

D373H 对夹硬密封蝶阀系列

D373H Wafer Type Hard Seal Butterfly Valve Series

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书

Instruction Manual



开 维 喜 阀 门 集 团 有 限 公 司
Kaiweixi Valve Group Co., LTD.

D373H 对夹硬密封蝶阀

D373H Wafer Type Hard Seal Butterfly Valve

型号: D373H	规格: DN50-DN2000
公称压力: PN10~PN40	适用介质: 水、空气、天然气、油品及弱腐蚀性流体
适用温度: -29℃~425℃/-40℃~650℃	阀体材质: 铸钢、不锈钢、双相不锈钢
连接方式: 对夹	驱动方式: 手动、蜗轮蜗杆、电动、气动
Model: D373H	
Size: DN50-DN2000	
Nominal Pressure: PN10-PN40	
Applicable Medium: Water, air, natural gas, oil, and mildly corrosive fluids	
Applicable Temperature: -29℃~425℃ / -40℃~650℃	
Body Material: Cast steel, stainless steel, duplex stainless steel	
Connection Type: Wafer	
Actuation Type: Manual, worm gear, electric, pneumatic	

概述

D373H 对夹硬密封蝶阀是一种通过高强度金属蝶板绕其固定轴（阀杆）旋转来实现开启、关闭和调节流体通道的阀门。其阀杆轴线位于蝶板密封面中心与管道通道中心线相交的位置，蝶板两侧对称。阀门采用对夹式连接，即阀体本身无法兰，通过双头螺栓将阀门直接夹持在两片管道法兰之间，实现紧凑安装。蝶板与阀座密封面均采用金属材料（不锈钢/合金钢）配对设计，密封面堆焊硬质合金并经精密研磨加工，依靠蝶板旋转产生的压紧力实现硬密封。该阀门通过手动、电动或气动装置驱动阀杆旋转 90°，即可实现对高温、高压及腐蚀性介质管路的快速切断与流量控制。

Overview

The D373H wafer type hard seal butterfly valve is a valve that achieves opening, closing, and fluid flow regulation through the rotation of a high-strength metal disc around its fixed shaft (valve stem). The stem axis is positioned at the intersection of the disc sealing surface center and the pipeline channel centerline, with the disc being symmetrical on both sides. The valve features a wafer-type connection, meaning the valve body itself is flangeless. It is clamped directly between two pipeline flanges using stud bolts, enabling a compact installation. Both the disc and the valve seat sealing surfaces are designed with a matching pair of metal materials (Stainless Steel/Alloy Steel). The sealing surfaces are overlaid with hard alloy and precision ground, relying on the compression force generated by the disc rotation to achieve a hard seal. By rotating the stem 90° via a manual, electric, or pneumatic actuator, the valve enables rapid shut-off and flow control for pipelines carrying high-temperature, high-pressure, and corrosive media.



D373H 对夹硬密封蝶阀产品图

D373H Wafer Type Hard Seal Butterfly Valve Product Drawing

特点

- 1、结构紧凑，安装便捷：采用对夹式连接设计，结构长度短，体积小，重量轻，无需法兰直接夹持于管道法兰之间，显著降低安装空间要求和管道负载成本。
- 2、启闭迅速，操作扭矩小：蝶板只需旋转 90° 即可实现全开或全关，操作简单快捷。精密加工的金属密封副摩擦系数低，所需操作扭矩小，可适配手动、电动、气动等多种驱动方式。
- 3、硬密封设计，耐高温高压：阀座与蝶板密封面均采用金属材料（不锈钢/合金钢）堆焊硬质合金，并经精密研磨处理，能够耐受高达 425℃ 以上的高温及高压工况，适用于蒸汽、热油等苛刻介质。
- 4、流体阻力小，节能效果显著：蝶板采用流线型设计，在全开状态下几乎不占据流道空间，介质流动接近直通管，压力损失极小，特别适合大流量、高流速的管道系统。
- 5、密封性能可靠，使用寿命长：金属密封副具有优异的耐磨性和抗冲蚀能力，配合合理的密封比压设计，可实现严密可靠的截断密封（符合 API 598 标准）。阀体采用高强度材料，有效抵抗热应力变形，确保长期稳定运行。
- 6、适用工况广泛：阀体可选用碳钢、不锈钢、合金钢等多种材质，适用于水、蒸汽、油品、腐蚀性介质及高温气体等工业流体。广泛应用于石油、化工、冶金、电力、热力管网等需要对介质进行切断或调节的场合。

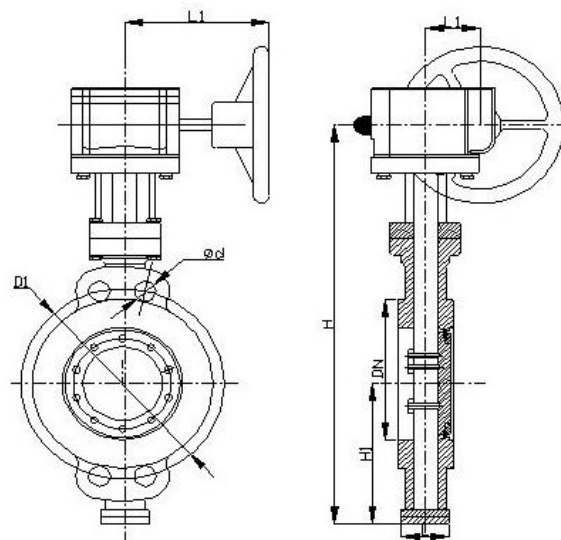
Features

- 1、Compact Structure, Easy Installation: The wafer-type connection design features a short face-to-face dimension, small volume, and light weight. It is clamped directly between pipeline flanges without requiring its own flanges, significantly reducing installation space requirements and pipeline load costs.
- 2、Quick Opening/Closing, Low Operating Torque: The disc achieves full opening or closing with a simple 90° rotation, making operation easy and fast. The precision-machined metal sealing pair has a low friction coefficient, requiring low operating torque and allowing compatibility with various drive modes such as manual, electric, and pneumatic.
- 3、Hard Seal Design, High Temperature and Pressure Resistance: The sealing surfaces of both the seat and the disc are made of metal materials (stainless steel/alloy steel) overlaid with hard alloy and precision-lapped. This design withstands high temperatures up to 425 ° C and high-pressure conditions, making it suitable for demanding media like steam and hot oil.

4、Low Fluid Resistance, Significant Energy Saving: The disc features a streamlined design. In the fully open position, it occupies almost no space in the flow path, allowing media flow close to a straight pipe condition with minimal pressure loss. This is particularly suitable for pipeline systems with large flow rates and high flow velocities.

5、Reliable Sealing Performance, Long Service Life: The metal sealing pair offers excellent wear resistance and erosion resistance. Combined with a properly designed specific sealing pressure, it achieves tight and reliable shut-off sealing (conforming to API 598 standards). The valve body is made of high-strength materials, effectively resisting thermal stress deformation and ensuring long-term stable operation.

6、Wide Applicability: The valve body can be made from various materials such as carbon steel, stainless steel, and alloy steel. It is suitable for industrial fluids including water, steam, oil, corrosive media, and high-temperature gases. It is widely used in applications requiring media shut-off or regulation in industries such as petroleum, chemical, metallurgy, power, and thermal piping networks.



D373H 对夹硬密封蝶阀结构图

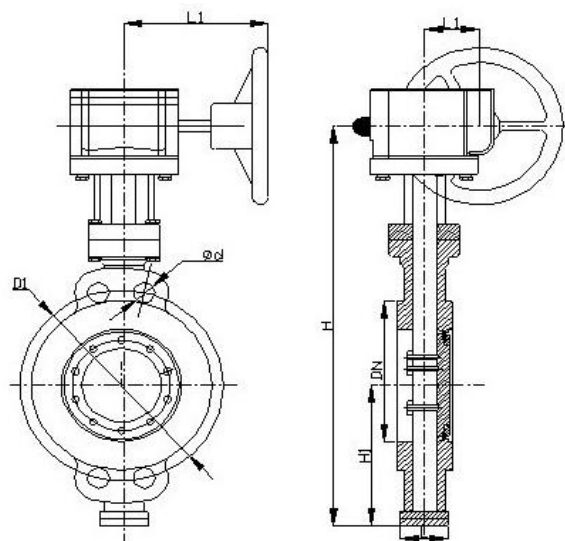
D373H Wafer Type Hard Seal Butterfly Valve Structure Drawing

零部件名称材料表 Parts and Materials List

零件名称 part name	零件材料 Part Material
阀体 body	铸钢、不锈钢、双相不锈钢 Cast steel, stainless steel, duplex stainless steel
蝶板 disc	碳钢、不锈钢、铬钢、合金钢 Carbon Steel, Stainless Steel, Chromium Steel, Alloy Steel
密封圈 Seal Ring	316 不锈钢+柔性石墨、聚四氟乙烯 316 Stainless Steel + Flexible Graphite, PTFE (Polytetrafluoroethylene)
阀杆 stem	2Cr13、不锈钢、铬钼钢 2Cr13, Stainless Steel, Chrome Molybdenum Steel
填料 packing	柔性石墨、聚四氟乙烯 Flexible Graphite, PTFE (Polytetrafluoroethylene)

性能规范表 Performance Specification Table

性能规范表 Performance Specification Table		
公称压力 Nominal Pressure	1.0/1.6/2.5/4.0	MPa
强度试验压力 Strength Test Pressure	1.5/2.4/3.75/6	
密封试验压力 Seal Test Pressure	1.1/1.76/2.75/4.4	
适用温度 Applicable Temperature	-29℃~425℃ -40℃~650℃	℃



D373H 对夹硬密封蝶阀外形尺寸图

D373H Wafer Type Hard Seal Butterfly Valve Overall Dimension Drawing

D373H 对夹硬密封蝶阀外形尺寸表

D373H Wafer Type Hard Seal Butterfly Valve overall dimension table

公称通径 Nominal Diameter	主要外型及连接尺寸(mm) Main Overall and Connection Dimensions (mm)								
	L	H	H1	L1	L2	PN0.6Mpa		PN1.0Mpa	
						D1	4-Φd	D1	4-Φd
50	43	250	80	48	145	110	4-14	125	4-18
65	46	265	95	48	145	130	4-14	145	4-18
80	64	275	100	48	145	150	4-18	160	4-18
100	64	370	125	48	145	170	4-18	180	4-18
125	70	420	135	70	175	200	4-18	210	4-18
150	76	505	172	70	175	225	4-18	240	4-22
200	89	610	240	90	200	280	4-18	295	4-22

250	114	665	265	90	200	335	4-18	350	4-22
300	114	755	295	125	280	395	4-22	400	4-22
350	127	860	330	125	280	445	4-22	460	4-22
400	140	890	370	125	280	495	4-22	515	4-26
450	152	966	395	130	280	550	4-22	565	4-26
500	152	1040	430	130	280	600	4-22	620	4-26
600	154	1285	490	175	365	705	4-26	725	4-30
700	165	1395	545	175	365	810	4-26	840	4-30
800	190	1560	615	225	440	920	4-30	950	4-33
900	203	1700	7D0	225	440	1020	4-30	1050	4-33
10D0	216	1865	715	290	490	1120	4-30	1160	4-36
1200	254	2125	865	290	490	1340	4-33	1380	4-39
14D0	279	2340	950	290	490	1560	4-36	1590	4-42
16D0	318	2580	107D	410	600	1760	4-36	1820	4-48
1800	356	2880	1200	5D0	600	1790	4-39	2020	4-48
20D0	4D5	3200	1350	5D0	800	2180	4-42	2230	4-48

公称通径 Nominal Diameter	L	H	H1	L1	L2	PN1. 6Mpa		PN2. 5Mpa	
						D1	4-Φ d	D1	4-Φ d
50	50	250	80	48	145	125	4-18	125	4-18
65	65	265	95	48	145	145	4-18	145	4-48
80	80	275	100	48	145	160	4-18	160	4-18
100	64	370	125	48	145	180	4-18	190	4-22
125	70	420	135	70	175	210	4-18	220	4-26

150	76	505	172	70	175	240	4-22	250	4-26
200	89	610	240	90	200	295	4-22	310	4-26
250	114	665	90	90	200	355	4-26	370	4-30
300	114	755	295	125	280	410	4-26	430	4-30
350	127	860	330	125	280	470	4-26	490	4-33
400	140	890	370	125	280	525	4-30	550	4-36
450	152	966	395	130	280	585	4-30	600	4-36
500	152	1040	430	130	280	650	4-33	660	4-36
600	154	1285	490	175	365	770	4-36	770	4-39
700	165	1395	545	175	365	840	4-36	875	4-42
800	190	1560	615	225	440	950	4-39	990	4-48
900	203	17D0	7D0	225	440	1050	4-39	1090	4-48
1000	216	1865	715	290	490	1170	4-42	1210	4-55
1200	254	2125	865	290	490	1390	4-48	1420	4-55
14D0	279	2340	950	290	490	1590	4-48	1640	4-60
1600	318	2580	107D	410	600	1820	4-55	1860	4-60
1800	356	2880	1200	5D0	600	2020	4-55	2070	4-68
20D0	4D5	32D0	1350	500	800	2230	4-60	2300	4-68

D373H 对夹硬密封蝶阀安装与维护须知

一、安装说明

安装前检查：

核对阀门型号、口径、压力等级及介质流向是否与管路设计要求一致。

检查阀门外观，确保运输过程中阀体、法兰密封面及蝶板无损伤。清除阀腔内及蝶板密封面的保护物和杂物。

手动旋转手柄或驱动方榫，确认蝶板启闭灵活、无卡阻。安装前建议将蝶板调整至微开状态（约 10° - 15° 开度）。

安装位置与方向：

阀门可安装于水平或垂直管道上，安装位置应便于观察、操作和维护。

注意阀体或铭牌上的箭头指示方向，确保其与介质设计流向一致。硬密封蝶阀通常推荐单向安装，特殊双向密封设计除外。

管道对接要求：

阀门采用对夹式连接，需使用标准管道法兰夹持安装。严禁通过强行拧紧螺栓校正管道法兰间的错位或间隙，以免阀体变形导致密封失效或卡阻。

安装时，将阀门置于两片法兰之间，保证蝶板处于关闭状态或微开状态，插入对穿螺栓后，采用对角、分步、均匀的方式分多次拧紧螺母，确保阀门受力均匀，法兰平行。

驱动装置安装：

若配备电动、气动或蜗轮执行机构，应在阀门管道安装就位后再行安装。确保执行机构输出轴与阀杆对中，连接牢固可靠，传动连接部分应留有适当的轴向间隙，避免顶死。

手动操作阀门至全关位置，再安装执行机构，并依据其说明书进行行程和扭矩的调试设定。

二、使用与操作说明

开启与关闭：

首次使用时，建议在低压或介质未充满管道状态下，缓慢进行数次全开全关操作，以磨合金属密封面。

正常操作时应平稳启闭，避免冲击。手动操作时，到达全开或全关位置后请勿继续强行旋转手柄。使用执行机构时，应确保其限位装置调整正确，防止过扭矩损坏密封副。

本阀门可用于调节流量，通过控制蝶板旋转角度可实现近似等百分比的流量特性。

若长期处于部分开启的调节状态，建议定期进行全行程开关操作，以防局部沉积或结垢影响密封精度与操作灵活性。

注意事项：

本阀门为金属硬密封结构，不宜作为节流阀长期处于微小开度（如 $<15^{\circ}$ ）工作，以免高速介质流冲蚀密封面。

用于高温工况时，冷态安装并首次通入热介质后，需对法兰螺栓进行热态再紧固，防止因热膨胀差异引起法兰连接处泄漏。

如介质中含有固体颗粒，建议在阀门上游安装过滤器，并定期评估其对金属密封面的磨损风险。

三、维护与保养说明

日常维护：

定期检查阀门外部及法兰连接处有无介质泄漏迹象。

保持阀杆及传动部件清洁，并按需对阀杆密封填料处、蜗轮传动机构等加注适量高温润滑脂（视工况而定）。

检查配套执行机构（如有）的运行状态是否正常，有无异响或过热。

定期检查：

根据使用频率与工况条件，建议每 6-12 个月或利用停车检修期进行一次全面检查。

检查内容包括：金属密封面磨损与划伤情况、阀杆与轴套的磨损间隙、法兰螺栓是否松动、阀杆填料是否老化失效。

存放要求：

阀门长期存放时，应处于微开状态（约 5° - 10° ），避免金属密封面长期受压产生压痕或粘连），并装好两端法兰保护盖。

存放于干燥、通风的室内环境中，避免阳光直射、雨淋及腐蚀性气氛。

故障与处理：

泄漏： 检查蝶板是否关到位（执行机构限位是否漂移）；检查金属密封面是否磨损严重或有异物嵌入；检查法兰螺栓是否均匀紧固；检查阀杆填料是否压紧。

操作扭矩过大或卡死： 检查蝶板边缘与阀体内腔是否有异物卡阻；检查阀杆与轴套是否因磨损或高温抱死；检查管道法兰夹装是否导致阀体变形；检查轴承或阀杆是否缺乏润滑。

如需更换金属密封圈、阀杆、轴套等内部零件，或遇到无法排除的故障，建议联系专业人员或生产厂家处理。

重要提示：

本说明为通用性技术指导，适用于常规工况下的 D373H 对夹硬密封蝶阀。若用于特殊介质（如强腐蚀、易燃易爆、高温颗粒物等）、关键安全系统或极端参数场合，必须严格遵循相关行业规范及制造商的专项技术协议进行操作与维护。

D373H Wafer Type Hard Seal Butterfly Valve Installation and Maintenance Instructions

I. Installation Instructions

Pre-Installation Inspection:

Verify that the valve model, nominal diameter, pressure rating, and medium flow direction match the pipeline design requirements.

Inspect the valve appearance to ensure no damage to the valve body, flange sealing surfaces, or disc during transportation. Remove protective coatings and debris from the valve cavity and disc sealing surfaces.

Manually rotate the handle or drive square to confirm the disc opens and closes smoothly without binding. It is recommended to adjust the disc to a slightly open position (approx. 10° -15° opening) before installation.

Installation Position and Orientation:

The valve can be installed on horizontal or vertical pipelines. The installation position should facilitate observation, operation, and maintenance.

Pay attention to the arrow direction on the valve body or nameplate, ensuring it is consistent with the designed medium flow direction. Hard seal butterfly valves are typically recommended for unidirectional installation, except for special bidirectional sealing designs.

Pipeline Connection Requirements:

The valve uses a wafer-type connection and must be installed clamped between standard pipeline flanges. Strictly avoid correcting misalignment or gaps between pipeline flanges by forcefully tightening bolts, as this may cause valve body deformation leading to seal failure or binding.

During installation, place the valve between two flanges, ensuring the disc is in a closed or slightly open state. Insert the through bolts, then tighten the nuts in a diagonal, step-by-step, and uniform manner in multiple stages to ensure even stress on the valve body and parallel flanges.

Actuator Installation:

If equipped with an electric, pneumatic, or worm gear actuator, install it after the valve is properly positioned in the pipeline. Ensure the actuator output shaft is aligned with the valve stem, the connection is secure and reliable, and appropriate axial clearance is left in the transmission connection parts to avoid jamming.

Manually operate the valve to the fully closed position before installing the actuator, and perform stroke and torque commissioning settings according to its instruction manual.

II. Operation Instructions

Opening and Closing:

For initial use, it is recommended to slowly perform several full open and close operations under low pressure or with the pipeline not fully filled with medium to break in the metal sealing surfaces.

During normal operation, open and close smoothly to avoid impact. When operating manually, do not continue forcefully rotating the handle after reaching the fully open or closed position. When using an actuator, ensure its limit devices are correctly adjusted to prevent over-torque damage to the sealing pair.

Opening Adjustment:

This valve can be used for flow regulation. By controlling the disc rotation angle, approximately equal percentage flow characteristics can be achieved.

If the valve remains in a partially open regulating state for an extended period, it is recommended to perform full-stroke opening and closing operations regularly to prevent local deposition or scaling from affecting sealing accuracy and operational flexibility.

Precautions:

This valve features a metal hard seal structure and should not be used as a throttle valve for long periods at very small openings (e.g., $<15^\circ$) to avoid erosion of the sealing surfaces by high-velocity medium flow.

For high-temperature conditions, after cold installation and initial introduction of hot medium, perform hot retightening of the flange bolts to prevent leakage at the flange connection caused by thermal expansion differences.

If the medium contains solid particles, it is recommended to install a strainer upstream of the valve and regularly assess the risk of wear to the metal sealing surfaces.

III. Maintenance Instructions

Routine Maintenance:

Regularly check the valve exterior and flange connections for signs of medium leakage.

Keep the valve stem and transmission components clean, and apply appropriate high-temperature grease to the stem seal packing and worm gear mechanism as needed (depending on operating conditions).

Check the operating status of the supporting actuator (if any) for normalcy, unusual noises, or overheating.

Periodic Inspection:

Depending on the frequency of use and operating conditions, a comprehensive inspection is recommended every 6-12 months or during scheduled maintenance shutdowns.

Inspection items include: wear and scratch condition of metal sealing surfaces, wear clearance between the stem and bushing, tightness of flange bolts, and aging/failure of stem packing.

Storage Requirements:

For long-term storage, the valve should be in a slightly open state (approx. 5° -10° to prevent indentation or adhesion of metal sealing surfaces due to prolonged pressure) and fitted with protective covers on both flange ends.

Store in a dry, well-ventilated indoor environment, avoiding direct sunlight, rain, and corrosive atmospheres.

Troubleshooting:

Leakage: Check if the disc is fully closed (actuator limit drift); check if metal sealing surfaces are severely worn or have embedded foreign objects; check if flange bolts are evenly tightened; check if the stem packing is compressed.

Excessive Operating Torque or Jamming: Check for foreign objects obstructing between the disc edge and valve body cavity; check if the stem and bushing are seized due to wear or high temperature; check if pipeline flange clamping has caused valve body deformation; check if bearings or stem lack lubrication.

For replacement of internal parts such as metal seal rings, stem, or bushings, or for malfunctions that cannot be resolved, it is recommended to contact professionals or the manufacturer.

Important Note:

These instructions are general technical guidance applicable to the D373H wafer hard seal butterfly valve under conventional operating conditions. For special media (such as highly corrosive, flammable, explosive, high-temperature particles), critical safety systems, or extreme parameter situations, operation and maintenance must strictly comply with relevant industry standards and the manufacturer's special technical agreement.

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

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