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

D371X 对夹消防信号蝶阀系列

D371X Wafer Type Fire Protection Signal Butterfly Valve Series

使用说明书

Instruction Manual

开维喜阀门集团有限公司

Kaiweixi Valve Group Co.,LTD.

地址：中国 浙江省温州市瓯北街道三桥工业区林下路 1 号　电话：0577-67038872　传真：0577-67198981　邮编：325100

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D371X 对夹消防信号蝶阀

D371X Wafer Type Fire Signal Butterfly Valve

型号：D371X　　规格：DN50-DN1200
公称压力：PN10~PN16　　适用介质：水及类似于水的介质。
适用温度：≤ 150 ℃　　阀体材质：铸铁、球墨铸铁、不锈钢+衬胶、衬氟
连接方式：对夹　　驱动方式：手动、蜗轮蜗杆、电动、气动

Model: D371X
Size Range: DN50-DN1200
Nominal Pressure: PN10-PN16
Applicable Medium: Water and water-like media
Applicable Temperature: ≤ 150 ℃
Body Material: Cast iron, ductile iron, stainless steel + rubber lining, fluoroplastic lining
Connection Type: Wafer
Drive Mode: Manual, worm gear, electric, pneumatic

概述

D371X 对夹消防信号蝶阀是一种通过蝶板旋转运动来开启、关闭或调节管道流体的阀门，同时集成了信号反馈功能。该阀门采用对夹式连接设计，通过螺栓将阀体直接夹持在管道法兰之间，结构紧凑、重量轻。其传动方式为涡轮蜗杆机构，通过手轮驱动涡轮箱内的蜗杆带动蜗轮及阀杆旋转，使固定在阀杆上的蝶板在90°范围内转动，从而控制介质流动。蝶板密封面通常采用橡胶或其他弹性材料，与阀座形成软密封，确保关闭时的严密性。该阀门在涡轮箱上集成有微动开关或信号装置，当蝶板处于全开或全关位置时，可输出无源触点信号，实现与消防控制中心联动报警或状态指示。D371X 对夹消防信号蝶阀操作省力、启闭迅速，广泛用于自动喷水灭火系统、消火栓系统、水处理及工业管道系统中。

Overview

The D371X wafer type fire signal butterfly valve is a valve that opens, closes, or regulates pipeline fluid through the rotary motion of the disc, while integrating a signal feedback function. The valve adopts a wafer-type connection design, with the valve body directly clamped between pipeline flanges using bolts, offering a compact structure and light weight. Its transmission method is a worm gear mechanism, where the handwheel drives the worm inside the gearbox, which in turn drives the worm wheel and stem to rotate, causing the disc fixed on the stem to rotate within a 90° range, thereby controlling the medium flow. The disc sealing surface is typically made of rubber or other elastic materials, forming a soft seal with the valve seat to ensure tightness when closed. The valve is equipped with micro switches or signal devices integrated into the worm gearbox. When the disc reaches the fully open or fully closed position, it can output passive contact signals to achieve linkage alarm or status indication with the fire control center. The D371X wafer type fire signal butterfly valve is labor-saving to operate, quick to open and close, and is widely used in automatic sprinkler systems, fire hydrant systems, water treatment, and industrial pipeline systems.

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D371X 对夹消防信号蝶阀产品图

D371X Wafer Type Fire Signal Butterfly Valve Product Drawing

特点

1. 涡轮传动设计：采用涡轮蜗杆减速机构，操作扭矩小、省力高效，并可实现阀门的精确调节与自锁，防止误操作。同时集成信号反馈装置，能够在蝶板全开或全关位置输出无源触点信号，便于消防控制中心实时监测阀门状态。
2. 对夹紧凑结构：阀体采用对夹式连接，体积小、重量轻，节省安装空间，便于在狭窄位置安装与维护。信号装置与涡轮箱一体化设计，不额外占用空间。
3. 软密封可靠：蝶板密封圈采用优质橡胶或高分子材料，弹性好、密封性能优异，关闭时能实现零泄漏，适用于多种介质。密封面磨损后可更换，延长阀门使用寿命。
4. 流阻系数低：阀门全开时蝶板与介质流向平行，流道通畅，流体阻力小，有利于降低系统能耗，满足消防系统对快速响应的要求。
5. 耐腐蚀耐用：阀体内外表面可采用环氧树脂涂层或镀层处理，关键部件如阀杆、蝶板采用不锈钢或铜合金材质，耐腐蚀性强，使用寿命长，适用于消防水、海水及轻度腐蚀性介质。
6. 信号反馈可靠：内置微动开关或接近开关，动作灵敏、触点容量大，支持常开/常闭信号输出，可与消防报警主机、PLC 系统联动，实现远程监控与故障报警。
7. 多向安装灵活：阀门可水平或垂直安装，不受介质流向限制，适配性强；涡轮箱可调整角度（多为 90° 或 180° 可调），便于现场操作和信号线缆布线。
8. 维护简便：结构设计简化，拆装方便，密封元件及信号开关更换快速，减少维护成本与停机时间。涡轮箱润滑脂加注口设计，便于定期保养。

Features

1. Worm Gear Drive Design: Adopts a worm gear reduction mechanism with low operating torque, labor-saving and efficient, enabling precise adjustment and self-locking to prevent misoperation. Integrated signal feedback device provides passive contact signals when the disc is fully open or fully closed, facilitating real-time valve status monitoring by the fire control center.
2. Wafer Compact Structure: Wafer-type connection design with small size and light weight, saving installation space and facilitating installation and maintenance in confined areas. Signal device is integrated into the worm gearbox without occupying additional space.
3. Reliable Soft Seal: Disc sealing ring made of high-quality rubber or polymer material with good elasticity and excellent sealing performance, achieving zero leakage when closed and suitable for various media. The sealing surface can be replaced after wear, extending valve service life.

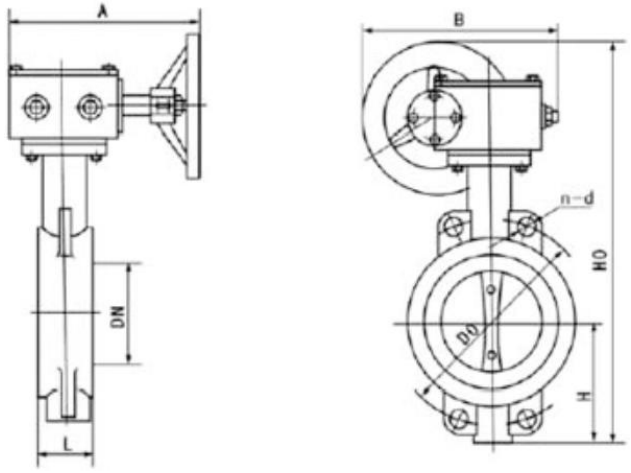
4. Low Flow Resistance Coefficient: When fully open, the disc is parallel to the medium flow direction, providing a smooth flow path with low fluid resistance, helping to reduce system energy consumption and meeting the rapid response requirements of fire protection systems.

5. Corrosion Resistant and Durable: Internal and external surfaces of the valve body can be treated with epoxy coating or plating. Key components such as stem and disc are made of stainless steel or copper alloy, offering strong corrosion resistance and long service life, suitable for fire water, seawater, and mildly corrosive media.

6. Reliable Signal Feedback: Built-in micro switch or proximity switch with sensitive action and high contact capacity, supporting normally open/normally closed signal output. Can interface with fire alarm hosts and PLC systems for remote monitoring and fault alarm.

7. Flexible Multi-Directional Installation: Valve can be installed horizontally or vertically without being restricted by medium flow direction, offering strong adaptability. The worm gearbox angle can be adjusted (typically 90° or 180° adjustable) for convenient on-site operation and signal cable routing.

8. Easy Maintenance: Simplified structural design with convenient disassembly and assembly. Sealing elements and signal switches can be replaced quickly, reducing maintenance costs and downtime. Grease injection port on the worm gearbox facilitates regular lubrication.



D371X 对夹消防信号蝶阀结构图

D371X Wafer Type Fire Signal Butterfly Valve Structure Drawing

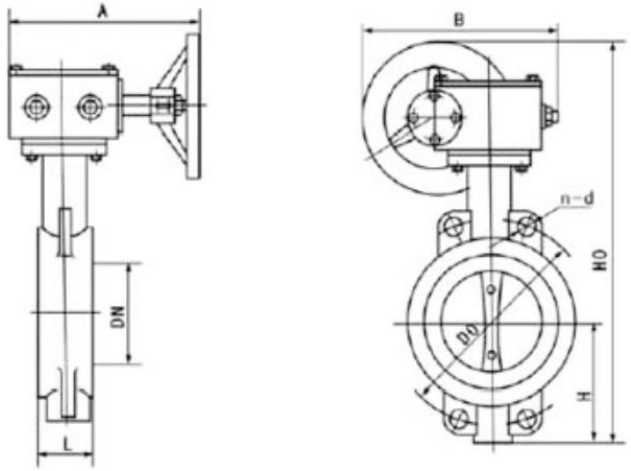
零部件名称材料表 Parts List and Materials Specification Table

名称 Name	材料 Materials
蜗轮箱 Worm Gear Box	球墨铸铁 Ductile Iron
蜗杆 Worm (Shaft)	碳钢（调质处理）Carbon Steel (Quenched and Tempered)
蝶板 Disc	碳钢（衬丁腈橡胶）Carbon Steel (NBR Lined)
阀杆 Stem	铬不锈钢（304/316）Chromium Stainless Steel (304/316)
阀座 Seat	丁腈橡胶 / 三元乙丙橡胶 Nitrile Rubber (NBR) / EPDM
螺栓 Bolt	碳钢（镀锌）/ 不锈钢

	Carbon Steel (Galvanized) / Stainless Steel
阀体 Body	铸铁、球墨铸铁、不锈钢+衬胶、衬氟 Cast iron, ductile iron, stainless steel + rubber lining, fluorine lining

性能规范表 Performance Specification Table

性能规范表 Performance Specification Table		
公称压力 Nominal Pressure (PN)	1.0/1.6	MPa
强度试验压力 Shell Test Pressure	1.5/2.4	
密封试验压力 Seat Test Pressure	1.1/1.76	
适用温度 Applicable Temperature Range	≤150	℃



D371X 对夹消防信号蝶阀外形尺寸图
D371X Wafer Type Fire Signal Butterfly Valve Overall Dimension Drawing

D371X 对夹消防信号蝶阀外形尺寸表
D371X Wafer Type Fire Signal Butterfly Valve Overall Dimension Table

DN	主要 外 形 尺 寸					主要 连 接 尺 寸					
						0.6MPa		1.0MPa		1.6MPa	
	L	H	H0	A	B	D0	n–d	D0	n–d	D0	n–d
50	43	63	306	180	200	110	4–14	125	4–18	125	4–18
65	46	70	321	180	200	130	4–14	145	4–18	145	4–18
80	46	83	346	180	200	150	4–18	160	8–18	160	8–18
100	52	105	387	180	200	170	4–18	180	8–18	180	8–18
125	56	115	411	180	200	200	8–18	210	8–18	210	8–18
150	56	137	447	270	280	225	8–18	240	8–22	240	8–22
200	60	164	572	270	280	280	8–18	295	8–22	295	12–22

250	68	206	646	270	280	335	12–18	350	12–22	355	12–26
300	78	230	738	380	420	395	12–22	400	12–22	410	12–26
350	78	248	761	380	420	445	12–22	460	16–22	470	16–26
400	102	289	877	450	470	495	16–22	515	16–26	525	16–30
450	114	320	938	480	490	550	16–22	585	20–26	585	20–30
500	127	343	993	480	490	600	20–22	620	20–26	650	20–33
600	154	413	1131	480	490	705	20–26	725	20–30	770	20–36
700	165	478	1476	640	660	810	24–26	840	24–30	840	24–36
800	190	525	1533	640	660	920	24–30	950	24–33	950	24–39
900	203	585	1655	750	860	1020	24–30	1050	28–33	1050	28–39
1000	216	640	1765	850	900	1120	28–30	1160	28–36	1170	28–42
1200	254	755	1995	850	900	1340	32–33	1380	32–39	1390	32–48

安装与维护须知

一、 安装说明

安装前检查：

核对验证： 仔细核对阀门型号、公称通径（DN）、压力等级（PN）及阀体上的箭头方向，确保与管路设计要求和介质流向一致。
外观检查： 检查阀门外观，确认在运输和存储过程中无损坏。安装前，务必清除阀腔内和密封面（蝶板边缘与阀座）上的所有保护涂层、包装物及杂物。
预操作检查： 安装前，先手动操作涡轮箱手柄，确认蝶板启闭灵活、无卡滞现象。建议将蝶板旋转至微开状态（约开启 10°-15°），以方便安装并对准。

安装位置与方向：

阀门可安装于水平或垂直管道上。安装位置应充分考虑空间，确保有足够的操作、维护和观察空间，便于操作涡轮驱动装置。
必须确保阀体上标示的箭头方向与管道中介质的预期流向一致。

管道对接要求：

本阀门为对夹式连接设计，需通过一组双头螺栓或长螺栓螺母，夹持在两片管道法兰之间进行安装。
严禁使用阀门螺栓来强行纠正管道法兰之间的错口、不同心或间隙过大。安装前，应先确保两片管道法兰平行对正，间隙均匀。
安装时，先将阀门置于两片法兰中间，插入少量螺栓（如 2-4 颗）初步定位。然后手动将蝶板旋转至全开位置（蝶板与流向平行），以减少干扰。

均匀、对称、分步　地拧紧所有对夹螺栓。建议使用扭矩扳手，按对角顺序分 2-3 轮逐次拧紧至规定扭矩值，确保阀门受力均匀，防止阀体变形导致密封失效。

涡轮驱动装置安装与调试：

涡轮驱动装置通常在出厂前已安装并调试完毕。安装阀门时，请注意保护涡轮箱及其手柄。
若需单独安装，请在阀门于管道上就位并完成初步螺栓紧固后进行。确保涡轮箱输出轴与阀杆方头对中，连接牢固。

调试关键步骤：

a. 手动旋转涡轮箱手柄，将阀门置于　全关位置。
b. 检查并确认蝶板关闭到位，无明显泄漏点（允许有极少量初期渗漏，经磨合后应消失）。
c. 在阀门全关位置，可根据需要调整涡轮箱上的　开度指示器　或　限位螺栓/螺钉，将其设定在“0”位（关闭位）。
d. 继续操作手柄至　全开位置，同样可设定开度指示器的“90°”位置（或最大开度标识）。
e. 反复操作数次，确认启闭灵活，开度指示准确，且在全开和全关位置均有明确的　限位感。

二、 使用与操作说明

开启与关闭操作：

首次或长期停用后启用：　建议在系统压力较低或介质未完全充满管道时，通过涡轮手柄缓慢、平稳地进行数次全开至全关的循环操作，以磨合密封副并去除可能存在的微量杂质。
正常操作：　操作涡轮手柄时应平稳匀速。利用涡轮传动机构的增力效应，可以较为省力地操作较大口径阀门。当手柄感觉明显变重（到达限位）时，切勿　使用加力杆或强行继续旋转，以免损坏内部零件或驱动机构。

开度调节：

本阀门通过涡轮机构可实现精确的角度控制，适用于流量调节工况。通过手柄位置或开度指示器，可以稳定地控制蝶板停留在任何中间角度。
若阀门长期处于非全开（部分开度）的调节状态运行，建议　每周或每月　定期进行一次全行程开关操作，以防止蝶板边缘或阀座局部沉积结垢或产生轻微粘滞。

重要注意事项：

避免长期微开节流：严禁将本阀门作为节流阀，长期处于微小开度（如<10°）下运行，以免高速流体对蝶板和阀座密封面造成严重气蚀和冲蚀破坏。
高温工况处理：用于高温介质时，在冷态安装并初次通入热介质升温后，由于热膨胀，必须在热态下对所有对夹连接螺栓进行再次均匀紧固，以防泄漏。
操作方向：通常顺时针旋转涡轮手柄为关闭阀门，逆时针旋转为开启阀门（以阀体标识或说明书为准）。操作时请确认方向。

三、 维护与保养说明

日常维护：

定期巡检阀门外部及法兰连接处有无泄漏痕迹。
保持阀杆伸出端、涡轮箱外部清洁。定期（每 6 个月或根据使用频率）通过涡轮箱上的 注油孔 加注指定的清洁润滑脂（如锂基脂）。
检查涡轮箱的密封性，防止雨水或灰尘大量侵入。

定期检查：

根据使用工况，建议每 6 至 12 个月 进行一次全面检查。
检查内容包括：阀杆转动是否灵活、有无泄漏；涡轮箱内部齿轮是否磨损、润滑是否良好；所有紧固螺栓是否松动；填料压盖（若有）是否需要调整。

存放要求：

阀门长期存放时，应处于 微开状态（蝶板开启约 5°-10°），使密封副不长期受压接触。
阀门通道两端应加装防护盖板，防止异物进入阀腔。
存放于干燥、通风的室内环境中，避免露天存放，防止日晒雨淋。涡轮箱应避免接触腐蚀性气体。

常见故障与处理：

泄漏：
关闭不严： 检查蝶板是否完全关闭到位；检查密封面是否有异物卡住或损伤。
阀体处泄漏： 检查并重新均匀紧固对夹螺栓。
阀杆处泄漏： 轻微均匀拧紧填料压盖（若设计有），或联系专业人员更换填料。

操作扭矩过大或卡阻：

检查阀门是否完全开启或关闭，有无异物卡塞。

检查涡轮箱润滑是否充足、齿轮是否损坏。
检查管道是否对阀门产生过大的应力。
对于内部阀座、蝶板密封圈（如橡胶/聚四氟乙烯）等核心密封件的更换，或无法排除的故障，建议联系专业技术人员或阀门制造厂家进行处理，以确保维修质量。

重要提示： 本说明书为 D371X 涡轮对夹式蝶阀的通用性安装操作指导。对于特定苛刻工况（如极端温度、强腐蚀、食品医药、真空等），用户应严格遵循该项目特定的工程技术规范和安全操作规程，并参考供货商提供的补充技术资料。

Installation and Maintenance Guidelines

I. Installation Instructions

Pre-Installation Inspection:

Verification: Carefully verify the valve model, nominal diameter (DN), pressure rating (PN), and the arrow direction on the valve body to ensure they align with the pipeline design requirements and the intended media flow direction.
Visual Inspection: Examine the valve's exterior for any damage incurred during transport or storage. Before installation, thoroughly remove all protective coatings, packaging materials, and debris from the valve cavity and sealing surfaces (disc edge and seat).
Pre-Operational Check: Manually operate the gearbox handwheel prior to installation to confirm smooth and unobstructed opening/closing of the disc. It is recommended to rotate the disc to a slightly open position (approximately 10° -15° open) to facilitate installation and alignment.

Installation Position and Direction:

The valve can be installed in horizontal or vertical pipelines. The installation location must provide adequate space for operation, maintenance, and observation, ensuring easy access to the gear drive.
The arrow marked on the valve body must align with the intended flow direction of the medium in the pipeline.

Pipeline Connection Requirements:

This valve features a wafer-type connection and is installed by clamping it between two pipeline flanges using a set of double-ended studs or long bolts and nuts.
Do not use the valve bolts to forcibly correct misalignment, offset, or excessive gaps between the pipeline flanges. Ensure the two pipeline flanges are parallel, aligned, and have a uniform gap before installation.
During installation, place the valve between the flanges and insert a few bolts (e.g., 2-4) for preliminary alignment. Manually rotate the disc to the fully open position (parallel to the flow) to minimize interference.
Tighten all clamping bolts evenly, symmetrically, and in steps. Using a torque wrench is recommended. Follow a diagonal sequence and tighten in 2-3 stages to the specified torque value to ensure uniform load distribution on the valve and prevent body deformation that could lead to seal failure.

Gear Drive Installation and Commissioning:

The gear drive is typically installed and adjusted at the factory. Protect the gearbox and its handwheel during valve installation.
If separate installation is required, perform it only after the valve is positioned in the pipeline and the initial bolt tightening is complete. Ensure the gearbox output shaft is concentrically aligned and securely connected to the valve stem.

Commissioning Key Steps:

a. Manually rotate the gearbox handwheel to position the valve in the fully closed position.

b. Inspect and confirm the disc is fully seated with no significant leakage points (minor initial seepage may occur but should disappear after run-in).
c. With the valve fully closed, adjust the opening indicator or limit screws/bolts on the gearbox, setting them to the "0" (closed) position as needed.
d. Continue operating the handwheel to the fully open position and similarly set the opening indicator to "90° " (or the maximum opening mark).
e. Cycle the valve several times to confirm smooth operation, accurate opening indication, and a definite limit stop feel at both full open and full closed positions.

II. Operation and Usage Instructions

Opening and Closing Operations:

Initial Startup or After Prolonged Shutdown: Before full system pressure or media fills the line, slowly and smoothly cycle the valve from fully open to fully closed several times using the gear handwheel. This helps run-in the sealing surfaces and dislodge any minor contaminants.
Normal Operation: Operate the gear handwheel smoothly and at a constant speed. The gear mechanism provides mechanical advantage for easier operation of larger valves. Never use a cheater bar or force the handwheel further when increased resistance (indicating a limit stop) is felt, as this may damage internal components or the drive.

Flow Adjustment:

This valve allows precise angular control via the gear mechanism, making it suitable for flow regulation. The handwheel position or opening indicator can stably maintain the disc at any intermediate angle.
If the valve operates for extended periods in a partially open (throttling) state, it is recommended to perform a weekly or monthly full-stroke open/close cycle to prevent localized deposits, scaling, or slight sticking on the disc edge or seat.

Important Notes:

Avoid Prolonged Low-Flow Throttling: Do not use this valve as a throttle valve for extended periods at very small openings (e.g., <10°), as high-velocity flow can cause severe cavitation and erosion damage to the disc and seat sealing surfaces.
High-Temperature Service: For high-temperature media, after cold installation and initial heat-up, re-tighten all clamping bolts uniformly under hot conditions due to thermal expansion to prevent leaks.
Operation Direction: Typically, clockwise rotation of the gear handwheel closes the valve, and counterclockwise rotation opens it (confirm using markings on the valve body or the manual). Verify the direction before operation.

III. Maintenance and Care Instructions

Routine Maintenance:

Periodically inspect the valve exterior and flange connections for signs of leakage.
Keep the exposed stem area and the exterior of the gearbox clean. At regular intervals (e.g., every 6 months or based on usage), lubricate by injecting the specified clean grease (e.g., lithium-based grease) through the grease fitting on the gearbox.
Check the gearbox seals to prevent significant ingress of rainwater or dust.

Periodic Inspection:

Depending on service conditions, a comprehensive inspection is recommended every 6 to 12 months. Inspection items include: smoothness of stem rotation and any leakage; internal gear wear and lubrication condition within the gearbox; tightness of all fasteners; and adjustment needs for the gland/packing (if equipped).

Storage Requirements:

For long-term storage, the valve should be in a slightly open position (disc open about 5°-10°) to prevent the seals from being under constant compression.
Install protective covers on both valve ports to prevent ingress of foreign objects.
Store indoors in a dry, well-ventilated environment. Avoid outdoor storage to protect from direct sunlight and rain. The gearbox should be kept away from corrosive atmospheres.

Common Troubleshooting and Remedies:
Leakage:

Failure to seal: Check if the disc is fully closed; inspect sealing surfaces for lodged debris or damage.
Leakage at body: Check and uniformly re-tighten the clamping bolts.
Leakage at stem: Slightly and evenly tighten the gland (if designed) or contact a specialist for packing replacement.

Excessive Operating Torque or Binding:

Check if the valve is fully open/closed or if foreign material is obstructing it.
Check gearbox lubrication and for gear damage.
Check if excessive pipeline stress is acting on the valve.
For replacement of core sealing components (e.g., seat, disc seal ring such as rubber/PTFE) or for faults that cannot be resolved, it is recommended to contact qualified technical personnel or the valve manufacturer to ensure proper repair quality.

Important Notice: This manual provides general installation and operational guidance for the D371X gear-operated wafer butterfly valve. For specific demanding applications (e.g., extreme temperatures, strong corrosion, food/pharmaceutical, vacuum service), users must strictly adhere to the project-specific engineering specifications and safety operating procedures, and refer

to supplementary technical documentation provided by the supplier.

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 18967796392
网址：https://www.kaiweixi.com
mail：karrie@kaiweixi.com

Kaiweixi Valve Group Co., Ltd
Address: No.1 Linxia Road, Sanqiao Industrial Zone, Oubei Street, Yongjia County, Wenzhou City, Zhejiang Province
Phone:+86 18967796392
URL: https://www.kaiweixi.com
E-mail：karrie@kaiweixi.com