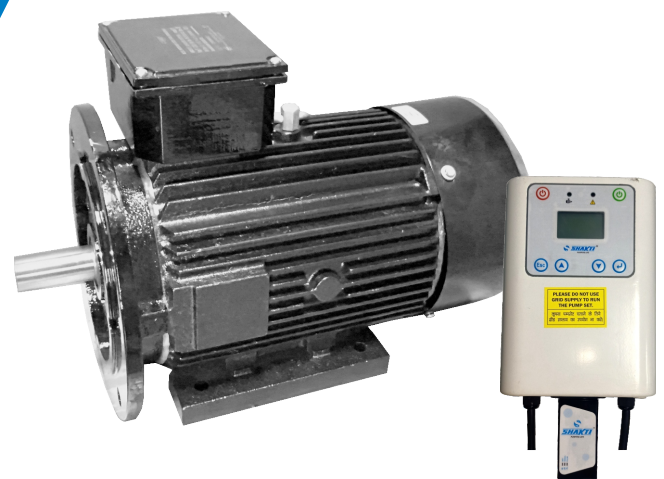


# **SURFACE MOTORS**

**SMG/S4MG/E2MG (BLDC/PMSM)**  
PRODUCT INFORMATION & SERVICE MANUAL



**SHAKTI**

**THE POWER OF INNOVATION, EFFICIENCY & TECHNOLOGY.**

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## INTRODUCTION

### INTERNATIONAL STANDARD FOR EFFICIENCY

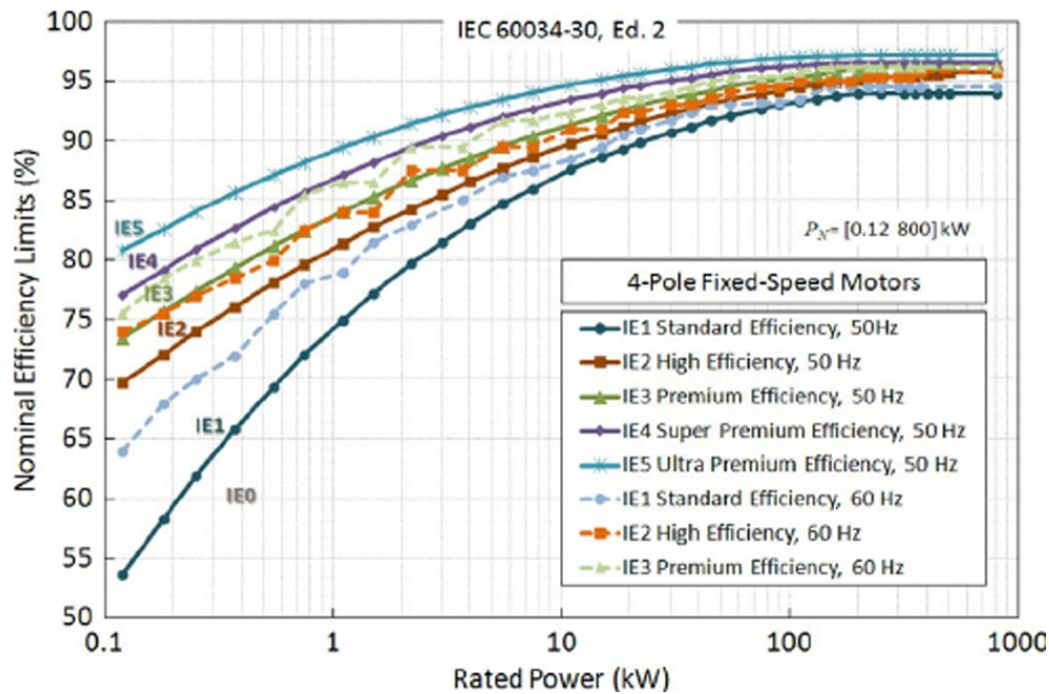
The efficiency factors defines efficiency of motors when transforming electrical energy into mechanical energy.

The International Electrotechnical Commission (IEC), in order to harmonize the energy consumption regulations aimed to reduce the CO<sub>2</sub> emissions and the impact of industrial operations on the environment, has established the standard IEC 60034-30:2014 which defines energy efficiency classes IE1, IE2, IE3, IE4, IE5 for low voltage three phase 50Hz and 60 Hz in power range 0.75 kW to 375 kW motors.

EFFICIENCY CLASS	DESIGNATE
IE1	Standard Efficiency
IE2	High Efficiency
IE3	Premium Efficiency
IE4	Super Premium Efficiency
IE5	Ultra Premium Efficiency

These motors are also with compliance in efficiency standard indicated in IS 12615:2018/IEC - 60034.

We continuously improve product design according to the new standards IEC 60034-30 and IEC 60034-2-1.



## TECHNICAL CHARACTERISTICS

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### BENEFITS OF HIGH EFFICIENT MOTORS

- Lower operating cost leads to short payback period due to higher efficiency.
- Motors have lower heat dissipation and temperature rise leads to increase life of motor.
- Higher thermal margins in design which reduces the cost.
- Reduction in CO<sub>2</sub> emissions.

### STANDARD FOR MOTORS

All motors are designed as per the following Indian and International standards.

#### Indian Standards

IS : 325	Three phase Induction motors specifications
IS : 900	Code of practice for installation and maintenance of induction motors
IS : 1231	Dimension of foot mounted AC induction motors
IS : 2223	Dimension of flange mounted AC induction motors
IS : 2253	Designation for types of construction and mounting arrangements of rotating electrical machines
IS : 4029	Guide for testing three phase induction motors
IS : 4691	Degree of protection provided by enclosures rotating electrical machines
IS : 6362	Designation methods of cooling for rotating electrical machines
IS : 12065	Permissible limits of noise level for rotating electrical machines
IS : 12615	Energy efficient three phase squirrel cage induction motors

#### International Standards

IEC : 60034 - 1	Rating and performance
IEC : 60034 - 2 - 1	Methods for determining losses and efficiency
IEC: 60034 - 5	Classification of degree of protection
IEC : 60034 - 6	Methods of cooling
IEC : 60034 - 7	Symbol of construction and mounting arrangements
IEC : 60034 - 8	Terminal marking and direction of rotation
IEC : 60034 - 9	Noise limits
IEC : 60072 - 1	Designation and output of electrical machines
IEC : 60034 - 30 - 1	Efficiency classes of line operated AC motors
IEC : 60034 - 30 - 2	Efficiency classes of variable speed AC motors

## KEY CHARACTERISTICS

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### APPLICATIONS

- Pumps
- Compressor
- Fans and Blowers
- Flour mill, Rolling mill, Mixers
- Machine Tools
- Textile & Plastic machineries
- Agriculture & Food processing
- Cranes , Hoist & Lifts
- Cooling tower

### FEATURES AND BENEFITS

- Motors are fitted
  - a) Dynamically balanced rotors.
  - b) Double shielded antifriction bearings.
- Motor are protected against in-grace of moisture and dust particles with IP55 protection.
- Use of electric grade steel & copper leads to low operating cost.
- The cooling fins design are based on three dimensional heat transfer principle.
- Minimum friction losses.
- Low noise smooth running motor.
- Reliable operation.
- Easy maintenance.
- Low payback period.

## TOLERANCES

Tolerance in performance of the motor is as per Indian & international standard.

For industrial motors according to IS 325/ IEC 60034-1, certain tolerances must be allowed on guaranteed values, taking into consideration the necessary tolerances for the manufacture of such motors and the materials used. The standard includes following remark:

### Schedule of tolerance

1. Efficiency ( $\eta$ )	
· Motors up to and including 150 kW	-15 % of $(1 - \eta)$
· Motors above 150 kW	-10 % of $(1 - \eta)$
2. Total losses (applicable to motors with ratings >150 kW)	+10 % of the total losses
3. Power factor ( $\cos \phi$ )	- 1/6 of $(1 - \cos \phi)$ ; min 0.02, max 0.07
4. Slip at full load and at working temperature	
· For Motors having output < 1 kW	$\pm 30$ % of the slip
· For Motors having output $\geq 1$ kW	$\pm 20$ % of the slip
5. Locked rotor current (IST) with any specified starting apparatus	+ 20 % of the current
6. Locked rotor torque (TST)	- 15 % to + 25 % of the torque (+25 % may be exceeded by agreement)
7. Pull out torque (TPO)	- 10 % of the torque except that after allowing for this tolerance the torque shall be not less than 1.6 or 1.5 times the rated torque
8. Moment of inertia	$\pm 10$ % of the value

### Dimension Tolerances

1. Frame Size	
· Frame Size $H \leq 250$	0, - 0.5 mm
· Frame Size $H \geq 280$	0, - 1mm
2. Diameter D of shaft extension	
· 11 to 28 mm	j6
· 32 to 48 mm	k6
· 55mm and over	m6
3. Diameter N of flange spigot	
· Up to F 500 B	j6
· above F 500 B	js6
4. Key width	h9

## TOLERANCES

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### Dimension Tolerances

- |   |          |
|---|----------|
| 5. Width of drive shaft keyway (normal keying)  | P9       |
| 6. Key depth  |          |
| • Square section  | h9       |
| • Rectangular section   | h11      |
| 7. Eccentricity of shaft in flanged motors (standard class)   |          |
| • $D \leq 10$ mm  | 0.030 mm |
| • $10 \text{ mm} < D \leq 18$ mm  | 0.035 mm |
| • $18 \text{ mm} < D \leq 30$ mm  | 0.040 mm |
| • $30 \text{ mm} < D \leq 50$ mm  | 0.050 mm |
| • $50 \text{ mm} < D \leq 80$ mm  | 0.060 mm |
| • $80 \text{ mm} < D \leq 120$ mm   | 0.070 mm |
| 8. Concentricity of spigot diameter and perpendicularity of mating surface of flange to shaft (standard class) Flange |          |
| • F65 to F 115  | 0.080 mm |
| • F130 to F 265   | 0.100 mm |
| • F300 to F 500   | 0.125 mm |
| • F600 to F740  | 0.160 mm |
| • F940 to F1080   | 0.200 mm |

## TECHNICAL CHARACTERISTICS

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### SMG MOTOR SPECIFICATION

- Motor Type:- AC Three phase induction Motor
- Enclosure:- TEFC (Totally enclosed fan cooled)
- Frame:- 71 to 225
- Mounting:- Foot cum flange B35 & Face V1/V18 & Foot Mounted B3
- Rated Power:- 2 POLE -0.37 kW to 45 kW  
4 POLE -0.37 kW to 22 kW
- Voltage:- 220-415 50Hz/ 220-460 60Hz
- Rated Speed:- 3000 / 3600 / 1500 / 1800
- Ambient Temperature:- -20 °C to +60 °C
- Altitude:- Should be below than 1000 meters above sea level
- Relative humidity:- upto 100%
- Connection:- 50 Hz, 380-415 V star/delta & 220-240 delta  
60 Hz, 380-460 V star/delta & 220-240 delta  
STAR (0.5 – 5.0 hp)/DELTA (7.5-25.0 hp)
- Direction of Rotation:- Anticlockwise or Clockwise as seen from the driver end side
- Duty / Rating:- S1
- Insulation Class:- Class 'H'
- Degree of Protection:- IP55
- Cooling Method:- IC411 / Shaft mounted fan
- Efficiency Class\*:- IE3 (0.37 – 45) kW  
IE4 (0.37 - 18.5) kW

\* Note: Efficiency levels are model dependent and subject to variation



## ELECTRICAL PERFORMANCE TABLE

### ELECTRICAL DATA SMG 2 -POLE 50Hz (230 V SINGLE PHASE)

S. NO.	Material Code	Rated Output	Frame Size	Full Load SPEED	Full Load Current	Nominal Efficiency At % LOAD			Power Factor At % LOAD			Locked Torque in Terms of Full Load Torque
		kW		[min <sup>-1</sup> ]	A	50%	75%	100%	50%	75%	100%	Percent
1	9000011335	0.37	SMG-71	2846	3.4	37	53	59	0.78	0.78	0.79	150.0
2	9000010446	0.55	SMG-71	2690	4.0	50	58	64	0.90	0.9	0.95	150.0
3	9000010447	0.75	SMG-80	2839	4.7	60	68	72	0.94	0.95	0.96	150.0
4	9000011371	1.1	SMG-80	2740	7.4	57	67	69	0.90	0.90	0.93	150.0
5	9000011054	1.5	SMG-90S	2885	9.4	62	70	75	0.73	0.87	0.94	200.0
6	9000011373	2.2	SMG-90L	2899	13.3	62	70	75	0.87	0.90	0.97	200.0

### ELECTRICAL DATA SMG 2-POLE 60Hz (230 V SINGLE PHASE)

S. NO.	Material Code	Rated Output	Frame Size	Full Load SPEED	Full Load Current	Nominal Efficiency At % LOAD			Power Factor At % LOAD			Locked Torque in Terms of Full Load Torque
		kW		[min <sup>-1</sup> ]	A	50%	75%	100%	50%	75%	100%	Percent
1	9000019412	0.37	SMG-71	3470	2.6	41	55	66	0.97	0.98	0.97	150.0
2	9000019413	0.55	SMG-71	3384	3.4	55	67	71	0.98	0.98	0.98	150.0
3	9000019414	0.75	SMG-80	3460	4.7	60	67	72	0.87	0.89	0.93	150.0
4	9000019051	1.1	SMG-80	3290	6.8	67	75	73	0.89	0.97	0.98	150.0
5	9000019416	1.5	SMG-90S	3501	10.1	60	69	73	0.88	0.88	0.88	200.0
6	9000017961	2.2	SMG-90L	3492	13.6	61	67	73	0.82	0.91	0.96	200.0

## ELECTRICAL PERFORMANCE TABLE

### ELECTRICAL DATA SMG 2-POLE 50Hz (380/415 V THREE PHASE)

S.NO	Material Code	Rated Output	Frame size	Full Load SPEED	Full Load Current	Nominal Efficiency At 96 LOAD			Power Factor At 96 LOAD			Locked Torque in Terms of Full Load Torque
		KW		[min <sup>-1</sup> ]	A	50%	75%	100%	50%	75%	100%	Percent
1	9000011336	0.37	SMG-71	2862	1.1	73	75	76	0.52	0.56	0.61	170
2	9000011332	0.55	SMG-71	2738	1.5	75	75	75	0.53	0.57	0.69	170
3	9000011333	0.75	SMG-80	2808	1.8	81	81	81	0.65	0.78	0.80	170
4	9000011372	1.1	SMG-80	2800	2.5	81	81	82	0.58	0.73	0.74	170
5	9000011334	1.5	SMG-90S	2915	3.6	74	77	81	0.58	0.68	0.71	170
6	9000011374	2.2	SMG-90L	2915	4.5	83	84	86	0.65	0.78	0.81	170
7	9000014131	3.0	SMG-100	2905	5.7	85	86	87	0.72	0.86	0.87	160
8	9000014130	3.7	SMG-100	2941	7.6	85	86	87	0.69	0.85	0.86	160
9	9000018910	5.5	SMG-132	2938	10.8	86	87	88	0.65	0.79	0.80	160
10	9000014288	7.5	SMG-132	2931	14.7	88	88	89	0.66	0.80	0.80	160
11	9000014567	11.0	SMG-160	2953	19.9	90	92	93	0.72	0.82	0.83	160
12	9000014873	15.0	SMG-160	2968	27	91	92	93	0.73	0.83	0.84	160
13	9000013502	18.5	SMG-160	2946	32.3	91	92	93	0.74	0.86	0.86	160
14	9000025643	22.0	SMG-180M	2950	37.8	91	92	92	0.75	0.88	0.89	160
15	9000030282	30.0	SMG- 200	2965	48.4	91	92	93.3	0.81	0.90	0.94	160
16	9000031586	37	SMG-200	2954	61	91	92	94	0.81	0.90	0.92	160
17	9000032204	45	SMG-225M	2955	74	91	92	94	0.85	0.89	0.91	220

### ELECTRICAL DATA SMG 2-POLE 60Hz (460 V THREE PHASE)

S.NO	Material Code	Rated Output	Frame size	Full Load SPEED	Full Load Current	Nominal Efficiency At 96 LOAD			Power Factor At 96 LOAD			Locked Torque in Terms of Full Load Torque
		KW		[min <sup>-1</sup> ]	A	50%	75%	100%	50%	75%	100%	Percent
1	9000011336	0.37	SMG-71	3432	0.9	74	78	78	0.49	0.55	0.63	170
2	9000011332	0.55	SMG-71	3345	1.2	78	78	79	0.62	0.73	0.73	170
3	9000011333	0.75	SMG-80	3445	1.6	81	82	83	0.61	0.73	0.73	170
4	9000011372	1.1	SMG-80	3385	2.2	83	83	83	0.63	0.75	0.76	170
5	9000011334	1.5	SMG-90S	3526	3.1	74	82	83	0.73	0.73	0.73	170
6	9000011374	2.2	SMG-90L	3420	3.9	82	83	85	0.73	0.73	0.84	170
7	9000014131	3.0	SMG-100	3532	5.2	78	81	83	0.72	0.85	0.86	160
8	9000014130	3.7	SMG-100	3528	6.3	82	84	86	0.72	0.85	0.86	160
9	9000018910	5.5	SMG-132	3551	9.5	84	88	89	0.82	0.82	0.82	160
10	9000014288	7.5	SMG-132	3542	13.1	83	86	87	0.82	0.83	0.83	160
11	9000014567	11.0	SMG-160	3526	16.9	84	87	89	0.93	0.93	0.93	160
12	9000014873	15.0	SMG-160	3560	25	87	88	91	0.88	0.88	0.88	160
13	9000013502	18.5	SMG-160	3540	30.7	84	86	90	0.84	0.84	0.84	160
14	9000025643	22.0	SMG-180M	3544	36.0	87	87	92	0.83	0.83	0.83	160
15	9000030282	30.0	SMG- 200	3563	47.0	90	91	92.0	0.77	0.81	0.88	160
16	9000031586	37	SMG- 200	3560	53	92	93	94	0.85	0.89	0.92	160
17	9000032385	45	SMG- 225M	3560	67	91	92	94	0.85	0.89	0.91	220

## ELECTRICAL PERFORMANCE TABLE

### ELECTRICAL DATA SMG 4-POLE 50Hz (380/415 V THREE PHASE)

S. NO.	Material Code	Rated Output	Frame size	Full Load SPEED	Full Load Current	Nominal Efficiency At % LOAD			Power Factor At % LOAD			Locked Torque in Terms of Full Load Torque
		KW		[min-']	A	50%	75%	100%	50%	75%	100%	Percent
1	9000025327	0.37	SMG-71	1419	1.0	60	69	70	0.45	0.59	0.68	170.0
2	9000025328	0.55	SMG-80	1440	1.6	76	76	79	0.36	0.50	0.62	170.0
3	9000025329	0.75	SMG-80	1422	1.7	76	78	80	0.50	0.62	0.75	170.0
4	9000025330	1.1	SMG-90S	1462	2.4	79	84	85	0.47	0.64	0.72	170.0
5	9000025331	1.5	SMG-90L	1448	3.0	81	83	85	0.59	0.74	0.80	170.0
6	9000025332	2.2	SMG-100	1450	5.1	78	81	82	0.60	0.67	0.73	170.0
7	9000025333	3.0	SMG-112	1464	6.7	82	84	85	0.65	0.65	0.78	160.0
8	9000025334	3.7	SMG-112	1452	7.7	82	84	85	0.69	0.74	0.79	160.0
9	9000025335	5.5	SMG-132	1453	10.1	86	87	88	0.65	0.84	0.86	160.0
10	9000026843	7.5	SMG-132	1462	14.0	87	88	89	0.69	0.82	0.84	160.0
11	9000026918	11.0	SMG-160M	1458	19.3	88	89	90	0.70	0.79	0.88	160.0
12	9000029234	15.0	SMG-160M	1473	26	90	91	92	0.69	0.78	0.87	160.0
13	9000030182	18.5	SMG-180M	1460	32.7	89	90	91	0.68	0.77	0.86	160.0

### BEARING DETAILS

#### SMG MOTOR -2 POLE

FRAME SIZE	FLANGE MOUNTED		FOOT MOUNTED MOTOR				FACE MOUNTED	
	(SNB PUMP)		(SNK PUMP)		NON STD.(SCM,SH		(SRN PUMP)	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE
71	-	-	-	-	6203 ZZ C3	6201 ZZ C3	6204 ZZ C4	6201 ZZ C3
80	-	-	-	-	6203 ZZ C3	6201 ZZ C3	6204 ZZ C4	6201 ZZ C3
90S/L	6305 ZZ C3	6205 ZZ C3	6305 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6305 ZZ C3	6205 ZZ C3
100	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6206 ZZ C3	7306-BE-ZR2P	6306 ZZ C3
132	6308 ZZ C3	6308 ZZ C3	6208 ZZ C3	6208 ZZ C3	-	-	7308-BE-ZR2P	6308 ZZ C3
160	6309 ZZ C3	6209 ZZ C3	6309 ZZ C3	6209 ZZ C3	-	-	7309 BEP	6209 ZZ C3
180	6310 ZZ C3	6210 ZZ C3	6210 ZZ C3	6210 ZZ C3	-	-	7310 BEP	6210 ZZ C3
200	6312 C3	6312 C3	6312 C3	6312 C3	-	-	7312 BEP	6312 C3
225	6313 C3	6313 C3	6313 C3	6313 C3	-	-	7313 C3	6313 C3

#### SMG MOTOR -4 POLE

FRAME SIZE	FLANGE MOUNTED		FOOT MOUNTED		FACE MOUNTED	
	(SNB PUMP)		(SNK PUMP)		(SRN PUMP)	
	DE	NDE	DE	NDE	DE	NDE
71	6204 ZZ C3	6202 ZZ C3	6204 ZZ C3	6202 ZZ C3	6204 ZZ C3	6202 ZZ C3
80	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3	6204 ZZ C3
90S/L	6305 ZZ C3	6205 ZZ C3	6305 ZZ C3	6205 ZZ C3	6305 ZZ C3	6205 ZZ C3
100L	6306 ZZ C3	6206 ZZ C3	6306 ZZ C3	6206 ZZ C3	7306 ZZ C4	6206 ZZ C3
112M	6306 ZZ C3	6206 ZZ C3	6306 ZZ C3	6206 ZZ C3	7306 ZZ C4	6206 ZZ C3
132	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	7308 ZZ C3	6306 ZZ C3
160	6309 ZZ C3	6209 ZZ C3	6309 ZZ C3	6209 ZZ C3	7309	6209 ZZ C3
180	6310 ZZ	6210 ZZ	6210 ZZ	6210 ZZ	7310	6210 ZZ

## TECHNICAL CHARACTERISTICS

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### S4MG MOTOR SPECIFICATION

- Motor Type:- Line Start Permanent magnet Synchronous Motor
- Enclosure:- TEFC (Totally enclosed fan cooled)
- Frame:- 80 to 132
- Mounting:- Foot cum flange B35 & Face V1/V18 & Foot Mounted B3
- Rated Power:- 0.37 kW to 7.5 kW
- Voltage:- 380-415 50Hz/ 380-460 60Hz
- Rated Speed:- 3000 / 3600 RPM
- Ambient Temperature:- -20 °C to +60 °C
- Altitude:- Should be below than 1000 meters above sea level
- Relative humidity:- upto 100%
- Connection:- 50 Hz, 380-415 V star/delta  
STAR (0.5 – 5.0 hp)/DELTA (7.5 - 10.0 hp)
- Direction of Rotation:- Anticlockwise or Clockwise as seen from the driver end side
- Duty / Rating:- S1
- Insulation Class:- Class 'H'
- Degree of Protection:- IP55
- Cooling Method:- IC411 /Shaft mounted fan
- Efficiency Class:- IE4

## ELECTRICAL PERFORMANCE TABLE

### ELECTRICAL DATA S4MG

Material Code		Rated Output	Frame Size	Voltage	Full Load Speed	Full Load Current	Efficiency [%]	Power Factor [%]
Flange	Face	kW	mm	(V)	[min <sup>-1</sup> ]	(A)	100	100
NA	9000024638	0.37	80	415	3000	0.8	85.0	0.72
NA	9000024639	0.55	80	415	3000	1.1	86.7	0.81
NA	9000024640	0.75	80	415	3000	1.4	86.5	0.84
NA	9000024835	1.1	90	415	3000	1.8	87.2	0.94
NA	9000024834	1.5	90	415	3000	3.1	88.3	0.77
9000027642	9000024833	2.2	90	415	3000	3.5	90.1	0.99
9000024689	9000024688	3	100	415	3000	5.2	88.9	0.91
9000024455	9000024494	3.7	100	415	3000	6.3	89.5	0.91
9000024644	9000024456	5.5	132	415	3000	11.5	90.8	0.74
9000024645	9000024457	7.5	132	415	3000	13.9	91.7	0.81

## BEARING DETAILS

### S4MG MOTOR

FRAME SIZE	FLANGE MOUNTED		FOOT MOUNTED MOTOR				FACE MOUNTED	
	(SNB PUMP)		(SNK PUMP)		NON STD.(SCM,SH		(SRN PUMP)	
	DE	NDE	DE	NDE	DE	NDE	DE	NDE
71	-	-	-	-	6203 ZZ C3	6201 ZZ C3	6204 ZZ C3	6201 ZZ C3
80	-	-	-	-	6203 ZZ C3	6201 ZZ C3	6204 ZZ C3	6201 ZZ C3
90S/L	6305 ZZ C3	6205 ZZ C3	6305 ZZ C3	6205 ZZ C3	6205 ZZ C3	6205 ZZ C3	6305 ZZ C3	6205 ZZ C3
100	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6306 ZZ C3	6206 ZZ C3	7306 ZZ C4	6306 ZZ C3
132	6308 ZZ C3	6308 ZZ C3	6208 ZZ C3	6208 ZZ C3	-	-	7308 ZZ C3	6308 ZZ C3

## TECHNICAL CHARACTERISTICS

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### E2MG MOTOR SPECIFICATION

- Motor Type:- Synchronous motor
- Enclosure:- TEFC (Totally enclosed fan cooled)
- Frame:- 71 to 180
- Mounting:- Foot cum flange B35 & Face V1/V18 & Foot Mounted B3
- Rated Power:- 0.37 kW to 18.5 kW
- Rated Speed:- 3000 / 3600 RPM
- Ambient Temperature:- -20 °C to +60 °C
- Altitude:- Should be below than 1000 meter above sea level
- Relative humidity:- upto 100%
- Connection:- (0.5-25.0 hp) STAR
- Direction of Rotation:- Anticlockwise or Clockwise as seen from the driver end side
- Duty / Rating:- S1
- Insulation Class:- Class 'H'
- Degree of Protection:- IP55
- Cooling Method:- IC411 / Shaft mounted fan
- Efficiency Class:- IE5

## ELECTRICAL PERFORMANCE TABLE

### E2MG MOTOR

Material Code		Rated Output	Frame Size	Voltage	Full Load Speed	Full Load Current	Efficiency [%]	Power Factor [%]
Flange	Face	kW	mm	(V)	[min <sup>-1</sup> ]	(A)	100	100
NA	NA	0.37	71	48	3000	6.8	84.4	0.92
NA	9000025025	0.75	80	58	3000	9.6	88.2	0.99
9000022889	9000025026	1.5	90	145	3000	7.4	87.7	0.97
NA	9000025027	2.2	112	180	3000	8.3	90.6	0.96
9000027644	9000024498	3.7	112	300	3000	8.9	93.2	0.95
NA	9000025029	5.5	112	220	3000	17	94.9	0.97
NA	9000025030	7.5	112	280	3000	16.8	94.7	0.98
NA	9000025031	11	132	300	3000	25	92.8	0.96
9000025042	9000025032	15	160	280	3000	35.4	94	0.97
9000025043	9000025033	18.5	160	415	3000	29.2	95.5	0.94

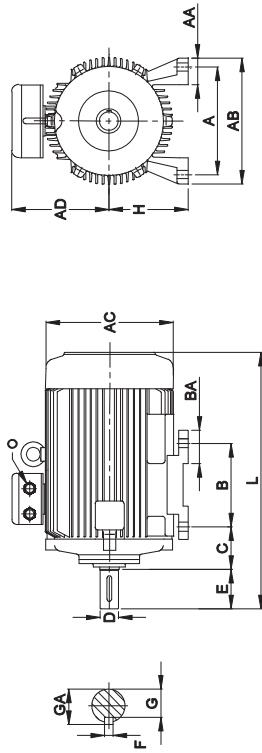
## BEARING DETAILS

### E2MG MOTOR

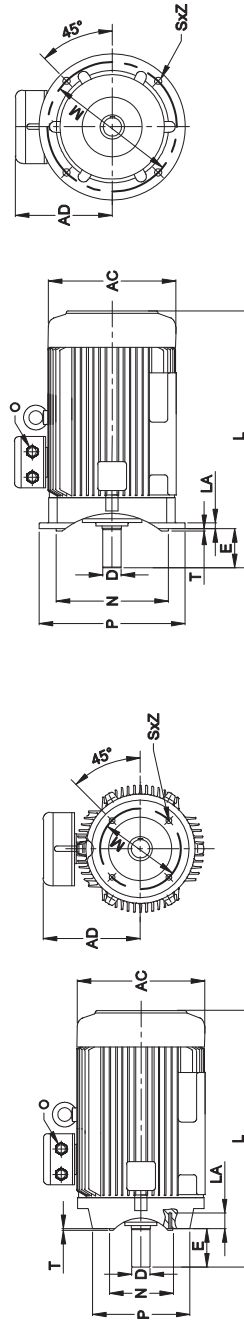
FRAME SIZE	FLANGE MOUNTED		FOOT MOUNTED		FACE MOUNTED	
	(SNB PUMP)		NON STD. (SMB)		(SRN PUMP)	
	DE	NDE	DE	NDE	DE	NDE
71	-	-	-	-	6204 ZZ C3	6201 ZZ C3
80	-	-	-	-	6204 ZZ C3	6201 ZZ C3
90S/L	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3
112	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	6206 ZZ C3	7206 ZZ C4	6206 ZZ C3
132 S/M	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	6308 ZZ C3	7308 ZZ C3	6306 ZZ C3
160	6309 ZZ C3	6209 ZZ C3	6309 ZZ C3	6209 ZZ C3	7309	6209 ZZ C3
180M/L	6310 ZZ	6210 ZZ	6210 ZZ	6210 ZZ	7310	6210 ZZ

## OUTLINE DIAGRAM

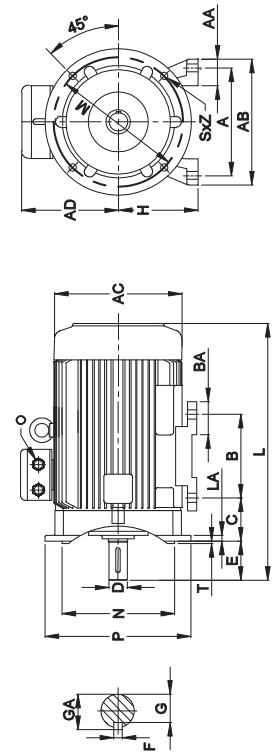
### MOUNTING DIMENSION -B3



### MOUNTING DIMENSION -V1 / V18



### MOUNTING DIMENSION -IM B35





## MECHANICAL DIMENSIONS

### 2 POLE

FRAME SIZE	OUTPUT		GENERAL			Foot mounted motors (B3)								Flange mounted motors (B5)								Face mounted motors (B14)								DE SHAFT							Weight (Approx) KG.
	KW	HP	L	AD	AC	A	B	C	H	K	AA	AB	BA	P <sub>MAX</sub>	M PCD	ØN	øS	Z NO.	TMAX	LA	P <sub>MAX</sub>	M PCD	ØN	øS	Z NO.	TMAX	D	E	F	GA	G						
71	0.37	0.5	225	128	147	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	106	85	70	M6	4	2.5	14	30	-	-	-	-	7			
	0.55	0.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	0.75	1	276	128	147	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
80	1.1	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10				
90	1.5	2	340	165	178	140	100	56	90	10	33	168	33	200	165	130	12	4	5	10	134	115	95	M8	4	3	24	50	8	27	20	17.5					
90L	2.2	3	370	168	178	140	100	56	90	10	33	168	33	200	135	130	12	4	5	10	134	115	95	M8	4	3	24	50	8	27	20	29.5					
100	3.7	5	400	170	225	189	140	63	112	14	47	220	37	250	215	180	15	4	4	10	160	130	110	M8	4	4.5	28	60	8	31	24	31					
132	7.5	10	489	135	225	195	120	136	160	14	36	230	40	300	265	230	15	4	4	13	-	-	-	-	-	-	-	38	80	10	41	33	45.5				
160	11	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138				
	15	20	666	233	323	254	210	108	160	15	62	314	107	350	300	250	19	4	5	13	-	-	-	-	-	-	42	110	12	45	37	148					
	18.5	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	148				
180	22	30	678	242	335	279	241	121	180	15	70	349	60	350	300	250	19	4	5	13	-	-	-	-	-	-	48	110	14	51	42.5	187					
200	30	40	779	282	402	318	305	134	200	19	84	392	82	400	350	300	19	4	5	15	-	-	-	-	-	-	55	110	16	59	49	294					
	37	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	309				
225	45	60	850	297	435	356	286	149	225	19	92	428	74	450	400	350	19	8	5	16	-	-	-	-	-	-	55	110	16	59	49	419					

### 4 POLE

FRAME SIZE	OUTPUT		GENERAL			Foot mounted motors (B3)										Flange mounted motors (B5)							DE SHAFT						Weight (Approx) KG.
	KW	HP	L	AD	AC	A	B	C	H	K	AA	AB	BA	P <sub>MAX</sub>	M PCD	ØN	øS	Z NO.	TMAX	LA	D	E	F	GA	G				
71	0.25	0.33	267	122	143	112	90	45	71	7	25	130	23	160	130	110	10	4	3.5	9	14	30	5	16	11	20			
	0.37	0.5																								20			
	0.55	0.75	344	148	160	125	100	50	80	10	30	155	28	200	165	130	12	4	3	11	19	40	6	22	15.5	26			
80	0.75	1																								27			
	1.1	1.5	414	140	178	140	125	56	90	10	45	185	42	200	165	130	12	4	3	15	24	50	8	27	20	38			
	1.5	2																								40			
100	2.2	3	427	170	198	160	140	63	100	12	45	195	40	250	215	180	15	4	3.5	11	28	60	8	31	24	50			
	3	4																							52				
	3.7	5	475	180	221	190	140	70	112	12	45	225	43	250	215	180	15	4	3.5	11	28	60	8	31	24	64			
132	5.5	7.5	510	204	258	216	140	89	132	12	52	256	47	300	265	230	15	4	4	10	38	80	10	41	33	92			
	7.5	10																							95				
	9.3	12.5	666	233	323	254	210	108	160	15	62	314	107	350	300	250	19	4	5	12.8	42	110	12	45	37	160			
160	11	15																								167			
	15	20																								181			
	18.5	25																								204			
180	22	30	678	242	335	279	241	121	180	15	70	349	59.5	350	300	250	19	4	5	12.8	48	110	14	51	42.5	215			

NOTE:-FOR E2MG AND S4RM GAD DATA CONTACT TO SHAKTI

## KEY CHARACTERISTICS

### CABLE ENTRY SIZE

FRAME	CABLE ENTRY
71-100	1XM20
80	1XM20
90	4XM20
90L	2XM20
100/112	1XM20
132	4XM20
160	2XM20
180	2XM25
200	2XM40
225	2XM40

### SOUND LEVEL

As per IS 12065 / IEC 60034-9 standard the permitted noise level of electrical machines are mentioned as per below table

FRAME	POWER		SOUND LEVEL (db) (A)	
	kW	HP	50 Hz	60 Hz
SMG 71	0.37 - 0.55	0.5 - 0.75	55	60
SMG 80	0.75 - 1.1	1.0 - 1.5	55	60
SMG 90/90L	1.5 - 2.2	2.0 - 3.0	60	65
SMG 100/112	3.0 - 3.7	4.0 - 5.5	60	70
SMG 132	5.5 - 7.5	7.5 - 10.0	70	75
SMG 160	11.0 - 18.5	15.0 - 25.0	70	80
SMG 180	22	30	70	80
SMG 200	30 - 37	40 - 50	75	85
SMG 225	45	60	80	90

### DISPOSAL

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this not possible, contact the nearest Shakti company or service workshop.

Subject to alternation

