

**Elektrim** **TECHTOP**

Product Catalog



[www.stcontrol.com](http://www.stcontrol.com)

**Power System  
& Transmission** Division





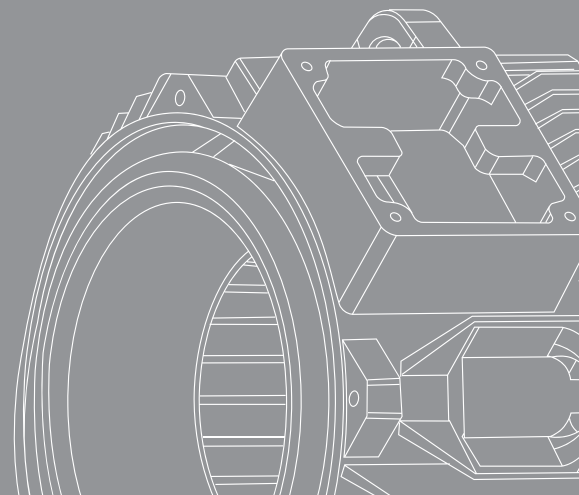
# Elektrim TECHTOP

## INTRODUCTION

**Elektrim Techtop**, a collaboration between two specialized veterans in the electric motor industry, serves to provide you only the highest quality electric motors, now on a global scale. Our partnership will enforce our vision for the industry and for our customers, ***Driving Our Globalized Brand with Localized Service***. Customer assurance and satisfaction serves as our top priority for you. To ensure this, we deliver the best after-sales policy in the industry, as well as having a professional technical personnel and experienced sales team. With our recent game-changing partnership, you are able to receive personalized service or get our products easily exchanged in all the 20-over countries we operate in. This gives you easy accessibility to all our services almost anywhere on the globe.

Previously known as Elektrim Motors & Machinery Pte Ltd, our company was founded in 1981 and has grown to be a leading powerhouse in the motor industry over the last 30 years. We have grown to have a strong regional network in over 10 Asian countries. Our main office which is located in Singapore, sits on an area of 90,000 square feet. It carries an inventory level of more than S\$3 million worth of stocks to meet our customers' demands. With the inception of our Malaysia and Vietnam branch offices, coupled with our partnerships with loyal agents and distributors all across Asia, our customers' needs are always well attended to.

Our brand is the No. 1 specialized brand in providing electric motors to the Palm Oil and Quarry Mining industries. Our brand is well recognized and trusted in the industries of Rubber, Industrial Fan, Marine & Offshore Engineering, Agricultural, Buildings, Cement and especially among the OEM production. Our motto is to be ***The Driving Force behind Every Machine***. To achieve this, all our motors are enhanced in our factory and regulated to stringent Quality Checks before delivery to ensure that our customer satisfaction and needs are always met. We believe in crafting each individual Elektrim Motor with precision and care to ensure the highest quality motors for our customers.





## USA

**Techtop Industries Inc.**  
1268 Old Alpharetta Road  
Alpharetta, GA 30005

## CANADA

**Techtop Canada Inc.**  
2795 Brighton Road #2  
Oakville, ON, L6H 6J4

## ITALY

**Simotop Group Spa**  
40024 Cà Bianca BO, Italy

## NETHERLANDS

**Simotop N.V.**  
Broekstraat 32 6828 PZ Arnhem  
Arnhem, the Netherlands

## SPAIN

**Dimotor S.A.**  
Corrals Nous, nº 61  
Pol. Ind. Can Roqueta  
08202 SABADELL  
Barcelona, Spain

## UNITED KINGDOM

**TEC Electric Motors Ltd**  
Unit 1 Building 341  
Rushock Trading Est  
Droitwich WR9 0NR  
United Kingdom

## GERMANY

**Techtop ADDA Motor GmbH**  
Kronberger Street 16  
63110 Rodgau, Germany

## AUSTRALIA

**Techtop Australia Pty Ltd**  
26 Kingsley Close  
Rowville VIC 3178  
Australia

## SINGAPORE

**Elektrim Techttop Motors Pte Ltd**  
80 Joo Koon Circle  
Singapore 629100  
Tel : (65) 6863 9500 Fax: (65) 6863 3778  
Email : enquiry@emm-motors.com

## MALAYSIA

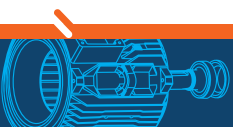
**Elektrim Techttop Motors Sdn Bhd**  
No. 12 & 14, Jalan Apollo U5/188, Seksyen U5  
Bandar Pinggiran Subang, 40150 Shah Alam  
Selangor Darul Ehsan, Malaysia  
Tel : (603) 7847 6635 / 7847 6629 / 7847 6619  
Fax: (603) 7847 1017  
Email : elektrim@tm.net.my

## Millivest Sdn Bhd (East Malaysia)

Block A Lot 4 Ground Floor, Jalan Elopura  
Taman Grandview Ppm 111  
Sabah 90000 Sandakan, Malaysia

## VIETNAM

**Elektrim Motors & Machinery (Vietnam) Pte Ltd**  
68 Bac Hai Street, Ward 6,  
Tan Binh District  
Ho Chi Minh, Vietnam  
Tel : (84) 8 629 23612 Fax: (84) 8 629 23574  
Email : info@elektrim.com.vn



## GLOBAL MAP



### INDONESIA

**PT Interjaya Surya Megah**  
Jalan Rungkut Industri III/55  
Surabaya, Indonesia

**PT Jayatech Palmindo**  
Kawasan Industri Medan 2 (Kim 2)  
Jalan Pulau Solor No. 18  
Medan, Indonesia

**PT Biotani Indonesia**  
Jalan Jenderal Sudirman Bukit Indah Sukajadi  
Ruko Dermaga Blok RE-09  
Batam, Indonesia

### MYANMAR

**Amos Myanmar Services Co. Ltd**  
No. 150/152 First Floor, 47 Street (Upper)  
Botahtaung Township  
Yangon, Myanmar

### PHILLIPINES

**P.T. Cerna Corporation**  
4173 Ponte Street Barangay  
Sta. Cruz Makati City, Philippines

### SRI LANKA

**Elektrim Techtop Motors Pte Ltd**  
80 Joo Koon Circle  
Singapore 629100

### HONG KONG

**Zenith International Enterprise Ltd.**  
Unit A2, 21/F, Fortune  
Factory Building  
40 Lee Chung Street  
Chiwan, Hong Kong

### CHINA

**Shanghai Top Motor Co. Ltd**  
No. 303 Kangliu Road  
Kangqiao Industrial Zone  
Pudong, Shanghai

### MIDDLE EAST

**SMART Systems for Factories  
Operation & Maintenance Co.**  
Wasfi Al-Tel Street (Gardens)  
Building No. 80, Office 401  
Amman, Jordan

### DUBAI

**Global Power Engineering Co. Ltd**  
Showroom No. Ead 01-02-03  
Dragon Mart, International City  
P.O. Box 299805  
Dubai, U.A.E



***The Driving Force  
Behind Every Machine***

*Global Brand, Local Service*





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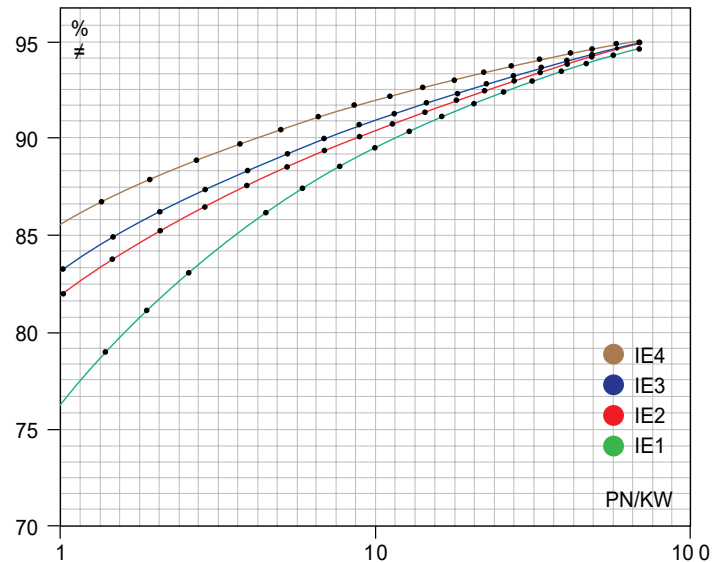


## EU Efficiency Level Classification

General

With the aim to reduce the power requirement of electric motors and to the energy consumption in Europe, CEMEP and the European Union reached an agreement, by which 2- and 4-pole three phase AC motors are affected, i.e. standard motors, defined as totally enclosed fan cooled, squirrel cage low voltage motors with 400V, 50Hz and S1 in the rated output range of 1.1 to 90kW.

In the 1.1 to 90kW output range, the 2- and 4-pole standard three phase motors described in this documentation correspond with the EU efficiency classification EFF2. Designation takes place with the EFF2 logo on the nameplate.



2 Pole	IE1	IE2	IE3	IE4
kW	min- π%	min- π%	min- π%	min- π%
1.1	75.0	79.6	82.7	85.2
1.5	77.2	81.3	84.2	86.5
2.2	79.7	83.2	85.9	88.0
3.0	81.5	84.6	87.1	89.1
4.0	83.1	85.8	88.1	90.0
5.5	84.7	87.0	89.2	90.9
7.5	86.0	88.1	90.1	91.7
11.0	87.6	89.4	91.2	92.6
15.0	88.7	90.3	91.9	93.3
18.5	89.3	90.9	92.4	93.7
22.0	89.9	91.3	92.7	94.0
30.0	90.7	92.0	93.3	94.5
37.0	91.2	92.5	93.7	94.8
45.0	91.7	92.9	94.0	95.0
55.0	92.1	93.2	94.3	95.3
75.0	92.7	93.8	94.7	95.6
90.0	93.0	94.1	95.0	95.8

4 Pole	IE1	IE2	IE3	IE4
kW	min- π%	min- π%	min- π%	min- π%
1.1	75.0	81.4	84.1	87.2
1.5	77.2	82.8	85.3	88.2
2.2	79.7	84.3	86.7	89.5
3.0	81.5	85.5	87.7	90.4
4.0	83.1	86.6	88.6	91.1
5.5	84.7	87.7	89.6	91.9
7.5	86.0	88.7	90.4	92.6
11.0	87.6	89.8	91.4	93.3
15.0	88.7	90.6	92.1	93.9
18.5	89.3	91.2	92.6	94.2
22.0	89.9	91.6	93.0	94.5
30.0	90.7	92.3	93.6	94.9
37.0	91.2	92.7	93.9	95.2
45.0	91.7	93.1	94.2	95.4
55.0	92.1	93.5	94.6	95.7
75.0	92.7	94.0	95.0	96.0
90.0	93.0	94.2	95.2	96.1

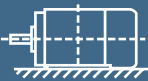
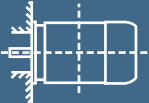
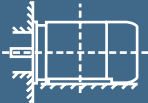





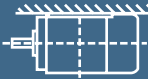



## Degrees of protection

General

Designation	First Numeral	Second Numeral
	Protection against contact and ingress of foreign bodies. Protection against hazardous "Live" parts and moving mechanical parts.	Protection against water
	5. Ingress of dust is not totally prevented, but dust shall not interfere with the satisfactory operation of equipment. A probe of 1mm diameter shall not penetrate the enclosure.	5. Water projected in jets against the enclosure from any direction will have no harmful effects.
	6. No ingress of dust	6. Water projected in power jets shall have no harmful effects.
IP55	Dust protected	Jetting water
IP56	Dust protected	Powerful Jetting
IP65	Dust tight	Jetting water
IP66	Dust tight	Powerful Jetting

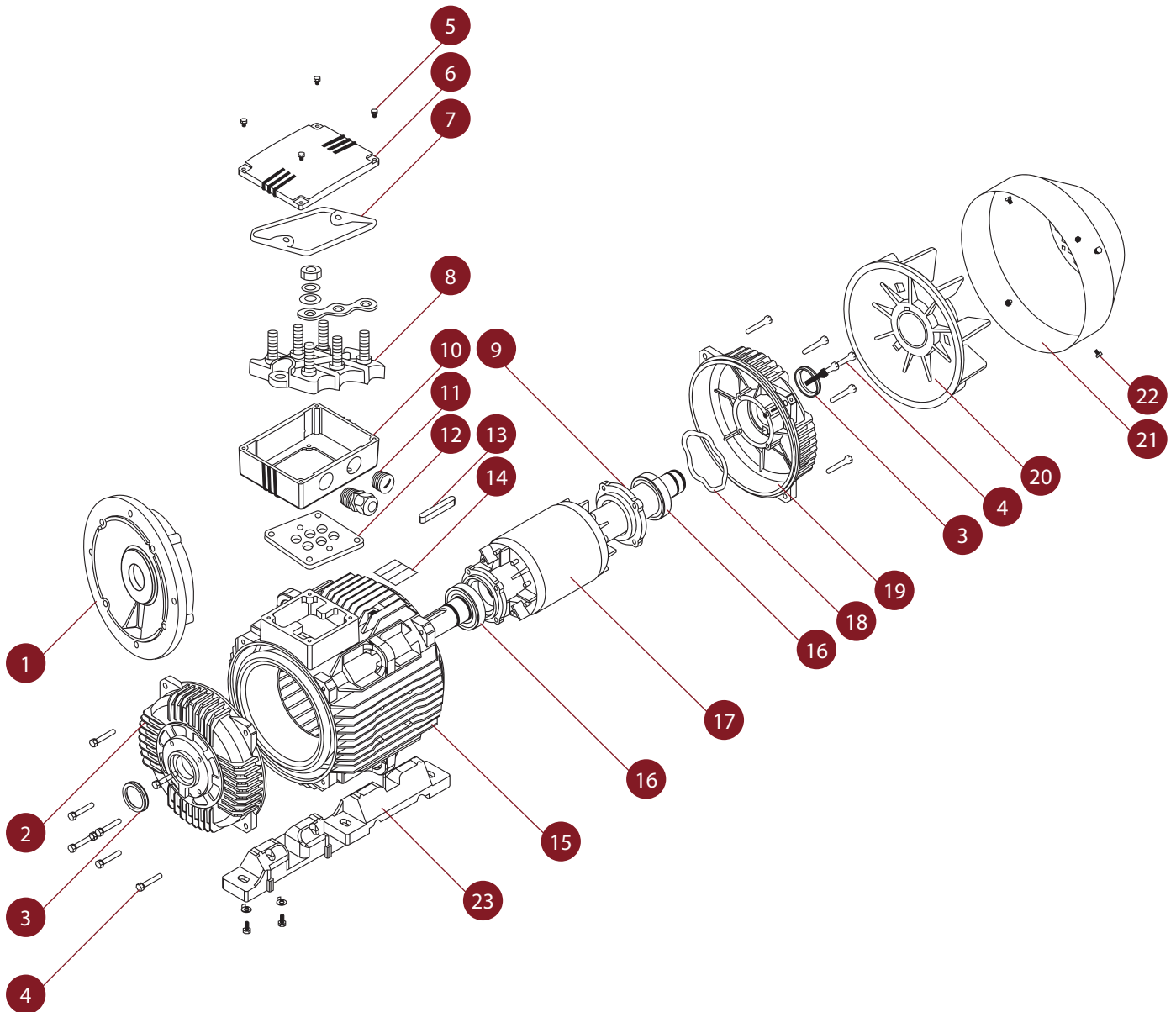




FOOT MTG HORIZ	FLANGE MTG	FOOT/FLANGE MTG	FOOT MTG VERT
<b>B3</b> IM1001 H80 ~ 355 	<b>B5</b> IM3001 H80 ~ 280 	<b>B35</b> IM2001 H80 ~ 355 	
<b>B6</b> IM1051 H80 ~ 160 	<b>V1</b> IM3011 H80 ~ 355 	<b>V15</b> IM2011 H80 ~ 160 	<b>V5</b> IM1011 H80 ~ 160 
<b>B7</b> IM1061 H80 ~ 160 			
<b>B8</b> IM1071 H80 ~ 160 	<b>V3</b> IM3031 H80 ~ 160 	<b>V36</b> IM2031 H80 ~ 160 	<b>V6</b> IM1031 H80 ~ 160 

Frame	Drive End Bearing	Non-drive End Bearing	Quantity of Grease in Bearing Chamber (grams)	International Brand
EM 63	6201	6201	Life Bearing	NSK
EM 70	6202	6202	Life Bearing	NSK
EM 80	6204 ZZ C3	6204 ZZ C3	Life Bearing	NSK
EM 90	6205 ZZ C3	6205 ZZ C3	Life Bearing	NSK
EM 100	6206 ZZ C3	6206 ZZ C3	Life Bearing	NSK
EM 112	6306 ZZ C3	6306 ZZ C3	Life Bearing	NSK
EM 132	6308 ZZ C3	6308 ZZ C3	Life Bearing	NSK
EM 160	6309 C3	6309 C3	12	NSK
EM 180	6311 C3	6311 C3	15	NSK
EM 200	6312 C3	6312 C3	20	NSK
EM 225	6313 C3	6313 C3	22	NSK
EM 250	6314 C3	6314 C3	23	NSK
EM 280 (2P)	6316 C3	6316 C3	30	NSK
EM 280 (4P - 8P)	6316 C3	6316 C3	30	NSK
EM 315 (2P)	6317 C3	6317 C3	30	NSK
EM 315 (4P - 8P)	NU319	6319 C3	45	NSK
EM 355 (2P)	6319 C3	6319 C3	30	NSK
EM 355 (4P - 8P)	NU322	6322 C3	60	NSK

	Insulation Class	
	F	H
Max. permissible winding temperature (°C)	180°C	250°C
Max. ambient temperature (°C)	40°C	80°C
Min. ambient temperature (°C)	-10°C	-10°C
Max. hours of operation at max. temperature (Hrs)	Unlimited	2 Hrs
Max. permissible humidity (%)	100%	100%
Temperature rise safety margin (K)	25K	45K



1 Flange B5	7 Terminal box seal	13 Key	19 NDE shield
2 End shield B3	8 Terminal board complete with components	14 Name plate	20 Cooling fan
3 V-ring	9 Bearing cover	15 Frame	21 Fan cover
4 Screws for fixing end shield	10 Terminal box base	16 Bearings	22 Screws for fixing fan cover
5 Screws for fixing terminal box cover	11 Cable gland and plug	17 Rotor with shaft complete	23 Feet
6 Terminal box cover IP55	12 Terminal base seal	18 Spring washer	

• This catalogue is only a reference for users. The data may be changed, please contact us before ordering.  
 • Note type, rated output, synchronous speed, voltage and frequency, insulation class, mounting type etc. When ordering.  
 • For special requirement, please contact us, we may deliver following special type of motor:  
 1. Voltage: such as 420V 2. Frequency 60Hz 3. Double end shaft 4. Motor for tropical humid climate





# *Elektrim* TECHTOP

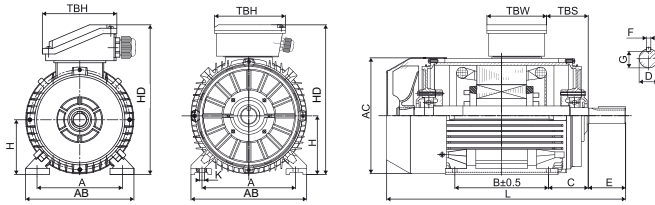


Figure 1 IM B3

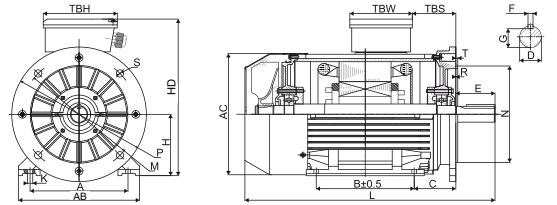


Figure 2 IM B35

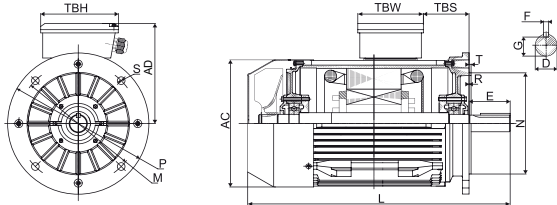


Figure 3 IM B5

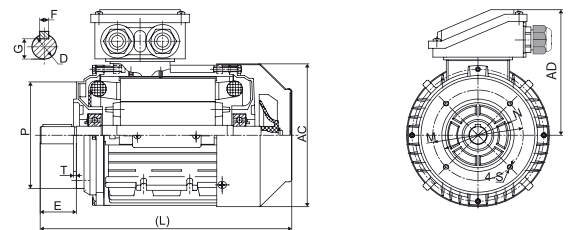


Figure 4 IM B14

Frame Size	B3 Foot Mounting						Shaft				General					
	H	A	B	C	K	D	E	F	G	AB	AD	HD	AC	L	KK	
80	80	125	100	50	Ø9	Ø19	40	6	15.5	154	134	214	Ø158	290	1-M20X1.5	
90S/L	90	140	100/125	56	Ø10	Ø24	50	8	20	178	141	231	Ø176	320/345	1-M20X1.5	
100	100	160	140	63	Ø12	Ø28	60	8	24	203	151	251	Ø199	385	1-M20X1.5	
112	112	190	140	70	Ø12	Ø28	60	8	24	231	180	292	Ø220	405	2-M25X1.5	
132S/M	132	216	140/178	89	Ø12	Ø38	80	10	33	263	200	332	Ø259	467/505	2-M25X1.5	
160M/L	160	254	210/254	108	Ø15	Ø42	110	12	37	316	244	404	Ø313	605/650	2-M32X1.5	
180M/L	180	279	241/279	121	Ø15	Ø48	110	14	42.5	354	265	445	Ø360	687/725	2-M32X1.5	
200L	200	318	305	133	Ø19	Ø55	110	16	49	393	300	500	Ø399	768.5	2-M40X1.5	
225S	4,6,8	225	356	286	149	Ø19	Ø60	140	18	53	440	333	558	Ø459	810	2-M50X1.5
225M	2	225	356	311	149	Ø19	Ø55	110	16	49	440	333	558	Ø459	805	2-M50X1.5
	4,6,8	225	356	311	149	Ø19	Ø60	140	18	53	440	333	558	Ø459	835	
250M	2	250	406	349	168	Ø24	Ø60	140	18	53	484	366	616	Ø506	915	2-M50X1.5
	4,6,8	250	406	349	168	Ø24	Ø65	140	18	58	484	366	616	Ø506	915	
280S/M	2	280	457	368/419	190	Ø24	Ø65	140	18	58	560	395	675	Ø559	984/1035	2-M50X1.5
	4,6,8	280	457	368/419	190	Ø24	Ø75	140	20	67.5	560	395	675	Ø559	984/1035	
315S	2	315	508	406	216	Ø28	Ø65	140	18	58	628	510	825	Ø680	1205	2-M63X1.5
	4,6,8	315	508	406	216	Ø28	Ø80	170	22	71	628	510	825	Ø680	1235	
315M/L	2	315	508	457/508	216	Ø28	Ø65	140	18	58	628	510	825	Ø680	1355	2-M63X1.5
	4,6,8	315	508	457/508	216	Ø28	Ø80	170	22	71	628	510	825	Ø680	1385	
355M/L	2	355	610	560/630	254	Ø28	Ø75	140	20	67.5	740	655	1010	Ø820	1495	2-M63X1.5
	4,6,8	355	610	560/630	254	Ø28	Ø95	170	25	86	740	655	1010	Ø820	1525	
	4,6,8	355	610	560/630	254	Ø28	Ø100	210	28	90	740	655	1010	Ø820	1565	

Frame Size	B5 Flange Mounting					B14				
	N	M	P	S	T	N	M	P	S	T
80	Ø130	Ø165	Ø200	4-Ø12	3.5	Ø80	Ø100	Ø120	M6	3
90S/L	Ø130	Ø165	Ø200	4-Ø12	3.5	Ø95	Ø115	Ø140	M8	3
100	Ø180	Ø215	Ø250	4-Ø15	4	Ø110	Ø130	Ø160	M8	3.5
112	Ø180	Ø215	Ø250	4-Ø15	4	Ø110	Ø130	Ø160	M8	3.5
132S/M	Ø230	Ø265	Ø300	4-Ø15	4	Ø130	Ø165	Ø200	M10	3.5
160M/L	Ø250	Ø300	Ø350	4-Ø19	5	Ø180	215	Ø250	M12	5
180M/L	Ø250	Ø300	Ø350	4-Ø19	5					
200L	Ø300	Ø350	Ø400	4-Ø19	5					
225S	4,8	Ø350	Ø400	Ø450	8-Ø19	5				
225M	2	Ø350	Ø400	Ø450	8-Ø19	5				
	4,6,8	Ø350	Ø400	Ø450	8-Ø19	5				
250M	2	Ø450	Ø500	Ø550	8-Ø19	5				
	4,6,8	Ø450	Ø500	Ø550	8-Ø19	5				
280S/M	2	Ø450	Ø500	Ø550	8-Ø19	5				
	4,6,8	Ø450	Ø500	Ø550	8-Ø19	5				
315S/M/L	2	Ø550	Ø600	Ø660	8-Ø24	6				
	4,6,8	Ø550	Ø600	Ø660	8-Ø24	6				
355M/L	2	Ø680	Ø740	Ø800	8-Ø24	6				
	4,6,8	Ø680	Ø740	Ø800	8-Ø24	6				

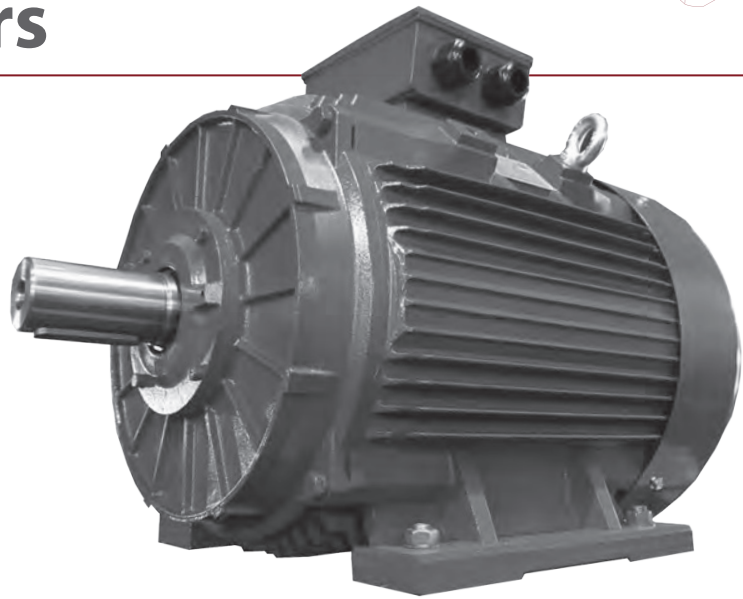


# Induction Motors

## Three-Phase Asynchronous Motors Cast Iron / Aluminum Housing

EMM series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. It encompasses our latest design with many new features, are made of selected high quality materials and conform to the IEC Standard.

Some unique design features are our special conical pro ventilation fan cover, detachable feet for cast iron housing, and extended aluminium housing range up till frame size 200. EMM series motors comes with Protection IP55, Insulation Class F and NSK imported bearings as a standard issue. These series of motors can be used for general drives.



IE1

### Efficiency Motors Technical Data (at 50Hz)

IE1

#### 2 Pole-3000 rpm Synchronous Speed 50Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-2	0.37	0.5	2750	0.89	0.85	0.82	4.3	72.5	0.86	1.3	2.2	2.4	0.001	64	13
EM71B-2	0.55	0.75	2760	1.2	1.14	1.1	4.9	78	0.89	1.9	2.5	2.6	0.001	64	14
EM80A-2	0.75	1	2840	1.8	1.7	1.67	5.5	75.5	0.83	2.5	2.3	2.6	0.001	67	16
EM80B-2	1.1	1.5	2840	2.6	2.5	2.4	5.6	76.2	0.84	3.7	2.3	2.6	0.001	67	17
EM90S-2	1.5	2	2850	3.4	3.2	3.1	6.1	79.5	0.85	5	2.5	2.9	0.001	72	22
EM90L-2	2.2	3	2850	4.8	4.6	4.4	6.1	81.7	0.85	7.4	2.7	2.9	0.001	72	25
EM100L-2	3	4	2880	6.3	6	5.8	6.5	83.1	0.87	10	2.7	2.9	0.004	76	33
EM112M-2	4	5.5	2880	8.2	7.8	7.6	6.5	84.2	0.88	13.3	2.6	2.9	0.006	77	45
EM132SA-2	5.5	7.5	2900	11.1	10.5	10.2	6.9	85.9	0.88	18.1	2.3	2.6	0.011	80	64
EM132SB-2	7.5	10	2900	14.9	14.2	13.5	6.9	87.2	0.88	24.5	2.5	2.8	0.013	80	70
EM160MA-2	11	15	2930	21.1	20.1	19.4	6.7	88.7	0.89	35.8	2.6	2.9	0.038	86	117
EM160MB-2	15	20	2930	28.6	27.2	26.2	6.7	89.5	0.89	48.8	2.6	2.9	0.045	86	125
EM160L-2	18.5	25	2930	34.6	32.9	31.8	6.8	90.2	0.9	60.4	2.5	2.8	0.055	86	147
EM180M-2	22	30	2940	41	38.9	37.6	6.6	90.6	0.9	71.4	2.6	2.8	0.076	89	180
EM200LA-2	30	40	2950	55.4	52.6	50.7	6.5	91.5	0.9	97.2	2.5	2.7	0.124	92	240
EM200LB-2	37	50	2950	67.9	64.5	62.2	6.5	92	0.9	119.8	2.4	2.6	0.139	92	255
EM225M-2	45	60	2970	82.1	78	75.3	6.8	92.5	0.9	144.8	2.4	2.6	0.233	92	309
EM250M-2	55	75	2970	99.6	94.6	91.3	6.8	93.2	0.9	177	2.5	2.8	0.312	93	403
EM280S-2	75	100	2970	134.8	128.1	123.5	6.7	93.9	0.9	241.3	2.4	2.7	0.597	94	544
EM280M-2	90	125	2970	159.5	151.5	146.1	6.7	94.2	0.91	289.5	2.4	2.7	0.675	94	620
EM315S-2	110	150	2980	194.6	184.9	178.2	6.6	94.4	0.91	352.7	2	2.5	1.18	96	980
EM315M-2	132	180	2980	233	221.4	213.4	6.6	94.6	0.91	423.2	2.1	2.5	1.55	96	1080
EM315LA-2	160	220	2980	282.1	270	258.4	6.7	94.7	0.91	513	1.9	2.4	1.76	99	1160
EM315LB-2	200	270	2980	347.7	330.1	318.4	6.7	95	0.92	641.2	1.9	2.4	2.02	99	1190
EM355M-2	250	340	2980	432.3	410.8	395.9	6.5	95.5	0.92	801.5	1.6	2.3	3.56	103	1760
EM355L-2	315	430	2980	543	515.9	497.3	6.5	95.8	0.92	1010	1.6	2.3	4.1	103	1850

## 4 Pole-1500 rpm Synchronous Speed 50Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-4	0.25	0.37	1360	0.72	0.68	0.66	3.7	70	0.76	1.8	2.4	2.6	0.0006	55	12
EM71B-4	0.37	0.5	1360	1.02	0.97	0.93	3.7	71.3	0.77	2.6	2.4	2.5	0.0008	55	13
EM80A-4	0.55	0.75	1390	1.6	1.5	1.4	5.5	71.4	0.75	3.8	2.2	2.4	0.002	58	17
EM80B-4	0.75	1	1390	2.1	2	1.9	5.6	73.5	0.76	5.2	2.2	2.4	0.002	58	18
EM90S-4	1.1	1.5	1400	2.9	2.7	2.6	5.4	76.2	0.77	7.5	2.2	2.5	0.002	61	22
EM90L-4	1.5	2	1400	3.8	3.5	3.4	5.2	78.7	0.78	10.2	2.4	2.6	0.003	61	27
EM100LA-4	2.2	3	1420	5.1	4.9	4.7	6	81	0.81	14.8	2.3	2.6	0.007	64	34
EM100LB-4	3	4	1420	6.8	6.4	6.2	6.1	82.7	0.82	20.2	2.3	2.7	0.007	64	38
EM112M-4	4	5.5	1440	8.8	8.4	8.1	6.5	84.5	0.82	26.5	2.3	2.8	0.01	65	43
EM132S-4	5.5	7.5	1440	11.7	11.2	10.8	6.8	85.7	0.83	36.5	2.3	2.9	0.021	71	68
EM132M-4	7.5	10	1440	15.6	14.8	14.3	6.5	87.1	0.84	49.8	2.4	3	0.03	71	81
EM160M-4	11	15	1460	22.5	21.3	20.6	6.9	88.6	0.84	72	2.3	2.9	0.075	75	123
EM160L-4	15	20	1460	30.3	28.5	27.5	6.8	89.5	0.85	98.2	2.3	2.9	0.092	75	144
EM180M-4	18.5	25	1470	36.2	34.4	33.2	6.4	90.2	0.86	120.2	2.3	2.9	0.139	76	182
EM180L-4	22	30	1470	42.9	40.7	39.3	6.9	90.7	0.86	143	2.3	2.9	0.158	76	190
EM200L-4	30	40	1470	57.5	54.7	52.7	6.8	92.1	0.86	195	2.4	2.9	0.262	79	270
EM225S-4	37	50	1480	69.7	66.2	64.6	6.5	92.7	0.87	238.9	2.2	2.7	0.406	81	284
EM225M-4	45	60	1480	84.5	80.3	77.4	6.3	93	0.87	290.5	2.3	2.5	0.469	81	320
EM250M-4	55	75	1480	103	97.8	94.3	6.4	93.3	0.87	355.1	2.2	2.5	0.66	83	427
EM280S-4	75	100	1480	138.1	131.1	126.4	6.8	93.8	0.88	483.9	2.1	2.8	1.12	86	562
EM280M-4	90	125	1480	165	157	152	6.9	94.1	0.88	580.7	2.2	2.7	1.46	86	667
EM-315S-4	110	150	1480	200.5	190.5	183.6	6.5	94.7	0.88	709.8	1.9	2.7	3.11	93	1000
EM-315M-4	132	180	1480	240	228	220	6.8	95	0.88	851.8	2.3	3.2	3.29	93	1100
EM315LA-4	160	220	1480	287	273	263	6.6	95.2	0.89	1032	2.6	3	3.79	97	1160
EM315LB-4	200	270	1480	358	340	328	6.4	95.4	0.89	1290	2.2	2.8	4.49	97	1270
EM355M-4	250	340	1490	441	419	405	6.2	95.6	0.9	1603	1.9	2.9	5.67	101	1700
EM355L-4	315	430	1490	555	527	509	6.1	95.8	0.9	2020	2.1	3.1	6.66	101	1850

## 6 Pole-1000 rpm Synchronous Speed 50Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-6	0.18	0.25	855	0.67	0.64	0.62	2.5	58.4	0.7	2	2	2.3	0.0011	52	13
EM71B-6	0.25	0.37	860	0.86	0.82	0.79	2.6	62.2	0.71	2.8	2.1	2.3	0.0014	52	13.5
EM80A-6	0.37	0.5	890	1.3	1.2	1.1	4.4	62	0.7	4	1.9	2.3	0.002	54	17
EM80B-6	0.55	0.75	890	1.8	1.7	1.6	4.5	65	0.72	5.9	2.1	2.4	0.003	54	19
EM90S-6	0.75	1	910	2.3	2.2	2.1	4.1	69.1	0.72	7.9	2.3	2.7	0.003	57	23
EM90L-6	1.1	1.5	910	3.2	3	2.9	4.6	72	0.73	11.5	2.3	2.7	0.004	57	25
EM100L-6	1.5	2	920	4.1	3.9	3.7	5	76	0.75	15.6	2.4	2.8	0.007	61	33
EM112M-6	2.2	3	940	5.6	5.3	5.1	5.2	79.1	0.76	22.4	2.1	2.5	0.014	65	45
EM132S-6	3	4	960	7.4	7	6.8	5.6	81.3	0.76	29.9	1.9	2.5	0.029	69	63
EM132MA-6	4	5.5	960	9.7	9.2	8.9	6.2	82.3	0.76	39.8	2.1	2.7	0.036	69	73
EM132MB-6	5.5	7.5	960	12.8	12.2	11.7	6.5	84.7	0.77	54.7	2.3	2.8	0.045	69	84
EM160M-6	7.5	10	970	17.1	16.2	15.6	5.6	86.6	0.77	73.9	2	2.6	0.088	73	119
EM160L-6	11	15	970	24.5	23.2	22.4	5.8	87.6	0.78	108.3	2.1	2.4	0.116	73	147
EM180L-6	15	20	970	31.6	30.1	28.9	5.7	89	0.81	147.7	2	2.4	0.207	73	195
EM200LA-6	18.5	25	970	38.5	36.6	35.2	6.7	90.2	0.81	182.2	2.2	2.8	0.315	76	220
EM200LB-6	22	30	970	44.7	42.5	40.9	6.6	90.2	0.83	216.7	2.3	2.9	0.36	76	250
EM225M-6	30	40	980	59.3	56.4	54.3	6.8	91.5	0.84	292.5	2.2	2.7	0.547	76	292
EM250M-6	37	50	980	70.1	67.4	64.9	6.2	92.2	0.86	360.7	2	2.5	0.834	78	408
EM280S-6	45	60	980	86	82	79	6.1	92.5	0.86	438.7	1.9	2.5	1.39	80	536
EM280M-6	55	75	980	105	100	96	6.7	92.9	0.86	536.2	2.1	2.7	1.65	80	595
EM315S-6	75	100	990	142	135	129	6.5	93.7	0.86	723.8	2	2.7	4.11	85	990
EM315M-6	90	125	990	170	161	155	6.2	93.9	0.86	868.6	2	2.6	4.28	85	1080
EM315LA-6	110	150	990	206	196	188	6	94.5	0.86	1062	1.9	2.7	5.45	85	1150
EM315LB-6	132	180	990	244	232	223	5.8	94.6	0.87	1274	2	2.7	6.12	85	1210
EM355MA-6	160	220	990	291	276	266	6.3	95.1	0.88	1544	1.6	2.8	8.85	92	1600
EM355MB-6	200	270	990	362	343	331	6.6	95.2	0.88	1930	2	2.9	9.55	92	1700
EM355L-6	250	340	990	451	429	413	6.5	95.1	0.88	2413	1.6	3	10.3	92	1800



## 8 Pole-750 rpm Synchronous Speed 50Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM80A-8	0.18	0.25	630	0.88	0.83	0.8	2.9	51	0.61	2.8	2	2.2	0.002	52	17
EM80B-8	0.25	0.37	640	1.15	1.09	1.05	3	54	0.61	3.7	2.1	2.4	0.003	52	19
EM90S-8	0.37	0.5	660	1.48	1.41	1.36	3.4	62	0.61	5.4	2	2.2	0.004	56	23
EM90L-8	0.55	0.75	660	2.16	2.06	1.98	3.5	63	0.61	8	2.1	2.3	0.004	56	25
EM100LA-8	0.75	1	690	2.41	2.29	2.21	3.5	70.5	0.67	10.4	2	2.2	0.008	59	33
EM100LB-8	1.1	1.5	690	3.35	3.18	3.06	3.6	72.4	0.69	15.2	2.2	2.4	0.01	59	38
EM112M-8	1.5	2	690	4.4	4.2	4	3.9	74.5	0.7	20.8	2.4	2.6	0.017	61	50
EM132S-8	2.2	3	710	5.9	5.6	5.4	4.3	79.3	0.71	29.6	2.3	2.5	0.031	64	63
EM132M-8	3	4	710	7.8	7.4	7.1	4.4	80.1	0.73	40.4	2.2	2.4	0.01	64	79
EM160MA-8	4	5.5	720	10.2	9.7	9.3	4.4	81.6	0.73	53.1	2.2	2.5	0.075	68	118
EM160MB-8	5.5	7.5	720	13.6	12.9	12.4	5	83.3	0.74	73	2.2	2.4	0.093	68	119
EM160L-8	7.5	10	720	17.7	16.8	16.2	5.7	85.9	0.75	99.5	2.1	2.3	0.126	68	145
EM180L-8	11	15	730	25.4	24.1	23.2	5.6	87.8	0.75	144	2.3	2.5	0.203	70	184
EM200L-8	15	20	730	34	32.3	31.1	5.5	88.3	0.76	196.3	2.1	2.4	0.339	73	250
EM225S-8	18.5	25	730	41	39	37.5	5.6	90.2	0.76	242.1	2.2	2.6	0.491	73	266
EM225M-8	22	30	740	47.2	44.8	43.2	5.4	90.8	0.78	284	2.1	2.4	0.547	73	292
EM250M-8	30	40	740	63.3	60.1	57.9	5.3	91.2	0.79	387.3	2.2	2.5	0.83	75	405
EM280S-8	37	50	740	77.5	73.6	71	5.6	91.8	0.79	477.7	2.3	2.7	1.39	76	520
EM280M-8	45	60	740	94.1	89.4	86.1	5.2	92	0.79	581	2.1	2.8	1.65	76	592
EM315S-8	55	75	740	110.8	105.3	101.5	5.7	93.1	0.81	710.1	1.9	2.5	4.79	82	1000
EM315M-8	75	100	740	150.1	142.6	137.5	5.9	93.7	0.81	968.3	2.1	2.8	5.58	82	1100
EM315LA-8	90	125	740	177.4	168.5	162.4	6.2	94	0.82	1162	2.3	2.9	6.37	82	1160
EM315LB-8	110	150	740	216.4	205.6	198.1	6	94.2	0.82	1420	2.2	2.8	7.23	82	1230
EM355MA-8	132	180	740	259.4	246.4	237.5	6.4	94.3	0.82	1704	1.9	2.7	7.55	90	1600
EM355MB-8	160	220	740	313.7	298	287.3	6.3	94.5	0.82	2066	1.7	2.6	11.73	90	1700
EM355L-8	200	270	740	386.2	366.9	353.6	6.5	94.8	0.83	2582	1.8	2.9	12.86	90	1800

2 Pole-3500 rpm Synchronous Speed 60Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-2	0.44	0.6	3300	0.77	0.74	0.71	4.3	72.5	1.03	1.3	2.2	2.4	0.0006	64	13
EM71B-2	0.66	0.9	3312	1.04	0.99	0.95	4.9	78	1.07	1.9	2.5	2.6	0.0006	64	14
EM80A-2	0.9	1.2	3408	1.55	1.48	1.42	5.5	75.5	1	2.5	2.3	2.6	0.0008	67	16
EM80B-2	1.32	1.8	3408	2.27	2.17	2.08	5.6	76.2	1.01	3.7	2.3	2.6	0.0009	67	17
EM90S-2	1.8	2.4	3420	2.91	2.78	2.67	6.1	79.5	1.02	5	2.5	2.9	0.0012	72	22
EM90L-2	2.64	3.6	3420	4.18	4	3.83	6.1	81.7	1.02	7.4	2.7	2.9	0.0014	72	25
EM100L-2	3.6	4.8	3456	5.45	5.22	5	6.5	83.1	1.04	10	2.7	2.9	0.0039	76	33
EM112M-2	4.8	6.6	3456	7.09	6.78	6.5	6.5	84.2	1.06	13.3	2.6	2.9	0.0055	77	45
EM132SA-2	6.6	9	3480	9.55	9.13	8.75	6.9	85.9	1.06	18.1	2.3	2.6	0.011	80	64
EM132SB-2	9	12	3480	12.91	12.35	11.83	6.9	87.2	1.06	24.5	2.5	2.8	0.013	80	70
EM160MA-2	13.2	18	3516	18.27	17.48	16.75	6.7	88.7	1.07	35.8	2.6	2.9	0.038	86	117
EM160MB-2	18	24	3516	24.73	23.65	22.67	6.7	89.5	1.07	48.8	2.6	2.9	0.045	86	125
EM160L-2	22.2	30	3516	29.91	28.61	27.42	6.8	90.2	1.08	60.4	2.5	2.8	0.055	86	147
EM180M-2	26.4	36	3528	35.36	33.83	32.42	6.6	90.6	1.08	71.4	2.6	2.8	0.076	89	180
EM200LA-2	36	48	3540	47.82	45.74	43.83	6.5	91.5	1.08	97.2	2.5	2.7	0.124	92	240
EM200LB-2	44.4	60	3540	58.64	56.09	53.75	6.5	92	1.08	119.8	2.4	2.6	0.139	92	255
EM225M-2	54	72	3564	70.91	67.83	65	6.8	92.5	1.08	144.8	2.4	2.6	0.233	92	309
EM250M-2	66	90	3564	86	82.26	78.83	6.8	93.2	1.08	177	2.5	2.8	0.312	93	403
EM280S-2	90	120	3564	116.45	111.39	106.75	6.7	93.9	1.08	241.3	2.4	2.7	0.597	94	544
EM280M-2	108	150	3564	137.73	131.74	126.25	6.7	94.2	1.09	289.5	2.4	2.7	0.675	94	620
EM315S-2	132	180	3576	168.09	160.78	154.08	6.6	94.4	1.09	352.7	2	2.5	1.18	96	980
EM315M-2	158.4	216	3576	201.27	192.52	184.5	6.6	94.6	1.09	423.2	2.1	2.5	1.55	96	1080
EM315LA-2	192	264	3576	245.45	234.78	225	6.7	94.7	1.09	513	1.9	2.4	1.76	99	1160
EM315LB-2	240	324	3576	300.09	287.04	275.08	6.7	95	1.1	641.2	1.9	2.4	2.02	99	1190
EM355M-2	300	408	3576	373.45	357.22	342.33	6.5	95.5	1.1	801.5	1.6	2.3	3.56	103	1760
EM355L-2	378	516	3576	469	448.61	429.92	6.5	95.8	1.1	1010	1.6	2.3	4.1	103	1850

4 Pole-1800 rpm Synchronous Speed 60Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-4	0.3	0.44	1632	0.62	0.59	0.57	3.7	70	0.91	1.8	2.4	2.6	0.0006	55	12
EM71B-4	0.44	0.6	1632	0.88	0.84	0.81	3.7	71.3	0.92	2.6	2.4	2.5	0.0008	55	13
EM80A-4	0.66	0.9	1668	1.36	1.3	1.25	5.5	71.4	0.9	3.8	2.2	2.4	0.002	58	17
EM80B-4	0.9	1.2	1668	1.82	1.74	1.67	5.6	73.5	0.91	5.2	2.2	2.4	0.002	58	18
EM90S-4	1.32	1.8	1680	2.45	2.35	2.25	5.4	76.2	0.92	7.5	2.2	2.5	0.002	61	22
EM90L-4	1.8	2.4	1680	3.18	3.04	2.92	5.2	78.7	0.94	10.2	2.4	2.6	0.003	61	27
EM100LA-4	2.64	3.6	1704	4.45	4.26	4.08	6	81	0.97	14.8	2.3	2.6	0.007	64	34
EM100LB-4	3.6	4.8	1704	5.82	5.57	5.33	6.1	82.7	0.98	20.2	2.3	2.7	0.007	64	38
EM112M-4	4.8	6.6	1728	7.64	7.3	7	6.5	84.5	0.98	26.5	2.3	2.8	0.01	65	43
EM132S-4	6.6	9	1728	10.18	9.74	9.33	6.8	85.7	1	36.5	2.3	2.9	0.021	71	68
EM132M-4	9	12	1728	13.45	12.87	12.33	6.5	87.1	1.01	49.8	2.4	3	0.03	71	81
EM160M-4	13.2	18	1752	19.36	18.52	17.75	6.9	88.6	1.01	72	2.3	2.9	0.075	75	123
EM160L-4	18	24	1752	25.91	24.78	23.75	6.8	89.5	1.02	98.2	2.3	2.9	0.092	75	144
EM180M-4	22.2	30	1764	31.27	29.91	28.67	6.4	90.2	1.03	120.2	2.3	2.9	0.139	76	182
EM180L-4	26.4	36	1764	37	35.39	33.92	6.9	90.7	1.03	143	2.3	2.9	0.158	76	190
EM200L-4	36	48	1764	49.73	47.57	45.58	6.8	92.1	1.03	195	2.4	2.9	0.262	79	270
EM225S-4	44.4	60	1776	60.18	57.57	55.17	6.5	92.7	1.04	238.9	2.2	2.7	0.406	81	284
EM225M-4	54	72	1776	73	69.83	66.92	6.3	93	1.04	290.5	2.3	2.5	0.469	81	320
EM250M-4	66	90	1776	88.91	85.04	81.5	6.4	93.3	1.04	355.1	2.2	2.5	0.66	83	427
EM280S-4	90	120	1776	119.18	114	109.25	6.8	93.8	1.06	483.9	2.1	2.8	1.12	86	562
EM280M-4	108	150	1776	142.73	136.52	130.83	6.9	94.1	1.06	580.7	2.2	2.7	1.46	86	667
EM-315S-4	132	180	1776	173.18	165.65	158.75	6.5	94.7	1.06	709.8	1.9	2.7	3.11	93	1000
EM-315M-4	158.4	216	1776	207.27	198.26	190	6.8	95	1.06	851.8	2.3	3.2	3.29	93	1100
EM315LA-4	192	264	1776	248.18	237.39	227.5	6.6	95.2	1.07	1032	2.6	3	3.79	97	1160
EM315LB-4	240	324	1776	309.09	295.65	283.33	6.4	95.4	1.07	1290	2.2	2.8	4.49	97	1270
EM355M-4	300	408	1788	380.91	364.35	349.17	6.2	95.6	1.08	1603	1.9	2.9	5.67	101	1700
EM355L-4	378	516	1788	479.09	458.26	439.17	6.1	95.8	1.08	2020	2.1	3.1	6.66	101	1850





## 6 Pole-1200 rpm Synchronous Speed 60Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM71A-6	0.22	0.3	1026	0.58	0.56	0.53	2.5	58.4	0.84	2	2	2.3	0.0011	52	13
EM71B-6	0.3	0.44	1032	0.75	0.71	0.68	2.6	62.2	0.85	2.8	2.1	2.3	0.0014	52	13.5
EM80A-6	0.44	0.6	1068	1.09	1.04	1	4.4	62	0.84	4	1.9	2.3	0.002	54	17
EM80B-6	0.66	0.9	1068	1.55	1.48	1.42	4.5	65	0.86	5.9	2.1	2.4	0.003	54	19
EM90S-6	0.9	1.2	1092	2	1.91	1.83	4.1	69.1	0.86	7.9	2.3	2.7	0.003	57	23
EM90L-6	1.32	1.8	1092	2.73	2.61	2.5	4.6	72	0.87	11.5	2.3	2.7	0.004	57	25
EM100L-6	1.8	2.4	1104	3.55	3.39	3.25	5	76	0.9	15.6	2.4	2.8	0.007	61	33
EM112M-6	2.64	3.6	1128	4.82	4.61	4.42	5.2	79.1	0.91	22.4	2.1	2.5	0.014	65	45
EM132S-6	3.6	4.8	1152	6.36	6.09	5.83	5.6	81.3	0.91	29.9	1.9	2.5	0.029	69	63
EM132MA-6	4.8	6.6	1152	8.36	8	7.67	6.2	82.3	0.91	39.8	2.1	2.7	0.036	69	73
EM132MB-6	6.6	9	1152	11.09	10.61	10.17	6.5	84.7	0.92	54.7	2.3	2.8	0.045	69	84
EM160M-6	9	12	1164	14.73	14.09	13.5	5.6	86.6	0.92	73.9	2	2.6	0.088	73	119
EM160L-6	13.2	18	1164	21.9	20.17	19.33	5.8	87.6	0.94	108.3	2.1	2.4	0.116	73	147
EM180L-6	18	24	1164	27.36	20.17	19.33	5.7	89	0.97	147.7	2	2.4	0.207	73	195
EM200LA-6	22.2	30	1164	33.27	31.83	30.50	6.7	90.2	0.97	182.2	2.2	2.8	0.315	76	220
EM200LB-6	26.4	36	1164	38.64	36.96	36.42	6.6	90.2	1	216.7	2.3	2.9	0.36	76	250
EM225M-6	36	48	1176	51.27	49.04	47.00	6.8	91.5	1.01	292.5	2.2	2.7	0.547	76	292
EM250M-6	44.4	60	1176	61.27	58.61	56.17	6.2	92.2	1.03	360.7	2	2.5	0.834	78	408
EM280S-6	54	72	1176	74.55	71.3	68.33	6.1	92.5	1.03	438.7	1.9	2.5	1.39	80	536
EM280M-6	66	90	1176	90.91	86.96	83.33	6.7	92.9	1.03	536.2	2.1	2.7	1.65	80	595
EM315S-6	90	120	1188	122.73	117.39	112.5	6.5	93.7	1.03	723.8	2	2.7	4.11	85	990
EM315M-6	108	150	1188	146.36	140	134.17	6.2	93.9	1.03	868.6	2	2.6	4.28	85	1080
EM315LA-6	132	180	1188	178.18	170.43	163.33	6	94.5	1.03	1062	1.9	2.7	5.45	85	1150
EM315LB-6	158.4	216	1188	210.91	201.74	193.33	5.8	94.6	1.04	1274	2	2.7	6.12	85	1210
EM355MA-6	192	264	1188	250.91	240	230	6.3	95.1	1.06	1544	1.6	2.8	8.85	92	1600
EM335MB-6	240	324	1188	311.82	298.26	285.83	6.6	95.2	1.06	1930	2	2.9	9.55	92	1700
EM355L-6	300	408	1188	390	373.04	357.5	6.5	95.1	1.06	2413	1.6	3	10.3	92	1800

## 8 Pole-900 rpm Synchronous Speed 60Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 440V (AMP)	IFL 460V (AMP)	IFL 480V (AMP)	IST IFL	EFF %	Power Factor	Rated Torque Nm	TST TFL	TM TFL	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM80A-8	0.22	0.3	756	0.75	0.72	0.69	2.9	51	0.73	2.8	2	2.2	0.002	52	17
EM80B-8	0.3	0.44	768	0.99	0.95	0.91	3	54	0.73	3.7	2.1	2.4	0.003	52	19
EM90S-8	0.44	0.6	792	1.28	1.23	1.18	3.4	62	0.73	5.4	2	2.2	0.004	56	23
EM90L-8	0.66	0.9	792	1.87	1.79	1.72	3.5	63	0.73	8	2.1	2.3	0.004	56	25
EM100LA-8	0.9	1.2	828	2.08	1.99	1.91	3.5	70.5	0.8	10.4	2	2.2	0.008	59	33
EM100LB-8	1.32	1.8	828	2.89	2.77	2.65	3.6	72.4	0.83	15.2	2.2	2.4	0.01	59	38
EM112M-8	1.8	2.4	828	3.82	3.65	3.5	3.9	74.5	0.84	20.8	2.4	2.6	0.017	61	50
EM132S-8	2.64	3.6	852	5.09	4.87	4.67	4.3	79.3	0.85	29.6	2.3	2.5	0.031	64	63
EM132M-8	3.6	4.8	852	6.73	6.43	6.17	4.4	80.1	0.88	40.4	2.2	2.4	0.01	64	79
EM160MA-8	4.8	6.6	864	8.82	8.43	8.08	4.4	81.6	0.88	53.1	2.2	2.5	0.075	68	118
EM160MB-8	6.6	9	864	11.73	11.22	10.75	5	83.3	0.89	73	2.2	2.4	0.093	68	119
EM160L-8	9	12	864	15.27	14.61	14	5.7	85.9	0.9	99.5	2.1	2.3	0.126	68	145
EM180L-8	13.2	18	876	21.91	20.96	20.08	5.6	87.8	0.9	144	2.3	2.5	0.203	70	184
EM200L-8	18	24	876	29.36	28.09	26.92	5.5	88.3	0.91	196.3	2.1	2.4	0.339	73	250
EM225S-8	22.2	30	876	35.45	33.91	32.5	5.6	90.2	0.91	242.1	2.2	2.6	0.491	73	266
EM225M-8	26.4	36	888	40.73	38.96	37.33	5.4	90.8	0.94	284	2.1	2.4	0.547	73	292
EM250M-8	36	48	888	54.64	52.26	50.08	5.3	91.2	0.95	387.3	2.2	2.5	0.83	75	405
EM280S-8	44.4	60	888	66.91	64	61.33	5.6	91.8	0.95	477.7	2.3	2.7	1.39	76	520
EM280M-8	54	72	888	81.27	77.74	74.5	5.2	92	0.95	581	2.1	2.8	1.65	76	592
EM315S-8	66	90	888	95.73	91.57	87.75	5.7	93.1	0.97	710.1	1.9	2.5	4.79	82	1000
EM315M-8	90	120	888	129.64	124	118.83	5.9	93.7	0.97	968.3	2.1	2.8	5.58	82	1100
EM315LA-8	108	150	888	153.18	146.52	140.42	6.2	94	0.98	1162	2.3	2.9	6.37	82	1160
EM315LB-8	132	180	888	186.91	178.78	171.33	6	94.2	0.98	1420	2.2	2.8	7.23	82	1230
EM355MA-8	158.4	216	888	224	214.26	205.33	6.4	94.3	0.98	1704	1.9	2.7	7.55	90	1600
EM355MB-8	192	264	888	270.91	259.13	248.33	6.3	94.5	0.98	2066	1.7	2.6	11.73	90	1700
EM355L-8	240	324	888	333.55	319.04	305.75	6.5	94.8	1	2582	1.8	2.9	12.86	90	1800

2 Pole - 3000 rpm Synchronous Speed 50Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Efficiency 100% / η %	Power Factor Cos Φ	Tn Nm	Ts Tn	Tmax Tn	Is In	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM80A-2	0.75	1	2840	1.7	1.62	1.56	80.6	0.83	2.54	2.2	2.3	6.1	0.0008	67	16
EM80B-2	1.1	1.5	2840	2.4	2.28	2.19	82.9	0.84	3.72	3	3.2	8	0.0009	67	17
EM90S-2	1.5	2	2840	3.22	3.06	2.95	84.2	0.84	5.04	3	3.2	8	0.0012	72	22
EM90L-2	2.2	3	2840	4.59	4.36	4.2	85.7	0.85	7.4	3	3.2	8	0.0014	72	25
EM100L-2	3	4	2860	6.04	5.73	5.53	86.8	0.87	9.95	2.8	3.2	8	0.0029	76	33
EM112M-2	4	5.5	2880	7.87	7.48	7.21	87.7	0.88	13.22	2.5	3.2	8	0.0055	77	45
EM132SA-2	5.5	7.5	2900	10.7	10.2	9.79	88.8	0.88	18.11	2.2	3.2	8	0.0109	80	64
EM132SB-2	7.5	10	2900	14.5	13.7	13.2	89.6	0.88	24.7	2.2	3.2	8	0.0126	80	70
EM160MA-2	11	15	2930	20.7	19.6	18.9	90.8	0.89	35.85	1.9	3	8	0.0377	86	117
EM160MB-2	15	20	2930	28	26.6	25.6	91.5	0.89	48.89	1.9	3	8	0.0499	86	125
EM160L-2	18.5	25	2930	33.9	32.3	31.1	92	0.9	60.3	1.9	3	8	0.055	86	147
EM180M-2	22	30	2940	40.2	38.2	36.8	92.3	0.9	71.46	1.9	3	8.2	0.075	89	180
EM200LA-2	30	40	2950	54.5	51.7	49.9	93	0.9	97.12	1.9	3	7.6	0.124	92	240
EM200LB-2	37	50	2950	66.8	63.5	61.2	93.5	0.9	119.78	1.9	3	7.6	0.139	92	255
EM225M-2	45	60	2960	81	76.9	74.2	93.8	0.9	144.7	1.8	2.5	7.6	0.233	92	309
EM250M-2	55	75	2965	98.6	93.6	90.3	94.2	0.9	176.85	1.8	2.5	8.2	0.312	93	403
EM280S-2	75	100	2970	134	127	122	94.8	0.9	241.16	1.7	2.5	7.6	0.579	94	544
EM280M-2	90	125	2970	158	150	145	95.2	0.91	289.39	1.7	2.5	7.6	0.675	94	620
EM315S-2	110	150	2975	193	183	177	95.2	0.91	352.51	1.6	2.2	7.2	1.18	96	980
EM315M-2	132	180	2975	231	219	211	95.5	0.91	423.02	1.6	2.2	7.2	1.82	96	1080
EM315LA-2	160	220	2975	276	263	253	95.6	0.92	512.75	1.6	2.2	7.2	2.08	99	1160
EM315LB-2	200	270	2975	346	329	317	95.5	0.92	640.94	1.6	2.2	7.2	2.38	99	1190
EM355M-2	250	340	2980	430	409	394	96	0.92	799.83	1.6	2.2	7.2	3	103	1760
EM355L-2	315	430	2980	542	515	496	96	0.92	1007.9	1.6	2.2	7.2	3.5	103	1850

4 Pole - 1500 rpm Synchronous Speed 50Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Efficiency 100% / η %	Power Factor Cos Φ	Tn Nm	Ts Tn	Tmax Tn	Is In	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM80A-4	0.55	0.75	1390	1.38	1.31	1.26	80.6	0.75	3.78	2.4	2.3	5.2	0.0018	58	17
EM80B-4	0.75	1	1390	1.82	1.73	1.67	82.4	0.76	5.15	2.4	2.3	6	0.0021	58	18
EM90S-4	1.1	1.5	1390	2.59	2.46	2.37	83.9	0.77	7.5	2.7	3	7	0.0023	61	22
EM90L-4	1.5	2	1390	3.39	3.22	3.11	85.1	0.79	10.23	2.7	3	7	0.0027	61	27
EM100LA-4	2.2	3	1410	4.77	4.53	4.37	86.5	0.81	14.8	2.5	2.8	7	0.0054	64	34
EM100LB-4	3	4	1410	6.35	6.04	5.82	87.5	0.82	20.18	2.5	2.8	7	0.0067	64	38
EM112M-4	4	5.5	1435	8.37	7.96	7.67	88.5	0.82	26.53	2.2	2.8	7	0.0095	65	43
EM132S-4	5.5	7.5	1440	11.3	10.7	10.3	89.3	0.83	36.48	2.2	2.8	7	0.0214	71	68
EM132M-4	7.5	10	1440	15	14.3	13.8	90.2	0.84	49.74	2.2	2.8	7	0.0296	71	81
EM160M-4	11	15	1460	21.8	20.7	20	91.1	0.84	71.59	2.1	2.8	7.5	0.0747	75	123
EM160L-4	15	20	1460	29.1	27.7	26.7	92	0.85	98.12	2.1	2.8	7.5	0.0918	75	144
EM180M-4	18.5	25	1470	35.4	33.6	32.4	92.3	0.86	120.19	2.1	2.8	7.5	0.139	76	182
EM180L-4	22	30	1470	41.9	39.8	38.4	92.8	0.86	142.93	2.1	2.5	7.5	0.158	76	190
EM200L-4	30	40	1470	56.8	54	52	93.3	0.86	160.98	2.1	2.5	7.5	0.262	79	270
EM225S-4	37	50	1475	68.9	65.4	63.1	93.8	0.87	198.51	1.8	2.3	7.5	0.406	81	284
EM225M-4	45	60	1475	83.6	79.4	76.6	94	0.87	290.37	1.8	2.3	7.5	0.469	91	320
EM250M-4	55	75	1480	102	96.7	93.2	94.4	0.87	354.9	1.8	2.3	7.5	0.66	83	427
EM280S-4	75	100	1480	138	131	126	94.9	0.87	483.95	1.8	2.3	7.5	1.12	86	562
EM280M-4	90	125	1480	165	157	151	95.2	0.87	578.79	1.8	2.3	7.5	1.46	86	667
EM-315S-4	110	150	1480	199	189	182	95.5	0.88	707.41	1.7	2.2	7.2	3.11	93	1000
EM-315M-4	132	180	1480	238	226	218	95.6	0.88	848.89	1.7	2.2	7.2	3.62	93	1100
EM315LA-4	160	220	1480	285	271	261	95.8	0.89	1029	1.7	2.2	7.2	4.13	97	1160
EM315LB-4	200	270	1480	357	339	327	95.6	0.89	1286.2	1.7	2.2	7.2	4.73	97	1270
EM355M-4	250	340	1490	440	418	403	96	0.9	1602.4	1.7	2.2	7.2	6.5	101	1700
EM355L-4	315	430	1490	554	526	507	96	0.9	2019	1.7	2.2	7.2	8.2	101	1850



## 6 Pole - 1000 rpm Synchronous Speed 50Hz

Motor Type	Rated Output		Rated Speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	Efficiency 100% / η %	Power Factor Cos Φ	Tn Nm	Ts Tn	Tmax Tn	Is In	M of J kgm2	Noise Level LW dB(A)	Net Weight kg
	kW	HP													
EM80A-6	0.37	0.5	885	1.29	1.23	1.18	62.5	0.7	3.93	1.9	2	4.7	0.0016	52	17
EM80B-6	0.55	0.75	885	1.54	1.46	1.41	75.5	0.72	5.84	1.9	2.1	4.7	0.0019	52	19
EM90S-6	0.75	1	910	2.03	1.93	1.86	77.8	0.72	7.87	2.5	2.5	5.5	0.0029	55	23
EM90L-6	1.1	1.5	910	2.86	2.72	2.62	80	0.73	11.54	2.5	2.5	5.5	0.0035	55	25
EM100L-6	1.5	2	920	3.72	3.53	3.41	81.7	0.75	15.24	2.2	2.5	5.5	0.0069	59	33
EM112M-6	2.2	3	935	5.26	5	4.82	83.6	0.76	22.35	2.2	2.5	5.5	0.014	63	45
EM132S-6	3	4	960	7.05	6.7	6.45	85.1	0.76	29.84	2.1	2.5	5.5	0.0286	67	63
EM132MA-6	4	5.5	960	9.27	8.8	8.48	86.3	0.76	39.79	2.1	2.5	6	0.357	67	73
EM132MB-6	5.5	7.5	960	12.4	11.8	11.3	87.6	0.77	54.71	2.1	2.5	6	0.0449	67	84
EM160M-6	7.5	10	970	16.6	15.8	15.2	89.2	0.77	73.84	2.1	2.5	6	0.0081	71	119
EM160L-6	11	15	970	23.8	22.6	21.8	90.2	0.78	108.3	2.1	2.5	6.5	0.116	71	147
EM180L-6	15	20	970	30.9	29.3	28.2	91.2	0.81	147.68	2.1	2.5	6.5	0.207	71	195
EM200LA-6	18.5	25	980	37.8	36	34.7	91.7	0.81	182.14	2.1	2.5	7	0.315	74	220
EM200LB-6	22	30	980	43.7	41.5	40	92.2	0.83	216.6	2.1	2.5	7	0.36	74	250
EM225M-6	30	40	980	58.6	55.7	53.7	92.6	0.84	292.35	1.8	2	7	0.547	74	292
EM250M-6	37	50	980	70.1	66.6	64.2	93.2	0.86	360.26	1.8	2	7	0.843	76	408
EM280S-6	45	60	980	84.8	80.6	77.7	93.7	0.86	438.52	1.8	2	7	1.39	78	536
EM280M-6	55	75	980	103	98.2	94.7	94	0.86	535.97	1.8	2	7	1.65	78	595
EM315S-6	75	100	985	140	133	128	94.6	0.86	730.87	1.8	2	7	4.11	83	990
EM315M-6	90	125	985	167	159	153	95	0.86	872.59	1.8	2	7	4.78	83	1080
EM315LA-6	110	150	985	204	194	187	95.2	0.86	1066.5	1.8	2	7	5.45	83	1150
EM315LB-6	132	180	985	241	229	221	95.5	0.87	1279.8	1.8	2	7	6.12	83	1210
EM355MA-6	160	220	990	288	274	264	95.8	0.88	1543.4	1.8	2	7	9.5	90	1600
EM335MB-6	200	270	990	363	345	332	95.4	0.88	1913.3	1.8	2	7	10.4	90	1700
EM355L-6	250	340	990	454	431	416	95.7	0.88	2411.6	1.8	2	7	12.4	90	1800

2 Pole - 3000 rpm Synchronous Speed 50Hz

Motor Type	Power (kW)	Full Load Speed (r/min)	Inl 400V (A)	Ifl 400V (A)	Ist/In (Times)	Eff. 100% FL (%)	Power Factor Cos Φ	Full Load Torque (N.M)	Tst/Tn (Times)	Tmin/Tn (Times)	Tmax/Tn (Times)
T3C 801-2	0.75	2848	0.92	1.79	6	83.7	0.75	2.51	2.7	2.1	2.8
T3C 802-2	1.1	2846	1.15	2.43	6.7	83.0	0.79	3.69	2.7	2.1	2.9
T3C 90S-2	1.5	2852	1.28	3.06	6.1	87.2	0.84	5.02	2.3	2	2.7
T3C 90L-2	2.2	2845	1.83	4.4	7	88.9	0.84	7.38	2.6	2.1	2.7
T3C 100L-2	3	2851	1.94	5.59	7.6	90.1	0.89	10.05	2.5	2	2.8
T3C 112M-2	4	2910	2.56	7.36	7.8	91.1	0.89	13.13	2.5	2	2.7
T3C 132S1-2	5.5	2905	3.48	10	7.8	91.2	0.89	18.08	2.4	2	2.9
T3C 132S2-2	7.5	2910	4.95	13.65	7.9	92.1	0.88	24.61	2.7	2	2.8
T3C 160M1-2	11	2920	6.44	19.34	7.9	93.2	0.9	35.97	2.2	2.1	3
T3C 160M2-2	15	2918	8.22	25.89	7.9	93.9	0.91	49.09	2.3	2.1	3
T3C 160L-2	18.5	2922	9.48	31.41	8	94.4	0.92	60.46	2.4	2.1	2.9
T3C 180M-2	22	2930	13.39	38.49	7.5	94.7	0.89	71.7	2.3	2	2.8
T3C 200L1-2	30	2925	19.12	52.74	6.7	95.3	0.88	97.94	2.4	2	2.7
T3C 200L2-2	37	2930	21.09	63.33	6.3	95.7	0.9	120.59	2.3	2	2.7
T3C 225M-2	45	2930	28.47	78.52	6.9	96	0.88	146.66	2.3	2	2.8
T3C 250M-2	55	2940	34.68	95.67	8	95.3	0.88	178.64	2.3	1.9	2.7
T3C 280S-2	75	2940	37.5	124.26	8	95.7	0.92	243.6	2.2	1.9	2.7
T3C 280M-2	90	2940	44.85	148.64	7.7	96	0.92	292.33	2.2	1.9	2.6
T3C 315S-2	110	2940	61.71	185.31	7.7	96.2	0.9	357.29	2	1.8	2.3
T3C 315M-2	132	2940	69.7	219.47	7.6	96.4	0.91	428.74	2	1.8	2.3
T3C 315L1-2	160	2945	89.2	267.86	7.8	96.8	0.9	518.81	2	1.8	2.3
T3C 315L2-2	200	2945	117.82	338.58	7.9	96.8	0.89	648.51	2	1.8	2.3
T3C 355M-2	250	2945	139.37	418.53	7.8	96.8	0.9	810.64	2	1.8	2.3
T3C 355L-2	315	2945	185.57	533.27	7.8	96.8	0.89	1021.4	2	1.8	2.3

4 pole - 1500 rpm Synchronous Speed 50Hz

Motor Type	Power (kW)	Full Load Speed (r/min)	Inl 400V (A)	Ifl 400V (A)	Ist/In (Times)	Eff. 100% FL (%)	Power Factor Cos Φ	Full Load Torque (N.M)	Tst/Tn (Times)	Tmin/Tn (Times)	Tmax/Tn (Times)
T3C 802-4	0.75	1420	0.87	1.73	5.4	85.5	0.76	5.04	2.3	2.1	2.9
T3C 90S-4	1.1	1425	1.17	2.42	5.9	87.1	0.78	7.37	2.3	2.1	2.7
T3C 90L-4	1.5	1420	1.53	3.21	6.4	88.3	0.79	10.09	2.4	2	2.7
T3C 100L1-4	2.2	1430	1.97	4.47	6.6	89.7	0.82	14.69	2.4	2.1	2.9
T3C 100L2-4	3	1430	2.86	6.17	6.9	90.7	0.8	20.03	2.4	2	2.8
T3C 112M-4	4	1435	3.92	8.25	7.9	91.6	0.79	26.62	2.5	2	3
T3C 132S-4	5.5	1430	4.77	10.81	7.1	92.6	0.82	36.73	2.3	2	2.8
T3C 132M-4	7.5	1430	6.19	14.43	7.8	92.4	0.83	50.08	2.3	2	2.7
T3C 160M-4	11	1440	6.06	19.09	7.9	93.4	0.91	72.95	2.5	2.1	2.8
T3C 160L-4	15	1445	7.71	25.55	7.8	94.1	0.92	99.13	2.4	2.1	2.9
T3C 180M-4	18.5	1445	12.49	33.15	7.8	94.6	0.87	122.26	2.4	2.1	3
T3C 180L-4	22	1460	13.35	38.37	7.5	95	0.89	143.89	2.3	2	3
T3C 200L-4	30	1460	19.06	52.57	7.9	95.6	0.88	196.22	2.4	2	2.7
T3C 225S-4	37	1470	32.99	71.09	6.7	95.9	0.8	240.36	2.4	2	2.7
T3C 225M-4	45	1480	39.99	86.19	7	96.2	0.8	290.35	2.3	2	2.8
T3C 250M-4	55	1480	34.57	95.36	7.4	96.6	0.88	354.87	2.4	1.9	2.7
T3C 280S-4	75	1480	39.77	125.22	7.5	96	0.91	483.92	2.2	1.9	2.6
T3C 280M-4	90	1480	44.76	148.32	7.7	96.2	0.92	580.7	2.2	1.9	2.6
T3C 315S-4	110	1480	61.58	184.92	7.8	96.4	0.9	709.75	2	1.8	2.3
T3C 315M-4	132	1480	69.56	219.01	7.8	96.6	0.91	851.69	2	1.8	2.3
T3C 315L1-4	160	1480	84.13	264.91	7.9	96.8	0.91	1032.36	2	1.8	2.3
T3C 315L2-4	200	1480	111.26	334.12	7.7	97	0.9	1290.45	2	1.8	2.3
T3C 355M-4	250	1480	146.97	422.35	7.9	97	0.89	1613.06	2	1.8	2.3
T3C 355L-4	315	1480	175.24	526.25	7.8	97	0.9	2032.45	2	1.8	2.3



## 6 pole - 1000 rpm Synchronous Speed 50Hz

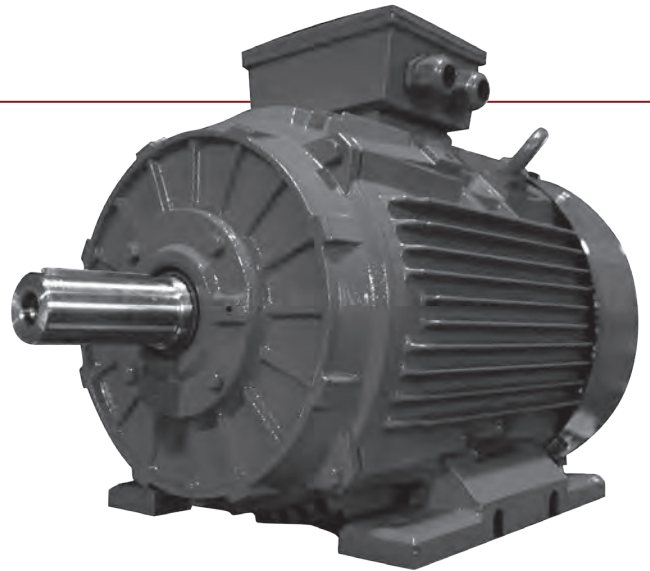
Motor Type	Power (kW)	Full Load Speed (r/min)	Inl 400V (A)	Ifl 400V (A)	Ist/In (Times)	Eff. 100% FL (%)	Power Factor Cos Φ	Full Load Torque (N.M)	Tst/Tn (Times)	Tmin/Tn (Times)	Tmax/Tn (Times)
T3C 90S-6	0.75	935	0.91	1.81	6.2	81.9	0.76	7.66	2.2	2	2.7
T3C 90L-6	1.1	935	1.14	2.45	6	84	0.8	11.23	2.3	2.1	2.6
T3C 100L-6	1.5	940	1.41	3.2	5.8	85.5	0.82	15.24	2.3	2.1	2.7
T3C 112M-6	2.2	940	2.18	4.71	6.4	87.3	0.8	22.35	2.3	2.1	2.9
T3C 132S-6	3	940	2.62	6.09	6.3	87.6	0.83	30.48	2.4	2.2	2.8
T3C 132M1-6	4	945	3.3	7.92	6.2	88.8	0.84	40.42	2.5	2	2.8
T3C 132M2-6	5.5	945	4.85	11	6.8	90	0.82	55.58	2.3	1.9	2.8
T3C 160M-6	7.5	955	6.03	14.46	7	91.1	0.84	74.99	2.4	1.9	2.7
T3C 160L-6	11	960	8.35	20.69	7.3	92.3	0.85	109.42	2.5	2	2.8
T3C 180L-6	15	960	12.27	28.6	7.8	93.2	0.83	149.21	2.3	2.1	2.9
T3C 200L1-6	18.5	965	13.83	34.26	7.8	93.7	0.85	183.07	2.4	2.1	3.2
T3C 200L2-6	22	965	15.64	40.05	7.9	94.2	0.86	217.7	2.3	1.9	3.1
T3C 225M-6	30	975	22.14	54.84	7.9	94.9	0.85	293.82	2.2	1.9	2.7
T3C 250M-6	37	975	29.59	68.97	7.5	94.3	0.83	362.38	2.3	2.1	2.7
T3C 280S-6	45	980	31.47	80.61	7.2	94.7	0.86	438.39	2.3	2	2.8
T3C 280M1-6	55	980	38.3	98.1	7.7	95.1	0.86	535.93	2.2	1.9	2.7
T3C 315S-6	75	980	44.74	128.58	7.9	95.6	0.89	730.81	2.1	1.9	2.5
T3C 315M-6	90	980	50.65	152.1	8	95.9	0.9	876.98	2	1.8	2.3
T3C 315L1-6	110	980	61.77	185.51	7.7	96.1	0.9	1071.86	2	1.8	2.3
T3C 315L2-6	132	980	78.09	224.4	8	96.4	0.89	1286.23	2	1.8	2.3
T3C 355M1-6	160	980	84.31	265.47	7.6	96.6	0.91	1559.07	2	1.8	2.3
T3C 355M2-6	200	980	111.5	334.82	7.8	96.8	0.9	1948.84	2	1.8	2.3
T3C 355L-6	250	980	147.28	423.23	7.8	96.8	0.89	2436.05	2	1.8	2.3

# Class H Motors

Three-Phase Asynchronous Motors  
Cast Iron / Aluminum Housing

Class H series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. Class H series of motors is an enhancement of our standard induction motors, technical data will be as follows with induction motors.

Class H motors are to cater to the needs of High Temperature Resistance requirements. It can withstand an ambient temperature of up to 85 °C, and an internal winding temperature of up to 300 °C for up to 2 hours, this is achieved through higher temperature safety margins and enhancements onto our internal winding, and many more.



# TENV Motors

Three-Phase Asynchronous Motors  
Cast Iron / Aluminum Housing

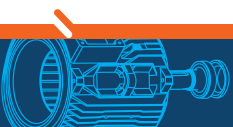
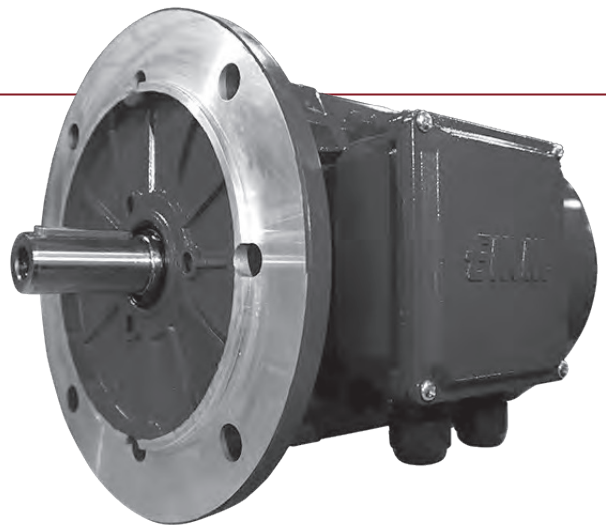
TENV series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. TENV series of motors is a modification of our standard induction motors, technical data will be as follows with induction motors. TENV motors come without fan blade and fan cover, and with a 1 metre wire extension with detached T-box as standard issue. These series of motors can be used for fan duty.

# Inverter Motors

Three-Phase Asynchronous Motors  
Cast Iron / Aluminum Housing

Inverter series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. Inverter series of motors is an enhancement of our standard induction motors, technical data will be as follows with induction motors.

Inverter duty motors are fully compatible with any brand of VFD/VSD, the motors are capable of prolong operation at frequencies between 5Hz to 100Hz. Inverter duty motors come standard with an attached Force Cooling Fan, longer rotor and stator construct, and reinforced corona resistance.



# Brake Motors

## Three-Phase Asynchronous Motors Cast Iron / Aluminum Housing

Brake motors series results from coupling an asynchronous three phase motor to an electromagnetic D.C. brake unit. Due to their reliability and operating safety, as well as their quick braking time (connection & disconnection time = 5 to 80 milliseconds), these series of motors are suitable for a great variety of applications, such as:

- Braking of loads or torques on the drive shaft
- Braking of rotating masses to reduce any lost time
- Braking operations to increase the set up precision
- Braking of machine parts, according to safety rules

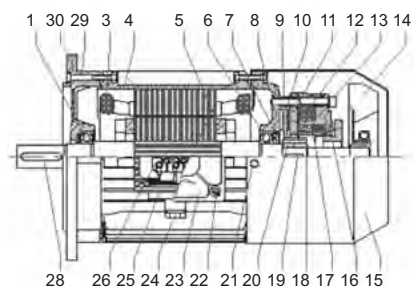
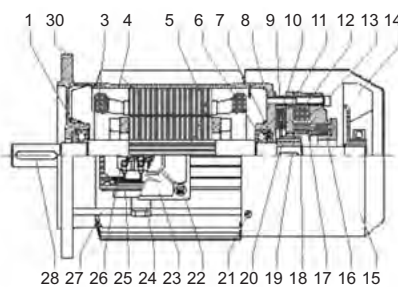
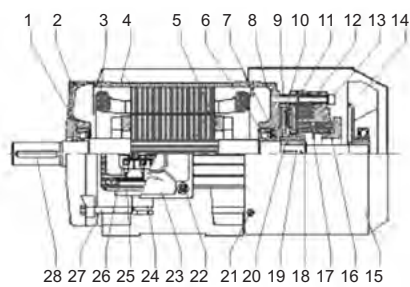
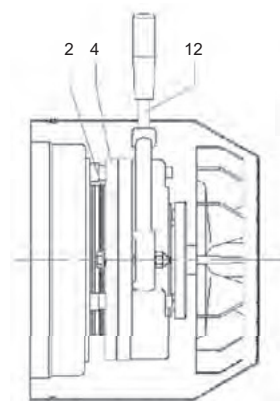
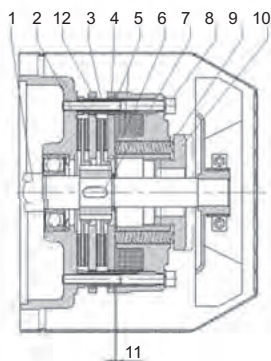
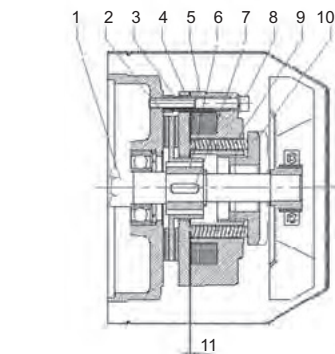
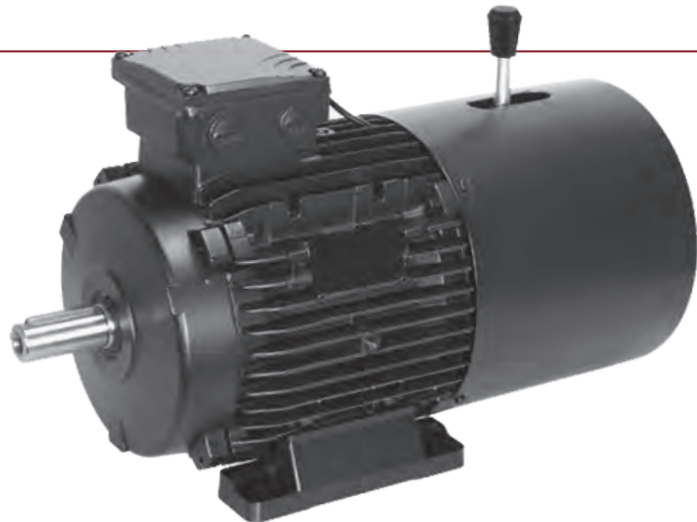


Figure 1 **B3 63~160**

Figure 2 **B5 63~112**

Figure 3 **B5 132~160**

### Spare Parts

1. Front bearing
2. Front shield
3. Winding
4. Frame with stator package
5. Shaft with rotor
6. Rear bearing
7. Spring
8. Rear shield
9. Adjusting bush
10. Brake disc

11. Moving anchor
12. Electromagnet coil with diode
13. Fixing screws for brake
14. Cooling fan
15. Fan hood
16. Ring nut
17. Spring
18. See gearing
19. Key brake side
20. Toothed pinion

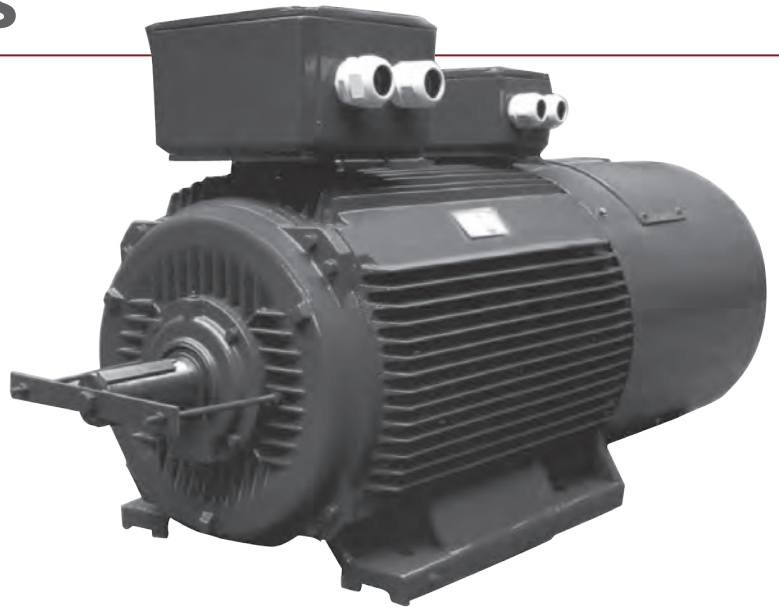
21. Fixing screw for fan hood
22. Fixing screw for terminal-box
23. Terminal-box
24. Able-holder
25. Packing
26. Terminal-block
27. Tie-bolt
28. Coupling side key
29. Fixing screw for shield
30. Flange shield

# Slip Ring Motors

Three-Phase Asynchronous Motors  
Cast Iron Housing

Slip ring series of three phase asynchronous motors is a selection of high torque motors that caters to client specific applications. These series of motors are only available in cast iron housing due to the heavy duty nature of use, well designed exterior, and conforms to all IEC standards.

Slip ring motors comes attached with our in-house designed Slip Ring Device with carbon brush, made from high quality materials, according to European motor winding standards and technology. This series of motors can be used for all heavy duty industries.



## Basic Performance Datas (380/415V, Deltar Connection)

## Slip Ring

### 4 Pole - 1500 rpm Synchronous Speed 50Hz

Model	Output	Speed	Rotor Current		Efficiency	P.F.	Max. Tocqu	Rotor Voltage	Rotor Amp	Noise	Rotary Inertia	Weight.
	(kW)	(r/min)	380V/Δ	415V/Δ	%	Cos ϕ		V	A	dB(A)	kg.m	Kg
200L1-4	18.5	1470	33.9	31	89.80%	0.86	3.7	239	47.6	94	0.29	272
200L2-4	22	1470	40	36.6	90.70%	0.86	3.7	281	48	94	0.32	286
225M2-4	30	1475	52.3	47.9	91.70%	0.89	3.3	350	51.5	98	0.63	376
250M1-4	37	1480	67	61.3	91.80%	0.86	3.6	290	79	98	0.87	460
250M2-4	45	1480	80.2	73.4	92.50%	0.87	3.6	338.7	81.7	100	0.98	520
280S-4	55	1472	95	87	92.00%	0.91	3.2	484	71	100	1.86	655
280M-4	75	1477	128	117.2	92.50%	0.91	3.9	277	166	103	2.41	765
315S-4	90	1476	157	143.8	92.80%	0.89	3	296	187	103	3.97	1175
315M-4	110	1481	192	175.8	93.50%	0.88	3.7	328	203	103	4.59	1263
315L1-4	132	1483	230	210.6	94.00%	0.88	4	399	200	106	5.33	1338
315L2-4	160	1484	275	251.8	94.50%	0.89	4	505	191	106	6.11	1450
355M1-4	200	1484	344	315	94.00%	0.89	2.7	627	194	106	10.03	1952
355M2-4	250	1486	438	401	94.50%	0.86	3.5	723	207	108	11.33	2078
355L-4	280	1488	489	447.8	94.80%	0.87	3.5	704	238	108	12.47	2194
400L1-4	315	1485	524	479.8	95.00%	0.91	2.8	557	340	111	17.85	3390
400L2-4	355	1486	587	537.5	95.20%	0.91	2.8	620	344	111	19.34	3515
400L3-4	400	1487	659	603.4	95.50%	0.91	2.8	698	343	111	21.11	3655





## 6 Pole - 1000 rpm Synchronous Speed 50Hz

Model	Output	Speed	Rotor Current		Efficiency	P.F.	Max. Tocqu	Rotor Voltage	Rotor Amp	Noise	Rotary Inertia	Weight.
	(kW)	(r/min)	380V/Δ	415V/Δ	%	Cos ϕ		V	A	dB(A)	kg.m	Kg
200L2-6	15	980	29.4	26.9	89.20%	0.81	3.1	199.3	48.1	88	0.41	277
22M1-6	18.5	980	35.3	32.3	89.00%	0.83	2.7	187	62.5	88	0.65	335
22M2-6	22	980	41.6	38.1	89.50%	0.83	2.7	224	61	88	0.72	360
250M1-6	30	985	55.3	50.6	91.00%	0.84	3.5	284.7	66.3	91	1.22	480
250M2-6	37	985	68.9	63.1	91.50%	0.84	3.5	338	69	91	1.35	520
280S-6	45	985	81.9	75	92.00%	0.86	3.6	361	77.6	94	2.41	645
280M-6	55	985	98.4	90.1	92.50%	0.86	3.4	486	70.1	94	2.74	695
315S-6	75	987	137	125.4	93.00%	0.85	2.8	266	172	98	5.48	1220
315M-6	90	989	163	149.2	93.50%	0.85	2.8	322	169	98	6.25	1335
315L1-6	110	989	194	177.6	94.00%	0.87	2.8	381	175	98	7.3	1421
315L2-6	132	990	234	214.3	94.20%	0.86	2.8	464	171	98	8.45	1430
355M1-6	160	991	291	266.5	94.50%	0.83	2.8	470	205	102	12.28	1950
355M2-6	200	991	353	323.2	94.80%	0.84	2.7	575	209	102	14.86	2164
355L-6	220	992	388	355.3	94.80%	0.84	2.7	647	204	102	16.71	2273
400L1-6	250	989	444	406.6	94.50%	0.85	2.6	446	337	108	20.69	3345
400L2-6	315	990	553	506.4	94.80%	0.86	2.6	536	352	108	23.73	3545
400L3-6	355	992	627	574.1	95.10%	0.85	2.8	670	315	108	28.28	3835

## 8 Pole - 750 rpm Synchronous Speed 50Hz

Model	Output	Speed	Rotor Current		Efficiency	P.F.	Max. Tocqu	Rotor Voltage	Rotor Amp	Noise	Rotary Inertia	Weight.
	(kW)	(r/min)	380V/Δ	415V/Δ	%	Cos ϕ		V	A	dB(A)	kg.m	Kg
200L1-8	11	730	23.7	21.7	87.90%	0.75	2.4	147.3	47.3	82	0.41	276
225M1-8	15	735	31.9	29.2	89.30%	0.75	2.4	169	56	86	0.71	357
225M2-8	18.5	735	39.1	35.8	89.50%	0.75	2.4	211	54	86	0.83	387
250M1-8	22	735	44.5	40.7	90.00%	0.78	3	213.9	64.9	86	1.18	480
250M2-8	30	735	61.5	56.3	90.50%	0.77	3	274	68.4	90	1.4	520
280S-8	37	740	74	67.8	91.30%	0.79	3	281.4	81.7	90	2.36	645
280M-8	45	740	86.3	79	92.30%	0.8	3	357.7	77.7	93	3	735
315S-8	55	742	104	95.2	92.50%	0.79	2.4	486	69	93	5.24	1060
315M-8	75	742	139	127.3	93.30%	0.8	2.4	498	91	96	6.82	1386
315L1-8	90	743	171.8	157.3	93.60%	0.8	2.4	504	108	96	7.82	1475
315L2-8	110	743	209.4	191.7	94.00%	0.8	2.6	514	129	96	9.21	1485
355M1-8	132	743	246	225.3	94.00%	0.81	2.7	462	171	99	13.24	1908
335M2-8	160	744	294	269.2	94.50%	0.82	2.7	562	170	99	16.05	2086
355L-8	185	744	345	315.9	94.50%	0.8	2.8	655	168	99	17.84	2203
400L1-8	200	740	404	369.9	93.80%	0.76	3	464	257	102	18.9	3275
400L2-8	250	740	498	456	94.00%	0.76	3	557	267	105	21.94	3470
400L3-8	315	741	624	571.4	94.50%	0.76	3	696	268	105	26.5	3765

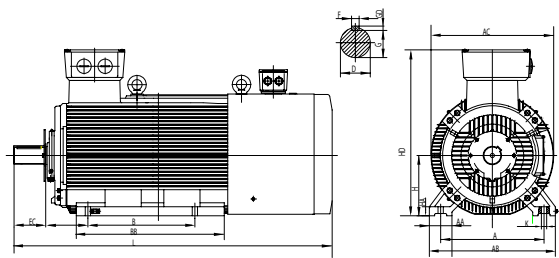


Figure 1 B3

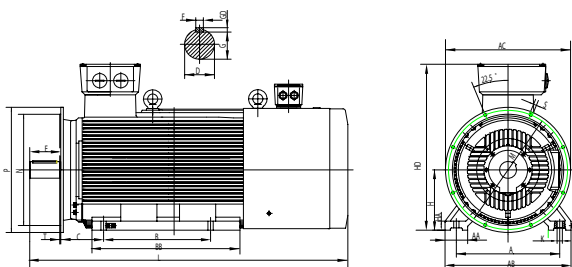


Figure 2 B35

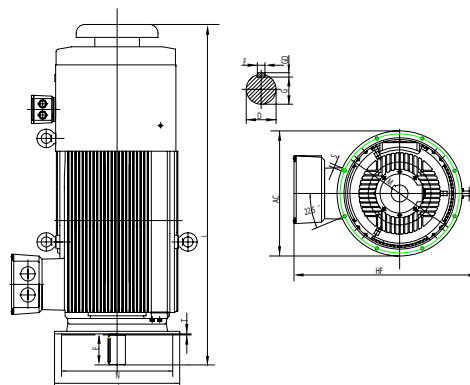


Figure 3 B5

For Foot Mounted (B3)																	
Frame	A	B	C	D	E	FxGD	G	H	K	AB	AC	AA	BB	HD	HA	L	
200L	318	305	133	55	110	16x10	49	200	19	388	400	70	375	525	25	970	
225M	356	311	149	60	140	18x11	53	225	19	435	446	75	400	555	28	1061	
250M	406	349	168	65	140	18x11	58	250	24	490	495	80	450	615	30	1150	
280S	457	368	190	75	140	20x12	67.5	280	24	550	560	85	490	700	35	1260	
280M	457	419	190	75	140	20x12	67.5	280	24	550	560	85	540	700	35	1310	
315S	508	406	216	80	170	22x14	71	315	28	635	635	125	680	870	45	1700	
315M	508	457	216	80	170	22x14	71	315	28	635	635	125	680	870	45	1700	
315L	508	508	216	80	170	22x14	71	315	28	635	635	125	680	870	45	1700	
355M	610	560	254	100	210	28x16	90	355	28	730	730	125	750	1010	52	1910	
355L	610	630	254	100	210	28x16	90	355	28	730	730	125	750	1010	52	1910	
400L	686	710	280	110	210	28x16	100	400	35	840	820	150	985	1105	60	2115	

For Flange Mounted (B5)													
Frame	D	E	FXGD	G	M	N	P	S	T	AC	HF	L	
200L	55	110	16x10	49	350	300	400	4xΦ19	5	420	580	1040	
225M	60	140	18x11	53	400	350	450	8xΦ19	6	446	640	1150	
250M	65	140	18x11	58	500	450	550	8xΦ19	6	495	695	1250	
280S	75	140	20x12	67.5	500	450	550	8xΦ19	6	560	770	1385	
280M	75	140	20x12	67.5	500	450	550	8xΦ19	6	560	770	1425	
315S	80	170	22x14	71	600	550	660	8xΦ24	6	645	975	1815	
315M	80	170	22x14	71	600	550	660	8xΦ24	6	645	975	1815	
315L	80	170	22x14	71	600	550	660	8xΦ24	6	645	975	1815	
355M	100	210	28x16	90	740	680	800	8xΦ24	6	710	1160	2050	
355L	100	210	28x16	90	740	680	800	8xΦ24	6	710	1160	2050	
400L	110	210	28x16	100	975	925	1060	8xΦ24	10	820	1295	2270	

For Foot & Flange Mounted (B35)																					
Frame	A	B	C	D	E	FxGD	G	H	K	M	N	P	S	T	AA	AB	AC	HA	HD	BB	L
200L	318	305	133	55	110	16x10	49	200	19	350	300	400	4xΦ19	5	70	388	420	25	525	375	970
225M	356	311	149	60	140	18x11	53	225	19	400	350	450	8xΦ19	6	75	435	446	28	555	400	1061
250M	406	349	168	65	140	18x11	58	250	24	500	450	550	8xΦ19	6	80	490	495	30	615	450	1150
280S	457	368	190	75	140	20x12	67.5	280	24	500	450	550	8xΦ19	6	85	550	560	35	700	490	1260
280M	457	419	190	75	140	20x12	67.5	280	24	500	450	550	8xΦ19	6	85	550	560	35	700	540	1310
315S	508	406	216	80	170	22x14	71	315	28	600	550	660	8xΦ24	6	125	635	635	45	870	680	1700
315M	508	457	216	80	170	22x14	71	315	28	600	550	660	8xΦ24	6	125	635	635	45	870	680	1700
315L	508	508	216	80	170	22x14	71	315	28	600	550	660	8xΦ24	6	125	635	635	45	870	680	1700
355M	610	560	254	100	210	28x16	90	355	28	740	680	800	8xΦ24	6	125	730	710	52	1010	750	1910
355L	610	630	254	100	210	28x16	90	355	28	740	680	800	8xΦ24	6	125	730	710	52	1010	750	1910
400L	686	710	280	110	210	28x16	100	400	35	975	925	1060	8xΦ24	10	150	840	820	60	1105	985	2115



# Single-Phase Motors

Three-Phase Asynchronous Motors  
Cast Iron / Aluminum Housing

Single phase series of aluminium housing dual-capacitor asynchronous motors, with the latest design in entirety, are made of selected quality materials and conform to IEC standards.

Single phase motors have good performance, safety and reliable operation; it has a multiple of starting torque up to 2.5. These series of motors are suitable for requirements with big starting torque and high over load, such as air compressors, pumps and many other small types of machinery.



SINGLE-PHASE

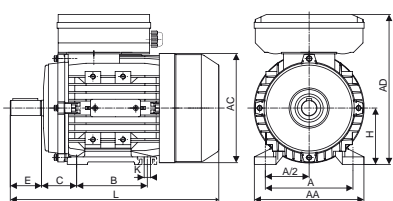


Figure 1 IM B3

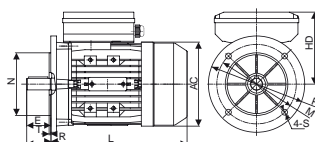


Figure 2 IM B5

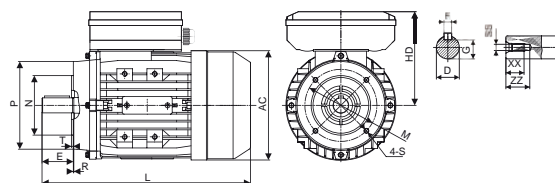


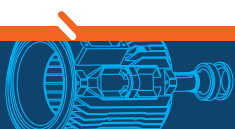
Figure 3 IM B14

## Double Capacitor Run

Single-Phase

Frame Size	Mounting Dimensions																								Overall Dimensions					Shaft End Screw Dimensions		
	General									IM B14					IM B5																	
	A	B	C	D	E	F	G	H	K	M	N	P	R	S	T	M	N	P	R	S	T	AA	AC	AD	HD	L	SS	XX	ZZ			
63	100	80	40	11	23	4	8.5	63	7X10	75	60	90	0	M5	2.5	115	95	140	0	φ10	3.0	120	121	179	116	217	M4	10	14			
71	112	90	45	14	30	5	11	71	7X10	85	70	105	0	M6	2.5	130	110	160	0	φ10	3.5	132	139	194	123	255	M5	12	17			
80	125	100	50	19	40	6	15.5	80	10X13	100	80	120	0	M6	3.0	165	130	200	0	φ12	3.5	160	156	223	143	290	M6	16	21			
90S	140	100	56	24	50	8	20	90	10X13	115	95	140	0	M8	3.0	165	130	200	0	φ12	3.5	175	174	240	150	335	M8	19	25			
90L	140	125	56	24	50	8	20	90	10X13	115	95	140	0	M8	3.0	165	130	200	0	φ12	3.5	175	174	240	150	365	M8	19	25			
100L	160	140	63	28	60	8	24	100	12X15	130	110	160	0	M8	3.5	215	180	250	0	φ15	4.0	198	196	271	171	403/421	M10	22	30			
112M	190	140	70	28	60	8	24	112	12X15	130	110	160	0	M8	3.5	215	180	250	0	φ15	4.0	220	221	297	185	431	M10	22	30			

Model	Power	Current	Speed	Eff.	Power Factor	Rate Torque	Tst/Tn	Tmax/Tn	Starting Current	Run Capacitor	Start Capacitor	Noise	Inertia
	(kW)	(A)	(r/min)	(%)	(Cos $\phi$ )	(N.M)	(Times)	(Times)	(A)	( $\mu$ F/V)	( $\mu$ F/V)	dB(A)	(kg*m <sup>2</sup> )
ML631-2	0.18	1.36	2820	62	0.93	0.63	1.9	1.8	7	8 $\mu$ F/450V	30 $\mu$ F/250V	70	0.000141
ML632-2	0.25	1.71	2800	67.5	0.94	0.88	2.3	1.8	8	10 $\mu$ F/450V	30 $\mu$ F/250V	70	0.000168
ML711-2	0.37	2.40	2780	70.5	0.95	1.27	2.5	1.6	12	12 $\mu$ F/450V	40 $\mu$ F/250V	75	0.000330
ML712-2	0.55	3.31	2790	74.5	0.97	1.88	2.5	1.8	20	16 $\mu$ F/450V	50 $\mu$ F/250V	75	0.000437
ML801-2	0.75	4.25	2840	77.5	0.99	2.56	2.5	1.8	30	20 $\mu$ F/450V	75 $\mu$ F/250V	75	0.000781
ML802-2	1.1	6.08	2850	79.5	0.99	3.74	2.3	1.8	40	30 $\mu$ F/450V	120 $\mu$ F/250V	78	0.000938
ML905-2	1.5	8.23	2860	80	0.99	5.10	2.5	1.8	56	40 $\mu$ F/450V	200 $\mu$ F/300V	80	0.001512
ML90L-2	2.2	11.90	2850	81	0.99	7.48	2.5	1.75	15	50 $\mu$ F/450V	250 $\mu$ F/300V	80	0.001995
ML100L-2	3.0	17.70	2830	75	0.98	10.13	2.5	1.63	110	60 $\mu$ F/450V	300 $\mu$ F/300V	83	0.004803
ML112M1-2	3.7	19.90	2900	82.5	0.98	12.40	2.5	1.8	155	60 $\mu$ F/450V	400 $\mu$ F/300V	84	0.007170
ML112M2-2	4.0	21.30	2900	83.5	0.98	13.41	2.5	1.8	165	60 $\mu$ F/450V	400 $\mu$ F/300V	84	0.007453
ML631-4	0.12	1.01	1380	54.5	0.95	0.85	2.5	1.65	6	8 $\mu$ F/450V	30 $\mu$ F/250V	65	0.000291
ML632-4	0.18	1.36	1340	60	0.96	1.27	2.3	1.43	6	10 $\mu$ F/450V	30 $\mu$ F/250V	65	0.000340
ML711-4	0.25	1.78	1415	63	0.97	1.73	2.5	1.7	10	12 $\mu$ F/450V	40 $\mu$ F/250V	65	0.000598
ML712-4	0.37	2.53	1410	65.5	0.97	2.56	2.3	1.6	15	16 $\mu$ F/450V	50 $\mu$ F/250V	68	0.000760
ML801-4	0.55	3.52	1420	71.5	0.95	3.75	2.5	1.8	20	20 $\mu$ F/450V	75 $\mu$ F/250V	70	0.001380
ML802-4	0.75	4.56	1420	73	0.98	5.08	2.5	1.75	27	25 $\mu$ F/450V	100 $\mu$ F/250V	70	0.001656
ML905-4	1.1	6.62	1420	76	0.95	7.45	2.5	1.7	40	35 $\mu$ F/450V	150 $\mu$ F/250V	73	0.002510
ML90L-4	1.5	8.56	1420	78.5	0.97	10.24	2.5	1.75	55	40 $\mu$ F/450V	200 $\mu$ F/300V	75	0.003252
ML100L1-4	2.2	12.10	1440	80.5	0.98	14.70	2.5	1.65	80	50 $\mu$ F/450V	250 $\mu$ F/300V	78	0.008045
ML100L2-4	3	16.40	1445	83	0.96	19.91	2.4	1.75	110	60 $\mu$ F/450V	300 $\mu$ F/300V	78	0.010543
ML112M1-4	3.7	19.70	1430	83.5	0.98	24.55	2.4	1.75	130	60 $\mu$ F/450V	400 $\mu$ F/300V	79	0.013608
ML112M2-4	4.0	21.30	1435	83.5	0.98	26.54	2.5	1.75	140	60 $\mu$ F/450V	400 $\mu$ F/300V	79	0.014485



# Dual Speed Motors

Three-Phase Asynchronous Motors  
Cast Iron / Aluminum Housing

Dual speed series of three phase asynchronous motors are constructed Totally Enclosed Fan Cooled (TEFC), and is available in both cast iron and aluminium housing. This series of motors has the capability of operation at multiple power output and/or multiple speeds with a wide selection of variation.

Dual Speed motors utilises very special winding technology to achieve its flexible capabilities, reliable operation and professional appearance, easy to maintain, while low on noise and little vibration. This series of motors is used widely for fan and pump industry.



DUAL SPEED

## Technical Data

### Dual Speed

#### 2/4 Poles - 3000/1500 rpm - Single Winding

Model	Power		Speed		Current	
	(kW)		(r/min)		A	
	2P	4P	2P	4P	2P	4P
80B	0.8	0.16	2955	1480	1.9	0.72
90S	1.2	0.24	2955	1480	2.91	0.81
90L	1.7	0.34	2955	1480	3.91	1.09
100L	2.4	0.48	2955	1480	5.52	1.35
112M	3.3	0.66	2955	1480	7.48	1.66
132SA	4.4	0.88	2955	1480	9.92	2.23
132SB	6.1	1.2	2955	1480	13.05	3.1
160MA	8.3	1.7	2955	1480	17.53	4.26
160MB	12	2.4	2955	1480	24.23	5.56
160L	17	3.4	2955	1480	34.1	7.27
180M	20	4	2955	1480	39.84	8.5
200LA	24	4.8	2955	1480	46.22	10.13
200LB	33	6.6	2955	1480	59.15	13.09
225M	41	8.2	2955	1480	77.48	17.5
250M	50	10	2955	1480	90.74	19.09
280S	61	12	2955	1480	118.95	24.84
280M	83	17	2955	1480	150.5	34.32
315S	99	20	2955	1480	172.36	39.7
315MA	121	24	2955	1480	219.87	46.99
315LA	145	29	2955	1480	262.84	57.5
315LB	176	35	2955	1480	321.58	67.9

## 4/6 Poles - 1500/1000 rpm - Separate Winding

Model	Power		Speed		Current	
	(kW)		(rpm)		A	
	4P	6P	4P	6P	4P	6P
80B	0.55	0.18	1480	990	1.64	0.67
90S	0.75	0.25	1480	990	2.12	0.86
90L	1.1	0.36	1480	990	2.96	1.3
100LA	1.5	0.5	1480	990	3.81	1.8
100LB	2.2	0.75	1480	990	5.11	2.32
112M	3	1	1480	990	6.84	3
132S	4	1.3	1480	990	8.88	3.91
132M	5.5	1.8	1480	990	11.76	4.78
160M	7.5	2.5	1480	990	15.65	6.21
160L	11	3.5	1480	990	22.56	9
180L	15	5	1480	990	30.32	12.5
200LA	18.5	6.1	1480	990	36.26	13.01
200LB	22	7.3	1480	990	42.9	17.1
225M	33	11	1480	990	63.48	24.52
250M	45	15	1480	990	84.59	31.66
280M	55	18	1480	990	103	37.02
315S	75	25	1480	990	138.11	51.09
315MA	90	30	1480	990	165.95	59.3
315LA	110	36	1480	990	201	70.1
315LB	132	44	1480	990	240.06	86.61

## 4/8 Poles - 1500/750 rpm - Single Winding

Model	Power		Speed		Current	
	(kW)		(rpm)		A	
	4P	8P	4P	8P	4P	8P
80B	0.6	0.12	1480	735	1.66	0.6
90S	0.8	0.16	1480	735	2.23	0.92
90L	1.2	0.24	1480	735	3.1	1.25
100LA	1.7	0.34	1480	735	4.26	1.4
100LB	2.4	0.5	1480	735	5.56	1.72
112M	3.3	0.7	1480	735	7.27	2.19
132S	4.4	0.9	1480	735	9.1	3.24
132M	6.1	1.2	1480	735	13.09	4.31
160M	8.3	1.7	1480	735	17.5	5.8
160L	12	2.4	1480	735	24.84	6.95
180M	17	3.4	1480	735	34.32	8.85
180L	20	4	1480	735	39.7	10.87
200L	24	5	1480	735	46.99	11.71
225S	33	6.6	1480	735	65.5	15.58
225M	41	8.2	1480	735	81.24	19.11
250M	50	10	1480	735	89.32	22.79
280S	61	12	1480	735	114.69	28.88
280M	83	17	1480	735	147.2	36.5
315S	99	20	1480	735	191.82	45
315MA	121	24	1480	735	224.3	47.1
315LA	145	29	1480	735	277.11	58.53
315LB	176	35	1480	735	324.89	72.15



## 6/8 Poles - 1000/750 rpm - Separate Winding

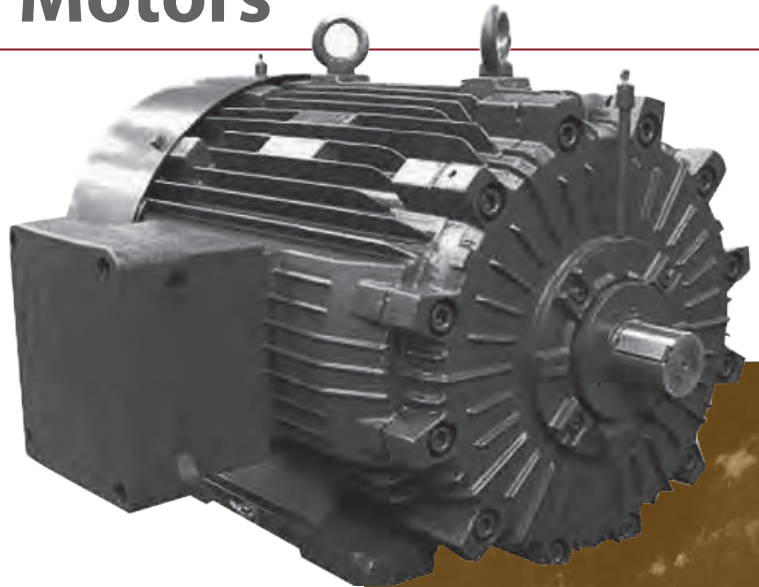
Model	Power		Speed		Current	
	(kW)		(rpm)		A	
	6P	8P	6P	8P	6P	8P
90S	0.55	0.24	990	735	1.87	1.25
90L	0.75	0.32	990	735	2.32	1.4
100L	1.1	0.47	990	735	3.28	1.7
112M	1.5	0.65	990	735	4.14	1.91
132S	2.2	0.95	990	735	5.61	3.58
132MA	3	1.3	990	735	7.47	4.81
132MB	4	1.7	990	735	9.76	5.8
160M	5.5	2.4	990	735	12.8	6.95
160L	7.5	3.2	990	735	17.15	8.85
180L	11	4.7	990	735	24.52	11.5
200L	13	5.5	990	735	28.99	13.6
225S	15	6.5	990	735	31.6	15.58
225M	21	9	990	735	44.71	21.09
250M	26	11	990	735	52.11	25.43
280S	30	13	990	735	59.35	30.02
280M	37	16	990	735	70.15	38.22
315S	53	23	990	735	104	49.85
315MA	65	28	990	735	122.84	58.58
315LA	80	34	990	735	162.05	71.88
315LB	92	40	990	735	170.25	82.41

DUAL SPEED

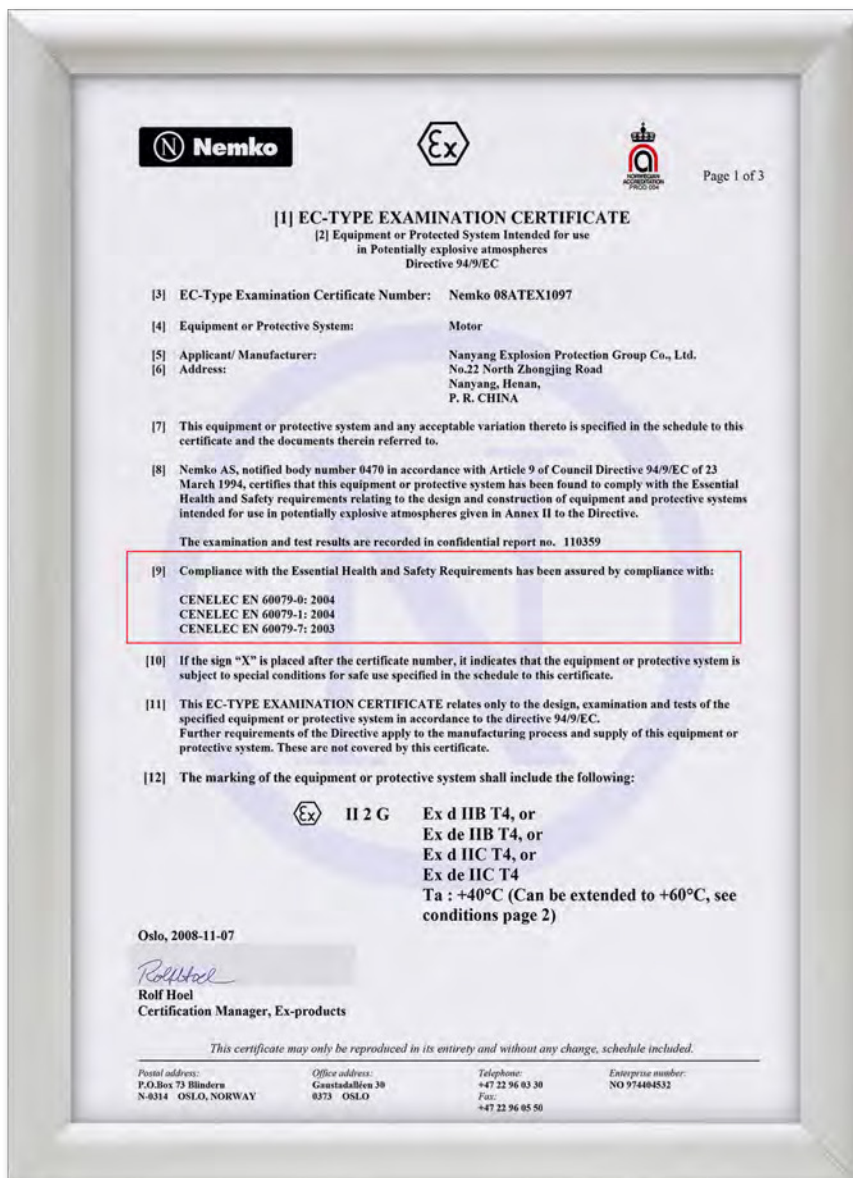
# Explosion Proof Motors

## Three-Phase Asynchronous Motors Cast Iron Housing

Explosion proof motors are manufactured according to International IEC standards, and can be delivered with International ATEX Certificate for all frame sizes, and for many different ex-proof requirements. This series of motors are designed to conform to the standards of Exd IIA T4, Exd IIB T4, Exd IIC T4.



EXPLOSION



International ATEX Certificate  
Exd IIB T4 | Exd IIC T4

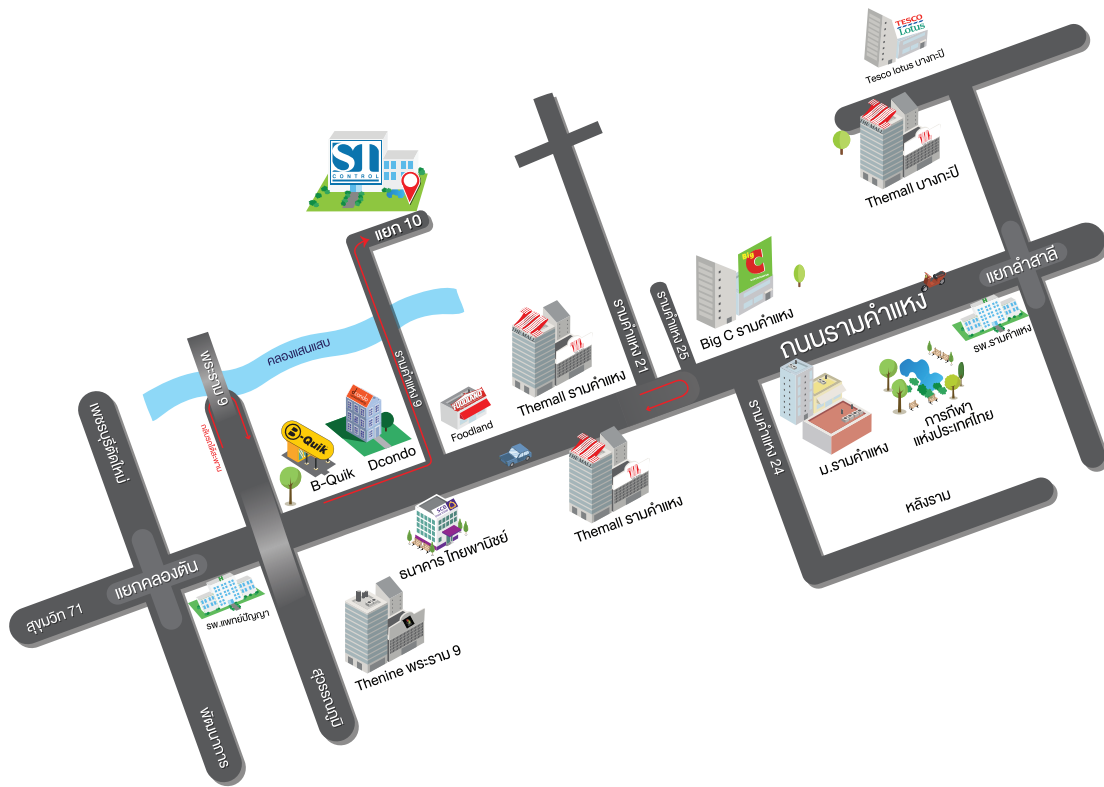








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