

DQ200～DQ25000

叠加式部分回转阀门电动装置

使用说明书

OPERATION MANUAL FOR

TYPE DQ200～DQ25000 ELECTRIC COMBINED

PART-TURN VALVE ACTUATORS



常州电站辅机股份有限公司

CHANGZHOU POWER STATION AUXILIARY EQUIPMENT CO., LTD.

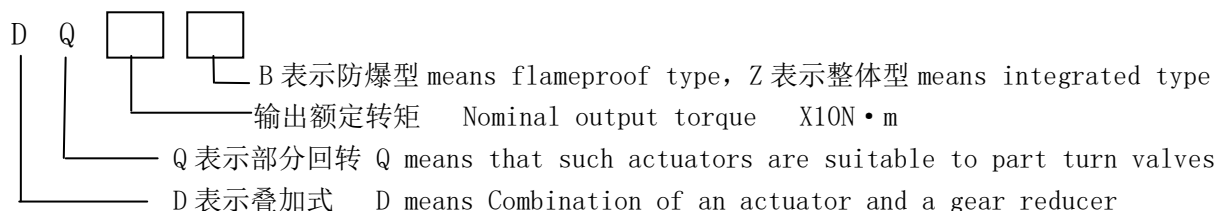
一. 概述 General Description

DQ 型阀门电动装置由第一级 ZB、ZC 型多回转阀门电动装置和第二级 DJA 型叠加减速器两部分组成，是我公司广泛吸取了国内外阀门控制的先进经验而设计的产品。具有结构紧凑，性能可靠，调整方便等特点。性能指标达到 GB/T24923-2010 标准。

该系列阀门电动装置用于阀瓣做部分回转运动的阀门，如球阀、蝶阀、风门等，是对阀门实现远控、集控和自控的必不可少的驱动装置，是工业管道系列控制中的重要单元，广泛应用于电站、石油、化工、冶金等行业。

Type DQ electric valve actuator is a combination of the first stage (a multi-turn electric valve actuator of type ZB or ZC) and the second stage (a gear reducer of type DJA). DQ series products are a new generation developed by us. Adopting advanced valve control technology at home and abroad, these products are of compact structure, reliable performance and easy adjustment. The performance index is conformed to Std GB/T24923-2010. This series is applicable to part-turn valves, such as ball valves, butterfly valves and dampers and is necessary drive device to carry out local control, centralized control and automatic control of valves, and so it is an important unit for industry pipe-line control system and is adopted extensively in power station, oil industry, chemical industry, metallurgical industry and so on.

二. 型号表示方法 Meanings of Type



三. 工作环境 Service Environment

1. 电源：三相四线，380V，50Hz（特殊订货可 415V、660V 等，频率可 60Hz）
Power: 3-phase, 4-line, 380V, 50Hz (415V, 660V, 60Hz for special order)
2. 工作环境：（如果是防爆型，请见第一级电动装置的说明书）
Service environment: (As for flameproof type, refer to operation of the first stage (the multi-turn electric valve actuator))
 - 2.1 环境温度：-20~60℃
Environmental temperature: -20~60℃
 - 2.2 环境相对湿度：≤90%（25℃时）
Permitted relative humidity no more than 90% (25℃)
 - 2.3 工作环境不含有腐蚀性、易燃、易爆的介质；
No corrosive, flammable and explosive media.
 - 2.4 防护等级 IP55
Protection IP55
3. 短时工作制，时间定额为 10 分钟；
Short-time duty, rated time 10 minutes.

四. 结构 Construction

第一级配用电装结构见 ZB、ZC 型相应说明书，DJA 型叠加减速器结构见图一。通过调节两撞销 6、8，可精确地调整电装输出轴的起始及终了位置。

The construction of type DJ reducer refer to Fig. 1, (The actuator of first stage see corresponding instruction manual). To adjust the two pins of 6 and 8 can regulate accurately start position and stop position of output shaft.

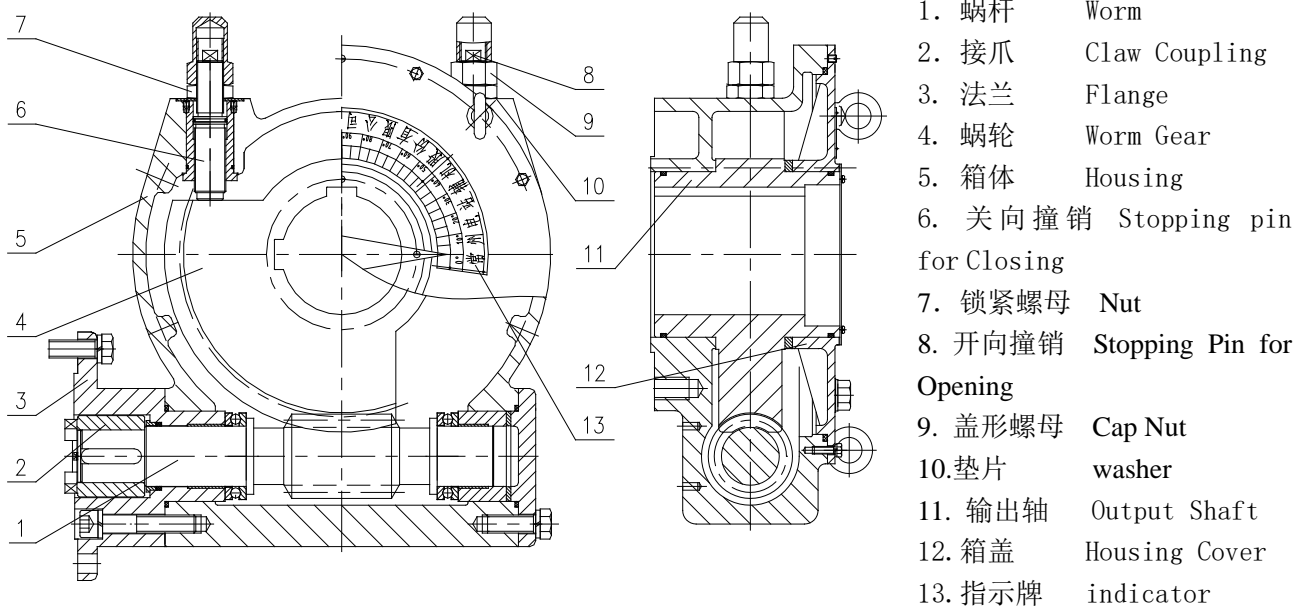


图 1. DJ 型叠加减速器结构简图 Fig.1 Scheme of Type DJ Reducer

五. 主要技术参数 Main Technical Parameters

型号 Type	额定转矩 Nominal Torque N·m	输出速度 Output Speed r/min (S)	手动速 比 Hand Oper Ratio	减速器 Reducer		第一级电装 Valve Actuator	电机功率 Motor Power kW	重量 WT kg
				型号 Type	速比 Ratio			
DQ200	2000	0.468 (31S)	37	DJ1A	37	ZB20-18/10	0.37	140
DQ400	4000	0.316 (48S)	57	DJ2A	57	ZB30-18/20	0.37	150
DQ600	6000	0.316 (48S)	57	DJ2A	57	ZB35-18/20	0.55	160
DQ800	8000	0.327 (46S)	2035	DJ3A	55	ZC45-18/20	0.75	240
DQ1000	10000	0.327 (46S)	2035	DJ3A	55	ZC60-18/20	1.1	250
DQ1600	16000	0.31 (48S)	2146	DJ4A	58	ZC90-18/20	1.5	340
DQ2000	20000	0.31 (48S)	2146	DJ4A	58	ZC120-18/20	2.2	350
DQ3200	32000	0.333 (45S)	2214	DJ5A	54	ZC250-18/20	4	510
DQ4000	40000	0.333 (45S)	2214	DJ5A	54	ZC250-18/20	4	510
DQ6300	63000	0.26 (58S)	2829	DJ6A	69	ZC250-18/20	4	770
DQ8000	80000	0.26 (58S)	5658	DJ6A	69	*ZC360-18/20	5.5	950
DQ12500	125000	0.168 (89S)	8758	DJ7A	80	*ZC500-13/22	5.5	1300
DQ16500	165000	0.168 (89S)	8758	DJ7A	80	*ZC660-13/22	7.5	1320
DQ25000	250000	0.104(145S)	14250	DJ8A	84	*ZC1030-8.7/22	7.5	2830

说明：1、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。

Note: 1.The motor starting current and maximum current is about 7 times the rated value, the operation of the current is too large is a normal phenomenon.

2、如果是防爆型或整体型，需在型号的后面加上相应的字母。 For flameproof type or integral type, it is needed to add corresponding letters to the end of type code.

3、带“*”的规格包含行星减速器。 Specifications with * include planet reducer.

六. 外形和连接尺寸 Overall Size and Connection Dimensions

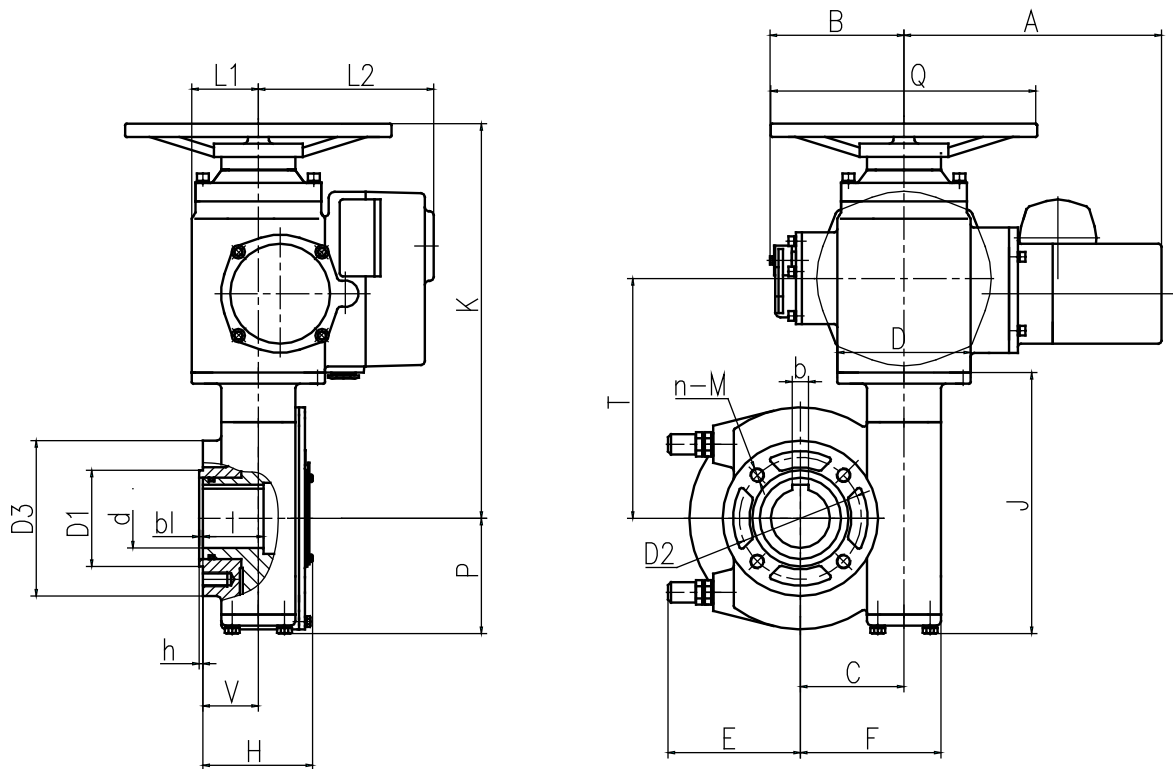


图 2. DQ200~DQ600 外形和连接尺寸

Fig.2 Overall Size and Connection Dimensions of DQ200~DQ800

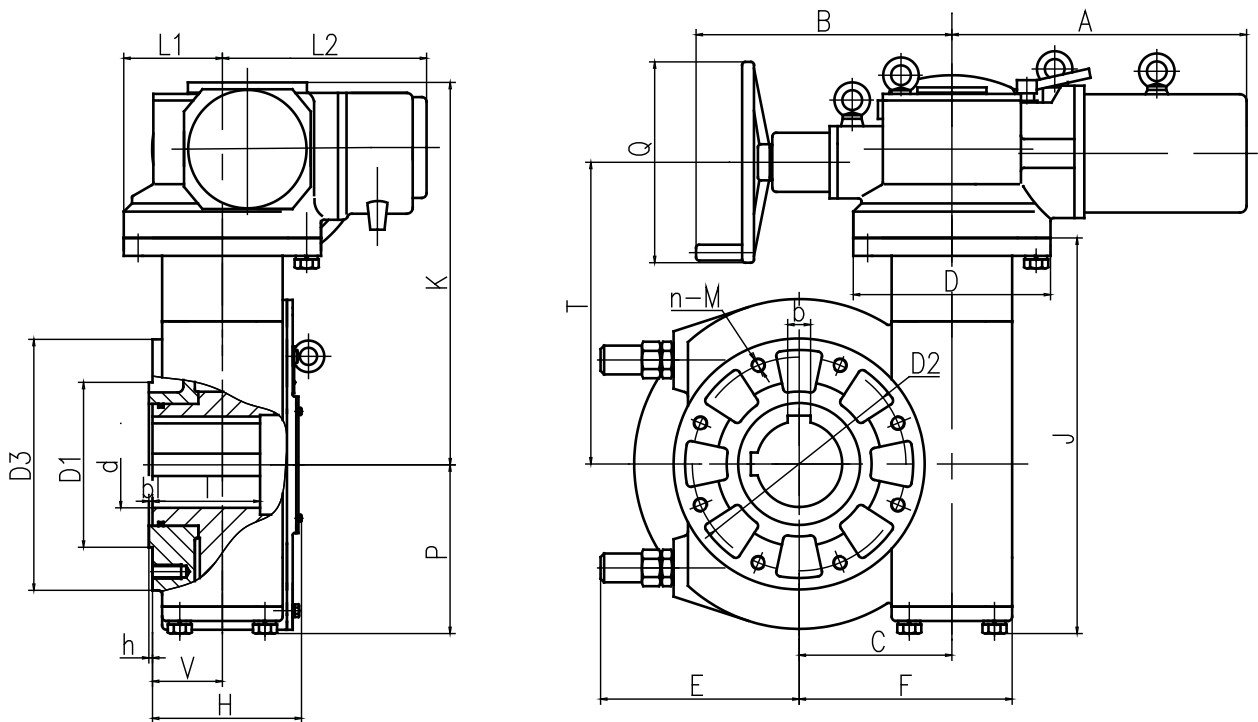


图 3. DQ800~DQ25000 外形和连接尺寸

Fig.3 Overall Size and Connection Dimensions of DQ800~DQ25000

外形尺寸表 Overall Size

型号 type	A	B	C	D	E	F	H	J	K	L1	L2	P	Q	T	V
DQ200	347	185	100	Φ140	162	160	190	290	499	90	237	128	Φ360	289	88
DQ400	347	185	140	Φ180	179	190	150	353	533	90	237	156	Φ360	324	75
DQ600	372														
DQ800	485	397	170	Φ225	203	229	160	408	441	112	296	175	Φ280	327	76
DQ1000															
DQ1600	485	397	213	Φ275	273	297	208	552	523	138	296	237	Φ280	410	98
DQ2000															
DQ3200	525	426	268	Φ330	315	358	253	750	712	165	335	279	Φ400	583	128
DQ4000															
DQ6300	525	426	335	Φ330	356	450	293	856	766	165	335	331	Φ400	637	145
DQ8000	543	403		Φ380				746	815	208	412		Φ400	910	
DQ12500	585	426	465	Φ380	415	605	325	1192	1007	165	335	426	Φ400	878	153
DQ16500															
DQ25000	608	426	582	Φ510	547	752	431	1198	1270	255	429	595	Φ400	1070	201

连接尺寸表 Connection Dimensions

型号 type	D1 (f8)	D2	D3	d(H9)	b×l	b1	h	n-M	法兰号 F	
DQ200	Φ100	Φ140	Φ175	Φ60	18×90	5	4	4-M16	F14	
DQ400	Φ130	Φ165	Φ210	Φ80	22×80		5	5	4-M20	F16
DQ600										
DQ800	Φ200	Φ254	Φ300	Φ100	28×110		5	5	8-M16	F25
DQ1000										
DQ1600	Φ230	Φ298	Φ350	Φ120	2-32×150		5	5	8-M20	F30
DQ2000										
DQ3200	Φ260	Φ356	Φ415	Φ160	2-40×200		5	5	8-M30	F35
DQ4000										
DQ6300	Φ300	Φ406	Φ470	Φ180	2-45×250	8	8	8-M36	F40	
DQ8000										
DQ12500	Φ370	Φ483	Φ560	Φ220	2-50×280	8	8	12-M36	F48	
DQ16500										
DQ25000	Φ470	Φ603	Φ686	Φ280	2-63×285	8	8	20-M36	F60	

说明：1. 图2和图3所示为正向安装（所谓正向安装即输出轴顺时针转动为关阀方向）关阀位置。

2. 均布连接螺孔数为4、8、12、20时，其中一只螺孔与水平线的夹角分别为45°、22.5°、15°、9°。螺孔的深度≥螺孔公称直径的1.8倍。

Captions:

1. What showed in Fig. 2 and Fig. 3 refers that DQ200~DQ16500 are all positively mounted and valves are seated. (What is called positive mounting is such case that output shaft is vertical and it rotates clockwise to close valve as viewed downward.)
2. As showed in Fig. 2 and Fig. 3, the amount of screw-eyes equally distributed is 4, 8, 12 or 20 and one of them makes correspondingly an angle of 45°, 22.5°, 15°, 9° with horizontal line. The depth of screwed hole ≥ 1.8 Nominal screw diameter.

七. 电气原理及接线

Principal of electricity and wiring diagram

电气原理及接线见配套的第一级电动装置的使用说明书。

Principal of electricity and wiring diagram see the operation manual for first stage electric valve actuators.

八. 调整 Adjustment

由于本装置需与阀门组装, 组装后运行前须对电动装置的行程机构, 力矩机构和开度指示机构进行调整。

如果阀门的全开和全关位置均由行程机构来控制, 则力矩机构不用调整。如果阀门的全关位置由力矩机构来控制或全开、全关位置均由机械限位来控制, 则力矩机构须重新调整。

1. 阀门的全开、全关位置若由行程机构或力矩机构来控制, 则在调整行程或力矩之前需旋松机械限位(即图 1 中的撞销)。
2. 阀门的全开、全关位置若由机械限位来控制并由力矩机构发信, 则调整方法如下:
手动操作电装, 使阀门处于预定位置;
调节相对应的机械限位(撞销), 使它刚好碰上输出轴, 并拧紧撞销的锁紧螺母和盖形螺母;
调整力矩机构, 逐步增大输出力矩值, 直到阀门能转到位为止。
3. 开度指示机构的调整见第一级电动装置使用说明书。

As this device is assembled with the valve, travel limit, torque mechanism and position indicator must be adjusted respectively before going into operation.

If opening and seating of valve is controlled by travel limit, torque mechanism need not resetting. If the seating of valve is controlled by torque mechanism, or opening and seating of valve is controlled by limit mechanism, torque mechanism must be reset.

1. As opening and seating of valve is controlled by travel or by torque mechanism (without limit mechanism), limit mechanism (i.e. stopping pin) must be loosened before the resetting of travel limit and torque mechanism.

2. As opening and seating of valve is controlled by limit mechanism and signal is transmitted by torque mechanism, regulate as following:

2.1 Operate the valve to predetermined position by handwheel.

2.2 Adjust corresponding limit mechanism (stopping pin), make it just meet with projection of output shaft, then tighten lock nut and cap nut of stopping pin.

2.3 By increasing gradually from scale interval 1 on, regulate the torque mechanism until the valve operates to predetermined position.

3. Adjustment of position indicator to Operation Manual for the first stage electric valve Actuators.

九. 安装及注意事项 Mounting and Caution

1. 本装置安装时应考虑便于接线, 调试和手动操作。
2. 本装置与阀门连接时, 应注意阀杆伸出部分与法兰平面的垂直度, 阀杆与法兰止口的同轴度及阀杆与装置输出轴孔的配合是否符合要求。
3. 安装后必须按本说明书及第一级阀门电动装置使用说明书的调试要求进行逐项调试, 检查各部件正常后才能投入使用。
4. 主要故障及排除方法参见第一级阀门电动装置使用说明书。

5. 润滑采用半流体复合钙基齿轮脂，润滑情况每年检查一次，如无异常可继续使用。
 6. 使用电装内部的机械限位机构时，输出轴的标准回转角度为 90° ，调节机械限位的调节螺钉，可使输出轴的起始或终止点在 $\pm 5^\circ$ 范围内变动。
 7. 本产品与阀门连接所用螺钉其强度级别不得低于 8.8 级，推荐拧紧力矩当 M16 为 $200\text{N}\cdot\text{m}$ ，M20 为 $380\text{N}\cdot\text{m}$ ，M30 为 $1300\text{N}\cdot\text{m}$ ，M36 为 $2300\text{N}\cdot\text{m}$ 。
1. The mounting of this device should be convenient to wiring, adjustment and hand operation.
 2. When this device is connected with valve, the extension of valve stem should be perpendicular to flange surface, coaxiality between valve stem and flange cylindrical surface, fit between valve stem and axle hole should conform to requirement.
 3. After assembling, this device should be debugged according to Operation Manual for the first stage electric valve actuators item by item. Only when all parts are normal, this device may go into operation.
 4. Trouble and troubleshooting refer to Operation Manual for the first stage electric valve actuators.
 5. The lubricant is semifluid combined calcium-base grease, the lubrication should be checked once every year. It can go on operating if no abnormality occurs.
 6. The internal mechanical limit allows a standard rotation of 90° for output shaft. Regulating the adjusting screw of mechanical limit makes starting point or stopping point of output shaft changes between $\pm 5^\circ$.
 7. The actuator is connected with the valve by screws of ≥ 8.8 strength level. $200\text{N}\cdot\text{m}$ of tighten up torque for M16 is recommended; and $380\text{N}\cdot\text{m}$ for M20; and $1300\text{N}\cdot\text{m}$ for M30; and $2300\text{N}\cdot\text{m}$ for M36.

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