



DQX 系列

衬胶蝶阀使用说明书

DQX Series Rubber Lined Butterfly Valve Manual



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一、概述

DQX 系列衬胶蝶阀是一种结构简单、易于操作、使用寿命长的角行程控制阀，密封材料耐老化、密封性能好，适用于低压差、大流量、常温介质的控制。

执行机构采用高性能 GT 气缸活塞执行机构，结构简单、输出力矩大，而且输出力矩基本上符合旋转类调节阀（如球阀、蝶阀等）的操作力矩要求。GT 执行机构有双作用和单作用两种结构，关于 GT 执行机构的详细介绍，请参阅 GT 气缸活塞执行机构产品使用说明书。

该系列蝶阀按气动执行机构的作用方式可分为单、双作用两大类，单作用衬胶蝶阀特点是动力源一旦发生故障，蝶阀将按控制系统要求自动地处于关闭或开启位置。双作用衬胶蝶阀将保持原位不变。

1、 Introduction

DQX series rubber lined butterfly valve is a simple structure, easy to operate, long service life of angular stroke control valve, sealing material aging resistance, good sealing performance, suitable for low pressure difference, large flow, room temperature media control.

The actuator adopts high-performance GT cylinder piston actuator with simple structure and large output torque, and the output torque basically meets the operating torque requirements of rotary regulating valves (such as ball valves, butterfly valves, etc.). GT actuator has two kinds of structure, double action and single action, for a detailed introduction of GT actuator, please refer to the GT cylinder piston actuator product instruction manual.



The series of butterfly valves can be divided into single and double acting two categories according to the mode of action of the pneumatic actuator. The characteristics of the single acting rubber lined butterfly valve is that once the power source fails, the butterfly valve will automatically be in the closed or open position according to the requirements of the control system. The double acting rubber lined butterfly valve will remain in place.



图 1 DQX 气动衬胶蝶阀

Fig.1 DQX pneumatic rubber lined butterfly valve

DQX 气动衬胶蝶阀与定位器、电磁阀、过滤减压阀等气动元件配套使用，可实现对石油、化工、制药、造纸、冶金、污水处理、油船、油罐等输送管道内介质的调节、切断作用。

DQX pneumatic rubber lined butterfly valve is used with positioner, solenoid valve, filter pressure reducing valve and other pneumatic components, which can realize the adjustment and cutting effect of the medium in the transmission pipeline of petroleum, chemical industry, pharmaceutical, paper making,



metallurgy, sewage treatment, oil tanker, oil tank.

二、阀体组件结构

DQX 衬胶蝶阀阀体组件是由阀体、阀板、密封阀座和其它零件组成的。

当驱动装置动作时，通过连轴套、阀杆和阀板转过 90° ，使蝶阀由关闭（开启）的位置转到开启（关闭）的位置控制管道内的介质流量。

双作用衬胶蝶阀和单作用衬胶蝶阀动作原理的区别在于后者执行机构气缸气压排空时，活塞在弹簧力作用下，阀板再转过 90° ，使蝶阀处于开启或关闭位置，而双作用蝶阀若要实现上述功能，GT 执行机构需外加配带“气源保护装置”。

2、 Valve body assembly structure

The DQX rubber lined butterfly valve body assembly is composed of a valve body, a valve plate, a sealing seat and other parts.

When the drive device is operating, the butterfly valve is turned 90° by connecting the sleeve, valve stem and valve plate, so that the butterfly valve is turned from the closed (open) position to the open (closed) position to control the medium flow in the pipeline.

The difference between the action principle of double-acting rubber lined butterfly valve and single-acting rubber lined butterfly valve is that when the air pressure of the cylinder of the latter actuator is emptied, the piston is under the action of the spring force, and the valve plate is turned 90° , so that the



butterfly valve is in the open or closed position. If the double-acting butterfly valve wants to achieve the above functions, the GT actuator needs to be equipped with an "air source protection device".

三、手操机构组件

蝶阀的规格不同，它所需要的操作力矩也不同，有四种规格的手动机构可供选择。其结构如表 1 所示。

3、Manual operation mechanism components

The specifications of the butterfly valve are different, and the operating torque required is different, and there are four kinds of manual mechanisms to choose from. Its structure is shown in Table 1.

表 1 手动机构与 GT 执行机构的组配关系表

Table 1 The combination relationship between manual mechanism and GT actuator

手动机构 Hand-operating mechanism	XLHJ26	XLHJ38	XLHJ54	XLHJ80A
执行机构 Actuator	GT75\83	GT110/125/143/160	GT200/210	GT240 以上 >GT240

手动机构的用途：

1、如动力源发生故障或执行机构出现损坏的情况下，可切换成手动操作，



可使工艺过程照常进行。

- 2、可使球芯固定在任意开度上。
- 3、可作为限位装置。

手动操作时，应使手柄位于手动位置，便可进行手动操作，自动操作时，应将手柄置于自动位置。

Uses of manual mechanism:

- 1、 If the power source fails or the actuator is damaged, it can be switched to manual operation, which can make the process proceed as usual.
- 2、 Can make the ball core fixed in any opening.
- 3、 Can be used as a limiting device.

For manual operation, the handle should be placed in the manual position to perform manual operation. For automatic operation, the handle should be placed in the automatic position.

四、工作原理

4、operating principle



气关式

气开式

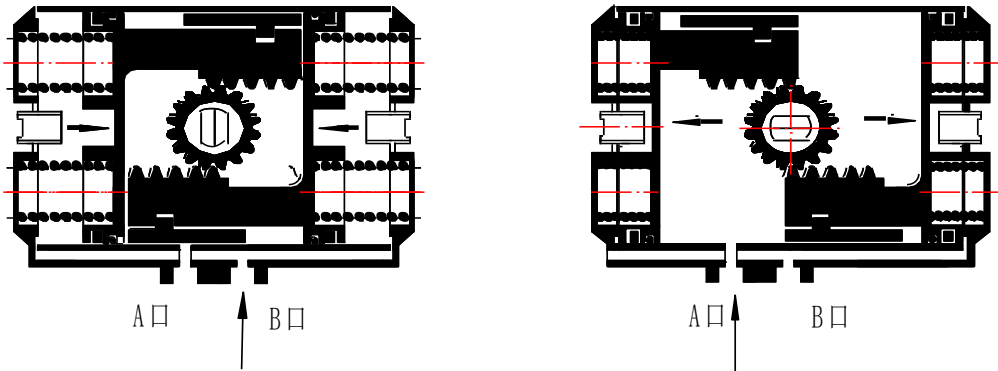


图 1 气关式与气开式

Figure 1: Gas-closed and gas-open

1、气关式:

外接气源通过气源三联件的进气口依次进入三联件出气端

——> 电磁换向阀 ——> 气动执行机构气室中 A 口，当电磁阀通电，气动执行机构换向为 B 口进气，齿条式活塞推动齿轮轴通过连接轴带动阀板转动，关闭阀门，指示器为红色，并能给出开关接点信号。

2 气开式:

外接气源通过气源三联件的进气口依次进入三联件出气端

——> 电磁换向阀 ——> 气动执行机构气室中 B 口，当电磁阀通电，气动执行机构 A 口进气，齿条式活塞推动齿轮轴通过连接轴带动阀板转动，打开阀门，指示器为黄色，并能给出开关接点信号。

1、 Gas close type:

The external air source enters port A in the air chamber of the electromagnetic reversing valve pneumatic actuator through the air intake port



of the air source triplet in turn. When the solenoid valve is energized,

The pneumatic actuator is reversed for inlet B, and the rack type piston drives the gear shaft through the connecting shaft to drive the valve plate to rotate and close the valve. The indicator is red and the switch contact signal can be given.

2、 Air open type:

The external air source enters port B in the air chamber of the electromagnetic reversing valve pneumatic actuator through the air intake port of the air source triplet in turn. When the solenoid valve is energized,

Pneumatic actuator A inlet air, rack type piston drive the gear shaft through the connecting shaft to drive the valve plate rotation, open the valve, the indicator is yellow, and can give the switch contact signal.

五、主要技术参数和性能

主要零件材质:

阀体、阀板-QT200、WCB、CF8、CF8M

阀杆-2Cr13、SUS304、SUS316

阀座-NR、NBR、EPDM、PTFE

主要技术参数:

公称通径: DN50-800mm

公称压力: PN1.6、2.5、4.0MPa



流量特性：近似等百分比

工作温度：-40~180℃

泄漏等级：软密封 VI

连接方式：对夹式、法兰式

执行机构：气动活塞式、电动、电子式

执行机构：

型 式：GTD(S)单作用（双作用）气缸活塞执行机构

气源接头：RC1/8, RC1/4, RC1/2

环境温度：-40~+80℃

供气压力：0.4~0.7MPa

附 件：电磁阀、行程开关和过滤减压阀

侧装手轮机构和保护装置（只适用双作用执行机构）

5、Main technical parameters and performance

Material of main parts:

Valve body, valve plate -QT200, WCB, CF8, CF8M

Stem -2Cr13, SUS304, SUS316

Seat -NR, NBR, EPDM, PTFE

Main technical parameters:

Nominal diameter: DN50-800mm

Nominal pressure: PN1.6, 2.5, 4.0MPa

Flow characteristics: approximate equal percentage



Operating temperature: $-40 \sim 180^{\circ}\text{C}$

Leakage grade: Soft seal VI

Connection mode: sandwich type, flange type

Actuator: pneumatic piston type, electric, electronic type

Executing agency:

Type: GTD(S) Single acting (double acting) cylinder piston actuator

Air source connectors: RC1/8, RC1/4, RC1/2

Ambient temperature: $-40 \sim +80^{\circ}\text{C}$

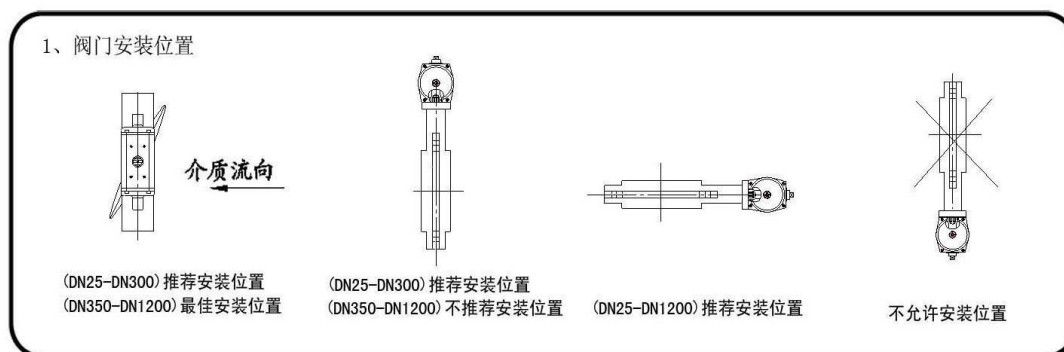
Gas supply pressure: $0.4 \sim 0.7\text{MPa}$

Accessories: solenoid valve, stroke switch and filter pressure reducing valve

Side-mounted handwheel mechanisms and protection devices (for dual-acting actuators only)

六、安装、使用和调试

1、安装指南说明



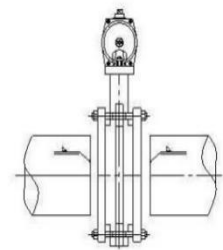


2. 气源要求

气源压力不得小于5.5巴，并通气预试阀门开关。

3. 连接法兰要求：管道对夹法兰标准必须与蝶阀所需法兰标准相符；建议使用对焊法兰或承插式法兰；不得使用平焊法兰(套合式)，如果用户使用平焊法兰或非标法兰，必须征得供应商同意。

4. 如果管道属新装法兰，建议先将蝶阀与法兰试装于管道上，然后对接定位点焊，注意在试装时一定要保证法兰盘与蝶阀对中且不要夹的过紧，试装完成后必须将阀门取下方能将法兰盘与管道满焊，待法兰降至常温后按规范正式安装阀门。



1、 Valve installation position

1、 Medium flow direction

(DN25-DN300) Recommended installation position

(DN25-DN300) Recommended installation position

(DN350-DN1200) Optimum installation location

(DN350-DN1200) The installation position is not recommended

(DN25-DN1200) Recommended installation position

2、 Air source requirements

Air source pressure shall not be less than 5.5 bar, and ventilation pre-test valve switch.

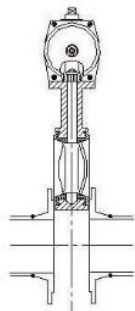
3、 Connection flange requirements:

the standard of pipe clamp flange must be consistent with the standard of

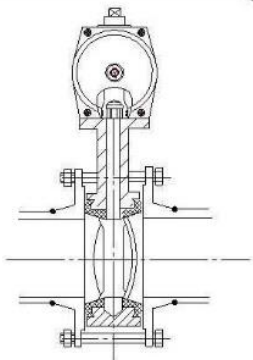
butterfly valve flange; It is recommended to use butt welded flange or socket flange; Do not use flat welded flanges (sleeve type), if the user uses flat welded flanges or non-standard flanges, must obtain the consent of the supplier.

4、 If the pipe is a new flange, it is recommended to try to install the butterfly valve and flange on the pipe first, and then butt spot welding, pay attention to ensure that the flange and the butterfly valve are aligned and not too tight, after the completion of the trial installation, the valve must be taken down to the bottom to fully weld the flange and the pipe, and the valve will be formally installed according to the specification after the flange is reduced to room temperature.

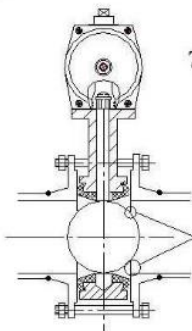
5、 安装阀门时，蝶板应处于接近全关的位置，确定管道法兰间有足够的距离将阀门插入法兰中间。橡胶阀座两端突出阀体端面作为法兰密封垫，蝶阀安装时无须再加密封垫。



6、 将螺栓穿入法兰盘，用手或扳手对称轮流预紧螺栓，以法兰盘端面凸台或外圆及阀体外圆为相互参照物，最终确认阀门是否与法兰盘对中。



7、 谨慎地、轻轻地将阀门开启到全开位置，检查阀板是否对中，检查阀板与法兰孔有无碰撞现象。



⚠管道与阀体不对中

8、 拧紧螺栓时，依次对称均匀、轮流锁紧，特别注意不要拧的过紧，以防造成阀门严重变形，启阀扭矩过大，一般以拧到不漏为准。最后再操作阀门一次，以确定装配的正确性。

⚠ 关于气动执行器的具体技术参数请参见《气动执行器使用说明书》！

5、 When installing the valve, the butterfly plate should be in a position close



to full closure, and there is enough distance between the pipe flanges to insert the valve into the middle of the flange. Both ends of the rubber valve seat protruding the valve body end face as a flange gasket, butterfly valve installation need not add gasket.

6、 The bolt into the flange, with a hand or a wrench symmetric turn to pre-tighten the bolt, flange face convex or outer circle and the outer circle of the valve body as a mutual reference, and finally confirm whether the valve and flange in line.

7、 Carefully and gently open the valve to the full open position, check whether the valve plate is in the center, check whether the valve plate and the flange hole collision phenomenon.

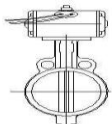

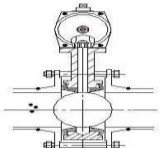
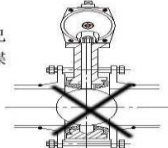
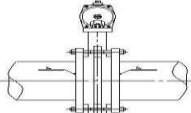
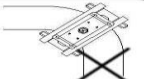
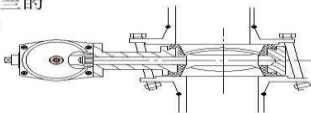

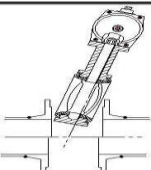
8、 Tighten the bolts, symmetrical and uniform in turn, take turns to lock, pay special attention not to screw too tight, in order to prevent serious deformation of the valve, valve opening torque is too large, generally to screw to not leak prevail. Finally, operate the valve once more to determine the correctness of the assembly.

Pipe not aligned with valve body

For the specific technical parameters of the pneumatic actuator, please refer to the "Pneumatic actuator Instruction Manual"!

2、 特别注意事项

2、special remarks

<p>1、安装气管前，必须清洁气路，保证气管中无油污无杂质，（尤其EPDM阀座必须杜绝管道中有油漂的存在）。</p> 	<p>6、阀门在进行安装时，必须确保阀门内腔的清洁。</p> 
<p>2、必须将管道内的杂质及油污清理干净，确保通过阀门的介质中没有油污及硬颗粒。</p> 	<p>7、阀门不得在开启情况下安装，以防破坏蝶板表面。</p> 
<p>3、阀门在管道上安装时，必须按要求选配法兰。</p> 	<p>8、蝶阀不得安装于管道拐角处。</p> 
<p>4、阀门安装前，管道上两片法兰的法兰孔必须对中；禁止在安装阀门时，靠紧固螺栓来调整对中。</p> 	<p>9、阀门的驱动限位装置在出厂前已经安装调试为最佳状态，客户不得私自对其调整。</p> 
<p>5、不允许用阀门做撬杠，撬撑法兰。</p> 	<p>10、蝶阀装上后不允许再焊接法兰，以免烫伤阀座（密封圈）和防腐图层。</p> <p>⚠ 特别声明：安装前，必须仔细阅读此安装指南。违反上述安装要求，将会造成阀门的损伤，甚至报废；其后果由施工方负责。</p>

1、 Before the installation of the gas pipe, it is necessary to clean the gas path to ensure that there is no oil and no impurities in the gas pipe (especially the EPDM seat must eliminate the existence of oil drift in the pipeline).

2、 The impurities and oil in the pipeline must be cleaned up to ensure that there is no oil and hard particles in the medium through the valve.

3、 When the valve is installed on the pipeline, the flange must be selected as required.

4、 Before the valve installation, the flange holes of the two flanges on the pipeline must be aligned; Do not adjust the alignment of the valve by tightening the bolt when installing the valve.



5、 Do not allow to use the valve as a crowbar, pry support flange.

Special Note: This installation guide must be read carefully before installation.

Violation of the above installation requirements will cause damage to the valve, or even scrap; The consequences shall be borne by the construction party.

6、 When the valve is installed, it must be ensured that the valve cavity is clean.

7、 The valve shall not be installed in the case of opening, to prevent damage to the surface of the butterfly plate.

8、 Butterfly valve shall not be installed in the pipeline corner.

9、 The driving limit device of the valve has been installed and adjusted to the best state before leaving the factory, and the customer shall not adjust it without permission.

10、 After the butterfly valve is installed, it is not allowed to weld the flange again, so as not to burn the valve seat (sealing ring) and anti-corrosion layer.

3、使用、调试说明

1、蝶阀在安装前应先核对阀门铭牌上的位号、口径、公称压力、作用方式、所配附件等是否符合规定要求。

2、蝶断可垂直和水平安装，但口径较大的阀门垂直安装时应对执行机构采取一定的支撑措施，以使阀门运行安全可靠。

3、蝶阀应安装在便于操作和维修的地方。

4、阀门安装前必须对管道进行清洗，除去管道中的异物，诸如焊渣、氧



化皮石块等，安装后应使阀门处于全开位置，对管道和阀门进行清洗及检查阀门与管道连接处的密封性。

5、应根据工艺需要确定是否需要蝶阀设置旁通。

6、应定期对气动衬胶蝶阀进行检查、维修，检查重点为阀芯、阀座、执行机构中的活塞密封环等零件，如有损坏应及时修复或调换，确保阀门正常使用。

7、本气动执行机构的气路控制是由电磁阀控制的，电磁阀线圈为普通型及防爆型线圈，用户可根据需要选择，防爆线圈接线时应按照防爆操作规范对连接线头进行处理，确保连接可靠。

8、本气动衬胶蝶阀的行程开关为普通型及防爆行程开关，在阀门开和关的位置能输出一对常开信号和一对常闭信号。电气接口为2个1/2"接口，接线时请用合适的接头，以保证密封。

9、应定期对气动衬胶蝶阀进行检查、维修、检查重点为阀芯、阀座、执行机构中的活塞密封环等零件，如有损坏应及时修复或更换，确保阀门正常使用。

10、使用气源压力请勿超过0.8Mpa。

3、 Use, debugging instructions

1、 Before installation, the butterfly valve should first check whether the position number, caliber, nominal pressure, mode of action, and accessories on the valve nameplate meet the specified requirements.

2、 The adjustment break can be installed vertically and horizontally, but when



the valve with a large diameter is installed vertically, certain support measures should be taken for the actuator to make the valve operate safely and reliably.

3、 The butterfly valve should be installed in a place that is easy to operate and maintain.

4、 The valve must be cleaned before installation to remove foreign matter in the pipeline, such as welding slag, oxide stone, etc. After installation, the valve should be in a fully open position to clean the pipeline and valve and check the tightness of the connection between the valve and the pipeline.

5、 According to the process needs to determine whether the butterfly valve needs to be set by bypass.

6、 The pneumatic rubber lined butterfly valve should be regularly inspected and repaired, and the inspection focus is on the spool, seat, piston seal ring and other parts in the actuator. If there is damage, it should be repaired or replaced in time to ensure the normal use of the valve.

7、 The gas path control of the pneumatic actuator is controlled by the solenoid valve, the solenoid coil is a common type and explosion-proof coil, the user can choose according to the need, the explosion-proof coil wiring should be processed in accordance with the explosion-proof operation specifications to ensure reliable connection.

8、 The travel switch of the pneumatic rubber lined butterfly valve is a common type and explosion-proof travel switch, which can output a pair of normally open signals and a pair of normally closed signals at the position of



the valve opening and closing. The electrical interface is 2 1/2 'interfaces.

Please use appropriate connectors when wiring to ensure sealing.

9、 The pneumatic rubber lined butterfly valve should be regularly inspected and repaired, and the inspection focus is on the spool, seat, piston seal ring and other parts in the actuator. If there is damage, it should be repaired or replaced in time to ensure the normal use of the valve.

10、 Do not use air source pressure exceeding 0.8Mpa.

七、维护和常见故障

1、气源、信号压力一定，但阀门动作不稳定，其主要原因是供气管线漏气，阀门摩擦力大，气缸漏气。因此，检查供气管线、气缸是否漏气。

2、阀门动作迟钝，主要原因是：阀体内有泥浆或粘性过大的介质，出现堵塞或结焦现象，四氟阀座硬化变质。因此，如有上述现象发生，应及时清洗阀体或更换填料套。

3、阀的泄漏量太大，主要原因是：密封阀座损坏，请更换密封阀座。

4、密封填料部渗漏，主要原因是：填料老化或擦伤、阀杆损坏。如有上述现象发生，应及时检查，更换填料或阀杆。

5、阀体渗漏，主要原因是：主副阀体间紧固螺母松弛，密封垫或 O 型圈损坏，应紧固螺母或更换密封垫和 O 型圈。

7、 Maintenance and common faults

1、 The air source, signal pressure is certain, but the valve action is unstable,



the main reason is the air supply pipeline leakage, valve friction, cylinder leakage. Therefore, check whether the gas supply line and cylinder leak.

2、The valve action is slow, the main reason is: there is mud or viscous medium in the valve body, blockage or coking phenomenon, PTFE valve seat hardening and deterioration. Therefore, if the above phenomenon occurs, the valve body should be cleaned or the packing sleeve replaced in time.

3、The leakage of the valve is too large, the main reason is: the sealing seat is damaged, please replace the sealing seat.

4、Sealing packing part leakage, the main reason is: packing aging or abrasion, valve stem damage. If the above phenomenon occurs, it should be checked in time to replace the packing or valve stem.

5、Valve body leakage, the main reason is: the nut between the main and secondary valve bodies slack, gasket or O-ring damage, should tighten the nut or replace the gasket and O-ring.

八、运输和贮存

1、储运前检查各种标志是否完整、齐全、正确、清晰，包装箱是否整齐、牢固、无破损伤裂，最后检查打箱、包装的可靠性及安全性。

2、运输时应轻装、轻放，严禁抛、滑和撞击，各类标志不得丢失、受潮及损坏机件。

3、贮存在空气温度为 5~40℃，相对湿度不大于 90%，库房空气中应不



含有腐蚀性有害物质。

- 4、按包装箱表面标记放置，不得倒置。
- 5、产品易锈部位涂防锈油脂，用防锈纸包敷，防锈期限不少于一年。
- 6、包装箱内应有石油沥青纸或塑料薄膜作为防雨措施。
- 7、产品包装自出厂发货之日起，保护有效期限为一年。

8、Transportation and storage

1、 Before storage and transportation, check whether all kinds of signs are complete, complete, correct and clear, whether the packing box is neat, firm, no damage or crack, and finally check the reliability and safety of the box and packaging.

2、 Transport should be light, light, strictly prohibited throwing, sliding and impact, all kinds of signs shall not be lost, damp and damaged parts.

3、 Stored in the air temperature of 5 ~ 40°C, the relative humidity is not more than 90%, the warehouse air should not contain corrosive harmful substances.

4、 Place according to the surface mark of the packing box, not upside down.

5、 Rust parts of the product coated with anti-rust grease, coated with anti-rust paper, anti-rust period of not less than one year.

6、 The packaging box should have petroleum asphalt paper or plastic film as rain prevention measures.

7、 Product packaging from the date of delivery, protection period is one year.



九、订货须知

订货时，请写明：

- 1、产品型号
- 2、公称通径
- 3、公称压力
- 4、执行机构（单/双作用指明）
- 5、介质温度
- 6、阀体和阀内件材料
- 7、附件
- 8、其它特殊要求

9、 Instructions for ordering

When ordering, please state:

- 1、 Product model
- 2、 Nominal diameter
- 3、 Nominal pressure
- 4、 The executive mechanism (single/double role specified)
- 5、 Medium temperature
- 6、 Valve body and valve interior materials
- 7、 Accessories
- 8、 Other special requirements



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