、 维护与保养

- 日常维护：建议每月进行 1 至 2 次全行程开关操作，防止因长期静止导致密封面粘连或因结垢卡死。保持阀杆清洁，定期清除阀体表面的油污和锈迹。若环境潮湿或腐蚀性较强，应在阀杆处涂抹防锈油脂。
- 定期检修（每 6 至 12 个月）：检查阀体内壁衬胶有无气泡、磨损或脱落，检查蝶板有无腐蚀或缺损。关闭阀门观察下游是否有渗漏，若出现内漏，首先检查是否有异物卡在密封面；若为密封圈老化磨损，需更换密封圈。检查手柄锁紧装置及阀杆压盖是否松动。
- 长期存放：阀门应存放于干燥通风的室内，避免阳光直射和雨淋。存放时应保持微启状态（开启 4° 至 5°），使橡胶密封面处于松弛状态，防止永久变形导致失效。两端必须使用保护盖封堵，以防灰尘进入。

五、 常见故障与排除

- 泄漏（外漏）：可能原因为阀杆 O 型圈磨损或压盖螺栓松动。排除方法为均匀拧紧填料压盖螺母；若仍泄漏，需更换阀杆密封圈。
- 泄漏（内漏）：可能原因为蝶板关闭不到位、橡胶阀座磨损刮伤或老化、蝶板与阀座间夹有杂物。排除方法为检查手柄限位并重新调整至完全关闭位；清理杂物清洗阀门；必要时更换阀体衬胶或阀座。
- 启闭扭矩过大：可能原因为阀杆处缺润滑或锈蚀、内部结垢或异物卡阻、螺纹连接处过紧。排除方法为加注润滑油脂；拆解检查并清理内部水垢；重新调整螺纹连接松紧度。

六、 免责声明

本须知适用于常规 D11X 内螺纹蝶阀（铸铁或球铁阀体，橡胶密封，工作温度 0℃至 80℃）。对于特殊工况（如易燃易爆区、强腐蚀介质、高温蒸汽、氧气环境），必须严格遵循制造商的专项技术协议。若未按本须知操作导致阀门损坏或引发安全事故，制造商及经销商不承担相应责任。

D11X Internal Thread Butterfly Valve – Safety, Installation and Maintenance Instructions

I. General Safety Rules

- Application range: This product is suitable for non-corrosive clean water, wastewater, firefighting water, oil, and mildly corrosive fluids (depending on valve body and sealing material).

It must not be used with strong acids, strong alkalis, or organic solvents that react vigorously with the rubber seal or valve body material.

- Pressure limitation: Do not exceed the nominal pressure (PN10/16/25) marked on the valve nameplate. During pressure testing, the valve must be fully open. Do not use the valve as a blind flange for single-sided pressure testing, as this may damage the sealing components.
- Safe operation: Do not use extension pipes or oversized wrenches to manually operate the handle, as this may break the valve stem or damage the sealing surface. For actuated valves (electric/pneumatic), disconnect the power supply and release the air pressure before commissioning or maintenance.
- Medium protection: If the medium contains hard particles or long fibers, install a strainer upstream to prevent debris from jamming the disc or scratching the sealing surface.

II. Installation Instructions

- Pre-installation check: Verify that the valve model, bore size, and pressure rating match the design. Inspect the valve body and rubber sealing surface for scratches. Remove weld slag, iron filings, and oil from the pipeline. Manually rotate the disc 2–3 times before installation to ensure smooth movement. During positioning, it is recommended to keep the disc open 4° –5° (slightly open) to facilitate proper alignment between the rubber seal and the pipe thread.
- Installation direction: Under normal conditions, the D11X butterfly valve provides bidirectional sealing, so flow direction need not be considered. If a unidirectional design is fitted, install according to the arrow on the valve body.
- Pipe connection (critical): The D11X uses internal threads. Wrap thread seal tape or apply sealant to the pipe thread to ensure a tight connection. Do not overtighten to correct pipeline misalignment. Hand- tighten the valve onto the pipe thread for several turns, confirm it is not cross- threaded, then tighten evenly with a wrench. Avoid excessive force that could crack the valve body.
- Actuator installation: When installing a worm gearbox or electric actuator, ensure the valve stem and actuator output shaft are concentric. Manually close the valve fully, then install the actuator and adjust the limit switches to prevent over- torque damage.

III. Operating Instructions

- Opening/closing: Turn the handle clockwise to close and counterclockwise to open. After reaching the fully open or fully closed position, turn back half a turn to prevent jamming and to facilitate the next operation. For initial use, operate slowly several times at low pressure to break in the rubber sealing surface.
- Flow regulation: The disc opens from 0° to 90° with an approximately linear flow characteristic, suitable for flow regulation. Do not operate for long periods at openings below 15°, as high - velocity flow will severely erode the rubber seat and cause seal failure.
- High- temperature precautions: For hot water applications around 80° C (confirm seat temperature rating), re- tighten the threaded connections after the first exposure to hot medium to compensate for thermal expansion. When fluid temperature exceeds 120° C, the valve body should be thermally insulated.

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IV. Maintenance and Care

- Routine maintenance: Perform 1–2 full- stroke operations per month to prevent the sealing surfaces from sticking or seizing due to scale buildup. Keep the valve stem clean and remove oil and rust from the valve body surface. In humid or corrosive environments, apply rust- preventive grease to the stem.
- Periodic inspection (every 6–12 months): Check the rubber lining inside the valve body for bubbles, wear, or peeling. Inspect the disc for corrosion or damage. Close the valve and check downstream for leakage. If internal leakage occurs, first check for debris trapped in the sealing surfaces; if the seal is aged or worn, replace it. Check the handle locking mechanism and stem gland for looseness.
- Long- term storage: Store the valve in a dry, ventilated indoor location away from direct sunlight and rain. Keep the valve slightly open (4° –5°) to keep the rubber seal relaxed and prevent permanent deformation. Protect both ends with covers to keep out dust.

V. Troubleshooting

- External leakage: Possible causes are worn stem O- ring or loose gland bolts. Remedy: evenly tighten the packing gland nuts; if leakage persists, replace the stem seal.
- Internal leakage: Possible causes include incomplete disc closure, worn/scratched/aged rubber seat, or debris trapped between disc and seat. Remedy: check the handle stop and readjust to the fully closed position; remove debris and flush the valve; if necessary, replace the body lining or seat.
- Excessive torque during operation: Possible causes include lack of lubrication or rust on the stem, internal scaling or debris jamming, or overtightened threaded connections. Remedy: apply lubricating grease; disassemble and clean internal scale; readjust the tightness of the threaded connection.

VI. Disclaimer

These instructions apply to standard D11X internal thread butterfly valves (cast iron or ductile iron body, rubber seal, operating temperature 0° C to 80° C). For special conditions (e.g., flammable/explosive areas, highly corrosive media, hot steam, oxygen service), strictly follow the manufacturer's specific technical agreement. The manufacturer and distributor assume no liability for valve damage or safety incidents resulting from failure to follow these instructions.

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

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