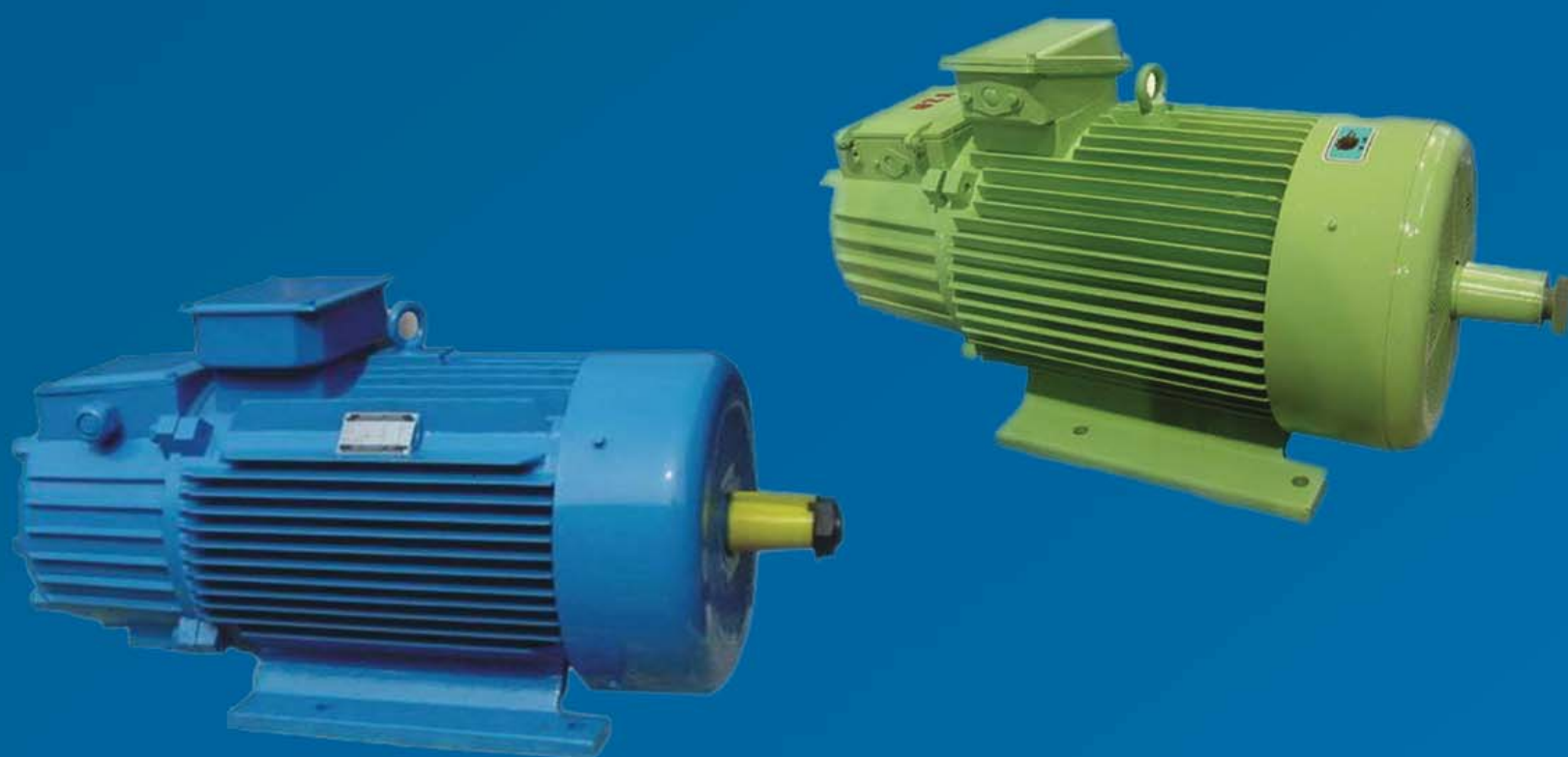


AZR(112-400) YZ(112-250) Series of Wound Rotor Three-phase
Induction Motors for Crane and Metallurgical Application



Contents

1 General	1
2 Guide for lectotype	2
3 Operation conditions of motor in site.....	9.
4 Construction characteristics	9.
5 Table of technical data	11
6 Overall and mounting dimensions	13

AZR3 Series of Wound Rotor Three-phase Induction Motors for Crane and Metallurgical Application

Instruction on Operation

1 General

1.1 AZR3 are based on AZ2 series of motors response to national industry policy of substitute hot roll by cold roll popularizing and adopting renewal of cold roll silicon steel plate improved appearance design, shaping is beautiful and novelty, improved the inner quality reliability and service life of motors, saved effective material, improved the degree of protection, decreased the noise, provided great social benefit.

1.2 The rated outputs and the mounting dimensions of the motors are in accordance with recommendation of IEC72 standard. Corresponding relation of the rated outputs to the mounting dimensions are same to and exchangeable with those of Japan standard JEM1202 and SIEMENS series motor of 1LT8 and 1LT9 (shaft height < 315).

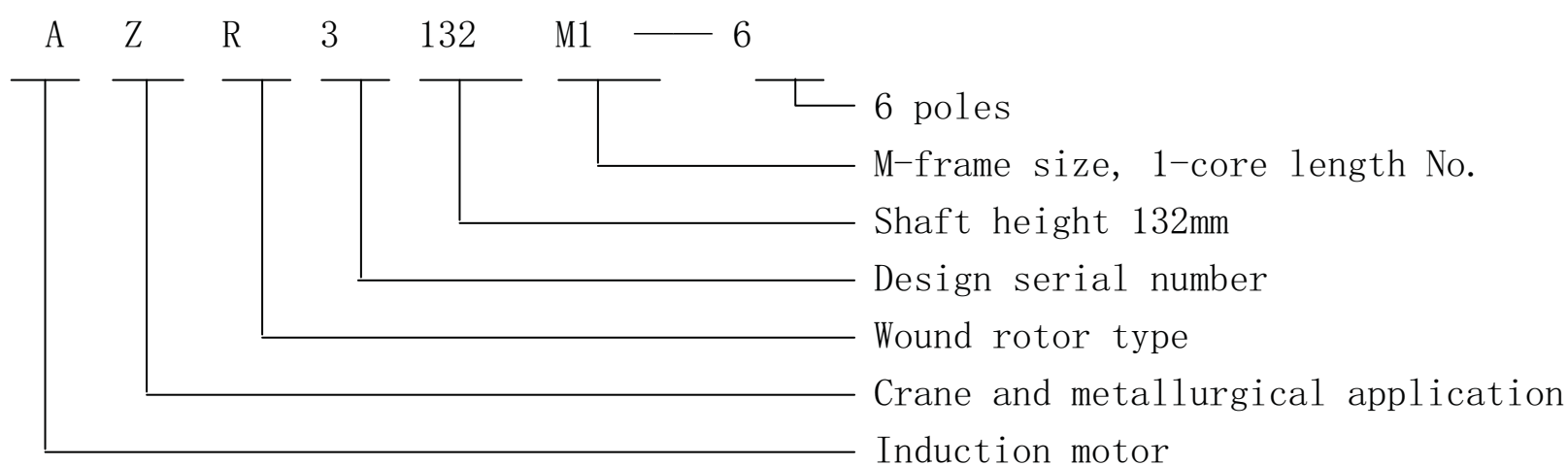
1.3 Among the products of the same kind, overall lever of this series of motor have reached advanced world standard it is the new generation of products of energy-saving and environment protection.

1.4 AZR3 series of motors are suitable for used for driving varieties of crane machineries and other similar equipments.

2 Guide for lectotype

The items mentioned herein, aiming to remind users t what should pay attention to.

Meaning of type of motor



2.2 Type spectrum are shown in table 1

Table 1

Duty type	S2								S3 6次/小时																			
	CDF				CDF				15%				25%				40%				60%				100%			
	Speed	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600	1500	1000	750
kW																												
AZR3112M1	3.3	1.7			3.0	1.5			4.0	2.2			3.3	1.7			3.0	1.5			2.6	1.3			2.0	1.1		
AZR3112M2	4.0	2.5			3.7	2.2			5.0	3.0			4.0	2.5			3.7	2.2			3.2	1.8			2.5	1.5		
AZR3 132M1	6.3	3.3			5.5	3.0			7.5	4.0			6.3	3.3			5.5	3.0			4.8	2.6			4.0	2.0		
AZR3 132M2	7.0	4.0			6.3	3.7			9.0	5.0			7.0	4.0			6.3	3.7			5.3	3.2			4.8	2.5		
AZR3 160M1	8.5	6.3			7.5	5.5			10.0	7.5			8.5	6.3			7.5	5.5			6.3	4.8			5.0	4.0		
AZR3 160M2	13.0	8.5			11.0	7.5			14.0	10.0			13.0	8.5			11.0	7.5			9.5	6.3			8.8	5.5		
AZR3 160L	17.0	13.0	8.5		15.0	11.0	7.5		20.0	15.0	11.0		17.0	13.0	8.5		15.0	11.0	7.5		13.0	9.0	6.3		11.0	7.5	5.5	
AZR3 180L	25.0	17.0	13.0		22.0	15.0	11.0		29.0	20.0	15.0		25.0	17.0	13.0		22.0	15.0	11.0		19.0	13.0	9.5		16.0	11.0	8.0	
AZR3 200L	35.0	25.0	17.0		30.0	22.0	15.0		39.0	31.0	22.0		35.0	25.0	17.0		30.0	22.0	15.0		26.0	19.0	13.0		22.0	16.0	11.0	
AZR3 225M	42.0	35.0	26.0		37.0	30.0	22.0		50.0	40.0	30.0		42.0	35.0	26.0		37.0	30.0	22.0		32.0	25.0	19.0		27.0	22.0	16.0	
AZR3 250M1	52.0	42.0	36.0		45.0	37.0	30.0		60.0	50.0	42.0		52.0	42.0	36.0		45.0	37.0	30.0		39.0	32.0	26.0		33.0	27.0	22.0	
AZR3 250M2	63.0	52.0	42.0		55.0	45.0	37.0		75.0	63.0	52.0		63.0	52.0	42.0		55.0	45.0	37.0		47.0	39.0	32.0		40.0	33.0	27.0	
AZR3 280S1	70.0	63.0	52.0	42.0	63.0	55.0	45.0	37.0	95.0	75.0	60.0	55.0	70.0	63.0	52.0	42.0	63.0	55.0	45.0	37.0	55.0	48.0	39.0	32.0	48.0	40.0	33.0	27.0
AZR3 280S2	85.0	70.0			75.0	63.0			115.0	85.0			85.0	70.0	63.0		75.0	63.0	55.0		63.0	53.0	47.0		55.0	46.0	40.0	
AZR3 280M	100.0	85.0	63.0	52.0	90.0	75.0	55.0	45.0	120.0	100.0	75.0	63.0	100.0	85.0	70.0	52.0	90.0	75.0	63.0	45.0	75.0	63.0	53.0	39.0	65.0	55.0	46.0	33.0
AZR3 315S1	125.0	103.0	70.0	63.0	110.0	90.0	63.0	55.0	140.0	120.0	84.0	75.0	125.0	103.0	85.0	63.0	110.0	90.0	75.0	55.0	92.0	75.0	63.0	47.0	80.0	65.0	55.0	40.0
AZR3 315S2			85.0	70.0			75.0	63.0			100.0	84.0				70.0				63.0				53.0				46.0
AZR3 315M	155.0	125.0	100.0	85.0	132.0	110.0	90.0	75.0	190.0	155.0	125.0	100.0	155.0	125.0	100.0	85.0	132.0	110.0	90.0	75.0	110.0	92.0	75.0	63.0	95.0	80.0	65.0	55.0
AZR3 355M			125.0	100.0			110.0	90.0			155.0	132.0			125.0	100.0			110.0	90.0			92.0	75.0			80.0	65.0
AZR3 355L1			150.0	125.0			132.0	110.0			190.0	160.0			150.0	125.0			132.0	110.0			110.0	92.0			95.0	80.0
AZR3 355L2			185.0	150.0			160.0	132.0			225.0	185.0			185.0	150.0			160.0	132.0			132.0	110.0			115.0	95.0
AZR3 400L1			230.0	185.0			200.0	160.0			280.0	236.0			230.0	185.0			200.0	160.0			170.0	132.0			145.0	115.0
AZR3 400L2			300.0	230.0			250.0	200.0			350.0	270.0			300.0	230.0			250.0	200.0			210.0	170.0			180.0	145.0

Table 1 (Continued)

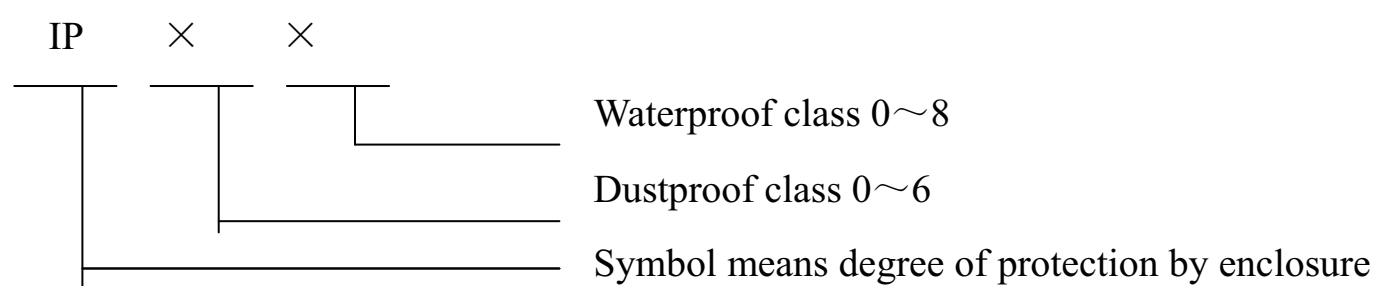
Duty type	S4 and S5																							
	150starts/hour								300starts/hour								600starts/hour							
	CDF				CDF				60%				40%				60%				60%			
Speed	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600	1500	1000	750	600
kW																								
AZR3 112M1	3.0	1.6			2.8	1.3			2.2	1.0			2.2	1.2			2.0	0.9			1.8	0.7		
AZR3 112M2	3.7	2.2			3.5	2.0			2.8	1.7			3.3	1.8			2.8	1.6			2.3	1.3		
AZR3 132M1	5.8	3.0			5.0	2.8			4.8	2.2			4.8	2.2			4.5	2.1			3.8	1.8		
AZR3 132M2	6.6	3.7			5.7	3.5			5.4	2.8			5.4	3.3			5.1	2.8			4.3	2.7		
AZR3 160M1	7.5	5.8			7.0	5.0			6.0	4.8			6.0	4.8			5.5	4.5			4.0	3.8		
AZR3 160M2	10.0	7.5			9.0	7.0			8.0	6.0			8.0	6.0			7.0	5.5			5.9	4.0		
AZR3 160L	14.0	11.0	7.5		13.0	10.0	7.0		11.0	8.0	5.8		11.0	8.0	6.0		10.0	7.5	5.5		9.0	5.9	3.8	
AZR3 180L	20.0	15.0	11.0		18.0	13.0	10.0		17.0	12.0	8.0		17.0	12.0	8.0		15.0	11.0	7.0		11.0	9.0	5.8	
AZR3 200L	28.0	21.0	15.0		25.0	18.5	13.0		22.0	17.0	12.0		22.0	17.0	12.0		20.0	15.0	11.0		15.0	11.0	8.0	
AZR3 225M	34.0	28.0	21.0		33.0	25.0	18.5		30.0	22.0	17.0		28.0	22.0	17.0		26.0	20.0	15.0		20.0	15.0	11.0	
AZR3 250M1	42.0	33.0	29.0		37.0	30.0	25.0		36.0	28.0	22.0		33.0	26.0	22.0		33.0	25.0	20.0		27.0	17.5	15.0	
AZR3 250M2	55.0	42.0	33.0		47.0	37.0	30.0		42.0	33.0	28.0		42.0	31.0	26.0		40.0	30.0	25.0		35.0	24.0	18.5	
AZR3 280S1	63.0	52.0	42.0	33.0	60.0	45.0	37.0	30.0	55.0	42.0	33.0	28.0	50.0	40.0	33.0	26.0	45.0	37.0	30.0	25.0	45.0	30.0	24.0	17.0
AZR3 280S2	75.0	59.0			70.0	51.0			65.0	48.0	42.0		55.0	45.0	42.0		50.0	42.0	27.0		50.0	34.0	30.0	
AZR3 280M	85.0	70.0	52.0	42.0	80.0	62.0	45.0	37.0	75.0	55.0		33.0	70.0	52.0		31.0	65.0	47.0	42.0	28.0	60.0	37.0	34.0	22.0
AZR3 315S1	102.0	84.0	59.0	50.0	90.0	74.0	50.0	45.0	80.0	66.0	48.0	42.0	75.0	62.0	48.0	40.0	68.0	56.0	48.0	37.0	55.0	44.0	38.0	30.0
AZR3 315S2			64.0	54.0			60.0	50.0			56.0	46.0			52.0	42.0				40.0				31.0
AZR3 315M	125.0	102.0	74.0	65.0	120.0	90.0	71.0	60.0	115	80.0	65.0	55.0	105.0	75.0	60.0	50.0	100.0	68.0	55.0	48.0	90.0	53.0	41.0	37.0
AZR3 355M			100.0	80.0			95.0	72.0			82.0	65.0			78.0	60.0			70.0	55.0			60.0	41.0
AZR3 355L1			115.0	100.0			106.0	90.0			98.0	80.0			95.0	75.0			85.0	70.0			70.0	50.0
AZR3 355L2			140.0	120.0			125.0	110.0			120.0	95.0			110.0	90.0			100.0	80.0			90.0	60.0
AZR3 400L1			195.0	145.0			180.0	132.0			170.0	120.0			150.0	110.0			135.0	96.0			130.0	75.0
AZR3 400L2			240.0	185.0			220.0	165.0			205.0	150.0			195.0	140.0			180.0	120.0			170.0	95.0

2.3. The insulation class are F and H generally, both instructions have the same technical parameter, only the temperature rise limits is different, the temperature rise limits of air indirect cooled winding: when the altitude doesn't exceed 1000 m above sea-level and on the basis of the max ambient temperature doesn't exceed 40°C, class F is 105K; on the basis of the max ambient temperature doesn't exceed 60°C, class H is 105 K.

2.4 Allowable temperature for bearing: it shall not exceed 95°C.

2.5 Voltage and frequency: rated voltage is 380V. rated frequency is 50Hz, allowable deviation for voltage is ±5%, allowable deviation for frequency ±1%.

2.6 Degree of protection by enclosure: :



2.7 Cooling form: typical cooling form for the products

——IC411 motors are TEFC

2.8 Selection of rating class and No. of poles (speed)

The rating class is selected from 1st numeral system of GB/T4772.1 standard by manufacturer, in which the few is selected from 2nd numeral system of GB/T4772.1 standard. Sometimes, when the rating class and No. of poles can't meet the requirements of the users, the users requirements would be satisfied after refer to manufacturer.

AZR series of motor is short-time duty or intermittent periodic duty, design basis is S3-40%, starts per hour is 6 (each cycle comprises 10 minutes, cyclic duration factor is 40%), that is basis duty type.

$$CDF = \frac{\text{running period}}{\text{cyclic period}} \%$$

Where running period comprised starting time, CDF and braking time, one cyclic period consists of running time and time at rest and deenergized.

During the operating of the same motor, because the number of starts, CDF, and the duty type are different, the rated power is different by consequence. But the actual value of speed keep unchanged generally, rated current is changed, rated current proportional to rated power. Basis duty type is regard as the uniform acceptable standard of type test of manufacturer. When in service use, it can't be performed completely.

According to their loads, duty type of this series of motor can be divided into::

(1) Duty type S3, intermittent periodic duty: it represents a series of cycles identical in duration, a duty cycle being length of time spend for running at constant duty, and at rest or deenergised (see Fig.1). Based on a duty cycle of 10 minutes, i.e.6starts/hour, it represents the condition in which heating during starting should

not significantly affect the temperature rise.

(2) Duty type S4 intermittent periodic duty with starting, it is a series of cycles identical in duration, a duty cycle being length of time spent for starting, it represents the condition in which heating during starting should affect the temperature rise significantly. Running at rated condition and at rest or deenergised (see Fig.2); starting classes are of 150,300 and 600 starts per hour.

(3) Duty type S5 intermittent periodic duty with starting and electric braking: it is a series of cycles identical in duration, a duty cycle being length of time spent for starting, running at rated condition, electric quick-braking, and at rest or deenergised (see Fig.3).

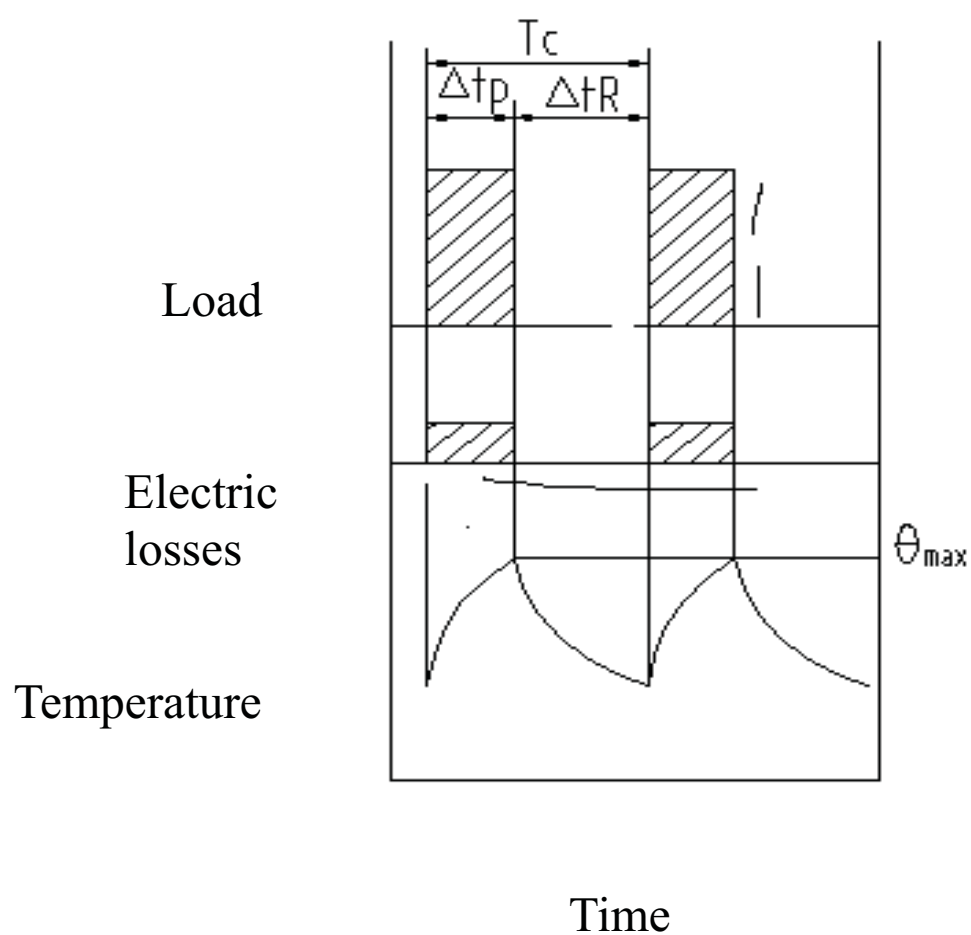


Fig.1. Duty type S3

Δt_p —Operation under rated condition;

Δt_R —At rest and deenergised;

θ_{max} —Maximum temperature attained during duty cycle;

$$CDF: \frac{\Delta t_p}{T_c} \times 100\%$$

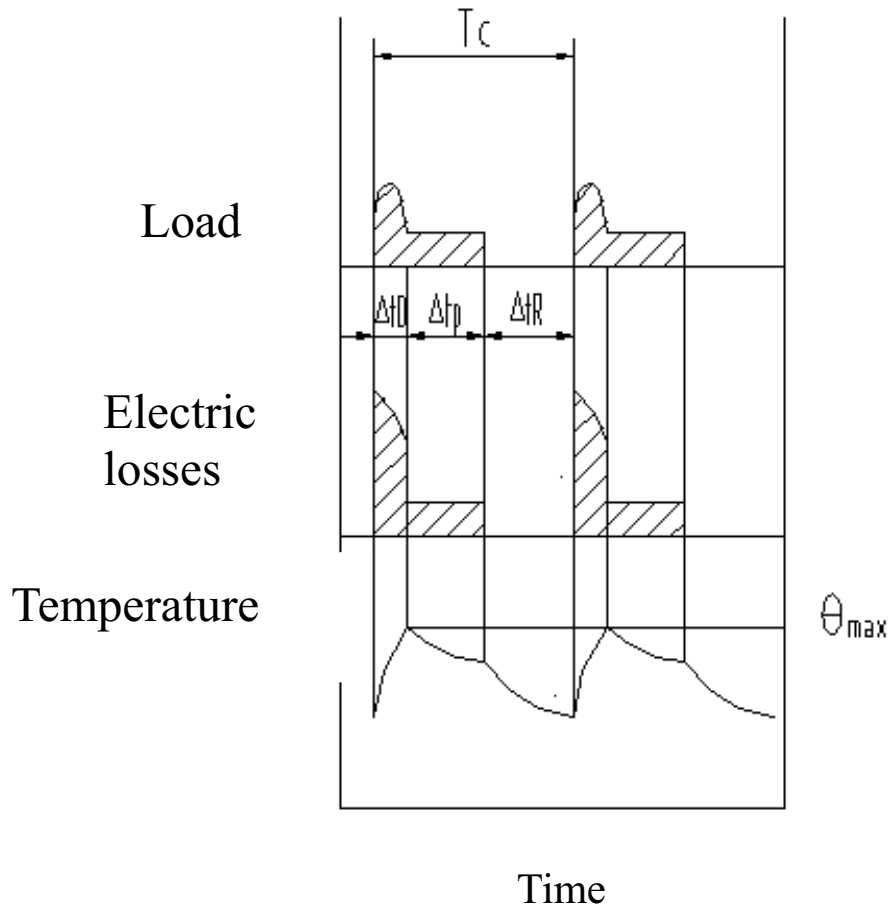


Fig.2. Duty type S4

Δt_D —Starting;

Δtp —Operation under rated condition.

Δt_R —At rest and deenergised;

θ_{max} —Maximum temperature attained during duty cycle;

$$CDF: \frac{\Delta t_D + \Delta tp}{T_c} \times 100\%$$

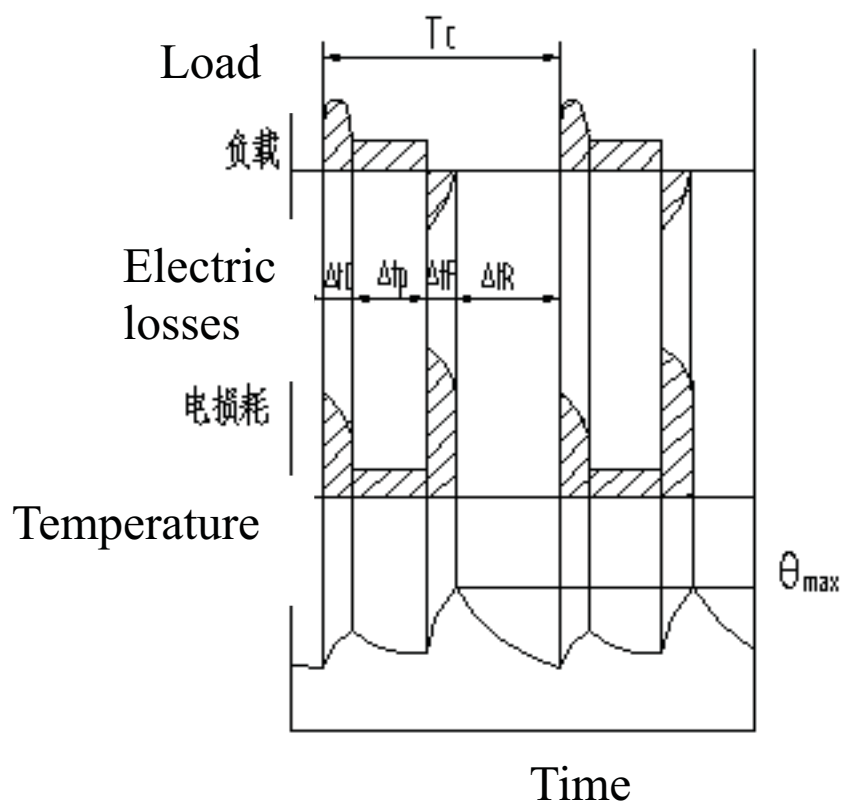


Fig.3. Duty type S5

Δt_D —The time of starting and accelerating ;

Δtp —Operation under rated condition;

Δt_F —Electric braking;

Δt_R —At rest and deenergised;

θ_{max} —Maximum temperature attained during duty cycle;

$$CDF: \frac{\Delta t_D + \Delta tp + \Delta t_F}{T_c} \times 100\%$$

2.9 CDF and number of starts

(1) Selection of CDF

CDF is determined on the basis of service condition on site and statistic data over a long period of time, it showing practical situation as far as possible.

(2) Number of starts

Normally, number of starts means the number at the end of complete starting, but when a motor at operated state, jogs sometimes, braking state haven't reach complete starting, therefore, these state should be reduced to equivalent numbers of starts in equivalent heating, the reduce method is as the follows:

- a. One jog (motor reaching speed doesn't exceed 25% of rated speed) is equal to 1/4 start;
- b. Electrical braking (being braked to 1/3 rated speed) once is equivalent to 80% of start;
- c. Typical examples of the equivalent number of starts/h are given in table 2

Table 2

Duty type	Starting duties				Starting class i.e.number of starts of thermal equivalent per hour
	starts per hour	Jogs per hour	Brakings to standstill per hour	Complete brakings and reversals per hour	
S3	6	0	0		6
	4	8	0	0	
	2	8	2		
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	

2.10 Tolerance of performance parameter

(1) Breakdown torque for induction motor: -10% of torque guaranteed value, but count in tolerance, torque value should not lower 1.6 or 1.5 times of rated torque..

(2) Slip: when the output is less than 1kW, slip guaranteed value is ± 30%; when the output is larger than 1kW,

$$S = \frac{n_1 - n_2}{n_1} \times 100\%$$

slip guaranteed value is ± 20%, slip n_1 , n_1 —synchronous speed; n_2 —rated speed.

(3) Moment of inertia: $\pm 10\%$ of guaranteed value.

2.11 Type of weather protection and environment symbol

- (1) TH——damp and tropical type;
- (2) W——outdoor light-corrosion- proof type;
- (3) WF1——outdoor medium-corrosion- proof type;
- (4) WF2——outdoor strong-corrosion- proof type;
- (5) F1——indoor medium-corrosion- proof type;
- (6) F2——indoor strong-corrosion- proof type.

2.12 Connection: Δ -connection、Y-connection

2.13 Cable entry device: rubber sheath and steel conduit

2.14 Thermal protection: PT100 or PTC can be embedded in winding.

2.15 According to user's requirements, the encoder and over speed switch can be provided

3 Operation conditions of motor in site

3.1 Altitude

Altitude above sea level is up to 1000m. (When the altitude above sea level is not in accordance with the above specifications, the temperature rise of the motor can be amended according to GB755)

3.2 Humidity

The average relative humidity of the moistest month should not more than 95%,and the average lowest temperature in this month should not over 25°C.

3.3 Ambient temperature

F insulated motor is suitable for operates at metallurgic site where the ambient temperature should not exceed 40°C, H insulated motor is suitable for operates at metallurgic site where the ambient temperature should not exceed 60°C, the lowest ambient temperature is-15°C, F insulated motor H insulated motor have the same technical parameter. (The motors of other operation conditions should be amended according to GB755) .

3.4 Voltage and frequency

During the operation of the motors, power supply, frequency and tolerance of ratings should conforms to GB 755.

4 Construction characteristic

Compare with the motors of YZR series, AZR3 series of motors has made greater improvement in construction. The fan is located at the non-shaft extension side (collector ring side), it is provided separate terminal box for stator and rotor, the terminal box of stator is located at the non-shaft extension side, in order to improve the ventilation-cooled effect; there are no terminal box of the rotor for motors (frame sizes of 112 to160), the cover of inspection window can be made entry directly; the greater improvement has been made in frame and lectotype of endshield, cooling fins of motor frame are parallels distributed in vertical directions, so that the frame as a whole approximate the square, thus having the strong three-dimensional effect and beautiful

appearance, the motor of shaft height of 280 to 400 are provided with the grease-filling and –draining device in order to extend the service life of bearing, the filling hole of shaft extension end are located at the external cover of bearing, brush-holder device is brush finger construction.

4.1 Cooling form: IC411 totally-enclosed fan cooled

4.2 Mounting arrangement are shown in table 3.

Table 3

Mounting arrangement	Designation	Availability (Frame size)	Remarks
	IM1001	112~160	Cylindrical shaft extension
	IM1003	180~400	Conical shaft extension
	IM1002	100~160	Cylindrical shaft extension
	IM1004	180~400	Conical shaft extension
	IM3001	112~160	Cylindrical shaft extension
	IM3003	180~225	Conical shaft extension
	IM3011	100~160	Cylindrical shaft extension
	IM3013	180~315	Conical shaft extension

4.3 The shaft extension for the motor can be available on the request of users

4.4 The type of drive; the motor can be connected to machine by means of coupling or pinion gears. For the later, the minimum pitch circle diameter of it should not be less than twice of the shaft diameter.

4.5 The axial play of shaft extension of the motor: it would be up to 1mm for frame sizes 100~180, and it would be up to 2mm for frame sizes 200~400.

4.6 For the fixing bolts, measures are taken against looseness.

4.7 Bearing selection are shown in table 4

Table 4

Frame size	IM1		IM3	
	Drive end	Non-diver end	Drive end	Non-diver end
112	6308-2RZ	6308-2RZ	6308-2RZ	6308-2RZ
132	6309-2RZ	6309-2RZ	6309-2RZ	6309-2RZ
160	6311-2RZ	6311-2RZ	6311-2RZ	6311-2RZ
180	6312	6312	6312	6312
200	6313	6313	NU313	7313ACJ
225	6314	6314	NU314	7314ACJ
250	6316	6316	NU316	7316ACJ
280	6318	6318	NU318	7318ACJ
315	6320	6320	NU320	7320ACJ
355	NU324	6324	—	—
400	NU328	6328	—	—

4.8 Brush dimensions and outer diameter of slip rings are shown in table 5

Table 5

Frame sizes	Brush dimensions mm	Outer diameter of ship rings mm	Frame sizes	Brush dimensions mm	Outer diameter of ship rings mm
112	16×8×25	90	250	32×16×40	160
132			280		
160	20×10×32	112	315	40×20×50	200
180			355		
200	25×12.5×32	132	400		225
225					

5 Technical parameter are shown in table 6

6 Overall and mounting dimensions are shown in table 4、 5、 6、 and fig .7、 8、 9

Fig 4

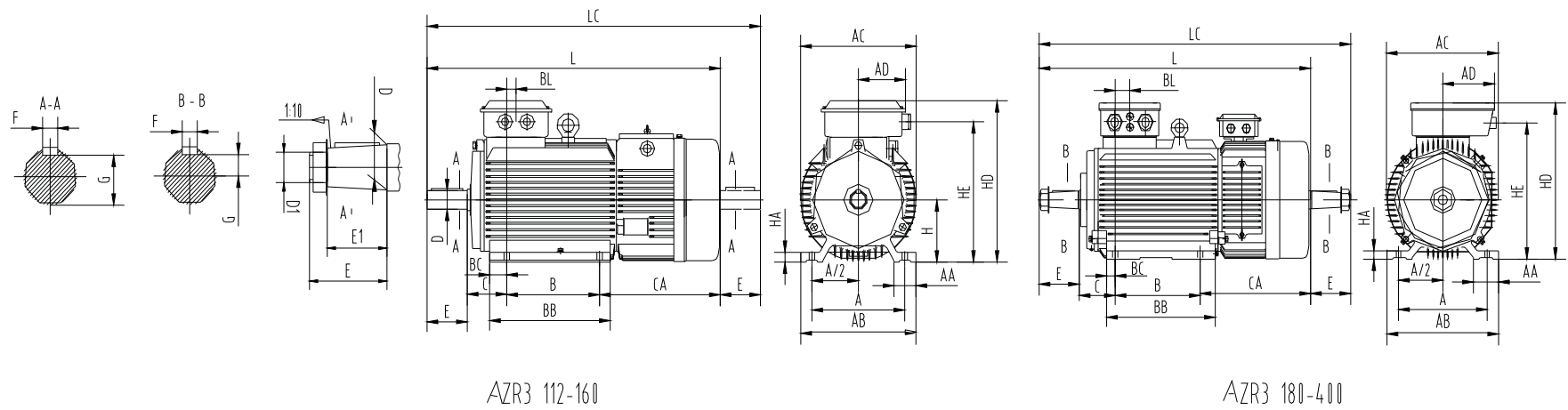


Table 7 IM1001, IM1002, IM1003,

Frame sizes	Mounting dimension and tolerance													Overall dimensions																		
	A	A/2 ¹⁾	B	C ²⁾		D ³⁾		D1	E		E1		F		G		H		K		di (a) of bolt	AA	AB	AC	AD	BC	BB	BL	HA	HE	HD	L
112M	190	95	140	70	±2		300	32	80	±0.37			10	0	27	112		12	+0.43	M10	50	250	235	160	20	225	40	20	315	275	590	670
132M	216	108	178	89	±2		300	38	80	±0.37			10	-0.036	33	132		12	0	M10	50	275	285	160	28	240	42	355	312	647	727	
160M	254	127	210	108	±3		330	48	110	±0.43			14		42.5	160		14.5		M12	60	320	320	200	47	290	33	25	425	366	758	868
160L		254	210	108	±3			330	48	110	±0.43			14		42.5	160		14.5		M12	60	320	320	200	47	290	33	25	425	366	802
180L	279	139.5	279	121	±3		360	55	M36×3				16	0	19.9	180		18.5		M16	72	360	360	280	330	40	470	420	870	980		
200L	318	159	305	133	±3			360	55	M36×3				16	-0.043	21.4	200		18.5		M16	90	406	406	245	313	90	49	520	467	978	1118
225M	356	178	311	149	±3		400	60	M42×3				18	0	23.9	225		24		M16	90	455	425	245	304	110	40	560	500	1050	1190	
250M	406	203	349	168	±3			400	60	M42×3				18	-0.20	25.4	250		24		M20	100	515	470	435	500	320	625	561	1195	1337	
280S	457	228.5	368	190	±4		540	85	M56×3	±0.50			20		31.7	280		28		M20	100	575	530	315	58	520	55	735	650	1265	1438	
280M			419	190	±4			540	85	M56×3	±0.50				20		31.7	280		28		M20	100	575	530	315	58	520	55	735	650	1315
315S	508	254	406	216	±4		600	95	M64×4				22	0	35.2	315		28		M24	130	640	620	370	43	550	34	835	710	1385	1562	
315M			457	216	±4			600	95	M64×4					22	-0.052	35.2	315		28		M24	130	640	620	370	43	550	34	835	710	1443
355M	610	305	560	254	±4		630	110	M80×4				25		41.9	355		35		M24	140	740	695	440	71	710	46	890	825	1654	1864	
355L			630	254	±4			630	110	M80×4	±0.58				25		41.9	355		35		M24	140	740	695	440	71	710	46	890	825	1724
400L	686	343	710	280	±4		M100×4	130	250	±0.58			28	0	50	400		35		M30	160	855	800	440	85	880	45	1090	920	1870	2120	

Note: 1) If the position hole "k" is up to standard, A/2 can not be examined.
 2) The lining deviation of dimension "c" includes the axial play.
 3) Conical shaft extension is checked according to the specification GB/T1570.

Fig. 5

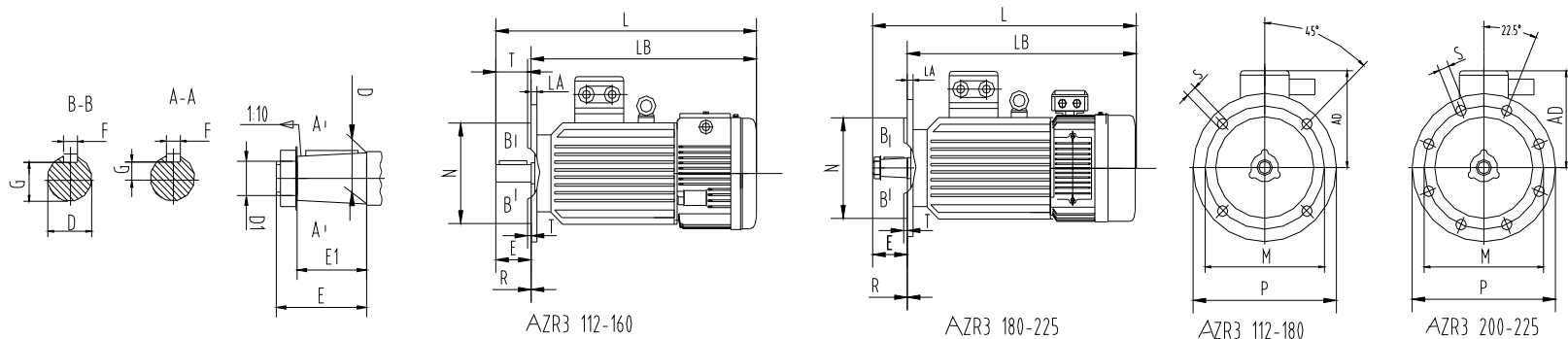


Table 8 IM3001 and IM3003 horizontal mounted motor

mm

Frame sizes	Mounting dimension and tolerance													Overall dimension													
	Flange symbol	D		D1	E		E1		F		G		M	N		P	R ³⁾		S		di (a) of bolt	T is max.	No. of holes	AD	LA	LB	L
112M	FF215	32				80	±0.37			10	0	27			215		180		250						±2.0	15	±0.43
132M	FF265	38	+0.018		80	±0.37			10	-0.036	33		265	230		300			±2.0	15	±0.43	M12	4	218	14	567	647
160M		48	+0.002		110	±0.43			14		42.5		300	250	+0.016	350			±3.0	19	±0.52	M16	5	265	18	648	758
160L	FF300	48			110	±0.43			14		42.5		300	250	-0.013	350			±3.0	19	±0.52	M16	5	265	18	692	802
180L		55		M30x2			82			0	19.9								±4.0	19	±0.52	M16	5	285		760	870
200L	FF400	60	+0.046	M42x3	140	±0.50	105	0	16	-0.054	21.4		400	350	±0.018	450			±4.0	19	±0.52	M16	5	317	20	838	978
225M		65		M42x3	140	±0.50	105	0	16			23.9		400	350	±0.018	450			±4.0	19	±0.52	M16	5	335	20	910

Note: 1) Conical shaft extension is checked according to the specification of GB/T1570.
 2) The dimension "p" is the largest limited dimension.
 3) "R" is the distance flange mating surface to shaft extension shoulder.

Fig. 6

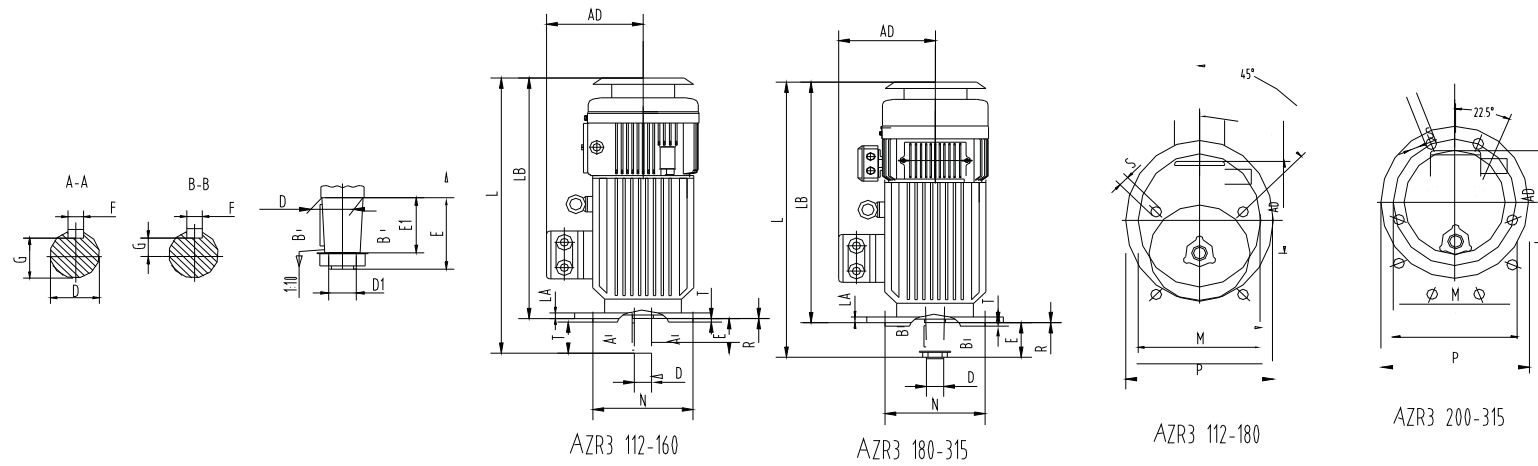


Table 9 IM3011、IM3013 vertical mounted motor

Frame sizes	Flange symbol	Mounting dimension and tolerance																		Overall dimension							
		D		D1	E		E1		F		G		M	N		P	R		S		di(a) of bolt	T is max.	No. of holes	AD	L	LA	LB
		Basic dim.	limit dev.		Basic dim.	limit dev.	Basic dim.	limit dev.	Basic dim.	limit dev.	Basic dim.	limit dev.		Basic dim.	limit dev.		Basic dim.	limit dev.	Basic dim.	limit dev.							
112M	FF215	32			80	±0.37			10	0 -0.36	27		215	180	^{+0.014} -0.011	250		±2.0	15	^{+0.430} 0	M12	4		203	630	14	550
132M	FF265	38	^{+0.018} -0.002								33		265	230		300						4		218	687		607
160M	FF300	48			110	±0.43			14		42.5		300	250	^{+0.016} -0.013	350		±3.0						265	808		698
160L																								265	852	18	742
180L		55		M36x3			82			0 -0.043	19.9													285	920		810
200L	FF400	60	^{+0.046} 0	M42x3	140		105	0 -0.540	16		21.4		400	350	±0.018	450	0		19	^{+0.520} 0	M16	5		317	1028	20	888
225M		65									23.9													335	1100		960
250M		70		M48x3					18		25.4													375	1257		1117
280S	FF500	85		M56x4		±0.50		0 -0.630	20	0 -0.052	31.7		500	450	±0.020	550		±4.0				8		455	1328	22	1158
280M																									1379		1209
315S	FF600	95	^{+0.054} 0	M64x4	170		130		22		35.2		600	550	±0.022	660			24		6		520	1452	25	1282	
315M																								520	1503		1333

注: 1) Conical shaft extension is checked according to the specification of GB/T1570.
 2) The dimension "p" is the largest limited dimension.
 3) "R" is the distance flange mating surface to shaft extension shoulder.

7 Interface dimension of field installation

7.1 Specification of terminal bolt and size of seal rings in table 12

Table 12

Shaft height (mm)	Size of terminal bolt	Size of earthing bolt	Inner hole dimension of seal ring	Thread dimension of steel conduit
112-132	3×M6	M5	2-Ø(13-18)	M30×2.0
160-180	3×M8	M6	2-Ø(18-25)	M36×2.0
200-250	3×M8	M6	2-Ø(22-32)	M48×2.0
280-315	3×M10	M8	2-Ø(37-44)	M64×2.0
355-400	6×M12	M8	2-Ø(37-44)	M64×2.0

7.2 Cable entry for temperature detector and tachometer element is Ø8.

8 Ordering information

8.1 Specify the types of the motor, output, rated voltage, rated frequency, No. of poles (or speed), mounting arrangements, and duty type when ordering.

8.2 If you haven't special requirements, the terminal box will located on the top of the motor, viewed from shaft extension, cable entry toward right side, and users can select the direction of cable entry too.

8.3 This catalogue is provided for end-user's reference. The data are subject to alteration without notice.



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