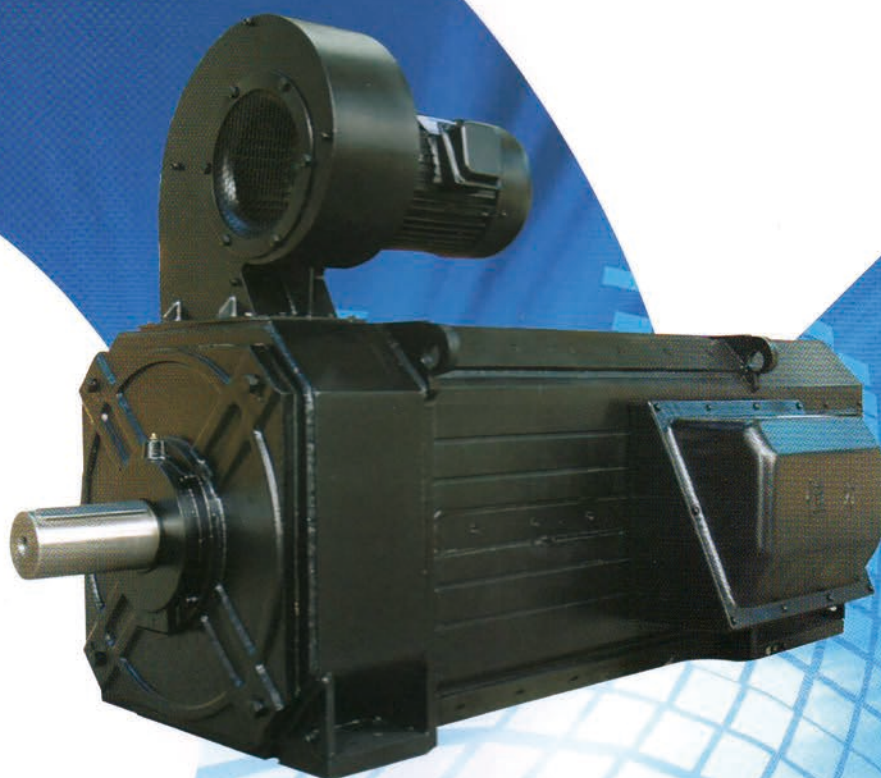




ZSN4系列

水泥回转窑用电动机

CEMENT ROTARY KILN DIRECT CURRENT MOTOR

杭州新恒力电机制造有限公司
Hangzhou New Hengli Electric Machine MFG. Co., Ltd.



国家二级企业
ISO9001:2000质量认证
国家CQC产品认证
CE产品认证

公司简介

杭州新恒力电机制造有限公司（原杭州直流电机厂）始建于一九五四年，积累近五十年设计与生产直流电机的专业经验，成为部、省定点生产中大型及小型交、直流电机的专业制造厂家，并于一九八八年晋升“国家二级企业”，一九九八年八月通过ISO9002质量体系认证，二〇〇一年十二月转版，获得ISO9001 2000版证书，05年获得德国莱茵公司的CE认证。

公司专业生产Z系列、Z4系列、ZZJ800轧机辅传动用直流电机、ZSN4水泥回转窑主传动系列、ZYJZ榨糖专用系列、ZFQZ频繁起制动用直流电机；2001年又引进国内一流专业人才，并与上海电器科学研究所、浙江大学、中科院电工所横向协作，开发了YVF2、YJP交流变频电机、Y、YR、YKK、YKS、YRKK、YRKS系列交流高低压中型异步电机，可根据用户需求设计、制造各种派生系列交直流电机，最大制造功率交流10000KW，直流3500KW，最大中心高度为1120mm，具备年生产200万千瓦各类中大型交直流及小型直流电机的能力。主要电机系列符合国际IEC标准，广泛应用于冶金、橡塑机械、电工、水泥、石化、供水、橡塑机械、矿山机械、造船、军工等行业，产品畅销全国各地，并部分出口到东南亚、欧美等国家和地区，在广大客户中享有很高的信誉和威望。

公司共有三个厂区——富阳东坞山新恒力总部、富阳高桥厂区和转塘工业园厂区，总占地面积165333.4m²，建筑面积965200m²，现有职工620人，其中工程技术人员63人，中高级职称的有22人，现有各类设备207台，具有对电机进行完整型式试验的能力，并具备包括特殊环境实验室在内的完备的检测手段。公司设有技术中心，专门从事产品的引进开发、科研和新工艺开发工作，计算机辅助设计、管理技术在科研、设计、经营管理中得到了广泛的应用并已于2000年年底实现计算机网络化。

公司本着‘起步晚，起点高’的精神，在吸收国内外先进电机制造工艺和绝缘技术的基础上，于2000年成功开发的Z系列直流电机，由于与哈尔滨大电机研究所进行横向协作，并采用了高等级的绝缘材料和特殊的换向工艺，使Z系列直流电机的技术水平和品质居于国内领先，产品在橡胶行业、冶金行业得到广泛应用，截止2011年6月，累计已生产单台功率500KW以上直流电机8600台、430万千瓦，在业界享有很高的美誉度。

在“拼搏”的企业精神，“求是”的工作作风激励下，经过全体员工的努力，企业荣获“浙江省先进工业企业”、“浙江省重合同、守信用企业”、“中国电器工业协会推介产品证书”、“中国技术监督情报协会放心品牌称号”，05年获得中国电力设备管理协会推荐品牌证书，并被上海电器科学研究所（集团）有限公司指定为特种电机生产基地

我们的宗旨是质量第一，顾客至上。我们随时根据顾客的要求及时提供优质的产品和完善的售后服务，竭诚为中外顾客服务。

选择‘恒力’就是选择了优秀的品质和完善的服务！



Company Profile

Hangzhou New Hengli Electric Machine MFG. Co., Ltd. (Originally Hangzhou DC Motor Factory) was founded in 1954, which has more than 50 years designing and manufacturing experiences for DC motor, our company becomes a expert manufacturer base for ministry and province projects, in which large, medium and small size AC and DC motors are produced. In 1988, it has been promoted to national second level enterprise and acquired the quality certificate of ISO9002 and its ISO9001 2000 verse in 2001, and passed CE Certificate of Lai Yin TUV company in Germany.

Our products includes Z series、Z4 series、ZZJ800 series for mill auxiliary DC motor、ZSN4 series for cement rotary kiln, ZYZJ series for sugar cane mill、ZFQZ type automatic DC motor; High level domestic specialists are introduced to our company in 2001. With technology cooperating with Shanghai Electrical Science Researching Institute, Zhejiang University and Institute of Electrical Engineering Chinese Academy of Sciences, YVF2 series Inverter-fed induction AC motor, and high or low voltage AC induction motor, such as Y, YR, YKK, YKS, YRKK, YRKS, etc. are developed. All kinds of deriving motor series AC and DC motors are designed according to the request of customers, including D.C. Motor with max-power 3500kw and A.C.motor with max-power 10000kw. The max-center-height of the motor reaches 1120mm. Our annual capacity reaches more than 2000mkw. Our products comply with international IEC standard, and widely used in metallurgy, electricity power, cement making, petroleum and chemical industry, water supply, rubber and plastic industry, mining, paper-making, ordnance-making, etc. Our products are widely sold all over the country, and part ones are exported to Southeast Asia, Europe and America, enjoying high reputations among high-level customers.

There are three manufacturing zones—New Hengli Industrial Zone in Dongwu Hill in Fuyang; Gaoqiao manufacturing Zone in Fuyang, Zhuantang Industrial Park, which covers total area of 165333.4m², construction area of 965200m². 620 employees including 63 engineers are working here, among of whom 22 engineers have middle or high level professional job title. We possesses 207 sets of different kinds of equipment, and have the ability of testing the whole function and technology parameters of the motor with complete set of checking instruments for the motor. The technology center specializes in production introduction and development, new technology designing, management control and computer assistant design system which are widely used in scientific research, design and management. In 2002, computer net and office system have been built.

The spirit of 'later start, higher start' in the absorption on the basis of domestic and foreign advanced motor manufacturing process and insulation techniques, we successfully developed Z series D.C. motor. Collaboratiing with Harbin Institute of Large Electrical Machinery, using higher degree of insulation materials and special commutation manufacturing process, we have the leading technical and quality of manufacturing Z series D.C. motors which are widely used in the rubber industry, metallurgy industry. To end of June 2011, we have produced 8600 sets of DC motors with output larger than 500KW, totally 4.3 million kilowatts, enjoyed a high reputation in the industry fields.

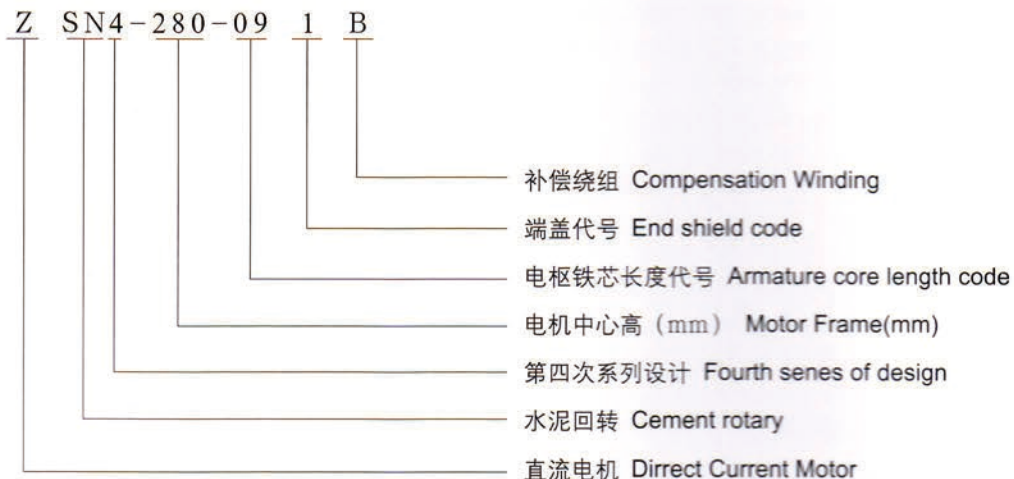
Inspired with company spirits of "Exert Ourselves" and working style of "Pursue the Truth", through great effort of all personnels, we acquired "Zhejiang Advanced Industrial Enterprises"; "Zhejiang Province Trustworthiness Enterprise"; "Certificate for China Electric Industry Commission Recommend Products"; "Reassurance Brand" title from China Association for Technical Supervision Information(CATSI); Recommend Brand Certificate by China Association of Electricity Supply in 2005; and to be titled "Manufacturing Base for Special Motors" by Shanghai Electrical Science Research Institute.

Provide with the best quality and serving customers with real heart is the purpose we pursue, we are supplying the best quality products and good after-sales service according to customers' requests, try our best to serve customers in domestic and foreign market.

Choose "Hengli" is to choose an excellent quality and perfect service.

ZSN4系列水泥回转窑主传动用直流电动机

型号说明 / Explanations for Type



注: 数字1、2表示短、长端盖

Remarks: No.1,2 Stands for Short/Long end Shield

结构特点 / Structure Features

1. 电机的冷却方式和外壳防护等级见表1。

Motor cooling type and protection class pls refers to form 1.

表1 (Table 1)

冷却方式 Cooling type	单管风 (IC17) Single-tube air	双管风 (IC37) Double-tube air
防护等级	IP21S	IP44

2. 电机安装型式: 卧式底脚安装 (IMB3) 电机可制造成双轴伸或单轴伸, 单轴伸电机可在非传动端侧装测速发电机。常用的永磁直流测速发电机型号见表2. 其他规格的测速机或旋转编码器也可协商。

Motor mounting types: horizontal foot mounting (IMB3), motor could be designed as double shaft extension or single shaft extension. Tacho-generator could be fixed at the non-drive end side of single shaft extension motor. Commonly used permanent magnet DC tacho-generator models are shown in Table 2. Other specifications of the tacho-generator or rotary encoder could also be negotiated.

表2 (Table 2)

型号 Type	额定功率 (W) Rated output	额定电压 (V) Rated voltage	额定电流 (mA) Rated current	额定转速 (r/min) Rated speed
ZYS-3A	22	110	200	0~2000
ZYS-100A	8	100	80	0~1000

3. 根据需要, 电机的定子绕组里可埋置过热保护元件。过热保护元件型号需在合同中注明。
If necessary, overheating protection thermal components could be embedded in the stator windings of the motor, thermal components model pls be specified in the contract.
4. 出线盒位置, 从传动端看, 在机座右侧, 根据需要也可在机座左侧或上方。
The location of terminal box could be fixed at the right side of the motor, view from the shaft extension, could also be fixed in the left side or above of the motor if necessary.

电机性能 / Motor Function

1. 技术数据表中的数据应按下列使用条件工作:
- a. 海拔不超过1000米;
 - b. 进入电机的初级冷却介质温度不超过40℃;
 - c. 电动机为连续工作制 (S1)
 - d. 电动机电枢回路和励磁回路可由静止整流电源供电, 也适应由直流发电机组供电。
 - e. 对管道通风冷却的电机, 其风量风压需满足表3的规定, 进风口在电机非换向器侧端盖上。

1. Data listed in the technical data sheet should be employed under the following conditions:
- a. Altitude above sea level max, 1000m;
 - b. Cooling air temperature max, 40℃;
 - c. Duty: Continuous (S1)
 - d. Armature and field circuit for motors may be either operated on static thyristor controlled supplies, or from d-c generator.
 - e. Motor for tube ventilation and cooling, the pressure of the air volume need to meet the requirements in Table 3, the air inlet is located on end shield of the motor commutator side.

表3 (Table 3)

机座号 Motor Frame	风量 (米 ³ /小时) Air Volume (m ³ /hr)	静压 (帕) Static Pressure (Pa)
ZSN4-225	2880	1400
ZSN4-250	3000	1400
ZSN4-280	4000	1600
ZSN4-315	4680	1600
ZSN4-355	5200	1600
ZSN4-400	7200	1800

2. 本系列电机性能均符合国家标准GB755-2000《旋转电机 定额和性能》, 也可按国际电工委员会标准IEC34-1的要求考核。
3. 电机绝缘等级为F级。
4. 电动机标准电枢电压为440伏。也可根据具体情况派生出220伏或其他电压。减小电枢电压为恒转矩调速, 在电枢电流连续条件下, 其最低转速可达20r/min, 此时仍能维持额定转矩, 转速平稳。
5. 电动机标准励磁电压为180伏。其他励磁电压也可协商。为确保励磁系统绝缘的可靠, 在断开励磁回路时, 需在励磁绕组二端并联一个释放电阻, 以防止自感电势。在标准励磁电压时, 其值约为7倍励磁绕组电阻 (冷态), 励磁电压高于标准电压时, 并接释放电阻可小于7倍, 反之大于7倍。
6. ZSN4-225机座号电机带串励绕组, 其他机座号均带补偿绕组。
7. 电机提供有接地标志的接线柱。
8. 技术数据表内的效率值为额定功率, 额定电压和转速时的效率。它包括励磁损耗。

2. Performances of motors all comply with State Standard GB755-2000《Rotating electrical machines-Rating and performance》, also be in accordance with the requirements of evaluation of the International Electrotechnical Commission standard IEC 34-1
3. Motor manufactured as F insulation.
4. Standard rated voltage: 440V, 220-volt or other voltage can also be derived under the specific circumstances. constant torque speed control could be done by Reducing armature voltage. The lowest speed could be adjusted to 20r/min under the circumstance of continually armature current. Meanwhile, motors could still remain the rated torque with smoothly speed.
5. Nominal field voltage: 180V, other excitation voltage are also acceptable on request.
- To assure the reliability of insulation of excitation system, the motor must be protected against self-induced voltages by a release resistor connected in parallel with the field winding when the excitation circuit of the motor is interrupted. At rated field winding resistance (cold). While the field voltage is higher than nominal voltage, the value of shunt resistance may be lower than seven-times field resistance, otherwise higher than seven-times.
6. ZSN4-225 motor adopts series field winding, others adopts compensating winding.
7. A marked earthing terminal is provided for the motors.
8. The efficiencies listed in the data sheet are for rated output, voltage and speed, and include excitation losses.

特点和用途

Feature and applications

ZS4系列直流电动机是我公司在Z4系列直流电动机的基础上,根据水泥回转窑主传动的工况特点,而开发的专用系列品种。

本系列电机采用八角形结构,定子空间利用率高。定子磁轭为叠片式,能承受脉动电流与电流急剧变化之工况,电机适应三相全控整流电源,以及不外接直流平波电抗器而长期工作。新颖的F级绝缘结构,保证了绝缘性能稳定和散热良好。根据水泥回转窑的特定工况,进行设计制造,使电动机的起动力矩可达额定力矩的2.5倍。采用管道通风的冷却方式,使电动机能在粉尘较大的恶劣环境中,安全可靠的运行。

ZSN4 series DC motor is designed based on Z4 series DC motor, it is the exclusively used as main drive motor for cement rotary kiln.

This series of motors adopt octagon shape to take good use of inner space of motor. The motors have laminated yokes, which means that when used on rectifier power supplies they can endure both current ripple and rapid current changes (load change) under dynamic condition. The stator design leads to high accuracy of pole spacing and consequent good commutation. The motors could be lastingly operated from fully controlled three phase bridge without a smoothing reactor, whose inductance is specified in the relevant technical data, should be inserted in the armature circuit to suppress ripple circuit. Motors are class F insulated, ensuring stable dielectric performance and excellent heat dissipation.

Designed exclusively according to special working conditions of cement rotary kiln, this series of motor could reach starting torque 2.5 times of rated torque. Adopting tube ventilation and cooling method, motors could be operated safely under bad circumstance full of dust and powder.

订货说明

1. 订货前, 请先查阅产品目录, 明确所需产品的规格, 如果所需规格与目录有所出入或有特殊要求, 请事先提出具体而明确的要求, 与我公司有关部门协商, 经同意后, 签订合同或技术协议。
2. 订货时请注明电机型号、功率、电压、转速、结构型式、励磁电压、出线盒位置, 以及所需装配成套供应的附件(如测速机的型号, 过热保护元件规格数量)。
3. 如果需要湿热带型, 请在原型号后面注明有“TH”

1. Pls refer to our catalogue before ordering, if the types, ratings you need are not covered by our form list, pls contact with us. Should you have particular needs, pls offer us specific proposal in advance. A contract or technical agreement may be made when the requirements are fixed by common consent.
2. Please write clearly the type, output, volts, speed, duty, type of construction, excitation, field voltage, No. of shaft-end, location of terminal box, necessary accessories and spare parts, etc(like the model and quantity of tacho-generator, thermal components).
3. If humid-tropical type required, please mark "TH" behind the original motor model.

技 术 数 据 表
Technical Specification

型号 Model	额定 功率 Rated Output Pn	额定 转速 Rated Speed 440v	电枢 电流 Armature Current In	励磁 功率 Field Power Pf	电枢回 路电阻 Armature Circuit R	电枢回 路电感 Armature Circuit La	磁场 电感 Magnetic Inductance Lf	效率 Efficiency	惯量矩 Moment of inertia Gd ²	重量 Weight kgs
	kW	r/min	A	W	Ω (20°C)	mH	H	%	kgm ²	kg
ZSN4-225-091	55	1500	140	1000	0.1872	4.0	19.3	87.8	3.68	530
	40	1000	105		0.3163	8.3	11.2	82.8		
ZSN4-225-11	75	1500	198	1400	0.1174	3.3	25.4	88.9	4.2	580
	40	750	107		0.3861	11.7	8.84	82.6		
ZSN4-225-21	90	1500	227	1600	0.105	2.4	16	89	4.8	630
	55	1000	145		0.2079	4.8	14.9	84		
ZSN4-250-11B	110	1500	276	2600	0.0740	0.79	16.7	89.4	5.0	810
	75	1000	195		0.1433	1.8	9.39	86.8		
	55	750	147		0.2578	3.3	6.51	86.6		
ZSN4-250-21B	125	1500	312	2700	0.0537	0.54	5.43	89.6	5.6	890
	90	1000	230		0.1140	1.2	6.4	87		
ZSN4-250-31B	75	750	196	2800	0.1718	2.5	10.2	85.0	6.2	960
ZSN4-280-091B	160	1500	397	2800	0.0410	0.52	9.88	90.1	8.8	1080
	110	1000	281		0.2945	1.4	12.3	87.9		
ZSN4-280-11B	190	1500	471	3000	0.0326	0.36	5.41	90.4	10	1190
	125	1000	316		0.0704	0.93	7.11	88.4		
	90	750	233		0.1290	1.1	7.20	85.4		
ZSN4-280-21B	22B 220	1500	540	3200	0.0245	0.41	6.23	91.3	11.2	1300
	160	1000	403		0.0572	1.0	5.89	88.8		
	21B 110	750	282		0.1032	1.2	14.9	86.0		
ZSN4-315-072 071	250	1500	616	2900	0.0248	0.42	9.03	91.5	12.8	1300
	125	750	323		0.0972	1.7	15.5	86.8		
ZSN4-315-082	280	1500	690	3300	0.0214	0.36	8.22	91.7	15.6	1460
	190	1000	475		0.0403	0.72	6.36	90.1		

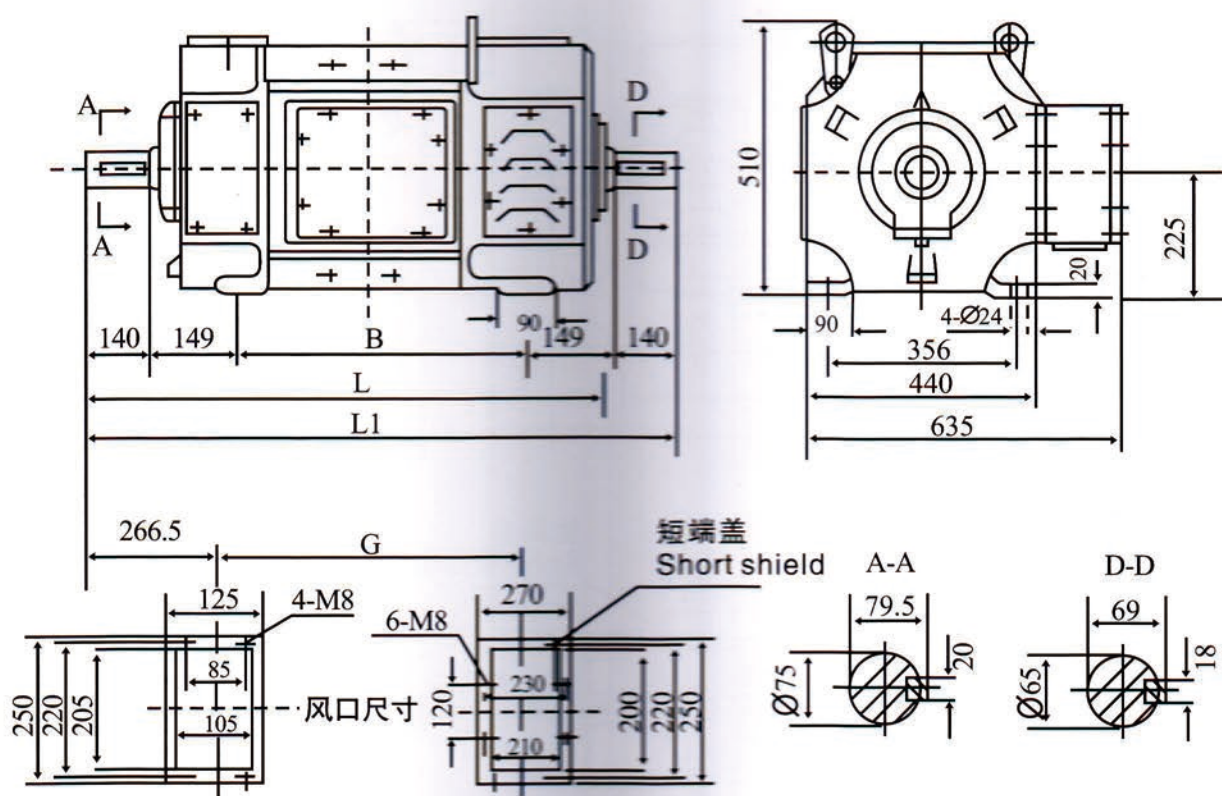
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型号 Model	额定 功率 Rated Output Pn	额定 转速 Rated Speed 440v	电枢 电流 Amature Current In	励磁 功率 Field Power Pf	电枢回 路电阻 Amature Circuit R	电枢回 路电感 Amature Circuit La	磁场 电感 Magnetic Inductance Lf	效率 Efficiency	惯量矩 Moment of inertia Gd ²	重量 Weight kgs
	kW	r/min	A	W	Ω (20°C)	mH	H	%	kgm ²	kg
092	315	1500	770	3500	0.0148	0.28	8.0	92.4	18.4	1620
ZSN4-315-092	220	1000	543		0.0323	0.63	7.96	90.8		
091	160	750	405		0.0614	1.2	7.66	87.8		
ZSN4-315-12	250	1000	615	3800	0.0268	0.58	9.8	91	21.2	1780
	190	750	478		0.0490	1.1	9.57	89.1		
ZSN4-315-22	220	750	550	4000	0.0392	0.88	5.81	89.4	24	1970
ZSN4-355-082	280	1000	682	3800	0.0185	0.42	6.3	91.4	32	2310
	250	750	622		0.0331	0.74	6.18	89.9		
ZSN4-355-092	315	1000	764	4000	0.0152	0.39	7.64	92	36.8	2530
	280	750	696		0.0297	0.69	7.49	90.1		
ZSN4-355-12	355	1000	864	4200	0.0161	0.34	24.7	92.2	42	2780
	315	750	776		0.0236	0.45	9.28	90.5		

其他部分已生产过规格技术数据表

Part of production specifications and teehnical data:

型号 Model	额定 功率 Rated Output Pn	额定 转速 Rated Speed 440v	电枢 电流 Amature Current In	励磁 功率 Field Power Pf	电枢回 路电阻 Amature Circuit R	电枢回 路电感 Amature Circuit La	磁场 电感 Magnetic Inductance Lf	效率 Efficiency	惯量矩 Moment of inertia Gd ²	重量 Weight kgs
	kW	r/min	A	W	Ω (20°C)	mH	H	%	kgm ²	kg
ZSN4-280-21B	75	500	199	3200	0.2	2.75	6.5	84	11.2	1300
ZSN4-280-31B	90	500	239	3400	0.167	2.3	7.73	84.2	13	1550
ZSN4-315-11	110	500	285	3800	0.102	1.92	9.75	86.5	21.2	1890
ZSN4-355-11	132	600	335	4000	0.0758	1.35	5.45	88	24	2080
ZSN4-355-11	165	500	414	4200	0.0575	1.1	8.89	89.5	42	2890
ZSN4-355-11	185	500	466	4200	0.0536	1.1	18.4	89.5	42	2890
ZSN4-400-21	250	400	650	5000	0.0407	1.05	14.8	87	24	4500
ZSN4-400-22	560	1000	1365	5000	0.0081	0.2	17	92.1	74	4500

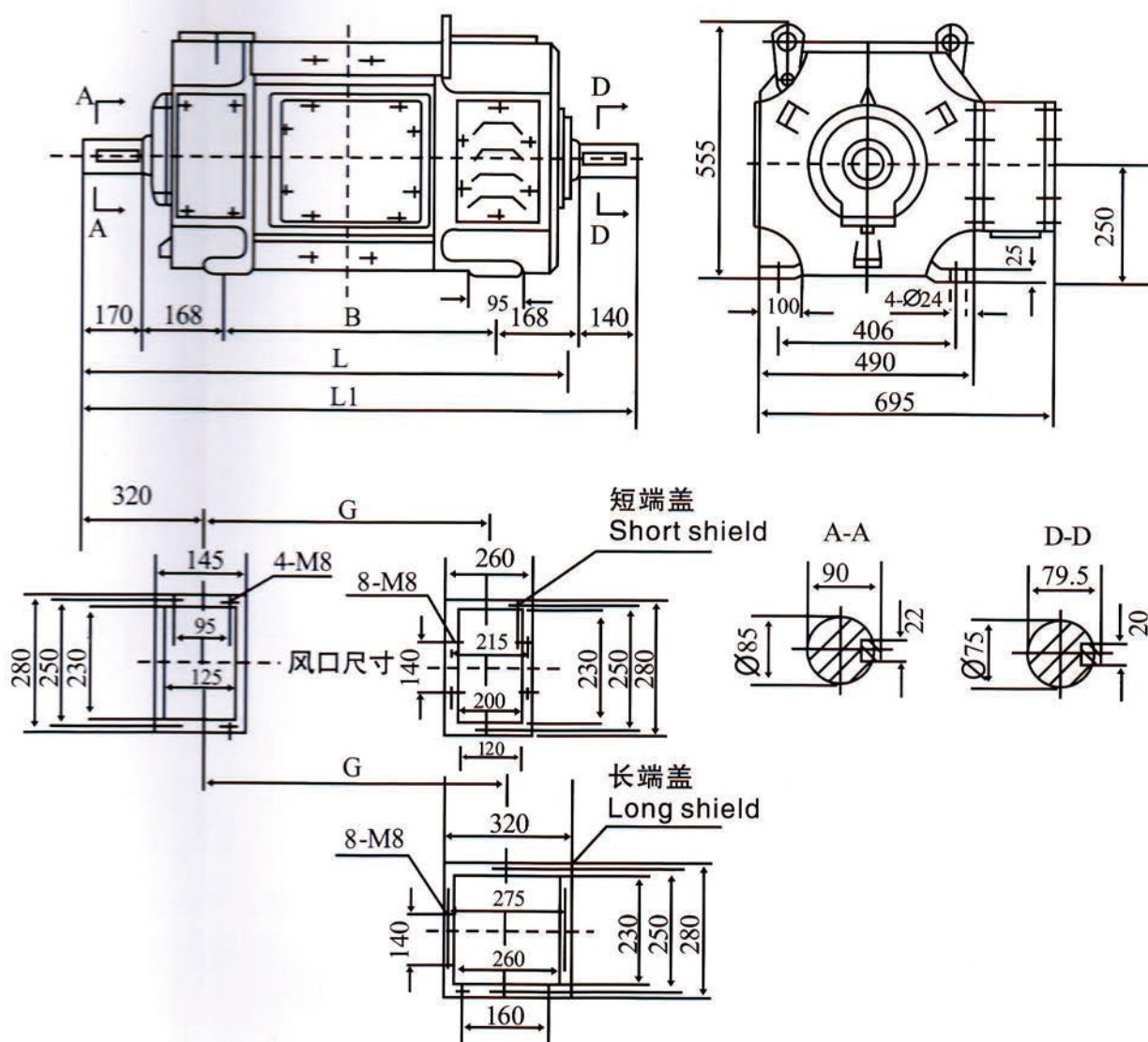


型号 Model	B	L	L_1	G
ZSN4-225-091	661	1100	1239	635
ZSN4-225-11	701	1140	1279	675
ZSN4-225-21	751	1190	1329	725

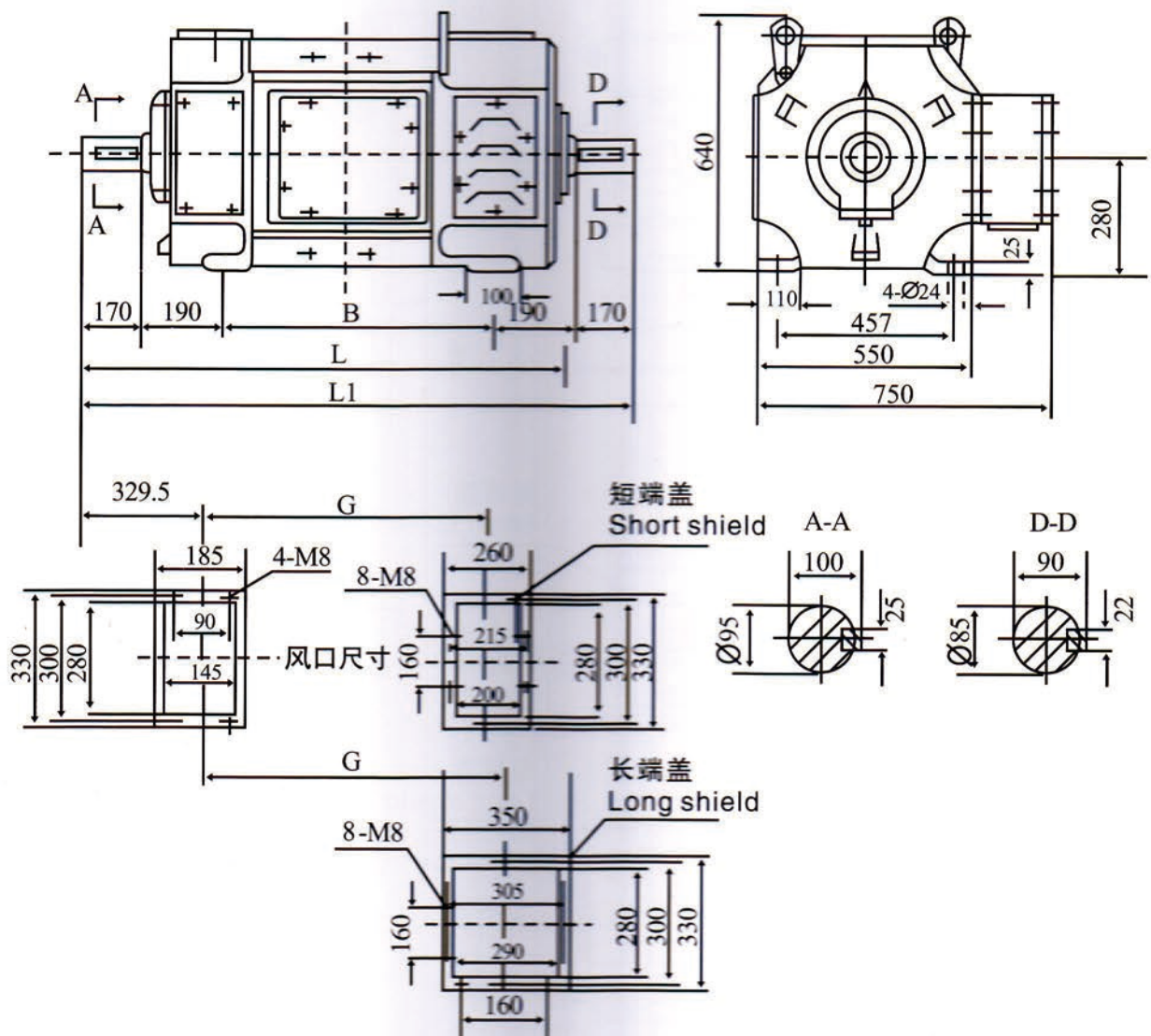


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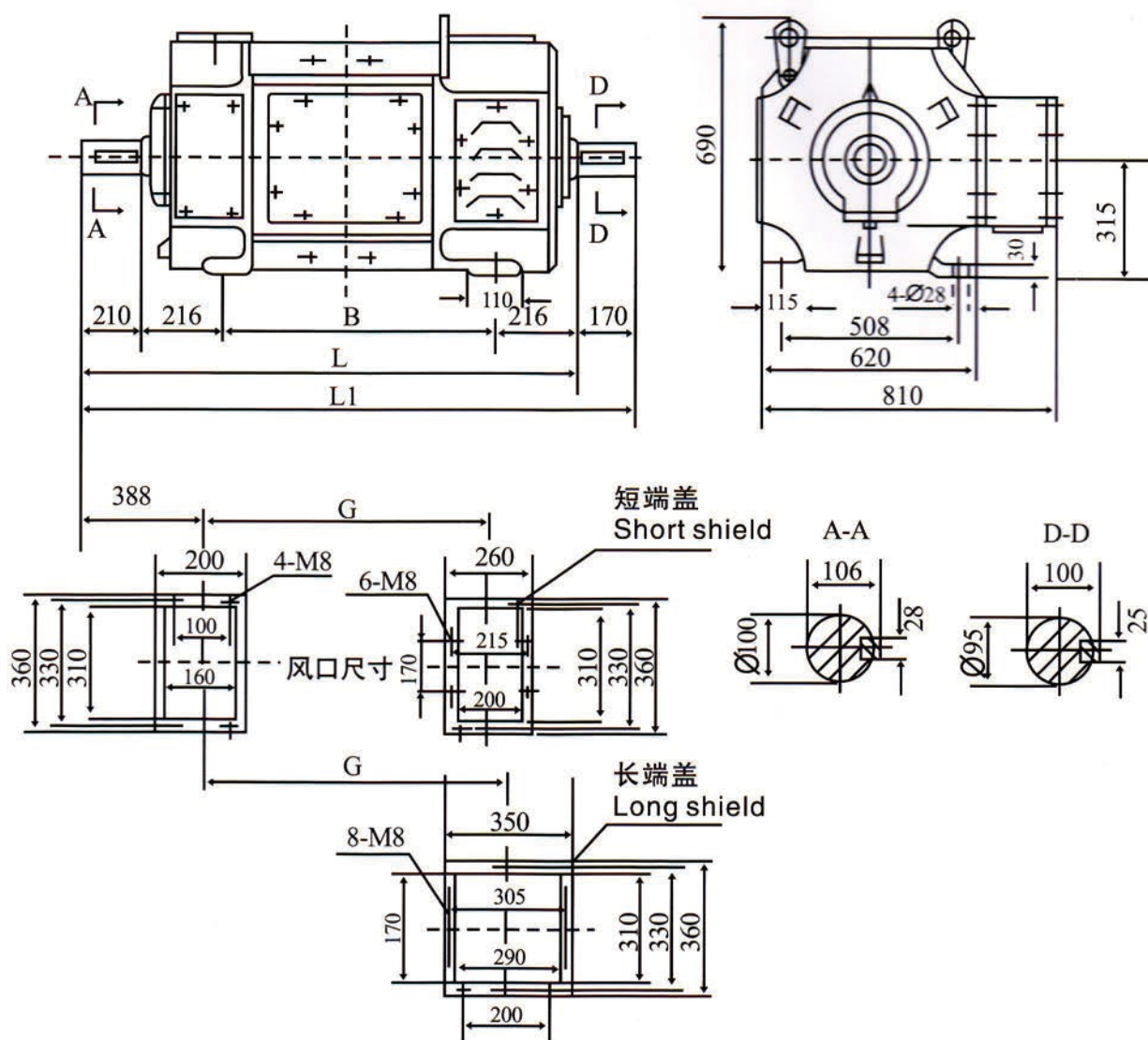
Do better than yesterday



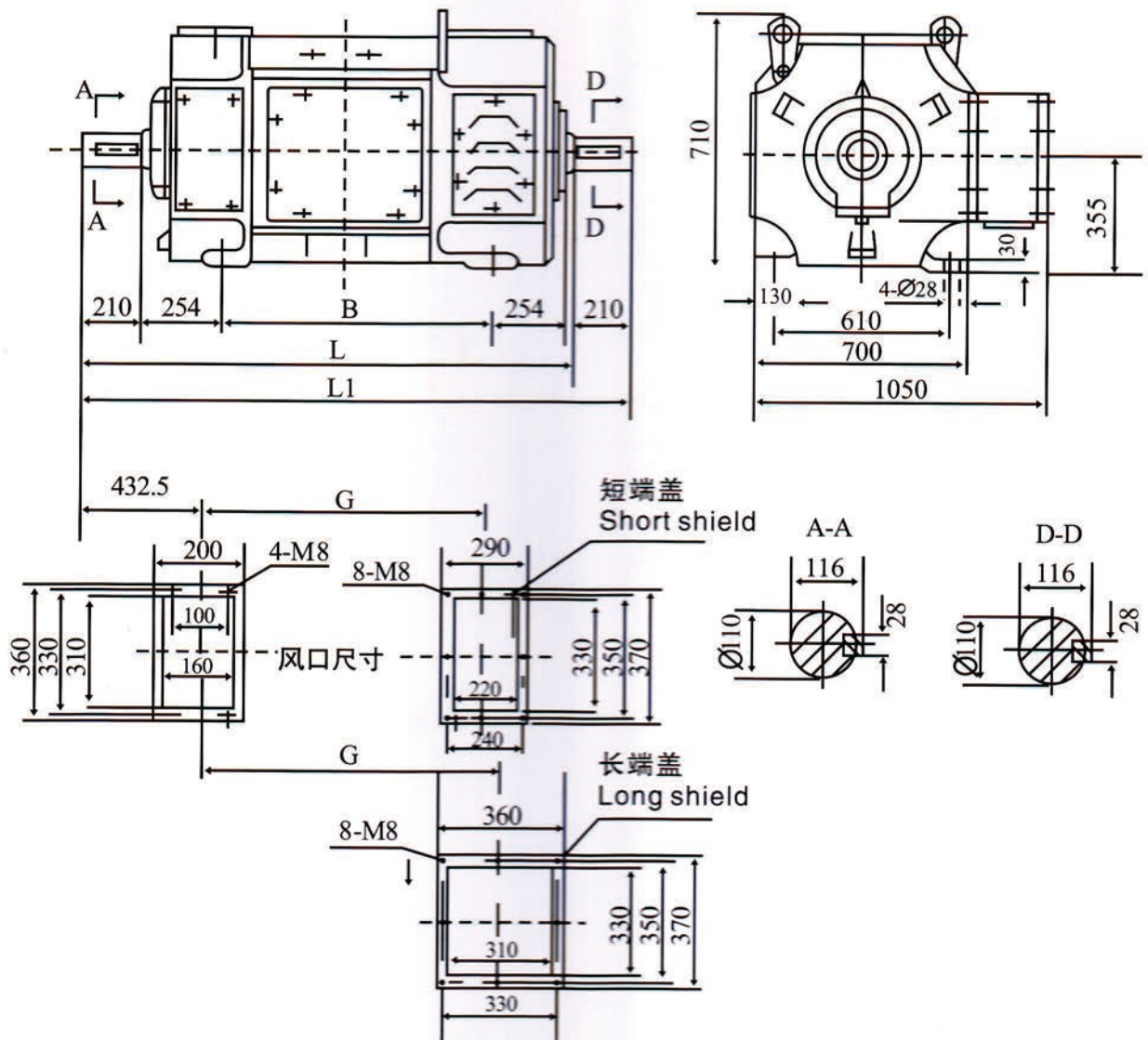
型号 Model	B	L	L_1	G
ZSN4-250-11	715	1225	1361.5	694.5
ZSN4-250-21	765	1275	1411.5	744.5
ZSN4-250-31	825	1335	1471.5	804.5
ZSN4-250-32	885	1395	1531.5	834.5



型号 Model	B	L	L ₁	G
ZSN4-280-091	712	1265	1432	727.5
ZSN4-280-11	762	1315	1482	777.5
ZSN4-280-21	822	1375	1542	837.5
ZSN4-280-22	912	1465	1632	882.5
ZSN4-280-31	892	1445	1615	907.5



型号 Model	B	L	L ₁	G
ZSN4-315-071	707	1352	1519	760
ZSN4-315-072	797	1442	1609	805
ZSN4-315-082	847	1492	1659	855
ZSN4-315-091	817	1462	1629	870
ZSN4-315-092	907	1552	1719	915
ZSN4-315-12	977	1622	1789	985
ZSN4-315-22	1057	1702	1869	1065
ZSN4-315-11	887	1532	1702	940
ZSN4-315-21	967	1612	1782	1020

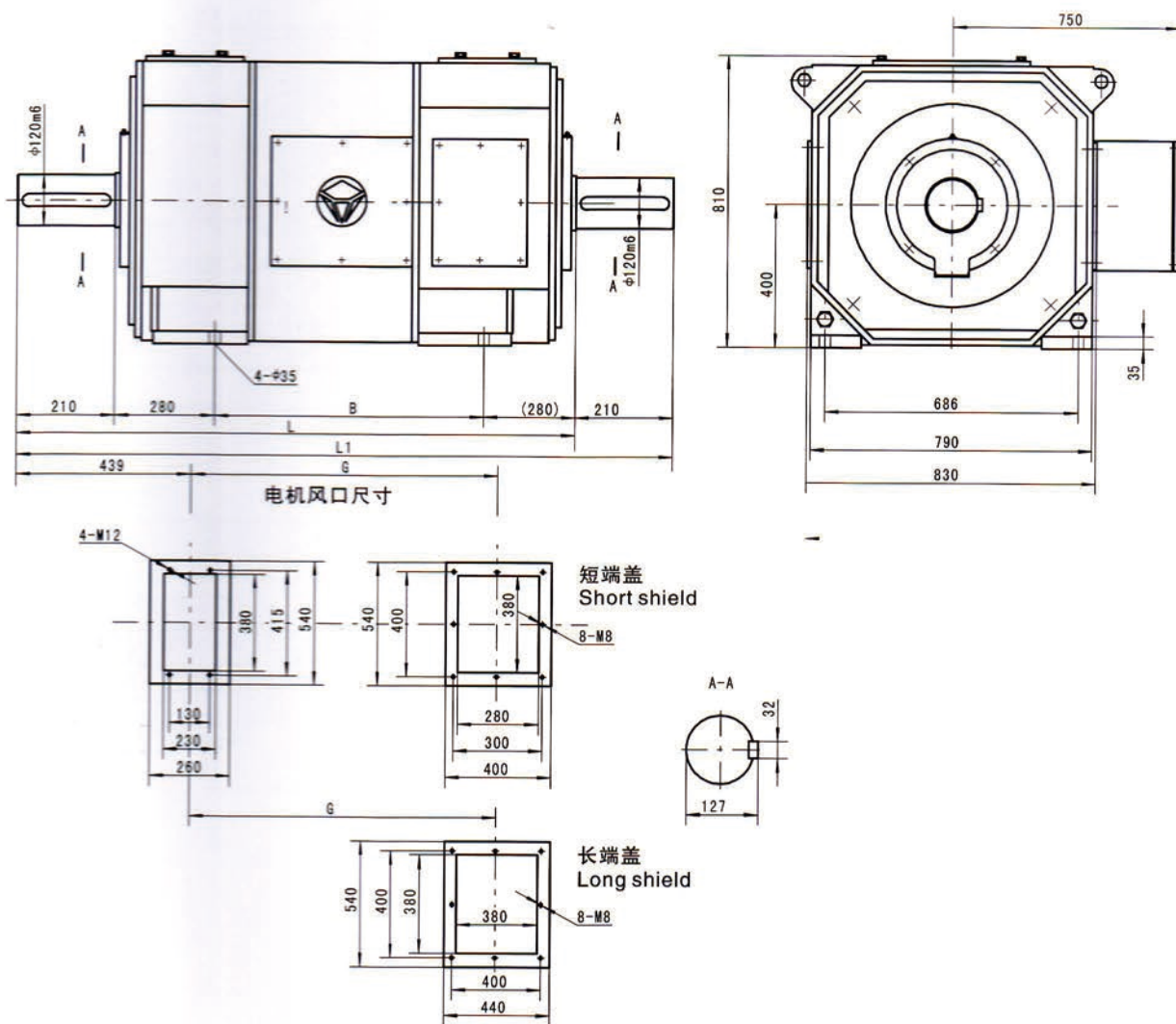


型号 Model	B	L	L ₁	G
ZSN4-355-081	818	1539	1746	866.5
ZSN4-355-082	908	1629	1836	911.5
ZSN4-355-092	978	1699	1906	981.5
ZSN4-355-12	1058	1779	1986	1061.5
ZSN4-355-11	968	1689	1899	1015.5



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型号 Model	B	L	L ₁	G
ZSN4-400-22	1159	1929	2139	1143
ZSN4-400-21	1039	1809	2019	1073

今天要比昨天做的更好!

杭州新恒力电机制造有限公司

Hangzhou New Hengli Electric Machine MFG. Co., Ltd.

地址：杭州富阳受降镇东坞山新恒力工业园 邮编：311422
营销中心电话：+86-571-87195658 87195659 87195668 58838717
传真：+86-571-87195669 58838718
技术咨询（电话/传真）：+86-571-58838721
客服中心（电话/传真）：86-571-58838726
24小时客服电话：13867468879 网址：www.hzhldj.com
邮箱：HZHLDJ@YAHOO.COM.CN

Add: Dongwu Hill Viuage, Shouxiang Town, Fuyang, Hangzhou, Zhejiang Province, China 311422
Business center tel: +86-571-87195658 87195659 87195668 58838717
Fax: +86-571-87195669 58838718
Technical consulting (Tel/Fax): +86-571-58838721
Customer service center (Tel/Fax): +86-571-58838726
24 hours customer service mobile: +86-13867468879/E-mial: www.hzhldj.com
E-mial: HZHLDJ@YAHOO.COM.CN