

BX44W 三通保温旋塞阀

BX44W Three-way Heat-preservation Plug Valve

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

BX44W 三通保温旋塞阀

型号: BX44W-1.0 P/R/C 规格: DN20-DN300
公称压力: PN1.0 适用介质: 非腐蚀、弱腐蚀、硝酸类等
适用温度: $\leq 250^{\circ}\text{C}$ 阀体材质: 铸钢、不锈钢
连接方式: 法兰 驱动方式: 手动、气动、电动

Model: BX44W-1.0 P/R/C Specification: DN20-DN300
Nominal pressure: PN1.0 Applicable medium: Non-corrosive, mildly corrosive, nitric acid class, etc.
Applicable temperature: $\leq 250^{\circ}\text{C}$ Valve body material: Cast steel, stainless steel
Connection method: flange drive method: Manual, pneumatic, electric



BX44W 三通保温旋塞阀产品图

BX44W Three-way Heat-preservation Plug Valve Product Diagram

概述

BX44W 保温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切换、分配或开启、关闭的阀门。该阀为多通式结构，旋塞上设有相应的介质流道（呈 L 形或 T 形），通过旋转旋塞 90 度或 180 度，使流道与阀体不同通道对齐或错位，从而实现介质的换向、合流或分流。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。阀体外部设有保温夹套，可通过引入蒸汽、导热油或其他保温介质，对阀体内部介质进行加热或保温，防止介质在输送过程中因温度下降而凝固或结晶。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，适用于需要改变介质流向或进行多路控制的保温工况。

Overview

The BX44W jacketed plug valve is a type of valve that opens, closes, switches, or distributes fluid passages through the rotary motion of a tapered or cylindrical plug. The valve adopts a multi-way structure, with corresponding flow ports (L-shaped or T-shaped) provided on the plug. By rotating the plug 90 or 180 degrees, the flow ports align with or become offset from different passages of the valve body, thereby achieving flow diversion, merging, or directional change.

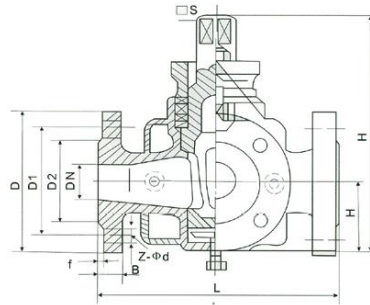
The valve stem is integrally or fixedly connected to the plug. During operation, the stem and plug rotate synchronously without any lifting motion. Packing sealing is provided between the stem and the valve body to ensure reliable external sealing. The external body of the valve is equipped with a heating jacket, which allows the introduction of steam, thermal oil, or other heating media to heat or maintain the temperature of the internal medium, preventing solidification or crystallization due to temperature drop during transportation. The valve relies on precise fit and lubrication or resilient sealing materials between the plug and the valve body sealing surfaces, offering low operating torque and stable sealing performance. It is suitable for insulation applications requiring flow direction change or multi-port control.

特点

1. 保温结构一体化：阀体外部整体铸造或焊接有保温夹套，可通入热媒，确保阀门内部介质维持工艺所需温度，适用于高粘度、易凝固或需恒温输送的介质。
2. 多通切换，流道灵活：旋塞旋转 90 度或 180 度即可完成介质的换向、合流或分流，操作迅速。阀体为多通式结构，旋塞上设有 L 形或 T 形流道，可根据工况需求实现多种流向控制。
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. Integrated Jacket Construction: The valve body is integrally cast or welded with an external heating jacket, allowing heating medium to pass through to maintain the required process temperature of the internal medium. Suitable for high-viscosity, easily solidifying, or constant-temperature conveying media.
2. Multi-Port Switching with Flexible Flow Path: A 90-degree or 180-degree rotation of the plug completes flow direction change, merging, or diverting, providing rapid operation. The valve adopts a multi-way structure with L-shaped or T-shaped flow ports on the plug, enabling various flow control modes according to process requirements.
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 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.



BX44W 三通保温旋塞阀结构图

BX44W Three-way Heat-preservation Plug Valve Product 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	不锈钢、铸钢/Stainless steel、Cast steel
2	塞子/Plug	不锈钢、铸钢/Stainless steel、Cast steel
3	填料/Packing	石棉盘根+304/Asbestos packing + 304

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
- 2、连接法兰按 GB/T17241.6 的标准

Standard requirements for external dimensions

1. The structural length of the valve shall comply with the standard of GB/T12221
2. Connecting flanges according to GB/T17241.6 standard

外形尺寸表 Outline dimension table

口径 (DN)	L		D	D1	D2	Z-φd
20	145	150	105	75	55	4×14
25	145	160	115	85	65	4×14
32	165	190	135	100	78	4×18
40	190	200	145	110	85	4×18
50	200	200	160	125	100	4×18
65	220	280	180	145	120	4×18
80	250	300	195	160	135	4×18
100	300	340	215	180	155	8×18
125	350		245	210	185	8×18
150	400		280	240	210	8×23

200	450	335	295	265	8×23
250	530	390	350	320	12×23
300	580	440	400	368	12×23

BX44W 三通保温旋塞阀安装与维护须知

第一部分：安装须知

一、安装前准备

核对确认：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、合金钢或铸铁）符合设计要求。检查旋塞与阀体密封面有无划伤、锈蚀或缺陷，并清点法兰密封垫片及连接紧固件。

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、泥沙及其他杂物，防止杂质进入阀腔损伤旋塞与阀体密封面。

方向与姿势：BX44W 为多通保温旋塞阀，安装前应确认工艺流程所需的流向切换或分配方式。为利于操作和维护，推荐水平安装并使阀杆处于垂直向上位置，手轮或执行机构应朝向易于操作的方向。保温夹套的进出口应朝向便于接管的位置，底部留有足够空间进行维护操作。

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, or alloy steel) meet the design requirements. Inspect the sealing surfaces of the plug and valve body for scratches, corrosion, or defects. Count the flange gaskets and heating jacket connection fittings.

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.

Orientation and Position: The BX44W is a multi-way jacketed plug valve. Before installation, confirm the required flow direction change or distribution mode for the process. For ease of operation and maintenance, horizontal installation is recommended with the valve stem in a vertical upward position. The handwheel or actuator should face a direction convenient for operation. The heating jacket inlet and outlet should face a direction convenient for piping connection, with sufficient space reserved at the bottom for maintenance operations.

二、安装过程

吊装与对中：平稳吊装阀门，确保阀体法兰与管道法兰自然对中，严禁强行撬动对孔。禁止以阀杆、手轮或保温夹套接口作为承力点。

位置选择：应根据工艺要求安装在需要改变介质流向、合流或分流的管段位置。用于易结晶、高粘度或需保温介质时，应尽量靠近热媒源，减少管路热损失。安装位置应留有足够的空间用于拆卸阀盖进行维护。

支撑与仪表：大口径或重型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，建议在阀门各进出口管道上安装压力表或温度计，用于判断密封性能及保温效果。

2、Installation process

Lifting and Alignment: Lift the valve smoothly and ensure natural alignment between the valve body flange and the pipeline flange. Forced alignment by prying is prohibited. Do not use the valve stem, handwheel, or heating jacket connections as lifting or load-bearing points.

Location Selection: The valve should be installed at pipeline sections where flow direction change, merging, or diverting is required according to process requirements. For media prone to crystallization, high viscosity, or requiring heat tracing, the valve shall be positioned as close as possible to the heating

medium source to minimize heat loss. Sufficient space shall be reserved for removing the valve cover during maintenance.

Supports and Instruments: Large-diameter or heavy plug valves require independent pipeline supports to prevent additional bending moments on the valve body. To monitor operating status, it is recommended to install pressure gauges or thermometers on each inlet and outlet pipeline of the valve to evaluate sealing performance and insulation effect.

第二部分：操作与使用须知

一、初始投运：

保温夹套预投运：缓慢开启热媒（蒸汽、导热油等）进口阀门，先进行暖管预热，待保温夹套温度均匀上升后再逐步开大热媒流量，禁止急剧升温，以免温差应力造成阀体或夹套开裂。

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。对于蒸汽等高温介质，应充分暖管后再缓慢引入。

检漏与观察：升压至工作压力后，检查阀体与管道连接处、阀杆填料处、保温夹套接口有无渗漏。记录初始状态下的操作扭矩及阀体表面温度，作为运行基准值。

二、运行监控与操作：

温度监测（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、结垢或填料过紧，应及时检查处理。严禁强行操作，以免损伤密封面或导致阀杆变形。

启闭操作：启闭阀门时应缓慢转动手轮或执行机构。BX44W 旋塞阀通过旋转旋塞 90 度或 180 度实现介质的换向、合流或分流，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。

定期排放冷凝水：定期检查热媒供应是否正常，保温夹套表面温度是否均匀。如发现保温效果下降、介质温度明显降低，应及时检查热媒管路是否堵塞、疏水阀是否正常工作或夹套是否泄漏。

Part 2: Instructions for Operation and Use

I. Initial Commissioning

Heating Jacket Pre-Commissioning: Slowly open the heating medium (steam, thermal oil, etc.) inlet valve. Preheat the piping first, then gradually increase the heating medium flow after the jacket temperature rises evenly. Rapid temperature increase is prohibited to avoid thermal stress cracking of the valve body or jacket.

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. For high-temperature media such as steam, warm up the piping adequately before introducing the medium.

Leak Check and Observation: Raise the pressure to the working pressure and check for leakage at the valve-body connections, valve stem packing, and heating jacket connections. Record the initial operating torque and valve body surface temperature as baseline values.

II. Operation Monitoring and Handling

Torque Monitoring: Regularly record the operating torque when opening or closing the valve. A significant increase in torque indicates possible sticking, scaling, or over-tightened packing on the sealing surfaces, which should be inspected and addressed promptly. Forced operation is prohibited to avoid damaging the sealing surfaces or deforming the valve stem.

Opening and Closing Operation: Rotate the handwheel or actuator slowly when opening or closing the valve. The BX44W plug valve achieves flow direction change, merging, or diverting by rotating the plug 90 or 180 degrees. 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.

Heating System Monitoring: Regularly check whether the heating medium supply is normal and whether the jacket surface temperature is uniform. If the insulation effect deteriorates or the medium temperature drops significantly, promptly check whether the heating medium piping is blocked, the steam trap is functioning properly, or the jacket is leaking.

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、法兰连接处、阀杆填料压盖、保温夹套接口有无锈蚀、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、温度计读数准确、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。对于有毒、易燃易爆介质，应执行专门的安全置换程序。

拆卸填料压盖或侧盖：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。严禁用硬物敲击或刮擦密封面。

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, flange connections, valve stem packing gland, and heating jacket connections. If slight external leakage occurs, evenly tighten the packing bolts as appropriate.

Instrument Maintenance: Ensure that upstream and downstream pressure gauges and thermometers 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. For toxic, flammable, or explosive media, follow special purging and replacement procedures.

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.

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.

保温效果差，介质温度下降/Poor insulation effect; medium temperature drops	1. 热媒供应不足或温度过低。 2. 保温夹套内部堵塞或积存大量冷凝水。 3. 夹套壁腐蚀穿孔导致热媒泄漏。/1. Insufficient heating medium supply or low temperature. 2. Heating jacket internally clogged or filled with condensate. 3. Jacket wall corroded through, causing heating medium leakage.	1. 检查热媒源及管路阀门开度。 2. 清理夹套内部，排放冷凝水，检查疏水阀。 3. 对夹套进行补焊或更换阀门。/1. Check heating medium source and valve opening. 2. Clean the jacket interior; drain condensate; check steam trap. 3. Weld repair the jacket or replace the valve.
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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，排除阀腔内及保温夹套内的积液和压力。

对阀杆外露表面、法兰密封面等加工表面进行防锈处理（如涂防锈脂）。

阀门进出口应用盲板或塑料盖封住，防止灰尘和异物进入阀腔。

保温夹套接口也应加以封堵，防止杂物进入夹套内部。

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。

4、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 and the heating jacket.

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

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

The heating jacket connections should also be capped to prevent debris from entering the jacket interior.

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!

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