

X13 系列二通内螺纹旋塞阀

X13 Series Two-Way Female Threaded Plug Valve

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开维喜阀门集团有限公司
Kaiweixi Valve Group Co., LTD.

X13 系列二通内螺纹旋塞阀

型号: X13W-1.0/X13T-1.0/X13W-1.0T/X13W-1.0P/X13W-1.0R 规格: DN15-DN100

公称压力: PN1.0

适用介质: 水、蒸汽、油品、煤气、硝酸、醋酸

适用温度: $\leq 250^{\circ}\text{C}$

阀体材质: 铸铁、铸铜、不锈钢、钼二钛

连接方式: 内螺纹

驱动方式: 手动

Model: X13W-1.0/X13T-1.0/X13W-1.0T/X13W-1.0P/X13W-1.0R

Specification: DN15-DN100

Nominal pressure: PN1.0

Applicable medium: Water, steam, oil, gas, nitric acid, acetic acid

Applicable temperature: $\leq 250^{\circ}\text{C}$

Valve body material: Cast iron, cast copper, stainless steel, molybdenum-titanium alloy (MoTi)

Connection method: Female thread (Internal thread) drive method: Manual



X13 系列二通内螺纹旋塞阀产品图

X13 Series Two-Way Female Threaded Plug Valve Product Diagram

概述

X13 系列二通内螺纹旋塞阀是一种通过锥形或圆柱形旋塞（塞体）的旋转运动来实现流体通道的开启或关闭的阀门。该阀为直通式结构，旋塞上设有贯通的介质流道，通过旋转旋塞 90 度，使流道与阀体通道对齐或垂直，从而实现全开或全关。其阀杆与旋塞为一体式或固定连接设计，操作时阀杆与旋塞同步旋转，无升降动作，填料密封位于阀杆与阀体之间，确保外密封可靠。阀体两端采用内螺纹连接方式，可直接与管道外螺纹连接，安装拆卸方便，适用于中小口径管道系统。该阀门依靠旋塞与阀体密封面之间的精密配合及润滑或弹性密封材料实现密封，操作扭矩小，密封性能稳定，结构紧凑，广泛应用于水、油、气等非腐蚀性或弱腐蚀性介质的管路系统中，作为截断或接通介质之用。

Overview

The X13 series two-way female threaded plug valve is a type of valve that opens or closes the fluid passage through the rotary motion of a tapered or cylindrical plug. The valve adopts a straight-through structure, with a through-type medium flow port provided on the plug. By rotating

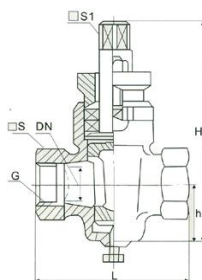
the plug 90 degrees, the flow port aligns with or becomes perpendicular to the valve body passage, thereby achieving fully open or fully closed positions. The valve stem is integrally or fixedly connected to the plug. During operation, the stem and plug rotate synchronously without any lifting motion. Packing sealing is provided between the stem and the valve body to ensure reliable external sealing. Both ends of the valve body adopt female threaded connections, which can be directly connected to external threads of pipelines, making installation and disassembly convenient and suitable for small and medium-diameter pipeline systems. The valve relies on precise fit and lubrication or resilient sealing materials between the plug and the valve body sealing surfaces to achieve sealing, offering low operating torque and stable sealing performance. With a compact structure, it is widely used in pipeline systems handling water, oil, gas, and other non-corrosive or mildly corrosive media for shut-off or flow passage applications.

特点

- 1、内螺纹连接，安装便捷：阀体两端采用内螺纹连接方式，可直接与管道外螺纹连接，安装拆卸方便，适用于中小口径管道系统，无需法兰焊接。
- 2、快速启闭，流道直通：旋塞旋转 90 度即可完成启闭，操作迅速。全开时流道呈直通状，流体阻力小，不易产生涡流或沉积。
- 3、密封性能可靠：旋塞与阀体密封面可进行精密研磨，或采用聚四氟乙烯（PTFE）等弹性材料衬套，实现良好的密封效果，且具有自润滑性，操作轻便。
- 4、耐腐蚀与耐磨：阀体及旋塞可根据介质选用碳钢、不锈钢、合金钢等材质，密封面可进行硬化处理（如堆焊硬质合金、渗氮等），耐磨损、抗冲刷，使用寿命长。
- 5、无升降结构，安装空间小：阀杆与旋塞一体旋转，无轴向位移，整体高度较低，适用于安装空间受限的管道系统。
- 6、双向密封无流向限制：阀门设计为双向密封，无严格介质流向要求，安装适应性更强。

feature

1. Female Threaded Connection for Easy Installation: Both ends of the valve body adopt female threaded connections, which can be directly connected to external threads of pipelines, making installation and disassembly convenient. Suitable for small and medium-diameter pipeline systems without the need for flange welding.
2. Quick Opening/Closing with Straight-Through Flow Path: A 90-degree rotation of the plug completes opening or closing, providing rapid operation. When fully open, the flow path is straight, resulting in low fluid resistance and minimal vortex or sedimentation.
3. Reliable Sealing Performance: The sealing surfaces of the plug and valve body can be precision-lapped or lined with resilient materials such as PTFE, achieving excellent sealing effect with self-lubricating properties and smooth operation.
4. Corrosion and Wear Resistance: The valve body and plug can be made of carbon steel, stainless steel, alloy steel, or other materials depending on the medium. Sealing surfaces can be hardened (e.g., hardfacing with cemented carbide, nitriding, etc.), providing wear resistance, erosion resistance, and long service life.
5. Non-Rising Stem Design, Compact Installation Height: The stem and plug rotate as one unit without axial movement, resulting in a low overall height, suitable for pipeline systems with limited installation space.
6. Bidirectional Sealing, No Flow Direction Restriction: The valve is designed for bidirectional sealing with no strict requirement on flow direction, offering greater installation flexibility.



X13 系列二通内螺纹旋塞阀结构图

X13 Series Two-Way Female Threaded Plug Valve Structural diagram

零部件名称材料表 List of Component Names and Materials

序号/No.	名称/name	材料/material
1	阀体/valve body	铸铁、铸铜、不锈钢、钼二钛/Cast iron, cast copper, stainless steel, molybdenum-titanium alloy (Mo-Ti alloy)
2	塞子/Plug	铸铁、铸铜、不锈钢、钼二钛/Cast iron, cast copper, stainless steel, molybdenum-titanium alloy (Mo-Ti alloy)
3	填料压盖/Packing gland	铸铁、铸铜、不锈钢、钼二钛/Cast iron, cast copper, stainless steel, molybdenum-titanium alloy (Mo-Ti alloy)
4	填料/Packing	油浸石棉盘根、柔性石墨/Oil-impregnated asbestos packing, flexible graphite

性能规范表 Performance Specification Sheet

性能规范表 Performance Specification Sheet		
公称压力 Nominal Pressure	1.0	MPa
强度试验压力 Strength test pressure	1.5	
密封试验压力 Sealing test pressure	1.1	
适用温度 Applicable Temperature	≤250	℃

外形尺寸标准要求

1、阀门的结构长度按 GB/T12221 的标准

Standard requirements for external dimensions

1. The structural length of the valve shall comply with the standard of GB/T12221

外形尺寸表 Outline dimension table

公称通径 Nominal diameter DN	管螺纹 Pipe thread G	尺寸 Measurements (mm)				
		L	□S	□S1	h1	H
15	1/2	85	30	12	26	99
20	3/4	90	36	16	34	124
25	1	110	46	18	38	133
32	1 1/4	130	55	18	45	152
40	1 1/2	150	60	26	55	212

50	2	170	75	28	74	260
65	2 1/2	220	90	32	82	295
80	3	250	105	36	125	327
100	4	300	140	46	135	425

X13 系列二通内螺纹旋塞阀安装与维护须知

第一部分：安装须知

一、安装前准备

核对阀门：核对设备铭牌，确认公称压力、口径及壳体材质（通常为铸钢、不锈钢、黄铜或合金钢）符合设计要求。检查旋塞与阀体密封面有无划伤或锈蚀，并检查内螺纹连接接口是否完好。

管道准备：安装前必须对管道系统进行彻底吹扫或冲洗，清除管道内残留的焊渣、铁锈、油污及杂物，防止杂质进入阀腔损伤旋塞与阀体密封面。管道外螺纹应清洁完好，无毛刺或损伤。

方向与姿势：X13 系列阀门为双向密封阀门，无严格介质流向限制。为便于操作和维护，推荐水平安装并使阀杆处于垂直向上位置，手轮应朝向便于操作的方向。阀门两端内螺纹与管道外螺纹连接时，应确保螺纹对中，避免歪斜。

Part 1: Installation Instructions

1、Preparation before installation

Verification: Check the valve nameplate to confirm that the nominal pressure, nominal diameter, and body material (typically cast steel, stainless steel, brass, or alloy steel) meet the design requirements. Inspect the sealing surfaces of the plug and valve body for scratches or corrosion. Check that the female threaded connections are intact.

Pipeline Preparation: Before installation, the pipeline system must be thoroughly purged or flushed to remove weld slag, rust, oil, and other debris, preventing foreign matter from entering the valve cavity and damaging the sealing surfaces between the plug and valve body. The external threads of the pipeline shall be clean and intact, free from burrs or damage.

Orientation and Position: The X13 series valve is a bidirectional sealing valve with no strict flow direction restriction. For ease of operation and maintenance, horizontal installation is recommended with the valve stem in a vertical upward position. The handwheel should face a direction convenient for operation. When connecting the female threads of the valve to the external threads of the pipeline, ensure proper thread alignment to avoid skewing.

二、安装过程

连接与对中：手动将阀门旋入管道外螺纹，确保螺纹自然对中，严禁强行扳拧或使用加长杠杆强行连接。

禁止以阀杆、手轮作为承力点。螺纹连接应使用合适的密封材料（如聚四氟乙烯生料带或密封胶）。

位置选择：建议安装在便于操作和检修的管段中，如设备入口、出口或分支管路上。阀门应尽量靠近需控制的设备，减少管路长度。

支撑与仪表：对于大口径或重量较大的内螺纹旋塞阀，需有管道独立支撑，避免阀体承受额外弯矩。为监控运行状态，建议在阀门上下游安装压力表，用于判断阀门密封性能。

2、Installation process

Connection and Alignment: Manually screw the valve onto the external threads of the pipeline, ensuring natural thread alignment. Forced wrenching or the use of extended levers for forced connection is prohibited. Do not use the valve stem or handwheel as load-bearing points. Appropriate sealing materials (such as PTFE tape or sealant) shall be used for threaded connections.

Location Selection: The valve should be installed in pipeline sections convenient for operation and maintenance, such as equipment inlets, outlets, or branch pipelines. The valve shall be positioned as

close as possible to the equipment to be controlled to minimize pipeline length.

Supports and Instruments: For large-diameter or heavy female threaded plug valves, independent pipeline supports are required to prevent additional bending moments on the valve body. To monitor operating status, it is recommended to install pressure gauges upstream and downstream of the valve to evaluate valve sealing performance.

第二部分：操作与使用须知

一、初始投运：

排气与充液：缓慢开启系统介质进口阀，打开阀门高点的排气阀（如有），待介质连续稳定流出后关闭，排尽阀腔内空气。

检漏与观察：升压至工作压力后，检查阀体与管道连接处（螺纹接口）、阀杆填料处有无渗漏。记录初始状态下的操作扭矩，作为运行基准值。观察并确认阀门在关闭状态下无内漏。

二、运行监控与操作：

操作扭矩监测（科学维护依据）：定期记录阀门启闭时的操作扭矩。当扭矩明显增大时，表明密封面可能发生粘连、异物卡滞或填料过紧，应及时检查处理。严禁强行操作。

启闭操作：启闭阀门时应缓慢转动手轮。旋塞阀为 90° 旋转启闭，全开或全关位置应有明显限位感。到位后勿过度施力。长期处于固定位置的阀门，建议每月进行一次全行程旋转，防止旋塞与阀体密封面粘连或结垢。

定期检查：对于间歇使用的阀门，建议定期进行启闭操作，确认阀门灵活可靠。

Part 2: Instructions for Operation and Use

I. Initial Commissioning

Venting and Filling: Slowly open the system medium inlet valve. Open the vent valve at the high point of the valve (if available) and close it after a continuous and stable flow of medium emerges, ensuring that air in the valve cavity is completely expelled.

Leak Check and Observation: Raise the pressure to the working pressure and check for leakage at the valve-body connections (threaded connections) and valve stem packing. Record the initial operating torque as a baseline value. Observe and confirm that there is no internal leakage when the valve is closed.

II. Operation Monitoring and Handling

Torque Monitoring (Basis for Scientific Maintenance): Regularly record the operating torque when opening or closing the valve. A significant increase in torque indicates possible sticking, foreign matter obstruction, or over-tightened packing on the sealing surfaces, which should be inspected and addressed promptly. Forced operation is prohibited.

Opening and Closing Operation: Rotate the handwheel slowly when opening or closing the valve. The plug valve opens and closes by a 90-degree rotation, and a distinct limit feel should be present at the fully open and fully closed positions. Do not over-torque when reaching the end position. For valves remaining in a fixed position for extended periods, a full-stroke rotation is recommended once per month to prevent sticking or scaling between the plug and valve body sealing surfaces.

Periodic Inspection: For valves used intermittently, regular opening and closing operations are recommended to confirm that the valve is flexible and reliable.

第三部分：维护与保养须知

一、日常维护

外观与泄漏检查：定期巡检，检查阀体、螺纹连接处、阀杆填料压盖有无锈蚀、裂纹或泄漏。如有微量外漏可适当均匀拧紧填料螺栓。

仪表维护：确保上下游压力表读数准确、灵敏。

热媒系统检查：定期（如每月）对阀门进行全行程启闭操作，确认转动灵活、无卡滞现象。

二、旋塞密封维护

安全隔离与泄压：关闭阀门上下游的截止阀。缓慢打开下游泄放阀或系统放空口，确认阀腔压力降至零且无介质流出后，方可进行后续操作。对于高温介质，须待阀体温度降至常温后再作业。

拆卸填料压盖或阀盖：使用合适工具，均匀对角松开并卸下填料压盖螺栓或阀盖螺栓。注意保护密封面，避免划伤。

取出与检查旋塞：小心取出旋塞（如为可拆式结构）。检查旋塞与阀体密封面有无划伤、腐蚀坑点、剥落或异物粘连。检查填料是否老化、变硬或失去弹性。

清洁密封面：使用软布和清洁剂擦拭密封面，清除结垢、锈蚀或粘连物。对于轻微磨损，可使用专用研磨工具进行研磨修复。严禁用硬物刮擦密封面。

检查与更换密封件：必须更换所有旧填料和密封垫片。对于衬 PTFE 等软密封结构的阀门，应检查衬套有无变形或破损，必要时更换。

回装与调试：将旋塞或密封件准确复位，确保密封面清洁并涂抹适量润滑脂（如有要求）。均匀对称紧固填料压盖螺栓或阀盖螺栓。操作旋塞应转动灵活、无卡滞。回装后进行密封性试验，确认无内外泄漏。

Part Three: Maintenance and Care Instructions

I. Routine and Periodic Maintenance

Visual and Leak Inspection: Perform regular inspections to check for rust, cracks, or leakage at the valve body, threaded connections, and valve stem packing gland. If slight external leakage occurs, evenly tighten the packing bolts as appropriate.

Instrument Maintenance: Ensure that upstream and downstream pressure gauges are accurate and responsive.

Operational Flexibility Check: Regularly (e.g., monthly) perform a full-stroke opening and closing operation of the valve to confirm smooth rotation and no sticking.

II. Plug Seal Maintenance (Core Procedure)

Safety Isolation and Depressurization: Close the shutoff valves upstream and downstream of the valve. Slowly open the downstream drain valve or system vent. Ensure that the valve cavity pressure drops to zero and no medium flows out before proceeding with subsequent operations. For high-temperature media, allow the valve body temperature to cool to ambient temperature before working.

Disassembly of Packing Gland or Valve Cover: Use appropriate tools to evenly and diagonally loosen and remove the packing gland bolts or valve cover bolts. Protect the sealing surfaces from scratches.

Removal and Inspection of Plug: Carefully remove the plug (if of a removable design). Inspect the plug and valve body sealing surfaces for scratches, corrosion pits, spalling, or foreign matter adhesion. Check whether the packing has aged, hardened, or lost elasticity.

Cleaning of Sealing Surfaces: Wipe the sealing surfaces with a soft cloth and cleaning agent to remove scale, rust, or adhered matter. For minor wear, use specialized lapping tools for restoration. Do not strike or scratch the sealing surfaces with hard tools.

Inspection and Replacement of Sealing Components: All old packing and gaskets must be replaced. For soft-sealed valves with PTFE or similar liners, check whether the liner is deformed or damaged and replace if necessary.

Reassembly and Testing: Properly reposition the plug or sealing components, ensuring that the sealing

surfaces are clean and that an appropriate amount of lubricant (if required) is applied. Evenly and symmetrically tighten the packing gland bolts or valve cover bolts. The plug shall rotate smoothly without sticking. After reassembly, perform a sealing test to confirm no internal or external leakage.

三、常见故障与处理

故障现象/Fault Phenomenon	可能原因/Possible Causes	处理方法/Corrective Actions
阀门无法完全关闭，内漏严重/Valve fails to close completely; severe internal leakage	1. 旋塞与阀体密封面磨损或划伤。 2. 软密封衬套（如 PTFE）变形或破损。 3. 密封面有异物卡滞。/1. Wear or scratching of plug and valve body sealing surfaces. 2. Deformation or damage of soft seal liner (e.g., PTFE). 3. Foreign matter stuck between sealing surfaces.	1. 拆解检查密封面，进行研磨修复或更换旋塞。 2. 更换密封衬套。 3. 清洗密封面，清除异物。/1. Disassemble and inspect sealing surfaces; perform lapping or replace the plug. 2. Replace the seal liner. 3. Clean sealing surfaces to remove foreign matter.
阀杆填料处外漏/External leakage at valve stem packing	1. 填料螺栓松动。 2. 填料老化或磨损。 3. 阀杆表面划伤或腐蚀。/1. Packing bolts loose. 2. Packing aged or worn. 3. Valve stem surface scratched or corroded.	1. 均匀拧紧填料螺栓。 2. 泄压后更换新填料。 3. 修复或更换阀杆。/1. Evenly tighten packing bolts. 2. Depressurize and replace packing. 3. Repair or replace the valve stem.
操作扭矩过大，转动困难/Excessive operating torque; difficult rotation	1. 长期未操作，密封面粘连或结垢。 2. 填料压得过紧。 3. 阀体或旋塞变形（如过热、过压）。/1. Long period without operation; sealing surfaces stuck or scaled. 2. Packing compressed too tightly. 3. Valve body or plug deformed (e.g., due to overheating or overpressure).	1. 注入润滑剂或清洗密封面，反复转动直至灵活。 2. 适当松解填料压盖。 3. 检查工况是否超限，必要时更换阀门。/1. Inject lubricant or clean sealing surfaces; rotate repeatedly until smooth. 2. Slightly loosen the packing gland. 3. Check if operating conditions exceed limits; replace valve if necessary.
螺纹连接处泄漏/Leakage at threaded connections	1. 密封材料老化或损坏。 2. 螺纹连接未拧紧。 3. 螺纹损坏。/1. Sealing material aged or damaged. 2. Threaded connection not tightened sufficiently. 3. Threads damaged.	1. 泄压后重新缠绕密封带或涂抹密封胶。 2. 适当拧紧连接。 3. 修复或更换管道/阀门。/1. Depressurize and reapply sealing tape or sealant. 2. Tighten the connection appropriately. 3. Repair or replace the pipe/valve.

四、长期停用与存放

长期停用的阀门，应将其置于半开状态（约 15° ~30° 开启位）或按制造商建议的位置，避免密封面长期受

压粘连。关闭系统进出口阀门，排除阀腔内积液和压力。

对阀杆外露表面、螺纹接口等加工表面进行防锈处理（如涂防锈脂）。

阀门进出口应用塑料盖封住，防止灰尘和异物进入阀腔。

存放在干燥、通风的室内，不得露天堆放，避免受潮和机械损伤。

3、 Long term disuse and storage

For valves taken out of service for extended periods, place them in a partially open position (approximately 15° to 30° open) or as recommended by the manufacturer to prevent long-term compression sticking of the sealing surfaces. Close the system inlet and outlet valves, and drain any trapped pressure and liquid from the valve cavity.

Apply rust preventive treatment (e.g., anti-rust grease) to exposed valve stem surfaces, threaded connections, and other machined surfaces.

Cover the valve inlet and outlet with plastic caps to prevent dust and foreign matter from entering the valve cavity.

Store in a dry, well-ventilated indoor location. Outdoor storage is not permitted. Protect from moisture and mechanical damage.

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（21）67038872

网址：<https://www.kaiweixi.com>

E-mail: zcq@kaiweixi.com

Kaiweixi Valve Group Co., Ltd

Address: No.1 Linxia Road, Sanqiao Industrial Zone, Oubei Street, Yongjia



开维喜阀门

开维喜阀门集团
Kaiweixi valve group
<https://www.kaiweixi.com>
E-mail: sales@kaiweixi.com

County, Wenzhou City, Zhejiang Province

Phone: +86 (21) 67038872

URL: <https://www.kaiweixi.com>

F-mail: zcq@kaiweixi.com