



YZR、YZ 系列起重及冶金用三相异步电动机

YZR & YZ SERIES CRANE AND METALLURGICAL THREE PHASE INDUCTION MOTOR



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1. 概况:

- 1.1 YZR、YZ系列冶金及起重用绕线转子与鼠笼转子三相异步电动机系用于各种类型的起重机械及其他类似设备的电力驱动,具有较高的过载能力和机械强度,适用于短时或断续周期性工作制,频繁启动、制动、及有显著的振动与冲击的设备。
- 1.2 电动机的功率等级和安装尺寸符合IEC72推荐标准,功率等级与安装尺寸的相互关系与日本JEM1202及德国DIN42681相似,大多数可互换。
- 1.3 电动机在海拔不超过1000米,能保证正常运行。
- 1.4 电动机的绝缘等级分为F级和H级两种。F级适用于环境空气温度不超过40℃的一般场所;H级适用于环境空气温度不超过60℃的冶金场所。两种电动机具有相同的参数。
- 1.5 电动机具有良好的密封性。用于一般场所的电动机防护等级为P44,用于冶金场所的电动机防护等级为P54。
- 1.6 YZR系列为冶金及起重用绕线转子三相异步电动机产品,符合行业标准JB/T10105-1999, YZ系列为冶金及起重用鼠笼转子三相异步电动机产品,符合行业标准JB/T10104-1999。
- 1.7 电动机额定频率为50赫兹,额定电压为380伏。

1. INTRODUCTION:

- 1.1 These series of three phase metallurgical industrial and crane motors, with wound or squirrel cage rotor are specially designed to drive metallurgical industrial cranes and other similar machines, it has excellent overload capability and high mechanical strength. Therefore, it is well suit for short duty cycle, or intermittent periodic duty, and equipments with frequent starting and braking or are subject to vibration and shock.
- 1.2 The standard range of power output and mounting dimensions complies with the recommended standard of (IEC 72). The relation between range of power output and mounting dimensions are similar to the Japanese standard (JEM1202) and German standard (DIN42681). Therefore most of them can be interchanged.
- 1.3 The motor can be operated well up to altitude of 1,000m.
- 1.4 There are two classes of insulation, F and H. Class F is applicable to temperature condition not exceeding 40℃. Class H is suitable for metallurgical industrial sites where ambient temperature is below 60℃. Both have the same technical data.
- 1.5 The motors possess a better enclosure, with protection standard of IP44 for normal site condition, and IP54 for metallurgical industrial condition.
- 1.6 The YZR series three phase induction metallurgical industrial and crane motor with wound rotor is complying with the standard JB/T10105-1999. The YZ series three phase induction metallurgical industrial and crane motor with squirrel cage rotor complying with the standard JB/T10104-1999.
- 1.7 Motor's rated voltage and frequency is 380V/50HZ.

1.8 电动机符号的意义：
Symbol definitions:

Y Z R 1 3 2 M 1 - 6



1.9 电动机基准工作制为S3-40%，机座号与容量等级对应关系见表1
The basic motor duty is S3-40%. See Table 1 for the relationship between frame size and rating.

机座号与同步转速及功率对应关系

Relations of frame size with synchronous speed and power

表1 Table 1

机座号 Frame size	同步转速 Synchr. speed	同步转速		
		1000转/分 r/min	750转/分 r/min	600转/分 r/min
112 M		1.5	-	-
132	M1	2.2	-	-
	M2	3.7	-	-
160	M1	5.5	-	-
	M2	7.5	-	-
	L	11	7.5	-
180 L		15	11	-
200 L		22	15	-
225 M		30	22	-
250	M1	37	30	-
	M2	45	37	-
280	S	55	45	37
	M	75	55	45
315	S	-	75	55
	M	-	90	75
355	M	-	-	90
	L1	-	-	110
	L2	-	-	132
400	L1	-	-	160
	L2	-	-	200

YZ系列电机制造色块内的规格。
YZ motors series are shown in the coloured block.

2. 电动机的工作制及技术数据:

电动机适用于断续周期性工作制, 根据负荷的不同性质, 电动机的工作制分为:

- 2.1 短时工作制 (S2): 在恒定负载下按给定时间运行, 未达到热稳定状态时即停机和断能一段时间, 使电机再度冷却到与冷却介质温度之差在 $2k$ 以内。
- 2.2 断续周期性工作制 (S3): 按一系列相同的工作周期运行, 每周期由一段恒定负载运行时间和一段停机和断能的时间所组成 (见图1), 但这段时间较短, 均不足以使电机达到热稳定状态, 并且每一周期的起动电流对稳升无明显的影响。
- 2.3 包括起动的断续周期性工作制 (S4): 按一系列相同的工作周期运行, 每周期由一段起动时间, 一段恒定负载运行时间和一段停机和断能时间所组成 (见图2), 但这段时间较短, 均不足以使电机达到热稳定状态。
- 2.4 包括电制动的断续周期性工作制 (S5): 按一系列相同的工作周期运行, 每一周期由一段起动时间, 一段恒定负载运行时间, 一段快速电制动时间和一段停机和断能时间所组成 (见图3), 但这段时间较短均不足以使电机达到热稳定状态。
- 2.5 选用电动机时, 各种起动及制动状态均需按等效发热折算成每小时等效起动次数, 以该等效起动次数确定电动机的定额。折算典型例子见表2。
- 2.6 折算方法:
 - 2.6.1 点动结束时电动机的转速不超过额定转速的25%, 四次相当于一次起动。
 - 2.6.2 电制动 (制动到额定转速的 $1/3$) 一次相当于0.8次起动。
- 2.7 电动机的基准工作制为S3-40%, 各工作制下电动机技术数据见表3、表4-1及表4-2。电动机铭牌上给出交货状态的数据, 如果用户不指定工作制时, 电动机铭牌上仅给出基准工作制时的数据, 当电动机需要按S2-S5之外的工作制运行时, 需与制造厂协商。

2. Motors Duty and Technical Data:

These motors are well suited to intermittent heavy duty operation. It can be classified into the following categories according to different load characteristics:

- 2.1 Short Time Duty (S2): Operation is under constant load in fixed time and the motor is resting or deenergizing when the heat balance is not reached. In a period of time, the motor is cooled and the temperature difference between motor and medium is limited within $2k$.
- 2.2 Intermittent Periodic Duty (S3): To run according to a series of identical cycles, the running time under constant load and the time of rest deenergized are included in period of one cycle (see Fig.1), but the time is shorter and does not make motor to a heat balance condition. The starting current shouldn't be enough to affect the temperature rise obviously.
- 2.3 Intermittent Periodic Duty with Starting (S4): To run according to a series of identical cycles, each cycle is formed by a starting time, a constant load's time & a rest or deenergized time (see Fig.2). But the time is short without condition making motor to a heat balance.
- 2.4 Intermittent Periodic Duty with Starting and Electric Braking (S5): It runs according to a series of identical cycles, there are starting time, constant load's time, electric quick braking time and a rest or deenergized time in each cycle. But the motor can not reach the condition of heat balance in such short time (Fig.3).
- 2.5 When you choose motor, various conditions of starting and braking have to be contained into a equivalent data of starts/hour according to equivalent heat, then the motor quota is determined by the equivalent data.
- 2.6 Conversion:
 - 2.6.1 When the touch starting is end, the speed does not exceed 25% of rated speed, i.e. four times equal once of starting.
 - 2.6.2 Once electric braking (to brake to one third of rated speed) is equal to 80% starting.
- 2.7 The duty type S3-40% is basic duty, the motor technical data is in the Table 3, Table 4-1 and 4-2. The data of delivery condition on the name plate only under basic duty. If you need a duty type out of S2 to S5, the consultation with manufacturer must be needed.

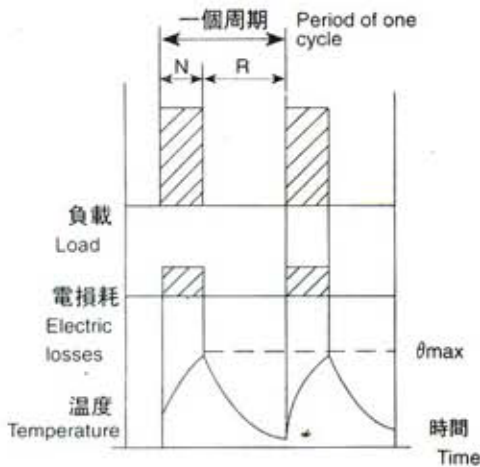


图1 断续周期性工作制S3

N-在额定条件下运行

R-停机和断能时间

θ_{max} -在工作周期中达到的最高温度

负载持续率:

$$FC = \frac{N}{N+R} \cdot 100\%$$

Fig.1 Intermittent periodic duty type S3

N=operation under rated condition

R=at rest and deenergized

Intermittent rate: $FC = \frac{N}{N+R} \cdot 100\%$

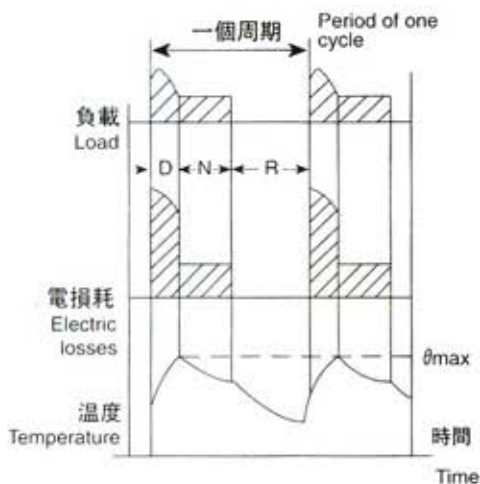


图2 包括起动的断续周期性工作制S4

D-起动

θ_{max} -在工作周期中达到的最高温度

R-停机和断能时间

负载持续率:

N-在额定条件下运行 $FC = \frac{D+N}{D+N+R} \cdot 100\%$

Fig.2 Intermittent periodic duty with starting type S4

D=starting

R=at rest and deenergized

N=operation under rated condition

θ_{max} =maximum temperature attained during the duty cycle

Intermittent rate: $FC = \frac{D+N}{D+N+R} \cdot 100\%$

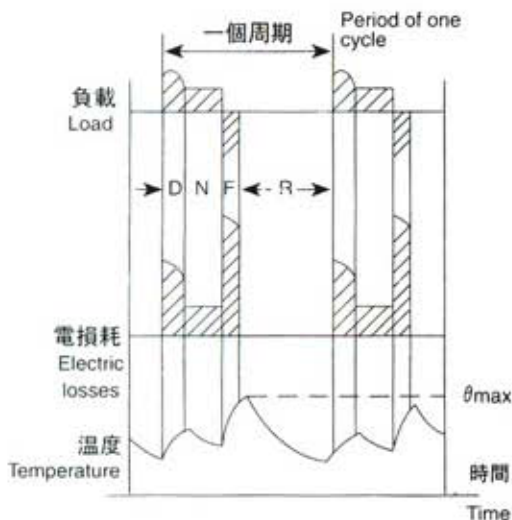


图3 包括电制动的断续周期性工作制S5

D-起动

θ_{max} -在工作周期中达到的最高温度

N-在额定条件下运行

负载持续率:

F-电制动时间 $FC = \frac{D+N+F}{D+N+F+R} \cdot 100\%$

R-停机和断能

Fig.3 Intermittent periodic duty with starting & electric braking type S5

D=starting

R=at rest and deenergized

F=electric braking

N=operation under rated condition

θ_{max} =maximum temperature attained during the duty cycle

Intermittent rate: $FC = \frac{D+N+F}{D+N+F+R} \cdot 100\%$

等效起动次数与点动、制动及起动次数对应关系

Relations of equivalent starting number with touch starting, braking and starting number

表2 Table 2

工作制 Duty type	起制动状态 Starting & Braking Condition				每小时等效 起动次数 Equivalent starts/h
	每小时起动次数 No. of starts/h	每小时点动次数 No. of touch starts/h	每小时制动次数 No. of brakes/h	每小时制动 并反转次数 No. of brakes & reverses/h	
S3	6	0	0	0	6
S3	4	8	0	0	
S3	2	8	2	0	
S4	150	0	0	0	150
S4	100	200	0	0	
S5	80	0	80	0	
S5	65	130	65	0	
S5	30	160	30	30	
S4	300	0	0	0	300
S4	200	400	0	0	
S5	160	0	160	0	
S5	130	260	130	0	
S5	60	320	60	60	
S4	600	0	0	0	600
S4	400	800	0	0	
S5	320	0	320	0	
S5	260	520	260	0	
S5	120	640	120	120	

YZ系列技术数据
YZ series technical data
表3 Table 3

机座号 Frame Size	项目 Items	S2		S3												转动惯量 Jm (Kg·m ²)	重量 Weight (Kg)												
		工作制 Duty type		6次/时 Stars/h																									
		FC		15%				25%				40%						60%				100%							
		30分钟 minutes		60分钟 minutes		I ₁ (A)		n (r/min)		kW		I ₁ (A)		n (r/min)				kW		I ₁ (A)		n (r/min)		kW		I ₁ (A)		n (r/min)	
				1000 转/分 r/min																									
				750 转/分 r/min																									
YZ	112M	1.8	4.9	892	1.5	4.25	920	2.2	6.5	810	1.8	4.9	892	1.5	4.25	920	2.7	2.44	4.47	69.5	0.75	1.1	2.7	946	0.8	3.5	980	0.022	58
	132M1	2.5	6.5	920	2.2	5.9	935	3	7.5	804	2.5	6.5	920	2.2	5.9	935	2.9	3.1	5.16	74	0.76	1.8	5.3	950	1.5	4.9	960	0.056	80
	132M2	4.0	9.2	915	3.7	8.8	912	5	11.6	890	4	9.2	915	3.7	8.8	912	2.8	3	5.54	78	0.79	3	7.5	940	2.5	7.2	945	0.062	92
	160M1	6.3	14.1	922	5.5	12.5	933	7.5	16.8	903	6.3	14.1	922	5.5	12.5	933	2.7	2.5	4.9	80	0.82	5	11.5	940	4	10	953	0.114	119
	160M2	8.5	18	943	7.5	15.9	948	11	25.4	926	8.5	18	943	7.5	15.9	948	2.9	2.4	5.52	81	0.83	6.3	14.2	956	5.5	13	961	0.143	132
	160L	15	32	920	11	24.6	953	15	32	920	13	28.7	936	11	24.6	953	2.9	2.7	6.17	83	0.84	9	20.6	964	7.5	18.8	972	0.192	152
YZ	160L	9	21.1	694	7.5	18	705	11	27.4	675	9	21.1	694	7.5	18	705	2.7	2.5	5.1	80	0.76	6	15.6	717	5	14.2	724	0.192	152
	180L	13	30	675	11	25.8	694	15	35.3	654	13	30	675	11	25.8	694	2.5	2.6	4.9	81	0.79	9	21.5	710	7.5	19.2	718	0.352	205
	200L	18.5	40	697	15	33.1	710	22	47.5	686	18.5	40	697	15	33.1	710	2.8	2.7	6.1	82.5	0.8	13	28.1	714	11	26	720	0.622	276
	225M	26	53.5	701	22	45.8	712	33	69	687	26	53.5	701	22	45.8	712	2.9	2.9	6.2	84	0.82	18.5	40	718	17	37.5	720	0.820	347
	250M1	35	74	681	30	63.3	694	42	89	663	35	74	681	30	63.3	694	2.54	2.7	5.47	85	0.84	26	56	702	22	45	717	1.432	462

YZR系列技术数据
YZR series technical data

表4-2 Table 4-2

机座号 Frame size	工作制 Duty type	S4 and S5																								转子 电压 Rotor voltage (V)	转动 惯量 Rotary inertia Jm (kg·m ²)	重量 Weight (kg)
		150次/时 Stars/h												300次/时 Stars/h						600次/时 Stars/h								
		25%				40%				60%				40%			60%			60%								
项目 Items	kW	I ₁	I ₂	n	kW	I ₁	I ₂	n	kW	I ₁	I ₂	n	kW	I ₁	I ₂	n	kW	I ₁	I ₂	n	kW	I ₁	I ₂	n	kW	I ₁	I ₂	n
1000 转/分 r/min																												
YZR	112M	1.6	4.75	11.3	845	1.3	4.2	8.85	890	1.0	3.75	6.57	920	1.2	4.0	8.0	900	0.9	3.7	5.87	930	0.7	3.4	4.46	946	100	0.03	74
	132M1	2.2	6.0	11.2	908	2.0	5.7	10	913	1.7	5.3	8.4	931	1.8	5.4	8.95	926	1.6	5.1	7.87	936	1.35	4.9	6.8	945	132	0.06	97
	132M2	3.7	9.7	13.1	915	3.5	9.2	11.2	925	2.8	8.5	9.65	940	3.3	9.4	11.9	925	2.7	8.5	9.65	940	2.3	6.0	7.5	950	185	0.07	108
	160M1	5.8	15.5	27.3	927	5.0	14.1	23.4	935	4.8	13.8	22.7	937	4.8	14.1	23.4	935	4.5	13.8	22.4	937	3.8	12.2	17.5	946	138	0.12	154
	160M2	7.5	18	27.6	940	7.0	17.1	25.6	945	6.0	15.6	21.8	954	6.0	15.6	21.8	954	5.5	14.8	19.8	959	4.0	13	14.2	970	185	0.15	160
	160L	11	28.3	27.8	950	10	23	25	957	8.0	19.5	19.8	969	9.0	19.5	19.8	969	7.5	18.7	18.5	971	6.0	16.7	14.2	978	250	0.20	174
	180L	15	33	43.7	960	13	29.5	37.7	965	12	28	34.6	969	12	28	34.6	969	11	26.6	31.7	972	9.0	23.6	22.9	978	218	0.39	230
	200L	21	47	55.4	965	18.5	42.5	48.5	970	17	40.5	53.8	973	17	40.5	52.6	973	15	37	40	975	11	31.5	28.5	981	200	0.67	320
	225M	28	58	70	965	25	53	62.2	969	22	50	54.5	973	22	50	54.5	973	20	46	49.4	977	15	39	36.8	982	250	0.84	398
	250M1	33	63	82.6	970	30	58	74.9	973	28	54	69.8	975	26	52	64.6	977	25	50	62.1	978	17.5	39	43.2	984	250	1.52	512
	250M2	42	78	90.5	967	37	70	79.3	971	33	63	70.5	975	31	60	66.1	976	30	58	63.9	977	24	49	50.9	981	290	1.78	559
	280S	52	95	116	970	45	83	100	974	42	80	93.6	975	40	76	89	977	37	71	82.2	978	30	64	66.5	980	280	2.35	747
	280M	70	130	115	972	62	114	102	975	55	90.5	104	978	52	98	85.5	979	47	92	77.3	981	37	78	61	982	370	2.86	848
750 转/分 r/min																												
YZR	160L	7.5	19	22.8	712	7.0	18.1	21.2	716	5.8	16.4	17.3	724	6.0	16.7	18	722	5.0	15.5	14.9	727	3.8	13.7	11.2	732	205	0.20	172
	180L	11	25.4	40.6	711	10	23.5	36.6	717	8	20.5	28.8	728	8.0	20.5	28.8	728	7.5	19.7	26.9	729	5.8	17.8	20.6	736	172	0.39	230
	200L	15	34	54.1	713	13	30	46.6	718	12	28.1	43	720	12	28.2	43	720	11	27	39.1	724	9	23	28.1	731	178	0.67	317
	225M	21	45	56.8	718	18.5	41	49.7	721	17	38	45.6	724	17	38	45.6	724	15	35.1	40	727	11	31	29.1	733	232	0.82	390
	250M1	29	61.5	68.5	700	25	54	58.7	705	22	49	51.9	712	22	49	51.9	712	20	46	46.2	716	15	39	34.2	725	272	1.52	515
	250M2	33	70	62.5	725	30	64	56.6	727	28	61	52.8	728	26	58	48.9	730	25	57	47	731	18.5	45	34.4	736	335	1.79	563
	280S	42	91	85.8	719	37	83	75.6	723	33	76.3	67	726	31	74	63.5	728	30	72	61.5	732	24	64	49.1	733	305	2.35	747
	280M	52	104	90.2	727	45	93	77.7	730	42	89	72.4	732	42	89	72.4	732	37	83	63.5	735	30	73	51.4	737	360	2.86	848
	315S	64	118	132.7	731	60	110.5	124.2	733	56	106	115.8	733	52	100	107	735	48	94	98.8	736	35	80	71.7	740	302	7.22	1050
	315M	75	142	136	725	72	136	130.7	725	65	126	117.6	727	60	120	108	729	55	116	99	729	41	100	73.7	732	372	8.68	1170
600 转/分 r/min																												
YZR	280S	33	78.7	141.8	578	30	74	125	579	28	71	116	580	26	68	108	582	25	66	103	583	17	56	69.8	588	150	3.58	767
	280M	42	98.7	154	565	37	90	136	569	33	84.3	118	573	31	82	110	574	28	78.5	98	577	22	72.5	75	582	172	3.98	840
	315S	50	110	128.4	583	45	100	115.3	585	42	96	107.4	586	40	94	102.2	587	37	90	94.5	587	30	84	76.3	589	242	7.22	1026
	315M	65	144	129	584	63	136	119	585	55	130	109	586	53	126	98.7	587	48	124	94.7	588	37	114	73	589	325	8.68	1156
	355M	80	160.5	149.7	587	72	156	134.5	588	65	140	121	589	60	130	112	590	55	124	102.4	590	41	104	76.19	591	330	14.32	1520
	355L1	100	185	157	586	90	170	142	588	80	155	126.5	589	75	150	119	590	70	145	111	591	50	120	78.4	594	388	17.08	1764
	355L2	120	250	149.8	588	110	230	137.5	589	95	210	122.7	591	90	205	116.2	591	80	190	130.2	592	60	165	77.1	594	475	19.18	1810
	400L1	146	314	223	588	130	288	199	589	115	268	175	590	110	260	168	591	97	247	148	592	75	220	114	594	410	24.52	2400
	400L2	185	396	223	590	165	365	262	589	145	332	183	592	140	324	176	592	123	298	155	592	95	265	122	594	480	28.10	2950

注：
表中数据是当负荷的转动惯量与电动机转动惯量相等情况下的数据，由于电动机允许的输出功率随负荷的转动惯量而变化，选择电动机时对S4及S5工作制应根据负荷的实际转动惯量进行校验。

Note:
The data in the Table is based on the rotary inertia of the load being equal to the rotary inertia of the motor. The selection of motors for S4 or S5 operation must be test checked according to the real load rotary inertia.

3. 电动机的结构:

3.1 冷却方式:

112-132机座号为自然冷却 (IC0041);
160-400机座号为自扇冷却 (IC0141);
400机座号也可为具有内循环通风的扇冷却 (IC0151)。

3.2 电动机安装结构型式: 见表5。

安装结构型式
Type of installation

安装型式 Installation type	代号 Symbol	制造范围 (机座号) Range (Frame size)
	IM1001	112-160
	IM1003	180-400
	IM1002	112-160
	IM1004	180-400
	IM3001	112-160
	IM3003	180
	IM3011	112-160
	IM3013	180-315

表5 Table 5

3.3 电动机的轴伸可以按用户提出的尺寸或要求制造。

3.4 传动方式:

电动机采用联轴器或正齿轮传动, 若采用正齿轮传动时, 其齿轮节圆最小直径应小于轴伸直径的2倍。

3.5 电动机定子出线盒位于电动机顶部, 可沿电动机两侧方向出线, 转子可以从端盖的两侧出线。

3.6 电动机上的各紧固螺栓都有防松措施。

3.7 电刷型号为J201, 规格如表6。

3.8 轴承见表7。

机座号与电刷规格对应关系

Relations of frame size with carbon brush

机座号 Frame size	电刷尺寸 The dimensions of brush (mm)	集电环外径 The outer diameter of slip-ring (mm)
YZR112	20 × 8 × 32	100
YZR132	20 × 8 × 32	100
YZR160	25 × 10 × 40	112
YZR180	25 × 10 × 40	125
YZR200	32 × 12.5 × 50	140
YZR225	32 × 12.5 × 50	140

3. Construction of motor:

3.1 Mode of cooling:

- Frame 112-132 cooling use external natural (IC0041);
- Frame 160-400 use the form of fan cooling (IC0141);
- Frame 400 cooling can use fan for internal circulation either (IC0151).

3.2 For installation, see Table 5.

3.3 The shaft extension can be made according to customer's request.

3.4 Transmission through shaft coupling or spur wheel may be used. If the latter is taken, the minimum pitch circle diameter should not be less than double the diameter of the shaft extension end.

3.5 Terminal box on top of the frame has two directions along both sides of the motor for stator, but the rotor's outlet position may be from both sides of the end cover.

3.6 The measures are taken to prevent slack on the fastener of the motor.

3.7 The brush type is J201, for specifications, see Table 6.

3.8 Bearings: see Table 7

表6 Table 6

机座号 Frame size	电刷尺寸 The dimensions of brush (mm)	集电环外径 The outer diameter of slip-ring (mm)
YZR250	40 × 12.5 × 50	160
YZR280	40 × 20 × 60	200
YZR315	40 × 20 × 60	200
YZR355	50 × 20 × 60	250
YZR400	2(40 × 20 × 60)	250

机座号与轴承对应关系
Relations of frame size with bearing

表7 Table 7

机座号 Frame size	安装型式 Mounting type	IM1		IM3	
		负载端 Load end	非负载端 Non-load end	负载端 Load end	非负载端 Non-load end
112		6308	6308	6308	6308
132		6309	6309	6309	6309
160		6311	6311	6311	6311
180		6313	6313	6313	6313
200		NU315	6315	NU315	7315
225		NU315	6315	NU315	7315
250		NU316	6316	NU316	7316
280		NU320	6320	NU320	7320
315		NU322	6322	NU322	7322
355		NU326	6326		
400		NU330	6330		

3.9 电动机的结构:

- a. YZ 160-250见图4
- b. YZR 160-250见图5
- c. YZR 280-355见图6

3.9 The construction of motor

- a. The construction of YZ 160-250 see Fig.4
- b. The construction of YZR 160-250 see Fig.5
- c. The construction of YZR 280-355 see Fig.6

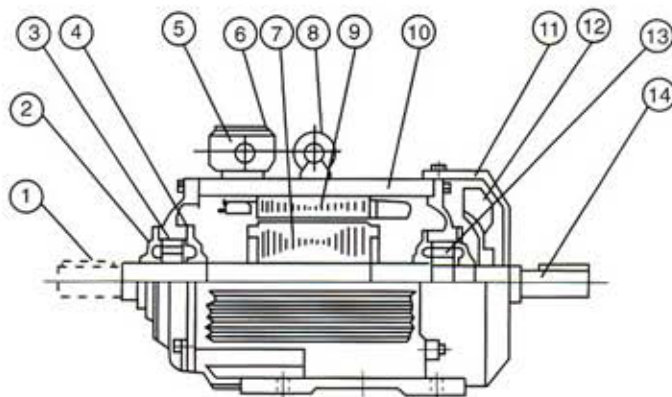


图4 YZ 160-250电动机结构图

Fig.4. Construction scheme of YZ 160-250

- | | |
|---------|--------|
| 1. 键 | 8. 吊环 |
| 2. 轴承外盖 | 9. 定子 |
| 3. 端盖 | 10. 机座 |
| 4. 轴承内盖 | 11. 端罩 |
| 5. 接线盒座 | 12. 风扇 |
| 6. 接线盒盖 | 13. 轴承 |
| 7. 转子 | 14. 转轴 |

- | | |
|------------------------|-----------------|
| 1. shaft end key | 8. eyebolt |
| 2. outer bearing cover | 9. stator |
| 3. end cover | 10. frame |
| 4. inner bearing cover | 11. fan cover |
| 5. terminal box frame | 12. cooling fan |
| 6. terminal box cover | 13. bearing |
| 7. rotor | 14. shaft |

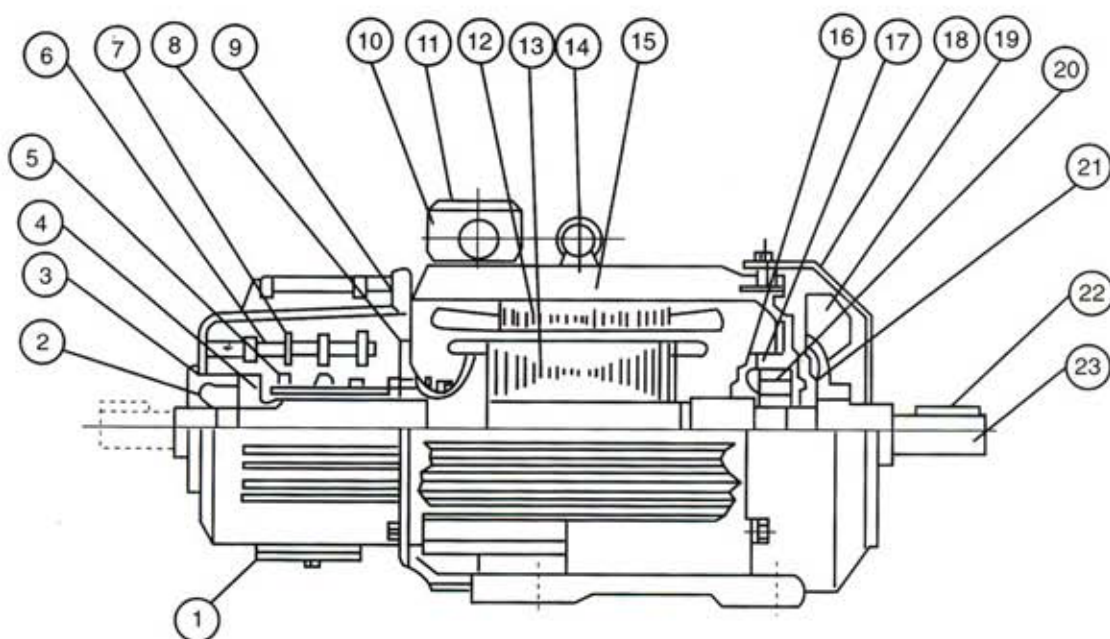


图5 YZR 160-250 结构图

- | | | |
|---------|----------|----------|
| 1. 排尘孔盖 | 9. 观察窗盖 | 17. 端盖 |
| 2. 轴承外盖 | 10. 接线盒座 | 18. 端罩 |
| 3. 前端盖 | 11. 接线盒盖 | 19. 风扇 |
| 4. 轴承内盖 | 12. 定子 | 20. 轴承 |
| 5. 集电环 | 13. 转子 | 21. 轴承外盖 |
| 6. 刷杆 | 14. 吊环 | 22. 键 |
| 7. 刷握 | 15. 机座 | 23. 转轴 |
| 8. 挡尘板 | 16. 轴承内盖 | |

Fig.5 Construction scheme of YZR 160-250

- | | | |
|---------------------------------|-------------------------|-------------------------|
| 1. dust-vent cover | 9. inspection cover | 17. end cover |
| 2. outer bearing cover | 10. terminal box frame | 18. fan cover |
| 3. front end cover | 11. terminal box cover | 19. cooling fan |
| 4. inner bearing cover | 12. stator | 20. bearing |
| 5. slip ring | 13. rotor | 21. outer bearing cover |
| 6. brush holder mounting rod | 14. eyebolt | 22. shaft end key |
| 7. brush holder | 15. frame | 23. shaft |
| 8. dust shield (divider shield) | 16. inner bearing cover | |

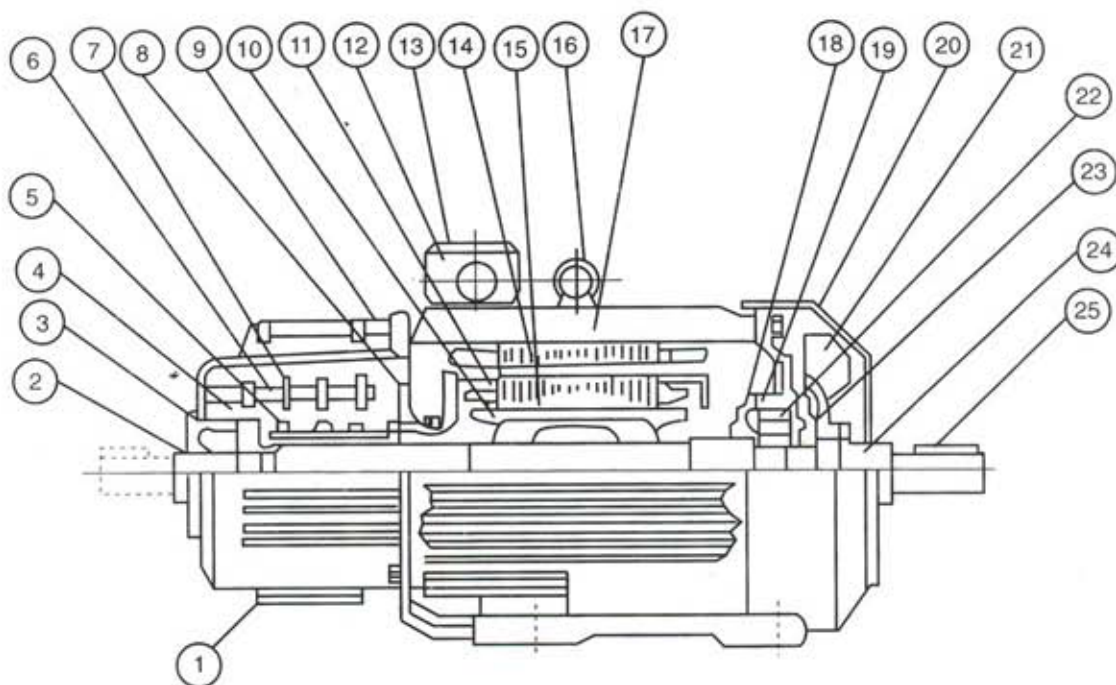


图6 YZR 280-355 结构图

- | | | |
|----------|----------|----------|
| 1. 排尘孔盖 | 9. 观察窗盖 | 17. 机 座 |
| 2. 轴承外盖 | 10. 转子支架 | 18. 轴承内盖 |
| 3. 前 端 盖 | 11. 转子压圈 | 19. 端 盖 |
| 4. 轴承内盖 | 12. 接线盒座 | 20. 端 罩 |
| 5. 集 电 环 | 13. 接线盒盖 | 21. 风 扇 |
| 6. 刷 杆 | 14. 定 子 | 22. 轴 承 |
| 7. 刷 握 | 15. 转 子 | 23. 轴承外盖 |
| 8. 挡 尘 板 | 16. 吊 环 | 24. 转 轴 |
| | | 25. 键 |

Fig.6 Construction scheme of YZR 280-355

- | | | |
|---------------------------------|------------------------|-------------------------|
| 1. dust-vent cover | 9. inspection cover | 17. frame |
| 2. outer bearing cover | 10. bearer for rotor | 18. inner bearing cover |
| 3. front end cover | 11. rotor clamper | 19. end cover |
| 4. inner bearing cover | 12. terminal box frame | 20. fan cover |
| 5. slip ring | 13. terminal box cover | 21. cooling fan |
| 6. brush holder mounting rod | 14. stator | 22. bearing |
| 7. brush holder | 15. rotor | 23. outer bearing cover |
| 8. dust shield (divider shield) | 16. eyebolt | 24. shaft |
| | | 25. shaft end key |

4. 安装及外形尺寸:

- 4.1 YZR 112-400 IM1 安装尺寸与外形尺寸见表 8。
- 4.2 YZ 112-250 IM1 安装尺寸与外形尺寸见表 9。
- 4.3 YZ 112-250 IM3 安装尺寸与外形尺寸见表 10。
- 4.4 YZR 112-315 IM3 安装尺寸与外形尺寸见表 11。

4. Installation and overall Dimensions:

- 4.1 Installation and overall dimensions of YZR 112-400 IM1: see table 8.
- 4.2 Installation and overall dimensions of YZ 112-250 IM1: see table 9.
- 4.3 Installation and overall dimensions of YZ 112-250 IM3: see table 10.
- 4.4 Installation and overall dimensions of YZR 112-315 IM3: see table 11.

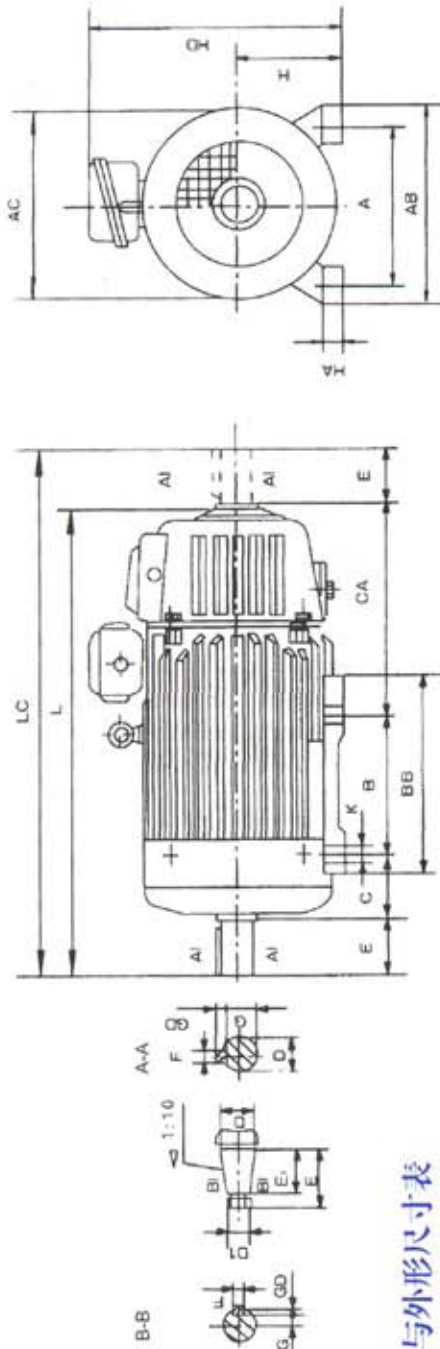
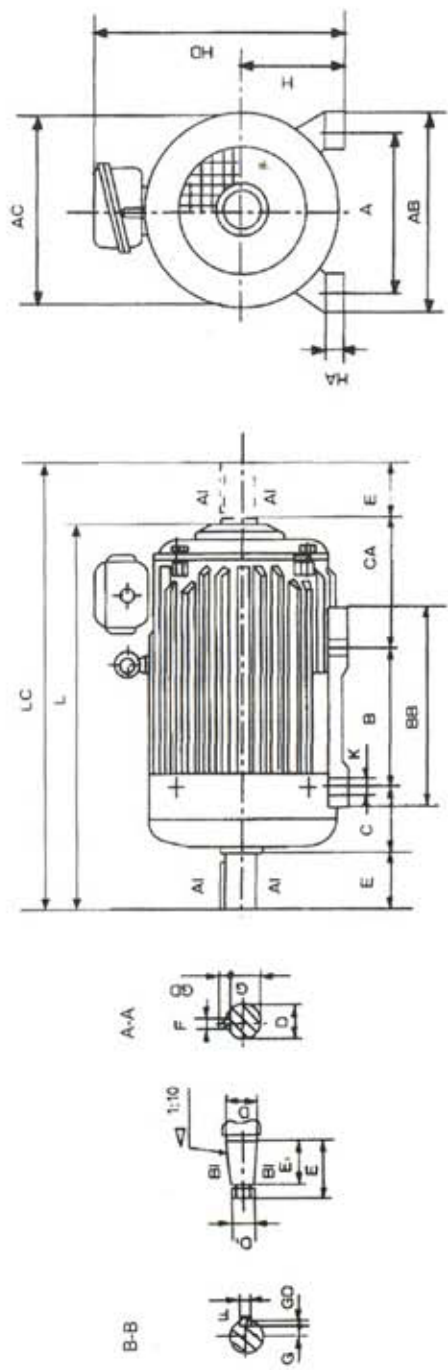


表8 Table 8 mm

YZR 112-400 IM1 安装尺寸与外形尺寸表 Installation and dimensions of series YZR 112-400 IM1

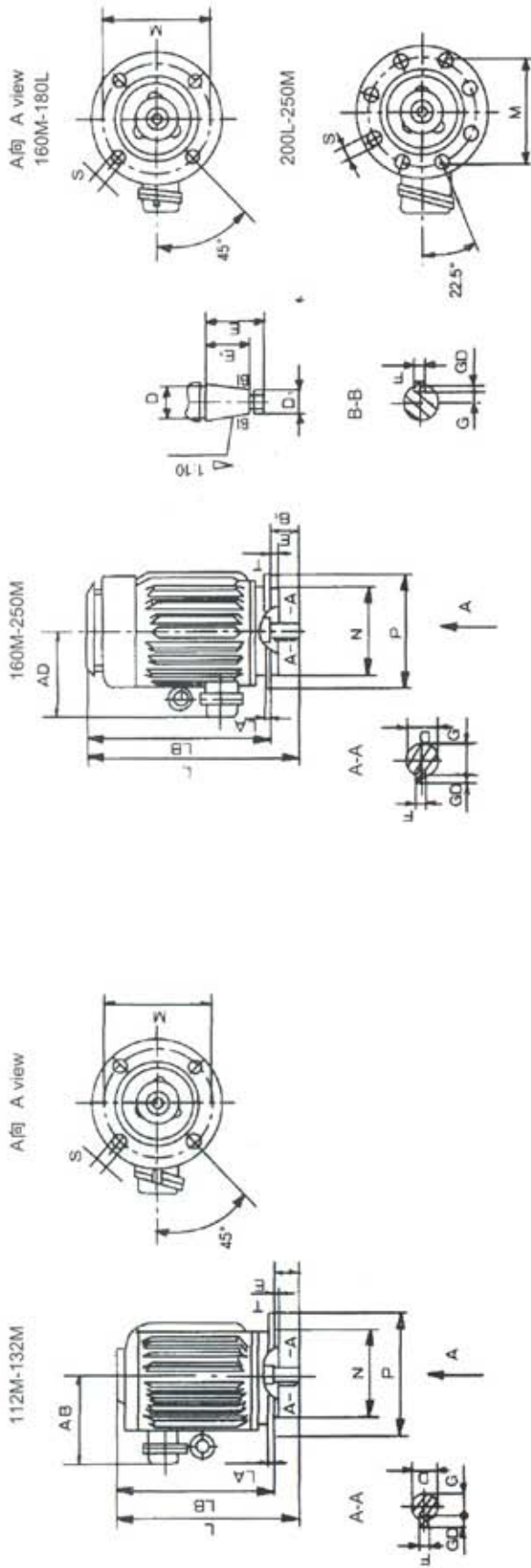
项目 Items	安装尺寸 Dimensions of installation													外形尺寸 Overall dimensions							
	H	A	B	C	CA	K	螺栓直径 Diameter of screw	D	D ₁	E	E ₁	F	G	GD	AC	AB	HD	BB	L	LC	HA
112M	112	190	140	70	300	12	M10	32		80		10	27	8	245	250	330	235	590	670	15
132M	132	216	178	89				38				33			285	275	360	260	645	727	17
160M	160	254	210	108	330	15	M12	48		110		14	42.5	9	325	320	420	290	758	868	20
160L			254															335	800	912	
180L	180	279	279	121	360			55	M36 x 3		82		19.9		360	360	460	380	870	980	22
200L	200	318	305	133	400	19	M16	60	M42 x 3	140	105	16	21.4	10	405	405	510	400	975	1118	25
225M	225	356	311	149	450			65				23.9			430	455	545	410	1050	1190	28
250M	250	406	349	168		24	M20	70	M48 x 3			18	25.4	11	480	515	605	510	1195	1337	30
280S	280	457	368	190	540			85	M56 x 4	170	130	20	31.7	12	535	575	665	530	1265	1438	32
280M			419															580	1315	1489	
315S	315	508	406	216	600	28	M24	95	M64 x 4			22	35.2	14	620	640	750	630	1440	1613	35
315M			457															730	1650	1864	38
355M	355	610	560	254	630			110	M80 x 4	210	165	25	41.9		710	740	840	800	1720	1934	
355L			630																		
400L	400	686	710	280		35	M30	130	M100 x 4	250	200	28	50	16	840	855	950	910	1865	2120	45



YZ 112-250 IMI 安装尺寸与外形尺寸表
Installation and dimensions of series YZ 112-250 IMI

表9 Table 9 mm

项目 Items	安装尺寸 Dimensions of installation											外形尺寸 Overall dimensions									
	代号 Symbols	H	A	B	C	CA	K	螺栓直径 Diameter of screw	D	D ₁	E	E ₁	F	G	GD	AB	HD	BB	L	LC	HA
机座号 Frame size	112M	112	190	140	70	135	12	M10	32		80		10	27	8	245	330	235	420	505	15
	132M	132	216	178	89	150			38				33			285	355	260	495	577	17
	160M	160	254	210	108	180	15	M12	48		110		14	42.5	9	325	420	290	608	718	20
	160L			254														335	650	762	
	180L	180	279	279	121				55	M36 x 3		82		19.9		360	460	380	685	800	22
	200L	200	318	305	133	210	19	M16	60	M42 x 3	140		16	21.4	10	405	510	400	780	928	25
	225M	225	356	311	149	258			65			105		23.9		430	545	410	850	998	28
	250M	250	406	349	168	295	24	M20	70	M48 x 3			18	25.4	11	480	605	510	935	1092	30



YZ 112-250 IM3安装尺寸与外形尺寸表
Installation and dimensions of series YZ 112-250 IM3

表10 Table 10 mm

项目 Items	安装尺寸 Dimensions of installation													外形尺寸 Overall dimensions						
	代号 Symbols	凸缘代号 The symbol of flange	M	N	P	LA	T	S	螺栓直径 Diameter of screw	孔数(个) Hole number	D	D ₁	E	E ₁	F	G	GD	L	AD	LB
112M	F215	215	180	250	14	4	15	M12	4	32		80		10	27	8	430	220	350	
132M	F265	265	230	300						38						33		495	230	415
160M		300	250	350	18					48			110		14	42.5	9	700	250	590
160L											55	M36 x 3	82		19.9		735	280	625	
180L						5	19	M16			60	M42 x 3	140		21.4	10	855	310	715	
200L		400	350	450	20						65		105		23.9		915	320	775	
225M											70	M48 x 3		18	25.4	11	1005	355	865	
250M		500	450	550	22															

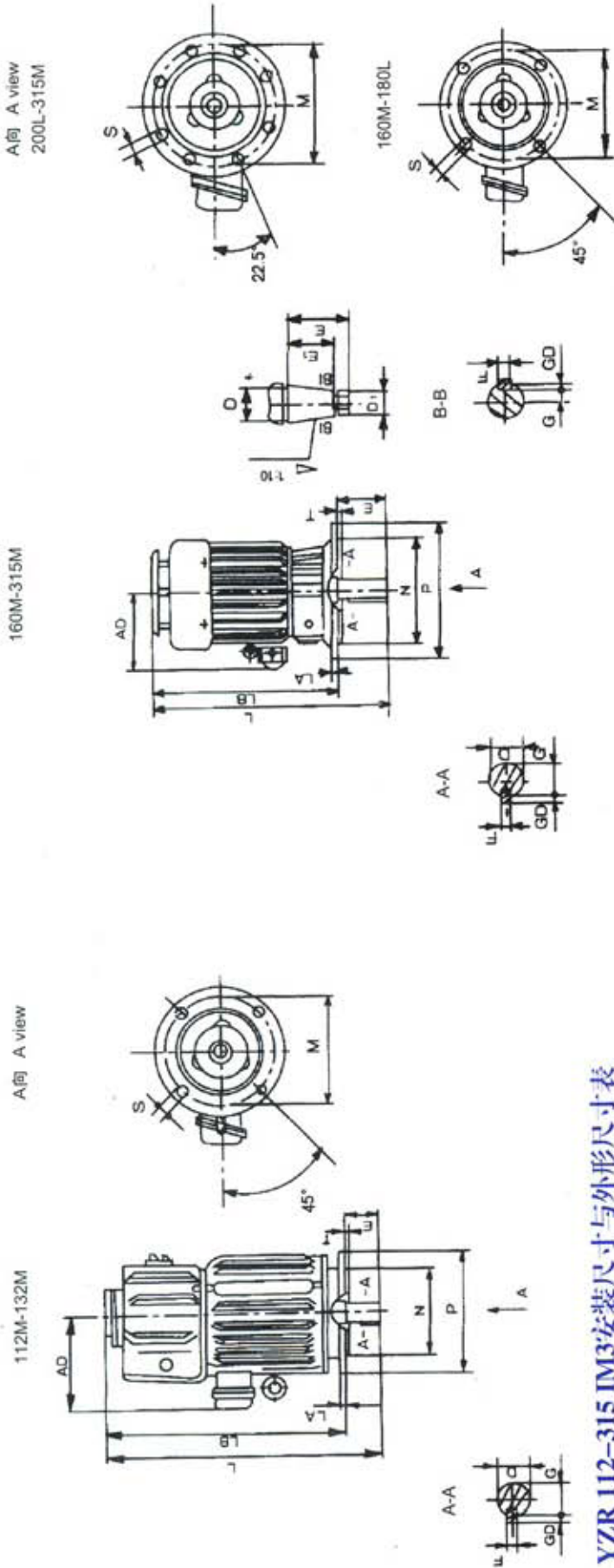


表11 Table 11 mm

YZR 112-315 IM3 安装尺寸与外形尺寸表
Installation and dimensions of series YZR 112-315 IM3

项目 Items	安装尺寸 Dimensions of installation											外形尺寸 Overall dimensions								
	代号 Symbols	凸缘代号 The symbol of flange	M	N	P	LA	T	S	螺栓直径 Diameter of screw	孔数(个) Hole number	D	D ₁	E	E ₁	F	G	GD	L	AD	LB
112M	F215	215	180	250	14	4	15	M12	4	32	38	80	-	10	27	8	595	220	515	
132M	F265	265	230	300																
160M	F300	300	250	350	18				8	55	M36 x 3	110	-	14	42.5	9	828	250	718	
160L																				
180L																				
200L	F400	400	350	450	20	5	19	M16	8	60	M42 x 3	140	105	16	19.9	10	1050	310	910	
225M																				
250M	F500	500	450	550	22															
280S																				
280M																				
315S	F600	600	550	660	25	6	24	M20												
315M																				

5. 派生产品:

为满足用户的不同需要, 在YZR、YZ系列的基础上, 可制造如下派生产品:

- 5.1 湿热带型电动机——适用于湿热带地区及类似环境中。电动机的参数与YZR、YZ系列相同。
- 5.2 60赫兹电动机——电压分380伏和440伏两种。同机座号之功率与基本系列一致, 额定电压为380伏的绕线型电动机之转子开路电压允许较50赫兹电机升高10%。
- 5.3 户外电机——适用于露天环境, 电动机具有如下的防护措施:
 - a. 轴的贯通部分设有防水环, 防止雨水的侵入;
 - b. 电动机的外面覆有钢质盖板, 防止日晒和外物的打击;
 - c. 电动机各空腔与外面贯通的气隙, 均设有密封垫, 接线盒口具有专门的防护, 以防灰尘和水侵入;
 - d. 电动机的底部设有排水孔, 以排除电机内部形成的冷凝水。
- 5.4 根据需要, 尚可试制如下产品:
 - 5.4.1 他冷式电动机——YZR系列他冷式电动机适用于工作特别繁重, 例如负载持续率高或起动次数特别多, 而电动机的功率不能降低的设备, 他冷式电动机根据通风方式的不同, 又可分为两种:
 - a. 管道通风型电动机: 经由管道, 从室外采风冷却电动机, 环境空气温度不超过40℃。
 - b. 自带风机型电动机: 风机就地采风, 环境空气温度为60℃。
 - 5.4.2 多速电机: 用于需要变速及准确动作的起重机械上。
 - 5.4.3 冶金及起重用涡流制动三相异步电动机。
 - 5.4.4 起重专用绕线转子三相异步电动机。

5. Derivative Products:

With the various needs of customers, following products can be made, derived from the YZR & YZ series:

- 5.1 High humidity type motor - The motor can be adapted for use in a high humidity tropical environment. Their basic specifications are the same as for the YZR & YZ series.
- 5.2 60HZ motor - The motor has 2 rated voltage 380V & 440V. The power is same as the basic series when its frame size is the same frame size. For the wound-rotor motor rated voltage being 380V, the open circuit of rotor voltage may exceed 10% of the 50HZ motor.
- 5.3 Outdoor type motor - It is applicable to the open environment and has following protections:
 - a. Waterproof ring device on the shaft;
 - b. The motor is against the elements by the external cover;
 - c. The watertight seals prevent ingress of water & dust;
 - d. For draining of condensation a drainage hole is incorporated into the bottom of the motor.
- 5.4 The following products can be made according to the customer's request:
 - 5.4.1 Separate-cooling type motor - This YZR series motor is suited for heavy duty and load condition. Example, it is used in the cases of higher intermittent rate & frequent starts. Ventilation can be divided into two types:
 - a. Ventilating-duct type - To cool motor, air from outside is taken through the pipe-line. The ambient temperature $\leq 40^{\circ}\text{C}$.
 - b. Motor with independent ventilator type - The ventilator uses surrounding air to cool motor, ambient temperature $\leq 60^{\circ}\text{C}$.
 - 5.4.2 Multi-speed motor - It is used where speed change is required and on cranes with accurate movement.
 - 5.4.3 Three-phase induction eddy-current brake motor used in cranes.
 - 5.4.4 Three phase induction motor with wound rotor used only for heavy-lift equipment.

6. 订货须知: NOTES FOR ORDERING

6.1 订货时请注明电动机的型号、功率、同步转速、绝缘等级、安装型式和工作制。

例: YZR160M1-6 5.5KW 1000r/min F级 IM1001 S3-40%

6.2 需要两端出轴伸, 必须在订货时声明, 否则只供给一端轴伸的电动机。

6.1 When ordering please specify the type, output, synchronous speed, insulation class, mounting arrangement and duty type of the motor.

Example YZR160M1-6 5.5KW 1000r/min F-Class IM1001 S3-40%

6.2 If the customers require the motor with two shaft extensions the special statements should be indicated in the order, or the motor with one shaft extension will be provided.



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