

**QB12.5Z~400Z**  
**QB12.5BZ~400BZ**

**整体普通型及整体防爆型**

**部分回转阀门电动装置**

**使用说明书**

OPERATION INSTRUCTION MANUAL FOR  
INTEGRATED NORMAL TYPE AND INTEGRATED EXPLOSION-  
PROOF TYPE PART-TURN  
ELECTRIC VALVE ACTUATORS



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## 一、概述 General Description

整体普通型、整体防爆型部分回转阀门电动装置由QB12.5~400及QB12.5~400B阀门电动装置附加控制电气元件组成。本系列阀门电动装置内置控制模块，大容量接触器，可不再使用电控箱，因此具有体积小，功能全(加设了相序自动鉴别及缺相保护功能，远程控制有四种方式，另加紧急关阀功能)，安装接线简单(只需接入三相动力线，即可现场操作)，检修方便(电气回路通过DC24V电压控制，电气部件之间采用接插件连接)等特点。

本产品性能指标达到GB/T24923-2010《普通型阀门电动装置技术条件》的规定，防爆型性能指标达到GB3836.1-2010《爆炸性环境 第1部分:设备 通用要求》、GB3836.2-2010《爆炸性环境 第2部分:由隔爆外壳“d” 保护的的设备》及GB/T24922-2010《隔爆型阀门电动装置技术条件》的规定。

Integrated normal type and integrated flameproof type part-turn electric valve actuators consist of QB12.5~400 and QB12.5~400B electric valve actuators and additional electric control elements. With control module and big capacity contactors built in, these series electric valve actuators need no more electric control box. And so they are small in size and of complete functions (provided with automatic discrimination of phase sequence, protection of phase-lacking, four modes of remote control, and the function of emergent valve shut in addition), simple in installation and wiring (once the 3-phase power supply is connected, can local operation be carried out), easy to maintain and repair (electric circuit is controlled by DC 24V voltage, electric elements are connected one another with plugs and sockets).

Performance index of these products meets with the requirements of Std GB/T24923-2010 TECHNICAL SPECIFICATIONS OF NORMAL ELECTRIC VALVE ACTUATORS and performance index of explosion-proof type actuators meets with Std GB3836.1-2010 Explosive atmospheres-Part 1:Equipment-General requirements and Std GB3836.2-2010 Explosive atmospheres-Part 2:Equipment protection by flameproof enclosures“d” and Std GB/T24922-2010 TECHNICAL SPECIFICATIONS OF FLAMEPROOF ELECTIRIC VALVE ACTUATORS.

## 二、型号表示方法 Representation of Type



Z表示整体式 Means integrated model

B表示防爆型, 不标注表示普通型

B means flameproof type, normal type without B

输出转速: Output speed (r/min)

输出转矩: Output torque (10N·m)

产品型式: QB (部分回转型) Product type: Part-turn

type

例: QB50-1BZ 表示部分回转型, 输出额定转矩500N·m(50kg·m), 输出转速1r/min, 防爆型, 整体式。

For example: QB50—1BZ represents actuator of part-turn type, rated output torque 500N · m

(50kgf · m)

output speed 1r/min, flameproof specifications, integrated model.

### 三、工作环境及主要技术参数 Service Environment and Main Technical Parameters

#### (一) 电源 Power Supply

电机: Motor 380V, 50Hz (其它电压和频率需特殊订货 other V and Hz for special order)

远程控制: DC24V, 控制信号门限为“on”

的最小值为20V; “off”的最大值为1.5V; 控制信号的拉电流为15mA (相当于1.6k, 0.36W负载)

Remote Control: DC 24V, minimum value for “on” of control signal gate is 20V, and maximum value for “off” is 1.5V; actuating current of control signal is 15 mA (approximate the load of 1.6kΩ, 0.36W)

#### (二) 工作环境 Service Environment

(1) 防爆型产品: 按标准分类, 本装置为Exd II BT4Gb

(工厂用), Exd II BT4Gb所适用环境为 II A、II B级T1~T4组的爆炸性气体混合物。

Flameproof type: according to the standard, these actuators are provided with Class ExdIIBT4Gb (for plant and works). Class ExdIIBT4Gb is suitable to the atmosphere of explosive gases mixture specified by groups T1~T4 of Class IIA and Class IIB.

(2) 普通型产品: 不含有腐蚀性、易燃、易爆的介质

Normal type: no corrosive, flammable or explosive media

(3) 环境温度: -20 ~ +60°C Ambient temperature: -20~60°C

(4) 环境相对湿度: ≤90% (+25°C时) Relative humidity: ≤90% (at 25°C)

(5) 防护等级: IP55 Protection: IP55

(三) 本装置为短时工作制, 额定运行时间为10分钟。

These actuators are for short time duty. The rated operating time is 10 minutes.

#### (四) 规格和主要技术参数 Specifications and Main Technical Parameters

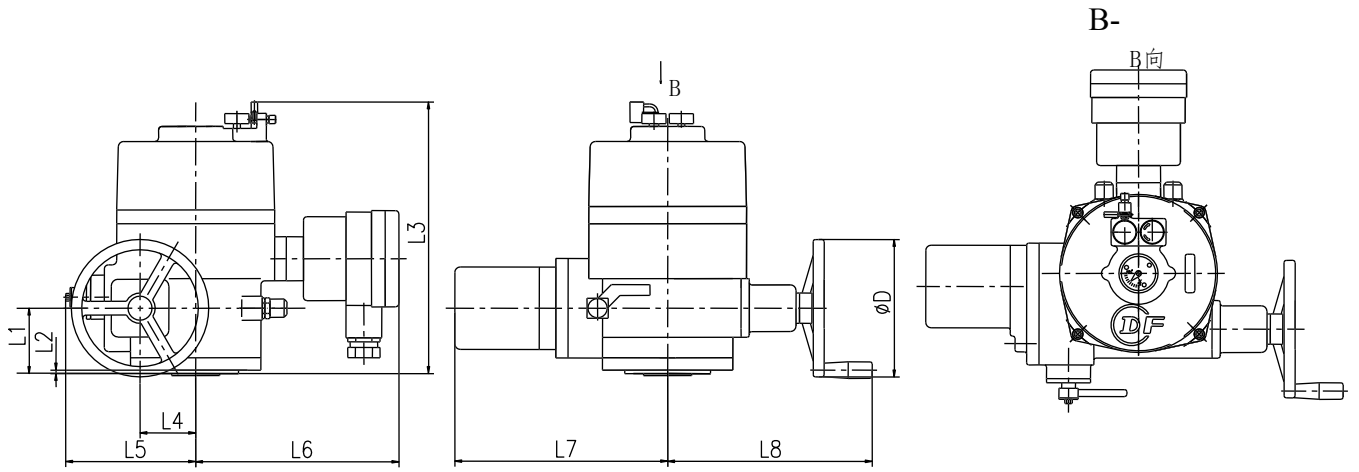
型号 type	电动机 motor		输出转速 output speed r/min		最大控制转矩 max. control	最小控制转矩 min.	阀杆直径 dia. of	手动速比	重量 weight kg	回转 90°时间 time of 90°rotati
	功率	电流	1	2						

	power kW	current A	输出转矩N·m output torque		torque N·m	control torque N·m	stem mm	ratio		on S
QB <sub>25</sub> <sup>12.5</sup> Z QB <sub>25</sub> <sup>12.5</sup> BZ	0.03	0.25	125		>125	62.5	22	63	约60	当输出转速 1r/min,时间为15S, 2r/min,时间为7.5S. 15S at 1r/min of output speed, 7.5S at 2r/min of output speed
	0.05	0.45		125						
	0.05	0.45	250		>250	125	28			
	0.09	0.68		250						
QB <sub>100</sub> <sup>50</sup> Z QB <sub>100</sub> <sup>50</sup> BZ	0.09	0.68	500		>500	250	42	47	约80	
	0.18	1.22		500						
	0.18	1.22	1000		>1000	500	50			
	0.25	1.4		1000						
QB <sub>400</sub> <sup>200</sup> Z QB <sub>400</sub> <sup>200</sup> BZ	0.25	1.4	2000		>2000	1000	60	53	约110	
	0.55	2.4		2000						
	0.37	1.8	3000		>3000	1500	60			
	0.55	2.4	4000		>4000	2000	80			

说明:电机的起动电流和最大电流约为表格所示的额定值的7倍,运行过程中电流偏大是正

常现象。

## 四、外形及连接尺寸 Overall Size and Connection Dimensions



(一)外形图 Contour

图1 QB12.5~400(B)Z外形图 Fig.1 Overall size of QB12.5~400(B)Z

QB12.5~400(B)Z外形尺寸表 table of overall size of QB12.5~400(B)Z

型号type	L1	L2	L3	L4	L5	L6	L7	L8	φD
QB12.5(B)Z	70	2	362	63	164	303	300	261	145
QB25(B)Z							310		
QB50(B)Z	95	3	395	81	190		332	300	200
QB100(B)Z	100	10	400				352		
QB200(B)Z	150	22	455	132	198		444	325	400
QB300(B)Z							420		
QB400(B)Z						444			

(二)连接尺寸 connection dimensions

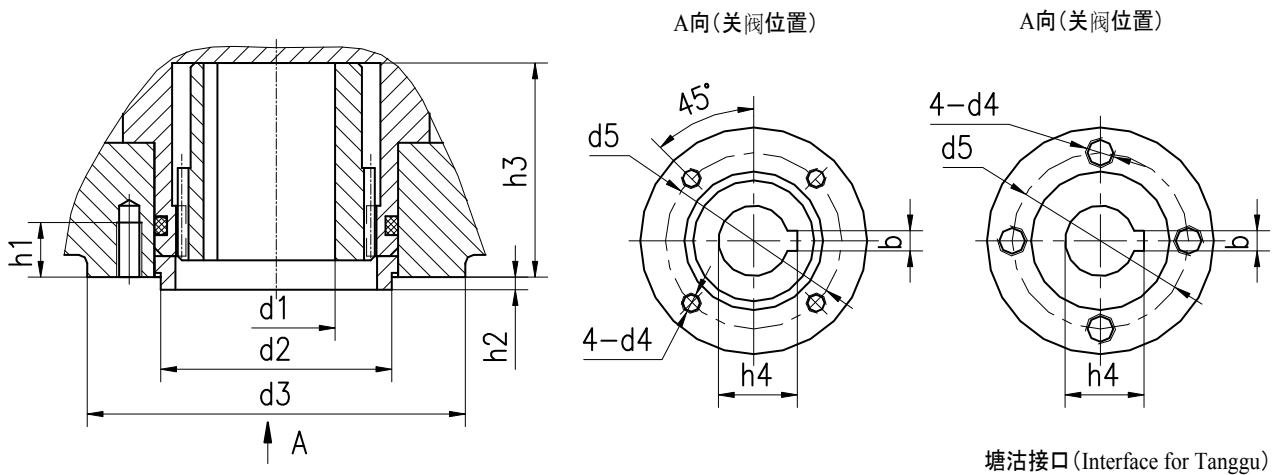


图2 QB12.5~400(B)Z连接尺寸图

Fig.2 Connection dimensions of QB12.5~400(B)Z

QB12.5~400(B)Z连接尺寸表 table of connection dimensions of QB12.5~400(B)Z

型号type	d1 (H9)	d2 (f8)	d3	d4	d5	h1	h2	h3	h4	b (D10 )	注 note
QB12.5(B) Z	22	35	65	M6	50	14	3	62	24.8	6	
	15.9		92	M10	70	20		55	18.3	5	*
QB25(B)Z	28	55	90	M8	70	16	3	47	31.3	8	
	19		92	M12	70	24		62	21.4	5	*
	22.2		115		89		59	24.6			
QB50(B)Z	42	70	125	M10	102	20	3	66	45.3	12	
	28.6		115	M12	89	24		71	32.1	8	*
QB100(B) Z	50	85	150	M12	125	24	3	66	53.8	14	
	31.7		140		108			71	35.2	8	*
QB200(B) Z	60	100	175	M16	140	30	4	97	64.4	18	
	33.34		197	M20	159	35		102	36.8	10	*
QB300(B) Z	60	100	175	M16	140	30	4	97	64.4	18	
	33.34		197	M20	159	35		102	36.8	10	*
QB400(B) Z	80	130	210	M20	165	35	5	97	85.4	22	
	50.65		276		216	35		114	55.1	16	*

注:打\*标记为塘沽阀门厂连接尺寸

Note: Asterisk is the connecting dimensions for Tanggu Valve Works.

## 五、结构 Structure

整体型电动装置主要有行程控制器、力矩控制器、开度机构、手轮部件、阀门电动机、

减速器、电气控制部分等组成。电气控制部分主要有多功能控制模块(DGN-

2)、主控模块(Yk-

2)、旋钮组件、开度指示盘(LED)及交流接触器等组成。其中多功能控制模块(DGN-

2)由驱动电路、远程控制电路及输入输出接口组成。主控模块(Yk-

2) 由AC/DC电源回路和相序鉴别电路组成。电气控制部分结构见下图, 其余结构参见QB普通型说明书或QB防爆型说明书。

The integrated electric valve actuators are mainly consisted of travel limit mechanism, torque limit mechanism, valve position indicating mechanism, handwheel assembly, valve motor, gear reducer, electric control elements. The electric control elements are mainly multifunction control module (DGN-2), main control module (Yk-2), knob assembly, position indicating dial (LED) and AC contactors. The multifunction control module (DGN-2) is combined with drive circuit, remote control circuit, interfaces of input and output. Main control module (Yk-2) consists of AC/DC power supply loop and discrimination circuit of phase sequence. For electrical control structure, see the figures below; for other structure, see the operation instruction for normal type QB actuators and the operation instruction for flameproof type QB actuators



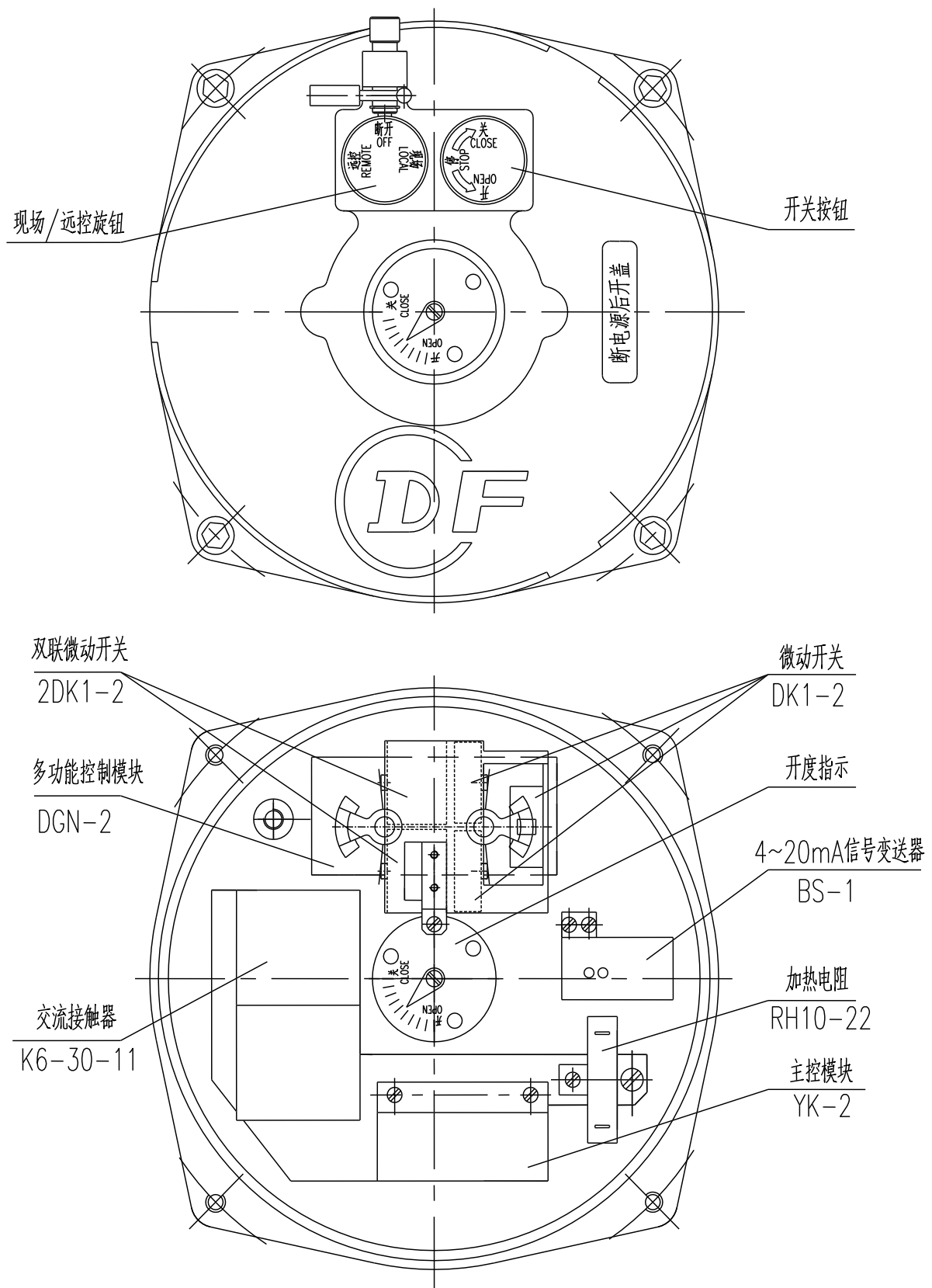
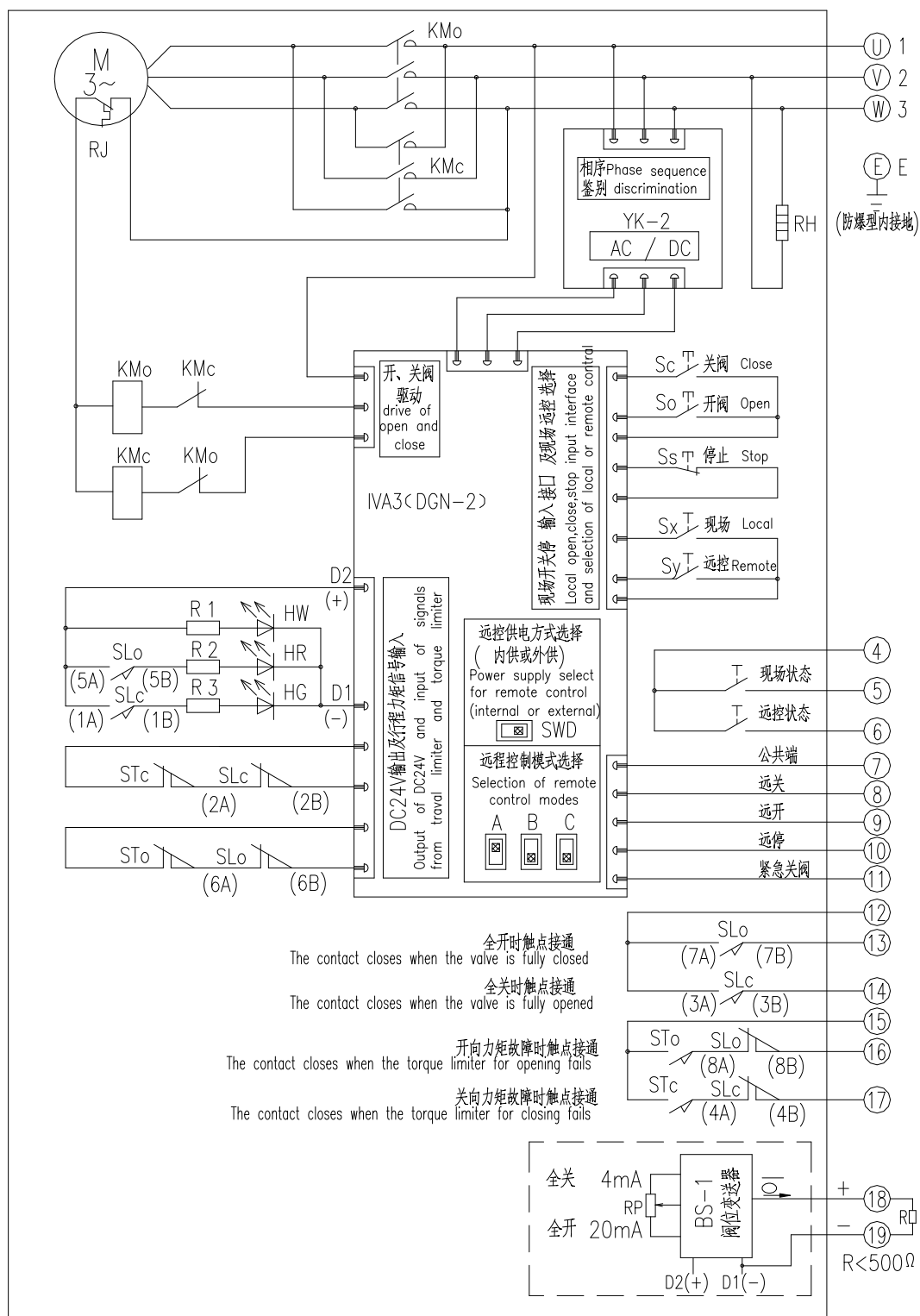


图3 QB12.5~400(B)Z电气部件图

Fig.3 Electric elements of QB12.5~400(B)Z



## 六、电气原理及接线 Schematic Diagram and Wiring



说明: 1、虚线框内元件为特规供货。

2 □ 整体普通型电装电源接线端子为1、2、3; 整体防爆型电装电源接线端子为U、V、W。

3 □ 图中输出接点状态为执行机构无故障, 处于中间位置的状态。

Note:1. Elements in dash line frame are for special supply. 2、Integrated normal type actuator terminal is 1,2,3;integrated explosion-proof type actuator terminal is U,V,W. 3、Output contact state is the actuator in a state of no fault, intermediate position.

图4 电气原理图 Fig.4 Electric schematic drawing

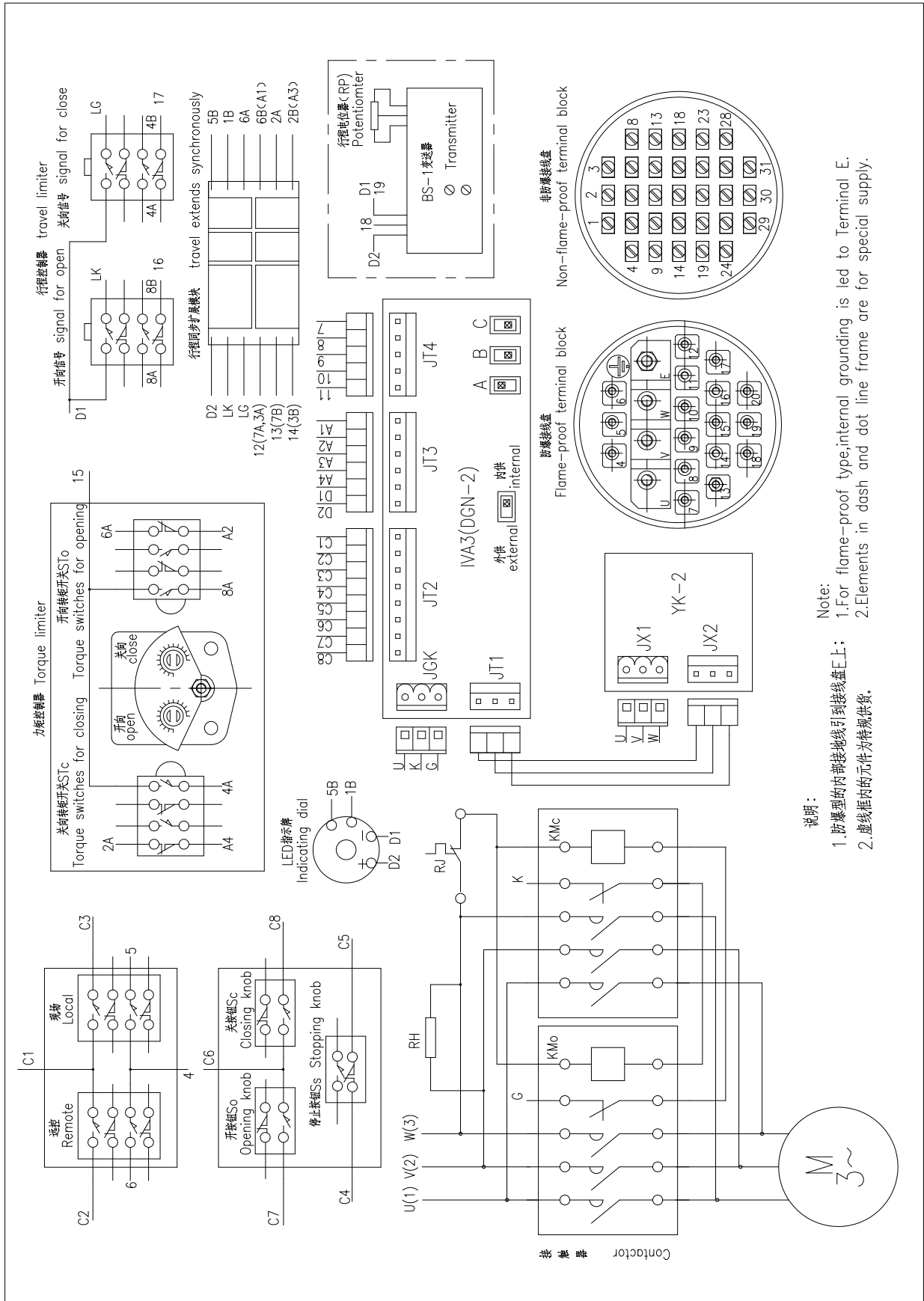


图5 接线图 Fig.5 wiring diagram

## 七、远程控制模式和远程监控 Remote Control Mode and Remote Monitor

### (一) 远程控制的几种模式 The modes of remote control

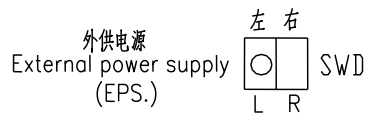
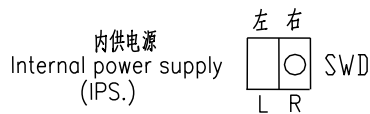
在整体型电动装置内的DGN-

2上, 设有三个拨码开关A, B, C, 通过拨码开关组合可得到以下几种控制模式。用户如无特殊要求, 产品出厂时, 选择为第二种控制模式。通过拨码开关SWD可选择远控的供电方式(内供或外供)。以上拨码开关的具体位置详见图5。

Three unit selector switches A, B, C are connected to DGN-2 built in integrated electric actuators. Following are available unit switch selecting. If users have no special requirements, the actuator is set to the second mode when delivering. With unit switches SWD, internal power supply (IPS.) or external power supply (EPS.) may be chosen for remote control. Details of unit switches selecting is shown in Fig. 5.

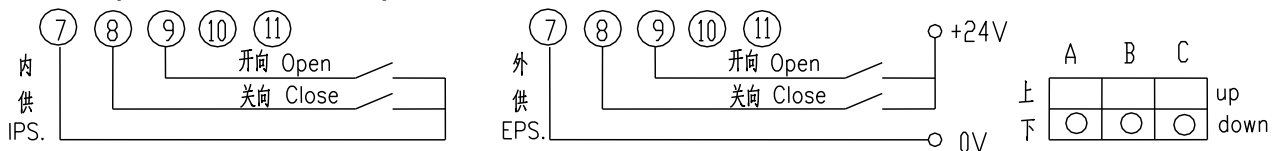
通过VA3 (DGN-2) 电路板上拨码开关SWD选择远控供电方式 DC24 内供或外供。

With unit switches SWD on IVA3(DGN-2), internal or external power supply may be chosen for remote control.



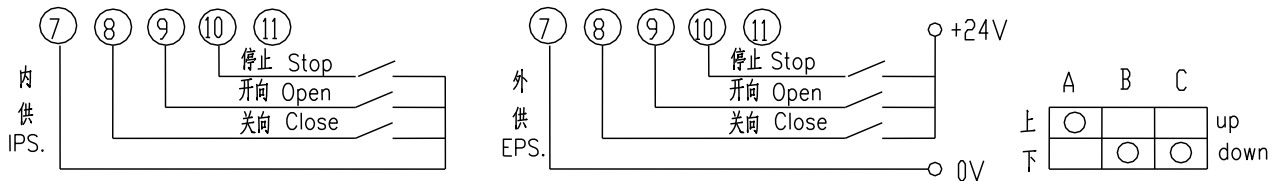
(1) 点动打开/关闭控制, 控制信号应持续直至阀门开关到位。

Clicking button for open/close, signal shall be held till valve reaches preset position

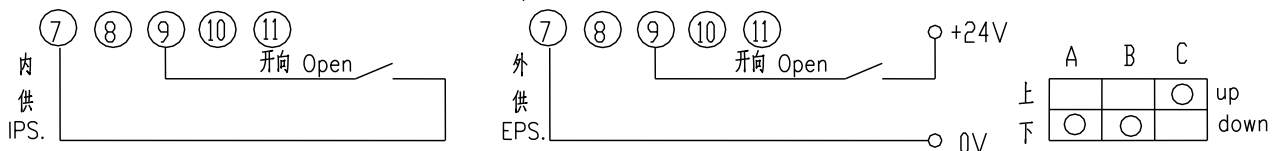


(2) 带自保持的打开/停止/关闭控制, 信号应持续500mS以上。

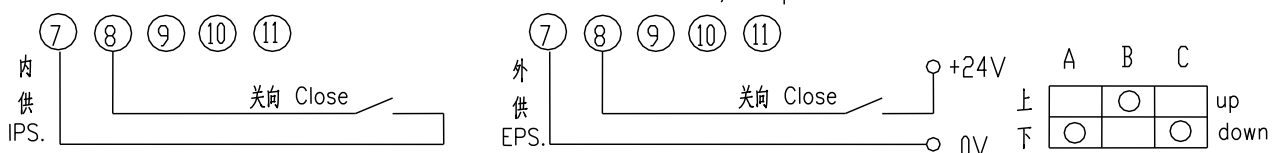
Self-holding control for open/stop/close, signal shall be held for 500ms at lest.



(3) 双线控制: 得电打开, 失电关闭。 Two-line control: opens when line is on, and closes when line is off.



(4) 双线控制: 得电关闭, 失电打开。 Two-line control: closes when line is on, and opens when line is off.



(5) 紧急关闭: 可超越其他远程控制信号强制关闭, 此信号应一直维持到阀门关闭。 Emergent valve shut: it can overstep other remote control signal to enforce valve closing, this signal shall be held till valve is closed.



## (二) 远程监控 Remote monitor

本系列电动装置可将全开、全关、故障、控制状态等无源结点信号输出给控制单元。也可通过BS-1模块直接输出4-

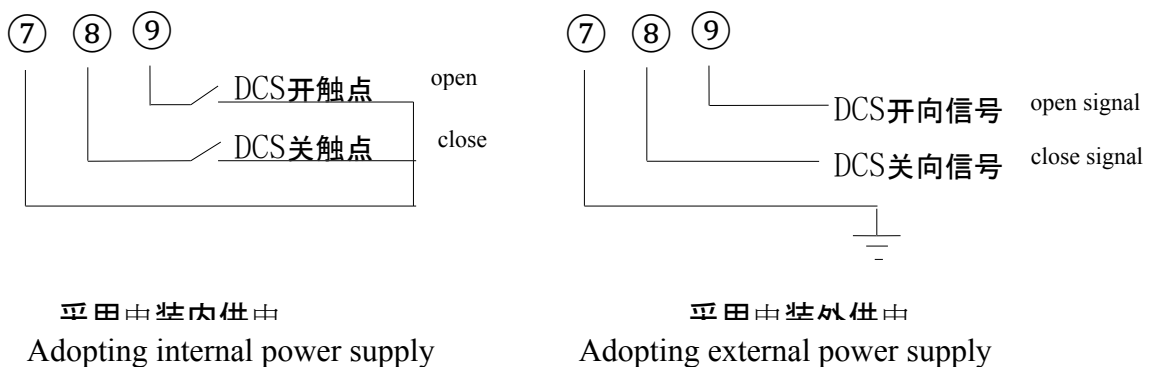
20mA阀位信号(如需此项功能, 订货时需说明), 以监控阀门全开到全关的全过程。

These series electric valve actuators are able to transmit passive contact signal of complete opening, seating, failure, control status to control unit. With BS-1 module, they are also able to transmit 4-20mA valve position signal (if such function is required, it must be declared when ordering) to monitor and control the whole process of valve from complete open to seating.

### (1) 远程监控采用DCS集散控制系统

本系列电动装置如作为DCS集散控制系统的前端执行机构, 可采取如下连接方式:

As the front end operating device of DCS (distributed control and centralized display) system, these actuators may adopt following connection mode:



注: 本系列电动装置远控默认采用DC24V电平控制, 如用户DCS采用其它电压值的开关量可特殊供货。

Note: Default remote control of these series actuators adopt DC24V electrical level control. If user's DCS needs other switching quantity of voltage, it can be supplied as special ordering.

## (2) 远程监控采用PLC电控柜集中操作方式

远程监控采用PLC电控柜可实现以下特殊功能:

Remote monitoring and control adopts PLC electrical box for centralized operating mode. PLC electrical box for remote monitoring and control is able to carry out following special functions:

1) 每个电动装置均可单独操作, 电动装置工作状态可动态显示(根据要求可设计成液晶显示);

2) 可实现多个电动装置之间的互锁和联动;

3) 可根据外部条件(如一定的温度、压力、流量)来开启或关闭电动装置;

4) 通过RS485接口可将电动装置工作状态传送给上位机, 并能接受上位机的操作命令。

注: 由于PLC电控柜控制要求多样, 定货时需将技术要求详细说明。

1) Each electric actuator is able to be operated separately, and its operating status can be displayed dynamically (it can be designed to display by LCD);

2) Interlocking and interaction can be carried out among many electric actuators;

3) To open or close electric actuators according to external conditions (such as certain temperature, pressure, rate of flow etc.);

4) The operating status of electric actuator can be transmitted to superior control through RS485 interface and it can also receive operating command from superior control.

Note: Owing the varied control specifications of PLC electrical control box, detailed specifications must be declared particularly when ordering.

## 八、调整 Adjustment

整体式电装的电气箱盖上, 设置两只旋钮分别为现场远控旋钮和开关旋钮。用于切换工作方式及现场的开、关、停操作。通过箱盖上的视窗孔, 可以看到开度指示盘上三只发光二极管, 其中黄灯亮表示电源正常, 红灯亮表示行程开到位, 绿灯亮表示行程关到位。整体式电动装置与阀门组装后, 应对电气控制部分, 力矩控制器, 行程控制器, 开度机构分别调整方可使用。具体调整如下:

On the cover of the electrical compartment of integrated actuators, two knobs are provided respectively for local/remote and open/close to use for the changing of operating modes and



operations of opening, closing and stopping. Looking into the window on the cover, three LED can be seen on the position indicating dial. Among them, yellow lamp lighting indicates that the power supply is normal; red lamp lighting indicates that the opening course is finished; and the green lamp lighting indicates that the closing course is finished. After the integrated electric actuators are assembled with the valves, only the electrical control compartment, torque limit mechanism, travel limit mechanism and position indicating mechanism has been properly adjusted, may the assembly be put into operation. Specific adjustment is shown as following:

### (一)检查电源

打开防爆接线盒接入动力线。接通电源，如果开度指示牌上黄色发光二极管不亮，则说明电源缺相(可能出现电源缺相，黄色发光二极管仍然亮的情况，但这时电动装置被锁住，不能进行开关操作)。应查明缺相原因，做适当处理。当接通电源黄色发光二极管亮了即可进行调试操作。

#### Check power supply

Open the cover of the flameproof terminal box and wire in it with power supply. If the yellow LED on indicating dial does not light, it indicates the absence of phase. (Sometimes the absence of phase occurs but the yellow LED does still light normally. In such case, the actuator is locked and can not run. ) The failure shall be found out and properly handled. When the power supply is turned on and the yellow LED lights, the actuator can be put into operation at once.

### (二)力矩控制器、行程控制器、开度机构的调整

拆下电气安装板螺丝，行程上下限位、力矩及开度机构的调整与普通型产品相同。调整完以后旋上安装螺丝，合上电气箱盖。至此，整体电动装置可以进行现场操作了。

Adjustment of torque limiter, travel limiter and position indicating mechanism Remove screws on electrical installation board, adjustment of travel limiter, torque limiter and position indicating mechanism is the same of normal type product. After the adjustment, tighten the fixing screws, put the cover on the electric compartment and fix it. Thus, the integrated electric actuators can be put into local operation.

### (三)现场/远程操作 Local/remote operation

□1□ 现场操作，需将现场/远控旋钮旋到现场位置，并用插销锁定。这时旋转开关旋钮(旋转的方向见旋钮上的指示)，即可进行现场开、关、停操作。每当阀位关到位，开度指示盘上的绿色指示灯亮。开到位，红色指示灯亮。运行过程中，按下开关旋钮电装即停在中间位置。

For local operation, turn the local/remote knob to local control position and lock it with the latch. Then turn the operating knob (rotating direction as shown on knob) to carry out local operation of opening, closing or stopping. Once the valve is seated, the green lamp on position indicating dial lights; and the red lamp lights as the valve reaches preset position. During operation, once the knob is pressed down, the electric actuator stops at medium position.

□2□远程控制,需将现场/远程旋钮旋到远控位置,并用插销锁定。整体式电动装置设有多种远控方式,可根据说明书中电气原理部分的控制方式进行选取。具体通过多功能控制模块(DGN-

2)上三只拨码开关的不同组合来调整,并在接线盒中接远控控制线(根据不同控制模式,7~11号线端子上需接2~5根线),即可实现远程控制电动装置。如用户没有特殊要求,产品出厂时,远程控制方式为第二种带自保持的打开/停止/关闭控制方式。

For remote operation, turn the local/remote knob to remote control position and lock it with the latch. Integrated model electric actuators are provided with many modes of remote control. Control mode can be selected according to electrical schematic diagram in this instruction manual and can be regulated particularly by different combinations of three unit selector switches on multi-function module (DGN-2). At the same time, wire remote control lines in the terminal box (2~5 lines are needed for No.7~No. 11 terminals according to different control modes). Thus, the electric actuators can be controlled remotely. If users have not put forward any special requirements, the remote control modes is set to second control mode of opening/closing/stopping with self-holding when the actuator is delivered.

**附:行程控制器、力矩控制器和开度机构的调整**

**Appendix:** Adjustment of travel limiter, torque limiter and position indicating mechanism

(一)行程控制机构调整 adjustment of travel mechanism

行程控制机构见图6，机构设有“开”、“关”、“中1”和“中2”四个控制单元。开向微动开关即图中的SLo，用于控制开向位置；关向即图中的SLc，用于控制关向位置；中1和中2分别为SLo1和SLc1，可以用于中间位置，也可用于开向或关向的极限位置。调整的目的是使阀门达到所需的位置时，凸轮能准确地触动微动开关，从而发出控制信号。调整步骤如下

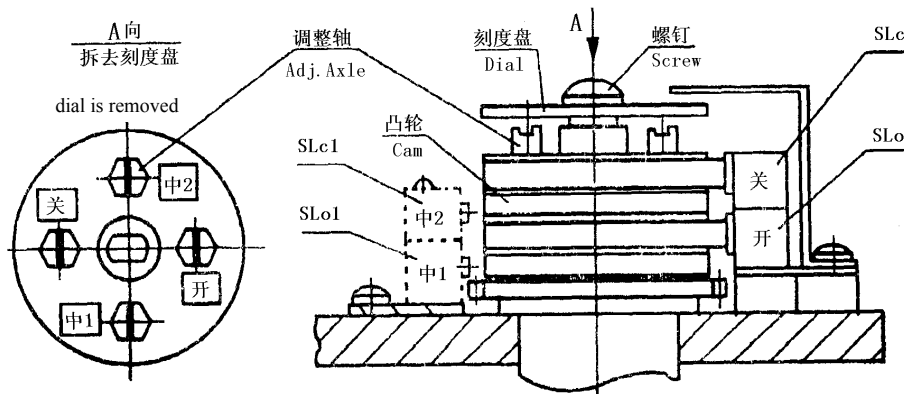


图6 行程控制机构 Fig.6 travel

Travel mechanism is as shown in Fig.6. The mechanism is provided with four units of “opening”, “closing”, “MED1” and “MED2”. Microswitch for opening, i.e. SLo in the figure, is used to control valve position during opening travel. Microswitch for closing, i.e. SLc in the figure, is used to control valve position during closing travel. MED1 and MED2 marked respectively SLo1 and SLc1, are used to control the medium position, limit position of opening or closing. Adjustment of travel mechanism is for the purpose of making cam of travel mechanism press microswitch precisely and transmit control signal when valve reaches the required position. Adjusting procedure:

1. 转动手轮，使阀门达到全关位置。
2. 拆下螺钉及刻度盘，转动关向调整轴，使关向凸轮刚好触动SLc(听到“卡达”声)。
3. 打开阀门至约50%的开启位置，电动关闭阀门，检查阀门关闭时停止的位置是否符合要求，如不符合，按上述方法微量调整凸轮，直至符合为止。
4. 把阀门打开到全开位置，转动开向调整轴，使开向凸轮刚好触动SLo(听到“卡达”声)。
5. 关闭阀门至约50%的关闭位置，电动打开阀门，检查阀门是否开到位，如不符合要求，按上述方法微量调整凸轮，直至符合为止。
6. 中间位置的调整：中1和中2两个中间位置，用户可用于开向或关向的中间位置(也可能是全开或全关位置)，调整方法与上面相同。

以上调整完成后，装上刻度盘，通电重复检查1~2次。

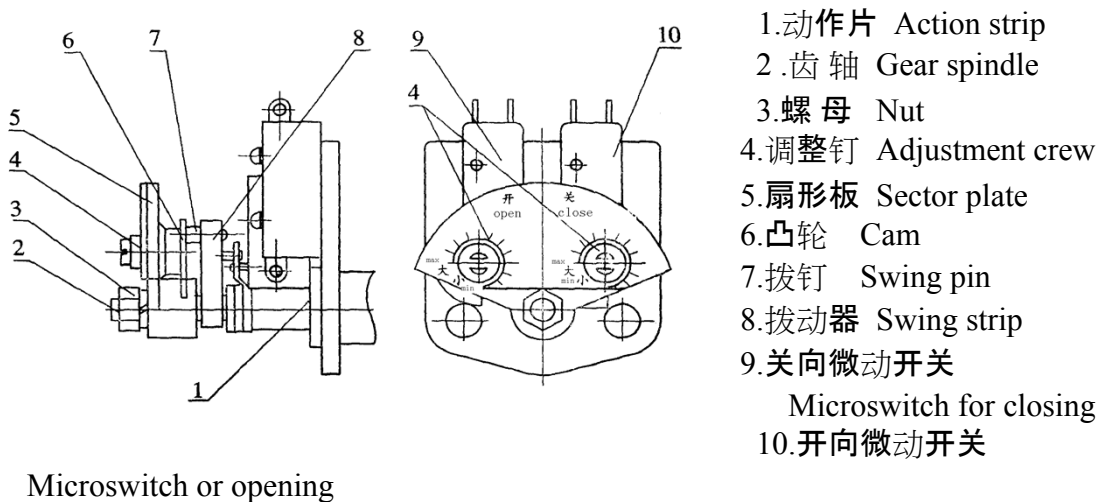
1. Rotate handwheel to make valve seat.
2. Remove screw and dial, rotate setting axle for closing to make the cam of closing just touch SLc microswitch (while click is heard).
3. Open the valve to about 50% of travel. Then close the valve by electric operation to check if the valve stops at required position. If it does not meet the requirement, continue above micro adjusting of cam until it meets the requirement.
4. Open the valve to complete opening, rotate setting axle for opening to make the cam of opening just touch SLo microswitch. ( while click is heard.)
5. Close the valve to about 50% of travel, open the valve by electric operation to check if the valve stops at required position. If it does not meet the requirement, continue adjusting until it meets the requirement.

6. Adjustment of medium position: Users may use MED1 and MED2 for medium position in opening or closing direction. (or complete opening, complete closing) Adjusting procedure is the same of above adjusting in opening or closing direction.

After the adjusting is finished, mount the dial, then repeat electric operation to check for 1~2 times.

## (二) 转矩控制机构的调整 adjustment of torque mechanism

转矩控制机构见图7, 本装置在出厂前, 启闭方向的转矩值均整定在额定控制点上, 一般不需要再作调整, 若现场需重新调整, 方法如下:



### 1. 关闭位置采用转矩控制方式时的调整

1.1 转动关阀转矩调整钉4, 使箭头指向“小”字处。

1.2

电动操作电装, 作关方向转动, 若阀杆尚未转动或阀门未关严关到位, 而转矩控制器关向微动开关被压下动作, 则说明输出转矩值偏小, 可微调调整钉(向“大”方向转动一格), 再电动操作, 逐步增大输出转矩值, 直到阀门关严为止。

2. 关闭位置采用机械限位时, 转矩机构的调整, 见图8

2.1 手动操作电装, 使阀门处于关闭位置(精确位置)。

2.2 调节关向调节螺钉4, 使螺钉刚好碰到蜗轮上凸台后, 拧紧螺母5及盖形螺母7。

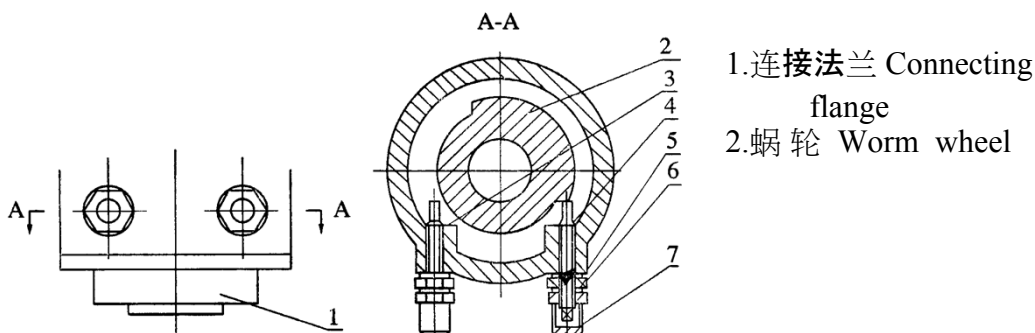
2.3 转矩控制器调整方法参见上述第1条, 逐步增大输出转矩值直到阀门能转到位为止。

2.4

补充说明: 转矩控制器调试好后, 若还需对阀门位置作少量调节, 可以微调机械限位调节螺钉, 这时转矩控制器可不再另作调整。

3.

开向位置采用转矩控制或机械限位时, 调整方法参见上述第1、2条, 不同的是应调整转矩控制器的开向调整钉及机械限位的开向调节螺钉。



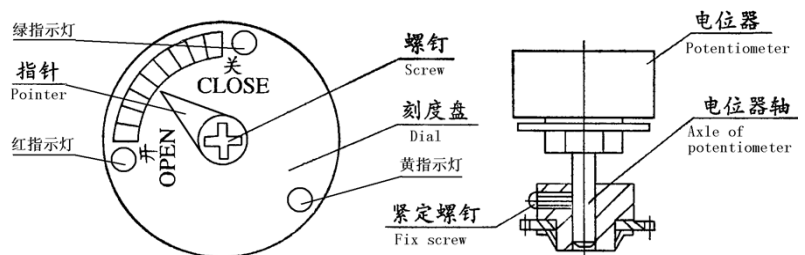
- 3.开向调节螺钉 Setting screw for opening
- 4.关向调节螺钉 Setting screw for closing
- 5.螺母 Nut
- 6.密封垫 Sealing pad
- 7.盖形螺母 Gland nut

Torque limit is shown in Fig.7. Torque limit of this device has been preset according to rated torque value before leaving factory and does not need resetting usually. If field resetting is required, it will be carried out as following:

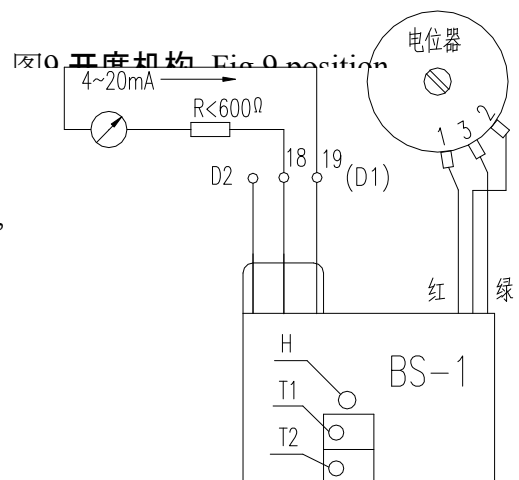
1. Adjustment for closing stopped by torque limit.
  - 1.1 Rotate adjusting screw 4 for closing torque and make the arrow point to “min”;
  - 1.2 Then operate the valve closing by electric drive. If microswitch of torque limit is pressed to act and the valve stem does not rotate or the valve does not close to seat, it means that the torque value preset is too small. The setting screw may be adjusted (move a scale towards max) , operate the valve by electric drive once again. Increase the output torque value gradually in this way until the valve is seated.
2. Adjustment for closing by mechanical stopping (Fig.8)
  - 2.1 Operate the valve by handwheel until it is seated (precise position).
  - 2.2 Adjust the setting screw 4 for closing and make it just touch the project part of output shaft. Then tighten nut 5 and gland nut 7.
  - 2.3 Increase the output torque value gradually in the same way as described in 1 until the valve is seated.
  - 2.4 Addition: After the torque limit is set up, if the position of valve needs a little resetting, setting screw may be reset and torque limit does not need resetting.
3. Adjustment for opening stopped by torque limit or mechanical stopping is the same of 1 and 2 for closing. Instead of adjusting screw and setting screw for closing, adjusting screw for opening on torque limit and setting screw for opening need adjusting.

(三)开度机构的调整 Adjustment of position indicator

1.开度刻度盘调整, 见图9。当行程控制机构调整完成后, 把阀门关闭到“全关”位置, 目视检查刻度盘上的“关”刻度是否与指针对正, 如没有对正, 松开刻度盘上的螺钉, 转动指针, 使指针与“关”刻度对正, 然后旋紧刻度盘上的螺钉。



Adjustment of dial, see Fig9  
 After adjusting of travel mechanism is finished, Close the valve to “complete closing” position and check by eyeballing if the “close” scale on dial aims at the pointer. If it does not , loosen the screw on dial and rotate the pointer to make it aim at the “close” scale on dial and then tighten the screw.



## 2. 阀位变送器BS-

1的调整, 见图10。阀位变送器的取样电位器选用高精度导电塑料电位器WDD32, 其独立线性度 $<1\%$ , 寿命 $10\times 10^6$ 次。

图中18、19为接线端子号, H为指示灯, 其亮度随输出电流的增大而变亮。调整方法如下:(以输出轴顺时针转动为关阀为例)使阀门处于全关位置, 关方向旋转取样电位器轴,使输出电流从大到小接近4mA(导电塑料电位器无限位)调节T1, 直至输出电流精确为4mA; 打开阀门至全开位置, 调节T2, 直至输出电流精确为20mA。如果输出轴逆时针转动为关阀, 则电位器的调节旋向应相反。

For the adjustment of position signal transmitter, refer to Fig.9

WDD32 sampling potentiometer of position transmitter is electric conductive plastic potentiometer of high precision. (independent linearity  $<1\%$ , service life:  $10\times 10^6$  cycles) 18、19 in the Fig. is the code of terminal. H is indicating lamp, which gets brighter as output current increases. The adjusting is as following: (Take seating of valve by clockwise rotation of output shaft as example) Make valve seated, turn the axle of sampling potentiometer to make output current vary to approach 4mA (Conductive plastic potentiometer has no rotation limit). Regulate T1 until output current is accurate 4mA. Unseat the valve to complete opening to regulate T2 until output current is accurate 20mA. If counterclockwise rotation of output shaft providing valve seating is required, the rotation of potentiometer regulation should be vice versa.

图10 阀位变送器 Fig.10 transmitter

## 九、注意事项 Cautions

打开电气箱盖时,现场/远控旋钮需处于断开位置。

Before opening the electrical compartment, the local/remote knob shall be in disconnected condition.

1. 力矩、行程控制器调整完毕, 安装电气安装板时需拧紧螺钉, 以保证现场、远控旋钮, 开关旋钮操作时正确到位。

When the adjustment of torque limiter and travel limiter is finished, the installation board shall be fixed and tightened with screws to ensure the proper and accurate operation of local /remote selecting knob and open/close selecting knob.

2. 调整力矩、行程控制器翻转电气安装板时, 需注意控制连线, 以免受损。

When turning over the installation board to adjust torque limiter and travel limiter, take care of the wiring of control line to avert damaging.

3. 防爆型专用电缆引入装置见图11, 非防爆型专用电缆引入装置见图12。

Entrance of cable for flame-proof model, see Fig.11. Entrance of cable for other models, see Fig.12.

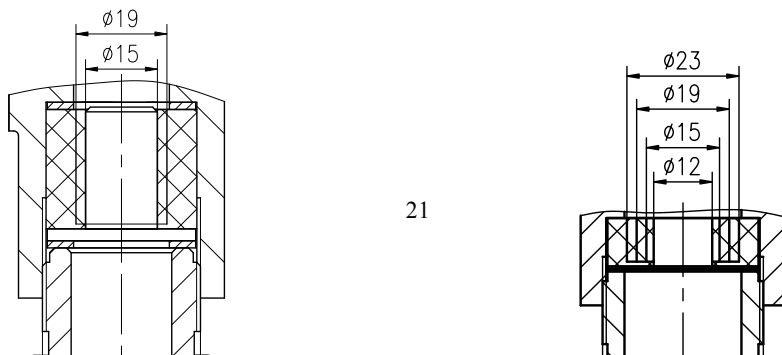


图11. 电缆引入装置(防爆型专用)

图12. 电缆引入装置(非防爆型专用)

Fig.11 entrance of cable (flame-proof)

Fig.12 entrance of cable (other)

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