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Q11H 锻钢内螺纹三片式球阀

Q11H Forged Steel NPT Three-Piece Ball Valve

使用说明书

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Q11H 锻钢内螺纹三片式球阀

型号：Q11H-16C/25C/40C/16P/25P/40P　　规格： DN10-DN50
公称压力：1.0Mpa-6.4Mpa　　适用介质：水、蒸汽、油
适用温度：≤232℃　　阀体材质：锻钢、锻不锈钢
连接方式：内螺纹　　驱动方式：手动、气动、电动
其他参数：制造标准按 GB/T12237

Q11H Forged Steel NPT Three-Piece Ball Valve

Model:Q11H-16C/25C/40C/16P/25P/40P　　Specifications: DN10-DN50
Nominal Pressure:1.0Mpa-6.4Mpa　　Applicable Media: water, gas, oil
Applicable Temperature: ≤120℃　　Body Material: forged steel 、forged stainless steel
End Connection :NPT　　Operation:Manual, pneumatic, electric
Other Parameters: Manufacturing standard according to GB/T12237.

Q11H 锻钢内螺纹三片式球阀概述

Q11H 锻钢内螺纹三片式球阀是一种采用锻钢阀体、内螺纹连接的高压高温专用球阀。阀体由 A105 等锻钢材料通过三片式螺栓连接结构构成，具有优异的机械强度和密封可靠性。阀门采用金属硬密封设计，通过旋转阀杆带动精密加工的球体实现 90 度启闭，能够在高压差和高温工况下保持稳定密封。该阀门专为石油、化工、电站等行业的苛刻工况设计，适用于水、蒸汽、油品及腐蚀性介质，是高压小口径管路系统中实现可靠截断的关键设备。

Q11H Forged Steel NPT Three-Piece Ball Valve Overview

The Q11H Forged Steel NPT Three-Piece Ball Valve is a specialized ball valve designed for high-pressure and high-temperature applications. It features a forged steel body (typically made of materials such as A105) and NPT connections. The valve employs a three-piece bolted structure, ensuring excellent mechanical strength and reliable sealing performance. Designed with metal hard-sealing technology, it operates through a 90-degree rotation of the stem to drive a precisely machined ball, providing stable sealing under high-pressure differentials and elevated temperatures. This valve is engineered for demanding conditions in industries such as petroleum, chemical, and power plants, and is suitable for media including water, steam, oil, and corrosive fluids. It serves as a critical device for reliable shut-off in high-pressure, small-diameter pipeline systems.

Q11H 锻钢内螺纹三片式球阀产品图
Q11H Forged Steel NPT Three-Piece Ball Valve

Q11H 锻钢内螺纹三片式球阀特点

1.锻钢阀体高压性能：采用锻造工艺成型，材料致密均匀，机械性能优异，能够可靠承受高压、高温及频繁压力冲击。

2.三片式结构维护便捷：阀体由三部分通过高强度螺栓连接，无需从管道拆卸即可进行内部检修和密封件更换，大大降低维护成本和时间。

3.金属硬密封耐高温：球体与阀座采用硬质合金密封面，耐磨损、耐高温、耐冲刷，适用于蒸汽及高温介质工况。

4.内螺纹连接紧凑可靠：采用 NPT 或 G 螺纹连接，结构紧凑，密封性好，适合高压小口径管路的紧凑布置。

5.防火安全设计：通常符合 API 607 防火标准，在软密封失效时仍能通过金属密封副保持基本密封功能，安全性能高。

Q11H Forged Steel NPT Three-Piece Ball Valve Features

1. Forged Steel Body for High-Pressure Performance: Manufactured using forging processes, the valve body features dense and uniform material structure, offering excellent mechanical properties. It reliably withstands high pressure, high temperature, and frequent pressure shocks.

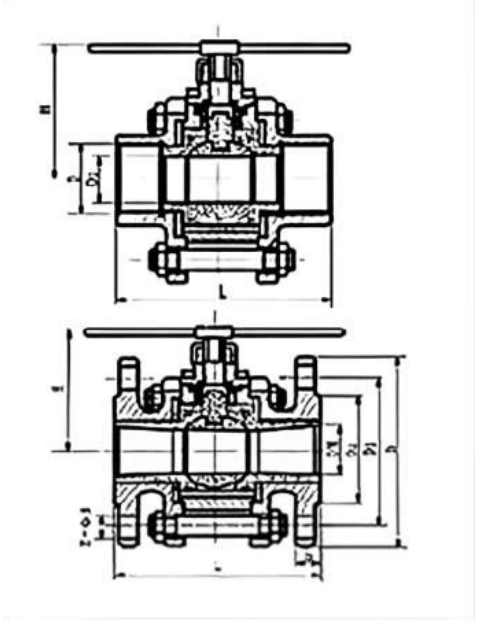
2. Three-Piece Structure for Easy Maintenance: The valve body consists of three sections connected by high-strength bolts, enabling internal inspection and seal replacement without removing the valve from the pipeline. This significantly reduces maintenance time and costs.

3. Metal Hard Sealing for High-Temperature Resistance: The ball and seat utilize hard alloy sealing surfaces, providing high resistance to wear, high temperatures, and erosion. This design makes the valve

suitable for steam and other high-temperature media.

4. NPT Connection for Compact Reliability: Equipped with NPT or G threads, the valve offers a compact and reliable seal. It is ideal for tight layouts in high-pressure, small-diameter piping systems.

5. Fire-Safe Design: Compliant with API 607 fire safety standards, the valve maintains essential sealing functionality through its metal sealing pairs even if soft seals fail, ensuring a high level of safety.



Q11H 锻钢内螺纹三片式球阀结构图

Q11H Forged Steel NPT Three-Piece Ball Valve

零部件名称材料表

Parts Name Material List

序号NO.	名称 Name	材料 Material
1	阀体 body	碳钢、不锈钢 carbon steel、Stainless Steel
2	球体 ball	不锈钢 Stainless Steel
3	密封圈 seal gasket	PTFE
4	填料 packing	弹性石墨 Flexible Graphite
5	阀杆 stem	不锈钢 Stainless Steel
6	阀座 seat	碳钢、不锈钢 carbon steel、Stainless Steel

性能规范表 Performance Specification		
公称压力 Nominal Pressure	1.0-6.4	Mpa
强度试验压力 Shell Test	1.5-9.6	
密封试验压力 Seal Test	1.1-7.04	
适用温度 Suitable Temp.	120	℃

外形尺寸标准要求

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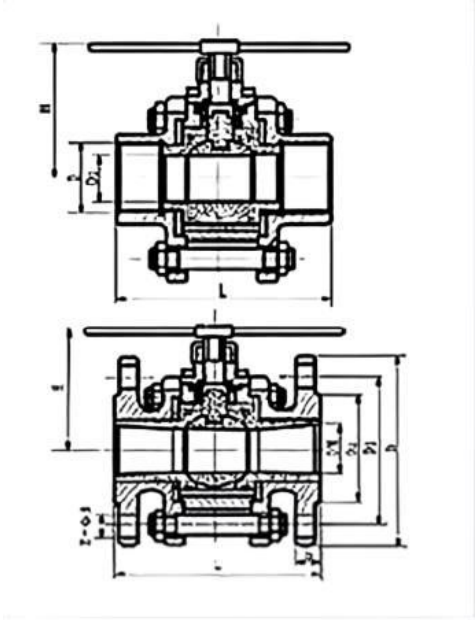
1、阀门的结构长度按 GB/T12221 的标准

2、连接法兰按 GB9113 的标准

Dimensions Standard Requirements

1. The structural length of the valve shall conform to the standard GB/T12221.

2. The connecting flange shall conform to the standard GB9113.



Q11H 锻钢内螺纹三片式球阀外形图

Q11H Forged Steel NPT Three-Piece Ball Valve View Drawing

Q11H 锻钢内螺纹三片式球阀外形尺寸表

Q11H Forged Steel NPT Three-Piece Ball Valve Dimensions Table

公称通径	尺寸（mm）			
（mm）	L	H	D	D1
10	90	76	32	3/8
15	90	76	32	1/2
20	100	81	38	3/4
25	115	92	45	1
32	130	114	55	1 1/4
40	150	125	65	1 1/2
50	170	144	75	2

Q11H 锻钢内螺纹三片式球阀安装、使用与维护说明

安装指南

1. 安装前准备：核对阀门型号、压力等级、螺纹标准及锻钢材质是否符合高压管路设计要求。清洁阀门内腔及管道端口螺纹，确保无杂质。

2. 螺纹连接操作：在管道外螺纹上顺时针缠绕密封带或涂抹高温密封剂。手动将阀门旋入管道，对正螺纹后用工具卡住阀体六角部位均匀紧固，注意锻钢阀门承力强但仍需避免野蛮操作。

3. 三片式结构注意事项：阀门由两片端盖与中间阀体通过高强度合金钢螺栓连接，安装时无需拆卸。紧固管道螺纹时应确保阀门不受扭曲力，防止内部金属密封组件错位。

4. 安装方向与空间：阀门可安装于任意方向，但需确保操作手柄或执行机构有充足旋转空间。推荐阀杆垂直或水平向上安装。

5. 安装后测试：手动操作阀门全行程数次，检查启闭是否顺畅无卡阻。进行管道压力试验，试验压力需符合设计规范，检查各连接处有无泄漏。

使用操作

1. 启闭操作：通过手柄或执行器进行 90 度旋转操作。操作应平稳施力，达到机械限位即停止，严禁使用加长杠杆强行操作。

2. 状态确认：通过手柄位置或执行器指示器明确判断阀门开关状态。高温高压工况下建议增设状态标识牌。

3. 常规使用：本阀门设计用于高压高温介质截断，不应用于流量调节。长期处于全开状态时，建议定期进行全行程开关操作，保持密封面清洁。

4. 带压操作注意事项：在系统带压状态下操作时，应缓慢均匀施力。若操作扭矩异常增大，应立即停止并检查系统压力是否超标或内部是否有杂质。

维护保养

1. 定期检查：定期检查螺纹连接处有无泄漏，阀体表面有无异常腐蚀或损伤。检查三片式连接螺栓是否紧固。

2. 内部维护：若需检修内部密封件，可在系统完全泄压后，拆卸三片式连接螺栓，将中间阀体部分取出进行检查和维护。

3. 密封性能维护：若阀门出现内漏，可能为金属密封面损伤或杂质附着。可拆开阀门检查阀座与球体密封面，轻微损伤可研磨修复，严重损伤需更换密封组件。

4. 阀杆密封维护：若阀杆处出现外漏，可尝试均匀拧紧阀杆压盖。高压工况下若泄漏持续，需泄压后更换高温高压填料。

5. 拆卸与存放：需要完全拆卸时，应先确认系统已完全泄压降温。阀门长期存放应保持全开或全关状态，对螺纹端口采取防锈措施，并存放在干燥环境中。

Installation, Operation, and Maintenance Instructions for Q11H Forged Steel NPT Three-Piece Ball Valve

Installation Guide

1. Pre-Installation Preparation: Verify that the valve model, pressure rating, thread standards, and forged

steel material comply with the design requirements of the high-pressure piping system. Clean the interior of the valve and the pipe thread ends to ensure they are free from debris.

2. Thread Connection Procedure: Apply thread seal tape or high-temperature sealant in a clockwise direction onto the external pipe threads. Hand-tighten the valve onto the pipe, then use a suitable tool on the hexagonal flats of the valve body for final uniform tightening. While forged steel offers high strength, avoid excessive force.

3. Considerations for Three-Piece Design: The valve consists of two end caps and a central body joined by high-strength alloy steel bolts. Do not disassemble during installation. Ensure the valve is not subjected to torsional stress when tightening the pipe connections to prevent misalignment of internal metal sealing components.

4. Orientation and Clearance: The valve can be installed in any orientation. However, ensure sufficient clearance for the operation of the hand lever or actuator. A vertical or horizontally upward stem orientation is recommended.

5. Post-Installation Testing: Manually cycle the valve through its full open/close travel several times to ensure smooth, unhindered operation. Conduct a system pressure test per design specifications and inspect all connections for leaks.

Operation

1. Opening/Closing Operation: Operate the valve via a 90-degree rotation of the hand lever or actuator. Apply force smoothly and stop once the mechanical stop is reached. The use of extension levers or excessive force is strictly prohibited.

2. Position Verification: Confirm the valve's open/closed status clearly via the hand lever position or actuator indicator. For high-temperature/pressure applications, additional status tags are recommended.

3. Normal Use: This valve is designed for on/off service in high-pressure and high-temperature media and must not be used for flow regulation. For valves maintained in the fully open position for extended periods, periodic full-stroke cycling is recommended to keep sealing surfaces clean.

4. Operation Under Pressure: When operating the valve under system pressure, apply force slowly and evenly. If operating torque increases abnormally, stop immediately and check for excessive system pressure or potential internal contamination.

Maintenance

1. Regular Inspection: Periodically inspect threaded connections for leaks and the valve exterior for abnormal corrosion or damage. Check the tightness of the three-piece assembly bolts.

2. Internal Maintenance: To inspect or service internal seals, ensure the system is fully depressurized and cooled. Then, disassemble the three-piece valve by removing the connecting bolts to access the central body section.

3. Seal Performance Maintenance: Internal leakage may indicate damage to metal sealing surfaces or contamination. Disassemble the valve to inspect the seat and ball sealing surfaces. Minor damage can be repaired by lapping; severe damage requires replacement of the sealing components.

4. Stem Seal Maintenance: For minor leakage around the stem, attempt to evenly tighten the stem gland. For persistent leakage under high-pressure conditions, depressurize the system and replace the stem packing with material suitable for high-temperature/high-pressure service.

5. Disassembly and Storage: For complete disassembly, ensure the system is fully depressurized and cooled. Valves for long-term storage should be left fully open or fully closed. Apply rust protection to threaded ends and store in a dry environment.

非常感谢您的阅读！

Thank you very much for reading!

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