

操作手册 **Operating Manual**

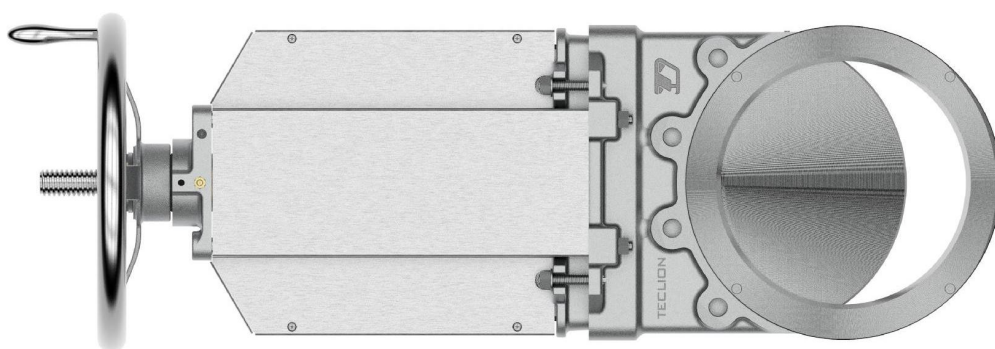
刀闸阀 **Gate valves**

适用型号: **GWL,GW,GWH**

Applicable Model: GWL,GW,GWH

手册编号: **MR2020**

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1 概述

1 概述

1 Overview

本操作手册是该产品的组成部分，其中包含操作和维修等重要说明，便于设备或系统维护人员学习整个设备的使用及安装过程。

This operation manual is an integral part of the product, which contains important instructions such as operation and maintenance, which is convenient for equipment or system maintenance personnel to learn the use and installation process of the entire equipment.

本手册包含一些重要的安全及维护信息，它能够指导操作人员正确的、安全的、更经济的使用该产品设备。使用之前认真阅读该手册，可以有效避免设备损伤，降低维护成本，减少停车时间，最大程度的延长设备的使用寿命。

This manual contains some important safety and maintenance information, which can guide the operator to use the product equipment correctly, safely and economically. Read this manual carefully before use, which can effectively avoid equipment damage, reduce maintenance costs, reduce downtime, and maximize the service life of the equipment.

建议将该手册放在设备附近显眼位置。

It is recommended to keep this manual in a conspicuous place near the equipment.

操作手册必须字迹清晰并且易于理解。确保设备和设备运行负责人及设备操作人员已仔细阅读并理解本操作手册。若对指南内容存在疑问或欲了解更多信息，请联系科狮公司。

The operating manual must be legible and easy to understand. Make sure that the person in charge of equipment and equipment operation and equipment operators have carefully read and understood this operation manual. If you have any questions about the content of the guide or for more information, please contact TECLION Company.

设备部分信息需结合产品样本查询。（手册中已经指出）

Some equipment information should be queried in combination with product samples. (Already pointed out in the manual)

由于不遵守本手册警告的不当操作以及对于其他鉴定为非正常操作引起的伤害和事故，损失及相关维护费将由用户自己承担。

Due to improper operation that does not comply with the warnings in this manual and other injuries and accidents identified as abnormal operation, the loss and related maintenance fees will be borne by the user.

2 初次使用

2 First Use

- 刀闸阀主要用于：
 - Knife gate valve is mainly used for:
 - 切断物料流向 Cut off material flow
 - 连续输送 Continuous delivery
 - 风送系统 Air delivery system
- 刀闸阀按照相关的标准和技术水平设计和制造，但不正当的操作仍然会给人身造成伤害甚至伤残或死亡。不正当的使用也可能不利于关联设备的正常运作。
- Knife gate valves are designed and manufactured in accordance with relevant standards and technical levels, but improper operation will still cause personal injury or even disability or death. Improper use may also be detrimental to the proper functioning of the associated device.
- 所有机械工作只可由经过培训的专业人员执行。本操作手册中所涉及的专业人员是指熟悉安装位置、机械安装、产品的故障排除与维护并具备以下资质的人员：
 - All mechanical work may only be performed by trained professionals. The professionals involved in this operation manual refer to those who are familiar with the installation location, mechanical installation, product troubleshooting and maintenance, and have the following qualifications:
- 接受过机械专业的培训（如机械工程师或机电工程师）并通过结业考试
 - Have received training in a mechanical specialty (such as a mechanical engineer or an electromechanical engineer) and passed the final exam.
- 了解本操作手册
 - Understand this operation manual
- 刀闸阀不适合用于输送不稳定化学品及高等级易爆物品。
- Knife gate valves are not suitable for transporting unstable chemicals and high-level explosives.
- 刀闸阀启动时须保证腔体内没有堆满物料。尤其是颗粒物料。
- When the knife gate valve is started, it must be ensured that the cavity is not full of materials. Especially granular materials.
- 使用该设备，除手册规定外，还应按照国家规定的其它相关安全和环保

2 First Use

条例正确操作。配件（如电磁阀、气缸等）的相关使用规定请参照配件的操作手册。

- In addition to the manual, the equipment should be operated correctly in accordance with other relevant safety and environmental protection regulations stipulated by the state. Please refer to the operation manual of the accessories for the relevant regulations on the use of accessories (such as solenoid valves, cylinders, etc.).
- 建议在标定的设计压力下正确使用该设备。
- It is recommended to use the device correctly under the calibrated design pressure.
- 只要设备的电气配件得到正确的防护，刀闸阀允许在室内或室外使用。
- Knife gate valves are allowed to be used indoors or outdoors as long as the electrical accessories of the equipment are properly protected.
- 若未明确设计，则禁止在存在爆炸隐患的区域内使用。
- If it is not clearly designed, it is forbidden to use it in the area where there is an explosion hazard.
- 对于与设备配合的多种防爆配件组合使用的情况，允许的危险使用环境取较低的防爆等级。
- For the case where multiple explosion-proof accessories are used in combination with the equipment, the allowable hazardous use environment shall take the lower explosion-proof level.
- 刀闸阀专业用于重力流或气力输送切断物料流向用，板式的结构决定其密封性低于蝶阀和球阀。对于需要长时间保压的场合，需配合专业的密封型切断阀门使用。
- Knife gate valve is specially used for gravity flow or pneumatic conveying to cut off the flow of material. The plate structure determines that its sealing performance is lower than that of butterfly valve and ball valve. For occasions requiring long-term pressure maintenance, it should be used with professional sealed shut-off valve.
- 关于泄露等级情况可以参照《MSS SP-81-2001 无阀盖的法兰端不锈钢刀形闸阀》。
- For the leakage level, please refer to "MSS SP-81-2001 Stainless Steel Knife Gate Valve with Flanged End Without Bonnet".



3 安全须知

3 Safety Instructions

3.1 警告图标及其含义

3.1 Warning icons and their meanings

本手册内的安全提示组成如下：

The safety instructions in this manual are organized as follows:



有用的提示或技巧。
Useful hints or tricks.



危险！直接面临或可能出现的危险情况。
Danger! Immediately exposed or potentially dangerous situations.



机械危险！可能造成伤残甚至死亡。
Mechanical hazard! Injury or even death may result.



爆炸危险！
Explosion hazard!

3.2 管理措施

3.2 Management measures

- 本使用手册需置于设备附近。
- This manual should be placed near the device.
- 除本手册外，使用及维护者仍需遵守公司、国家相关的安全和环保等规章制度，防止意外的发生。

- In addition to this manual, users and maintainers still need to abide by the company and country's relevant safety and environmental protection rules and regulations to prevent accidents.
- 涉及本设备的所有机械工作，须经过手册培训方可操作。
- All mechanical work involving this equipment must be operated after manual training.
- 使用组织可以参考本手册，对安全条例做适当的增补。
- The user organization can refer to this manual and make appropriate supplements to the safety regulations.
- 使用或维护本设备时，不允许将杂物（如绳索、塑料袋、零件等）置于阀门内，同时不允许长发、衣服松散者、佩戴首饰者操作，都有可能引起意外。
- When using or maintaining this equipment, it is not allowed to put sundries (such as ropes, plastic bags, parts, etc.) in the valve, and people with long hair, loose clothes, and people wearing jewelry are not allowed to operate, which may cause accidents.
- 重视所有的安全警示。
- Heed all safety warnings.
- 阀门发生意外，应立即停机并上报相关人员，防止由阀门引起系统安全问题。
- If an accident occurs in the valve, it should be stopped immediately and reported to the relevant personnel to prevent system safety problems caused by the valve.
- 未经科狮公司授权，不得对阀门设备的附件、机体进行更改。否则将引起不可预知的危险。
- The accessories and body of the valve equipment shall not be changed without the authorization of TECLION Company. Otherwise it will cause unpredictable danger.
- 设备零件更换，其规格型号需经制造商技术确认。
- Equipment parts replacement, its specifications and models need to be confirmed by the manufacturer's technology.
- 塑料件（如软管）需定期更换，即便未有可见瑕疵。
- Plastic parts, such as hoses, need to be replaced regularly, even if there are no visible defects.
- 依据操作手册，定期对设备进行复检。
- According to the operation manual, periodically re-inspect the equipment.

- 用户维护车间，需配齐维修用的相关设备和工具。
- The user maintains the workshop and needs to be equipped with related equipment and tools for maintenance.
- 注意防火。
- Pay attention to fire prevention.

3.3 目标群体及要求

3.3 Target groups and requirements

- 设备操作和维护者，必须是经过授权的达到法定年龄的健康人员。
- Equipment operators and maintainers must be authorized healthy personnel of legal age.
- 设备操作和维护者，必须是通过培训和明确职责的人员。
- Equipment operators and maintainers must be trained and have clear responsibilities.
- 本设备涉及的电气部分，只可由经过培训的了解本操作手册的专业电气人员执行。
- The electrical part involved in this equipment can only be performed by trained professional electrical personnel who understand this operation manual.
- 其他工作如运输、仓储、运行和废弃处理等必须有受过相应培训的人员进行。
- Other work such as transportation, storage, operation and disposal must be carried out by appropriately trained personnel.
- 本设备涉及的压力管道的安装和维护，需受过培训的人员进行。
- The installation and maintenance of the pressure piping involved in this equipment should be carried out by trained personnel.

3.4 安装和开车阶段

3.4 Installation and start-up phase

- 设备安装前，需检查与其对接的管道或其他设备内部已经被清理、清洗干净。
- Before installing the equipment, check that the interior of the connected pipes or other equipment has been cleaned and cleaned.
- 勿将杂物留在系统内。

- Do not leave debris in the system.
- 若系统大修或阀门维修、管道更换，应重复上述清理步骤。
- If the system is overhauled or the valve is repaired or the pipeline is replaced, the above cleaning steps should be repeated.
- 应确保阀门安装后，无装配应力。（拉力、压力、扭力）
- It should be ensured that there is no assembly stress after the valve is installed. (tension, pressure, torque)
- 设备投入运行前，建议试车一段时间。
- Before the equipment is put into operation, it is recommended to test it for a period of time.

3.5 分类的危险警告

3.5 Classified hazard warnings

3.5.1 电

3.5.1 Electrical

- 电气维护人员需经过专业的培训并取得资格。
- Electrical maintenance personnel need to be professionally trained and qualified.
- 设备维护时应确保电磁阀电源和气源已被切断，且相关联的系统可能引起意外的电气设备也应该被切断。（如输送风机等）
- During equipment maintenance, it should be ensured that the solenoid valve power supply and air supply have been cut off, and the electrical equipment that may cause accidents in the associated system should also be cut off. (such as conveying fans, etc.)
- 设备的电气部分必须定期检查，损坏的接线盒、接线端子、密封接头应该及时更换，且应确保电缆接点牢靠。
- The electrical parts of the equipment must be inspected regularly. Damaged junction boxes, terminals, and sealing joints should be replaced in time, and the cable contacts should be secure.
- 若由于生产需求，例行检查时不得断电停车的，应该安排一个能够及时切断设备电源的人员应急。
- If due to production demand, the power outage cannot be shut down during routine inspection, a person who can cut off the power supply of the equipment in time should be arranged for emergency.



3.5.2 危险气体、粉尘、蒸汽

3.5.2 Hazardous gases, dusts, vapors

- 虽然设备已经设计了密封系统，但仍然不能保证使用过程中气体零泄漏，对于危险环境，经常检查泄漏情况也是避免危险发生的有效方法。
- Although the equipment has been designed with a sealing system, it still cannot guarantee zero leakage of gas during use. For dangerous environments, frequent inspection of leakage is also an effective method to avoid danger.
- 焊接、切割、打磨设备时，应确保环境内和设备内部不含有爆炸性介质，且此类工作一定要得到相关部门的授权，方可操作。
- When welding, cutting and grinding equipment, it should be ensured that the environment and the inside of the equipment do not contain explosive media, and such work must be authorized by the relevant departments before operation.
- 对于使用氮气输送的介质，设备投入运行前需检查是否有氮气外漏。
- For the medium conveyed by nitrogen, check whether there is nitrogen leakage before the equipment is put into operation.

3.5.3 噪音

3.5.3 Noise

- 标配的设备正常使用过程中噪音主要来自于气缸动作排气，已配有消音器，噪音一般不大。
- During normal use of the standard equipment, the noise mainly comes from the exhaust of the cylinder action. It has been equipped with a muffler, and the noise is generally not large.
- 电驱动的设备，噪音主要来自于驱动电机。
- Electrically driven equipment, the noise mainly comes from the drive motor.

3.5.4 其他

3.5.4 Others

- 处理油脂或其它化学物质时应该遵循相关的安全和环保条例。
- Relevant safety and environmental regulations should be followed when handling grease or other chemicals.
- 伴热设备运行时，表面温度可能会达到危险的水平，所以维护人员需格外小心被烫伤，必要时需做隔热处理。
- When the heat tracing equipment is running, the surface temperature may reach a dangerous level, so maintenance personnel should be extra careful

to be scalded, and heat insulation should be done if necessary.

3.6 可能引起险情的潜在危险源

3.6 Potential Hazards That May Cause Hazardous Situations

- 拆解设备接线盒，需断电操作。
- To disassemble the equipment junction box, power off operation is required.
- 出现金属刮擦或金属异物导致阀芯转动不畅，需及时排除。
- Metal scratches or metal foreign objects cause the valve core to not rotate smoothly, which needs to be eliminated in time.

4 运输和仓储

4 Shipping and Warehousing

4.1 包装

4.1 Packaging

除合同另有约定，按照 GB/T13384-2008《机电产品包装通用技术条件》，货物交付时应该检查其包装是否完整，内部设备是否完好。

返厂维修设备时，也应该按照上述标准打包。

Unless otherwise agreed in the contract, in accordance with GB/T13384-2008 "General Technical Conditions for Packaging of Mechanical and Electrical Products", When the goods are delivered, the packaging should be checked for completeness and the internal equipment is in good condition.

When the equipment is returned to the factory for repair, it should also be packaged according to the above standards.



注意 NOTICE

必须按照预定的支点来支撑设备，若设备未标明支撑点，应该固定设备法兰。

The equipment must be supported according to the predetermined fulcrum. If the equipment does not indicate the supporting point, the equipment flange should be fixed.

4.2 拆包

4.2 Unpacking

拆包无法避免人为和环境因素的影响，一般需要设备监管人员指导，避免拆包过程中对设备配件造成损伤。

Unpacking cannot avoid the influence of human and environmental factors, and generally requires the guidance of equipment supervisors to avoid damage to equipment accessories during the unpacking process.

注意包装箱上的提示符号。

Pay attention to the reminder symbol on the box.

4.3 仓储

4.3 Warehousing

储存设备，请按照下述条件执行：

storage device, please follow the following conditions:

- 防潮、防尘。
- Moisture and dust proof.
- 室内存放，温度控制在+5~+40℃。
- Indoor storage, the temperature should be controlled at +5~+40℃.
- 远离腐蚀液、油、油漆、热辐射。
- Keep away from corrosive liquid, oil, paint, heat radiation.
- 由于设备配有气控元件等，还应参照配件规定的仓储条件。
- Since the equipment is equipped with air control components, etc., the storage conditions specified by the accessories should also be referred to.
- 应保证设备气控元件进气口被防尘封堵。
- Ensure that the air inlets of the air control components of the equipment are blocked by dust.
- 若非封闭式存放，请将设备置于木质垫板上，必要时需有支撑。
- For non-enclosed storage, place the device on a wooden base with support if necessary.



注意 NOTICE

禁止将设备置于过软、过窄的底座上，防止放置时发生倾倒。必要时需对设备多点支撑，保证其安放稳固。

It is forbidden to place the device on a base that is too soft or too narrow to prevent tipping during placement. When necessary, multi-point support for the equipment is required to ensure its stable placement.

4.4 供货范围

4.4 Scope of supply

除另有约定，随机有装箱清单，请核对物品完整。

Unless otherwise agreed, there is a packing list at random, please check the completeness of the items.

5 技术资料

5 Technical data

5.1 铭牌

5.1 Nameplate

	TECLION 科狮机械	合肥科狮机械科技有限公司 HEFEI TECLION MACHINERY INDUSTRY CO., LTD.
刀闸阀 Designation: Gate valve		
型号: GWH200-P-S	位号:	
Nominal Diameter DN200	Item NO.	
设计压力 : 0.35MPa		
Design pressure		
工作温度: -20~250℃	主体材质: 304SS	
设计级别: 高载荷, 密封型 High duty Sealed		
出厂编号 Serial NO.: TL21038N08-03	TEL: +86-551-65684598	

设备出厂时, 铭牌已按设备情况填写相关内容, 并固定于设备体上, 为保证设备情况的可追溯性, 请勿移走。若使用过程中有脱落, 请用户自行固定。

When the equipment leaves the factory, the nameplate has been filled with relevant content according to the equipment condition and fixed on the equipment body. In order to ensure the traceability of the equipment condition, please do not remove it. If it falls off during use, please fix it by yourself.

5.2 型号说明

5.2 Model description



提示 HINT

有关型号描述的详细情况以及其他信息可以参考产品样本或咨询科狮公司。

For the details of the model description and other information, please refer to the product catalogue or consult TECLION Company.

序号	1	2	3	4	5	6	7	8	9	10	11
型号	G	W	H	150	H	R	—	P	—	S	F

序号 number	描述 description	字母分类 alphabetical classification
1	产品大类, 刀闸阀 Product category, knife gate valve	G 刀闸 G knife switch
2	阀门安装类型 Valve Mounting Type 阀门结构类型 Valve structure type	W: 对夹式 W: Wafer type F: 法兰式 F: Flange R: 人孔 R: manhole
3	密封压力 sealing pressure	L: 低压, 常压 L: low pressure, normal pressure 空白: 标准 ($\leq 0.1\text{MPaG}$) Blank: Standard ($\leq 0.1\text{MPaG}$) H: 高压 ($> 0.1\text{MPaG}$) H: high pressure ($> 0.1\text{MPaG}$)
4	刀闸阀公称通径 DN Knife gate valve nominal diameter DN	100-600 100-600
5	刀闸阀法兰等级 Knife Gate Valve Flange Rating	空白: PN10 H: PN20 Blank: PN10 H: PN20
6	刀闸阀法兰形式 Knife Gate Valve Flange Form	空白: 平面法兰 R: 凸面法兰 Blank: Flat Flange R: Raised Face Flange
7	间隔 interval	—
8	驱动形式区分 Drive form distinction	空白: 手动 P: 气缸驱动 D: 电动 Dynamic Blank: Manual P: Cylinder Drive D: Electric Dynamic
9	间隔 interval	—
10	刀闸阀材质 Knife gate valve material	1、奥氏体不锈钢 Austenitic stainless steel S:304SS SL:304L SS:316 SSL:316L ST:321 SST:310S 2、碳钢 carbon steel C:WCB CS:外壳 WCB+闸板 304 C:WCB CS:Shell WCB+ Gate 304
11	特殊配置 special configuration	N: 充气的 N: Inflated F: 带防护罩 F: with protective cover W: 闸板硬化 W: Ram hardening E: 调节型, 配定位器 E: Adjustable type, with positioner

5.3 设备应用范围

5.3 Equipment application range

刀闸阀类型: GWL, GW, GWH

Knife gate valve type: GWL, GW, GWH

适用于粉末或颗粒物料, 重力流落料或气力输送

Suitable for powder or granular materials, gravity flow blanking or pneumatic conveying



提示 HINT

若有其他特殊要求, 如充气密封, 请咨询科狮公司。

If you have other special requirements, such as inflatable seals, please consult TECLION Company.

5.4 设备允许使用工况

5.4 Allowable working conditions of equipment

刀闸阀类型 Knife Gate Valve Type	GWL	GW	GWH
允许使用压力 MPa Allowable pressure MPa	常压 normal pressure	0.1 0.1	大于 0.1 greater than 0.1
允许使用温度 °C Allowable use temperature °C	标准配置的阀门: -20~250 Standard configuration valve: -20~250		



注意 NOTICE

阀门允许使用压差及使用温度, 应严格按照铭牌标称。

The allowable pressure difference and operating temperature of the valve should be strictly in accordance with the nameplate.



提示 HINT

若有其他特殊要求, 请咨询科狮公司。

If you have other special requirements, please consult TECLION Company.

5.5 噪音

5.5 Noise

在正常情况下，阀门不带载动作时的声音远低于驱动运转时产生的噪音。

Under normal circumstances, the sound of the valve when it is not under load is much lower than the noise generated when the drive is running.

阀门噪音主要受物料情况、输送情况的影响，如输送硬质塑料、片状料，气力输送时压缩空气瞬间膨胀，均有可能引起噪音的产生。所以很难界定设备带载时的噪音等级。

Valve noise is mainly affected by material conditions and conveying conditions, such as conveying rigid plastics and sheet materials, and the instantaneous expansion of compressed air during pneumatic conveying, which may cause noise. So it is difficult to define the noise level of the equipment under load.

必要时，可以采取防噪音装置。

If necessary, anti-noise devices can be adopted.



注意 NOTICE

用户需对非正常的噪音提高警惕，如金属刮擦时产生的尖锐噪音，以及设备动作时剧烈震动等。必要时需及时停车处理。

Users need to be vigilant about abnormal noises, such as sharp noises when metal is scratched, and violent vibrations when the device is in motion. When necessary, stop the vehicle in time.

5.6 漏气和耗气情况

5.6 Air leakage and air consumption

5.6.1 漏气

5.6.1 Air leakage

刀闸阀，出厂时一般会告知用户，其仅适用于重力流下料或气力输送场合，表示其有可能产生内漏，漏气量与压差大小，阀门规格，物料情况等因素有关，所以没有统一的漏气量指标。必要时可以参考《MSS SP-81-2001 无阀盖的法兰端不锈钢刀形闸阀》。

Knife gate valves will generally inform users when they leave the factory that they are only suitable for gravity flow unloading or pneumatic conveying occasions, indicating that they may cause internal leakage. The amount of air leakage is related to the pressure difference, valve specifications, material conditions and other factors, so there is no unified air leakage indicator. If necessary, refer to "MSS SP-81-2001 Stainless Steel Knife Gate Valve with Flanged End Without Bonnet".

5.6.2 耗气

5.6.2 Gas consumption

耗气来自于驱动气缸。部分统计如下表：

Air consumption comes from the drive cylinder. Some statistics are as follows:

阀门口径 Valve size Series air consumption 系列耗气量	80	100	150	200	250	300	350	400	450	500	600
L/stroke	0.27	0.56	1.26	1.65	3.2	3.8	7	8	11.5	13	19

5.7 设备材质

5.7 Equipment material

请参考 5.2 型号说明序号 10。

Please refer to 5.2 Model Description No. 10.

5.8 设备重量

5.8 Equipment weight

请参考产品样本。Please refer to product samples.

5.9 刀闸阀基本构造

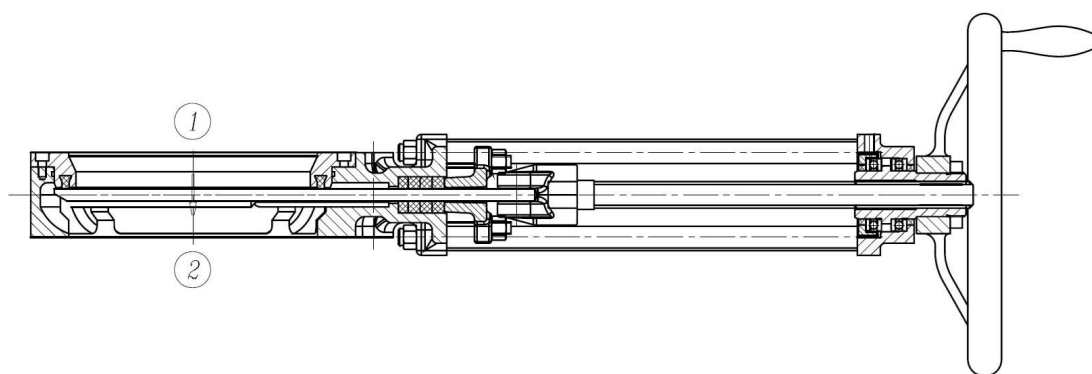
5.9 Basic structure of knife gate valve

在阀体内腔，阀板按一定行程推拉，即可实现通道的开或关。当阀板打开后，物料便可从 1 口到 2 口流动。

In the cavity of the valve body, the valve plate can be pushed and pulled according to a certain stroke to realize the opening or closing of the channel. When the valve plate is opened, the material can flow from port 1 to port 2.

一般型刀闸阀建议水平安装于竖直管道，当需要倾斜安装时，倾斜角不要超过水平夹角 30° 。若要竖直安装于水平管道，请咨询科狮公司。

General knife gate valves are recommended to be installed horizontally in vertical pipelines. When inclined installation is required, the inclination angle should not exceed the horizontal angle of 30° . For vertical installation in horizontal pipelines, please consult TECLION company.



5.9.1 刀闸阀示意图

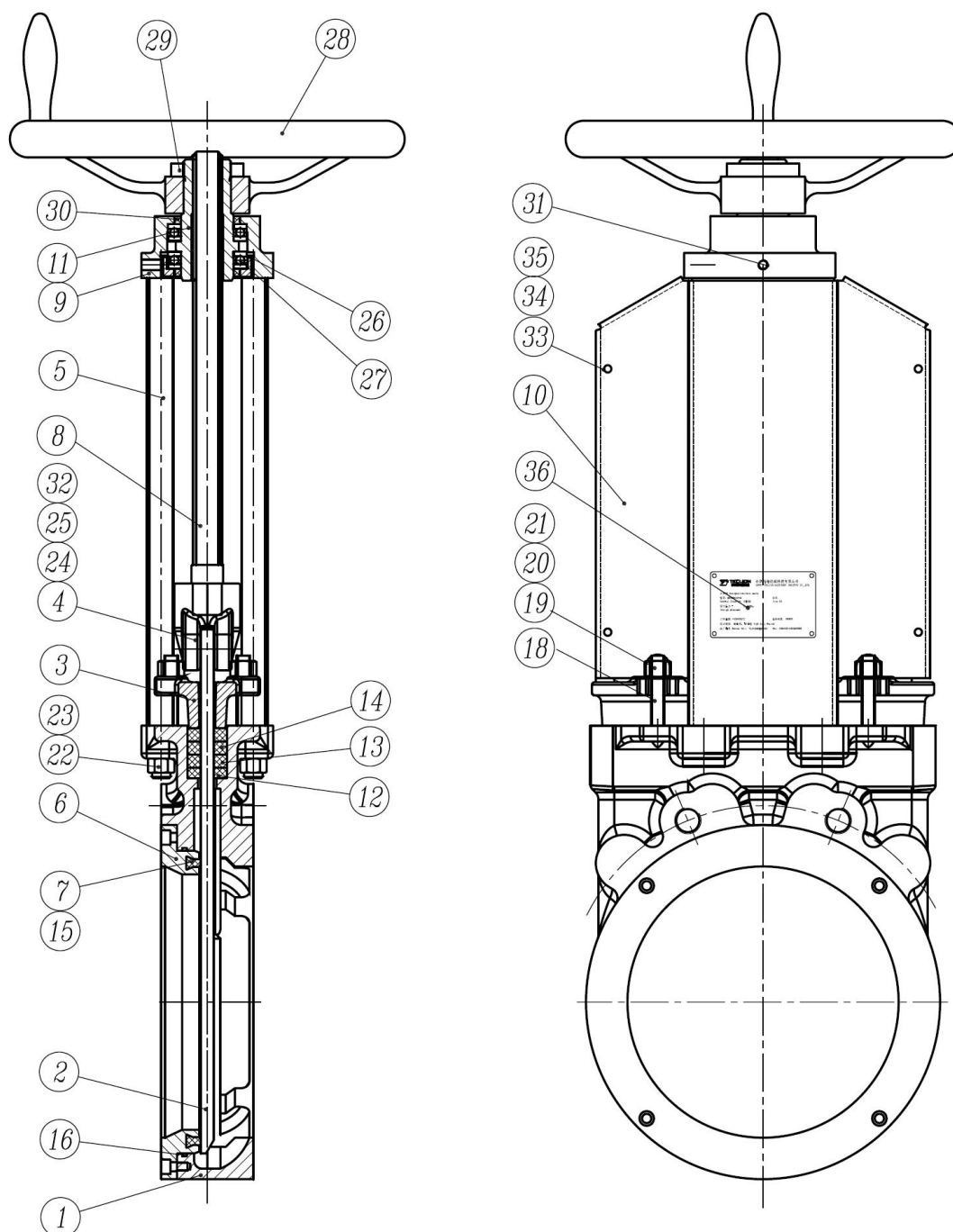
5.9.1 Schematic diagram of knife gate valve

5.10 装配图

5.10 Assembly drawing

5.10.1 GW 型(标准型)

5.10.1 GW type (standard type)

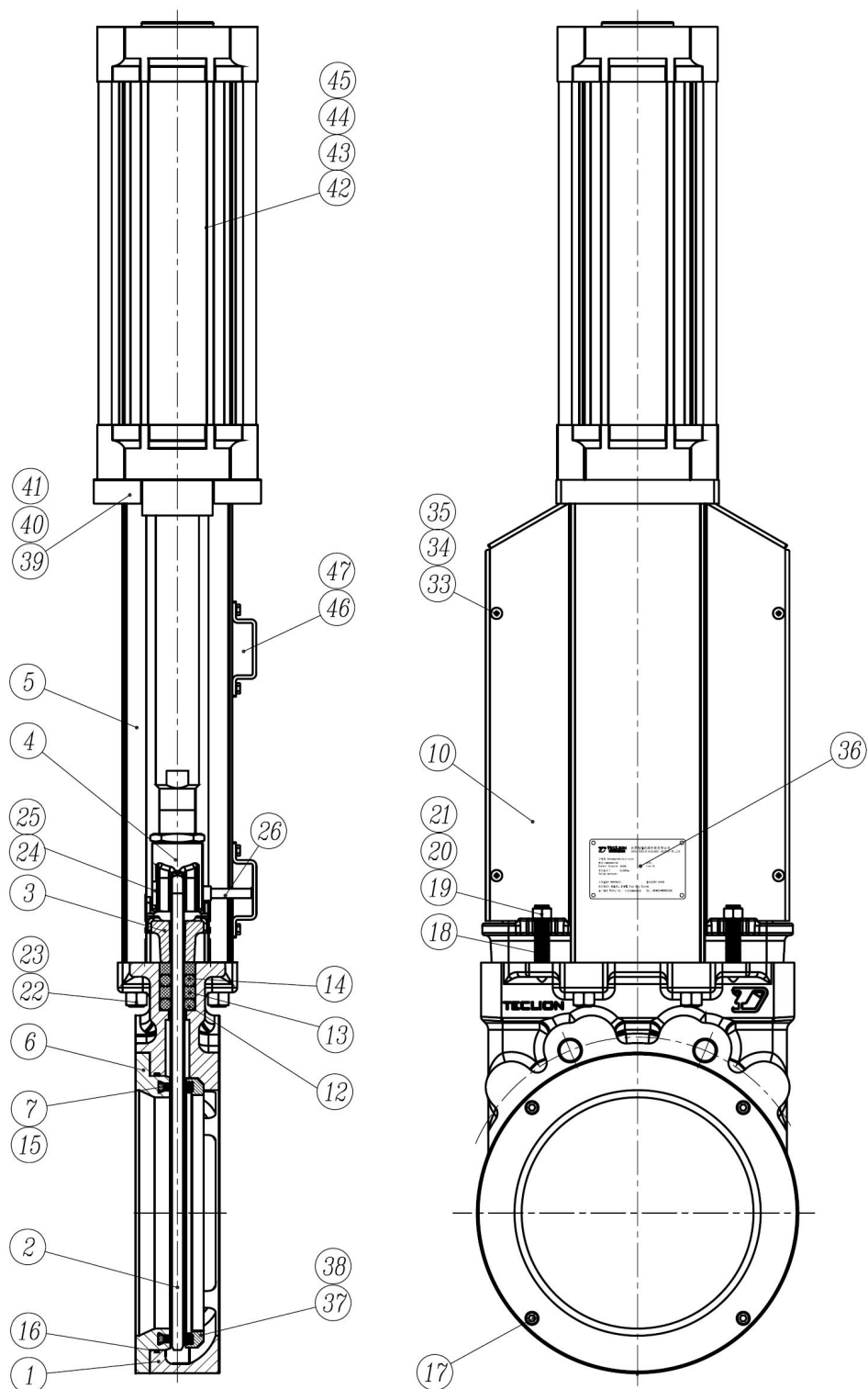


5.10.1 GW 剖面图

5.10.1 GW profile

5.10.2 GWH 型

5.10.2 Type GWH



5.10.2 GWH 剖面图

5.10.2 GWH profile

其它驱动形式：电动、气手动等

Other drive forms: electric, pneumatic, etc.

5.10.3 明细表

5.10.3 Schedule

表中阴影标识的零件可作为备品备件。

The shaded parts in the table can be used as spare parts.

带★号的属于非标准配置，用户可选。

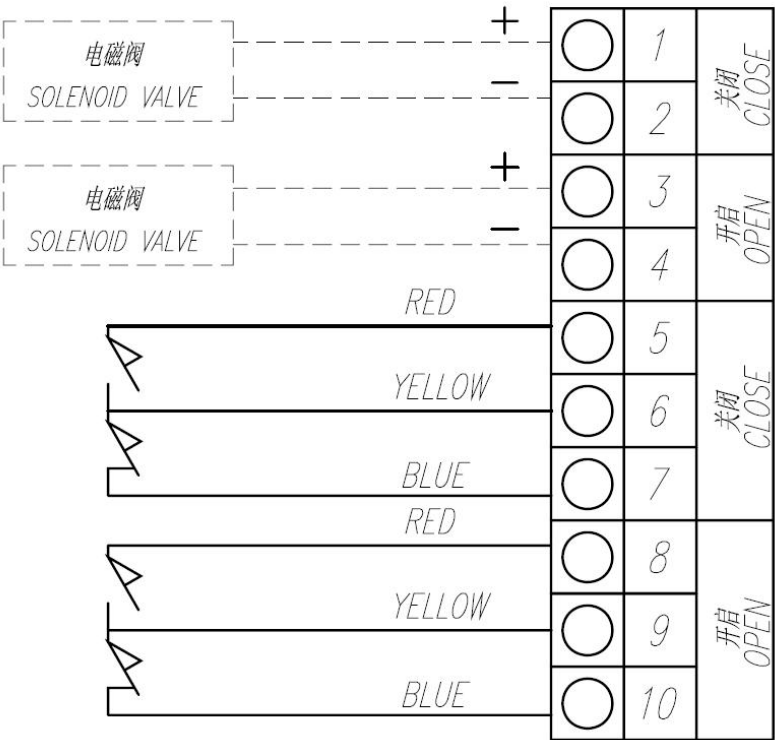
The ones marked with ★ are non-standard configurations, which can be selected by the user.

1	阀体	25	销 GB/T91
2	闸板	26	轴承压盖
3	填料压盖	27	推力轴承 GB/T301
4	Y 型接头	28	手轮
5	支撑杆	29	锁紧螺母 JB24
6	密封座	30	油封
7	密封圈	31	紧定螺钉 GB/T77
8	阀杆	32	紧定螺钉 GB/T77
9	驱动座	33	十字槽盘头螺钉 GB/T818
10	防护组件	34	螺母 GB/T6170
11	阀杆螺母	35	平垫圈 GB/T95
12	棒材	36	铭牌
13	填料	37	支撑座
14	O 型圈 GB/T3452.1	38	支撑圈
15	O 型圈 GB/T3452.1	39	气缸转接板
16	O 型圈 GB/T3452.1	40	螺钉 GB/T70.1
17	螺钉 GB/T70.1	41	弹簧垫圈 GB/T93
18	螺柱 GB/T898	42	气缸
19	螺母 GB/T6170	43	电磁阀
20	弹簧垫圈 GB/T93	44	过滤调压阀
21	平垫圈 GB/T95	45	气管接头
22	螺母 GB/T6170	46	限位开关
23	弹簧垫圈 GB/T93	47	接线盒
24	销轴 GB/T882		

1	Valve body	25	Pins GB/T91
2	Gate	26	Bearing gland
3	Packing gland	27	Thrust bearing GB/T301
4	Y-connector	28	Handwheel
5	Support rod	29	Lock nut JB24
6	Seal seat	30	Oil seal
7	Seal	31	Set screw GB/T77
8	Stem	32	Set screw GB/T77
9	Drive seat	33	Cross recessed pan head screw GB/T818
10	Protection components	34	Nut GB/T6170
11	Stem Nut	35	Flat washer GB/T95
12	Bars	36	Nameplate
13	Packing	37	Support base
14	O-ring GB/T3452.1	38	Support ring
15	O-ring GB/T3452.1	39	Cylinder adapter plate
16	O-ring GB/T3452.1	40	Screws GB/T70.1
17	Screw GB/T70.1	41	Spring washer GB/T93
18	Stud GB/T898	42	Cylinders
19	Nut GB/T6170	43	Solenoid valve
20	Spring washer GB/T93	44	Filter Regulator
21	Flat washer GB/T95	45	Tracheal connector
22	Nut GB/T6170	46	Limit switch
23	Spring washer GB/T93	47	Junction Box
24	Pin GB/T882		

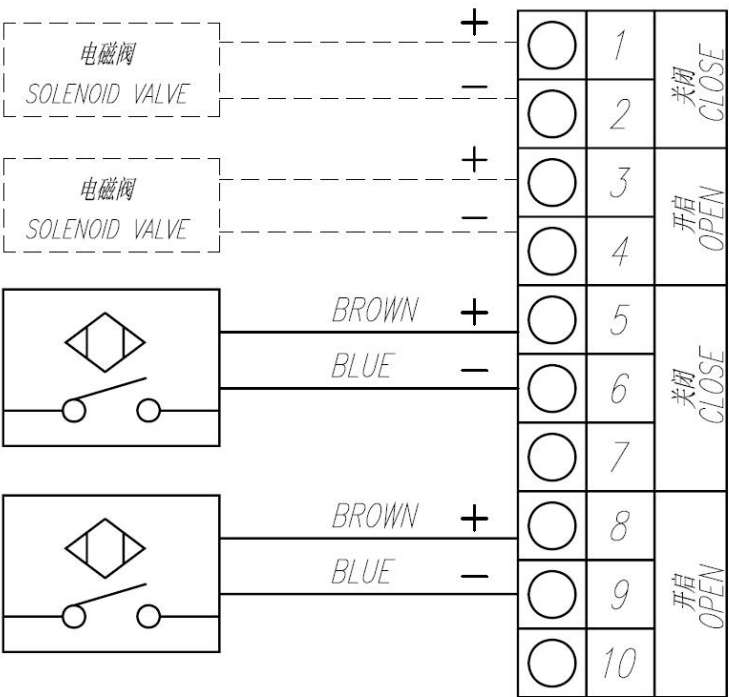
5.10.4 接线端子图

5.10.4 Wiring Terminal Diagram



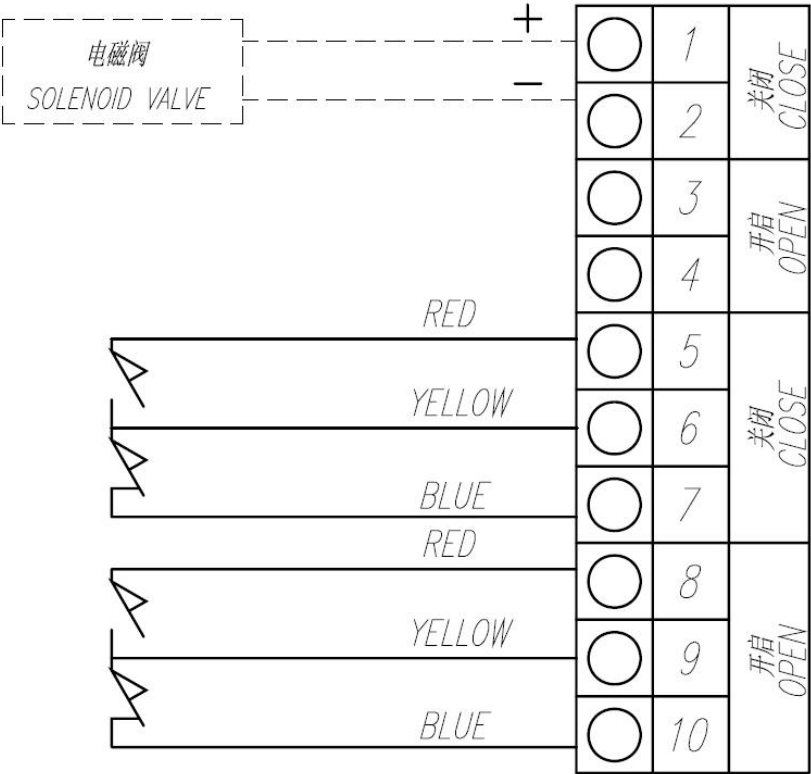
5.10.4.1 SPDT 开关双电控接线图

5.10.4.1 SPDT switch double electric control wiring diagram



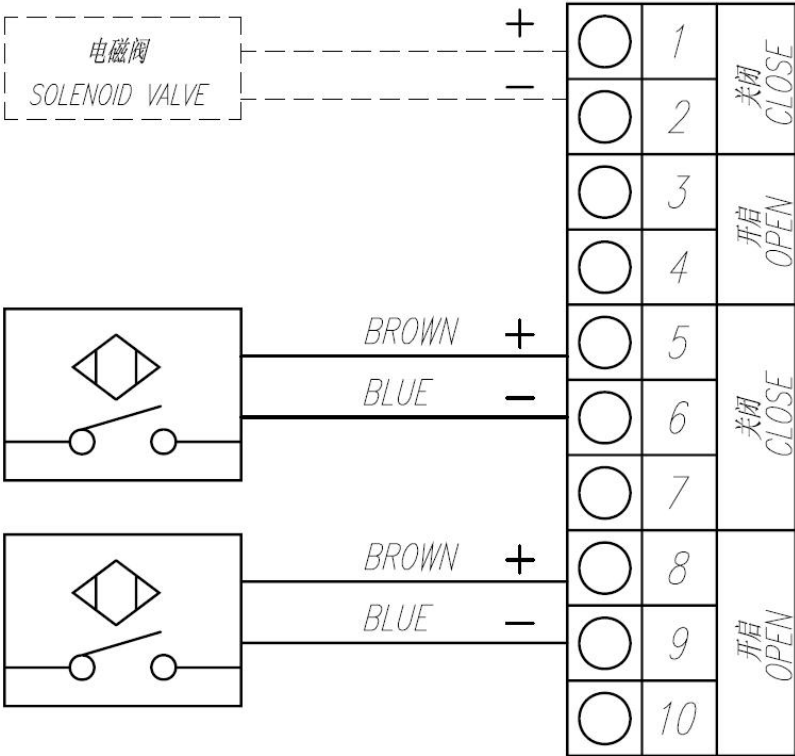
5.10.4.2 电感开关双电控接线图

5.10.4.2 Inductive switch dual electric control wiring diagram



5.10.4.3 SPDT 开关单电控接线图

5.10.4.3 SPDT switch single electrical control wiring diagram



5.10.4.4 电感开关单电控接线图

5.10.4.4 Inductive switch single electric control wiring diagram



提示 HINT

接线需要专业的电工。

Wiring requires a professional electrician.

5.11 结构说明

5.11 Structure description

5.11.1 一般说明

5.11.1 General notes

- 经过专业设计的阀体①，通过法兰对夹或直接法兰连接于系统管道，可以牢靠的支撑整个阀门。
- The professionally designed valve body ① is connected to the system pipeline through flanged clips or direct flanges, which can firmly support the entire valve.
- 阀门入口均配有密封圈⑦。
- The valve inlet is equipped with a sealing ring ⑦.
- 阀板②置于阀体①腔内。
- The valve plate ② is placed in the valve body ① cavity.
- 阀板②和阀体①之间设计有填料槽，内装有填料⑬，被填料压盖③压紧。
- A packing groove is designed between the valve plate ② and the valve body ① which is filled with packing ⑬ and pressed by the packing gland ③.
- 驱动装置有手动、气动、电动。通过支撑杆⑤与阀体①连接。手动一般采用手轮⑳，有的手动是链轮，气动采用气缸㉔，电动配有电动头。
- The driving devices are manual, pneumatic and electric. It is connected

with the valve body ① through the support rod ⑤. The manual generally adopts the hand wheel ②⑧, some manual is the sprocket, the pneumatic adopts the cylinder ④②, and the electric is equipped with an electric head.

- 气动时，除气缸④②，还标配有：电磁阀④③、限位开关④⑥、过滤减压阀④④、接线盒④⑦。
- When pneumatic, in addition to the cylinder ④②, it is also equipped with: solenoid valve ④③, limit switch ④⑥, filter pressure reducing valve ④④, junction box ④⑦.

5.11.2 轴承部位

5.11.2 Bearing parts

- 刀闸阀，阀杆螺母部位配有推力轴承②⑦。
- Knife gate valve, the stem nut part is equipped with thrust bearing ②⑦.
- 轴承中充入润滑脂，有助于延长轴承寿命。
- The bearing is filled with grease, which helps to prolong the life of the bearing.

5.11.3 驱动部位

5.11.3 Drive part

- 采用双作用气缸④②驱动的，气缸与支撑杆⑤之间转接板③⑨，气缸上配有电磁阀④③和过滤减压阀④④。用户直接引入气源至过滤减压阀即可。电磁阀④③和限位开关④⑥的电缆线已被引入接线盒④⑦内，接线情况请查看接线端子图。
- It is driven by a double-acting cylinder ④②. The adapter plate ③⑨ is between the cylinder and the support rod ⑤. The cylinder is equipped with a solenoid valve ④③ and a filter pressure reducing valve ④④. The user can directly introduce the air source to the filter pressure reducing valve. The cables of the solenoid valve ④③ and limit switch ④⑥ have been introduced into the junction box ④⑦, please refer to the wiring terminal diagram for the wiring.

-
- 手动驱动的配有手轮②⑧。
 - Manual drive is equipped with a hand wheel②⑧.
 - 电动驱动的配有电动头。电动头驱动的刀闸阀出厂时一般不配限位开关，到位信号在电动头内集成。
 - Electric drive is equipped with electric head. The knife gate valve driven by the electric head is generally not equipped with a limit switch when leaving the factory, and the in-position signal is integrated in the electric head.
 - 带气手动切换装置的，装置与气缸连接，手动操作时，需将针型阀打开，且需将定位扳手 扳至手动位置。
 - For those with pneumatic manual switching device, the device is connected to the cylinder. When operating manually, the needle valve needs to be opened, and the positioning wrench needs to be pulled to the manual position.

6 分解和装配

6 Disassembly and Assembly

6.1 刀闸阀安装于管道

6.1 Knife gate valve installed in pipeline

6.1.1 所需工具/辅助材料

6.1.1 Required tools/auxiliaries

1. 扳手套件 Wrench set
2. 起重设备 Lifting equipment
3. 螺丝刀套装 Screwdriver set
4. 紧固件、密封垫（若需要请联系科狮公司） Fasteners and gaskets (if necessary, please contact TECLION Company)
5. 所有的标准部件均不是供货范围 All standard parts are not included in the scope of supply

6.1.2 安装的先决条件

6.1.2 Prerequisites for installation



注意 NOTICE

不正当安装可能造成刀闸阀损伤。

Improper installation may cause damage to the knife gate valve.

可能造成财产损失

May cause property damage.

仔细阅读本章节中的说明

Read the instructions in this chapter carefully.



危险 DANGER

大口径刀闸阀属于较重物品，安装时需要辅助支撑，防止挤压、坠空。

The large-diameter knife gate valve is a heavy item and needs auxiliary support during installation to prevent extrusion and falling into the air.



注意 NOTICE

起吊或搬抬设备时，不得将施力点置于连接薄弱部位（如储气罐支架、手轮等）。

When hoisting or lifting the equipment, do not place the force application point on the weak connection part (such as gas tank bracket, hand wheel, etc.)

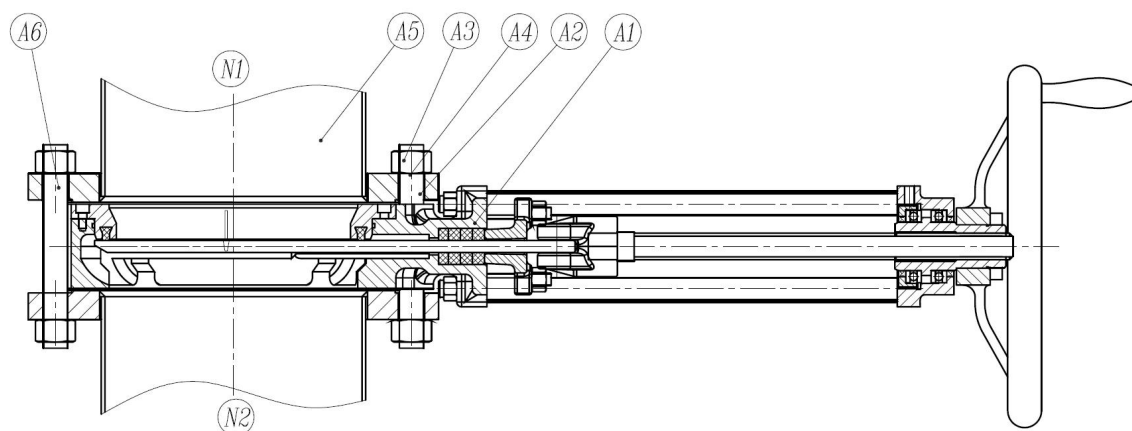
检查下列各点要求是否得到满足：

Check that the following requirements are met:

- 刀闸阀在运输或者仓储过程中未遭受损坏。（必要时可通气试动作）
- The knife gate valve is not damaged during transportation or storage. (You can perform a breath test if necessary)
- 刀闸阀法兰标准与对接法兰标准一致。（可查阅随机的技术资料）
- Knife gate valve flange standard is consistent with the butt flange standard. (Random technical information can be consulted)
- 安装空间足够。
- The installation space is sufficient.
- 对接管道内已经被清理干净。
- The inside of the butt pipe has been cleaned up.
- 周围不得存在有害油污、酸、有害气体、蒸汽、放射性环境等。
- There shall be no harmful oil pollution, acid, harmful gas, steam, radioactive environment around.
- 电磁阀铭牌上标注的电压与电源电压一致。
- The voltage marked on the nameplate of the solenoid valve is consistent with the power supply voltage.
- 对接管道已良好的接地。
- The docking pipeline has been well grounded.
- 必须彻底清除对接法兰表面上的防锈剂、污垢或类似污染。
- Rust inhibitors, dirt or similar contamination on the surface of the butt flanges must be thoroughly removed.

6.1.3 典型安装图

6.1.3 Typical installation diagram



A-1 典型安装图

A-1 Typical Installation Diagram

符号说明

Symbol Description

A1	刀闸阀	A5	管道
A1	Knife Gate Valve	A5	pipe
A2	短螺柱	A6	长螺柱
A2	short stud	A6	long stud
A3	螺母	N1	物料入口
A3	Nut	N1	material inlet
A4	弹簧垫圈	N2	物料出口
A4	Spring Washer	N2	material outlet



静电接地点
Static ground point



物料流向
material flow

6.1.4 安装说明

6.1.4 Installation Instructions

- N1 口与进料管道连接。

- The N1 port is connected to the feed pipeline.
- N2 口与出料管道连接。
- The N2 port is connected to the discharge pipe.

**危险 DANGER**

静电不但可能对人体造成伤害，而且也可能引爆危险环境，对设备运转也是不利的，所以需严格按照要求静电接地。

Static electricity may not only cause harm to the human body, but also may detonate dangerous environments, which is also detrimental to the operation of the equipment. Therefore, it is necessary to strictly follow the requirements of electrostatic grounding.

6.2 刀闸阀与管道分离

6.2 Separation of Knife Gate Valve and Pipeline

- 所需工具同 6.1.1 列出。
- Required tools are listed in 6.1.1.
- 拆除螺柱 A2、A6 和螺母 A3。
- Remove studs A2, A6 and nut A3.
- 拆除电缆和其他管线。
- Remove cables and other pipelines.

**危险 DANGER**

刀闸阀属于较重物品，拆卸时需要辅助支撑，防止挤压、坠空。

Knife gate valve is a heavy item, and it needs auxiliary support when dismantling to prevent extrusion and falling.

**注意 NOTICE**

起吊或搬抬设备时，不得将施力点置于连接薄弱部位（如储气罐支架、手轮）。

When hoisting or lifting the equipment, do not place the force application point on the weak connection part (such as air tank bracket, hand wheel).

6.3 分解刀闸阀

6.3 Disassembling the Knife Gate Valve

- 所需工具同 6.4.1 列出
- Required tools are listed in 6.4.1
- 分解时请严格按照使用手册步骤。
- When disassembling, please strictly follow the steps in the user manual.



注意 NOTICE

科狮公司生产的刀闸阀交货时已经安装调试至最佳状态，所以不允许用户对新的设备进行拆解，不允许对设备上的紧固件进行重新预紧和松解。

The knife gate valve produced by TECLION Company has been installed and debugged to the best state upon delivery, so the user is not allowed to disassemble the new equipment, and it is not allowed to re-tighten and loosen the fasteners on the equipment.

分解刀闸阀前应确保气缸已经切断气源。

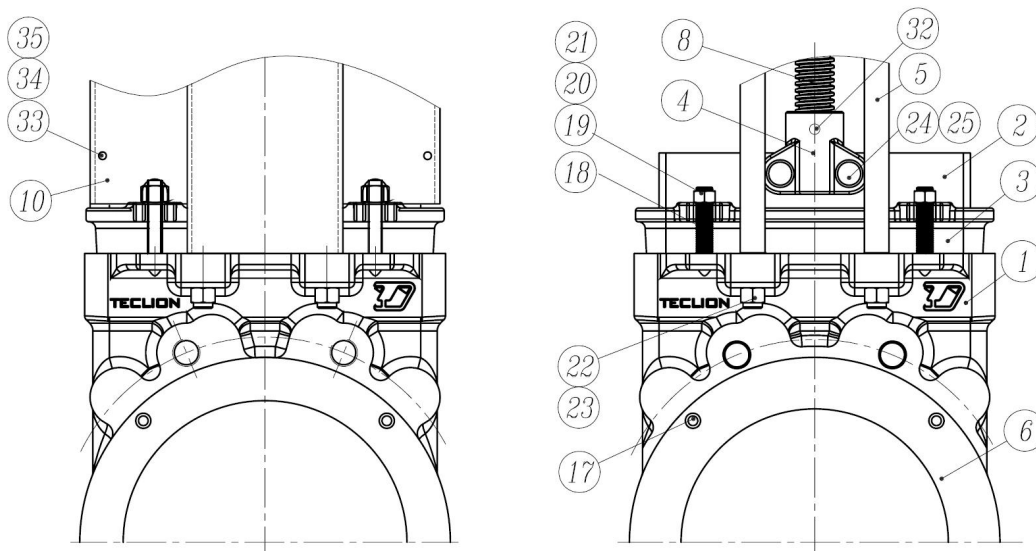
Before disassembling the knife gate valve, make sure that the air supply of the cylinder has been cut off.

零件的机加工面放到台子上时需垫橡胶垫以防划伤。

The machined surface of the part should be placed on the table with a rubber pad to prevent scratches.

6.3.1 刀闸阀的分解 (参照图 5.10.1)

6.3.1 Disassembly of Knife Gate Valve (Refer to Figure 5.10.1)



A-2 分解参照

A-2 Decomposition Reference

6.3.1.1 按分离步骤将刀闸阀从系统管道上取下，置于稳定的工作台上。保证其得到良好的支撑。

6.3.1.1 Remove the knife gate valve from the system pipeline according to the separation steps and place it on a stable workbench. Make sure it is well supported.

6.3.1.2 取下防护组件⑩上的螺钉③③，就可以将防护组件上下部分取下。

6.3.1.2 The upper and lower parts of the protective assembly can be removed by removing the screws③③ on the protective assembly⑩.

6.3.1.3 按图 A-2 所示，取下螺母②②，顺时针旋转手轮②⑧即可将支撑杆⑤带着驱动座⑨和阀杆螺母⑪一同取下。

6.3.1.3 As shown in Figure A-2, remove the nut ②② and turn the hand wheel clockwise②⑧ to remove the support rod⑤ with the drive seat⑨ and the valve stem nut⑪.

6.3.1.4 取下销②⑤，然后将两个销轴②④取下，即可将阀杆⑧带着 Y 型接头④一同取下。

6.3.1.4 Remove the pin②⑤, and then remove the two pin shafts②④, the valve stem⑧ can be removed together with the Y-type joint④.

6.3.1.5 松解填料压盖③上的螺母①⑨，将填料压盖取下。

6.3.1.5 Loosen the nut ①⑨ on the packing gland③ and remove the packing gland.

6.3.1.6 将填料⑬挑出。

6.3.1.6 Pick out the filler⑬.

6.3.1.7 将阀板②慢慢拉出。

6.3.1.7 Pull out the valve plate② slowly.

6.3.1.8 若需更换阀杆螺母⑪或轴承②⑦，需先松解紧定螺钉③①后旋下轴承压盖②⑥。

6.3.1.8 If the stem nut⑪ or bearing②⑦ needs to be replaced, first loosen the set

screw ③① and then unscrew the bearing gland ②⑥.



危险 DANGER

气动/电动刀闸阀断电、断气前勿将手伸入阀板与阀体间隙，否则可能引起剪切。

Do not put your hand into the gap between the valve plate and the valve body before the pneumatic/electric knife gate valve is powered off and cut off, otherwise it may cause shearing.



注意 NOTICE

防护罩属于铝合金制品，拆解后需放到软垫上防止划伤。

The protective cover is an aluminum alloy product. After disassembly, it should be placed on a soft pad to prevent scratches.

6.4 装配刀闸阀

6.4 Assembling the Knife Gate Valve

6.4.1 所需工具/辅助材料

6.4.1 Required tools/auxiliaries

- 扳手套件
- Wrench set
- 润滑脂
- Grease
- 螺丝刀套装
- Screwdriver set
- 橡胶锤
- Rubber hammer
- 可能需要测量工具（游标卡尺、深度尺）
- Measuring tools (vernier calipers, depth gauges) may be required
- 所有的标准部件均不是供货范围
- All standard parts are not included in the scope of supply

6.4.2 安装先决条件

6.4.2 Installation prerequisites

**注意 NOTICE**

不正当安装可能造成刀闸阀及驱动损伤。

Improper installation may cause damage to the knife gate valve and drive.

可能造成财产损失

May cause property damage

仔细阅读本章节中的说明

Read the instructions in this chapter carefully

检查下列各点要求是否得到满足：

Check that the following requirements are met:

- 各密封圈完好，轴承等配件规格尺寸吻合。
- All sealing rings are in good condition, and the specifications and dimensions of bearings and other accessories are consistent.
- 必须彻底清除安装表面的防锈剂、污垢或类似污染。必须使用常用的溶剂。所有零件均是完好无损的。
- The mounting surface must be thoroughly cleaned of rust inhibitor, dirt or similar contamination. Common solvents must be used. All parts are intact.
- 使用合适的润滑脂。
- Use suitable grease.
- 周围不得存在有害油污、酸、有害气体、蒸汽、放射性环境等。
- There shall be no harmful oil pollution, acid, harmful gas, steam, radioactive environment around.
- 在腐蚀性的环境条件请保护好未有效防腐的零部件。
- Please protect the parts that are not effectively anti-corrosion in corrosive environmental conditions.

6.4.3 刀闸阀的装配（参照图 5.10.1）

6.4.3 Assembly of Knife Gate Valve (Refer to Figure 5.10.1)

按分解步骤反向复原后阀杆涂抹润滑脂。

Apply grease to the valve stem after reverse recovery according to the disassembly steps.

7 开车调试

7 Commissioning

7.1 开车准备

7.1 Preparation for driving

刀闸阀检修组装完毕或新机，均需试车运行检查，以保证装于系统后能够良好的动作。

After the knife gate valve has been repaired and assembled, or a new machine, it needs to be checked by commissioning to ensure that it can operate well after being installed in the system.

- 新机到货开箱后需检查机器完好性，有必要通知科狮公司收货情况。
- After the new machine arrives and unpacks, it is necessary to check the integrity of the machine, and it is necessary to notify TECLION company of the receipt of the goods.
- 调试人员需经过专业的培训，且已阅读本手册。
- Commissioning personnel need to undergo professional training and have read this manual.
- 试车过程中应该严格遵守相关安全规章制度。
- The relevant safety rules and regulations should be strictly observed during the test run.
- 原则上刀闸阀动作时，进出口禁止杂物落入。
- In principle, when the gate valve moves, the import and exit debris is prohibited to enter.
- 确定电缆电压符合电磁阀铭牌规定。
- Make sure that the cable voltage meets the requirements of the solenoid valve nameplate.
- 检查气源压力是否正常。
- Check whether the air source pressure is normal.
- 确认设备已良好的接地。
- Confirm that the equipment is well grounded.

7.2 试动作

7.2 Trial action

- 确认准备条件无误，即可通入压缩空气，检查阀板动作是否到位。
- After confirming that the preparation conditions are correct, you can enter the

compressed air and check whether the valve plate action is in place.

7.3 安全须知

7.3 Safety Instructions



危险 DANGER

试车阶段，不管电磁阀是否通电，禁止将手从任何部位伸入阀板与阀体间隙。

During the test run, no matter whether the solenoid valve is energized or not, it is forbidden to put your hand into the gap between the valve plate and the valve body from any part.



注意 NOTICE

开车前务必确保阀板与阀体间隙内没有混入杂物（编织袋、布料、螺栓、木头、泥浆等）

Before driving, make sure that there is no debris (woven bags, cloth, bolts, wood, mud, etc.) in the gap between the valve plate and the valve body.

8 投入运行

8 Put into operation

8.1 正常运转

8.1 Normal operation

正常动作的刀闸阀有以下指标：

A knife gate valve with normal operation has the following indicators:

- 动作流畅，无爬行。
- Smooth movement, no crawling.
- 无异响。
- No abnormal sound.
- 无卡死现象。
- No stuck phenomenon.
- 阀板准确到位。
- The valve plate is in place accurately.

8.2 关闭设备

8.2 Switch off the device

当遇到以下情况时需要关闭设备：

The device needs to be turned off when:

- 检修需要。
- Repair required.
- 发生故障。
- A malfunction occurs.



注意 NOTICE

设备开关需按照用户管理规则。

The device switch must be in accordance with the user management rules.

8.3 运行过程中常见问题处理

8.3 Handling of common problems during operation

设备运行过程中出现一些小问题，允许用户根据下表自行处理，必要时请

联系科狮公司。未获准许，不得擅自拆解刀闸阀。

If there are some small problems during the operation of the equipment, users are allowed to deal with them according to the following table. If necessary, please contact TECLION Company. Do not disassemble the knife gate valve without permission.

下表中列出的问题解决方法不是唯一的。

The problem solutions listed in the following table are not unique.

常见问题 Common problem	可能的原因 Possible reason	对应措施 Countermeasures
气缸不动作 Cylinder does not operate	<ul style="list-style-type: none"> ● 电磁阀失灵 ● Solenoid valve failure ● 气源压力不够 ● Insufficient air pressure ● 电磁阀线圈被锁死 ● The solenoid valve coil is locked ● 阀板被卡死 ● The valve plate is stuck 	<ul style="list-style-type: none"> ● 更换电磁阀 ● Replace the solenoid valve ● 调节过滤减压阀 ● Adjust filter pressure relief valve ● 调节线圈侧手动锁 ● Adjustment coil side manual lock ● 清理间隙内积存异物 ● Clean up foreign objects accumulated in the gap
开关不到位 The switch is not in place	<ul style="list-style-type: none"> ● 阀板阻塞，气缸推力不够 ● The valve plate is blocked and the cylinder thrust is not enough ● 限位装置移位 ● Limiting device shift 	<ul style="list-style-type: none"> ● 清理异物 ● Clean up foreign objects ● 调限位装置 ● Adjust the limit device
响亮的尖锐声 loud shrill sound	<ul style="list-style-type: none"> ● 金属杂质侵入 ● Metal impurity intrusion 	<ul style="list-style-type: none"> ● 取出阀板，清除异物，将擦痕打磨平整 ● Take out the valve plate, remove foreign objects, and smooth the scratches
气缸爬行 Cylinder crawling	<ul style="list-style-type: none"> ● 填料过紧 ● The packing is too tight ● 阀板与壳体刮擦 ● The valve plate and the casing are scratched ● 电磁阀排气孔不畅 ● Solenoid valve exhaust hole is not smooth 	<ul style="list-style-type: none"> ● 适当松解填料 ● Properly loosen the filler ● 联系科狮公司 ● Contact TECLION Company ● 更换消音器 ● Replace the muffler

当按照上述措施仍然不能解决问题时，请及时联系科狮公司客服。

When the above measures still cannot solve the problem, please contact the customer service of TECLION Company in time.

8.4 设备长期停车超过三个月

8.4 Long-term parking of equipment for more than three months

8.4.1 长期停车之前

8.4.1 Before long-term parking

- 卸料完毕。
- Unloading is completed.
- 停车后存储请参照“运输和仓储”。
- For storage after parking, please refer to "Transportation and Storage".

8.4.2 长期停车之后

8.4.2 After prolonged parking

- 清理附着设备表面的异物。
- Clean up foreign objects attached to the surface of the equipment.
- 清除落入阀芯腔的异物。
- Remove foreign objects that fall into the spool cavity.
- 按照“开车调试”步骤进行调试。
- Debug according to the steps of "Start-up debugging".

9 保养和维护

9 Care and Maintenance

9.1 建议

9.1 Recommendations

- 检查运转的设备，需参照各章节安全须知，避免意外。
- To check the running equipment, please refer to the safety instructions in each chapter to avoid accidents.
- 任何的操作失误，都有可能引起较大的经济损失，所以定期保养和检查是有必要的。
- Any operation error may cause great economic loss, so regular maintenance and inspection are necessary.
- 刀闸阀的使用寿命与正确的使用和保养息息相关，并且受到很多其他系统和环境及人为因素的影响。
- The service life of the knife gate valve is closely related to the correct use and maintenance, and is affected by many other systems and environmental and human factors.
- 定期清理设备表面灰尘、油污，也有助于延长使用寿命。
- Regularly clean the dust and oil on the surface of the equipment, which also helps to prolong the service life.
- 检查设备时应保证人体不与运转的部件接触，必要时需断电停机。
- When checking the equipment, it should be ensured that the human body does not come into contact with the moving parts, and the power should be shut down if necessary.

9.2 检查设备

9.2 Check the equipment

良好运转的设备也需要定期检查：

Well-functioning equipment also requires regular inspections:

- 检查设备动作是否正常，有无异物和卡料，有无异常噪音，有无串料等。
- Check whether the equipment operates normally, whether there are foreign objects and stuck materials, whether there is abnormal noise, whether there is string material, etc.
- 检查所有外围紧固件是否有松动。及时拧紧。

- Check all peripheral fasteners for looseness. Tighten in time.
- 检查法兰连接处密封是否有效。
- Check whether the seal at the flange connection is effective.
- 检查设备外密封是否有效。
- Check whether the outer seal of the device is effective.
- 检查压缩空气压力是否正常。
- Check that the compressed air pressure is normal.

9.3 润滑油

9.3 Lubricating oil

- 设备出厂时轴承已经注入一个寿命周期的润滑脂, 故轴承部位无需润滑。
- When the equipment leaves the factory, the bearings have been injected with grease for a life cycle, so the bearing parts do not need to be lubricated.

9.4 保养周期

9.4 Maintenance interval



注意 NOTICE

保养前需确保驱动电源已被切断, 并且保证设备不会被误启动。

Before maintenance, it is necessary to ensure that the drive power has been cut off, and that the equipment will not be accidentally activated.

保养内容 Maintenance content	保养周期 Maintenance cycle	
	每个季度或每运转 2250 小时 Quarterly or per 2250 hours of operation	每 年 或 每 运 转 9000 小时 Yearly or every 9000 hours of operation
检查外围紧固件是否松动 Check for loose peripheral fasteners	●	
检查外密封是否泄漏 Check the outer seal for leaks	●	
检查轴承是否正常运转 Check the bearings for proper operation	●	
检查内密封件是否良好 Check if the inner seal is good	●	
彻底清洗设备 Thoroughly clean the equipment		●
检查电磁阀、过滤减压阀工作正常 Check that the solenoid valve and filter pressure reducing valve are working properly	●	
检查位置信号是否准确 Check that the position signal is accurate	●	
驱动设备 Drive device	查看气缸、电动头使用手册 View the manual of cylinder and electric head	