

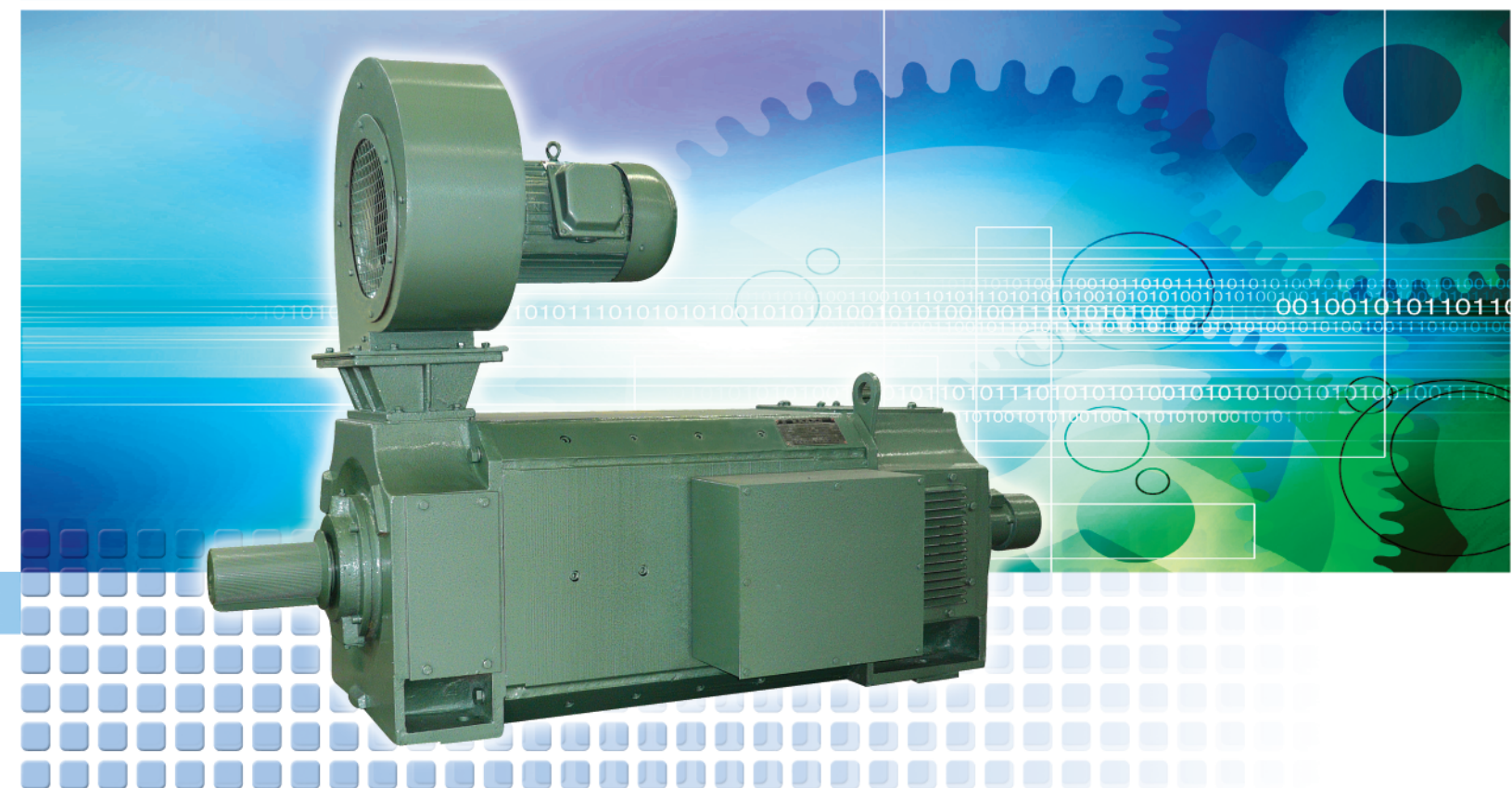


主要产品

- 电机 ● Z4系列直流电机、Z系列直流电机、ZZJ-800系列轧机辅传动直流电机、ZFQZ系列频繁起制动直流电机、ZSN4系列水泥回转窑主传动直流电机、ZBL4系列全封闭直流电机、ZYS系列测速发电机。
- 电控 ● 高速线材、冷（热）带连轧、拉矫机、镀锌线、酸洗线、方管线、横纵剪机、平整机、成缆机、铜（铝）连铸连轧、热磨机、缠丝机、塑料挤出机、造纸机、矫直机、离心机等自动化生产线的设计。
- 电抗器 ● 直流调速器配套用电抗器、变频器配套用电抗器、补偿电抗器、平波电抗器、三相变压器、滤波器。

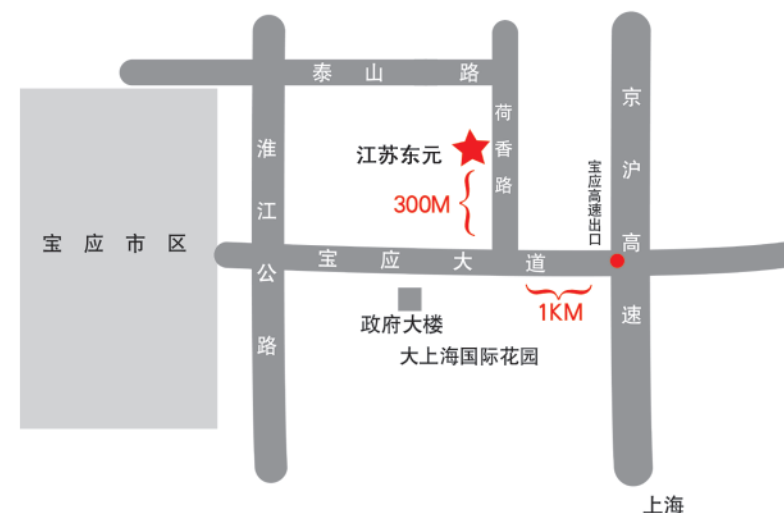
ZFQZ 系列频繁起制动直流电动机

ZFQZ SERIES FREQUENTLY STARTING/BRAKING DC MOTOR



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江苏东元电机电控有限公司
Jiangsu Dongyuan Electrical Motor and Control System Co., Ltd.

【公司简介】

江苏东元电机电控有限公司是集科、工、贸一体的技术生产型企业。专业从事直流电机、特种电机及工业自动化控制的设计、制造和销售，在电机及电气自动化领域拥有较高的知名度与良好的信誉，通过ISO9001：2000质量体系认证，拥有企业自主进出口权。

我公司主要产品有：直流电机、自动化控制、电抗器三大类。其中直流电机是本公司的重点产品，具体分为：Z系列中型直流电机、Z4系列直流电机、Z2直流电机、ZZJ-800系列轧机辅传动直流电机、ZFQZ系列频繁起制动直流电机、ZSN4系列水泥回转窑直流电机、ZBL4系列全封闭直流电机及其他派生直流电机。公司融计算机技术、现代自动化控制技术为一体，采用PLC、触摸屏、工控机等控制方式，自行设计、开发自动化成套工程项目，为冶金、线缆、塑料、水泥、造纸、化工、电工等行业提供直流电机及配套电气自动化控制的服务。

“以质取胜、追求卓越、诚信为本、开拓创新”是与客户合作及公司发展的宗旨。我公司以精良的设备、先进的工艺、科学的管理以及现代化的检测手段打造优质产品，愿与全国新老客户及海外客商真诚合作，共创“双赢”。

BRIEF INTRODUCTION

Jiangsu Dongyuan Electrical Motor and Control System Co., Ltd. is a manufacturing enterprise dedicated in the design, manufacture and sales of DC motors, specialty motors and industrial automation controls. It enjoys a high reputation and popularity in the field of motors and electrical automation. Dongyuan is ISO9001:2000 certified, and has been granted the license for direct export business.

Our main products include DC motors, automation controls and reactors. Among them, the DC motors are the key products, and include Z series DC motors, Z4 series DC motors, Z2 DC motors, ZZJ-800 series auxiliary transmission DC motors, ZFQZ series frequent start DC motors, ZSN4 series DC motors for cement rotary kilns, ZBL4 series fully-sealed DC motors and other derivative DC motors. Combining computer technologies with the modern automation control technologies, Dongyuan adopts the PLC, touch screens, industrial control machines and other modes of control. It has designed and developed automation projects in complete sets all by itself, providing DC motors and supporting electrical automation controls for metallurgical industry, cables & wires industry, plastics, cements, paper making, chemical industry, electric power industry and others.

In the cooperation with customers and in the course of its growth, Dongyuan adheres to the principle of “winning with quality, pursuing the best, stressing good faith and maintaining a pioneering and innovative spirit”. With the sophisticated equipment, advanced technologies, scientific management and modern test and inspection facilities, Dongyuan has been trying to make higher quality products, and is ready to work closely and in good faith with all customers, old and new, at home and abroad, to achieve a win-win situation.



概述 General description

ZFQZ系列直流电动机是在Z4系列直流电动机的基础上，借鉴ZZJ-800系列直流电动机的主要工艺而开发的系列产品。电机的转动惯量分别为ZZJ-800系列和ZZJ-900系列的45%和65%，适应频繁正逆转和频繁起制动的恶劣工况。电机具有优良的过载特性，其最大转矩和起动转矩分别是ZZJ-800系列和ZZJ-900系列的112%和117%。电机重量仅为ZZJ-800系列的65%。电机功率等级符合IEC34-13《起重、冶金用辅机电动机技术规范》的国际标准。电机外形尺寸除了两底脚孔间轴向尺寸“B”之外，均符合IEC72国际标准。电机通过带底板可达到ZZJ-800和ZZJ-900系列相一致的主要安装尺寸。并可通过协商制成ZZJ-800和ZZJ-900系列相对应的轴伸尺寸，因而可替换ZZJ-800和ZZJ-900系列产品。

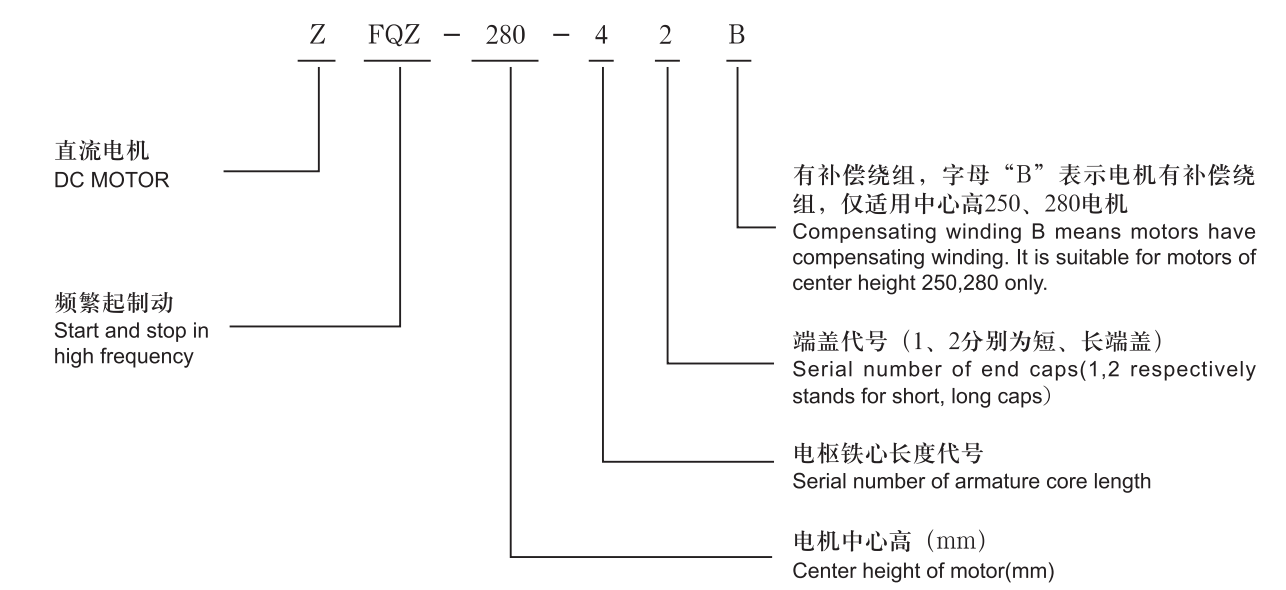
Series ZFQZ DC motors are developed on the basis of Z4 series and ZZJ-800 Series DC motors. The rotating inertia of the motors is 45% and 65% of the motors of Series ZZJ-800 and ZZJ-900 respectively . The motors are suitable for direct & reversal rotation and start & stop in high frequency in a bad working circumstance . The motors are good-overloading. The max. rotating moment and the starting moment are 112% and 117% of the moments of Series ZZJ-800 and Series ZZJ-900 motors respectively . The weight of the motors is just 65% of the Series ZZJ-800 motors .The class of the motor power is in accordance with the international standard IEC34-13“Technical Criteria of Auxiliary Machine and Hoisting and Metallurgy”Outline mounting dimensions of the motors comply with IEC 72 Standard, except for the axial distance between the mounting holes(dimension B). The mounting dimension of the motors with bottom plates is able to be in compliance with the dimension of Series ZZJ-800 and Series ZZJ-900 motors. Also, the shaft extension dimension of the motors can be customized into the corresponding dimension of Series ZZJ-800 and Series ZZJ-900 motors after discussion with customers. Therefore , Series ZFQZ DC motors can substitute for Series ZZJ-800 and Series ZZJ-900 motors.

使用条件 Working conditions

- 1、电动机适用于环境空气温度为-30℃到+40℃，海拔不超过1000米的场所。
- 2、电动机的供电电源采用静止整流电源或直流发电机电源。当采用三相全控桥式整流电源时，可不外接平波电抗器而长期工作。

1. The allowable ambient temperature for the operation of the motors is -30℃~ +40℃ and the allowable sea level is not higher than 1000m.
2. The supplying electric source of the motors adopts rectified electric source or DC generator electric source. When adopting 3-phase, fully controllable bridge rectified electric source, motors can work for a long period without outer smoothing reactor.

一、型号说明 Type description



二、产品性能 Products performance

- 1、电动机的额定电压有220V，440V两种。根据需要也可派生出其他等级电压。
 - 2、电动机的励磁方式为他励，励磁电压为180V或310V。根据需要也可派生出其他等级电压。
 - 3、电动机基速时允许按技术数据表规定的最大运行转矩运行，历时60s。
 - 4、额定电压为220V的电机，可以提高外施电压，使转速增加到额定转速2倍，此时允许最大运行转矩为额定转矩的1.8倍，历时15s。
 - 5、额定电压220V的电动机按技术数据表规定的弱磁转速运行时最大运行转矩为额定转矩的0.6倍，历时15s。
 - 6、电动机的电流变化率 ($\frac{di}{dt}$) 可达到200—250倍额定电流/秒。若需要 $\frac{di}{dt} > 250$ ，可以协商解决。
 - 7、电动机的出现盒标准位置从传动端视在机座右侧。根据需要，也可装于机座左侧，但需要在订货时说明。
1. There are 2 kinds of rated voltage of motors: 220V, 440V, As required, the motors with other voltage level can be produced.
 2. The mode of excitation of motors is separate excitation . The voltage of excitation is 180V or 310V. As required ,the motors with other voltage level can be produced.
 3. The motors running at basic speed can reach max. rotating moment regulated in the Technical Data Table . It will last 60s.
 4. For the motors of rated voltage 220V, the rotating speed can reach as 2 times as the rated rotating speed through increasing the applied voltage . At this time , the allowable max. rotating moment is as1.8 times as the rated rotating moment. Itwill last 15s.
 5. For the motors of rated voltage 220V , the max. rotating moment is as 0.6 times as the rated rotating moment when the motors are running with low-intensity magnetic rotation regulated in the Technical Data Table. It will last 15s.
 6. The electric current changing rate ($\frac{di}{dt}$) of the motors can reach as 200-250 times as the rated electric current changing rate. It can be discussed if $\frac{di}{dt} > 250$ is required.
 7. The standard position of wire outlet box of the motors is on the right of the machine baseplate seen from the drive end. If required , it can be mounted on the left of the machine baseplate . If so, this requirement should be stated in the order.

三、结构特点 Structure features

- 1、电动机的机座为八角形薄钢板迭片结构，具有定子空间利用率高，内部结构紧凑。转动惯量小、重量轻、适应可控硅供电等优点。
 - 2、电动机全部带补偿绕组，使电机有优良的换向性能和过载能力。
 - 3、电动机的绝缘等级为F级，并经无溶剂真空压力浸漆（VPI）处理。绕组绝缘具有良好的绝缘性能和机械强度。
 - 4、换向片为竖板整体结构，竖板与电枢线圈连接采用钨极惰性气体保护焊（TIG）。
 - 5、电枢铁心采用斜槽结构，能有效减小振动和噪音。
 - 6、电动机采用滚动轴承及不停机加油结构。
1. The motor baseplate is of octagon Laminated thin steel plate structure.Therefore,it has many advantages such as high utilization of stator room,tight inner structure,small rotating inertia,slight weight and suitability for supplying electricity by controllable silicon.
 2. All the motors have compensating winding,which makes motors have a goog ability of commutation and overload.
 3. The insulating level of motors is Level F.The insulation of motors is handled by VPI.The winding has a goog insulation and mechanical intensity.
 4. The commutator segment is of vertical plate and integral structure.The connection with the vertical plate and armature coil adopts TIG
 5. The armature core is of skewed slot structure,which is able to decrease vibration and noise.
 6. The motos is of rolling bearing and oil—filling without stopping motors structure.

四、工作制、防护等级、冷却方法和安装形式
Working system,Protection Level,Cooling Mode and Mounting Type

电机为连续工作制（S1），其他工作制可按表（1）对技术数据表中的值进行折算。
The motors adopt continuous working system.Other working systems can convert the data in the Technical Data Table according to the Table 1.

表 1 (Table 1)	
工作制 working System	负载增加 overload increasing
S2—30min	107%
S2—60min	100%
S3—40%	120%
S3—60%	110%

电机冷却方式均为他冷。强迫通风，即电机自带径向骑式鼓风机或管道通风或带空/水冷却器。其防护等级和冷却方式的对应关系见表2.所需要的冷却风量。风压及风机电动机的功率见表3，空/水冷却器循环风机功率冷却水流量见表4
All the cooling modes of the motors are of separately-cooling and forced ventilation type.It means the motors are equipped with radial ride type air blower,duct ventilation cooler or air/water cooler.The corresponding relations between the protection level and cooling mode are shown in Table2.The ventilation quantity,ventilation pressure and air blowe power of the cooler are shown in Table 3.The recyling air blower power and cooling water discharge of the air/water cooler are shown in Table4.

表 2 (Table 2)		
	防护等级 Protection Level	冷却方式 Cooling Mode
径向骑式鼓风机冷却 Radial Ride Type Air Bolwer Cooling	IP21S	IC06
单管风Single—duct Ventilation	IP23S	IC17
双管风Double—duct Ventilation	IP44	IC37
带空/水冷却器WithAir/Water Cooler	IP44	ICW86

表 3 (Table 3)

机座号 Baseplate NO	风量 (m³/hr) Ventilation Quantity	静压 (Pa) Static Pressure	电动机功率 (kw) Motor Power	重量 (kg) Weight
ZFQZ-250	3000	1400	3	70
ZFQZ-280	4000	1600	4	80
ZFQZ-315	4860	1600	5.5	90
ZFQZ-355	5200	1600	5.5	120
ZFQZ-400	7200	1800	5.5	180
ZFQZ-450	9000	1800	7.5	250

* 注：风机电动机为三相二级380V。

* Note:The motors of air blower adopt 3-phase, 2-electrode and 380V

表 4 (Table 4)

冷却器型号 Cooler Type	风机电动机 Air Bower Motor	冷却水流量 (m³/h) Cooling Water Discharge	重量 (kg) Weight
KSL-250	4.0kw	11	400
KSL-280	5.5kw	12	500
KSL-315	5.5kw	13	600
KSL-355	7.5kw	15	750
KSL-400	7.5kw	18	850
KSL-450	11kw	19.5	950

* 注：风机电动机为三相二级380V。

* Note:The motors of air blower adopt 3-phase, 2-electrode and 380V

用户如需要其他类型工作制、防护等级、冷却方式和安装形式可另行协商。

If other working system, protection level, cooling mode and mounting type are required, it should be discussed separately.

五、附件 Attachments

根据用户需要,本系列电动机可配套供应测速元件、超速保护装置、加热器和测温、限温保护元件等。

As required, this series of motors can be equipped with tachocomponents, over-speed protection device, heater and temperature-measurement, temperature-limit components

技术数据表（A）

(与ZZJ-880和ZZJ-900系列相对应规格)

型号 Type	额定 功率 Rated Power	额定 电压 Rated Voltage	额定 转速 Rated Rotating Speed	弱磁 转速 Low- intensity Magnetic Rotating Speed	额定 电流 Rated Current	额定 转矩 Rated Rptating Moment	最大 运行 转矩 Max Running Rotating Moment	起动 转矩 Starting Rotating Moment	电枢回 路电阻 Armature Circuit Resistance	电枢回 路电感 Armature Circuit Inductance	励磁 功率 Excitation Power	转动 惯量 Rotating Inertia	重量 Weight
	KW	V	r/min		A	kNm			20℃ mΩ	mH	KW	kgm²	kg
ZFQZ-250-081B	37.3	220	575	1725	220	0.62	1.86	2.17	130.7	0.93	2.10	0.95	710
		440	575	1150	112				541.4	3.7			
ZFQZ-250-21B	52	220	550	1650	288	0.91	2.73	3.19	77.1	0.62	2.75	1.4	900
		440	550	1100	144				329.5	3.4			
ZFQZ-280-12B	75	220	515	1300	415	1.39	4.17	4.87	54.8	0.51	3.10	2.5	1170
ZFQZ-280-11B	75	440	515	1050	202				208.6	2.3			
ZFQZ-315-082	112	220	500	1250	614	2.14	6.42	7.49	34.4	0.48	4.5	4.1	1720
ZFQZ-315-081	112	440	500	1000	300				134.9	2.0			
ZFQZ-315-22	150	220	480	1200	795	2.99	8.97	10.5	22.5	0.39	4.35	6	1960
ZFQZ-315-21	150	440	480	960	393				89.5	1.4			
ZFQZ-355-092	186	220	435	1100	982	4.09	12.3	14.3	17.7	0.34	4.20	9.2	2520
ZFQZ-355-091	186	440	435	870	488				73.8	1.3			
ZFQZ-355-42	280	440	390	780	720	6.86	20.6	24	42.3	0.9	6.5	15	3720

技术数据表 (B) Technical Data Table (B)

型号 Type	额定 功率 Rated Power	额定 电压 Rated Voltage	额定 转速 Rated Rotating Speed	额定 电流 Rated Current	额定 转矩 Rated Rptating Moment	最大运 行转矩 Max Running Rotating Moment	起动 转矩 Starting Rotating Moment	电枢回 路电阻 Armature Circuit Resistance	电枢回 路电感 Armature Circuit Inductance	励磁 功率 Excitation Power	转动 惯量 Rotating Inertia	重量 Weight
	KW	V	r/min	A	kNm	kNm		20℃mΩ	mH	KW	kgm²	kg
ZFQZ-450-42	600	725	600	880	9.55	28.7	33.4	23.9	0.7	7.5	43.5	6700
	500	660	500	810	9.55	28.7	33.4	27.8	0.8	7.5	43.5	6700
ZFQZ-450-31	420	660	430	700	9.33	28	32.6	47.2	1	7.1	39	6000
	220	370	180	730	11.6	35	40	58.1	1.1	7.1	39	6000
ZFQZ-400-42	520	440	660	1285	7.52	22.5	24.8	7.3	0.9	7.1	23.5	6700
	418	725	530	635	7.53	22.6	26.4	54.1	1.5	7.1	23.5	5200
	400	440	410	1020	9.32	28	32.6	29	0.8	7.1	23.5	5200
	205	420	280	570	6.99	21	24.5	57.7	1.3	7.1	23.5	5200
	500	660	708	810	6.74	20.2	23.6	26	0.6	7.1	23.5	5200
ZFQZ-400-32	440	660	600	725	7	21	22.5	37.8	1	6.4	21	4900
ZFQZ-400-11	515	660	850	837	5.78	17.3	19.1	3.1	0.7	6.1	21	3800
ZFQZ-355-42	418	725	600	630	6.65	20	23.3	51.5	1.2	6.5	15	3750
	355	440	500	895	6.78	20.3	23.7	26.8	0.74	6.5	15	3750
	361	600	550	665	6.27	18.8	22	45.1	1.1	6.5	15	3750
ZFQZ-355-32	450	725	750	670	5.73	17.2	20	41.1	1	6	13	3400
	315	440	500	800	6.02	18.1	21	30.4	0.88	6	13	3400
ZFQZ-355-22	450	660	900	735	4.78	14.3	16.7	64.2	1	5.6	11.5	3200
	370	440	650	930	5.44	16.3	19	25.3	0.6	5.6	11.5	3200
ZFQZ-355-12	315	660	880	510	3.42	10.3	12	42	0.7	4.7	10.5	2900
ZFQZ-315-42	315	600	800	570	3.76	11.3	13.2	44	0.8	5.2	7.7	2450
	315	440	750	780	4	12	13.5	23.9	0.51	5.2	7.7	2450
	284	400	680	785	4	12	13.5	25.6	0.52	5.2	7.7	2450
ZFQZ-315-32	280	660	750	465	3.56	10.7	12.5	68.4	1.3	4.6	7	2300
	320	440	900	785	3.4	10.2	11.9	21.1	0.6	4.6	7	2300
ZFQZ-315-22	230	220	705	1175	3.12	9.35	11	10.5	1	4.3	6	2100
ZFQZ-315-21	150	660	480	260	2.98	8.95	10.4	199	3.3	4.35	6	1950
ZFQZ-315-12	160	440	600	410	2.55	7.65	8.93	69.8	1	3.85	5.3	1800
ZFQZ-280-32B	170	440	900	430	1.8	5.41	6.31	53.4	1.5	3	3	1600
ZFQZ-280-31B	110	40	600	311	1.75	5.25	5.78	45.5	1.55	3.7	3.2	1600
ZFQZ-280-11B	75	440	515	201	1.39	4.17	4.59	114	6.34	2.45	1.25	830
ZFQZ-250-41B	132	440	1000	332	1.26	3.78	4.15	37.6	1.11	3.2	1.75	1100
ZFQZ-250-31B	92	400	880	260	1	3	3.5	96.1	0.99	2.85	1.55	1000
ZFQZ-250-21B	60	440	620	175	0.92	2.76	3.22	30	3.9	2.75	1.4	900

*说明: 技术数据表 (A) 和技术数据表 (B) 列出了 ZJZ-800 和 ZJZ-900 系列相对应的规格和部分已生产制造过的规格, 仅供设计选型时参考。如果所需产品的型号规格与本技术表有出入或有特殊要求, 请与我厂有关部门联系, 经确认后签订设计协议和合同。

*Note: The specifications corresponding to Series ZZJ-800 and Series ZZJ-900 and the specifications of partial produced motors are listed in Technical Data Table(A) and Technical Data Table(B) respectively. All these specifications are for design and type choice only. If the required specifications of the motors are not in accordance with those in the Technical Data Table or some special requirements are offered , please contact us. After confirmation, the technical agreement can be made.

电机安装外形图 Mounting Figuration Drawing of Motors
(ZFQZ-250)

