

压力表旋塞阀

Pressure-gauge Plug Valve

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

压力表旋塞阀

型号: X14H-4.0C/X13H-4.0C/X14H-4.0T/X13H-4.0T/X14H-4.0P/X13H-4.0P

规格: G1/2

公称压力: PN1.6-6.4

适用介质: 水、蒸汽、油品、硝酸类

适用温度: $\leq 100^{\circ}\text{C}$

阀体材质: 铸钢、铸铜、不锈钢

连接方式: 内螺纹

驱动方式: 手动

Model: X14H-4.0C / X13H-4.0C / X14H-4.0T / X13H-4.0T / X14H-4.0P / X13H-4.0P

Specification: G1/2

Nominal pressure: PN1.6-6.4

Applicable medium: Water, steam, oil, nitric acid type

Applicable temperature: $\leq 100^{\circ}\text{C}$

Valve body material: Cast steel, cast copper, stainless steel

Connection method: Female thread (Internal thread)

drive method: Manual



压力表旋塞阀产品图

Pressure-gauge Plug Valve Product Diagram

概述

压力表旋塞阀是一种通过锥形或圆柱形旋塞（塞体）的旋转运动来实现压力测量管路与压力仪表之间通断的阀门。该阀为直通式或直角式结构，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，从而实现压力表与测压点的连通或切断。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。阀体两端通常采用内螺纹连接方式，一端连接压力仪表，另一端连接测压管道或设备接口，安装拆卸方便。该阀门依靠旋塞与阀体密封面之间的精密配合实现密封，操作扭矩小，密封性能稳定，广泛应用于锅炉、压力容器、管道系统中的压力测量隔离，作为压力表在线校验、更换或清洗时的截断和接通之用。

Overview

The pressure gauge plug valve is a type of valve that connects or disconnects the pressure

measurement pipeline to or from the pressure instrument through the rotary motion of a tapered or cylindrical plug. The valve adopts a straight-through or angle-type 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 connecting or isolating the pressure gauge from the pressure tapping point. 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 typically adopt female threaded connections, with one end connected to the pressure instrument and the other end connected to the pressure tapping pipeline or equipment interface, making installation and disassembly convenient. The valve relies on precise fit between the plug and the valve body sealing surfaces to achieve sealing, offering low operating torque and stable sealing performance. It is widely used for pressure measurement isolation in boilers, pressure vessels, and pipeline systems, serving as a shut-off and connection device for online pressure gauge calibration, replacement, or cleaning.

特点

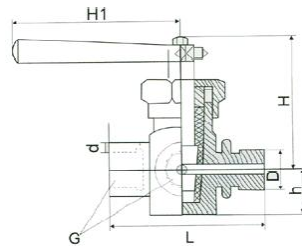
- 1、内螺纹连接，安装便捷：阀体两端采用内螺纹连接方式，一端连接压力仪表，另一端连接测压管道，安装拆卸方便，适用于仪表管路系统，无需法兰焊接。
- 2、快速启闭，操作轻便：旋塞旋转 90 度即可完成压力表与测压点的连通或切断，操作迅速。启闭过程中密封面无摩擦，操作扭矩小，便于压力表的在线校验、更换或清洗。
- 3、密封性能可靠：旋塞与阀体密封面可进行精密研磨，实现良好的密封效果，确保在高压工况下无内外泄漏，有效隔离压力介质。
- 4、耐腐蚀与耐高压：阀体及旋塞可根据介质选用碳钢、不锈钢、合金钢等材质，密封面可进行硬化处理，耐高压、抗冲刷，适用于蒸汽、水、油、气等多种介质。
- 5、无升降结构，高度紧凑：阀杆与旋塞一体旋转，无轴向位移，整体高度较低，适用于空间受限的仪表盘或仪表箱安装。
- 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，安装时无需区分进出口，提高安装便利性。

feature

1. Female Threaded Connection for Easy Installation: Both ends of the valve body adopt female threaded connections, with one end connected to the pressure instrument and the other end connected to the pressure tapping pipeline, making installation and disassembly convenient. Suitable for instrument piping systems without the need for flange welding.
2. Quick Opening/Closing with Light Operation: A 90-degree rotation of the plug connects or disconnects the pressure gauge from the pressure tapping point, providing rapid operation. There is no friction on the sealing surfaces during opening and closing, resulting in low operating torque, facilitating online calibration, replacement, or cleaning of pressure gauges.
3. Reliable Sealing Performance: The sealing surfaces of the plug and valve body can be precision-lapped to achieve excellent sealing, ensuring no internal or external leakage under high-pressure conditions and effectively isolating the pressure medium.
4. Corrosion Resistance and High-Pressure 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 to withstand high pressure and erosion, suitable for various media such as steam, water, oil, and gas.

5. Non-Rising Stem Design, Compact Height: The stem and plug rotate as one unit without axial movement, resulting in a low overall height, suitable for installation on instrument panels or in instrument cabinets with limited space.

6. Bidirectional Sealing, No Flow Direction Restriction: The valve is designed for bidirectional sealing with no strict requirement on flow direction, eliminating the need to distinguish between inlet and outlet during installation, thereby improving installation convenience.



压力表旋塞阀结构图

Pressure-gauge 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	铸钢、铸铜、不锈钢/Cast steel, cast copper, stainless steel
2	塞子/Plug	铸钢、铸铜、不锈钢/Cast steel, cast copper, stainless steel
3	填料/Packing	铸钢、铸铜、不锈钢/Cast steel, cast copper, stainless steel
4	填料压盖/packing gland	石墨/Graphite

性能规范表 Performance Specification Sheet

性能规范表 Performance Specification Sheet		
公称压力 Nominal Pressure	1.6-6.4	MPa
强度试验压力 Strength test pressure	2.0-7.0	
密封试验压力 Sealing test pressure	1.6-6.4	
适用温度 Applicable Temperature	≤100	℃

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

零件名称 Name of Parts	尺寸 measurements (mm)						
	D	L	G	d	h	H	H1

X14H-4. 0C X13H-4. 0C	G1/2	91	20*1. 5	6. 5	25	85	123
X14H-4. 0T X13H-4. 0T							
X14H-4. 0P X13H-4. 0P							

压力表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（通常为碳钢、不锈钢或合金钢）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：安装前必须对测压管道系统进行彻底吹扫，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。压力表接口及管道螺纹应清洁完好，无毛刺或损伤。

方向与姿势：压力表旋塞阀为双向密封阀门，无严格介质流向限制。为便于操作和观察，推荐垂直安装并使阀杆处于水平向外位置，手轮应朝向便于操作的方向。阀门两端内螺纹分别连接压力表和测压管道，安装时应确保螺纹对中，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 carbon steel, stainless steel, 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 pressure tapping pipeline system must be thoroughly purged 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 pressure gauge interface and pipeline threads shall be clean and intact, free from burrs or damage.

Orientation and Position: The pressure gauge plug valve is a bidirectional sealing valve with no strict flow direction restriction. For ease of operation and observation, vertical installation is recommended with the valve stem in a horizontal outward position. The handwheel should face a direction convenient for operation. When connecting the female threads of the valve ends to the pressure gauge and pressure tapping 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及压力表螺纹，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），但应注意避免密封材料进入阀腔。

位置选择：建议安装在压力表与测压点之间的管路上，应尽量靠近压力表，便于操作和维修。安装位置应留有足够的空间用于启闭操作和日常维护。

支撑与仪表：对于较重的压力表或存在振动的工况，压力表及阀门应有独立支撑，避免阀门及压力表承受额外弯矩。安装完成后应确认压力表与阀门连接牢固，无松动。

2、 Installation process

Connection and Alignment: Manually screw the valve onto the external threads of the pipeline and the pressure gauge, 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) shall be used for threaded connections, but care shall be taken to prevent sealing material from entering the valve cavity.

Location Selection: The valve should be installed on the pipeline between the pressure gauge and the pressure tapping point, and shall be positioned as close as possible to the pressure gauge for ease of operation and maintenance. Sufficient space shall be reserved for opening/closing operation and daily maintenance.

Supports and Instruments: For heavy pressure gauges or applications with vibration, independent supports shall be provided for the pressure gauge and the valve to prevent additional bending moments on the valve and the pressure gauge. After installation, confirm that the pressure gauge and the valve are firmly connected without looseness.

第二部分：操作与使用须知

一、初始投运：

排气与充压：缓慢开启系统测压点阀门，使介质缓慢进入阀腔及压力表。对于气体介质，应缓慢升压，避免压力冲击损坏压力表。

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、压力表连接处有无渗漏。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，压力表指示正常。

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。压力表旋塞阀为 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。

定期操作：对于长期处于固定位置的阀门，建议每月进行一次全行程启闭操作，防止旋塞与阀体密封面粘连，确保需要时能够正常操作。

压力表在线校验/更换操作：当需要校验或更换压力表时，应先关闭压力表旋塞阀，确认阀门完全关闭后，缓慢打开泄压阀（如有）或缓慢松开压力表连接螺纹，确认阀腔及压力表内压力已降至零后，方可拆卸压力表。安装新压力表前应清洁连接螺纹，安装后缓慢打开阀门，检查有无泄漏。

Part 2: Instructions for Operation and Use

I. Initial Commissioning

Venting and Pressurization: Slowly open the system pressure tapping point valve to allow the medium to slowly enter the valve cavity and the pressure gauge. For gaseous media, pressurize slowly to avoid pressure shock that may damage the pressure gauge.

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

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 pressure gauge 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.

Periodic Operation: For valves remaining in a fixed position for extended periods, a full-stroke opening

and closing operation is recommended once per month to prevent sticking between the plug and valve body sealing surfaces, ensuring normal operation when needed.

Online Pressure Gauge Calibration/Replacement Operation: When calibration or replacement of the pressure gauge is required, first close the pressure gauge plug valve. After confirming that the valve is fully closed, slowly open the pressure relief valve (if available) or slowly loosen the pressure gauge connection threads. Confirm that the pressure in the valve cavity and the pressure gauge has dropped to zero before removing the pressure gauge. Before installing a new pressure gauge, clean the connection threads. After installation, slowly open the valve and check for leakage.

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：确保压力表读数准确、灵敏，表盘清晰，无损坏。定期校验压力表。

操作灵活性检查：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：关闭测压点上游的截止阀（如有），并关闭压力表旋塞阀。缓慢打开泄压阀或缓慢松开压力表连接螺纹，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：使用合适工具，均匀对角松开并卸下填料压盖螺栓。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。

回装与调试：将旋塞准确复位，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。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 the pressure gauge is accurate and responsive, with a clear and undamaged dial. Calibrate the pressure gauge regularly.

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 valve upstream of the pressure tapping point (if available) and close the pressure gauge plug valve. Slowly open the pressure relief valve or slowly loosen

the pressure gauge connection threads. 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: Use appropriate tools to evenly and diagonally loosen and remove the packing gland 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.

Reassembly and Testing: Properly reposition the plug, 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. 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. 密封面有异物卡滞。/1. Wear or scratching of plug and valve body sealing surfaces. 2. 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. 清洗密封面，清除异物。/1. Disassemble and inspect sealing surfaces; perform lapping or replace the plug. 2. 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。/1. Long period without operation; sealing surfaces stuck or scaled. 2. Packing compressed too tightly. 3. Valve body or plug deformed.	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.
压力表指示异常或无	1. 压力表旋塞阀未打开。	1. 确认阀门处于全开位置。

指示/Pressure gauge indicates abnormally or no indication	2. 阀门内部堵塞。 3. 压力表故障。/1. Pressure gauge plug valve not open. 2. Valve internally blocked. 3. Pressure gauge faulty.	2. 拆解检查并清理阀腔。 3. 校验或更换压力表。/1. Confirm the valve is in fully open position. 2. Disassemble, inspect, and clean the valve cavity. 3. Calibrate or replace the pressure gauge.
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四、长期停用与存放

长期停用的阀门，应将其置于关闭状态。关闭测压点上游阀门，排除阀腔内及压力表内的积液和压力。

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 the closed position. Close the upstream valve of the pressure tapping point, and drain any trapped pressure and liquid from the valve cavity and the pressure gauge.

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!

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