



断电复位型 (VSQ系列)

Power reduction type (VSQ Series)



流体自控阀门专用 电动执行器

Fluid Control Valve Electric actuator

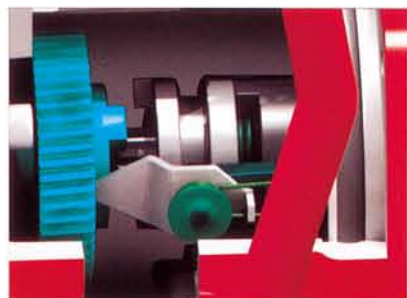
水、空气、蒸气、油、气体、真空等流体
Water, air, steam, oil, gas, vacuum and other fluids.

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产品结构 product mix



手动操作（离合器系统） Manual operation (clutch system)

手动/自动转换手柄和手轮用于手动操作通电后，手柄会自动复位转换成自动方式。
Manual / automatic conversion handle and handwheel for manual operation. After that, the handle is automatically reset and converted into an automatic mode.



凸轮和限位开关 Cam and limit switch

有两个螺丝在上面紧固，设置简单，每个凸轮可单独设置，不跑位。

Two fastening screws are arranged in the above, simple, each cam can be set separately, do not run.



干燥器 Dryer

7~30W，采用金属外壳，散热快，寿命长，内置温控开关，核心为陶瓷密封，不会漏电。

7~30W, the use of metal shell, fast heat dissipation, long life, built-in temperature control switch, the core for ceramic seal, no leakage.

1. 壳体（Shell）

硬质阳极氧化压铸铝壳体，外部环氧粉末涂层，适应严苛的工作环境。
Hard anodic oxidation die casting aluminum shell, external epoxy powder coating, adapt to the harsh working environment.

2. 蜗轮（Worm gear）

精加工双涡轮结构，反向回坐力最小，接触面积大，噪音小，输出扭矩大。
Finishing twin turbo structure, reverse recoil minimum, large contact area, low noise, large output torque.

3. 自锁（Self locking）

双涡轮结构，具有自锁功能，在烦收到反向扭矩的情况下，保持阀位不变。
The dual turbine structure has self locking function and keeps the valve position in the case of receiving reverse torque.

4. 密封（Seal up）

IP67 防护等级，所有连接面都有O型圈密封。
IP67 protection grade, all connection surfaces have O ring seal.

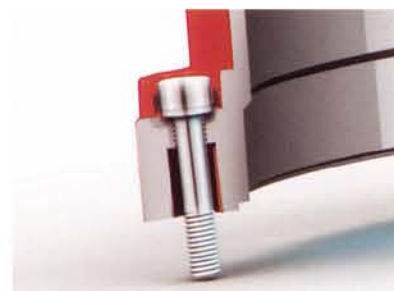
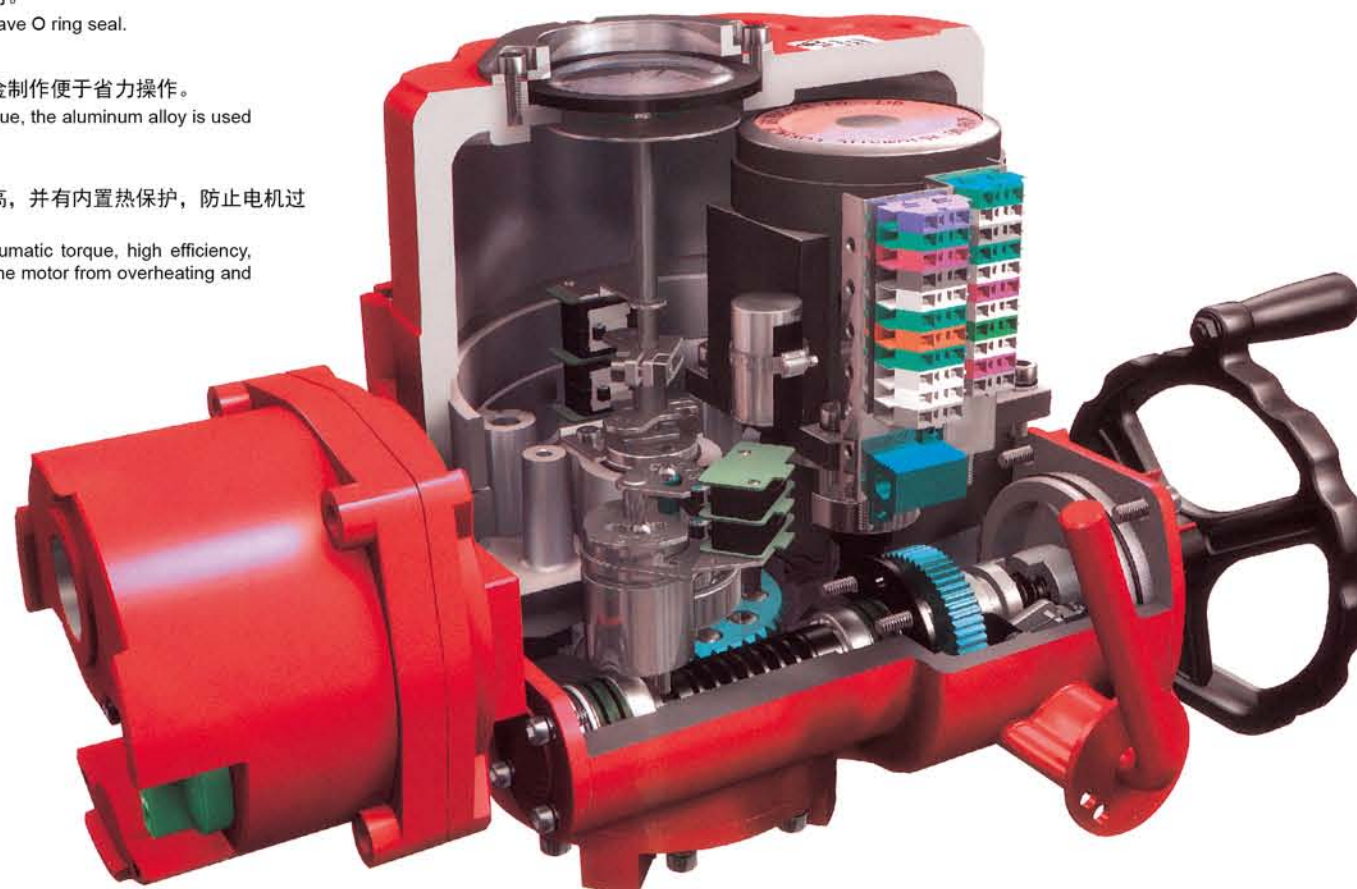
5. 手轮（Handwheel）

随着执行器扭矩增大尺寸增大，采用铝合金制作便于省力操作。
With the increase in the size of the actuator torque, the aluminum alloy is used to make the operation easier.

6. 电机（Electric machinery）

一体设计的感应电机，气动扭矩大，效率高，并有内置热保护，防止电机过热烧坏。绝缘等级F级。

Integrated design of induction motor, high pneumatic torque, high efficiency, and have built-in thermal protection to prevent the motor from overheating and burning. Insulation grade F level.



防脱螺丝（screwsleeve）

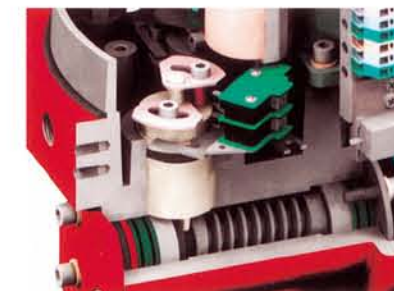
上盖螺丝为专门设计，保养及安装时不会脱落，材质全部为不锈钢，不会生锈。

The upper cover screws are specially designed, and the maintenance and installation will not fall off. All the materials are not embroidered and will not rust.



视窗采用聚碳酸酯，内置O型圈，金属压盖固定，压紧自带两个排水槽，不易积水，易观察。

The window uses polycarbonate, built-in O type ring, metal cap fixed, tight with two water drain, not easy to water, easy to observe.



扭矩开关（Torque switch）

扭矩开关可防止因过载引起的电机、内部电气元件以及其他连接阀门的损坏。一旦扭矩开关起作用，执行器立即停止动作。

Torque switches can prevent damage to motor, internal electrical components and other connecting valves caused by overload.

Once the torque switch works, the actuator stops at once.



可换驱动轴套 （Commutative driving shaft sleeve）

轴套是可更换的，可根据不通的要求加工，四个悬耳用于驱动轴和轴套的紧密配合，和阀门安装方便。

The shaft sleeve is replaceable and can be processed according to the inability to meet the requirements. The four hanging ears are used to drive the shaft and the shaft sleeve closely, and the installation of the valve is convenient.



产品概述

VSQ 系列电动执行器用于控制旋转小于360° 的阀门及其同类产品，如蝶阀、球阀、风门、挡板阀、旋塞阀、百叶阀等，广泛应用于石油、化工、电力、冶金、水处理、船舶、制药、造纸、供热、制冷、轻工等各行各业中。

Product overview

VSQ series electric actuators are used to carry out valves that rotate less than 360 degrees and similar products, such as butterfly valve, ball valve, valve, baffle valve, cock valve, shutter and so on. It is widely used in oil, chemical, electric, metallurgical, water treatment, shipbuilding, pharmaceutical, paper, heating, cooling, light industry and other industries.

特点

Characteristic

1、基本特点：该类型产品是在原有的电动执行器内部安装了大容量的锂电池和相应的控制电路，目的是当外部电源断电时或电缆线因事故断开时，执行器可以按事先设定好的方案关闭阀门或打开阀门，以防止事故的发生。

Basic features: this type of product is installed a large capacity lithium battery and the corresponding control circuit inside the original electric actuator. The purpose is to shut down the valve or open the valve door to prevent the accident when the external power is broken and the cable is broken because of the accident.

2、不论是外部电源断电还是电缆线断线时，在电动阀门一端的电器和电缆线中只有 DC24V 的电压存在，，所以不会对人体造成伤害，也不会因为短路引起火灾及其他危害。

There is only DC24V voltage in the electrical and cable lines at one end of the electric valve, so it will not cause harm to the human body, and it will not cause fire and other harm by short circuit, whether it is external power supply or cable line breaking.

3、蓄电型电动执行器中的锂电池可以自动通过外部电源进行反复充电，可靠性高，使用寿命长。

The lithium battery in electric accumulator electric actuator can be repeatedly charged by external power supply, with high reliability and long service life.

4、蓄电型阀门有普通型、调节型，如果客户有特殊要求时，我们还可以根据客户需求定制特种类型的电动执行器。

The accumulator valve has common and adjustable type. If the customer has special requirements, we can customize the special type of electric actuator according to customer's needs.

工作环境

Work Environment

1、动力电源 Power supply:

交流：AC110V ~ AC240V; $\pm 10\%$ 50/60Hz;

AC: AC110V ~ AC240V; $\pm 10\%$ 50/60Hz;

直流：DC24V($\pm 10\%$);

DC: DC24V($\pm 10\%$);

基本误差：2.5%。

Basic error: 2.5%.

2、产品为户外型，其防护等级有：IP67、IP68 等。

Products for outdoor type, its protection level are: IP67, IP68 and so on.

3、环境温度：-20 ~ 60℃。Ambient temperature: -20 ~ 60 C.

4、环境相对湿度不大于 90%(25℃)。

The relative humidity of the environment is not more than 90% (25 degrees C).

5、工作环境中不含强腐蚀性介质。

There is no strong corrosive medium in the working environment.

6、特殊环境可根据用户需要定做。

The special environment can be customized according to the needs of the user.

技术参数 Technical parameter

型号 Model	输出 最大扭矩 output Maximum torque	动作 时间 O/S times	最大 轴径 Maximum Shaft diameter	电机 功率 Motor power	额定电流 (A) 50/60Hz Rated current (A) 50/60Hz				手轮 转数 handwheel Revolutions	重量 weight
					单相 Single-phase		三相 Three-phase			
	N.M	S	mm	W	110V	220V	380V	440V	N	Kg
VSQ-1	60	18/22	20	20	1.10/0.95	0.55/0.54	0.3/0.3	N/A	10	7.5
VSQ-2	80	18/22	20	20	1.10/0.95	0.55/0.54	0.3/0.3	N/A	10	7.5
VSQ-3	100	18/22	20	20	1.10/0.95	0.55/0.54	0.3/0.3	N/A	10	7.5
VSQ-4	150	21/25	22	40	1.65/1.67	0.88/0.84	0.31/0.31	0.30/0.31	11	17.3
VSQ-5	200	21/25	22	40	1.67/1.67	0.89/0.85	0.31/0.31	0.30/0.31	11	17.3
VSQ-6	300	26/31	35	90	1.85/1.86	0.92/0.92	0.35/0.35	0.34/0.34	13.5	22
VSQ-7	500	26/31	35	90	3.60/3.62	1.55/1.58	0.59/0.59	0.58/0.58	13.5	23
VSQ-8	600	26/31	35	120	4.10/4.10	1.60/2.20	0.60/0.59	0.59/0.58	13.5	23
VSQ-9	800	31/37	45	120	4.20/4.10	2.15/2.20	0.85/0.85	0.79/0.79	16.5	29
VSQ-10	1200	31/37	45	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	16.5	29
VSQ-11	1600	78/93	45	180	4.20/4.10	2.15/2.20	0.85/0.85	0.79/0.79	49.5	83
VSQ-12	2000	93/112	45	180	4.10/4.10	2.15/2.20	0.85/0.85	0.79/0.79	49.5	83
VSQ-13	3000	93/112	45	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	49.5	83
VSQ-14	4000	155/185	45	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	82.5	83
VSQ-15	5000	155/185	45	180	4.20/4.10	2.35/2.30	0.87/0.87	0.81/0.81	82.5	83

标准件技术参数 Technical parameters of standard parts

外壳 The shell	防水级别IP67 Waterproofing level IP67
电机电源 Power	标准AC220V 单相 Standard AC220V single-phase
	可选110V单相, 380V/440V AC 3相 Optional 110V single phase, 380V/440V AC 3 phase
电机 Motor	鼠笼式异步电机 Squirrel cage asynchronous motor
限位开关 Limit switch	开/关 各一个SPDT 250V AC 10A O / S a SPDT 250V AC 10A
辅助限位开关Auxiliary limit switch	开/关 各一个SPDT 250V AC 10A O / S a SPDT 250V AC 10A
扭矩开关 Torque switch	开/关 各一个SPDT 250V AC 10A O / S a SPDT 250V AC 10A
行程 Trip	90度±10度 0-270度可选 90 degree ± 10 degree 0-270 degree optional

失效保护/操作温度 protection temperature	内置过热保护 Built-in overheating protection
指示器 Indicator	连续位置指示刻度 Continuous position indicator
手动操作 Manual operation	机械离合机构, 配手轮使用 Mechanical separation mechanism, with handwheel
自锁装置 Self locking device	蜗轮, 蜗杆机构提供自锁 Worm gear and worm mechanism provide self locking
机械限位 Mechanical limit	2个外部调整螺丝 2 external adjustment screws
干燥器 Dryer	7-10W (AC110V/220V)
接线孔 Connection hole	2个PF3/4" 2 PF3/4 "
环境温度 ambient temperature	-20度-70度 -20 degree -70 degree
润滑 lubrication	铝基润滑脂 Aluminum base grease
材料 Material Science	铜, 铝合金, 铝青铜, 聚碳酸酯 Copper, aluminum alloy, aluminum bronze, polycarbon polyester
环境湿度 Ambient humidity	最大90% Maximum 90%
抗震性能 Aseismic performance	X Y Z 10Kg 0.2-34Hz 30分钟 X Y Z 10Kg 0.2-34Hz 30 minutes
外涂层 Outer coating	干粉 环氧树脂 具有超强防腐功能 Dry powder epoxy polyester has super strong anticorrosion function

编号NO.	可选配置 Optional configuration	备注
1	防爆执行器 (EXIIBT4 EXdIICT5) Explosion-proof actuator	VSQ系列 VSQ series
2	防水执行器 (IP68 10m 250HR) Waterproofing executor	VSQ系列 VSQ series
3	电位计 (1-10K) Potentiometer	VSQ系列 VSQ series
4	比例式控制器 (input/output 4-20mA, 0-5V) Proportional controller	VSQ系列 VSQ series
5	现场控制单元 (就地/远程开关) Field control unit (in-situ / remote switch)	VSQ系列 VSQ series
6	行程120度, 180度, 270度 120,180,270 degrees	VSQ系列 VSQ series
7	直流电机 (DC24V) DC motor (DC24V)	VSQ系列 VSQ series
8	附加扭矩开关 (SPDTX2 250V AC 10A) Additional torque switch	VSQ-1除外 Except VSQ-1
9	断电后, 电动阀自动开或关 Electrical reduction	VSQ系列 VSQ series
10	电流位置传感器 (输出4-20mA) Current position sensor (output 4-20mA)	VSQ系列 VSQ series
11	耐高温执行器 (-10度-100度) High temperature resistant actuator (-10 -100 degree)	VSQ系列 VSQ series
12	耐低温执行器 (-40度-70度) Low temperature resistant actuator (-40 -70 degree)	VSQ系列 VSQ series
13	低速执行器 Low speed actuator	VSQ系列 VSQ series

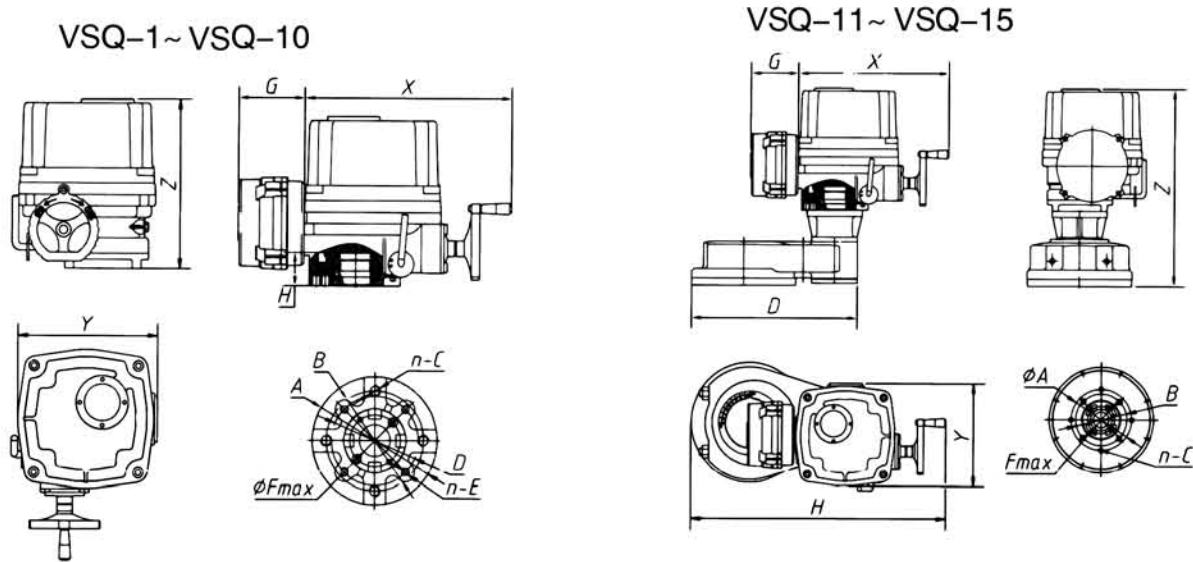
结构 Structure

电动执行器主要由以下几部分组成 The electric actuator is mainly composed of the following parts

壳体部分	Shell part	驱动部分	Drive part
传动部分	Transmission part	比例控制部分	Proportional control part
力矩开关和限位开关	Torque switch and limit switch	开关检测与反馈部分	Switch detection and feedback part

外观图

Appearance diagram

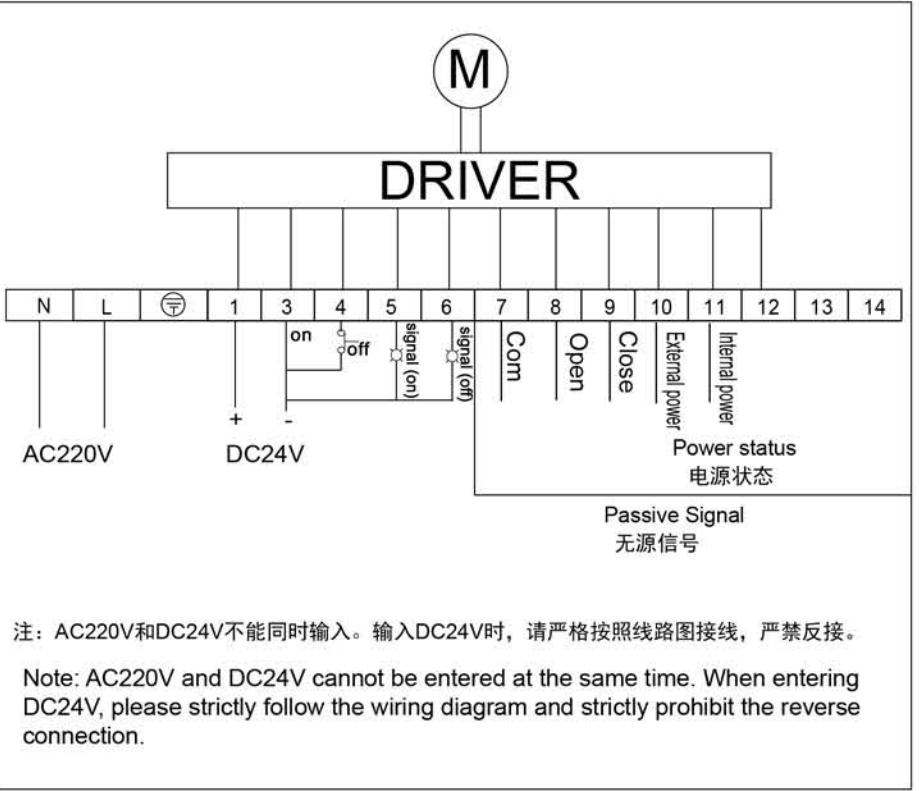


Model	X	Y	Z	A	B	N-C	D	N-E	F	G	H
VSQ-1	260	161	235.5	Φ90	Φ70	4-M8	/	/	Φ20	140	40
VSQ-2	260	161	235.5	Φ90	Φ70	4-M8	/	/	Φ20	140	40
VSQ-3	260	161	235.5	Φ90	Φ70	4-M8	/	/	Φ20	140	40
VSQ-4	351	226	270	Φ125	Φ102	4-M10	Φ70	4-M8	Φ22	140	45
VSQ-5	351	226	270	Φ125	Φ102	4-M10	Φ70	4-M8	Φ22	140	45
VSQ-6	351	240	290	Φ150	Φ125	4-M12	Φ102	4-M10	Φ35	140	55
VSQ-7	367	240	290	Φ150	Φ125	4-M12	Φ102	4-M10	Φ35	140	55
VSQ-8	367	240	290	Φ150	Φ125	4-M12	Φ102	4-M10	Φ35	140	55
VSQ-9	410	276	330	Φ180	Φ140	4-M16	Φ125	4-M12	Φ45	140	65
VSQ-10	410	276	330	Φ180	Φ140	4-M16	454	4-M12	Φ45	140	65
VSQ-11	410	276	534	Φ165	Φ140	8-M16	454	/	Φ45	140	696
VSQ-12	410	276	534	Φ165	Φ140	8-M16	454	/	Φ45	140	696
VSQ-13	410	276	534	Φ165	Φ140	8-M16	454	/	Φ45	140	696
VSQ-14	410	276	534	Φ165	Φ140	8-M16	454	/	Φ45	140	696
VSQ-15	410	276	534	Φ165	Φ140	8-M16	454	/	Φ45	140	696

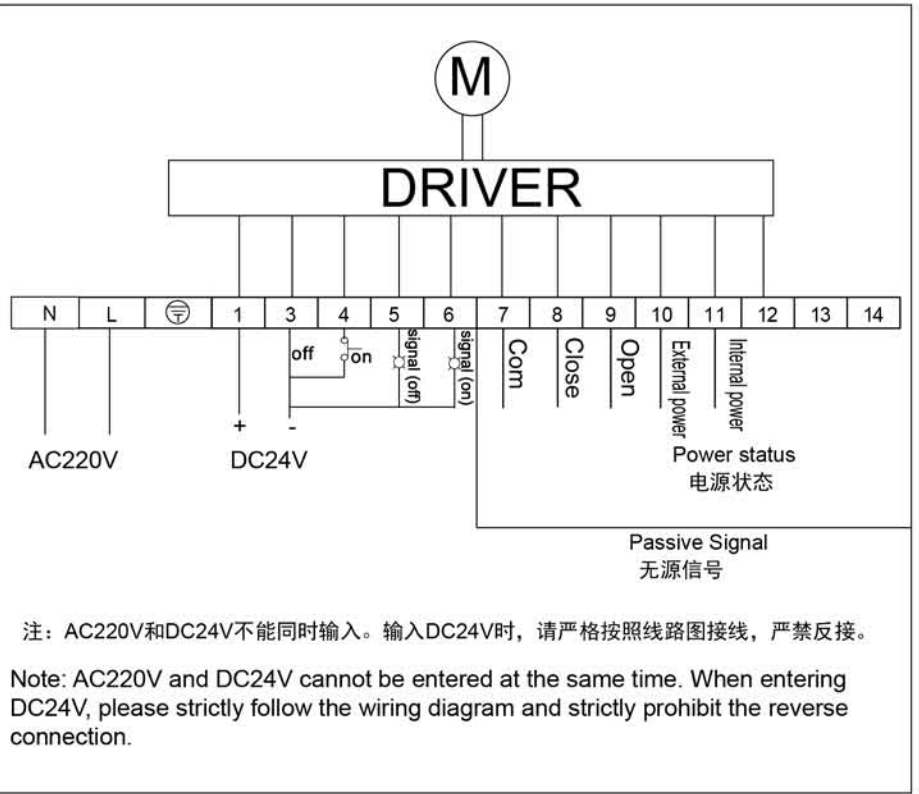
接线图

Wiring diagram

1、VSQ-1 AC100V~AC240V/DC24V 常开型（断电开）Often open (fault ON)



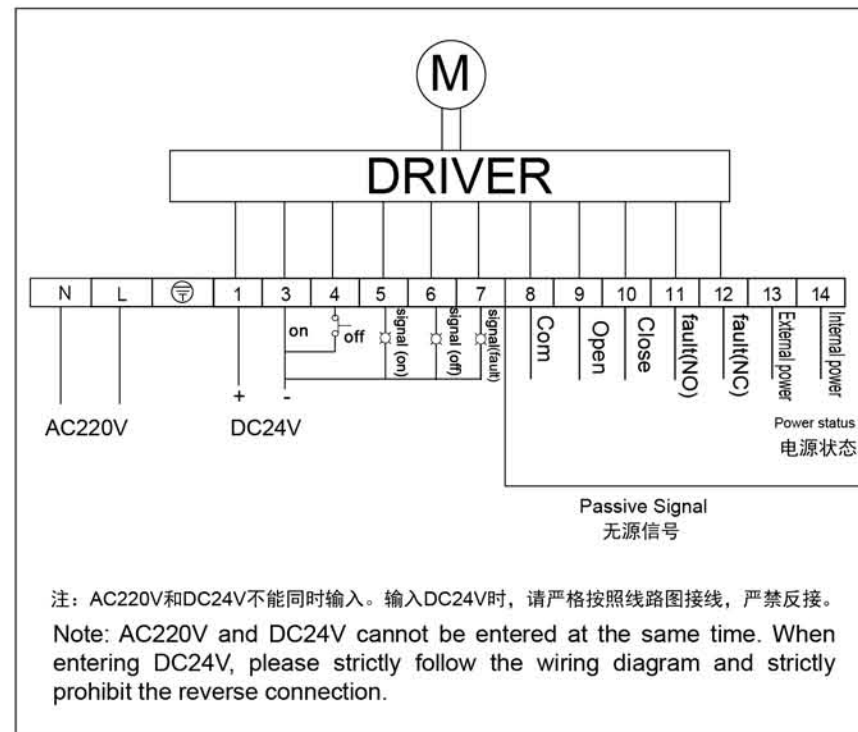
2、VSQ-1 AC100V~AC240V/DC24V 常闭型（断电关）Often Closed (Fault Off)



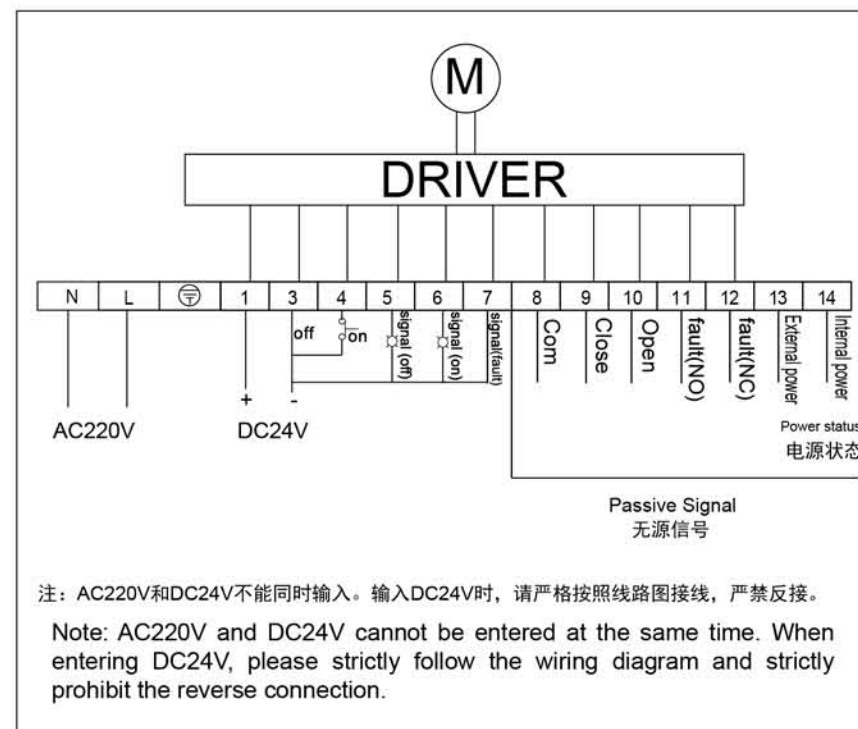
接线图

Wiring diagram

3、VSQ-2~15 AC100V~AC240V/DC24V 常开型（断电开）Often open (fault ON)



4、VSQ-2~15 AC100V~AC240V/DC24V 常闭型（断电关）Often Closed (Fault Off)



安装调试 Installation And Debugging

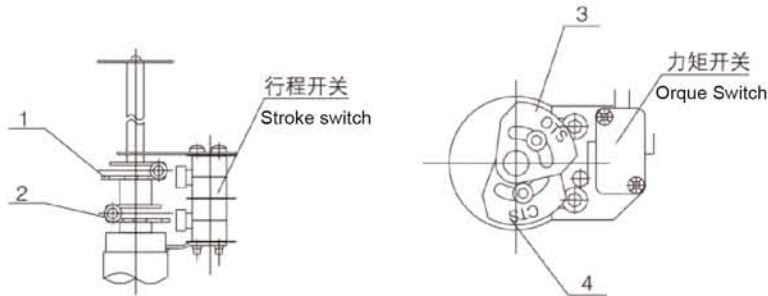


- 行程限位开关的设定
Setting of travel limit switch
- 阀门位置指示
Valve position indication
- 机械限位
Mechanical limit
- 力矩开关
Torque switch

行程限位开关的设定

Setting of travel limit switch

- 1、拉动手—电动切换手柄至手动位置后,顺时针转动手轮,使阀门至全关位置。
Pull the hand-operated electric switch handle to manual position, turn the handwheel clockwise, so that the valve is fully closed.
- 2、用对边为 4mm 的“L”六角扳手,松动 CLS 凸轮上的螺钉(见下图)。
Use the "L" six angle wrench with the opposite edge 4mm for loosening the screws on the CLS cam (see below).
- 3、调整凸轮,使之与对应的行程开关接触(刚好听到咔哒声),然后紧固螺钉。
Adjust the cam, make it contact with the corresponding travel switch (just listen to the clicking sound), then tighten the screws.
- 4、接通电源,按下“开”向按钮(这时切换手柄自动复位),反方向运行某个角度,然后再向“关”方向运行,以检查阀门,“关”方向限位是否准确。
Connect the power supply, press the "open" button (then switch the handle automatically reset), run a certain angle in the opposite direction, and then run to the "shut" direction, to check the valve, the "close" direction is accurate.
- 5、若位置不合要求,可重复操作。反之全开位置调整方法一样。
If the position is not required, the operation can be repeated. On the other hand, the full open position adjustment method is the same.



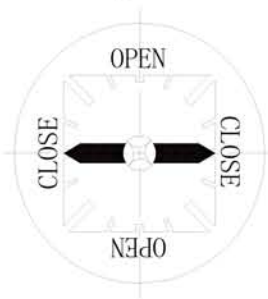
- 注 Note:
- 1、OLS凸轮—用于开方向限位行程开关。
OLS cam is used for opening directional limit stroke switch.
 - 2、CLS凸轮—用于关方向限位行程开关。
CLS cam is used for off direction limit stroke switch.
 - 3、OTS凸轮—用于开方向过力矩开关。
OTS cam is used for opening direction over torque switch.
 - 4、CTS凸轮—用于关方向过力矩开关。
The cts cam is used for the turn over torque switch.

阀门位置指示

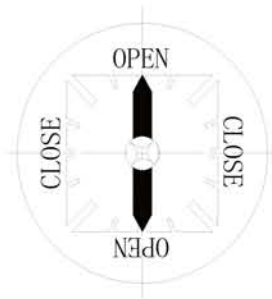
Valve position indication

电动装置开度指针盘与顶部刻度窗指示阀门的“开”或“关”的位置,如果由于行程位置的重新调整,位置指示可能出现偏差,这时可以用手直接转动指针盘进行调整,无需松开指针盘紧固螺钉。

The electric device opening pointer and the top scale indicate the "open" or "shut" position of the valve. If the position indication may be deviated because of the readjustment of the stroke position, the hand can be rotated directly with the hand to adjust, without loosening the fastening screw of the pointer disc.



关阀位置
Valve Close Position



开阀位置
Valve Open Position

机械限位

Mechanical limit

- 1、出厂时,装置上的两机械限位螺钉已调好并紧固,无特殊需求,用户不须松动。
When the factory is out, the two mechanical limit screws on the device have been adjusted and tightened. There is no special requirement and users need not be loosened.
 - 2、如必须调整限位螺钉时,应首先确定该螺钉所限制的阀门位置。当箱罩开度窗向上,面对限位螺钉,右侧为关限位螺钉,左侧为开限位螺钉。
If the screw must be adjusted, the position of the valve restricted by the screw should be determined first. When the hood opening window is upward, facing the limit screw, the right side is the limit screw and the left side is the open limit screw.
 - 3、当调好阀门极限位置(或所需位置)时,松开限位螺钉上的螺母,向内旋入限位螺钉至与扇形蜗轮端面相接触,而后再退回0.5~1圈(使之成为过行程限位的安全保护)。最后将限位螺钉上的螺母可靠拧紧,至此限位调整完毕。
When the limit position of the valve is adjusted (or the required position), the nut on the limit screw is loosened and the limit screw is swirled inward to contact with the end of the fan worm, and then back to 0.5 to 1 cycles (to make it a safety protection for the limit of the travel limit). Finally, the nut on the limit screw is tightened reliably, so the limit adjustment is completed.
- 注意: 设置机械限位时,
型号为VSQ-1~10的限位螺钉在电气接头的下部,
VSQ-11~15减速器的电动装置,限位螺钉在减速器侧面。
- Note: when setting up the mechanical limit,
the type VSQ-1~10 screws are at the lower part of the electrical connector.
VSQ-11~15 reducer electric device, limit screw on the side of reducer.

力矩开关

Torque switch

- 1、正常情况下,不必对力矩开关重新设置或调整,因为在产品发货前已在工厂进行了设置,已达到电装的额定转矩。若遇必须调整转矩开关时,请由专业人员操作。
Under normal circumstances, it is not necessary to reset or adjust the torque switch because it has been set up in the factory before the product is shipped and has reached the rated torque. If you have to adjust the torque switch, be operated by a professional.
- 2、阀门电动装置设有开、关方向各一个力矩开关,用对边为3nm的“L”六角扳手,松动凸轮片上的压紧螺钉,即可转动凸轮片,从而改变力矩大小。
The valve electric device has a torque switch in the direction of opening and closing, with the "l" wrench of 3nm on the side, loosening the pressing screw on the cam piece, the cam piece can be rotated to change the torque size.
- 3、警告:转矩开关的设置,须使用特殊的精密仪器,以保护电装及阀体。必须重新设置或调整转矩时,若随意调整过力矩控制装置,其质量将不会得到保证。
Warning: the installation of torque switches must be equipped with special precision instruments to protect the electrical and valve bodies. When the torque is reset or adjusted, the quality of the torque control device will not be guaranteed if the torque control device is adjusted at will.

※注意 Note :

◆本电动装置的切换机构为自动复位设计,在电机运转时,切换手柄将自动切换到电动位置。
The switching mechanism of the electric device is designed for automatic reset. When the motor is running, the switching handle will automatically switch to the electric position.

◆切换手柄在手动位置时,切忌手动强行切换到电动位置,这会损坏装置。
When switching handle is in manual position, it is not necessary to switch manually to the electric position manually, which will damage the device.

操作说明

Operation description

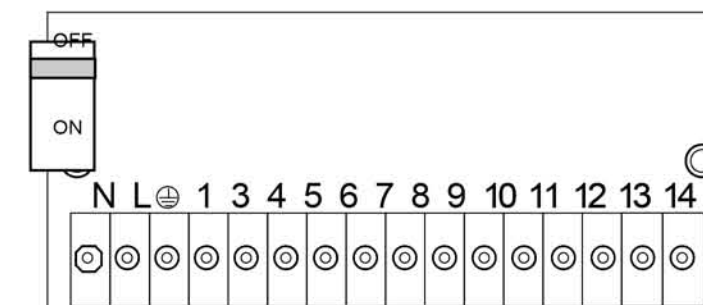


● 操作说明 Operation description

● 注意事项 Matters needing attention

操作说明

Operation description



1、当拨码开关处于OFF时，电池线路被关断，内部工作电路失效，装置停止工作。
When the dial switch is at OFF, the battery line is turned off, the internal working circuit fails, and the device stops working.

【1】当外接电源有电时，电源给电动执行器供电，同时电源给电池充电。
when the external power is available, the power supply is supplied to the electric actuator and the battery is charged by the power supply.

【2】当外接电源没电时，整个装置处于无电状态。
When the external power is out of power, the whole device is in the state of no electricity.

2、当拨码开关处于ON时处于工作位置时，电池线路被接通，内部工作电路正常工作
When the dial switch is in ON position, the battery line is connected, and the internal working circuit is working normally.

【1】当外接电源有电时，电源给电动执行器供电，同时电源给电池充电。
When the external power is available, the power supply is supplied to the electric actuator and the battery is charged by the power supply.

【2】当外接电源没电时，电动执行器外部电源没有，整个装置由电池供电。
When the external power is out of power, the external power supply of the electric actuator is not available, and the whole device is powered by batteries.

注：外接电源有电时，远程开阀、关阀由3、4控制；外接电源断电时，执行器自动恢复到设定状态。

Note: when the external power supply is in power, the remote valve opening and closing valves are controlled by 3 and 4. When the external power supply is cut off, the actuator is automatically restored to the set state.

设定状态在订货时请说明。

Please explain the set state at the time of order.

3、由于阀门卡阻等原因导致电动装置过力矩，此时电动装置被保护停止工作，3与7输出一组DC24V的有源信号，同时，8与11或12输出一组常开和常闭无源信号。

在外部电源供电控制时，执行器会输出开或者关的各一组有源和无源信号。同时输出一组电源状态的无源信号。

The electric device is over torque due to the valve blocking and other reasons. At this time the electric device is protected from working, 3 and 7 output a group of dc24v active signals, while 8 and 11 or 12 output a set of normally open and normally closed passive signals.

When external power supply is controlled, the actuator will output a set of active and passive signals on or off. A passive signal that outputs a set of power states at the same time.

注意事项

Matters needing attention

1、在运输、储藏、安装过程中必须将拨动开关打到OFF档。

In the process of transportation, storage and installation, the toggle switch must be hit to the off gear.

2、电动装置运行前将拨动开关OFF档打到ON档。

Before the operation of the electric device, dial the switch off gear to the on gear.

3、电控柜断电后，执行器自动恢复到全开或者全关状态。

After the power cabinet is cut off, the actuator will automatically resume to full open or full shut state.

4、电控柜再次有电后，电池会自动充电（电池完全把电充满需要3个小时以上）。

Once the power cabinet is again charged, the battery will automatically recharge (the battery will need more than 3 hours to completely fill the battery).

5、电控柜再次有电后，电动阀门立即运行到远程状态所给信号状态并同时给电池充电。

Once the power cabinet is again charged, the electric valve immediately runs to the state of the signal given by remote state and recharges the battery at the same time.

6、电池完全充电800次左右时，电池储存电量的能力只剩80%。（完全充电是指：电量放到不能使用时再充电。通常都是电量还很多时就会充电，所以实际充电次数会远大于800次）。

When the battery is fully charged for about 800 times, the capacity of the battery to store electricity is only 80%. (full charge refers to recharging the battery when it is not available. Usually when the electricity is too much, it will be charged, so the actual charging times will be much greater than 800 times.