



DQZ 系列

刀闸阀使用说明书

DQZ Series Knife Gate Valve Manual



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一、产品概述

DQZ刀闸阀系实用新型阀门，具有轻松转动通过阀杆启动闸板切断管线物流，是一种高技术新型闸阀，本阀门执行机构可以配置手动、气动、电动、液动、伞齿轮、杠杆式。刀闸阀的使用已从普通领域发展到了更为广阔的使用范围。从矿山排渣发展到城市污水处理；从一般工业管道发展到食品卫生管道系统。超薄型设计的刀闸阀，彻底解决了普通闸阀、平板闸阀、球阀、截止阀、调节阀、蝶阀等存在的流阻大、安装笨重、占地面积广的疑难问题。刀闸阀出现后，大量的通用切断和调节类阀门已被金属密封刀闸阀所取代。

本公司生产的刀闸阀，吸取了国内外先进技术和结构优点，排除了其他厂家所产刀闸阀在使用中存在的各种问题，成功研制出真正的金属密封（活动密封零泄漏）和无磨擦区域的产品，使产品的使用寿命大大提高。

1、Introduction

DQZ knife gate valve is a utility model valve, with easy rotation through the stem start gate plate to cut off the pipeline logistics, is a new high-tech gate valve, the valve actuator can be configured manual, pneumatic, electric, hydraulic, bevel gear, lever type. The use of knife gate valves has developed from the ordinary field to a wider range of use. From mine slagging development to urban sewage treatment; From the development of general industrial pipes to food sanitation piping systems. Ultra-thin design of knife gate valve, completely solve the ordinary gate valve, flat gate valve, ball valve,



globe valve, regulating valve, butterfly valve and other existing flow resistance, installation cumbersome, occupy a wide area of difficult problems. After the advent of knife gate valves, a large number of general purpose cut-off and regulating valves have been replaced by metal sealed knife gate valves.

The knife gate valve produced by the company has absorbed the advantages of advanced technology and structure at home and abroad, and excluded the various problems existing in the use of the knife gate valve produced by other manufacturers, and successfully developed a real metal seal (active seal zero leakage) and non-friction area products, so that the service life of the product is greatly improved.

1、刀闸阀结构特点

根据阀门执行机构的不同，刀闸阀的类型有：手动刀闸阀、气动刀闸阀、电动刀闸阀、液动刀闸阀和气液联动刀闸阀。

手动刀闸阀的结构组成型式如图 1 所示，在符合本标准技术要求的条件下，允许设计成其他结构型式，表 1 为手动刀闸阀各零件所用材料表。

刀闸阀的优点：重量轻、结构简单小巧、密封性能可靠、使用寿命长、且具有切断介质等功能。V 型闸板可作为调节阀使用。设计紧凑、占据空间小、重量轻、价格便宜、易于安装、耐磨防堵措施完善、便于维修、使用方便及寿命长，并且可任意选用驱动装置。闸板有 5 个支撑点，使闸板有很好的自对中。当阀门处于关闭状态，并承受背压时，闸板不发生偏移。

1、 Knife gate valve structure characteristics

According to the different valve actuators, the types of knife gate valves



are: manual knife gate valve, pneumatic knife gate valve, electric knife gate valve, hydraulic knife gate valve and gas-liquid linkage knife gate valve.

The structure of the manual knife gate valve is shown in Fig. 1. Under the condition of meeting the technical requirements of this standard, it is allowed to be designed into other structural types. Table 1 is the material table used for the parts of the manual knife gate valve.

The advantages of knife gate valve: light weight, simple and compact structure, reliable sealing performance, long service life, and has the function of cutting off media. The V-shaped ram can be used as a regulating valve. Compact design, small space, light weight, cheap price, easy to install, wear-resistant anti-blocking measures perfect, easy to maintain, easy to use and long life, and can be arbitrarily selected drive device. The valve plate has 5 support points, so that the valve plate has a good self-alignment. When the valve is closed and under back pressure, the valve plate does not shift.

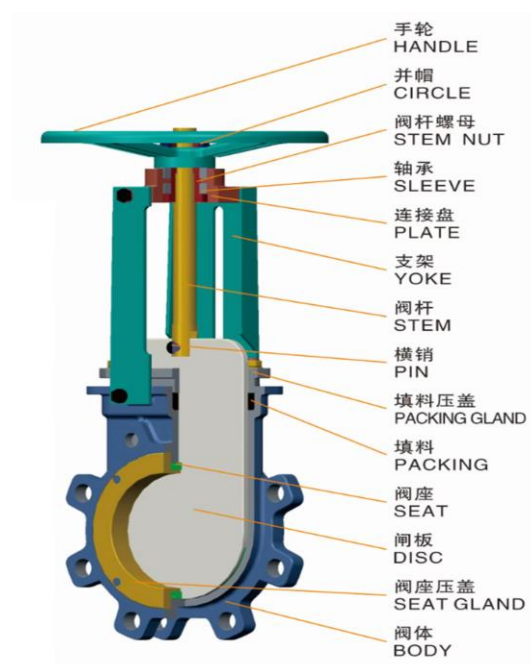




图 1 手动刀闸阀结构组成图

Fig 1 Structure composition of manual knife gate valve

表 1 手动刀闸阀材料表

Table 1 Manual knife gate valve material

序号	名称 NAME	材料 MATERIAL
1	阀体 BODY	WCB、CF8、CF8M、CF3M、310S
2	阀座压盖 SEAT GLAND	WCB、CF8、CF8M、CF3M、310S
3	闸板 DISC	201、304、316、316L、2520
4	阀座 SEAT	STL、EPDM、PTFE、VITON
5	填料 PACKING	石墨、PTFE
6	填料压盖 PACKING GLAND	WCB、CF8、CF8M、CF3M、310S
7	横销 PIN	35#
8	阀杆 STEM	2Cr13、304、316L
9	支架 YOKE	WCB+Cr
10	连接盘 PLATE	35#、304
11	轴承 BEARING	35#
12	阀杆螺母 STEM NUT	QA19-4
13	并帽 CIRCLE	45#
14	手轮 HANDLE	Qt450

2、刀闸阀工作原理

刀闸阀工作原理：刀闸阀的密封结构包括阀体、闸板、密封圈，阀座、楔块。是通过闸板跟安装在阀座上的密封圈贴面挤压起到密封作用。可提升的闸板密封面，可刮除密封面上的粘着物，自动清除杂物。不锈钢闸板可防止腐蚀引起的密封泄漏，精磨抛光处理可获得更好的密封效果。刀板底端加工成刀刃状，对松软物料如纤维、纸浆、木浆具有切断功能，同时有良好开启和关闭作用。在刀板上端安装有硬聚四氟乙烯刮泥器，可防止

粉尘、砂砾等擦伤性物质进入填料盒，可显著提高刀板寿命。不锈钢阀体坚固耐用，阀体加强筋设计提高阀体强度，双头螺栓使用启闭更为迅速。整体的不锈钢材质，可防止腐蚀破坏。阀体、填料函均为精密铸造，其中阀体采用凸缘式整体铸造，材质可根据用户需要选用，密封圈采用 PTFE 增强聚四氟乙烯材质，耐腐蚀、耐磨损、不沾渣。全圆形的直流通道设计不存渣、不卡阻。科学的上密封填料函设计，使上密封安全有效，经久耐用。短结构长度，可节省原料，安装空间，也有效支持管道强度。三角形的支架节省原材料，保证需要的力学性能。刀型闸阀阀体上的导向块使闸板正确运动。挤压块保证闸板有效密封。刀型闸阀还可任意选用驱动机构。

2、Knife gate valve working principle

Working principle of knife gate valve: The sealing structure of knife gate valve includes valve body, gate plate, sealing ring, seat and block. It is sealed by squeezing the gate with the sealing ring veneer mounted on the seat. The lifting shutter sealing surface can scrape the adhesive on the sealing surface and automatically remove debris. The stainless steel gate can prevent the sealing leakage caused by corrosion, and the fine grinding and polishing treatment can obtain better sealing effect. The bottom end of the blade is processed into a blade shape, which has a cutting function for soft materials such as fiber, pulp and wood pulp, and has a good opening and closing effect. A hard polytetrafluoroethylene mud scraper is installed on the upper end of the blade, which can prevent dust, gravel and other abrasive substances from entering the packing box, and can significantly improve the life of the blade. The stainless



steel body is strong and durable, the body reinforcement design improves the strength of the body, and the use of the stud is more rapid. The whole stainless steel material can prevent corrosion damage. Valve body, stuffing box are precision casting, the valve body adopts flange casting, the material can be selected according to user needs, the sealing ring adopts PTFE reinforced polytetrafluoroethylene material, corrosion resistance, wear resistance, non-stick slag. Full circular DC channel design without slag, no blocking. The scientific design of the upper sealing stuffing box makes the upper sealing safe, effective and durable. Short structural length, can save raw materials, installation space, but also effectively support the strength of the pipeline. The triangular bracket saves raw materials and guarantees the required mechanical properties. The guide block on the body of the knife gate valve makes the gate move correctly. Extruded block ensures effective seal of ram. Knife gate valve can also be arbitrarily selected drive mechanism.

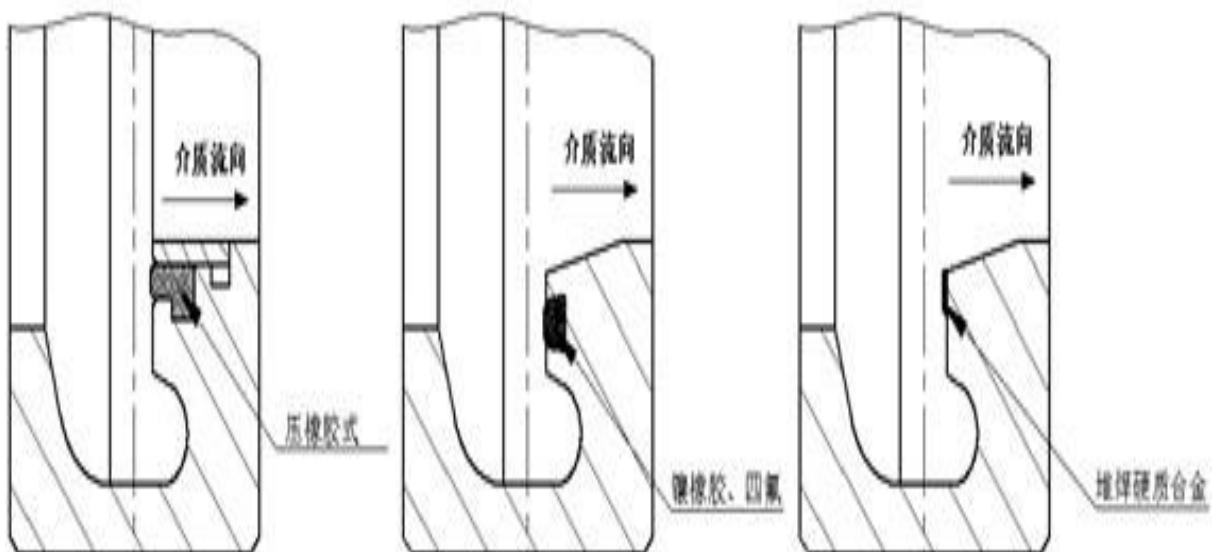


图 2 刀闸阀密封结构

Fig.2 Seal structure of knife gate valve

二、刀闸阀使用说明

2、 knife gate valve instructions

1、手动刀闸阀

1、 Manual knife gate valve

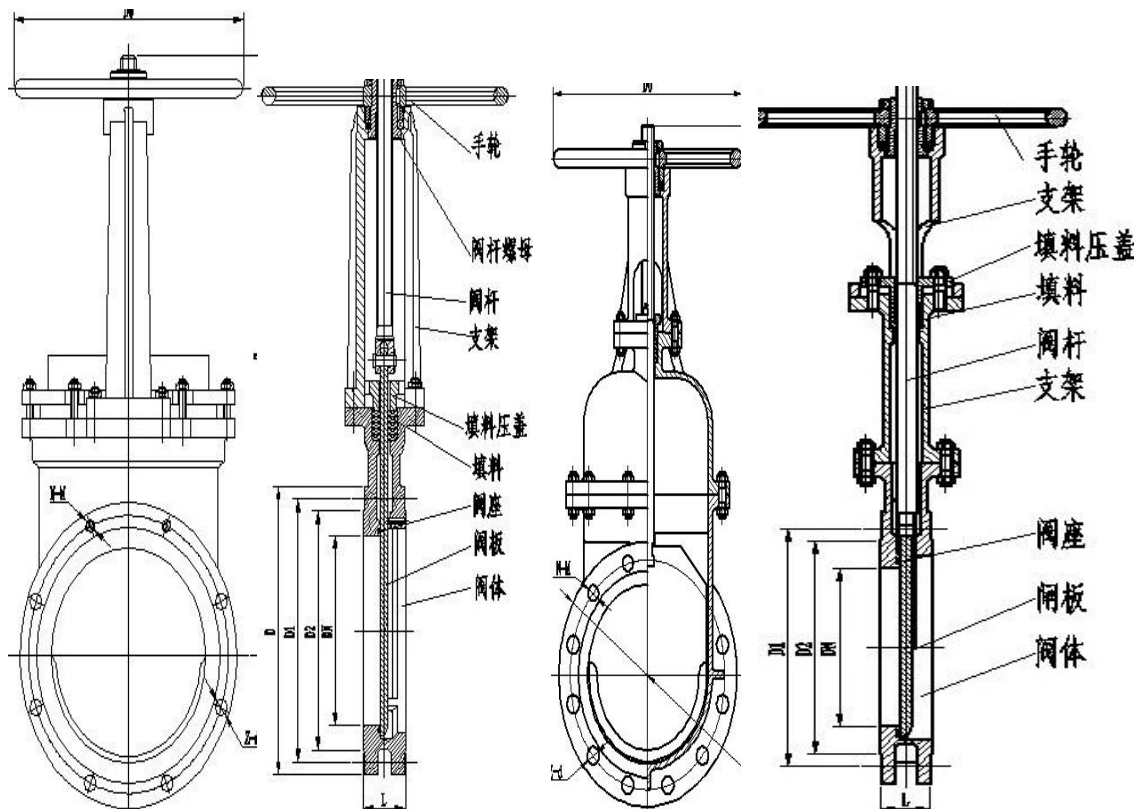


图3 手动刀闸阀（明杆、暗杆）

Fig.3 Manual knife gate valve (open rod, dark rod)

推杆 push rod 支架 holder 填料 padding 填料压盖 stuffing box gland 阀座 valve seat
 闸板 valve plate 阀体 valve body 阀杆螺母 valve-stem nut 手轮 handwheel

当逆时针转动手轮时，阀杆带动闸板向上运动，闸板移离密封圈，阀



杆继续提升闸板，使闸板离开密封面至通径顶部位置时，即刀闸阀开到全通位置。

在关闭位置时，闸板受阀杆的机械施压作用，紧插压在阀座与密封圈之间，关闭时，顺时针转动手轮，阀杆开始下降并使闸板开始下移，继续转动手轮，阀杆推动闸板下降，将闸板推移到关闭位置，当手轮不能再转动时，这时闸板面已完全覆盖通道，同时闸板又受另一面的上楔块和下斜楔块的顶力使得闸板面挤压密封圈，从而起到密封作用。

When turning the handwheel counterclockwise, the valve stem drives the gate to move upward, the gate moves away from the sealing ring, and the valve stem continues to lift the gate, so that the gate leaves the sealing surface to the top position of the diameter, that is, the knife gate valve opens to the full through position.

In the closed position, the gate is tightly inserted between the valve seat and the sealing ring under the mechanical pressure of the valve stem. When it is closed, turn the handwheel clockwise, the valve stem begins to fall and the gate begins to move down. Continue to turn the handwheel, the valve stem pushes the gate down, and the gate is moved to the closed position. At the same time, the ram is forced by the upper and lower wedge blocks on the other side of the ram surface to squeeze the seal ring, thus playing a sealing role.

2、气动刀闸阀

2、Pneumatic knife gate valve

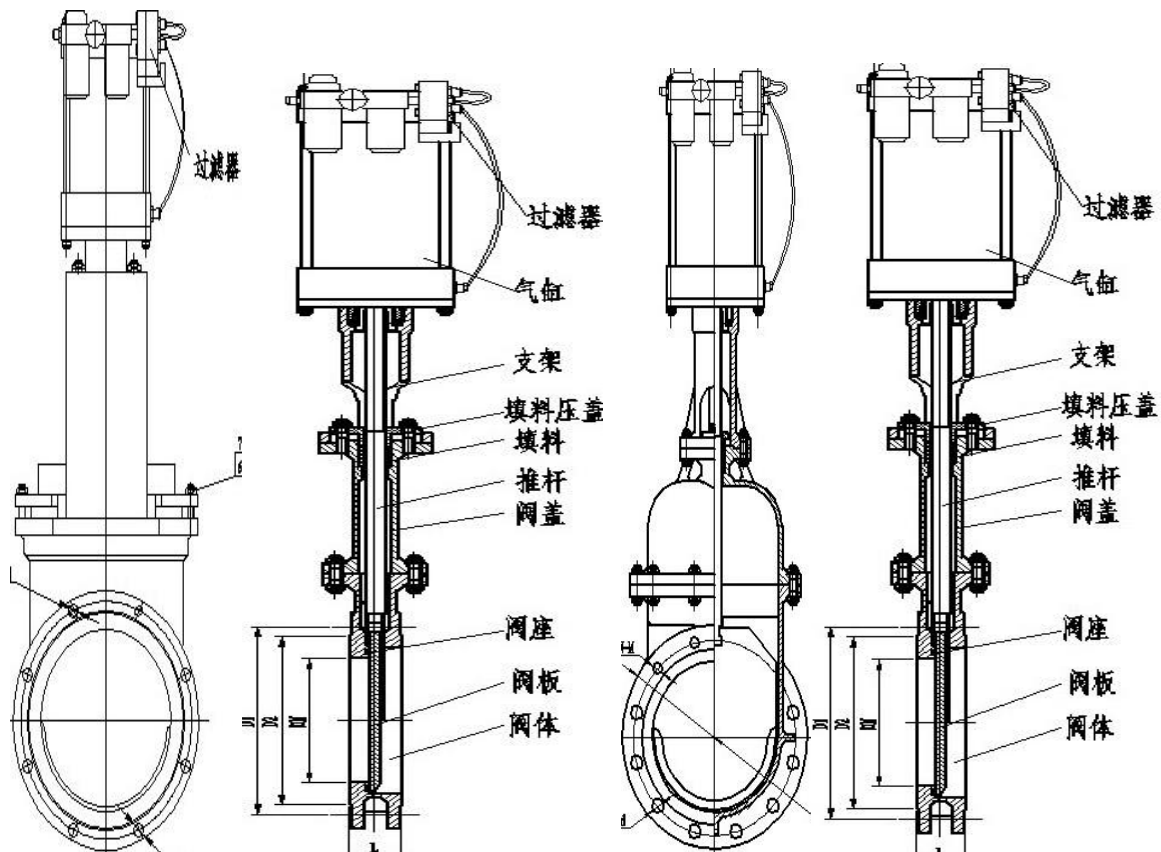


图4 气动刀闸阀（明杆、暗杆）

Fig.4 Pneumatic knife gate valve (open rod, dark rod)

推杆 push rod 支架 holder 填料 padding 填料压盖 stuffing box gland 阀座 valve seat 阀板 valve plate 阀体 valve body 气缸 air cylinder 过滤器 filter

气动刀闸阀是以通过使压缩空气进入气缸，推动活塞在气缸内做上下运动，从而使阀杆带动闸板在阀体腔内做上下运动，实现阀门的开启或关闭。压缩空气常用气压为 0.4~0.8 Mpa。

Pneumatic knife gate valve is to push the piston to move up and down in the cylinder by making the compressed air enter the cylinder, so that the valve stem drives the gate to move up and down in the body cavity to achieve the opening or closing of the valve. The commonly used pressure of compressed air is 0.4 ~ 0.8Mpa.



刀闸阀气缸维护：

气动刀闸阀在气缸正常使用后，要经常检查系统中分水器和油雾器的工作情况，及时放水加油。不供油的气缸 6 个月在气缸内滑动部位加涂润滑脂。采用尾部单双耳的气缸或中间摆动气缸，应定期向尾部或摆轴处加润滑油。气动刀闸阀气缸正常使用过程中应定期检查气缸各部位，注意连接部位有无松动。气缸密封件有无损坏泄漏情况，发现问题应及时修复，以防发生事故。

Knife gate valve cylinder maintenance:

After the pneumatic knife gate valve is used normally in the cylinder, the working condition of the water distributor and oil mist in the system should be checked frequently, and the water should be refueled in time. The cylinder without oil supply should be lubricated in the sliding part of the cylinder for 6 months. The cylinder with single and double ears at the tail or the intermediate swing cylinder should be regularly lubricated to the tail or pendulum shaft. During the normal use of the pneumatic knife gate valve cylinder, all parts of the cylinder should be regularly checked, and pay attention to whether the connection part is loose. There is no damage to the cylinder seal leakage, and the problem should be repaired in time to prevent accidents

3、电动刀闸阀

3、 Electric knife gate valve

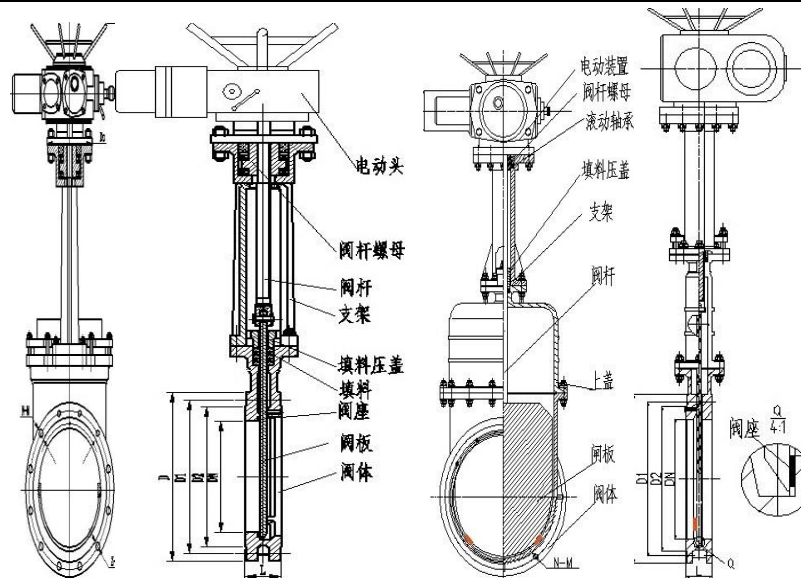


图 5 电动刀闸阀（明杆、暗杆）

Fig.5 Electric knife gate valve (open rod, dark rod)

推杆 push rod 支架 holder 电动机 electromotor 填料 padding 填料压盖 stuffing box
 gland 阀座 valve seat 阀板 valve plate 阀体 valve body

产品驱动部分采用多回转电动装置，用以驱动和控制阀门的开启和关闭，操作人员可以在控制室内远距离对阀门进行控制，也可以现场手动操作，也可以与计算机配合实现计算机自动控制。广泛应用于排水、供热、电站、化工、食品、造纸、制药、煤炭、采矿等工程，满足了现代工、农业自动化要求。

电动刀闸阀特点：启闭迅速，平衡可靠，自动化程度高。安装高度及位置不受限制。采用防爆型电动装置，在易燃易爆，甚至有毒气体环境中可以正常工作。配有手动，万一供电间断，可以手动操作开启或关闭阀门，有效控制介质，防止事故发生。

The driving part of the product adopts a multi-turn electric device to drive and control the opening and closing of the valve. The operator can control the valve remotely in the control room, or manually operate it on the spot, or



cooperate with the computer to achieve automatic computer control. Widely used in drainage, heating, power station, chemical, food, paper, pharmaceutical, coal, mining and other projects, to meet the requirements of modern industrial and agricultural automation.

Electric knife gate valve features: fast opening and closing, reliable balance, high degree of automation. Installation height and position are not limited. Using explosion-proof electric device, it can work normally in flammable and explosive, and even toxic gas environment. Equipped with manual, in case of power interruption, you can manually open or close the valve, effectively control the medium, to prevent accidents.

调试使用说明：

电动执行器与阀门组装后，必须对转矩控制器、行程控制器、开度指示器分别进行调整后方可使用。调整前，必须检查开度指示器上的电位器是否已脱开（把电位器轴上的齿轮的紧定螺钉松开）以防损坏，首次安装时，先把阀门用手动开到中间位置，检查电机的旋向，控制线路是否正确，以防电机失控。转矩控制机构的调整（电动执行器说明书）出厂时已按用户的要求调整好距离，一般不需要调整。如需改变给定值，可旋转凸轮的调整轴至相应刻度，先调关向，后调开向。

Debugging instructions:

After the electric actuator and valve are assembled, the torque controller, stroke controller and opening indicator must be adjusted respectively before they can be used. Before adjustment, it is necessary to check whether the



potentiometer on the opening indicator has been disconnected (loosen the tightening screw of the gear on the potentiometer shaft) to prevent damage, the first installation, the valve is manually opened to the middle position, check the rotation of the motor, the control line is correct, in order to prevent the motor from losing control. The adjustment of the torque control mechanism (electric actuator instruction manual) has been adjusted according to the user's requirements when leaving the factory, and generally does not need to be adjusted. If you need to change the given value, you can rotate the adjustment axis of the CAM to the corresponding scale, first adjust the off direction, then adjust the open direction.

4、电液动刀闸阀

4、 Electro-hydraulic knife gate valve

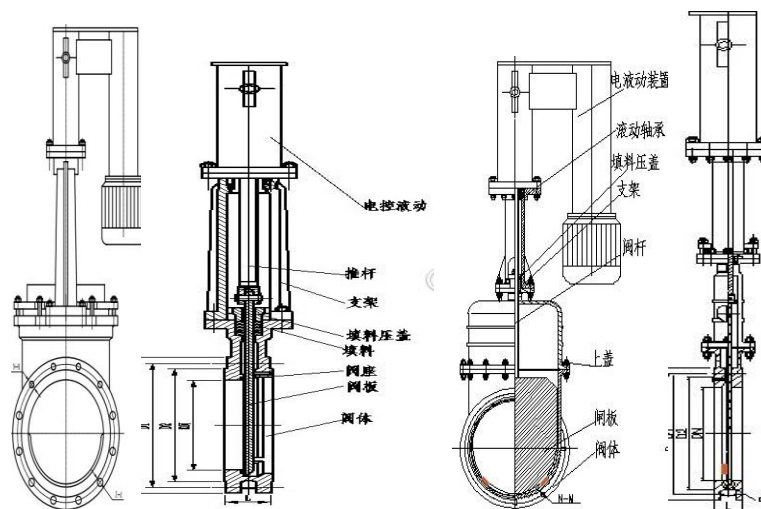


图 6 电液动刀闸阀（明杆、暗杆）

Fig. 6 Electrohydraulic knife gate valve (open rod, dark rod)

推杆 push rod 支架 holder 电液装置 Electro-hydraulic 填料 padding 填料压盖 stuffing box gland 阀座 valve seat 阀板 valve plate 阀体 valve body

电液动刀闸阀是利用电液推杆往复推拉直线运动、上升、下降从而实

现阀门的开启与关闭，配置传感器和数字显示装置（用户选择），可进行远距离、高空及危险地区的集中或程序控制。本产品已广泛用于冶金、矿山、煤炭、电力、机械、粮食等部门。留有 PLC 远程接口，可实现机、电、液一体化的现场远程、集中和自动化控制，输出力矩大，过载保护能力强。可设定多重过载自动保护措施来保护电机，如配手动装置，一旦电力线路出现故障可手动应急操作。另外还具有：转动效率高、结构紧凑、体积小、防水、防尘等优点。可根据不同的安装空间设计产品的外形结构，自锁能力强，可在任意位置锁定。

工作原理：电液动刀闸推杆以电机为动力源，通过双向齿轮泵输出压力轴，经油路集成块的控制，送至油缸，实现活塞杆的往复运动。工作过程中，活塞杆所受外力应当不超过调定的输出力，且将电液推杆活塞杆运行数个来回，保证将油缸内空气排尽。

Electro-hydraulic knife gate valve is the use of electro-hydraulic push rod reciprocating push and pull linear motion, rise, fall to achieve the valve opening and closing, equipped with sensors and digital display device (user selection), can be remote, high altitude and dangerous areas of centralized or program control. This product has been widely used in metallurgy, mining, coal, electric power, machinery, food and other departments. There is a PLC remote interface, which can realize the remote, centralized and automatic control of machine, electricity and hydraulic integration. The output torque is large, and the overload protection ability is strong. Multiple automatic overload protection measures can be set to protect the motor, such as manual devices, once the



power line fault can be manually emergency operation. In addition, it has the advantages of high rotation efficiency, compact structure, small size, waterproof, dustproof and so on. The shape structure of the product can be designed according to different installation Spaces, and the self-locking ability is strong, and it can be locked at any position.

Working principle: The electro-hydraulic cutting brake push rod takes the motor as the power source, and outputs the pressure shaft through the two-way gear pump, which is controlled by the oil circuit integrated block and sent to the cylinder to realize the reciprocating movement of the piston rod. During the working process, the external force on the piston rod should not exceed the adjusted output force, and the electro-hydraulic push rod piston rod is run several times to ensure that the air in the cylinder is exhausted.

调试使用说明：

根据工况要求将电液推杆安装在刀阀上，安装时需注意加油螺塞方向朝上，从加油处加入洁净的液压油（工作环境温度 20℃ 左右时，推荐使用 46#液压油）。根据图 7 所示液压工作原理图进行安装，保证管路安装正确。

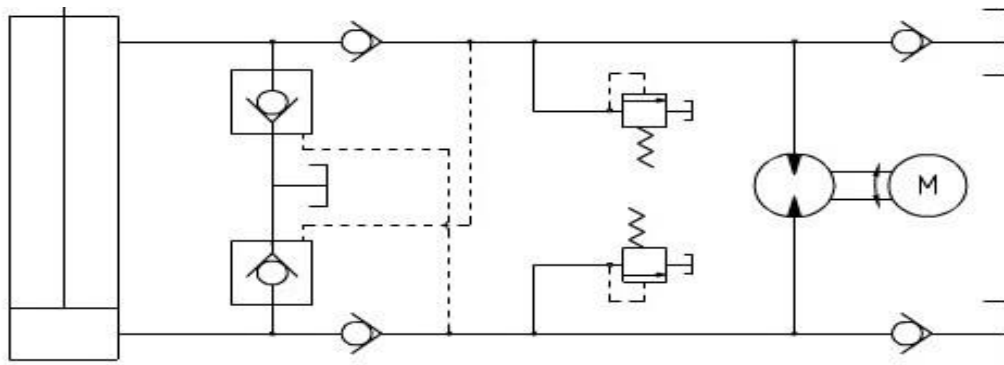
Debugging instructions:

Install the electro-hydraulic push rod on the knife valve according to the working condition requirements. Pay attention to the direction of the refueling plug when installing, and add clean hydraulic oil from the refueling place (46# hydraulic oil is recommended when the working environment temperature is

about 20 ° C). Install according to the hydraulic working principle diagram shown in Figure 7 to ensure that the pipeline is installed correctly

图 7 液压工作原理图

Fig. 7 Hydraulic working principle diagram



5、液动刀闸阀及配套液压站

5、Hydraulic knife gate valve and supporting hydraulic station

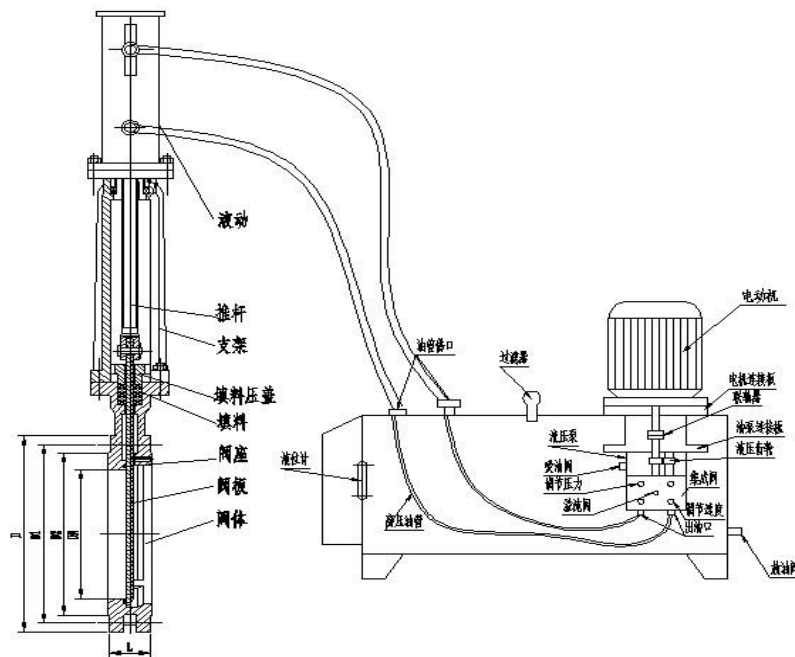


图 8 液压刀闸阀及配套液压站

Fig. 8 Hydraulic knife gate valve and supporting hydraulic station

推杆 push rod 支架 holder 电动机 electromotor 填料 padding 填料压盖 stuffing
box gland 阀座 valve seat 阀板 valve plate 阀体 valve body

液压站又称液压泵站，它按驱动装置（主机）要求供油，并控制油流动的方向、压力和流量。它适用于主机与液压装置可分离的各种液压机械场合。用户购买后只要将液压站与主机上的执行机构（油缸和油马达）用油管相连接，液压机械即可实现各种规定的动作、工作循环。液压站是由泵装置、集成块、阀组合、油箱及电气盒等组合而成。

各部件功用如下：泵装置：配置有电机和油泵，为液压站的动力源，将机械能转化为液压油的动力能。集成块：是由液压阀及通道体组合而成。它对液压油实行方向、压力、流量调节。阀组合：是板式阀装在立板上，板后管连接，与集成块功能相同。油箱：是钢板焊的半封闭容器，配备有滤油网、空气滤清器等，可以用来储油、使油冷却及过滤。电器盒：分两种形式，一种设置外接引线的端子板；一种是配置了全套控制电器。

液压站的工作原理：电机带动油泵旋转，泵从油泵中吸油后打油，将机械能转化为液压油的压力能，液压油通过集成块（或阀组合）被液压阀实现了方向、压力、流量调节后经外接管路传输到液压机械的油缸或油马达中，从而控制了液动机方向的变换、力量的大小及速度的快慢，推动液压推杆上下直线运动.从而实现阀门的开启和关闭。

液压系统阀的压力值按照设定后,控制系统通过一个信号控制器给出各种指令,实现连续、光滑的松、施闸。在自动条件下的工作过程如下：当给出主松闸命令时，通过激活控制阀和比例调节阀使工作油压上升到 8.5 MPa。通过增加比例调节阀的控制电压，让油压短时间内上升到 11MPa，压力能被减少到合适的值进行预松闸。当发出主松闸命令一定时间后,通过

激活控制阀使油压上升到最大，让闸完全敞开。当罐笼刚到达停车位置时，通过释放控制阀使压力下降到 11MPa，工作闸进行预贴闸。在停车位置主松闸命令消失时，通过减少比例调节阀的电压使压力减少到 8.5MPa；油压减少到 6.5MPa 后，延时一定时间后，通过短时间释放控制阀使油压减少到设定水平(安全电路跳闸时最大允许油压)。两通道控制中的第一个施闸命令到时，比例调节阀被完全释放，油压将保持在较低压力。两通道控制中的第二个施闸命令到时，阀释放，闸压力逐渐减少到零，此时阀又被激活。液压阀的顺序动作,构成了液压系统自动条件下的下压力—时间曲线，以满足提升系统自动条件下的恒减速制动要求。

Hydraulic station, also known as hydraulic pump station, it supplies oil according to the requirements of the drive device (main engine), and controls the direction, pressure and flow of oil flow. It is suitable for various hydraulic mechanical occasions where the main engine and the hydraulic device can be separated. After the purchase of the user, as long as the hydraulic station is connected with the actuator (cylinder and oil motor) on the main engine with the tubing, the hydraulic machinery can realize a variety of specified actions and working cycles. The hydraulic station is composed of a pump unit, an integrated block, a valve assembly, a fuel tank and an electrical box.

The functions of each component are as follows: Pump device: equipped with motor and oil pump, which is the power source of the hydraulic station and converts the mechanical energy into the power energy of hydraulic oil. Integrated block: It is composed of hydraulic valve and channel body. It



regulates the direction, pressure and flow of hydraulic oil. Valve combination: The plate valve is installed on the vertical plate, and the tube behind the plate is connected, which has the same function as the integrated block. Oil tank: semi-closed container welded with steel plate, equipped with oil filter screen, air filter, etc., can be used to store oil, cool oil and filter oil. Electrical box: divided into two forms, one set the terminal board of the external lead; One is equipped with a full set of control appliances.

Working principle of hydraulic station: The motor drives the oil pump to rotate, and the pump pumps oil after absorbing oil from the oil pump, converting the mechanical energy into the pressure energy of hydraulic oil. The hydraulic oil realizes the direction, pressure and flow adjustment by the hydraulic valve through the integrated block (or valve combination), and then transmits to the hydraulic machinery cylinder or the oil motor through the external pipeline, thus controlling the direction change of the hydraulic motor, the size of the force and the speed. Push the hydraulic push rod up and down straight motion. Thus the valve is opened and closed.

After the pressure value of the valve of the hydraulic system is set, the control system gives various instructions through a signal controller to achieve continuous and smooth loosening and braking. The working process under automatic conditions is as follows: When the main release command is given, the working oil pressure is raised to 8.5 MPa by activating the control valve and the proportional control valve. By increasing the control voltage of the



proportional control valve, the oil pressure rises to 11MPa in a short time, and the pressure can be reduced to a suitable value for pre-release. When the main release command is issued for a certain period of time, the oil pressure is raised to the maximum by activating the control valve, so that the brake is fully open. When the cage has just reached the parking position, the pressure is lowered to 11MPa by releasing the control valve, and the working brake is pre-bonded. The pressure is reduced to 8.5MPa by reducing the voltage of the proportional control valve when the main release command at the parking position disappears. After the oil pressure is reduced to 6.5MPa, after a delay of a certain time, the oil pressure is reduced to the set level (the maximum allowable oil pressure when the safety circuit is tripped) by releasing the control valve for a short time. At the time of the first brake command in the two-channel control, the proportional control valve is fully released and the oil pressure will be kept at a low pressure. When the second brake command in the two-channel control arrives, the valve is released, the brake pressure is gradually reduced to zero, and the valve is activated again. The sequential action of the hydraulic valve constitutes the downpressure-time curve under the automatic condition of the hydraulic system to meet the constant deceleration braking requirements under the automatic condition of the lifting system.

系统特点:

经典的高低压液压控制系统，节能环保绿色设计，能源利用率高，噪音低，杜绝渗漏。主要的元件为国际知名品牌，安全稳定的系统回路，结



构紧凑，动力强悍，冲压频率高，所有元件拥有良好的互换性，保证机床高的开机率。

System features:

Classic high and low pressure hydraulic control system, energy saving and environmental protection green design, high energy efficiency, low noise, prevent leakage. The main components are international well-known brands, safe and stable system circuit, compact structure, strong power, high stamping frequency, all components have good interchangeability, to ensure the high opening rate of the machine tool.

三、安装指南

3、 Installation guide

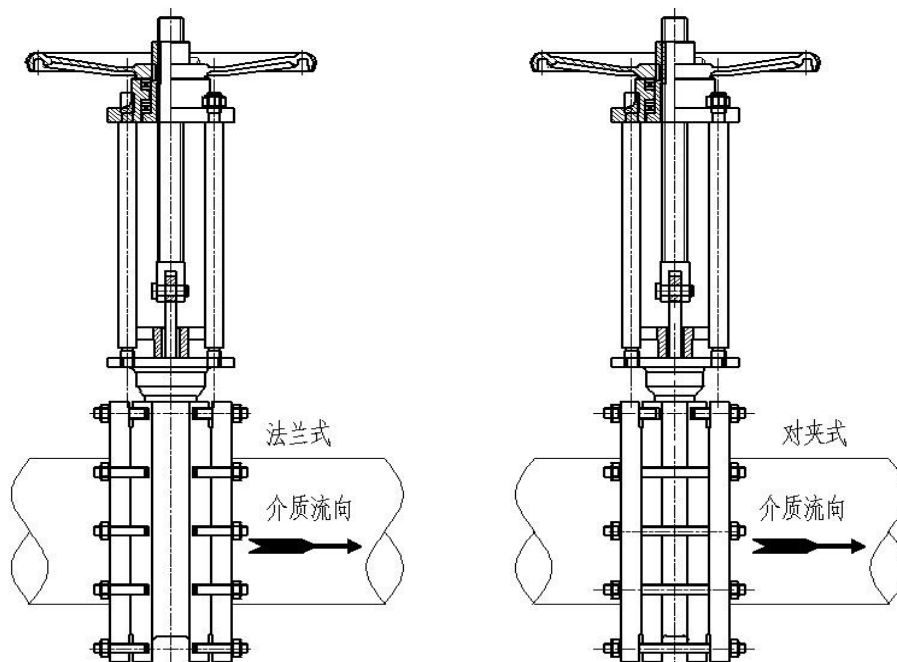


图9刀闸阀安装示意图

Fig.9 Installation diagram of knife gate valve



法兰式 flange form 对夹式 double-clip type

介质流向 Medium flow direction

安装前应仔细阅读使用说明书,认真核对型号、规格以及其他标志与现场使用要求是否相同。阀门在管道安装时要对应介质流向合理安装阀门,如图 9 所示。操作部位要安放在便于阀门起闭操作与布线的位置,安装使用前必须对阀门进行综合性能检查,阀门的密封圈和传动部位,气动、电动装置的行程控制机构及开度(位置)指示机构等,都必须逐项地进行检查,阀门内腔和密封面不允许有污物附着。检查各连接螺栓是否均匀拧紧。阀门应清洗干净并在各转动部位加注润滑油(脂),阀门的气动、电动装置的综合性能检查必须在阀门启闭无卡阻的情况下进行。调试使用时注意电动阀门的电缆接地芯线必须安全可靠地接入内接地螺钉。阀门在使用时每星期应在转动部位加注润滑油(脂)。检查填料是否均匀压紧并密封,但又不得过紧妨碍闸板升降。在使用过程中如发现电机过热或运转不正常、控制机构失灵等,应及时切断电源,停机检查。

Before installation, read the instruction manual carefully, and carefully check whether the model, specifications and other marks are the same as the on-site use requirements. During pipeline installation, the valve should be reasonably installed according to the medium flow direction, as shown in Figure 9. The operation part should be placed in a position that is convenient for the valve to be operated and wired, and the valve must be checked before installation and use. The sealing ring and transmission parts of the valve, the stroke control mechanism and the opening (position) indicating mechanism of the pneumatic and electric devices must be checked item by item, and the inner



cavity and sealing surface of the valve are not allowed to have dirt attached. Check whether the connection bolts are evenly tightened. The valve should be cleaned and filled with lubricating oil (grease) in each rotating part, and the comprehensive performance check of the pneumatic and electric devices of the valve must be carried out in the case of the valve opening and closing without blocking resistance. During commissioning, the grounding core of the electric valve must be securely connected to the internal grounding screw. The valve should be filled with lubricating oil (grease) in the rotating part every week when in use. Check that the packing is evenly pressed and sealed, but not too tight to prevent the gate lifting. In the process of use, if the motor is found to be overheating or abnormal operation, control mechanism failure, etc., the power should be cut off in time, stop the inspection.

四、维护与保养

本阀门应存放在干燥通风的室内，闸板应关好，以防污物进入腔内。长期存放的阀门应定期检查，加工面上应涂上防锈油。阀门投入使用后，应定期检查如下内容：闸板密封面与阀座密封圈面的磨损程度、阀杆与阀杆螺母磨损情况、填料是否过时失效，如有损坏应及时更换，一般在使用后半年可以紧固填料压盖，以确保上密封。应定期在系统卸压后清洗腔内去除污物，对各转动部位加注润滑油(脂)。

4、Repairing and maintenance

The valve should be stored in a dry and ventilated room, and the gate



should be closed to prevent dirt from entering the chamber. Long-term stored valves should be checked regularly, and the processing surface should be coated with anti-rust oil. After the valve is put into use, the following contents should be checked regularly: the degree of wear of the gate sealing surface and the sealing ring of the valve seat, the wear of the valve stem and the valve stem nut, whether the packing is outdated and invalid, if there is damage, it should be replaced in time, and the packing gland can be tightened in half a year after use to ensure the sealing. The dirt should be cleaned in the chamber regularly after the system pressure relief, and lubricating oil (grease) should be added to each rotating part.

五、常见问题与解决方案

5、Common problems and solutions

表 2 气动刀闸阀故障及排除方法表

Table 2 Pneumatic knife gate valve failure and troubleshooting method table

故障 Malfunction	产生原因 Cause	排除处理方法 Exclusion process
气动执行器动阀门 不能动作 The pneumatic actuator valve	电磁阀是否正常，是否烧 坏，电磁阀芯是否被杂物 卡死。 Whether the solenoid	更换电磁阀， 更换线圈， 清除杂物 Replace the solenoid valve, replace the coil, and



cannot operate.	valve is normal, whether it is burned out, and whether the solenoid valve core is stuck by debris.	remove debris
	对执行器单独供气检验，是否正常工作，如气缸冲气不正常工作，拆开执行器检查密封件是否损坏，气缸表面是否磨损。 Separately supply air to the actuator to check whether it works normally. If the cylinder punching does not work normally, disassemble the actuator to check whether the seal is damaged and whether the cylinder surface is worn.	更换密封圈，气缸。 Replace the sealing ring and cylinder
	阀内有杂质将闸板卡住。 There are impurities in the valve and the ram is stuck.	清除杂物更换已损件 Remove debris and replace damaged parts
	手动操作机构手柄处在	将手柄扳到气动自动位



	<p>手柄位置</p> <p>The handle of the manual operation mechanism is in the handle position</p>	<p>置</p> <p>Turn the handle to the pneumatic automatic position</p>
<p>气动阀门动作迟缓 爬行</p> <p>Slow movement of pneumatic valve</p>	<p>气源压力不够。</p> <p>Insufficient air pressure.</p>	<p>增加气源压力（一般试验 <0.4MPa,使用时 0.4-0.8MPa）</p> <p>Increase the air source pressure (general test <0.4MPa, 0.4-0.8MPa when used)</p>
	<p>气动执行器扭矩过小</p> <p>The pneumatic actuator torque is too small</p>	<p>加大执行器扭矩（更换）</p> <p>Increase the actuator torque (replace)</p>
	<p>阀门闸板和填料组合件太紧，不合理</p> <p>The valve ram and packing assembly are too tight and unreasonable</p>	<p>适当调节螺栓</p> <p>Appropriate adjustment of bolts</p>
	<p>气源管路堵塞流量过小。</p> <p>The blocked flow rate of the air supply pipeline is</p>	<p>排除堵塞。</p> <p>Remove blockage.</p>



	too small.	
回信器无信号 The responder has no signal	信号电源线路，短路，断路 Signal power line, short circuit, open circuit	维修电源线路 Repair the power line
	凸轮位置不准确 The CAM position is not accurate	重新调整凸轮位置至正确 Re-adjust the CAM position to correct
	徽动开关损坏 The emblem switch is damaged	更换徽动开关 Replace the emblem switch

故障 Malfunction	产生原因 Cause	排除处理方法 Exclusion process
外泄漏 Outsidedrainleakage	1 活塞杆安装偏心 润滑油供应不足 活塞杆与密封件之间有杂物 密封件老化损坏活塞杆划伤 Piston rod mounting	重新安装调整 检查油雾气是否失灵 清洗，清除杂物 修复或更换活塞杆 Reinstallation adjustment Check whether the oil mist fails



	<p>eccentricity</p> <p>Insufficient supply of lubricating oil</p> <p>There is debris between the piston rod and the seal</p> <p>Seal aging damage piston rod scratc</p>	<p>Wash and remove debris</p> <p>Repair or replace the piston rod</p>
	<p>四拉杆螺母式连接螺纹松动</p> <p>密封件损坏</p> <p>The screw thread of the four-tie rod nut connection is loose</p> <p>Seal failure</p>	<p>重新紧固</p> <p>更换密封件</p> <p>Tighten the fastener</p> <p>Replace seal</p>
	<p>密封件老化，损坏</p> <p>The seal is aged and damaged</p>	<p>更换密封件</p> <p>Replace seal</p>
<p>内泄漏</p> <p>Internal leakage</p>	<p>气缸润滑不良</p> <p>密封面有杂物密封损坏，老化</p> <p>Poor cylinder lubrication</p> <p>There is debris on the</p>	<p>检查油雾器是否失灵</p> <p>清洗，清除杂物更换密封件</p> <p>Check whether the oil mist is faulty</p>



	<p>sealing surface. The sealing is damaged and aging</p>	<p>Clean, remove debris and replace seals</p>
<p>气缸输出力不足 Cylinder output force is insufficient</p>	<p>内外泄漏严重 连接抽负载机构别劲不灵活 工作压力低负载力大缸径小 Serious internal and external leakage The connection pumping load mechanism is not flexible Working pressure low load large bore</p>	<p>按内外泄漏故障排除 重新调整安装 调高工作压力缸径 Troubleshooting according to internal and external leakage Adjust the installation Raise the working pressure bore</p>
<p>活塞杆 Piston rod</p>	<p>活塞杆连接偏心密封有杂物 The piston rod connection eccentric seal has debris</p>	<p>轻微砂纸打磨修， 更换气缸杆 Lightly sanded, Cylinder rod replacement</p>
<p>损坏 Damage</p>	<p>有偏心负载或横向负载 承受冲击负载 Eccentric load or lateral</p>	<p>消除偏心负载或横向 不应受冲击，选粗杆气缸 Eliminate eccentric load or</p>



	<p>load</p> <p>Bearing impact load</p>	<p>lateral load</p> <p>Should not be impacted, choose thick cylinder</p>
<p>缓冲效果不好</p> <p>Poor cushioning effect</p>	<p>缓冲密封不好，针阀杆损坏</p> <p>气缸速度太快</p> <p>The buffer seal is not good, and the needle valve stem is damaged</p> <p>The cylinder speed is too fast</p>	<p>更换缓冲圈，更换针阀杆</p> <p>降低速度或设置缓冲机构</p> <p>Replace the buffer ring and the needle valve stem</p> <p>Reduce speed or set buffer mechanism</p>
<p>缸筒拉伤</p> <p>Cylinder strain</p>	<p>1. 气缸润滑不良</p> <p>2. 缸内有杂物</p> <p>1. Poor cylinder lubrication</p> <p>2. There is debris in the cylinder</p>	<p>轻微拉伤用砂纸打磨光滑继续使用，严重拉伤更换缸筒</p> <p>For minor strain, smooth with sandpaper and continue to use. For serious strain, replace cylinder</p>

表 3 电动刀闸阀故障及排除方法

Table 3 Electric knife gate valve failure and troubleshooting method table

故障	原因	排除方法
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Malfunction	Cause	Elimination methods
电动机不动 Motor stasis	1.电源线脱开 2.控制线路故障 3.行程或力矩控制器失灵 1. Disconnect the power cable 2. The control cable is faulty 3.The stroke or torque controller is faulty	1.检查电源线 2.排除线路故障 3.排除行程或力矩控制器故障 1. Check the power cables 2. Rectify the cable fault 3.Troubleshoot the stroke or torque controller
输出轴旋向不符合规定 The output axis rotation does not meet the requirements	电源相序接反 The phase sequence of the power supply is reversed	调换任意两电源线 Replace any two power cables
电机过热 Motor overheating	1.连续工作时间太长 2.电机与电动执行机构部配套 3.一相断开 1. Working for too long 2. Matching of motor and	1.停止运行，使电机冷却 2.检查配套情况 3.检查电源线 1. Stop running to cool the motor 2. Check the supporting



	electric actuator 3.One-phase break	conditions 3.Checking power cables
运行中电机停转 The motor stops running	1.电动执行机构过载力矩控制器动作 2.阀门有故障 1.Electric actuator overload torque controller action 2. The valve is faulty	1.增大额定转矩 2 检查阀门 1.Increase the rated torque 2 Check the valve
阀门到位后电机不停转或灯不亮 After the valve is in place, the motor does not stop or the lamp does not turn on	1.行程或力矩控制器有故障 2.行程控制器调整不当 1. The stroke or torque controller is faulty 2.The travel controller is improperly adjusted	1.检查行程或力矩控制器 2.重调行程控制机构 1. Check the stroke or torque controller 2.Reset the stroke control mechanism
远方无阀位信号 No remote valve position signal	1.远传电位器故障 2.电位器齿轮紧定螺钉松动 1. The remote potentiometer is faulty	1.检查更换电位器 2.拧紧电位器齿轮紧定螺钉 1. Check the replacement potentiometer



	2.The potentiometer gear setting screw is loose	2.Tighten the potentiometer gear setting screw
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表 4 电液动刀闸阀故障及排除方法

Table 4 Electrohydraulic knife gate valve failure and troubleshooting methods

故障 Malfunction	原因 Cause	排除方法 Elimination methods
推杆活塞杆 不动作 Push rod piston rod inaction	电机不动作 Motor inactivity	检查电机接线及电器 Check motor wiring and electrical appliances
	加油过少 Underrefueling	检查油位并加油 Check the oil level and add oil
	电机工作，油箱内油位无变化，无溢流声，泵吸油口无吸油现象 The motor works, the oil level in the tank does not change, there is no overflow sound, and the oil suction port of the pump does not absorb oil	检查联轴器是否脱落，并重新装配 Check if the coupling has fallen off and reassemble
	电机工作，油箱内有溢流声但阀不动作 The motor is working, there is an overflow sound in the fuel tank, but the valve does not operate	拆开清洗 Disassemble and clean
电机烧毁 Motor burnout	电压不符或电机进水、受潮	使用合适电压并避免电机受潮进水

	Voltage discrepancy or motor water, damp	Use the appropriate voltage and avoid moisture and water from the motor
阀门爬行 Valve crawl	液压泵吸油不足，导致空气进入 Hydraulic pump suction is insufficient, resulting in air entry	加油 Refuel
	工作腔内空气未排尽 The air in the working chamber is not exhausted	运行数个来回 Run several back and forth

表 5 液压泵站故障及排除方法

Table 5 Hydraulic pump station faults and troubleshooting methods

常见故障 Common fault	引起故障的可能原因 Possible causes of the fault	排除方法 Elimination methods
主油路压力建立不起或系统压力达不到所需油压 The main oil circuit pressure cannot be established or the system pressure cannot reach the required oil pressure	油泵没有输出液压油 油泵旋转方向是否反 油泵吸油口是否畅通 吸油过滤器堵塞 比例溢流阀旁的溢流阀阀芯卡死 比例溢流阀中锥阀内有脏物，锥阀关不住 液动阀阀芯卡死 There is no hydraulic oil output from the pump Whether the rotation direction of the oil pump is reversed Whether the oil suction port of the oil pump is smooth The oil suction filter is blocked	排除油泵故障 纠正油泵的转向 检查吸油管路 清洗过滤器 拆开溢流阀清洗，要求阀芯运动灵活 拆开比例溢流阀中锥阀阀芯，清洗 拆开液动阀，清洗 Oil pump troubleshooting Correct the steering of the oil pump Check the suction line Cleaning filter Disassembling the relief valve for cleaning requires flexible spool movement Disassemble the hydraulic



	<p>The spool of the relief valve beside the proportional relief valve is stuck</p> <p>The valve core of the hydraulic valve is stuck</p>	<p>valve and clean</p>
<p>主油路压力不可调，或信号电压降了，而油压不降</p> <p>The main oil circuit pressure is not adjustable, or the signal voltage is dropped, and the oil pressure is not dropped</p>	<p>比例溢流阀的主阀芯卡死</p> <p>The main spool of the proportional relief valve is stuck</p>	<p>把比例溢流阀拆开清洗，要求阀芯运动灵活</p> <p>The proportional relief valve is disassembled and cleaned, and the spool movement is required to be flexible</p>
<p>一级制动油压保持不住</p> <p>Primary brake oil pressure cannot be maintained</p>	<p>蓄能器气囊没有气压 溢流阀阀芯卡住 单向节流阀调节过大 电磁阀 G5没有通电 电磁阀 G3,G4内泄露大</p> <p>The accumulator bladder has no air pressure</p> <p>The spool of the relief valve is stuck</p> <p>Unidirectional throttle adjustment is too large</p> <p>Solenoid valve G5 is not powered on</p> <p>Solenoid valve G3,G4 leakage is large</p>	<p>对蓄能器充气 清洗阀芯或更换 调节节流阀的流量 检查通电状态 清洗阀芯或更换</p> <p>Inflate the accumulator</p> <p>Clean or replace the spool</p> <p>Adjust the throttle flow</p> <p>Check power status</p> <p>Clean or replace the spool</p>
<p>电磁阀故障报警</p> <p>Solenoid valve fault alarm</p>	<p>电磁阀阀芯被卡 电磁阀线圈烧毁 阀芯检测传感器故障</p> <p>The solenoid valve spool is stuck</p>	<p>清洗电磁阀阀芯 更换线圈 更换传感器</p> <p>Clean the solenoid valve spool</p>



	<p>Solenoid valve coil burned</p> <p>The spool detection sensor is faulty</p>	<p>Coil replacement</p> <p>Replace the sensor</p>
<p>PLC 故障</p> <p>PLC fault</p>	<p>外界原因造成的烧毁</p> <p>输出结点烧毁</p> <p>Burned by external causes</p> <p>Output node burnout</p>	<p>将 G1、G2、G3、G4、G6、G7人为接入 AC220V，然后给电液比例溢流阀供电流</p> <p>Manually connect G1, G2, G3, G4, G6 and G7 to AC220V, and then supply power to the electro-hydraulic proportional relief valve</p>

六、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

6、Ordering Instructions

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, ordering instructions

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