

BONENG



YG Variable-Frequency Three-Phase Induction Motors For Roll Table Application

Power: 0.75kW~45kW; Frame Size: 112~280

Modified date 02/2021
Selection Sample C05.0032-EN

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Notes:

- ◆ The structure scheme, appearance diagram and other attached diagrams in sample are examples, there is no strict proportion requirement. (The unmarked dimension units are mm).
- ◆ The marked weight is average value, it has no constraint force.

The following items must be strictly observed:

- ◆ To prevent accidents, all the rotation parts are added with protective covers by the purchaser according to the safety regulations of the nation and region.
- ◆ The instruction book must be read carefully before the test run.

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1 Overview

BONENG variable–frequency three–phase induction motors for roll table application is a special power unit for the conveyor roller road in the iron and steel metallurgy industry, uses a closed natural cooling structure. The standard protection class IP55,insulation class H, the design and production in line with IEC,GB and other related standards .

It can be automatically controlled with the frequency converter,and has the characteristics of large starting torque,small starting current,good dynamic performance,high efficiency and energy saving,frequent reverse rotation,braking,wide range of speed regulation,etc. Suitable for S1–S10 working system.

1.1 Technical Design

- ◆ Frame material: grey cast iron;
- ◆ Rated power: 0.75 kW–45 kW。
- ◆ Number of motor poles: 4,6
- ◆ Motor efficiency: Meet the IEC 60034–30 standard IE3 efficiency level,and to meet GB18613–2012 standard energy efficiency grade 2.
- ◆ Standard mounting structure (compliance with standards IEC 60034–7) : IMB3、IMB5、IM B35, etc.
- ◆ Motor degree of protection: Protection class IP55 (IEC 60034–5).
- ◆ Motor Insulation class: Insulation system designed according to the temperature level of 180 °C (H), by 155°C (F) temperature level assessment, F–class insulation (optional according to working conditions); The temperature rise limits according to IEC 60034–1 are as follows (resistance method).

Insulation class	Temperature rise level		
	Thermometer method	Resistance method	Embedded thermometer method
B	70	80	85
F	85	100	100
H	105	125	130

- ◆ Motor thermal protection: Optional PTC thermistor, thermal switch or PT100 temperature sensor for winding protection.
- ◆ Motor terminal box: From the motor tail,the standard position of the terminal box is on the left side of the frame,with the cable entry facing down. Terminal box location and cable entry can be selected according to the customer requirements.
- ◆ Motor terminal box cable entry: Motor cable entry are two.
- ◆ Motor cooling method :Motor cooling is natural cooling and provide self–fan cooling motor and the motor that independently drives fan for forced cooling.

1.2 Nameplate information

2	3	4	5	6	1	20
 3~Mot.YG112M4B11FC4 						
112M-4	B5	IP55	Ins.F	S1	Brake	180VDC/60 N.m
kW	V	Hz	A	r/min	Conn	COSφ
1.1	400	50	2.5	1460	Y	0.77
	460	60	2.2	1765	Y	0.74
7-Q320507	LGM35-2020	60 kg	Date	201906	NO.	12345678
Constant Torque 1-50(60)Hz Constant Power 50(60)-100Hz BONENG TRANSMISSION (SUZHOU) CO.,LTD						
8	21	9	10	17	11	12
18	13	22	14	15	19	16

1. Motor type (specification)
2. Frame size
3. Type of construction
4. Degree of protection
5. Insulation class
6. Duty
7. Enterprise standard
8. Rated power
9. Rated voltage
10. Rated frequency
11. Rated current
12. Rated speed
13. Winding connections
14. Power factor
15. Efficiency
16. Energy efficiency class
17. Weight
18. Date of manufacture
19. Number of manufacture
20. Braking voltage / torque
21. Constant torque Range
22. Constant power Range

1.3 Motor Energy Efficiency

- ◆ According to IEC 60034-30-1 standard,
the scope of motor energy efficiency is:
 - Motor under 1000V, 50 / 60Hz three-phase AC power supply;
 - 4,6 pole single-speed motor with power of 0.12 kW ~ 1000kW;
 - N designed continuous working system (S1) motor.
- ◆ IEC60034-30-1 Energy efficiency rating:
 - IE1(Standard Efficiency)
 - IE2(High Efficiency)
 - IE3(Premium Efficiency)
 - IE4(Super Premium Efficiency)

IEC 60034-30-1	GB18613-2012
IE1	Standard Energy Efficiency (IE1)
IE2	Grade 3 Energy Efficiency (IE2)
IE3	Grade 2 Energy Efficiency (IE3)
IE4	Grade 1 Energy Efficiency (IE4)

According to standard IEC60034-30-1, Motor Energy Efficiency (η %) :

Power	IE1-50Hz		IE2-50Hz		IE3-50Hz		IE4-50Hz	
	4-pole	6-pole	4-pole	6-pole	4-pole	6-pole	4-pole	6-pole
0.12	50	38.3	59.1	50.6	64.8	57.7	69.8	64.9
0.18	57	45.5	64.7	56.6	69.9	63.9	74.7	70.1
0.2	58.5	47.6	65.9	58.2	71.1	65.4	75.8	71.4
0.25	61.5	52.1	68.5	61.6	73.5	68.8	77.9	74.1
0.37	66	59.7	72.7	67.6	77.3	73.5	81.1	78
0.4	66.8	61.1	73.5	68.8	78	74.4	81.7	78.7
0.55	70	65.8	77.1	73.1	80.8	77.2	83.9	80.9
0.75	72.1	70	79.6	75.9	82.5	78.9	85.7	82.7
1.1	75	72.9	81.4	78.1	84.1	81	87.2	84.5
1.5	77.2	75.2	82.8	79.8	85.3	82.5	88.2	85.9
2.2	79.7	77.7	84.3	81.8	86.7	84.3	89.5	87.4
3	81.5	79.7	85.5	83.3	87.7	85.6	90.4	88.6
4	83.1	81.4	86.6	84.6	88.6	86.8	91.1	89.5
5.5	84.7	83.1	87.7	86	89.6	88	91.9	90.5
7.5	86	84.7	88.7	87.2	90.4	89.1	92.6	91.3
11	87.6	86.4	89.8	88.7	91.4	90.3	93.3	92.3
15	88.7	87.7	90.6	89.7	92.1	91.2	93.9	92.9
18.5	89.3	88.6	91.2	90.4	92.6	91.7	94.2	93.4
22	89.9	89.2	91.6	90.9	93	92.2	94.5	93.7
30	90.7	90.2	92.3	91.7	93.6	92.9	94.9	94.2
37	91.2	90.8	92.7	92.2	93.9	93.3	95.2	94.5
45	91.7	91.4	93.1	92.7	94.2	93.7	95.4	94.8
55	92.1	91.9	93.5	93.1	94.6	94.1	95.7	95.1
75	92.7	92.6	94	93.7	95	94.6	96	95.4
90	93	92.9	94.2	94	95.2	94.9	96.1	95.6
110	93.3	93.3	94.5	94.3	95.4	95.1	96.3	95.8
132	93.5	93.5	94.7	94.6	95.6	95.4	96.4	96
160	93.8	93.8	94.9	94.8	95.8	95.6	96.6	96.2
200	94	94	95.1	95	96	95.8	96.7	96.3
250	94	94	95.1	95	96	95.8	96.7	96.5
315-1000	94	94	95.1	95	96	95.8	96.7	96.6
Power	IE1-60Hz		IE2-60Hz		IE3-60Hz		IE4-60Hz	
	4-pole	6-pole	4-pole	6-pole	4-pole	6-pole	4-pole	6-pole
0.12	62	48	64	50.5	66	64	70	68
0.18	66	52.5	68	55	69.5	67.5	74	72
0.25	68	57.5	70	59.5	73.4	71.4	77	75.5
0.37	70	62	72	64	78.2	75.3	81.5	78.5
0.55	74	66	75.5	68	81.1	81.7	84	82.5
0.75	77	72	82.5	80	85.5	82.5	85.5	84
1.1	79	75	84	85.5	86.5	87.5	87.5	88.5
1.5	81.5	77	84	86.5	86.5	88.5	88.5	89.5
2.2	83	78.5	87.5	87.5	89.5	89.5	91	90.2
3.7	85	83.5	87.5	87.5	89.5	89.5	91	90.2
5.5	87	85	89.5	89.5	91.7	91	92.4	91.7
7.5	87.5	86	89.5	89.5	91.7	91	92.4	92.4
11	88.5	89	91	90.2	92.4	91.7	93.6	93
15	89.5	89.5	91	90.2	93	91.7	94.1	93
18.5	90.5	90.2	92.4	91.7	93.6	93	94.5	94.1
22	91	91	92.4	91.7	93.6	93	94.5	94.1
30	91.7	91.7	93	93	94.1	94.1	95	95
37	92.4	91.7	93	93	94.5	94.1	95.4	95
45	93	91.7	93.6	93.6	95	94.5	95.4	95.4
55	93	92.1	94.1	93.6	95.4	94.5	95.8	95.4
75	93.2	93	94.5	94.1	95.4	95	96.2	95.8
90	93.2	93	94.5	94.1	95.4	95	96.2	95.8
110	93.5	94.1	95	95	95.8	95.8	96.2	96.2
150	94.5	94.1	95	95	96.2	95.8	96.5	96.2
185	94.5	94.1	95	95	96.2	95.8	96.5	96.2
220	94.5	94.1	95.4	95	96.2	95.8	96.8	96.5
250-335	94.5	94.1	95.4	95	96.2	95.8	96.8	96.5
375-1000	94.5	94.1	95.8	95	96.2	95.8	96.8	96.5

2 Reference standards

Name	IEC standard	Chinese national standard
Rotating electrical machines-Rating and performance	IEC 60034-1	GB 755
Test procedures for three-phase induction motors	IEC 60034-2	GB/T 1032
Classification of degrees of protection provided by enclosures of rotating electrical machines (IP code)	IEC 60034-5	GB/T 4942.1
Cooling methods of rotating electrical machines	IEC 60034-6	GB/T 1993
Classification of types of construction and mounting arrangements for rotating electrical machines (IM code)	IEC 60034-7	GB/T 997
Rotating electrical machines --Terminal marking and direction of rotation	IEC 60034-8	GB/T 1971
Measurement of airborne noise emitted by rotating electrical machines and the noise limits - Part 3:Noise limits	IEC 60034-9	GB/T 10069.3
Mechanical vibration of certain machines with shaft heights 56 mm and higher-measurement ,evaluation and limits of vibration severity	IEC 60034-14	GB/T 10068
Dimensions and output series for rotating electrical machines-- Part 1:Frame numbers 56 to 400 and flange numbers 55 to 1080	IEC 60072-1	GB/T 4772.1
General requirements for safety of small and medium size rotating electrical machines	/	GB/T 14711
Electrical insulation--Thermal evaluation and designation	IEC 60085	GB/T 11021
Environmental conditions appearing in nature of electric and electronic products Temperature and humidity	IEC 60721-2-1	GB/T 4797.1
Standard Voltages	IEC 60038	GB/T 156

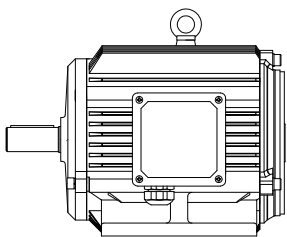
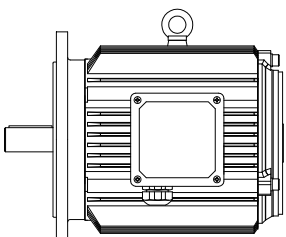
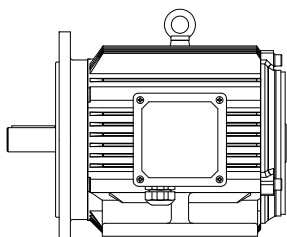
3 Mechanical design

3.1 Terminal box

- The terminal box is self-rotating by $4 \times 90^\circ$, allowing cables to enter in all directions.
Motor terminal box has two cable entries, one of the cable entry with gland seal, the other cable entry using plug seal.
- Motor terminal box technical parameters see the table below:

Frame size	Numbers of main terminals	Contact screw thread	Outer cable diameter	Cable entry size (gland +screwed plug)
112	6	M5	18~24	M30X2+M30X2
132				
160	6	M6	22~28	M36X2+M36X2
180				
200	6	M8	30~36	M48X2+M48X2
225				
250	6	M10	37~44	M63×2+M63×2
280				

3.2 Type of construction

Basic construction	Frame with feet	Cover with flange	Cover with flange ,Frame with feet
Frame size	112-280	112-280	112-280
Mounting type	IMB3	IMB5	IMB35
Diagram			

3.3 Motor shaft end thread

Frame size	Drive end	Non-drive end
112	CM10L15/16.3	CM8L12/13.2
132	CM12L20/19.8	CM10L15/16.3
160	CM16L25/25.3	CM16L25/25.3
180		
200~280	CM20L30/31.3	CM20L30/31.3

3.4 Bearing

BONENG roller table motor is using deep groove ball bearings for the standard configuration, these bearings are sealed. Bearing specifications are as follows:

Frame size	Standard motor bearing specifications	
	Drive end	Non-drive end
112	6306-2Z/C3	6206-2Z/C3
132	6308-2Z/C3	6208-2Z/C3
160	6309-2Z/C3	6209-2Z/C3
180	6311-2Z/C3	6211-2Z/C3
200	6312-2Z/C3	6212-2Z/C3
225	6313-2Z/C3	6312-2Z/C3
250	6314-2Z/C3	6314-2Z/C3
280	6317-2Z/C3	6316-2Z/C3

Bearing life

The nominal bearing life can be calculated according to the standard calculation procedures specified in ISO 281. If the motor is operated under the conditions specified in this catalog, 90% or more of the bearings will reach the nominal life. Generally, the service life of a bearing depends on the bearing specification, bearing loaded, operating conditions, rotational speed, and grease life. When the motor is installed horizontally and without axial force, the bearing life of the motor can reach at least 40,000 hours. In the case of maximum allowable load, the life of the motor is at least 20,000 hours. The bearing life here refers to the normal operation of the motor at 50/60Hz.

When the motor is operating under abnormal conditions, the bearing life will be shortened. Such as the following situations:

- ◆ When the motor speed is higher than the rated speed, due to increased vibration of the motor, making the bearing subjected to additional radial and axial forces, resulting in reduced life expectancy;
- ◆ When the environment or equipment and other factors lead to increased vibration of the motor, the bearing will therefore be subjected to additional radial and axial forces, resulting in reduced life expectancy;
- ◆ When the ambient temperature increases 10°C, grease life and relubrication time will be cut in half.

3.5 Noise

Motor noise is divided into N level (general level), R level (first level), S level (excellent level) and E level (low noise level) four levels. R is lower than the level N 5dB, S level is lower than the level N 10dB, E level lower than the level N 15dB. BONENG general series of motor noise values are lower than the N-class noise level.

◆ The noise value of A weighted sound power level measured when the motor is not loaded:

Motor Power (KW)	Synchronous speed (r/min)	
	1500/1800	1000/1200
	Sound power level dB(A)	
0.75	/	57
1.1	61	57
1.5	61	61
2.2	64	65
3	64	69
4	65	69
5.5	71	69
7.5	71	73
9	75	73
11	75	73
15	75	73
18.5	76	76
22	76	76
25	76	76
30	79	76
37	81	78
45	81	80

◆ A weighted sound power level noise increase measured at motor load:

Motor Power (KW)	Synchronous speed (r/min)	
	1500/1800	1000/1200
	Sound power level dB(A)	
≤11	5	7
>11~37	4	6
>37~45	3	5

3.6 Vibration

Motor vibration levels are divided into N level (conventional level), R level (lower level) and S level (special level). BONENG motor rotors are half-key balancing, in line with N class IEC60034-14 vibration level.

For applications requiring lower vibrations, we can offer motors with lower R or S vibration requirements.

Vibration level	Speed (r/min)	Frame size		
		112-132	160-225	250-280
N	600-3600	1.8 mm/s	2.8 mm/s	3.5 mm/s
R	600-1800	0.71 mm/s	1.12 mm/s	1.8 mm/s
	>1800-3600	1.12 mm/s	1.8 mm/s	2.8 mm/s
S	600-1800	0.45 mm/s	0.71 mm/s	1.12 mm/s
	>1800-3600	0.71 mm/s	1.12 mm/s	1.8 mm/s

4 Electrical design

4.1 Voltage/Frequency

IEC 60034-1 classifies voltage and frequency variations into class A ($\pm 5\%$ voltage deviation, $\pm 2\%$ frequency deviation) and class B ($\pm 10\%$ voltage deviation, $\pm 3\%$ – 5% frequency deviation). Motors are rated for class A and class B torque.

In class A, the temperature is about 10 K higher than during normal operation.

Standard 60034-1	Class A	Class B
Voltage deviation	$\pm 5\%$	$\pm 10\%$
Frequency deviation	$\pm 2\%$	$+3\%/-5\%$

4.2 Electrical parameter tolerances

- ◆ Efficiency η
 $P_n \leq 150 \text{ kW}$: $-0.15 (1 - \eta)$
 $P_n > 150 \text{ kW}$: $-0.10 (1 - \eta)$
 Efficiency η is a value less than one
- ◆ Power factor: $(1 - \cos \phi) / 6$
 Minimum absolute value: 0.02
 maximum absolute value: 0.07
- ◆ Slip rate: $\pm 20\%$ (When motor power $< 1 \text{ kW}$, deviation $\pm 30\%$ is allowed)
- ◆ Locked-rotor motor current: $+20\%$
- ◆ Locked-rotor torque: -15% – $+25\%$
- ◆ Maximum torque: -10%
- ◆ Rotational inertia: $\pm 10\%$

4.3 Overload

According to standard IEC60034, BONENG roller table motors can withstand 1.5 times the rated current at rated voltage and frequency for 2 minutes without damage.

4.4 Insulation system

BONENG roller table motors insulation system with reliability, durability and long life, impact resistance and strong features.

BONENG roller table motors standard design temperature is class F (155°C), optional temperature class H (180°C).

4.5 Duty

The duty is a description of some of the column load conditions that the motor is subjected to, including starting, electric brake, no-load, downtime , power-off, duration and sequencing. Working system is divided into 10 categories, see the table below:

Duty	Meaning
S1	Continuous duty: Constant load operation, the motor reaches the state of thermal stability.
S2	Short-time duty: constant load for a predetermined limited time, and then stop the motor until it returns to ambient temperature.
S3	Intermittent periodic duty: start-up process has no effect on temperature rise. Run in the same series of work cycles.
S4-S10	Intermittent duty: Start-up process has an impact on temperature rise, operation consists of a series of the same cycle, each cycle includes the dead load section and no-load and energy-cut section. It can use load continuation cdf and start and stop every hour to describe.

4.6 Load factor

Load continuity is the ratio of load duration to duty cycle duration. The duty cycle time is the sum of the running time plus the break time. $Cdf = \text{sum of one cycle run time} / \text{work cycle time} * 100\%$.

Our roller table motor work system are S1, if S1 working system motor use at S2 or S3 working system, allowing the output power should be the product of the rated power and power growth factor K. The growth factors are as follow:

Duty			Power growth factor K
S2	operation hours	60 min	1.1
		30 min	1.2
		10 min	1.4
S3	load factor (cdf)	60%	1.1
		40%	1.15
		25%	1.3
		15%	1.4
S4-S10	In order to determine the rated power and working system, it is necessary to give start and stop numbers per hour, start and stop mode, load time, brake type, braking time and no-load power-off time.		Please consult separately

4.7 Degree of protection

BONENG roller table motor protection strict implementation of IEC60034-5 related standards, our production of the motor protection is IP55 as a standard configuration, according to customer needs we can also provide a higher degree of protection of the motor.

IP	First characteristic numeral	Second characteristic numeral
	Protection against solid objects	Protection against liquid
0	No special protection	No special protection
1	Protected against solid objects greater than 50mm	Protected against dripping water
2	Protected against solid objects greater than 12mm	Protected against dripping water when tilted up to 15°
3	Protected against solid objects greater than 2.5mm	Protected against spraying water
4	Protected against solid objects greater than 1mm	Protected against splashing water
5	Dust-protected	Protected against water jets
6	Dust-tight	Protected against heavy seas
7	/	Protected against the effects of immersion
8	/	Protected against the effects of continuous submersion

5 Options

5.1 Cooling and ventilation

BONENG roller table motors are equipped with surface self-cooling. For some applications, you can consider use self-fan cooling or separate drive fan forced cooling.

◆ Cooling method:

IC410 motor surface self-cooling

IC411 motor surface self-fan cooling

IC416 motor surface independent fan forced cooling

With independent drive fan, you must select the appropriate fan parameter configuration according to needs.

◆ Independent fan technical data

Frame size	Type	Voltage (V)	Frequency (Hz)	Power (W)	Current (A)	Speed (r/min)
112	G112	400 / 460	50 / 60	50 / 80	0.1 / 0.13	2750 / 3200
132	G132	400 / 460	50 / 60	40 / 50	0.13 / 0.15	1450 / 1700
160	G160	400 / 460	50 / 60	70 / 100	0.13 / 0.15	1350 / 1550
180	G180	400 / 460	50 / 60	70 / 100	0.13 / 0.15	1350 / 1550
200	G200	400 / 460	50 / 60	180 / 270	0.36 / 0.45	1250 / 1350
225	G225	400 / 460	50 / 60	200 / 280	0.36 / 0.45	1200 / 1300
250	G250	400 / 460	50 / 60	400 / 600	0.9 / 1.0	1300 / 1400
280	G280	400 / 460	50 / 60	450 / 600	0.9 / 1.0	1250 / 1400

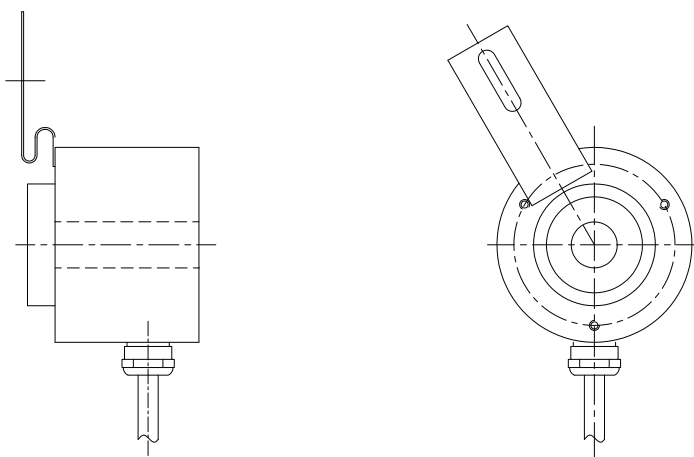
5.2 Encoder

BONENG roller table motor can be connected with the encoder to achieve speed closed-loop control, the encoder has the characteristics of high resolution ,high control accuracy and reliable operation.

◆ Encoder electrical parameters

Encoder type	E25A	E25B	E25B
Voltage	10-30V	10-30V	10-30V
Signal output form	push-pull	push-pull	push-pull
Resolution	1024	1024	1024
Maximum output frequency	300KHz	100KHz	100KHz
Working temperature	-20℃~70℃	-10℃~70℃	-10℃~70℃
Degree of Protection	IP65	IP55	IP55
Output signal	A; A-; B; B-; 0; 0-; 0V; +V; GND	A; A-; B; B-; Z; Z-; 0V; +V; GND	A; A-; B; B-; Z; Z-; 0V; +V; GND

◆ Encoder machine dimension

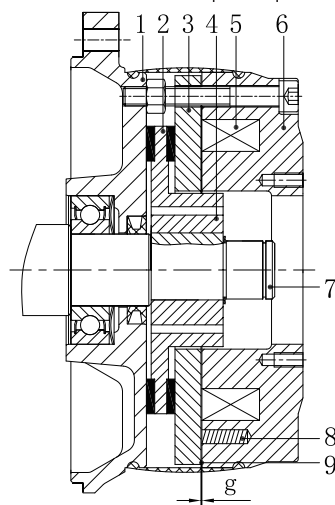


5.3 Brake

According to user requirements, BONENG roller table motors can installed an external brake device on the motor back end cover, the brake device is a DC coil excitation disc brake, electromagnetic force generated when the DC coil is energized acts on the spring to release the brake.

Brakes are designed for loss of power and meet basic safety requirements. Brake can select mounted manual release handle or release screw to achieve mechanical release. Each brake is equipped with a rectifying device because the brake coil works with direct current. The device is used to change the power frequency current(single phase or two phase)provided by the outside through a simple bridge rectifier structure to the direct current to meet the working needs of brake coil, and supply it to the brake coil.

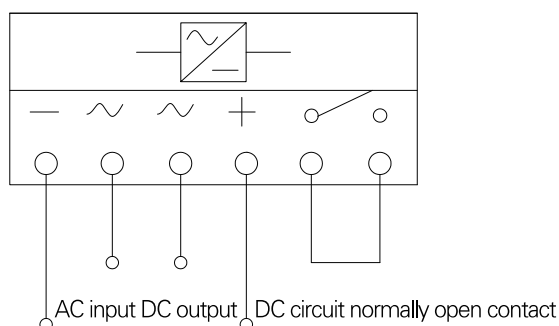
Brakes are controlled by a control system that can be installed in the motor terminal box or in a power distribution cabinet.Brake structure principle is as follows:



- 1、 Motor back end cover
- 2、 Brake friction disk
- 3、 Brake armature disks
- 4、 Brake splined hub
- 5、 Brake DC excitation coil
- 6、 Brake stator
- 7、 Motor shaft
- 8、 Brake thrust spring
- 9、 Brake air gap

◆ Braking fast brake (Preset normally open connects)

Using BONENG universal brake motors for applications such as hoisting gear or other applications that require brakes to minimize brake delay after motor has been powered down for immediate braking, BONENG motor to the brake configuration of the rectifier to provide users with a pair of rectifier DC circuit normally open contact, through the normally open contact of the control, you can easily and quickly achieve the rapid braking you want. Rectifier schematic diagram is as follows:



◆ Brake micro switch

Brake micro switch provides a group of normally open and a group of normally closed switch signal used to detect the working status of the brake, the micro switch can feed back a switch quantity signal by detecting the working state of the brake , By processing the feedback switch signal, the brake can be effectively prevented from starting without releasing the motor, In this way, the brake working state monitoring and more effective protection of the motor.

◆ When the motor is selected for brakes, the corresponding accessory code must be selected according to the requirement; Brakes can provide different voltage configurations to meet user needs.

◆ Brake parameters:

Brake type	BN14	BN16	BN18	BN20	BN25	BN30
Brake torque (N.m)	60	80	150	260	600	1000
Brake power (W)	50	55	85	100	110	200
Rated gap (mm)	0.3	0.3	0.4	0.4	0.5	0.6
Maximum gap (mm)	0.75	0.75	1	1	1.25	1.5
AC brake voltage (AC-V)	230or400	400	400	400	400	400
DC brake voltage (DC-V)	103or180	180	400	180	180	180
Fit motor frame size	112	132	400	160	200-225	250-280
Brake actuation time(ms)	190	200	400	260	390	420
Slow brake releasing time(ms)	570	600	400	780	2000	3000
Rapid brake releasing time(ms)	57	60	400	78	230	380

5.4 Motor thermal protection

Motor thermal protection refers to the temperature protection sensor or temperature detection sensor embedded in the motor stator windings or other appropriate place, so that motor will not be damaged due to overheating. Temperature sensor options are as follows:

- ◆ PTC thermistor temperature protection

Three PTC thermistors are connected in series with each resistor buried in the motor three-phase winding end and leads from the terminal box, the user can according to the actual situation connected them to the frequency converter terminal drive or the thermorelay thermal relay to achieve the motor winding overheating protection.

At present, the most commonly used motor winding overheating protection is the use of PTC thermistors installed in the motor windings for protection. The winding temperature can be accurately monitored due to the lower thermal capacity of the thermistor and its excellent thermal conductivity around the foot. When the limit temperature is reached (nominal trip temperature), there is a step change in the PTC thermistor resistance. After this change is captured by the trip device, the auxiliary circuit can be disconnected.

PTC thermistor itself can't tolerate high current and high voltage, otherwise it will lead to damage to the semiconductor device. PTC thermistor and trip device switching hysteresis effect is small, so you can achieve rapid restart. For heavy load start, high start frequency, large load changes, high ambient temperature or power fluctuations and other applications, we recommended that the motor use this type of protection.

- ◆ Thermal switch temperature protection

3 bimetal switches in series way to each switch are buried in the motor end of the three-phase winding and leads from the terminal box, bimetal switches provide the switch signal, the user can achieve the motor winding overheating protection based on the actual situation in the detection circuit.

- ◆ PT100 Thermistor Sensor Temperature Protection

PT100 thermistor is a high preciseness, high sensitivity sensor with better linear temperature resistance than other resistive sensors with stable performance and high reliability.

- ◆ Moisture-proof heating protection

When the motor is in a harsh environment, such as large humidity or relatively large temperature difference between day and night, the motor winding is likely to condensation phenomenon, which will bring the risk of motor burned. In this case, we advisable to configure the motor windings with moisture-proof heating belt. The motor must be in not working state when the Moisture-proof heating belt is in the working process; when the motor is down, moisture-proof heating belt must be started for the winding heating. Electrical parameters of moisture-proof heating belt are shown in the following table.

Electrical parameters of moisture-proof heating belt

Frame size	Power (W)	Voltage (V)
112	30	220
132~160	40	220
180~200	50	220
225~280	60	220

6 Frequency conversion applications

BONENG roller table three-phase asynchronous motors are suitable for variable speed, constant speed application, it can achieve constant torque or constant frequency output under the specified operating frequency range. When the load change, the load torque or actual power out of rated range, motor needs expert cooling, you can choose self-fan cooling or axial flow ventilator to force cooling.

When the motor speed exceeds the rated speed, the noise and vibration values will increase and the bearing life will be shortened.

The maximum safe speed allowed of the motor is as follows:

Frame size	4-pole		6-pole	
	Maximum speed (r/min)	Maximum frequency (Hz)	Maximum speed (r/min)	Maximum frequency (Hz)
112	3600	120	2400	120
132	2700	90	2400	120
160	2700	90	2400	120
180	2700	90	2400	120
200	2250	75	1800	90
225	2250	75	1800	90
250	2250	75	1800	90
280	2250	75	1800	90

7 YG motor type designation

YG 132S 4 B22 H C 1 - N 0 N 0 0 - 1 1 1

Motor type¹⁾ _____
 YG=Vairable-frequency three-phase induction motors for roll table application

Frame size¹⁾ _____

Motor poles¹⁾ _____
 4=4-pole; 6=6-pole

Power code¹⁾ _____

Types of construction _____
 H=B3 foot-mounted
 F=B5 flange-mounted
 B=B35 foot and flange-mounted

Frame material _____
 C=Grey cast iron frame(Standard configuration of H112 and above)

Frequency/Voltage code _____
 1=50Hz 220V△/380VY
 2=50Hz 230V△/400VY
 7=60Hz 440VY
 8=60Hz 460VY

Cooling method _____
 N=natural cooling
 A=self-fan cooling
 F=forced-fan cooling

Encoder _____
 0=no encoder
 1=with encoder E25A
 2=with standard encoder eccessoraries
 3=with encoder E25B
 4=with encoder E25C

Brake _____
 N=no brake
 A= brake 220-240VAC
 B= brake 380-415VAC
 C= brake 440-480VAC
 D=brake with handle 220-240VAC
 E=brake with handle 380-415VAC
 F=brake with handle 440-480VAC
 G=self-locking brake 220-240VAC
 H=self-locking brake 380-415VAC
 J=self-locking brake 440-480VAC
 K=brake with micro switch 220-240VAC
 L=brake with micro switch 380-415VAC
 M=brake with micro switch 440-480VAC
 P=double brake 220-240VAC
 Q=double brake 380-415VAC
 X=double brake 440-480VAC
 R=double brake with handle 220-240VAC
 S=double brake with handle 380-415VAC
 T=double brake with handle 440-480VAC

Thermal protection and heating protection _____
 0=no winding protection
 1=thermistors
 2=thermoswith
 3=PT100 temperature Sensor
 4=heating belt
 5=thermistors and heating belt
 6= thermoswith and heating belt
 7=PT100 temperature Sensorand heating belt

Degree of protection _____
 0=IP55/F
 1=IP55/F with rain cover
 A=IP55/H
 B=IP55/H with rain cover
 J=IP55/F/Metal waterproof joint
 K=IP55/F/Metal waterproof joint with rain cover
 L=IP55/H/Metal waterproof joint
 M=IP55/H/Metal waterproof joint with rain cover

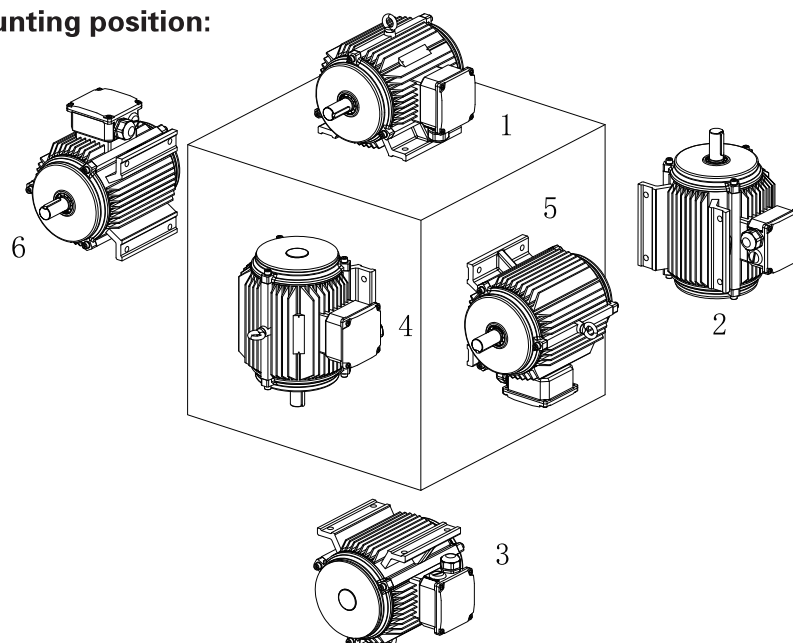
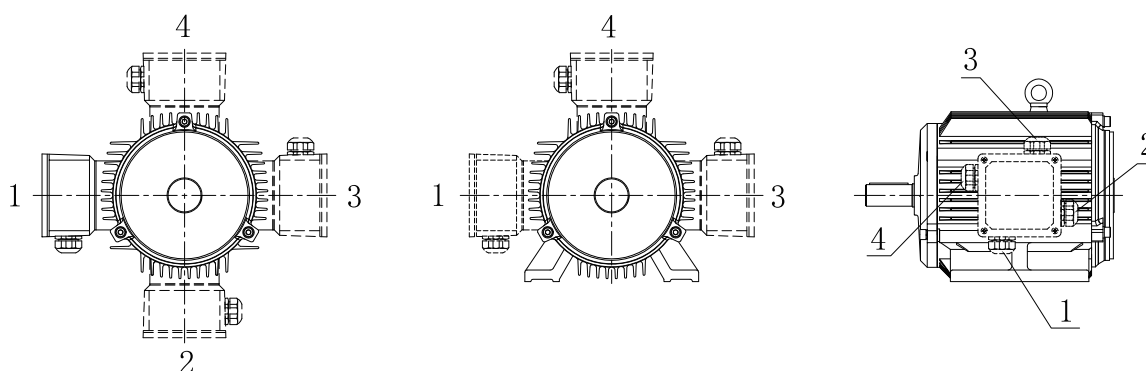
Mounting position²⁾ _____
 1/2/3/4/5/6

Terminal box location³⁾ _____
 1/2/3/4

Cable entry location³⁾ _____
 1/2/3/4

Note¹⁾ Motor type/Frame size/Motor poles/Power code

Power (kW)	4-pole specification	6-pole specification	Power (kW)	4-pole specification	6-pole specification
0.75		YG112M6A75	11	YG180M4C11	YG200M6C11
1.1	YG112M4B11	YG112M6B11	15	YG200M4C15	YG200M6C15
1.5	YG112M4B15	YG132S6B15	18.5	YG200M4C18	YG225M6C18
2.2	YG132S4B22	YG132M6B22	22	YG225M4C22	YG225M6C22
3	YG132M4B30	YG160S6B30	25	YG225M4C25	YG250M6C25
4	YG160S4B40	YG160S6B40	30	YG250M4C30	YG280S6C30
5.5	YG160S4B55	YG160M6B55	37	YG280S4C37	YG280M6C37
7.5	YG160M4B75	YG180M6B75	45	YG280M4C45	
9	YG180M4B90	YG180M6B90			

Note²⁾ Motor mounting position:

Note³⁾ Motor terminal box and cable entry location(View Angle: motor tail):


Standard color of motor RAL5015 (RAL5015)

8 YG motor selection technical data(efficiency IE3)

50Hz 380V 4P-1500r/min S1

Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB(A)	J (kg.m ²)
112M	1.1	380	50	Y	1455	7.2	IE3	84.1	0.79	2.6	>2.2	3.26	59	0.001
112M	1.5	380	50	Y	1450	9.9	IE3	85.3	0.8	3.4	>2.2	3.22	59	0.0121
132S	2.2	380	50	Y	1460	14.4	IE3	86.7	0.81	4.8	>2.2	3.25	64	0.0247
132M	3	380	50	Y	1460	19.6	IE3	87.7	0.82	6.4	>2.2	3.26	64	0.0332
160S	4	380	50	Y	1475	25.9	IE3	88.6	0.83	8.3	>2.2	3.52	65	0.0646
160S	5.5	380	50	Y	1475	35.6	IE3	89.6	0.84	11.1	>2.2	3.58	71	0.0845
160M	7.5	380	50	Y	1475	48.6	IE3	90.4	0.85	14.9	>2.2	3.59	71	0.11
180M	9	380	50	Y	1480	58.1	IE3	91.4	0.86	17.4	>2.2	3.52	73	0.148
180M	11	380	50	Y	1480	71.0	IE3	91.4	0.86	21.3	>2.2	3.52	73	0.169
200M	15	380	50	Y	1480	96.8	IE3	92.1	0.86	28.8	>2.2	2.96	73	0.275
200M	18.5	380	50	Y	1480	119.4	IE3	92.6	0.86	35.3	>2.2	3.07	76	0.317
225M	22	380	50	Y	1485	141.5	IE3	93	0.87	41.4	>2.2	3.07	76	0.555
225M	25	380	50	Y	1485	160.8	IE3	93.6	0.87	46.7	>2.2	2.95	76	0.621
250M	30	380	50	Y	1485	192.9	IE3	93.6	0.86	57	>2.2	2.95	76	0.768
280S	37	380	50	Y	1485	237.9	IE3	93.9	0.87	69	>2.2	2.98	78	1.397
280M	45	380	50	Y	1485	289.4	IE3	94.2	0.87	83.5	>2.2	3.28	78	1.658

50Hz 400V 4P-1500r/min S1

Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB(A)	J (kg.m ²)
112M	1.1	400	50	Y	1460	7.2	IE3	84.1	0.77	2.5	>2.5	3.62	59	0.001
112M	1.5	400	50	Y	1455	9.8	IE3	85.3	0.78	3.3	>2.5	3.57	59	0.0121
132S	2.2	400	50	Y	1465	14.3	IE3	86.7	0.79	4.7	>2.5	3.61	64	0.0247
132M	3	400	50	Y	1465	19.6	IE3	87.7	0.8	6.2	>2.5	3.62	64	0.0332
160S	4	400	50	Y	1475	25.9	IE3	88.6	0.81	8.1	>2.5	3.94	65	0.0646
160S	5.5	400	50	Y	1475	35.6	IE3	89.6	0.82	10.8	>2.5	4.01	71	0.0845
160M	7.5	400	50	Y	1475	48.6	IE3	90.4	0.83	14.5	>2.5	4.02	71	0.11
180M	9	400	50	Y	1480	58.1	IE3	91.4	0.84	17	>2.5	3.94	73	0.148
180M	11	400	50	Y	1480	71.0	IE3	91.4	0.85	20.5	>2.5	3.95	73	0.169
200M	15	400	50	Y	1480	96.8	IE3	92.1	0.85	27.7	>2.5	3.3	73	0.275
200M	18.5	400	50	Y	1480	119.4	IE3	92.6	0.85	34	>2.5	3.43	76	0.317
225M	22	400	50	Y	1485	141.5	IE3	93	0.86	39.8	>2.5	3.42	76	0.555
225M	25	400	50	Y	1485	160.8	IE3	93.6	0.87	44.4	>2.5	3.27	76	0.621
250M	30	400	50	Y	1485	192.9	IE3	93.6	0.86	54	>2.5	3.28	76	0.768
280S	37	400	50	Y	1485	237.9	IE3	93.9	0.87	65.5	>2.5	3.3	78	1.397
280M	45	400	50	Y	1490	288.4	IE3	94.2	0.87	80	>2.5	3.62	78	1.658

50Hz 380V 6P-1000r/min S1

Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB(A)	J (kg. m ²)
112M	0.75	380	50	Y	955	7.5	IE3	78.9	0.72	2.1	>2.2	2.75	57	0.0121
112M	1.1	380	50	Y	955	11.0	IE3	81	0.72	2.9	>2.2	2.75	57	0.0158
132S	1.5	380	50	Y	970	14.8	IE3	82.5	0.75	3.7	>2.2	3.17	61	0.0299
132M	2.2	380	50	Y	970	21.7	IE3	84.3	0.76	5.3	>2.2	3.23	65	0.0522
160S	3	380	50	Y	970	29.5	IE3	85.6	0.76	7.1	>2.2	2.98	69	0.0801
160S	4	380	50	Y	970	39.4	IE3	86.8	0.76	9.3	>2.2	2.95	69	0.094
160M	5.5	380	50	Y	975	53.9	IE3	88	0.76	12.5	>2.2	3.12	69	0.135
180M	7.5	380	50	Y	980	73.1	IE3	89.1	0.8	16	>2.2	3.22	73	0.238
180M	9	380	50	Y	985	87.3	IE3	90.3	0.82	18.5	>2.2	3.28	73	0.232
200M	11	380	50	Y	985	106.6	IE3	90.3	0.81	23	>2.2	3.06	73	0.374
200M	15	380	50	Y	985	145.4	IE3	91.2	0.81	31	>2.2	3.06	73	0.417
225M	18.5	380	50	Y	990	178.5	IE3	91.7	0.83	37	>2.2	2.71	73	0.625
225M	22	380	50	Y	990	212.2	IE3	92.2	0.83	44	>2.2	2.69	73	0.723
250M	25	380	50	Y	985	242.4	IE3	92.2	0.85	49	>2.2	3.07	73	1.189
280S	30	380	50	Y	990	289.4	IE3	92.9	0.85	58	>2.2	2.94	74	1.678
280M	37	380	50	Y	990	356.9	IE3	93.3	0.86	71	>2.2	2.8	76	2.012

50Hz 400V 6P-1000r/min S1

Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB(A)	J (kg. m ²)
112M	0.75	400	50	Y	960	7.5	IE3	78.9	0.69	2	>2.5	3.07	57	0.0121
112M	1.1	400	50	Y	960	10.9	IE3	81	0.7	2.8	>2.5	3.07	57	0.0158
132S	1.5	400	50	Y	975	14.7	IE3	82.5	0.72	3.7	>2.5	3.52	61	0.0299
132M	2.2	400	50	Y	975	21.5	IE3	84.3	0.74	5.1	>2.5	3.58	65	0.0522
160S	3	400	50	Y	975	29.4	IE3	85.6	0.74	6.9	>2.5	3.31	69	0.0801
160S	4	400	50	Y	975	39.2	IE3	86.8	0.74	9	>2.5	3.28	69	0.094
160M	5.5	400	50	Y	975	53.9	IE3	88	0.74	12.2	>2.5	3.46	69	0.135
180M	7.5	400	50	Y	980	73.1	IE3	89.1	0.78	15.6	>2.5	3.57	73	0.238
180M	9	400	50	Y	985	87.3	IE3	90.3	0.79	18.3	>2.5	3.71	73	0.232
200M	11	400	50	Y	985	106.6	IE3	90.3	0.78	22.6	>2.5	3.43	73	0.374
200M	15	400	50	Y	985	145.4	IE3	91.2	0.78	30.5	>2.5	3.45	73	0.417
225M	18.5	400	50	Y	990	178.5	IE3	91.7	0.81	36	>2.5	3.06	73	0.625
225M	22	400	50	Y	990	212.2	IE3	92.2	0.82	42	>2.5	3.04	73	0.723
250M	25	400	50	Y	990	241.2	IE3	92.2	0.83	47.5	>2.5	3.4	73	1.189
280S	30	400	50	Y	990	289.4	IE3	92.9	0.83	56.5	>2.5	3.28	74	1.678
280M	37	400	50	Y	990	356.9	IE3	93.3	0.84	68.5	>2.5	3.13	76	2.012

60Hz 440V 4P-1800r/min S1

Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB(A)	J (kg.m ²)
112M	1.1	440	60	Y	1760	6.0	IE3	87.5	0.76	2.2	>2.3	3.85	59	0.001
112M	1.5	440	60	Y	1760	8.1	IE3	88.5	0.78	2.9	>2.3	3.78	59	0.0121
132S	2.2	440	60	Y	1765	11.9	IE3	89.5	0.79	4.1	>2.3	3.8	64	0.0247
132M	3	440	60	Y	1765	16.2	IE3	89.5	0.8	5.5	>2.3	3.79	64	0.0332
160S	4	440	60	Y	1775	21.5	IE3	89.5	0.82	7.2	>2.3	4.06	65	0.0646
160S	5.5	440	60	Y	1775	29.6	IE3	91.7	0.83	9.5	>2.3	4.12	71	0.0845
160M	7.5	440	60	Y	1775	40.4	IE3	91.7	0.83	13	>2.3	4.13	71	0.11
180M	9	440	60	Y	1780	48.3	IE3	92.4	0.85	15.1	>2.3	4.03	73	0.148
180M	11	440	60	Y	1780	59.0	IE3	92.4	0.85	18.4	>2.3	4.04	73	0.169
200M	15	440	60	Y	1780	80.5	IE3	93	0.85	24.9	>2.3	3.38	73	0.275
200M	18.5	440	60	Y	1780	99.3	IE3	93.6	0.85	30.6	>2.3	3.49	76	0.317
225M	22	440	60	Y	1785	117.7	IE3	93.6	0.86	35.9	>2.3	3.49	76	0.555
225M	25	440	60	Y	1785	133.8	IE3	94.1	0.87	40.1	>2.3	3.35	76	0.621
250M	30	440	60	Y	1785	160.5	IE3	94.1	0.85	49.5	>2.3	3.35	76	0.768
280S	37	440	60	Y	1785	198.0	IE3	94.5	0.87	59.5	>2.3	3.39	78	1.397
280M	45	440	60	Y	1790	240.1	IE3	95	0.87	72	>2.3	3.72	78	1.658

60Hz 460V 4P-1800r/min S1

Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB(A)	J (kg.m ²)
112M	1.1	460	60	Y	1765	6.0	IE3	87.5	0.74	2.2	>2.5	4.21	59	0.001
112M	1.5	460	60	Y	1760	8.1	IE3	88.5	0.76	2.8	>2.5	4.13	59	0.0121
132S	2.2	460	60	Y	1770	11.9	IE3	89.5	0.77	4.1	>2.5	4.16	64	0.0247
132M	3	460	60	Y	1770	16.2	IE3	89.5	0.78	5.4	>2.5	4.15	64	0.0332
160S	4	460	60	Y	1780	21.5	IE3	89.5	0.8	7.1	>2.5	4.47	65	0.0646
160S	5.5	460	60	Y	1780	29.5	IE3	91.7	0.81	9.3	>2.5	4.53	71	0.0845
160M	7.5	460	60	Y	1780	40.2	IE3	91.7	0.82	12.6	>2.5	4.53	71	0.11
180M	9	460	60	Y	1785	48.2	IE3	92.4	0.83	14.8	>2.5	4.43	73	0.148
180M	11	460	60	Y	1785	58.9	IE3	92.4	0.84	17.8	>2.5	4.45	73	0.169
200M	15	460	60	Y	1780	80.5	IE3	93	0.84	24.1	>2.5	3.7	73	0.275
200M	18.5	460	60	Y	1780	99.3	IE3	93.6	0.84	29.6	>2.5	3.84	76	0.317
225M	22	460	60	Y	1790	117.4	IE3	93.6	0.85	34.8	>2.5	3.82	76	0.555
225M	25	460	60	Y	1790	133.4	IE3	94.1	0.86	38.8	>2.5	3.66	76	0.621
250M	30	460	60	Y	1790	160.1	IE3	94.1	0.85	47.5	>2.5	3.66	76	0.768
280S	37	460	60	Y	1790	197.4	IE3	94.5	0.86	57.5	>2.5	3.7	78	1.397
280M	45	460	60	Y	1790	240.1	IE3	95	0.86	69.5	>2.5	4.06	78	1.658

60Hz 440V 6P-1200r/min S1

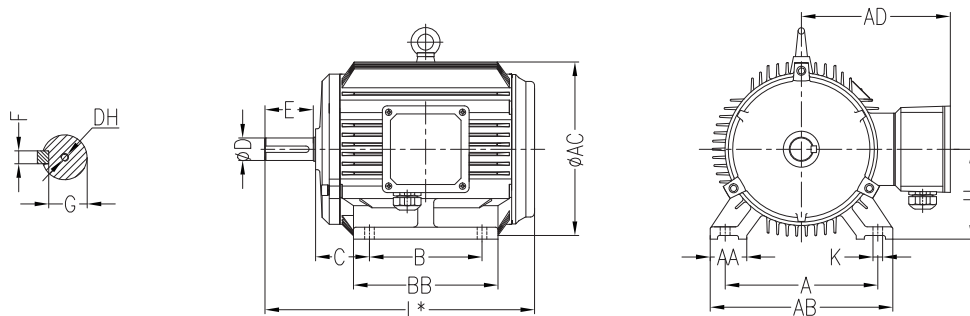
Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB (A)	J (kg. m ²)
112M	0.75	440	60	Y	1160	6.2	IE3	82.5	0.68	1.8	>2.3	3.28	57	0.0121
112M	1.1	440	60	Y	1160	9.1	IE2	85.5	0.69	2.5	>2.3	3.25	57	0.0158
132S	1.5	440	60	Y	1175	12.2	IE2	86.5	0.72	3.2	>2.3	3.76	61	0.0299
132M	2.2	440	60	Y	1175	17.9	IE2	87.5	0.73	4.6	>2.3	3.8	65	0.0522
160S	3	440	60	Y	1175	24.4	IE3	87.5	0.73	6.2	>2.3	3.47	69	0.0801
160S	4	440	60	Y	1175	32.5	IE3	89.5	0.74	8	>2.3	3.43	69	0.094
160M	5.5	440	60	Y	1175	44.7	IE3	91	0.74	11	>2.3	3.61	69	0.135
180M	7.5	440	60	Y	1180	60.7	IE3	91	0.78	13.9	>2.3	3.74	73	0.238
180M	9	440	60	Y	1185	72.5	IE3	91.7	0.81	16	>2.3	3.76	73	0.232
200M	11	440	60	Y	1185	88.6	IE3	91.7	0.79	20	>2.3	3.49	73	0.374
200M	15	440	60	Y	1185	120.9	IE3	91.7	0.79	27.2	>2.3	3.47	73	0.417
225M	18.5	440	60	Y	1190	148.5	IE3	93	0.82	32	>2.3	3.06	73	0.625
225M	22	440	60	Y	1190	176.6	IE3	93	0.82	38	>2.3	3.04	73	0.723
250M	25	440	60	Y	1190	200.6	IE3	93	0.83	43	>2.3	3.52	73	1.189
280S	30	440	60	Y	1190	240.8	IE3	94.1	0.84	50	>2.3	3.34	74	1.678
280M	37	440	60	Y	1190	296.9	IE3	94.1	0.85	61	>2.3	3.18	76	2.012

60Hz 460V 6P-1200r/min S1

Frame size	PN (kW)	UN (V)	FN (Hz)	Conn	nN (r/min)	TN (N.m)	IE-CL	η (%)	COS (COS ϕ)	IN (A)	Tst/TN	Tmax/TN	LWdB (A)	J (kg. m ²)
112M	0.75	460	60	Y	1165	6.1	IE3	82.5	0.65	1.8	>2.5	3.59	57	0.0121
112M	1.1	460	60	Y	1165	9.0	IE2	85.5	0.66	2.5	>2.5	3.57	57	0.0158
132S	1.5	460	60	Y	1175	12.2	IE2	86.5	0.69	3.2	>2.5	4.12	61	0.0299
132M	2.2	460	60	Y	1180	17.8	IE2	87.5	0.71	4.5	>2.5	4.15	65	0.0522
160S	3	460	60	Y	1175	24.4	IE3	87.5	0.71	6.1	>2.5	3.8	69	0.0801
160S	4	460	60	Y	1175	32.5	IE3	89.5	0.72	7.8	>2.5	3.75	69	0.094
160M	5.5	460	60	Y	1180	44.5	IE3	91	0.71	10.7	>2.5	3.94	69	0.135
180M	7.5	460	60	Y	1185	60.4	IE3	91	0.76	13.7	>2.5	4.08	73	0.238
180M	9	460	60	Y	1185	72.5	IE3	91.7	0.78	15.8	>2.5	4.17	73	0.232
200M	11	460	60	Y	1190	88.3	IE3	91.7	0.77	19.6	>2.5	3.84	73	0.374
200M	15	460	60	Y	1190	120.4	IE3	91.7	0.77	27	>2.5	3.85	73	0.417
225M	18.5	460	60	Y	1190	148.5	IE3	93	0.8	31.5	>2.5	3.39	73	0.625
225M	22	460	60	Y	1190	176.6	IE3	93	0.81	37	>2.5	3.37	73	0.723
250M	25	460	60	Y	1190	200.6	IE3	93	0.82	41.5	>2.5	3.84	73	1.189
280S	30	460	60	Y	1190	240.8	IE3	94.1	0.82	49	>2.5	3.67	74	1.678
280M	37	460	60	Y	1190	296.9	IE3	94.1	0.83	60	>2.5	3.49	76	2.012

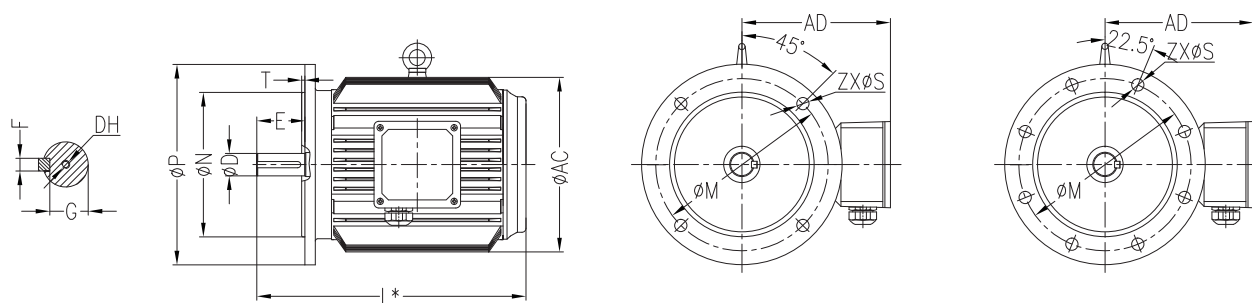
9 YG motor dimensions

B3 mounting construction



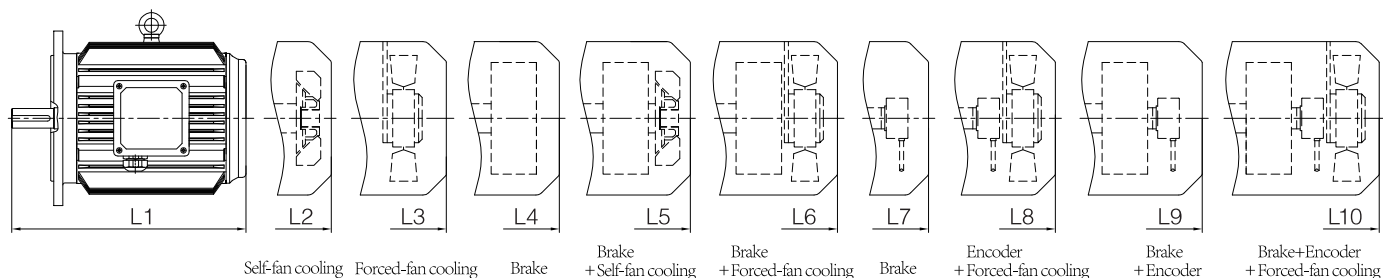
Frame size	No. of poles	Dimension (mm)														
		A	B	C	D	E	F	G	H	K	AA	AB	AC	AD	BB	DH
112M	4, 6	190	140	70	28	60	8	24	112	12	45	230	220	220	180	CM10L15/16.3
132S	4, 6	216	140	89	38	80	10	33	132	12	55	270	259	240	186	CM12L20/19.8
132M	4, 6	216	178	89	38	80	10	33	132	12	55	270	259	240	224	CM12L20/19.8
160S	4, 6	254	210	108	42	110	12	37	160	14.5	65	320	314	285	260	CM16L25/25.3
160M	4, 6	254	254	108	42	110	12	37	160	14.5	65	320	314	285	304	CM16L25/25.3
180M	4, 6	279	241	121	48	110	14	42.5	180	14.5	70	355	356	310	349	CM16L25/25.3
200M	4, 6	318	305	133	55	110	16	49	200	18.5	70	395	398	335	369	CM20L30/31.3
225M	4, 6	356	286	149	60	140	18	53	225	18.5	75	435	446	370	393	CM20L30/31.3
	4, 6	356	311	149	60	140	18	53	225	18.5	75	435	446	370	393	CM20L30/31.3
250M	4, 6	406	349	168	65	140	18	58	250	24	80	490	485	380	445	CM20L30/31.3
280S	4, 6	457	368	190	75	140	20	67.5	280	24	85	550	547	410	485	CM20L30/31.3
280M	4, 6	457	419	190	75	140	20	67.5	280	24	85	550	547	410	536	CM20L30/31.3

B5 mounting construction



Frame size	No. of poles	Dimension (mm)												
		D	E	F	G	M	N	P	S	T	Z	AC	AD	DH
112M	4, 6	28	60	8	24	215	180	250	14.5	4	4	220	220	CM10L15/16.3
132S	4, 6	38	80	10	33	265	230	300	14.5	4	4	259	240	CM12L20/19.8
132M	4, 6	38	80	10	33	265	230	300	14.5	4	4	259	240	CM12L20/19.8
160S	4, 6	42	110	12	37	300	250	350	18.5	5	4	314	285	CM16L25/25.3
160M	4, 6	42	110	12	37	300	250	350	18.5	5	4	314	285	CM16L25/25.3
180M	4, 6	48	110	14	42.5	300	250	350	18.5	5	4	356	310	CM16L25/25.3
200M	4, 6	55	110	16	49	350	300	400	18.5	5	4	398	335	CM20L30/31.3
225M	4, 6	60	140	18	53	400	350	450	18.5	5	8	446	370	CM20L30/31.3
250M	4, 6	65	140	18	58	500	450	550	18.5	5	8	485	380	CM20L30/31.3
280S	4, 6	75	140	20	67.5	500	450	550	18.5	5	8	547	410	CM20L30/31.3
280M	4, 6	75	140	20	67.5	500	450	550	18.5	5	8	547	410	CM20L30/31.3

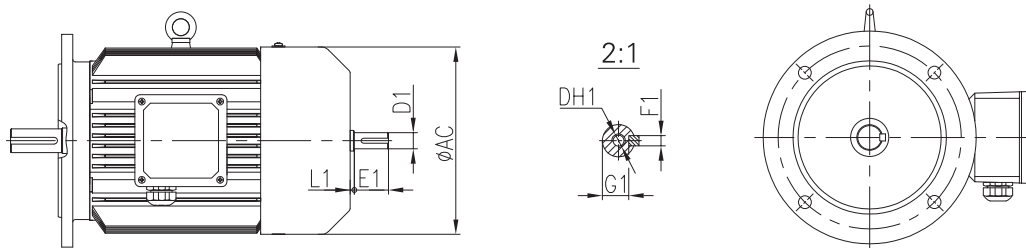
YG motor length and weight



Frame size	4-pole power (kW)	Motor length L* (mm)										Motor weight (kg)									
		L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
112M	1.1	336	404	464	479	479	544	404	544	479	584	38	40	41	47.5	48	48.5	40	42	48	50
112M	1.5	336	404	464	479	479	544	404	544	479	584	43	45	46	52.5	53	53.5	45	47	53	55
132S	2.2	391	465	530	545	545	615	465	615	545	645	61	63	65	73.5	74	75.5	63	66	74	77
132M	3	429	503	568	583	583	653	503	653	583	683	71	73	75	83.5	84	85.5	73	76	84	87
160S	4	507	601	651	661	696	756	601	756	661	786	107	111	113	131	132	132.5	111	113.5	132	133.5
160S	5.5	507	601	651	661	696	756	601	756	661	786	115	119	121	139	140	140.5	119	121.5	140	141.5
160M	7.5	551	645	695	705	740	800	645	800	705	830	138	142	144	162	163	163.5	142	144.5	163	164.5
180M	9	599	706	751	771	826	861	706	861	771	901	179	185	187	216	217	218	185	188	217	219.5
180M	11	599	706	751	771	826	861	706	861	771	901	194	200	202	231	232	233	200	203	232	234.5
200M	15	649	797	817	827	912	937	797	937	827	987	250	259	260	307	309	307	258	260	309	308.5
200M	18.5	649	797	817	827	912	937	797	937	827	987	271	280	281	328	330	328	279	281	330	329.5
225M	22	723	869	904	899	984	1024	869	1024	899	1064	335	345	347	393	395	396	344	348.5	395	397.5
225M	25	723	869	904	899	984	1024	869	1024	899	1064	355	365	367	413	415	416	364	368.5	415	417.5
250M	30	783	964	989	979	1104	1144	964	1144	979	1174	434	448	449	550	553	548	446	448	553	550
280S	37	833	1011	1041	1041	1151	1191	1011	1191	1041	1231	560	575	577	677	680	678	573	577.5	680	680
280M	45	884	1062	1092	1092	1202	1242	1062	1242	1092	1282	630	645	647	747	750	748	643	647.5	750	750
Frame size	6-pole power (kW)	Motor length L* (mm)										Motor weight (kg)									
		L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
112M	0.75	336	404	464	479	479	544	404	544	479	584	36	38	39	45.5	46	46.5	38	40	46	48
112M	1.1	336	404	464	479	479	544	404	544	479	584	41	43	44	50.5	51	51.5	43	45	51	53
132S	1.5	391	465	530	545	545	615	465	615	545	645	59	61	63	71.5	72	73.5	61	64	72	75
132M	2.2	429	503	568	583	583	653	503	653	583	683	64	66	68	76.5	77	78.5	66	69	77	80
160S	3	507	601	651	661	696	756	601	756	661	786	104	108	110	128	129	129.5	108	110.5	129	130.5
160S	4	507	601	651	661	696	756	601	756	661	786	111	115	117	135	136	136.5	115	117.5	136	137.5
160M	5.5	551	645	695	705	740	800	645	800	705	830	131	135	137	155	156	156.5	135	137.5	156	157.5
180M	7.5	599	706	751	771	816	861	706	861	771	901	182	188	190	219	220	221	188	191	220	222.5
180M	9	599	706	751	771	816	861	706	861	771	901	194	200	202	231	232	233	200	203	232	234.5
200M	11	649	797	817	827	912	937	797	937	827	987	221	230	231	278	280	278	229	231	280	279.5
200M	15	649	797	817	827	912	937	797	937	827	987	251	260	261	308	310	308	259	261	310	309.5
225M	18.5	723	869	904	899	984	1024	869	1024	899	1064	320	330	332	378	380	381	329	333.5	380	382.5
225M	22	723	869	904	899	984	1024	869	1024	899	1064	345	355	357	403	405	406	354	358.5	405	407.5
250M	25	783	964	989	979	1104	1144	964	1144	979	1174	443	457	458	559	562	557	455	457	562	559
280S	30	833	1011	1041	1041	1151	1191	1011	1191	1041	1231	530	545	547	647	650	648	543	547.5	650	650
280M	37	884	1062	1092	1092	1202	1242	1062	1242	1092	1282	590	605	607	707	710	708	603	607.5	710	710

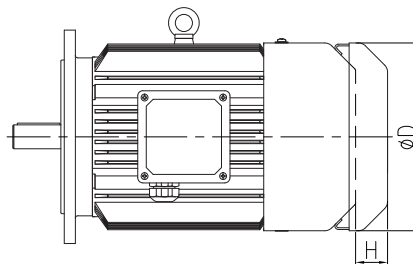
10 Dimensions of motor shaft projecting tail and rainproof cover

◆ Dimensions of motor shaft projecting tail



Frame size	Dimensions (mm)						
	D1	E1	F1	G1	L1	AC	DH1
112	Please inquire						
132							
160							
180							
200							
225							
250							
280							

◆ Dimensions of rainproof cover

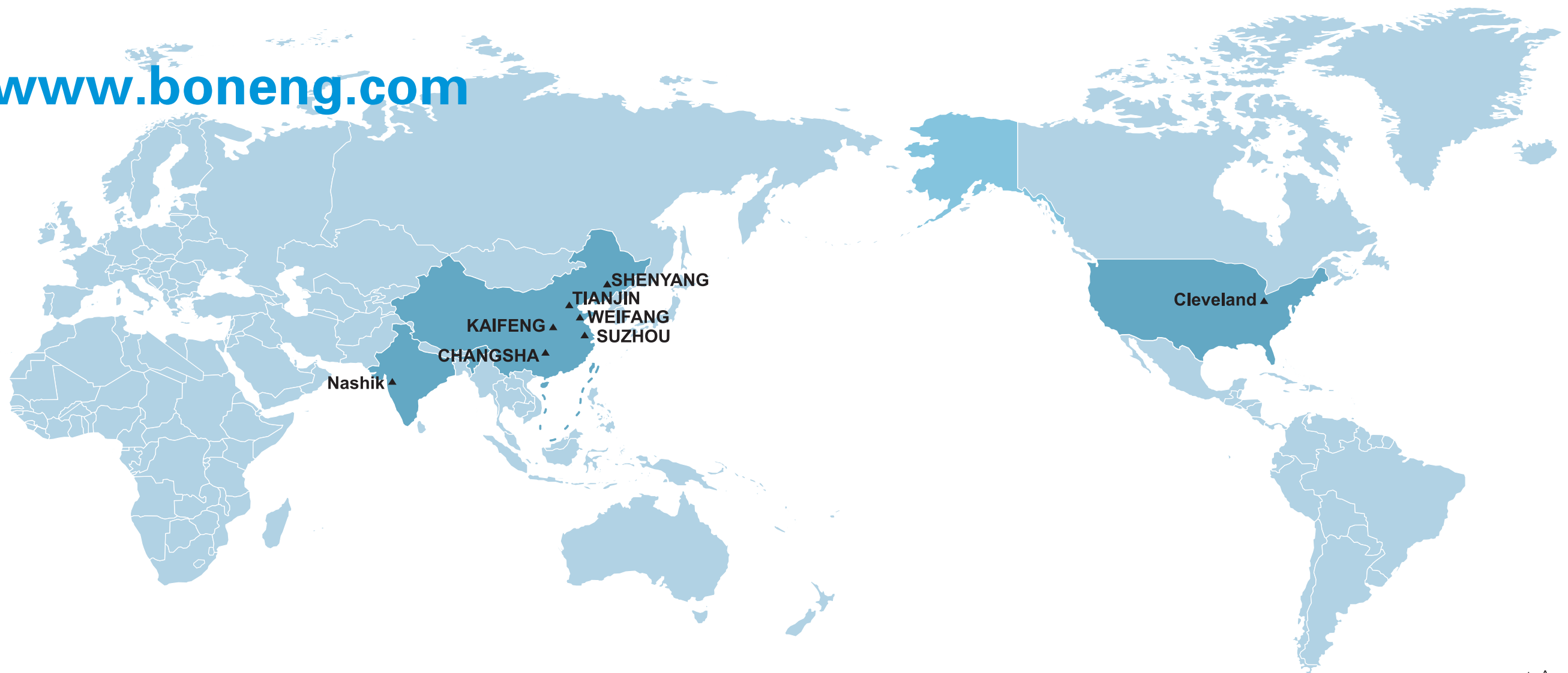


Frame size	H112	H132	H160	H180	H200	H225	H250	H280
D	220	259	314	356	398	446	485	547
H	40	40	60	60	70	70	80	80

11 Electrical connection schematics

Basic wiring diagram	1) Self-fan /natural cooling motor	2) Forced-fan cooling motor
Slow brake wiring diagram(factory standard)	3) Motor with brake	4) Forced-fan cooling motor with brake
Rapid brake wiring diagram(customer connection)		

Along with the technology advancedet.,the product of the manual of Boneng will be changed,please forgive.



▲ Assembly Company

BONENG TRANSMISSION(INDIA)PVT.LTD

Plot No. E-10/3, MIDC sinnar (Malegaon)
Industrial Area, Nashik, 422123,
Maharashtra, India.
TEL:+91-11- 4507 6293 (DELHI)
TEL:+91-22-2781 3385 (MUMBAI)

BONENG TRANSMISSION(SUZHOU)CO.,LTD.

No. 100, Ruyuan Road, Xiangcheng District, 215131
Suzhou, Jiangsu Province, China
TEL: 0512-66189662

BONENG TRANSMISSION(SHENYANG)CO.,LTD.

No. A73-6, Area A, Pacific Industrial City, Shenbei 110013
New District, Shenyang, Liaoning Province, China
TEL: 024-31271571

BONENG TRANSMISSION(TIANJIN)CO.,LTD.

7th Workshop, Hongpeng Industrial Park, No. 6 300021
Shuanghai Road, Beichen District, Tianjin City,China
TEL: 022-26929556

BONENG TRANSMISSION(WEIFANG)CO.,LTD.

1st Workshop, Economic Development Zone, Anqiu, 261000
Weifang City, Shandong Province, China
TEL: 0536-2141166

BONENG TRANSMISSION(KAIFENG)CO.,LTD.

5th Workshop, Haishen Machinery, No.11, Fourth 475000
Street, Songcheng Road,New District, Kaifeng City,
Henan Province, China
TEL: 0371-23335238

BONENG TRANSMISSION(CHANGSHA)CO.,LTD.

No. 1288 Puri Avenue, Wangcheng Economic Development 410205
Zone, Changsha City, Hunan Province, China
TEL: 0731-88386958

BONENG TRANSMISSION(USA)LLC.

1250 E 222nd Euclid, OH 44117,United Staes
TEL: 1-216-618-3099
TEL: 1-216-618-0138

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BONENG

BONENG TRANSMISSION (SUZHOU) CO.,LTD

100#, Ruyuan Rd.,Xiangcheng District,Suzhou,China

www.boneng.com