

Energy saving motors for industrial applications

Motor Type 1LA9/1LG6/1SE0



Motors - EFF1

Answers for industry.

SIEMENS

Index

Sr. No.	Description	Page no.	
1	Introduction to IS:12615	2	
2	Introduction to CEMEP agreement of the EU	2	
3	Introduction to high efficiency motors	3	
4	1LA9 series EFF1 motors Frames 63M-132M; 0.12 - 7.5kW	Salient features	4
		Selection and ordering data	5
		Dimensional diagrams	6, 7
5	1LG6 series EFF1 motors Frames 180M - 315L; 18.5 - 200kW	Salient features	8
		Selection and ordering data	9
		Dimensional diagrams	10, 11
6	1SE0 series EFF1 motors Frames 160M - 355L; 9.3 - 315kW	Salient features	12
		Selection and ordering data	13
		Dimensional diagrams - FS 180-315	14 - 17
		Dimensional diagram of 1SE0 160 frame motors	18
7	Details of flange dimensions of 1LA9 and 1LG6 motors	20	
8	Case Studies in savings in Electricity Bills	21	

Introduction to standards for energy efficient motors

IS:12615-2004 – Energy efficient induction motors – Three phase squirrel cage (1st rev) (Applicable to 1SE0)

- This 1st revision of its predecessor – IS:12615-1989 extends the range of motors covered. Now the standard covers 2P and 4P motors from 0.37kW – 160kW, 6P motors from 0.37 – 132kW and 8P motors from 0.37 – 110 kW.
- As per this standard all motors are required to be designed for an ambient temperature of 40°C. The nominal efficiency values listed for EFF2 and EFF1 classification in tables 1 to 4 of this standard are subject to motor operation at 40°C, with rated voltage and frequency being available at motor terminals and the altitude not exceeding 1000m. These values are also subject to tolerance as per IS:325.
- The clause 4.3 of IS:12615-2004 makes it clear that when operated at extreme conditions of voltage and frequency the performance may not be in accordance with the standard.
- The clause 17.1.2 of this new standard makes provision for calculation of efficiency of motors, when motors conforming to this standard are operated at ambient temperatures exceeding 40°C but up to 55°C.
- The clause 6 of this standard requires that motors classified as per EFF1 or EFF2 shall have a method of cooling IC411 as per IS:6362.
- This standard has a correlation of output to frame size for motors up to 315M.
- The standard in its clause 8 also requires that the motors covered shall be rated for S1 (continuous duty) as specified in 9.2 of IS:325.
- This is the only EEM Standard which also gives the limiting values of full load speed, full load current, starting torque and starting current.

The CEMEP agreement (Applicable to 1LG6 & 1LA9 motors)

The CEMEP agreement of the EU is a voluntary agreement that classifies motor efficiency into three classes. High efficiency - EFF1, Improved efficiency - EFF2 and Standard efficiency - EFF3. The following are the salient features of CEMEP agreement.

Motors covered by this agreement are defined as totally enclosed fan ventilated (IP 54 or IP 55) three phase A.C. squirrel cage induction motors 1.1 to 90 kW, with 2- or 4-poles, rated for 400 V-line, 50 Hz, S1 Duty Class, in standard design. (Standard design can be interpreted as design N as per EN 600 34-12 and according to HD 231.)

Some of the motors that are not covered by this agreement are:

Motors for variable speed applications sold with or without the frequency converter, Brake motors, Non-ventilated motors (IC 410) or non-standard air-cooled motors (Ex: IC416, 417, 418 or exchangers...), Hollow shaft motors, Integral gear motors, stator/rotor units, Submersible motors, Motors for refrigeration hermetic compressors, Motors intended for explosive atmosphere, Slip-ring motors, Marine motors etc.

In line with this CEMEP Agreement, only the following motors presently imported by us are stamped with the EFF1 logo on the nameplate –1LA9 Series – 1.1kW – 7.5kW in 2P and 4P, 1LG6 Series – 18.5kW – 90kW in 2P and 4P.

Introduction

The energy requirements of the nation are growing at a rapid rate, due to the ever increasing industrialisation in India and also by the demands of an economy which is largely driven by technology. This leads to a rapid depletion of fossil fuels [non-renewable sources of energy].

The gap between the demand and supply of energy is ever widening. The result – power shedding. The financial loss that occurs as a consequence of loss of production, is beyond compensation.

Since more than 75% of the industrial electricity consumption is by polyphase induction motors, using energy saving high efficiency motors would result in a considerable contribution towards energy and fossil fuel conservation.

The Siemens range of EFF1 motors have up to 45% reduced losses and therefore use lesser energy from the system for the same output. Thus while reducing your electricity bills, they help you save money, and can be better looked upon as “Money saving motors”.

The superior design and higher quality of materials used in energy efficient motors result in lower heat generation. This leads to lengthened insulation life, longer uptime, reduced maintenance costs and enhanced reliability. This means a higher productivity for you - our customer.

With the energy demand from the system being reduced by use of high efficiency motors, the utility companies need to generate lesser energy and therefore burn lesser fossil fuels.

Reduced combustion of fossil fuels ensures lesser CO₂ emission in the atmosphere. Most of the power plants, being thermal, are major sources of particulate matter deposits in the air. Thus use of energy efficient motor helps in reducing green-house gas emission [lesser global warming] as well as helps in reducing the pollution and thus enhancing the quality of life.

Also, considering the cost of setting up a new power station, it has been observed that it is much cheaper to save energy. Therefore energy saved is more than “Extra Energy” required to be generated.

We have a basket of EFF1 motors to meet all your requirements for Energy Conservation – 1LA9, 1SE0 and 1LG6.



1LA9 series of energy efficient motors



1LA9 63 Frame motor with separate T.Box but integral mounting feet



1LA9 132 frame motor with integral T.Box but detachable mounting feet

1LA9 series – frames 63M – 132M

2-pole: 0.18 - 7.5kW
 4-pole: 0.12 - 7.5kW
 6-pole: 0.75 - 5.5kW

- Aluminium alloy - light weight housings
- Maintenance free double sealed pre-lubricated bearings
- Inverter Grade DURIGNIT® IR 2000 winding as a standard
- Conforms to CEMEP agreement of the EU
- Motors 1.1kW – 7.5kW in 2 & 4P stamped EFF1
- Frame 90S/L have dual mounting holes at NDE
- All 1LA9 motors can be used at an SF of 1.15 when utilised to class F limits
- Low noise levels



Converter operation:

The insulation of 1LA9 motors is such that they can be connected to pulse-controlled AC converters with voltages not exceeding 500V and voltage front times $t_v > 0.1\mu s$ at the motor terminals.

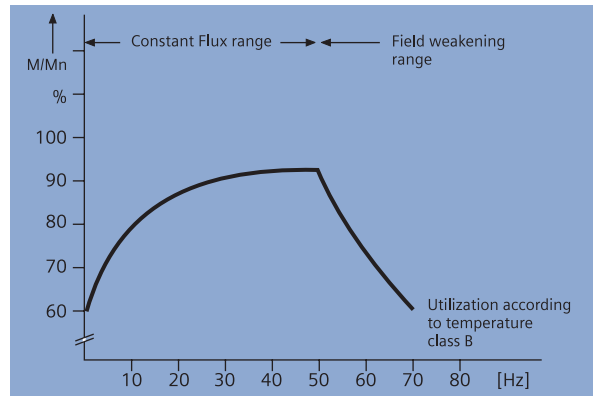
Frame size	Frame material	Mounting feet	Fan	Fan cowl
63-100	Aluminium alloy	Cast [Integral]	Thermoplastic	Corrosion Protected Sheet
112-132	Aluminium alloy	Bolted [Detachable]		
Frame size	Terminal box	Cable entry possible		Terminal box material
63-90	Separate	Can be rotated in steps of 90°		Aluminium alloy
100-132	Integrated with the housing	180°		Aluminium alloy

Constant torque applications:

During continuous operation, the self-ventilated motors cannot generate their full rated torque over the whole speed range. The continuously permissible torque is also lowered when the speed is reduced due to the reduced cooling effect. This is illustrated in the figure. Depending on the speed range, a corresponding torque reduction and therefore power-output reduction has to be carried out in the case of self-ventilated motors.

Square-law torque applications:

In order to prevent overloading of motors, equipment with square law characteristics (centrifugal fans, centrifugal pumps) should not be operated beyond 50 Hz.



Typical curve of permissible torque in the case of self-ventilated motors with a rated frequency of 50 Hz

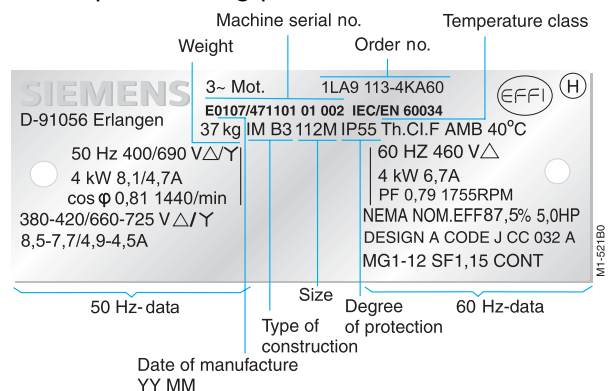
The above is a generic curve. For exact derating factor for constant torque operation over different speed ranges please contact your nearest sales office.

Bearing arrangements



Frame size	Motor type 1LA9	Poles	Bearing type			
			Horizontal Construction		Vertical Construction	
			Drive end	Non-drive end	Drive end	Non-drive end
63 M	06 .	2...6	6201 2ZC3	6201 2ZC3	6201 2ZC3	6201 2ZC3
71 M	07 .	2...6	6202 2ZC3	6202 2ZC3	6202 2ZC3	6202 2ZC3
80 M	08 .	2...6	6004 2ZC3	6004 2ZC3	6004 2ZC3	6004 2ZC3
90 S/L	09 .	2...6	6205 2ZC3	6004 2ZC3	6205 2ZC3	6004 2ZC3
100 L	10 .	2...6	6206 2ZC3	6205 2ZC3	6206 2ZC3	6205 2ZC3
112 M	11 .	2...6	6206 2ZC3	6205 2ZC3	6206 2ZC3	6205 2ZC3
132 S/M	13 .	2...6	6208 2ZC3	6208 2ZC3	6208 2ZC3	6208 2ZC3

Note: 63 Series bearings cannot be fitted in place of 62 series.


Example of rating plate



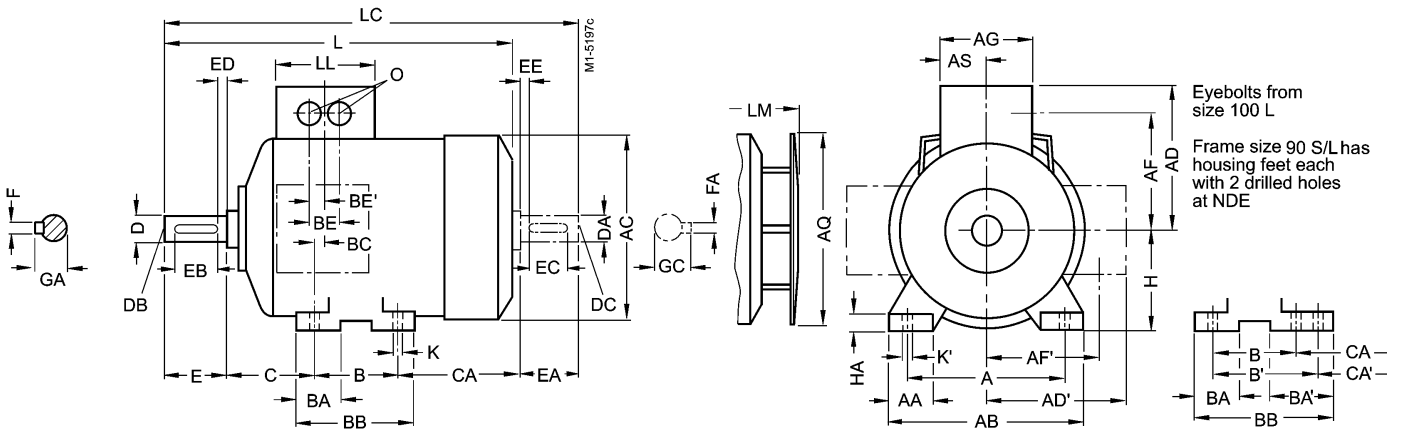
Selection & ordering data

Rated output kW	Frame size	Order no. (for Order no. Supplement for voltage and type of construction, see table below)	Efficiency class 	Operating data at rated output						Locked rotor torque	Locked rotor current	Break down torque	Rotor class	Moment of inertia $J = \frac{GD^2}{4}$ kgm ²	Weight kg			
				Rated speed rev/min	Efficiency at		Power factor	Rated current at 400V A	Rated torque Nm							For direct-on-line starting as multiple of rated		
					4/4-load %	3/4-load %										torque	current	torque
				Type of constr. IMB3 approx.														
Energy-saving motor to CEMEP "High Efficiency" eff1, IP55 degree of protection, insulation class F  #																		
3000 rev/min, 2 Pole, 50Hz																		
0.18	63 M	1LA9 060-2KA..	1	2840	70.0	70.0	0.78	0.48	0.61	2.8	4.8	3.1	16	0.00022	4.1			
0.25		1LA9 063-2KA..		2840	72.0	72.0	0.80	0.63	0.84	2.5	4.9	2.5		16	0.00026	5.1		
0.37	71 M	1LA9 070-2KA..	1	2840	74.0	74.0	0.77	0.94	1.2	3.3	6.5	3.1	16	0.00041	6			
0.55		1LA9 073-2KA..		2835	75.0	75.0	0.75	1.42	1.9	3.6	6.3	2.9		16	0.00050	7.2		
0.75	80 M	1LA9 080-2KA..	1	2870	80.0	80.0	0.82	1.66	2.5	4.4	8.3	3.2	16	0.0010	9.8			
1.1		1LA9 083-2KA..		2860	84.0	84.0	0.89	2.1	3.7	3.8	7	3.2		16	0.0013	12.3		
1.5	90 S	1LA9 090-2KA..	1	2890	85.0	85.0	0.87	2.95	5	4.1	7.0	3.5	16	0.0018	15			
2.2		1LA9 096-2KA..		2890	86.5	86.5	0.87	4.2	7.3	4.1	7.0	3.5		16	0.0022	18.6		
3	100 L	1LA9 106-2KA..	1	2890	87.0	87.0	0.88	5.7	9.9	3.4	7.0	3.2	16	0.0044	24			
4	112 M	1LA9 113-2KA..	1	2905	88.5	88.5	0.89	7.3	13	2.8	7.0	3.2	16	0.0077	35			
5.5	132 S	1LA9 130-2KA..	1	2930	89.5	89.5	0.90	9.9	18	2.7	7.0	3.2	16	0.019	43			
7.5		1LA9 131-2KA..		2930	90.5	90.5	0.92	13	24	2.8	7.0	3.1		16	0.024	56		
1500 rev/min, 4 pole, 50 Hz																		
0.12	63 M	1LA9 060-4KA ..	1	1395	66.0	66.0	0.65	0.41	0.82	2.7	3.5	2.6	16	0.00037	4.1			
0.18		1LA9 063-4KA ..		1395	65.0	65.0	0.68	0.59	1.3	3.0	3.6	2.5		16	0.00045	5.1		
0.25	71 M	1LA9 070-4KA ..	1	1410	70.0	70.0	0.64	0.81	1.7	3.6	4.3	3.1	16	0.00076	6			
0.37		1LA9 073-4KA ..		1384	71.0	71.0	0.73	1.04	2.6	3.3	4.2	3.0		16	0.00095	7.2		
0.55	80 M	1LA9 080-4KA ..	1	1410	77.0	77.0	0.78	1.32	3.7	3.4	5.6	2.9	16	0.0017	9.8			
0.75		1LA9 083-4KA ..		1400	81.0	81.0	0.75	1.78	5.1	4.0	5.8	3.5		16	0.0024	12.3		
1.1	90 S	1LA9 090-4KA ..	1	1440	84.0	84.0	0.77	2.45	7.3	3.1	6.4	3.2	16	0.0033	15			
1.5		1LA9 096-4KA ..		1440	85.0	85.0	0.77	3.3	9.9	3.6	6.7	3.4		16	0.0040	18		
2.2	100 L	1LA9 106-4KA ..	1	1435	86.5	86.5	0.82	4.5	15	3.4	7.0	3.6	16	0.0062	25			
3		1LA9 107-4KA ..		1435	87.5	87.7	0.81	6.1	20	3.8	7.0	3.9		16	0.0077	30		
4	112 M	1LA9 113-4KA ..	1	1440	88.5	89.0	0.81	8.1	27	3.2	6.9	3.2	16	0.014	37			
5.5	132 S	1LA9 130-4KA ..	1	1455	89.5	89.5	0.84	10.6	36	3.2	7.0	3.6	16	0.023	45			
7.5		1LA9 133-4KA ..		1455	90.3	90.5	0.84	14.2	49	3.4	7.0	3.6		16	0.029	60		
1000 rev/min, 6 pole, 50Hz																		
0.75	90 S	1LA9 090-6KA ..	1	925	75.5	75.5	0.72	2.0	7.7	3.0	4.4	2.5	16	0.0033	15.7			
1.1		1LA9 096-6KA ..		940	82.0	82.0	0.70	2.75	11	3.7	5.7	3.2		16	0.0050	19		
1.5	100 L	1LA9 106-6KA ..	1	935	85.0	85.0	0.73	3.60	15	3.5	6.2	3.4	16	0.0065	25			
2.2		1LA9 113-6KA ..		955	84.0	84.0	0.70	5.4	22	2.9	6.2	3.0		16	0.014	37		
4	132 M	1LA9 133-6KA ..	1	950	84.0	84.0	0.81	8.5	40	3.0	6.3	2.7	16	0.025	49			
5.5		1LA9 134-6KA ..		960	86.0	86.0	0.77	12	55	3.7	7.3	3.6		16	0.030	64		

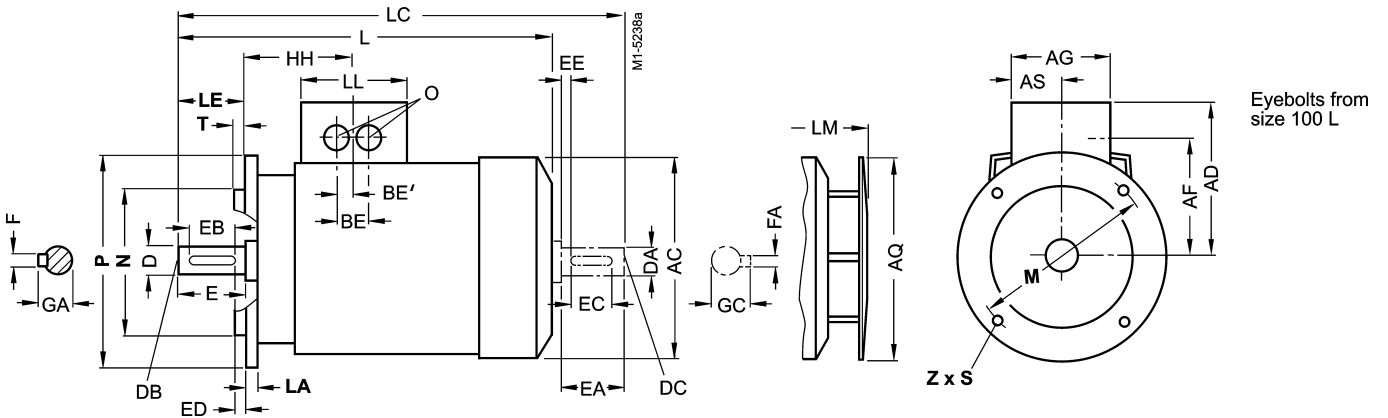
Motor type	Penultimate position: Voltage identifier				Final position: Type of construction identifier						
	50Hz		60Hz		IMB3	Price supplement					IMB35
	230VΔ/ 400VY	400VΔ/690VY	460VY	460VΔ		IMB5	IMV1 Without canopy	IMV1 With canopy	IMB14 With standard flange	IMB14 With special flange	
1LA9 060 to 1LA9 096	1	6	1	6	0	1	1	4	2	3	6
1LA9 106 to 1LA9 134	1	6	1	6	0	1	1	4	2	3	6

As per CEMEP agreement,  will be stamped on the nameplate only where classified as "1" in the efficiency class column.

IMB3



IMB5 and IMV1 • (Z = Number of fixing holes) for flange dimension, see page 20



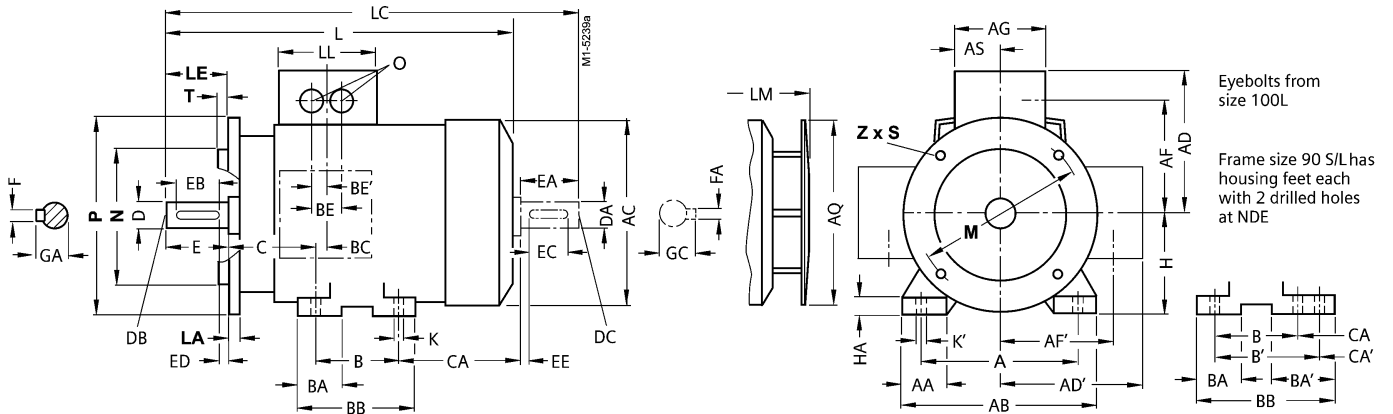
For motor 1LA9			Dimension designation according to IEC																					
Frame Size	Motor Type	No. of poles	A	AA	AB	AC ¹⁾	AD	AD'	AF	AF'	AG	AQ	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA
63 M	1LA9 060 1LA9 063	2, 4	100	27	120	124	101	101	78	78	74	124	37	80	28	-	96	30	32	18	40	66 92	63	7
71 M	1LA9 070 1LA9 073	2, 4	112	30.5	132	145	111	111	88	88	74	124	37	90	27	-	106	18	32	18	45	83	71	7
80 M	1LA9 080 1LA9 083	2, 4	125	30.5	150	163	120	120	97	97	75	124	37.5	100	32	-	118	14	32	18	50	94 134	80	8
90 S 90 L	1LA9 090 1LA9 096	2, 4, 6	140	30.5	165	180	128	128	105	105	75	170	37.5	100 125	33	54	143	23	32	18	56	143 118	90	10
100 L	1LA9 106 1LA9 107	2, 4, 6	160	42	196	203	135	163	78	123	120	170	60	140	47	-	176	39	42	21	63	160 195 ⁴⁾	100	12
112 M	1LA9 113	2, 4, 6	190	46	226	227	148	176	91	136	120	170	60	140	47	-	176	32	42	21	70	179	112	12
132 S	1LA9 130 1LA9 131	2, 4 2	216	53	256	267	167	194	107	154	140	250	70	140	49	-	180	39	42	21	89	162.5 200.5	132	15
132 M	1LA9 133 1LA9 133 1LA9 134	6 4 6	216	53	256	267	167	194	107	154	140	250	70	178	49	-	218	39	42	21	89	124.5 162.5	132	15

* This dimension is assigned in DIN EN 50 347 to the frame size listed.

1) Measured across the bolt heads
2) For 1LA9 096-6KA..
3) For 1LA9 096-2 and 1LA9 096-4

4) For 1LA9 107-4KA
5) With a cast-on terminal housing, 4 knockout openings are provided for metric threads

IMB35 • (Z = Number of fixing holes) for flange dimension, see page 20



For motor 1LA9											Drive-End shaft extension						Non-Drive-End shaft extension							
Frame Size	Motor Type	No. of poles	HH	K	K'	L	LC	LL	LM	O	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
63 M	1LA9 060	2, 4	69.5	7	10	202.5	232	74	231.5	1XM16 X 1.5	11	M4	23	16	3.5	4	12.5	11	M4	23	16	3.5	4	12.5
						228.5	258	257.5																
71 M	1LA9 070 1LA9 073	2, 4	63.5	7	10	240	278	74	268	1XM16 X 1.5 1XM25 X 1.5	14	M5	30	22	4	5	16	14	M5	30	22	4	5	16
80 M	1LA9 080 1LA9 083	2, 4	63.5	9.5	13.5	273.5	324	75	299.5	1XM16 X 1.5 1XM25 X 1.5	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
						308.5	364	334.5																
90 S 90 L	1LA9 090 1LA9 096	2, 4, 6	79	10	14	331	389	75	382.5	1XM16 X 1.5 1XM25 x 1.5	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
						376 ²⁾	434 ²⁾	427.5 ²⁾																
						358 ³⁾	414 ³⁾	409.5 ³⁾																
100 L	1LA9 106 1LA9 107	2, 4, 6	102	12	16	407	473	120	458.5	2x M32 x 1.5 ⁵⁾	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
						442 ⁴⁾	508 ⁴⁾	493 ⁴⁾																
112 M	1LA9 113	2, 4, 6	102	12	16	431	499	120	482.5	2x M32 x 1.5 ⁵⁾	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	1LA9 130 1LA9 131	2, 4 2	128	12	16	452.5	551.5	140	505	2x M32 x 1.5 ⁵⁾	38	M12	80	70	5	10	41	38	M12	80	70	5	10	41
						490.5	589.5	543																
132 M	1LA9 133 1LA9 133 1LA9 134	6 4 6	128	12	16	452.5	551.5	140	505	2x M32 x 1.5 ⁵⁾	38	M12	80	70	5	10	41	38	M12	80	70	5	10	41
						490.5	589.5	543																

1LG6 series of energy efficient motors

1LG6 series – frames 180M – 315L

2-pole: 22 - 200kW
 4-pole: 18.5 - 200 kW
 6-pole: 15 - 160kW

- Specially designed T.Box base to prevent blocking of cooling fins
- Dual mounting holes at NDE for 180M/L, 225S/M, 280S/M, 315S/M & 315M/L
- 1LG6 317-318 have 3 mounting holes at NDE for 315S/M/L
- Inverter grade winding as a standard
- Conforms to CEMEP agreement of EU
- Low noise levels
- Motors suitable for 50°C - mentioned on aux. dataplate

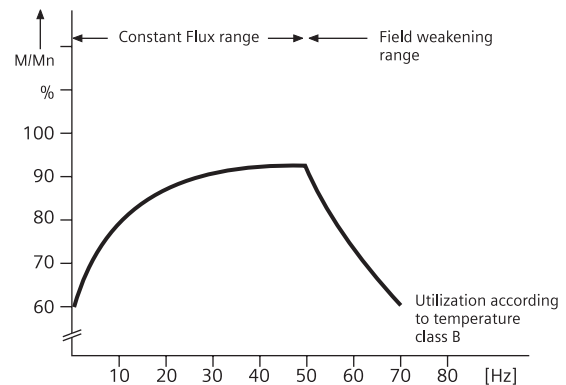


Converter operation:

The insulation of 1LG6 motors is such that they can be connected to pulse-controlled AC converters with voltages not exceeding 500V and voltage front times $t_s > 0.1\mu s$ at the motor terminals.

Frame size	Frame material	Mounting feet	Fan	Fan cowl
180 - 315	Cast iron	Cast [integral]	Plastic	Glass-reinforced plastic

Frame size	Terminal box	Cable entry possible	Terminal box Material
180 - 225	Separate	Can be rotated in steps of 90°	Aluminium alloy
250 - 315	Separate	Can be rotated in steps of 90°	Cast iron



Typical curve of permissible torque in the case of self-ventilated motors with a rated frequency of 50 Hz

The above is a generic curve. For exact derating factor for constant torque operation over different speed ranges please contact your nearest sales office.

Constant torque applications:

During continuous operation, the self-ventilated motors cannot generate their full rated torque over the whole speed range. The continuously permissible torque is also lowered when the speed is reduced due to the reduced cooling effect. This is illustrated in the figure. Depending on the speed range, a corresponding torque reduction and therefore power-output reduction has to be carried out in the case of self-ventilated motors.

Square-law torque applications:

In order to prevent overloading of motors, equipment with square law characteristics (centrifugal fans, centrifugal pumps) should not be operated beyond 50 Hz.

Bearing arrangements

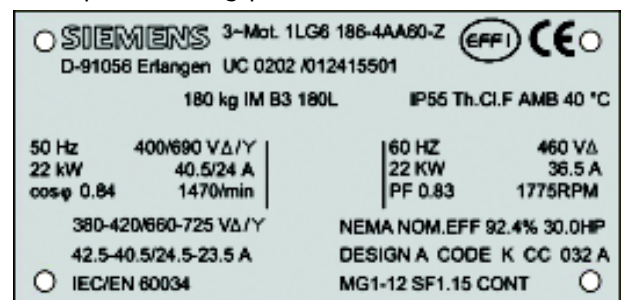
Frame size	Motor type 1LG6	Poles	Bearing type			
			Horizontal Construction		Vertical Construction	
			Drive end	Non-drive end	Drive end	Non-drive end
180 M/L	18 .	2 to 8	6210 ZC3 ¹⁾	6210 ZC3 ¹⁾	6210 ZC3 ¹⁾	6210 ZC3 ¹⁾
200 L	20 .	2 to 8	6212 ZC3 ¹⁾	6212 ZC3 ¹⁾	6212 ZC3 ¹⁾	6212 ZC3 ¹⁾
225 S/M	22 .	2 to 8	6213 ZC3 ¹⁾	6213 ZC3 ¹⁾	6213 ZC3 ¹⁾	6213 ZC3 ¹⁾
250 M	25 .	2 to 8	6215 ZC3 ¹⁾	6215 ZC3 ¹⁾	6215 ZC3 ¹⁾	6215 ZC3 ¹⁾
280 S/M	28 .	2	6217 C3	6217 C3	6217 C3	6217 C3
		4 to 8	6317 C3	6317 C3	6317 C3	6317 C3
315 S/M	310 313	2	6219 C3	6219 C3	6219 C3	6219 C3
		4 to 8	6319 C3	6319 C3	6319 C3	6319 C3
315 L	316 317 318	2	6219 C3	6219 C3	6219 C3 ²⁾	7219 BEP ²⁾
		4 to 8	6319 C3	6319 C3	6319 C3	6319 C3

Notes: 1. Bearings are prelubricated.
 2. Vertical Construction in 315L frame 2P is possible only for 50Hz execution.

Terminal box data

Frame Size	Type	Terminal Box Type	Terminal Size	Max. permissible conductor cross section	B.S. Conduit Entry (IS:1653)
				mm ²	mm
180	1LG6 18._	gk 330	M5	16	M40 x 1.5
200	1LG6 20._	gk 430	M6	25	M50 x 1.5
225	1LG6 22._	gk 431	M8	35	M50 x 1.5
250	1LG6 25._	gt 520	M10	120	M63 x 1.5
280	1LG6 28._				
315	1LG6 31._	gt 620	M12	240	M63 x 1.5

Example of rating plate



■ 50 Hz

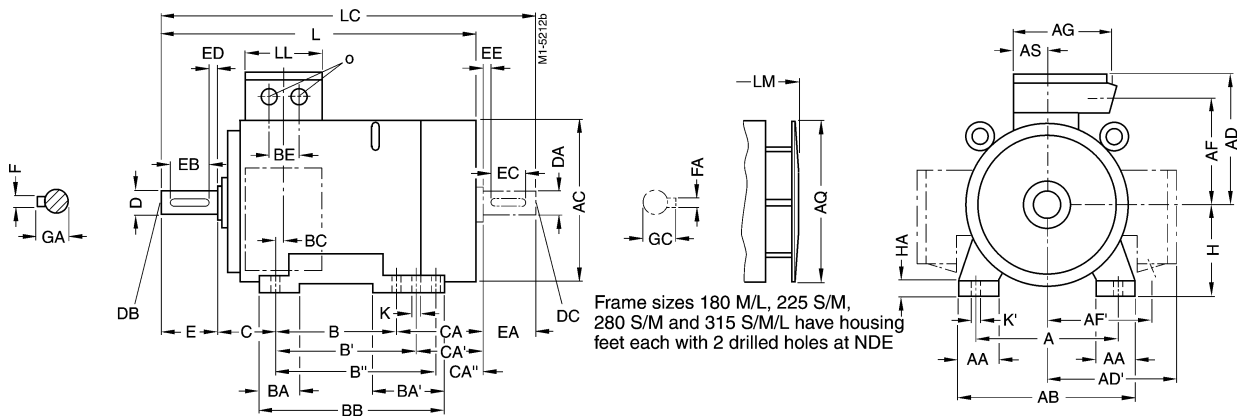
Rated output kW	Frame size	Order no. (for Order no. Supplement for voltage and type of construction, see table below)	Efficiency class EFF I	Operating data at rated output						Locked rotor torque	Locked rotor current	Break down torque	Rotor class KL	Moment of inertia $J = \frac{GD^2}{4}$ kgm ²	Weight kg	Type of constr. IMB3 approx.			
				Rated speed rev/min	Efficiency at		Power factor	Rated current at 400V A	Rated torque Nm								For direct-on-line starting as multiple of rated		
					4/4-load %	3/4-load %											torque	current	torque
																		#	
Energy-saving motor to CEMEP "High Efficiency" eff1, IP55 degree of protection, insulation class F																			
3000 rev/min, 2-pole, 50 Hz																			
22	180M	1LG6 183-2AA..	1	2955	94.1	94.5	0.88	38.5	71	2.5	7.2	3.4	16	0.086	180				
30	200 L	1LG6 206-2AA..	1	2960	93.5	93.4	0.88	53.0	97	2.4	7.0	3.3	16	0.15	225				
37	200 L	1LG6 207-2AA..	1	2960	94.1	94.0	0.89	64.0	119	2.5	7.2	3.3	16	0.18	255				
45	225 M	1LG6 223-2AA..	1	2965	94.9	95.1	0.89	77.0	145	2.5	7.3	3.2	16	0.27	330				
55	250 M	1LG6 253-2AA..	1	2975	95.3	95.3	0.90	93.0	177	2.4	6.8	3.0	16	0.47	420				
75	280 S	1LG6 280-2AB..	1	2975	95.2	95.2	0.89	128	241	2.5	7.0	3.0	13	0.83	530				
90	280 M	1LG6 283-2AB..	1	2978	95.6	95.7	0.90	150	289	2.6	7.6	3.1	13	1.0	615				
110	315 S	1LG6 310-2AB..		2982	95.8	95.7	0.91	182	352	2.4	6.9	2.8	13	1.4	790				
132	315 M	1LG6 313-2AB..		2982	96.0	95.9	0.91	220	423	2.6	7.1	2.9	13	1.6	915				
160	315 L	1LG6 316-2AB..		2982	96.4	96.4	0.92	260	512	2.5	7.1	2.9	13	2.1	1055				
200	315 L	1LG6 317-2AB..		2982	96.5	96.5	0.93	320	641	2.5	6.9	2.8	13	2.5	1245				
1500 rev/min, 4-pole, 50 Hz																			
18.5	180 M	1LG6 183-4AA..	1	1470	92.6	93.2	0.83	34.5	120	2.5	6.4	3.0	16	0.12	155				
22	180 L	1LG6 186-4AA..	1	1470	93.2	93.5	0.84	40.5	143	2.5	6.7	3.1	16	0.14	180				
30	200 L	1LG6 207-4AA..	1	1470	93.3	93.4	0.85	55.0	195	2.6	6.7	3.3	16	0.23	225				
37	225 S	1LG6 220-4AA..	1	1480	94.0	94.4	0.85	67.0	239	2.7	6.8	3.0	16	0.40	290				
45	225 M	1LG6 223-4AA..	1	1480	94.5	94.7	0.85	81.0	290	2.8	6.9	3.0	16	0.49	330				
55	250 M	1LG6 253-4AA..	1	1485	95.1	95.3	0.87	96.0	354	2.6	7.5	3.0	16	0.86	460				
75	280 S	1LG6 280-4AA..	1	1485	95.1	95.2	0.87	130	482	2.5	6.8	2.9	16	1.40	575				
90	280 M	1LG6 283-4AA..	1	1486	95.4	95.5	0.86	158	578	2.7	7.5	3.1	16	1.70	675				
110	315 S	1LG6 310-4AA..		1488	95.9	96.0	0.87	190	706	2.7	7.1	2.9	16	2.3	810				
132	315 M	1LG6 313-4AA..		1488	96.1	96.2	0.88	225	847	2.7	7.3	2.9	16	2.9	965				
160	315 L	1LG6 316-4AA..		1490	96.3	96.4	0.88	275	1026	3.0	7.4	3.0	16	3.5	1105				
200	315 L	1LG6 317-4AA..		1490	96.4	96.5	0.88	340	1282	3.2	7.6	3.0	16	4.2	1305				
1000 rev/min, 6-pole, 50 Hz																			
15	180 L	1LG6 186-6AA..		975	90.9	91.7	0.81	29.5	147	2.4	5.5	2.5	16	0.20	175				
18.5	200 L	1LG6 206-6AA..		978	91.2	91.8	0.81	36.0	181	2.4	5.6	2.4	16	0.29	210				
22	200 L	1LG6 207-6AA..		978	91.9	92.5	0.82	42.0	215	2.4	5.6	2.4	16	0.36	240				
30	225 M	1LG6 223-6AA..		980	93.2	93.7	0.83	56.0	292	2.8	6.5	2.9	16	0.63	325				
37	250 M	1LG6 253-6AA..		985	93.7	94.1	0.83	69.0	359	2.9	6.8	2.5	16	0.93	405				
45	280 S	1LG6 280-6AA..		988	94.4	94.6	0.85	81.0	435	3.0	6.8	2.7	16	1.40	520				
55	280 M	1LG6 283-6AA..		988	94.6	94.8	0.85	99.0	532	3.3	7.3	2.9	16	1.60	570				
75	315 S	1LG6 310-6AA..		990	95.0	95.0	0.83	138	723	2.8	7.3	3.0	16	2.5	760				
90	315 M	1LG6 313-6AA..		990	95.3	95.4	0.85	160	868	2.7	7.3	2.9	16	3.2	935				
110	315 L	1LG6 316-6AA..		990	95.6	95.7	0.85	196	1061	2.9	7.4	2.9	16	4.0	1010				
132	315 L	1LG6 317-6AA..		990	95.8	95.8	0.85	235	1273	3.1	7.8	3.1	16	4.7	1180				
160	315 L	1LG6 318-6AA..		990	95.8	95.9	0.86	280	1543	3.2	7.8	3.1	16	5.4	1245				

Order no. supplements

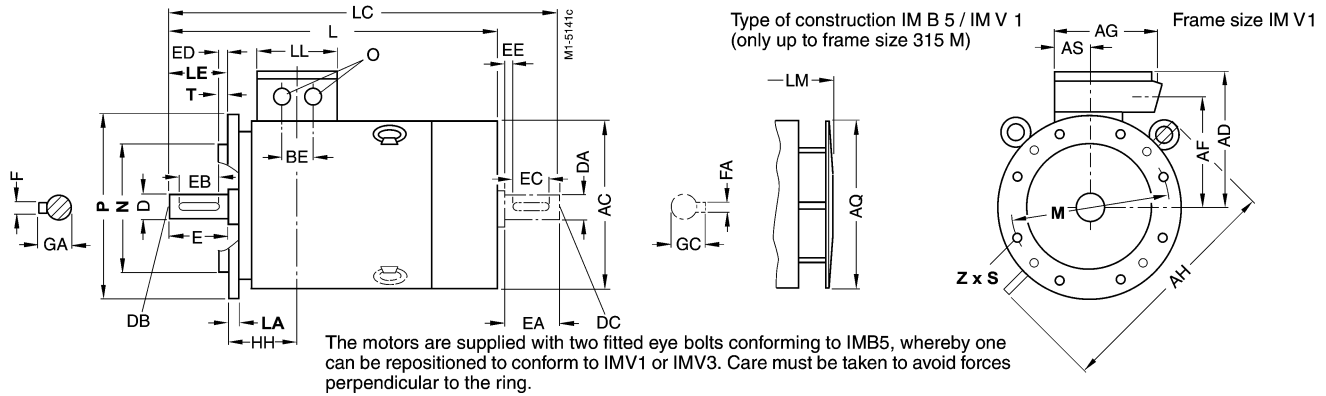
Motor type	Penultimate position: Voltage identifier						Final position: Type of construction identifier				
	50 Hz			60 Hz			IMB 3	Price supplement			
	230 VΔ/ 400 VY	400VΔ/ 690 VY	500 VY	500 VΔ	460 VY	460 VΔ		IMB5	IMV1 Without canopy	IMV1 With canopy	IMB35
1LG6 183 to 1LG6 313	1	6	3	5	1	6	0	1	1	4	6
1LG6 316 to 1LG6 318	-	6	-	5	-	6	0	-	8	4	6

As per CEMEP agreement, **EFF I** will be stamped on the nameplate only where classified as "1" in the efficiency class column.

IMB3



IMB5 and IMV1 • (Z = Number of fixing holes) for flange dimension, see page 20



For motor 1LG6		Dimension designation according to IEC																							
Frame Size	Motor Type	No. of poles	A	AA	AB	AC ¹⁾	AD	AD'	AF	AF'	AG	AH	AQ	AS	B*	BA	BA'	BB	BC	BE	C	CA*	H	HA	
180 M	1LG6 183	2	279	65	339	363	262	262	220	220	152	452	340	71	241	70	111	328	36	54	121	253	180	20	
		4																							202
180 L	1LG6 186	4, 6	279	65	339	363	262	262	220	220	152	452	340	71	279	70	111	328	36	54	121	215	180	20	
200 L	1LG6 206	2, 6	318	70	378	402	300	300	247	247	260	512	340	96	305	80	80	355	63	85	133	177	200	25	
		2, 6																							234
	1LG6 207	4	318	70	378	402	300	300	247	247	260	512	340	96	305	80	80	355	63	85	133	177	200	25	
225 S	1LG6 220	4	356	80	436	442	325	325	272	272	260	556	425	96	286	85	110	361	47	85	149	218	225	34	
		2																							253
	1LG6 223	4, 6	356	80	436	442	325	325	272	272	260	556	425	96	311	85	110	361	47	85	149	253	225	34	
250 M	1LG6 253	2	406	100	490	495	392	392	308	308	300	620	470	118	349	100	100	409	69	110	168	235	250	40	
		4																							305
		6																							235
280 S	1LG6 280	2	457	100	540	555	432	432	348	348	300	672	525	118	368	100	151	479	62	110	190	267	280	40	
		4, 6																							
280 M	1LG6 283	2	457	100	540	555	432	432	348	348	300	672	525	118	419	100	151	479	62	110	190	326	280	40	
		4																							
		6																							216
315 S	1LG6 310	2	508	120	610	610	500	500	400	400	380	780	590	154	406	125	176	527	69	110	216	315	315	50	
315 M ²⁾	1LG6 313	2	508	120	610	610	500	500	400	400	380	780	590	154	457	125	176	578	69	110	216	424	315	50	
		4, 6																							
315 L ²⁾	1LG6 316	2	508	120	610	610	500	500	400	400	380	780	590	154	508	125	176	578	69	110	216	373	315	50	
		4, 6																							
		2																							513
1LG6 317	1LG6 317	2	508	120	610	610	500	500	400	400	380	780	590	154	508	155	206	648	69	110	216	513	315	50	
		4, 6																							
		2																							513
1LG6 318	1LG6 318	2	508	120	610	610	651	651	524	524	470	780	590	165	508	155	206	648	69	135	216	513	315	50	
		4																							
		6																							110

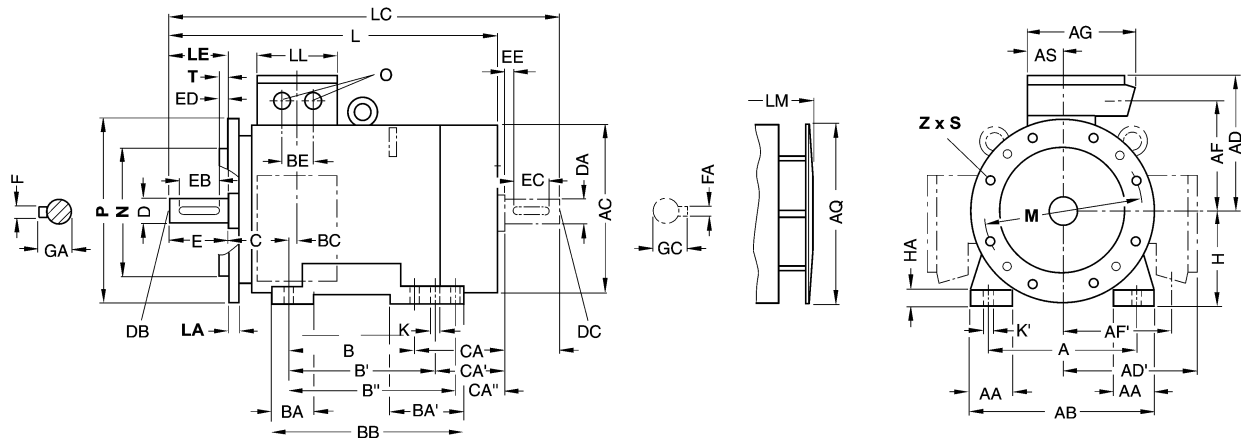
* This dimension is assigned in DIN EN 50 347 to the frame size listed.

1) Measured across the bolt heads

2) With order codes for terminal box positions (K09, K10, K11) only bolted feet are possible with 3 holes with dimension "B" (406,457 and 508mm. BB will then be 666 mm.

3) Diameters upto 90 mm are possible.

IMB35 • (Z = Number of fixing holes)



Frame Size	Motor Type	No. of poles	HH	K	K'	L	LC	LL	LM	O	Drive-End shaft extension						Non-Drive-End shaft extension							
											D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
180 M	1LG6 183	2	157	15	19	720	835	132	810	2X M40X 1.5	48	M16	110	100	5	14	51.5	48	M16	110	100	5	14	51.5
		4				669	784		759															
180 L	1LG6 186	4, 6	157	15	19	720	835	132	810	2X M40X 1.5	48	M16	110	100	5	14	51.5	48	M16	110	100	5	14	51.5
200 L	1LG6 206 1LG6 207	2, 6	196	19	25	720	835	192	810	2X M50X 1.5	55	M20	110	100	5	16	59	55	M20	110	100	5	16	59
		4				720	835		810															
225 S	1LG6 220	4	196	19	25	789	903	192	889	2X M50X 1.5	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
225 M	1LG6 223	2	196	19	25	819	933	192	919	2X M50X 1.5	55	M20	110	100	5	16	59	48	M16	110	100	5	14	51.5
		4, 6				849	963		949															
250 M	1LG6 253	2	237	24	30	887	1002	236	987	2X M63X 1.5	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
		4				957	1102		1057															
		6				887	1032		987															
280 S	1LG6 280	2	252	24	30	960	1105	236	1070	2X M63X 1.5	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
		4, 6																						
280 M	1LG6 283	2	252	24	30	1070	1215	236	1180	2X M63X 1.5	75	M20	140	125	10	20	79.5	65	M20	140	125	10	18	69
		4																						
		6				960	1105		1070															
315 S	1LG6 310	2	285	28	35	1072	1217	307	1182	2X M63X 1.5	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
		4, 6				1102	1247		1212															
315 M ²⁾	1LG6 313	2	285	28	35	1232	1377	307	1342	2X M63X 1.5	80	M20	170	140	25	22	85	70	M20	140	125	10	20	74.5
		4, 6				1262	1407		1372															
315 L ²⁾	1LG6 316	2	285	28	35	1232	1377	307	1342	2X M63X 1.5	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
		4, 6				1262	1407		1372															
	1LG6 317	2	285	28	35	1372	1517	307	1482	2X M63X 1.5	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
		4, 6				1402	1547		1512															
	1LG6 318	2	285	28	35	1372	1517	330	1482	2X M63X 1.5	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
		4				1402	1547		1512															
6							307																	

1SE0 series of super energy efficient motors

1SE0 series – frames 160M – 355L

- On-line greasing facility as standard
- 63 series bearings as standard
- Specially designed low noise fan
- Conform to IS:12615-2004 EFF1 requirement
- Dual mounting holes at NDE for frames 160M/L, 180M/L, 225S/M, 280S/M & 315S/M
- Side mounted box and/or larger T.Box possible



Bearing system

The bearing data of direct coupled motors is given in the table below. Regreasing facility is a standard feature for all 1SE0 motors. It is advisable to check the permitted bearing loads. If high cantilever forces are exerted at the driving end due to belt transmission etc., motors can be fitted with appropriate strengthened bearings.

Frame size	Motor type 1SE0	Poles	Bearing type			
			Horizontal Construction		Vertical Construction	
			Drive end	Non-drive end	Drive end	Non-drive end
160 M, L	16.	2...4	6309 C3	6309 C3	6309 C3	6309 C3
180 M, L	18.	4	6310 C3	6310 C3	6310 C3	6310 C3
200 L	20.	4	6312 C3	6312 C3	6312 C3	6312 C3
225 S, M	22.	4	6313 C3	6313 C3	6313 C3	6313 C3
250 M	25.	2...8	6315 C3	6315 C3	6315 C3	6315 C3
280 S, M	28.	2	6315 C3	6315 C3	6315 C3	6315 C3
		4...8	6317 C3	6317 C3	6317 C3	6317 C3
315 S, M	311, 314	2	6317 C3	6317 C3	6317 C3	6317 C3
		4...8	6319 C3	6319 C3	6319 C3	6319 C3
315 L	318, 319	2	6317 C3	6317 C3	6317 C3	7317 B ¹⁾
		4...8	6319 C3	6319 C3	6319 C3	6319 C3
355 L	35	2	6317 C3	6317 C3	6317 C3	7317 B ¹⁾
		4...8	6322 C3	6322 C3	6322 C3	6322 C3

Note: 1. 2P motors in frames 315L and above possible in vertical construction only for 50Hz execution.

Terminal box data

Frame Size	Type	Terminal Box Type	Terminal Size	Max. Current Carrying Capacity per terminal	Max. permissible conductor cross section	B.S. Conduit Entry (IS:1653)
				A	mm ²	mm
160	1SE0 16._	1XB1 223	M6	63	3½ x 25	2x 31.8
180	1SE0 18._					
200	1SE0 20._	1XB7 322	M8	100	3½ x 35*	2x 51
225	1SE0 22._					
250	1SE0 25._	1XB7 422	M10	200	3½ x 120	2x 51
280	1SE0 28._	1XB7 522	M12	400	3½ x 240	2x 63.5
315	1SE0 31._	1XB7 622	M16	630	3½ x 400	2x 63.5
355	1SE0 35._					

* 50mm² for DOL starting only

Converter operation

Standard 1SE0 motors in frame sizes 160 and 180 are suitable for operation on PWM Drive Converters with voltage front times of $t_v > 0.1\mu s$ for system voltages up to 500V, at the motor terminals. In frames 200 & above the stator winding for motors for converter operation is required to be dielectrically strengthened by means of a special impregnation system.

To avoid bearing damage due to bearing currents, insulated bearings are recommended at NDE for frames 280 and above.

For constant torque operation at reduced speeds please refer to your nearest sales office giving details.

Specially designed low noise cooling fan



Rated Output	Frame Size	Order no. (for order no. suffixes for voltage and type of construction, see table below)	Operating characteristics at rated output					Locked rotor current	Locked rotor torque	Break down Torque	Rotor Class	GD ² of rotor	Weight Type of constr. IMB3 approx.
			Rated current at 415V	Efficiency (EFF I)	Power factor	Rated speed	Rated torque						
kW			A	%		rev/min	kgf.m	current	torque	torque	KL	kgf.m ²	kg
3000 rev/min, 2 Pole, 415V ±10%, 50Hz ±5%, Combined V & F 10%, Ambient 50°C, IP55, Insulation Class F													
9.3	160M	1SE0 163-2YK..	16.4	90.0	0.88	2940	3.1	7.0	2.6	3.0	16	0.35	165
11	160M	1SE0 163-2YL..	19.2	91.0	0.88	2940	3.6	7.0	2.6	3.0	16	0.35	165
15	160M	1SE0 164-2YL..	26.3	91.5	0.87	2940	5	7.0	2.4	3.0	16	0.35	165
18.5	160L	1SE0 166-2YK..	32.1	92.2	0.87	2944	6.1	7.0	2.6	3.0	16	0.38	180
1500 rev/min, 4 Pole, 415V ±10%, 50Hz ±5%, Combined V & F 10%, Ambient 50°C, IP55, Insulation Class F													
9.3	160M	1SE0 163-4YK..	17.2	92.0	0.82	1475	6.1	7.0	2.2	2.5	16	0.52	141
11	160M	1SE0 163-4YL..	20.5	92.5	0.81	1475	7.3	7.0	2.2	2.5	16	0.52	141
13	160L	1SE0 166-4YK..	23.9	92.5	0.82	1475	8.6	7.0	2.2	2.5	16	0.64	165
15	160L	1SE0 166-4YL..	27.6	92.5	0.82	1475	9.9	7.0	2.2	2.5	16	0.64	165
18.5	180M	1SE0 183-4YL..	33.2	92.5	0.84	1470	12.3	7.0	2.0	2.3	10	0.76	190
22	180L	1SE0 186-4YL..	39.4	92.6	0.84	1470	14.6	7.0	2.0	2.3	10	0.93	216
30	200L	1SE0 207-4YL..	52.1	93.2	0.86	1470	19.9	7.0	2.4	2.5	16	1.42	265
37	225S	1SE0 221-4YK..	62.9	94.2	0.87	1480	24.4	7.0	2.3	2.3	16	2.16	335
45	225M	1SE0 223-4YL..	76.4	94.2	0.87	1480	29.6	7.0	2.3	2.3	16	2.5	350

Motor insulation utilised to class B limits.

Values subject to tolerance as per IS:325. Motor performance conforms to IS:12615-2004.

Order No. Suffixes		Last place but one : Figure denoting voltage		Last place : Figure denoting type of construction				
Motor type		415V, 50 Hz ±10/5/10 variation	Other Voltage and/or Frequency or higher supply variation*	IMB3	At additional price			
					IMB5	IMV1 without canopy	IMV1 with canopy	IMB35£
1SE0 163 - 223	2P & 4P	8	9	0	1	1	4	6

* Details of voltage/connection/frequency/V&F variation should be additionally given in plain text.

£ For motor type 1SE0 in 160 frame, for IMB35 dimension 'C' will be non-standard.



Rated Output	Frame Size	Motor Type	Operating characteristics at rated output					Locked rotor current	Locked rotor torque	Break down Torque	Rotor Class	GD ² of rotor	Weight Type of constr. IMB3 approx. kg
			Rated current	Efficiency	Power factor	Rated speed	Rated torque	For direct-on-line starting as multiples of rated					
			A	%		rev/min	kgf.m	current	torque	torque			
3000 rev/min, 2-Pole, 415V±10%, 50Hz±5%, Combined V and F ±10%, Ambient 50°C, IP55, Class F insulation													
55	250M	1SE0254-2YB..	90	94.0%	0.90	2970	18.0	7.0	2.1	2.7	KL13	1.80	425
75	280S	1SE0281-2YB..	124	94.6%	0.89	2975	24.6	7.0	2.0	2.3	KL13	3.68	625
90	280M	1SE0284-2YB..	148	95.0%	0.89	2975	29.5	7.0	1.9	2.7	KL13	4.25	665
110	315S	1SE0311-2YC..	181	95.0%	0.89	2980	36.0	7.0	1.8	2.7	KL10	5.20	820
132	315M	1SE0314-2YC..	214	95.3%	0.90	2980	43.1	7.0	1.8	2.7	KL10	6.00	880
160	315L	1SE0318-2YC..	258	95.7%	0.90	2980	52.3	7.0	1.8	2.7	KL10	9.20	1120
200	315L	@ 1SE0319-2YC..	323	95.7%	0.90	2985	65.3	7.0	1.8	2.7	KL10	9.20	1120
250	355L	1SE0356-2YC..	397	96.2%	0.91	2985	81.6	7.0	1.6	2.8	KL10	13.20	1470
315	355L	# 1SE0357-2YC..	500	96.3%	0.91	2985	102.8	7.0	1.6	2.8	KL10	16.00	1650
1500 rev/min, 4-Pole, 415V±10%, 50Hz±5%, Combined V and F ±10%, Ambient 50°C, IP55, Class F insulation													
55	250M	1SE0254-4YA..	96.0	94.2%	0.85	1480	36.1	7.0	2.5	2.5	KL16	3.8	495
75	280S	1SE0281-4YA..	130.0	94.7%	0.85	1485	49.1	7.0	2.5	2.5	KL16	5.9	650
90	280M	1SE0284-4YA..	157.0	95.2%	0.84	1485	59.0	7.0	2.5	2.5	KL16	6.9	700
110	315S	1SE0311-4YA..	189.0	95.5%	0.85	1488	72.0	7.0	2.4	2.4	KL16	8.4	865
132	315M	1SE0314-4YA..	226.0	95.7%	0.85	1488	86.4	7.0	2.4	2.4	KL16	11.7	960
160	315L	1SE0318-4YA..	270.0	95.8%	0.86	1488	104.7	7.0	2.4	2.4	KL16	14.7	1115
200	315L	@ 1SE0319-4YA..	336.0	96.2%	0.86	1485	131.1	6.0	2.5	2.5	KL16	16.80	1220
250	355L	1SE0356-4YB..	420.0	96.2%	0.86	1488	163.6	6.5	2.1	2.5	KL13	24.00	1590
315	355L	1SE0357-4YB..	529.0	96.3%	0.86	1488	206.2	6.5	2.1	2.5	KL13	29.60	1790
1000 rev/min, 6-Pole, 415V±10%, 50Hz±5%, Combined V and F ±10%, Ambient 50°C, IP55, Class F insulation													
37	250M	1SE0254-6YA..	67	93.0%	0.82	980	36.8	6.5	2.3	2.3	KL16	3.56	420
45	280S	1SE0281-6YA..	80	93.4%	0.84	984	44.5	6.5	2.4	2.3	KL16	5.20	555
55	280M	1SE0284-6YA..	97	93.8%	0.84	984	54.4	6.5	2.4	2.3	KL16	6.00	595
75	315S	1SE0311-6YA..	130	94.2%	0.85	985	74.2	6.5	2.3	2.5	KL16	9.60	800
90	315M	1SE0314-6YA..	156	94.5%	0.85	985	89.0	6.5	2.3	2.5	KL16	11.60	860
110	315L	1SE0318-6YA..	190	94.7%	0.85	985	108.8	6.5	2.3	2.5	KL16	15.00	1030
132	315L	1SE0319-6YB..	227	95.0%	0.85	985	130.5	6.5	2.1	2.3	KL13	19.80	1170
160	355L	1SE0356-6YB..	275	95.4%	0.85	988	157.7	6.0	2.1	2.3	KL13	24.00	1460
200	355L	1SE0357-6YB..	343	95.5%	0.85	988	197.2	6.0	2.1	2.3	KL13	30.00	1580
250	355L	1SE0358-6YB..	428	95.7%	0.85	988	246.5	6.0	2.1	2.3	KL13	36.40	1790
750 rev/min, 8-Pole, 415V±10%, 50Hz±5%, Combined V and F ±10%, Ambient 50°C, IP55, Class F insulation													
30	250M	1SE0254-8YB..	57	92.0%	0.80	730	40.0	5.0	2.1	2.2	KL13	4.40	450
37	280S	1SE0281-8YB..	69	92.0%	0.81	732	49.2	5.5	2.1	2.2	KL13	5.60	575
45	280M	1SE0284-8YB..	83	92.5%	0.82	732	59.9	5.5	2.1	2.2	KL13	6.40	615
55	315S	1SE0311-8YB..	100	93.0%	0.82	737	72.7	5.5	2.1	2.4	KL13	9.20	785
75	315M	1SE0314-8YB..	136	93.5%	0.82	737	99.1	5.5	2.1	2.4	KL13	12.00	900
90	315L	1SE0318-8YB..	162	94.0%	0.82	737	118.9	5.5	2.1	2.4	KL13	17.60	1130
110	315L	1SE0319-8YB..	198	94.3%	0.82	737	145.4	5.5	2.1	2.4	KL13	19.50	1250
132	355L	1SE0356-8YB..	240	94.5%	0.81	738	174.2	6.0	2.1	2.2	KL13	24.80	1440
160	355L	1SE0357-8YB..	291	94.5%	0.81	738	211.2	6.0	2.1	2.2	KL13	30.00	1580
200	355L	1SE0358-8YB..	362	95.0%	0.81	740	263.2	6.0	2.1	2.2	KL13	37.20	1790

Temperature rise limited to Class B rise for all motors except those marked # and @.

(All values subject to tolerance as per IS : 325.)

Temperature rise 75K

Efficiency Class is as per IS : 12615.

@ Temperature rise 95K

Order No. Suffixes							
Motor type	Last place but one : Figure denoting voltage			Last place : Figure denoting construction			
	415V, 50 Hz Standard V & f variation	* Other Voltage and/or Frequency (& voltage & frequency variation)	IMB3	At additional price			
				IMB5	IMV1 without canopy	IMV1 with canopy	IMB35
1SE0 254 to 314	8	9	0	1	1	4	6
1SE0 318 to 358	8	9	0	-	8	4	6

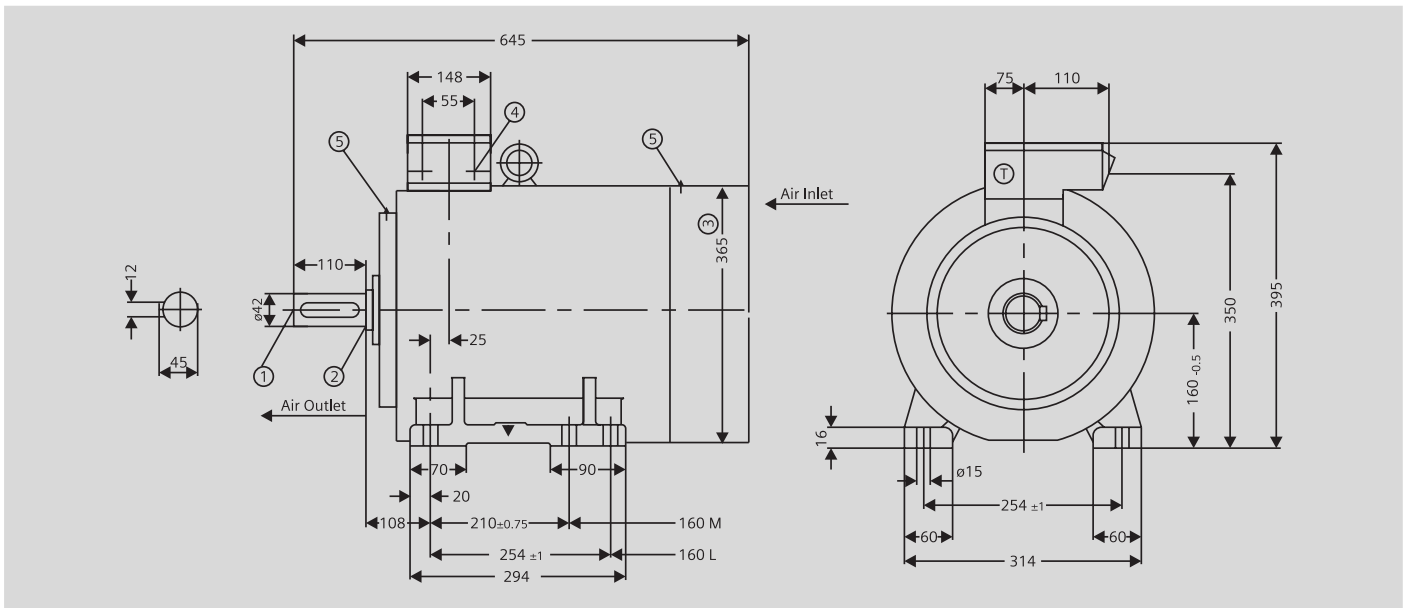
* Details of voltage/connection/frequency/voltage and frequency variation should be additionally given in plain text.

Efficiency class will be stamped on the name-plates for motors covered under IS:12615-2004 only

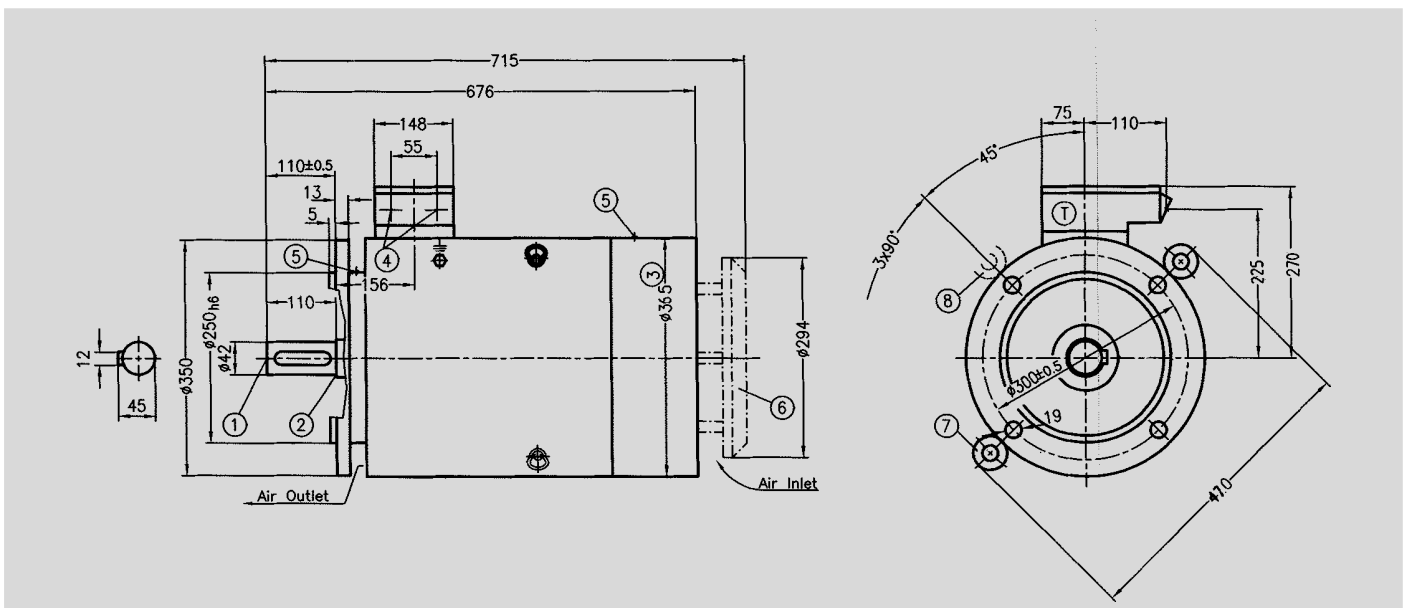
Dimensional diagrams

Frame sizes: 1SE0 - 160M and 160L

Construction: IMB3, IMB6, IMB7, IMB8, IMV5, IMV6



Construction: IMB5 and IMV1



Dimensions in mm

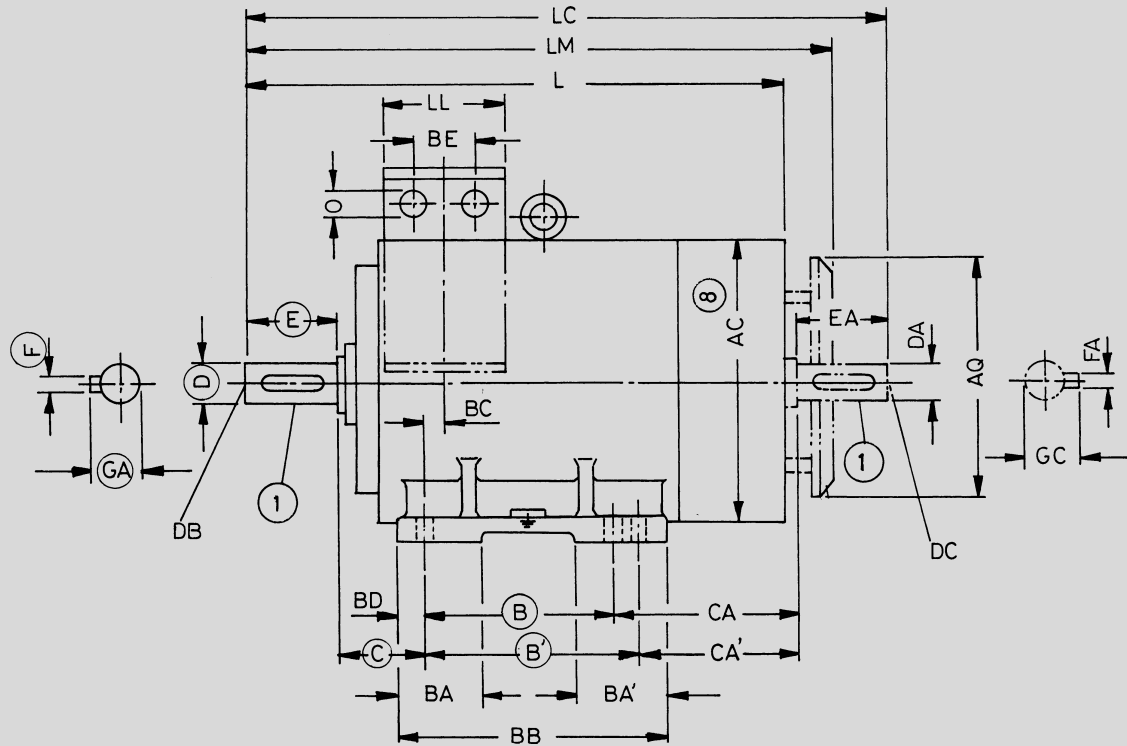
- ① Shaft extension $\phi 42 \times 6 \times 110$ with protected center hole M16 X 36.
- ② Relief groove E1 x 0.2 as per IS:3428.
- ③ Measured over bolt heads.
- ④ 2 Nos. B.S. conduit entry 31.8 (1.25").
- ⑤ Grease nipple M10x1 as per IS:4009.
- ⑥ Canopy as per requirement
- ⑦ Eye bolt position for IMV1 Construction
- ⑧ Eye bolt position for IMB5 Construction
- ⑨ Terminal box: Type 1XB1 223
Suitable for max. cable conductor cross section (mm sq): 25



Dimensional diagrams

Frame sizes: 1SE0 180M - 355L

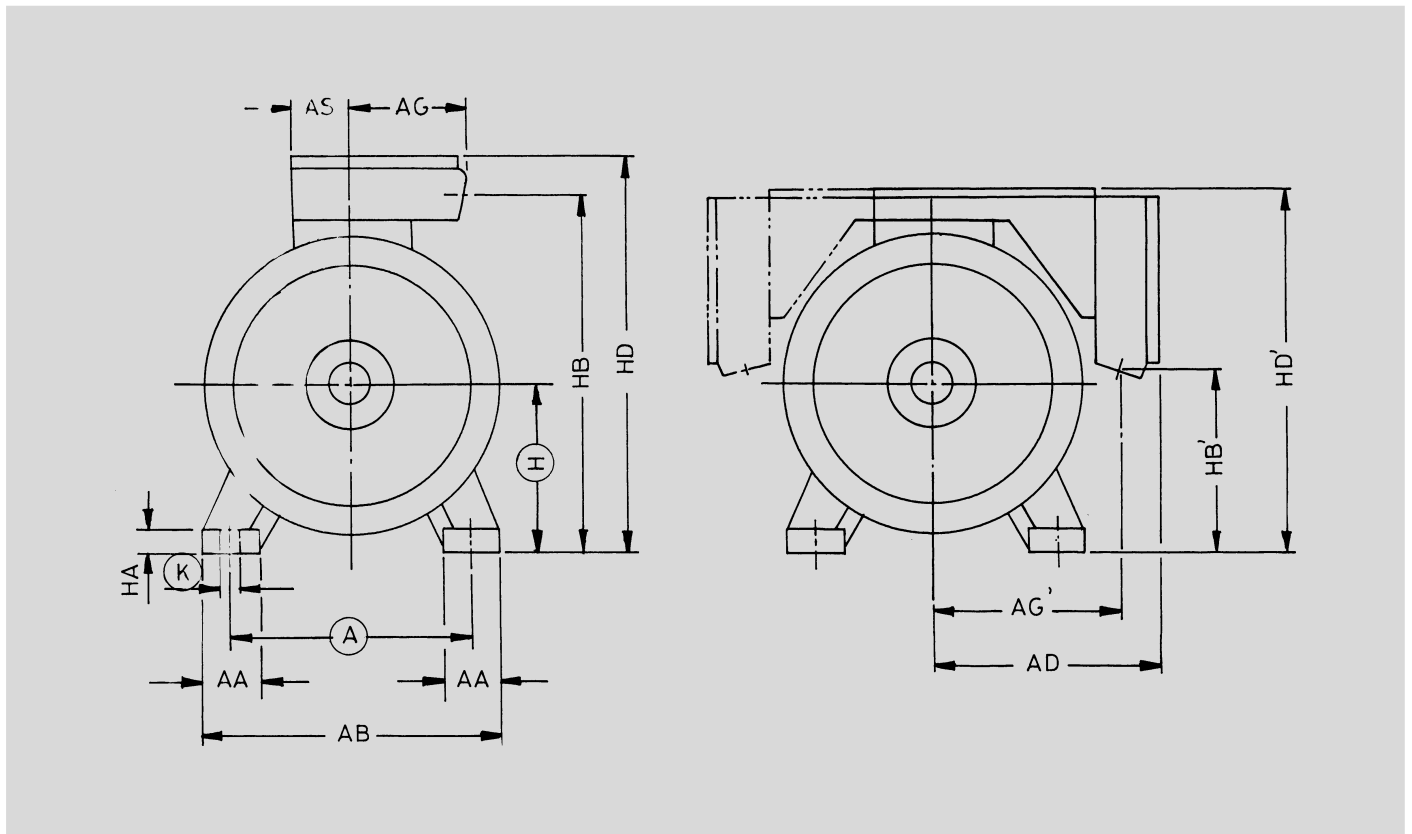
Construction: IMB3, IMB6, IMB7, IMB8, IMV5, IMV6



Frame size	No. of Poles	A	AA	AB	AC [®]	AD	AG	AG'	AQ	AS	B	B'	BA	BA'	BB	BC	BD	BE	C	CA	CA'	H	HA	HB	HB'	HD
180M	2...8	279	65	344	375	260	110	225	340	75	241	-	110	110	332	35	30.5	55	121	259	-	180	26	405	220	450
180L											-	279								-	221					
200L	2	318	80	398	415	335	155	275	380	100	305		85	85	355	42	25	85	133	239	-	200	34	450	190	510
	4...8																									
225S	2	356	80	436	470	335	155	275	425	100	286	-	110	110	386	25	50	85	149	269	-	225	34	500	240	560
	4...8																									
225M	2	356	80	436	470	335	155	275	425	100	-	311								-	244					
	4...8																									
250M	2	406	100	506	520	460	200	365	470	120	349	-	115	115	425	39	46	85	168	283	-	250	42	585	255	680
	4...8																									
280S	2	457	100	557	575	550	250	430	525	135	368	-	100	155	483	30	30.5	100	190	317	-	280	42	700	260	820
	4...8																									
280M	2	457	100	557	575	550	250	430	525	135	-	419								-	266					
	4...8																									
315S	2	508	120	628	645	660	285	530	590	165	406	-								358	-					
	4...8																									
315M	2	508	120	628	645	660	285	530	590	165	-	457	120	171	527	32	35	135	216	-	307	315	52	830	290	960
	4...8																									
315L	2	508	120	628	645	660	285	530	590	165	508	-	120	578						396	-					
	4...8																									
355L	2	610	120	730	720	640	285	510	670	165	630	-	170	255	774	53	72	135	254	461	-	355	44	860	380	990
	4...8																									

Dimensions in mm

Construction : IMB3, IMB6, IMB7, IMB8, IMV5, IMV6



Frame size	No. of Poles	Shaft Extension																						
		HD'	K	L	LC	LL	LM	O	Drive End				Non-drive End											
									D	DB	E	F	GA	DA	DC	EA	FA	GC						
180M	2...8	415	15	720	841	148	805	⑤	48	②	110	14	51.5	48	②	110	14	51.5						
180L	4...8																							
200L	2	450	19	775	897	197	860	⑥	55	③	110	16	59	48	②	110	14	51.5						
	4...8															55	③	16	59					
225S	2	500	19	805	924	197	905	⑥	55	③	110	16	59	48	②	110	14	51.5						
	4...8			835	954		935		60		③	140	18	64	55		③	16	59					
225M	2			805	924	905	55		③		110	16	59	48	②		14	51.5						
	4...8			835	954	935	60		③		140	18	64	55	③		16	59						
250M	2	590	24	930	1050	234	1030	⑥	60	③	140	18	64	55	③	110	16	59						
	4...8			1080			65		140		18	69	60			140	18	64						
280S	2	645	24	1005	1155	266	1115	⑦	65	③	140	18	69	60	③	140	18	64						
	4...8								75			20	79.5	65				69						
280M	2								65			18	69	60				64						
	4...8								75			20	79.5	65				69						
315S	2	740	28	1110	1260	330	1220	⑦	65	③	140	18	69	60	③	140	18	64						
	4...8			1140	1290		1250		80		170	22	85	70			20	74.5						
315M	2			1110	1260		1220		65		140	18	69	60			18	64						
	4...8			1140	1290		1250		80		170	22	85	70			20	74.5						
315L	2			1250	1400	1360	65		140		18	69	60	18			64							
	4...8			1280	1430	1390	80		170		22	85	70	20			74.5							
355L	2			855	28	1485	1625		330		1590	⑦	75	③			140	20	79.5	65	③	140	18	69
	4...8					1515	1685		1620		95		④				170	25	100	85		170	22	90

- ① Shaft extension as per IS: 1231
- ② Protected centre hole M16 x 36
- ③ Protected centre hole M20 x 42
- ④ Protected centre hole M24 x 50
- ⑤ 2 Nos. B.S. Conduit Entry 31.8 (1¼")-IS:1653
- ⑥ 2 Nos. B.S. Conduit Entry 51 (2")-IS:1653
- ⑦ 2 Nos. B.S. Conduit Entry 63.5 (2½")-IS:1653
- ⑧ Measured over bolt heads
- ⑨ Terminals box can be rotated in steps of 90°
- ⑩ For 160 and 180 Frames slant of cable entry integral with Terminal Box. For 200 to 355 Frames Cable End Box of detachable type.

Definitive dimensions (Upto 315L) :
A, B, B', C, H, K, D, E, F, GA are binding dimensions for all standard motors.

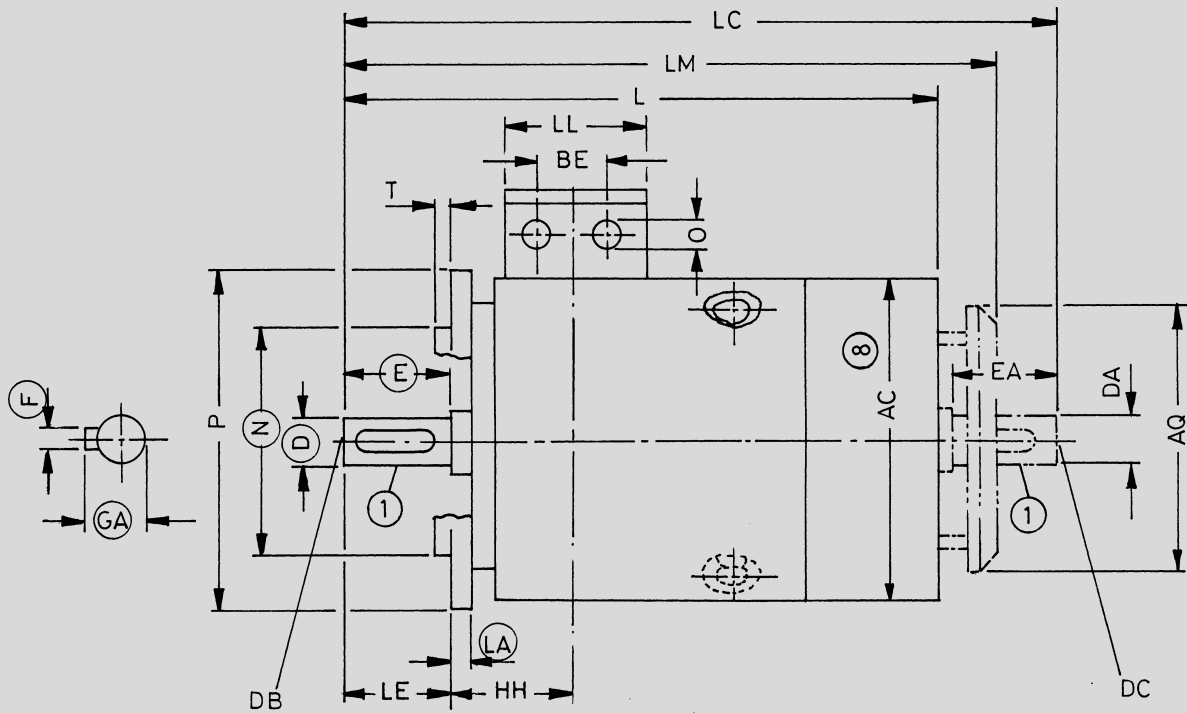
All other dimensions are subject to change. For valid dimensions, please contact Regional Office in your area

Dimensions in mm

Dimensional diagrams

Frame sizes: 1SE0 180M - 355L

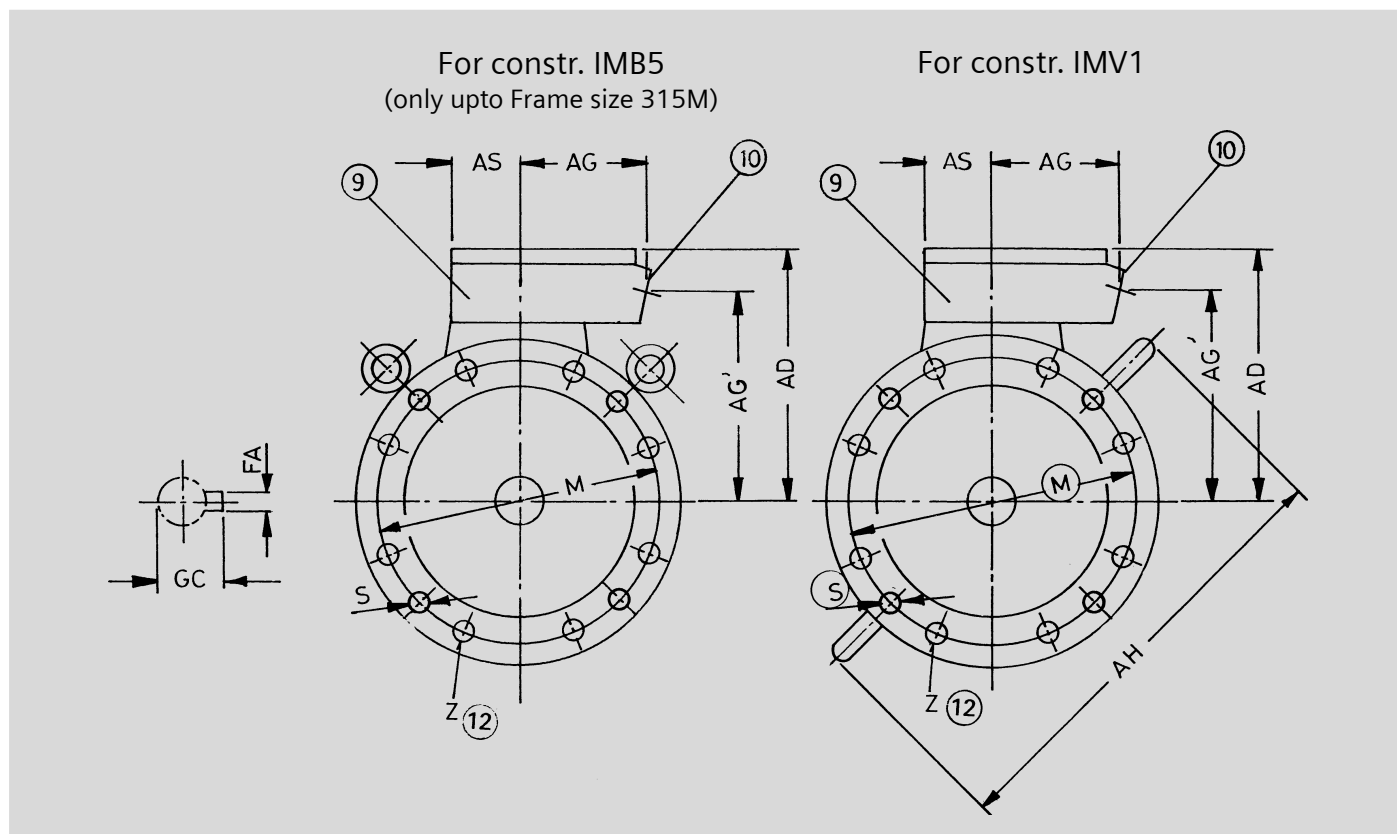
Construction: IMB5, IMV1



Frame size	No. of Poles	⑧	AC	AD	AG	AG'	AH	AQ	AS	BE	HH	L	LC	LE	LL	LM	O	Shaft Extension									
																		Drive End					Non-drive End				
																		D	DB	E	F	GA	DA	DC	EA	FA	GC
180M	2....8	375	260	110	225	470	340	75	55	156	720	841	110	148	805	⑤	48	②	110	14	51.5	48	②	110	14	51.5	
180L																											
200L	2	415	335	155	250	530	380	100	85	175	775	897	110	197	860	⑥	55	③	110	16	59	48	②	110	14	51.5	
	4....8																					55	③	110	16	59	
225S/M	2	470	335	155	275	580	425	100	85	174	805	924	110	197	905	⑥	55	③	110	16	59	48	②	110	14	51.5	
	4....8										835	954	140		935		60		140	18	64	55	③	110	16	59	
250M	2	520	430	200	335	645	470	120	85	207	930	1050	140	234	1030	⑥	60	③	140	18	64	55	③	110	16	59	
	4....8										1080						65			18	69	60	③	140	18	64	
280S/M	2	575	540	250	420	700	525	135	100	220	1005	1155	140	266	1115	⑦	65	③	140	18	69	60	③	140	18	64	
	4....8																75			20	79.5	65	③	140	18	69	
315S/M	2										1110	1260	140		1220		65		140	18	69	60			18	64	
	4....8										1140	1290	170		1250		80	③	170	22	85	70	③	140	20	74.5	
315L	2	645	645	285	515	805	590	165	135	248	1250	1400	140		1360	⑦	65		140	18	69	60			18	64	
	4....8										1280	1430	170		1390		80		170	22	85	70			20	74.5	
355L	2	720	635	285	505	925	670	165	135	307	1485	1625	140		1590	⑦	75	③	140	20	79.5	65	③	140	18	69	
	4....8										1515	1685	170		1620		95	④	170	25	100	85	③	170	22	90	

Dimensions in mm

Construction : IMB5, IMV1



Frame size	No. of Poles	Flange							
		⑩ Number	LA	M	N	P	S	T	⑫ Z
180M	2...8	F300B	13	300	250	350	19	5	4
180L									
200L	2	F350B	15	350	300	400	19	5	4
	4...8								
225S/M	2	F400B	16	400	350	450	19	5	8
	4...8								
250M	2	F500B	18	500	450	550	19	5	8
	4...8								
280S/M	2	F500B	18	500	450	550	19	5	8
	4...8								
315S/M	2	F600B	22	600	550	660	24	6	8
	4...8								
315L	2	F600B	22	600	550	660	24	6	8
	4...8								
355L	2	F740B	25	740	680	800	24	6	8
	4...8								

Dimensions in mm

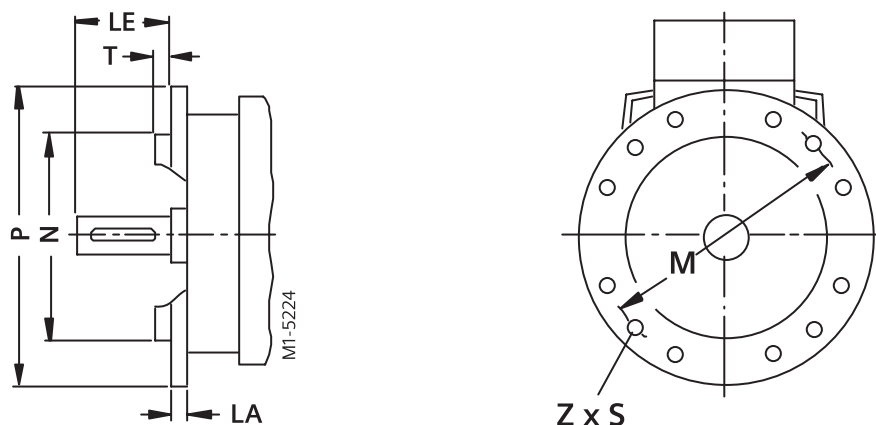
- ① Shaft extension as per IS: 1231
- ② Protected centre hole M16 x 36
- ③ Protected centre hole M20 x 42
- ④ Protected centre hole M24 x 50
- ⑤ 2 Nos. B.S. Conduit Entry 31.8 (1 1/4")-IS:1653
- ⑥ 2 Nos. B.S. Conduit Entry 51 (2")-IS:1653
- ⑦ 2 Nos. B.S. Conduit Entry 63.5 (2 1/2")-IS:1653
- ⑧ Measured over bolt heads
- ⑨ Terminals box can be rotated in steps of 90°
- ⑩ For 160 and 180 Frames, slant of Cable entry integral with Terminal Box. For 200 to 355 Frames Cable End Box of detachable type.
- ⑪ Flange as per IS: 2223
- ⑫ No. of fixing holes.

Definitive dimensions (Upto 315L) :

M,N,S,D,E,F, GA and LA are binding dimensions for all standard motors.

All other dimensions are subject to change. For valid dimensions, please contact Regional Office in your area.

1LA9 / 1LG6 - Flange dimensions



In DIN EN 50347, flange FF with clearance holes are assigned to the frame sizes. The DIN 42948 standard with flanges A remains valid. See the assignment table below.

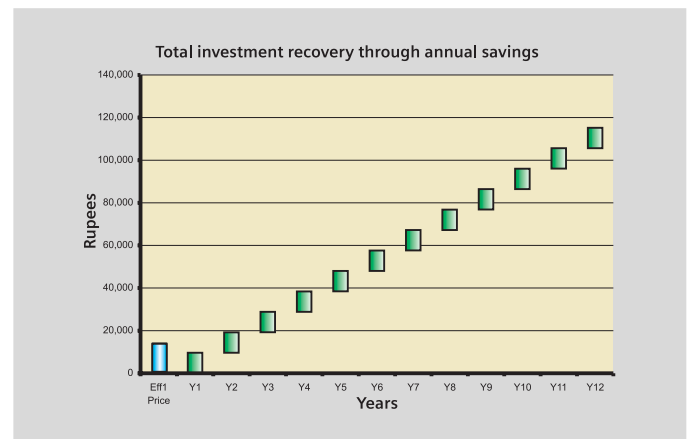
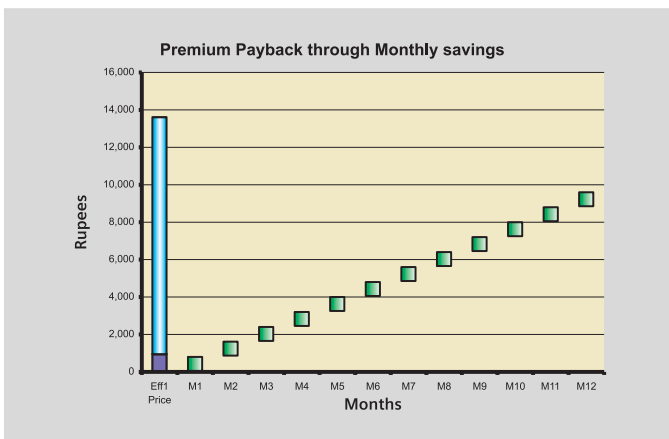
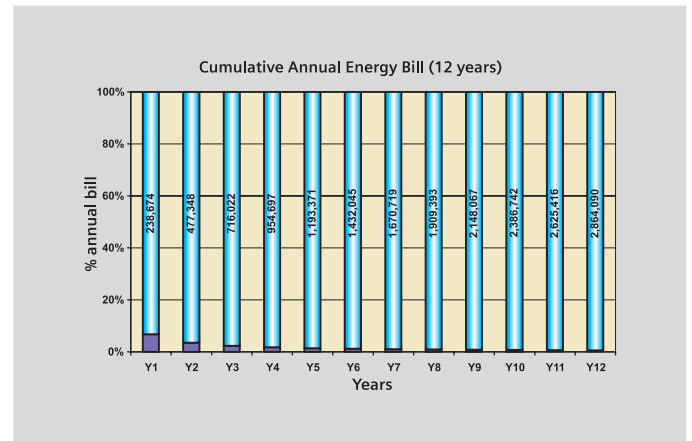
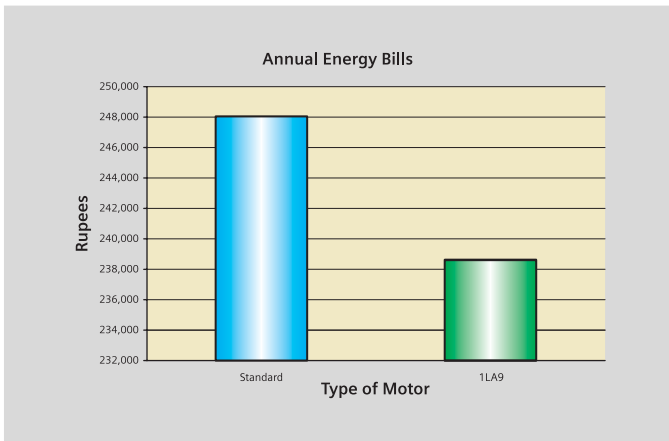
(Z = Number of fixing holes)

Size	Type of construction flange type	Flange with clearance holes (FF/A)		Dimension drawing according to IEC							
		acc. to DIN EN 50 347	acc. to DIN 42 948	LA	LE	M	N	P	S	T	Z
1LA9 motors											
63	IM B5 flange	FF115	A140	8	23	115	95	140	10	3	4
71	IM B5 flange	FF130	A160	9	30	130	110	160	10	3.5	4
80	IM B5 flange	FF165	A200	10	40	165	130	200	12	3.5	4
90	IM B5 flange	FF165	A200	10	50	165	130	200	12	3.5	4
100	IM B5 flange	FF215	A250	11	60	215	180	250	14.5	4	4
112	IM B5 flange	FF215	A250	11	60	215	180	250	14.5	4	4
132	IM B5 flange	FF265	A300	12	80	265	230	300	14.5	4	4

Size	Type of construction flange type	Flange with clearance holes (FF/A)		Dimension drawing according to IEC							
		acc. to DIN EN 50 347	acc. to DIN 42 948	LA	LE	M	N	P	S	T	Z
1LG6 motors											
180	IM B5 flange	FF300	A350	13	110	300	250	350	18.5	5	4
200	IM B5 flange	FF350	A400	15	110	350	300	400	18.5	5	4
225 2-pole 4-pole & 6-pole	IM B5 flange	FF400	A450	16	110 140	400	350	450	18.5	5	8
250	IM B5 flange	FF500	A550	18	140	500	450	550	18.5	5	8
280	IM B5 flange	FF500	A550	18	140	500	450	550	18.5	5	8
315 2-pole 4-pole & 6-pole	IM B5 flange	FF600	A660	22	140 170	600	550	660	24	6	8

It makes much better economic sense to invest in SIEMENS energy efficient motors.

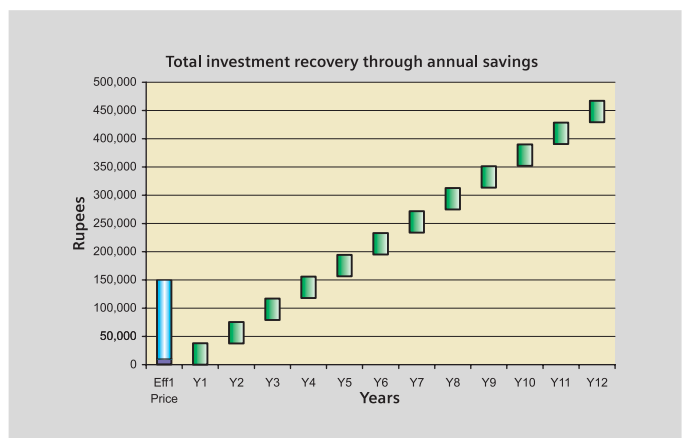
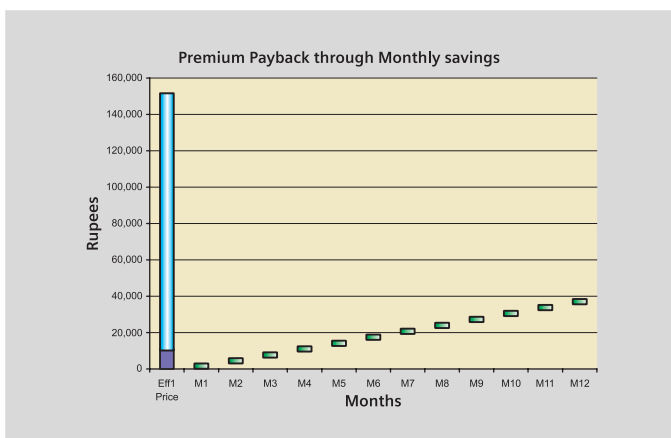
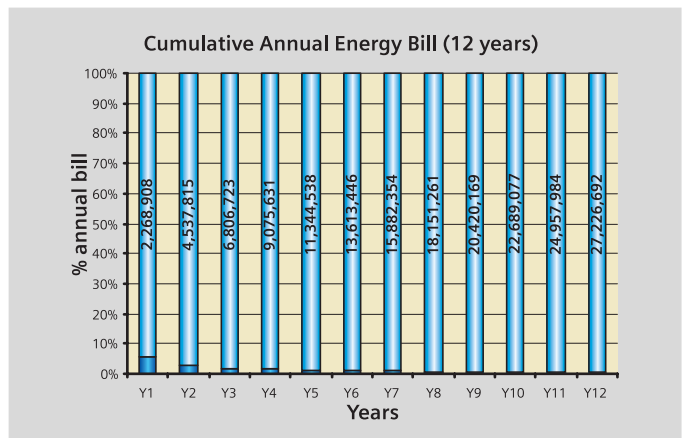
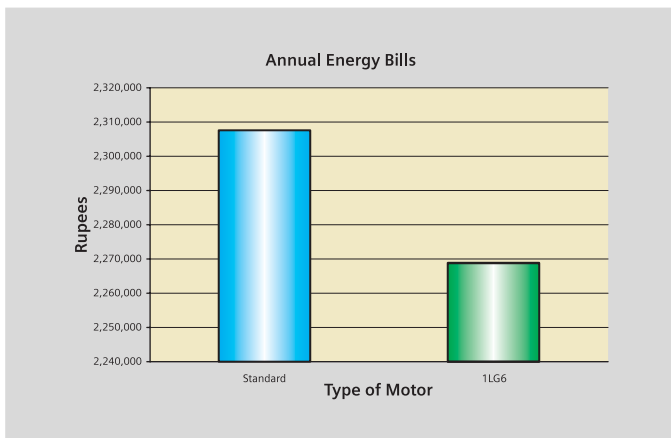
Equipment Name / Tag number : Cement Mill Belt conv - 1&2			
Type of Motor		Standard	1LA9
Motor Rating		7.5kW / 4P	
Rated output of the motor	kW	7.5	7.5
Motor Type		Make X	1LA9 133-4KA ..
Efficiency compared to the value stipulated in IS:12615-2004		EFF2	>EFF1
How much is the motor loaded as a % of the rated?		80.0%	80.0%
Rated speed of the motor	rpm	1430	1455
Efficiency		87.0%	90.5%
Power Tariff	Rs./kWH	4.5	4.5
Operation of the motor per annum	hours	8,000	8,000
Energy consumption per annum	kWH	55,172	53,039
Energy Saved per annum over standard motor	kWH	—	2,134
Annual Energy Bill	Rs.	248,276	238,674
Savings towards energy bill per annum	Rs.	—	9,602
Savings towards energy bill per month	Rs.	—	800
Purchase price of a new motor [exclusive of taxes and duties]	Rs.	12,650	13,556
"Incremental" investment over a standard motor	Rs.		906
Payback of incremental investment (Premium)	months		1-Months, 4-days
Payback of total investment (Purchase Price)	years		1-Year, 5-Months



Case study - 2

It makes much better economic sense to invest in SIEMENS energy efficient motors.

Equipment Name / Tag number : LS Crusher Apron Conv Motor			
Type of Motor		Standard	1LG6
Motor Rating		75kW / 4P	
Rated output of the motor	kW	75	75
Motor Type		Make X	1LG6 280-4AA..
Efficiency compared to the value stipulated in IS:12615-2004		EFF2	>EFF1
How much is the motor loaded as a % of the rated?		80.0%	80.0%
Rated speed of the motor	rpm	1470	1485
Efficiency		93.6%	95.2%
Power Tariff	Rs./kWH	4.5	4.5
Operation of the motor per annum	hours	8,000	8,000
Energy consumption per annum	kWH	512,821	504,202
Energy Saved per annum over standard motor	kWH	—	8,619
Annual Energy Bill	Rs.	2,307,692	2,268,908
Savings towards energy bill per annum	Rs.	—	38,785
Savings towards energy bill per month	Rs.	—	3,232
Purchase price of a new motor [exclusive of taxes and duties]	Rs.	139,660	150,218
“Incremental” investment over a standard motor	Rs.		10,558
Payback of incremental investment (Premium)	months		3-Months, 8-days
Payback of total investment (Purchase Price)	years		3-Year, 10-Months

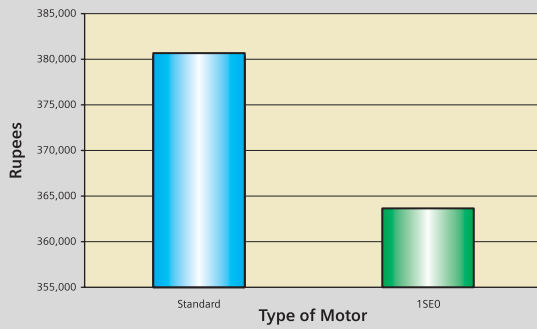


It makes much better economic sense to invest in SIEMENS energy efficient motors.

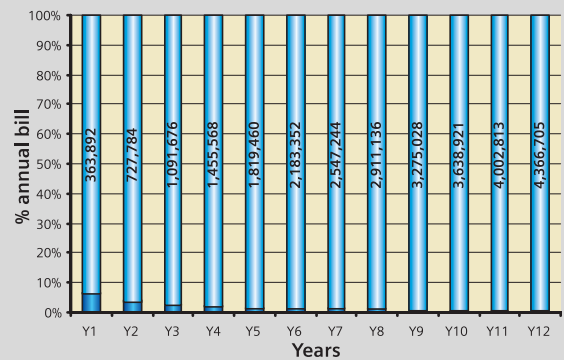
Equipment Name / Tag number : LS Crusher Apron Conv Motor

Type of Motor		Standard	1SE0
Motor Rating		11kW / 4P	
Rated output of the motor	kW	11	11
Motor Type		Make X	1SE0 163-4YL...
Efficiency compared to the value stipulated in IS:12615-2004		EFF2	>EFF1
How much is the motor loaded as a % of the rated?		85.0%	85.0%
Rated speed of the motor	rpm	1440	1475
Efficiency		88.4%	92.5%
Power Tariff	Rs./kWH	4.5	4.5
Operation of the motor per annum	hours	8,000	8,000
Energy consumption per annum	kWH	84,615	80,865
Energy Saved per annum over standard motor	kWH	—	3,751
Annual Energy Bill	Rs.	380,769	363,892
Savings towards energy bill per annum	Rs.	—	16,877
Savings towards energy bill per month	Rs.	—	1,406
Purchase price of a new motor [exclusive of taxes and duties]	Rs.	20,095	24,754
"Incremental" investment over a standard motor	Rs.	—	4,659
Payback of incremental investment (Premium)	months		3-Months, 9-days
Payback of total investment (Purchase Price)	years		1-Year, 6-Months

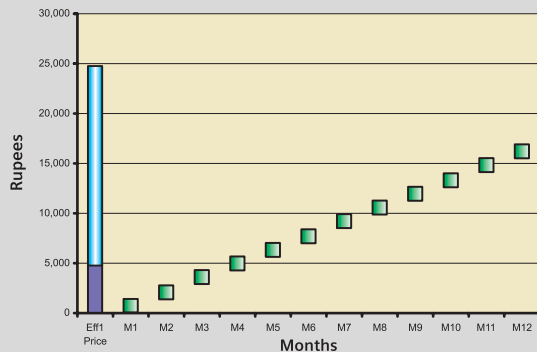
Annual Energy Bills



Cumulative Annual Energy Bill (12 years)



Premium Payback through Monthly savings



Total investment recovery through annual savings



Your partners

WEST

Offices:

- Ahmedabad** - 380009
3rd Floor, Prerna Arbour
Girish Cold Drinks Cross Roads
Off. C. G. Road
☎ : +91 79 40207600
Fax: +91 79 40207699
- Mumbai** - 400018
130, Pandurang Budhkar Marg, Worli
☎ : +91 22 24987000-02
Fax: +91 22 24987312
- Nagpur** - 440010
5th Floor, Landmark Building, Ramdas Peth
☎ : +91 712 6633000
Fax: +91 712 6633111
- Pune** - 411016
Tower B / 701 - 705, ICC Trade Tower
403A, Senapati Bapat Road
☎ : +91 20 2570 6000
Fax: +91 20 2570 6060

Territory managers :

- Aurangabad** - 431210
A9, Yogeshwari Vrundavan
Nr. Malhar Chowk, Garkheda Parisar
Prerna Nagar
Mobile: +91 9766316446
E-mail: santosh.rajhans@siemens.com
- Baroda** - 390007
1st Floor, Vanijiya Bhavan, Race Course Road
☎ : +91 265 2325810 / 12, 6692110
Mobile: +91 98255 06963
E-mail: sreejagannath.mohanta@siemens.com
- Bhilai** - 490001
C/o Mr. S.H. Siddiqui
Sector -1, Street -9, Quarter No. 1A
Mobile: +91 9826127525
E-mail: sandeep.barde@siemens.com
- Indore** - 452001
521, Suniket Apartments
Shri Nagar Extension, Khajrana Main Road
Mobile: +91 98266 41970
E-mail: vineet.saxena@siemens.com
- Kolhapur** - 416001
B-7, Mahagaonkar Complex
1147/E, Rajaram Road, Opp. Kamala College
☎ : +91 231 2536626
Mobile: +91 9822558876
E-mail: amol.pandit@siemens.com
- Nashik** - 422101
8B, Shubhamangal Apartment
Chavan Mala, Nasik Road
Mobile: +91 9822193204
E-mail: nitinkumar.deshpande@siemens.com
- Raipur** - 492007
Flat No. 103, First Floor, Block B
Shilp Enclave, Near LAS Colony
Shankar Nagar
Mobile: +91 9425057945
E-mail: brajesh.rathor@siemens.com
- Rajkot** - 360005
D-3 Aalap Century, University Road
Mobile: +91 98255 06962
E-mail: bhushan.sawant@siemens.com
- Surat** - 395004
59, Ground Floor, Shreejinagar Part-1
Dhabholi Char Rasta, Ved Road, Katargam
Mobile: +91 99250 01779
E-mail: chandrakant.keshrani@siemens.com
- Vapi** - 396195
Flat No. 302, Samrajaya IV
Royal Residency, Charwada Road
☎ : +91 260 6451156
Mobile: +91 98251 47957
E-Mail: siemens_vapi@sancharnet.in

SOUTH

Offices:

- Bangalore** - 560001
1st Floor, Jyothimahal, #49, St. Marks Road
☎ : +91 80 22042000
Fax: +91 80 22224131
- Chennai** - 600034
4, Mahatma Gandhi Road
☎ : +91 44 28334000
Fax: +91 44 28334088
- Coimbatore** - 641018
7th Floor, East Wing, Global Towers
1057, Avinashi Road
☎ : +91 422 4336300
Fax: +91 422 4336310
- Hyderabad** - 500004
5-9-19, Lakshmi Narsinh Estate, 4th Floor
Secretariat Road, Opp. Secretariat, Saifabad
☎ : +91 40 23482500
Fax: +91 40 23243145

Territory managers :

- Belgaum** - 590003
H/No 713, Narvekar Lane
Shahapur, Karnataka
☎ & Fax: +91 831 2495156
Mobile: +91 9740277991
E-mail: anand.gawade@siemens.com
- Cochin** - 682016
K.G. Oxford Business Centre
39/4609, 3rd Floor, Sreekanth Road
Ravipuram
☎ : +91 484 4028611/22/33/44
Fax: +91 484 2380201
E-mail: sajeen.s@siemens.com
- Madurai** - 625010
8/12, Ground Floor
Sakthi Vellammal Street, S.S.Colony
☎ : +91 452-2601751
Mobile: +91 98946 17780
- Pondicherry** - 605001
32, Second Floor, St. Theresa Street
☎ & Fax: +91 413 4500101
Mobile: +91 9840472727
E-mail: elankumarak.pandian@siemens.com
- Salem** - 636 008
3/25, Santhosh Nagar, PACB Back Side
Chinnathirupathi
Mobile: +91 98946 17772
E-Mail: rubengerald@yahoo.com
- Tiruchirappalli** - 620017
T3, 11rd Floor, Vishranthi Daffodils Apartments
Opp: Friends Eye Hospital, Puthur
☎ : +91 431 4030390
Fax: +91 431 4030390
Mobile: +91 9444911221
E-mail: Akhilesh.Nair@siemens.com
- Trivandrum**
Skyline City Villa, House No-8, Vetamukku
Mobile: +91 98959 79604
E-Mail: jonsa_82@yahoo.com
- Vijayawada** - 520010
G-2, Shreya Towers, Moghalrajapuram
Near Jammichettu Centre
☎ : +91 866 6629933
Mobile: +91 9866463639
E-mail: santosh.p@siemens.com
- Visakhapatnam** - 530003
B4, Mount Moriah Residency
Waltair Uplands
☎ : +91 891 2712535
Mobile: +91 98492 12555
E-mail: siemensvizag@rediffmail.com

NORTH

Offices:

- Chandigarh** - 160017
SCO 189 - 191, 3rd Floor, Sector 17C
☎ : +91 172 4690300
Fax: +91 172 4690399
- Lucknow** - 226001
28/45, Ashok Marg, Opposite Indira Bhawan
☎ : +91 522 4031022, 4031000
Fax : +91 522 4031019
- New Delhi** - 110002
4A, Ring Road, I.P. Estate
☎ : +91 11 42995000-09
Fax: +91 11 42995030

Territory managers :

- Bareilly** - 243001
Flat No. T1, 129, Civil Lines
Mobile: +91 9897019061
E-mail: siemens.bly@gmail.com
- Dehradun** - 248001
122, Ashok Vihar, Lane No.1, Ajabpur Kalan
Mobile: +91 97600 33117
E-mail: manish.bajpai@siemens.com
- Faridabad** - 121006
House No. 237, Sector 8, Faridabad
Mobile: +91 9873696350
E-mail: ramit.mehra@siemens.com
- Gurgaon** - 122001
117-C, First Floor, Sector-30
Behind Jalvayu Vihar
Mobile: +91 99710 91588
Email: siemens.ggn@gmail.com
- Hardwar** - 249407
758, 1st Floor, Model Colony
Awass Vikas, Jwalapur
Fax: +91 1334 - 265491
Mobile: +91 9897070133
E-mail: naveen.khare@siemens.com
- Jalandhar** - 144001
H. No. 448R, First Floor, Pushpa Niwas
Near Geeta Mandir, Model Town, Punjab
Ground Floor, City Center
☎ : +91 343 2605286
Mobile: +91 9830185007
E-mail: sourav.paul@siemens.com
- Jodhpur** - 342008
371, Gouri House
Kamala Nehru Nagar, Near SBI Bank
☎ : +91 291 2760371
Mobile: +91 98283-27200
E-mail: Naveen.sahariya@siemens.com
- Kota** - 324002
48, Model Town, Khedli Pkatak, Rajasthan
☎ : +91 744 2340523
Mobile: +91 9784842605
E-mail: ajit.parashar@siemens.com
- Ludhiana** - 141009
H. No. 3127, Urban Estate
Sector 38, Chandigarh Road
Mobile : +91 9876047929
E-mail: sunil.singla@siemens.com
- Ludhiana** - 141004
H. No. 281, 1st Floor, E Block, B.R.S. Nagar
Mobile: +91 9872000936
E-Mail: singh.harpa@siemens.com
- Ludhiana** - 141004
H.No. 3996, 1st Floor, Sector 32A
Urban Estate, Chandigarh Road
☎ & Fax: +91 161-5017741
Mobile: +91 9815130172
E-Mail: nitinbansal@siemens.com
- Jaipur** - 302006
6, Park Street, Opp. Pink City Petrol Pump
M.I. Road, Rajasthan
☎ : +91 141 2370274, 2377956
Fax: +91 141 2370482
Mobile: +91 9829244313
E-mail: peesh.gupta@siemens.com
- Kanpur** - 208013
106, Agarwal Apartments
Near Hari Har Dham Mandir
Shyam Nagar, Uttar Pradesh
☎ & Fax: +91 512 2423348
Mobile: +91 9839102434
E-mail: siemens_knp@satyam.net.in
- Renukoot** - 231217
Above ICICI Prudential Office, Patel Nagar
Murdhawa, Distt. Sonbhadra, U.P.
Mobile: +91 9838007897
E-mail: siemens_upeast@sify.com
- Udaipur** - 313001
303, Oasis Park, PP singhal Marg
Ambavgarh
☎ : +91-294-2430345
Fax: +91-294-2430345
Mobile: +91 9829039120
E-mail: ankur.singh@siemens.com

EAST

Offices:

- Kolkata** - 700042
43 Shanti Palli, R B Connector
Eastern Metropolitan Bypass
☎ : +91 33 24449000, 24428641-47
Fax: +91 33 24449010 / 13

Territory managers :

- Bhubaneswar** - 751002
109, Harapriya Apartment
Vivekananda Marg
☎ : +91 674 3200627
Mobile: +91 9937009749
E-mail: anirban.aditya@siemens.com
- Bhubaneswar** - 751013
Flat No. - E 303, "Jyotsna Enclave"
(Beside Hotel Mayfair) Jaydev Vihar
Mobile: +91 9337058366
E-mail: shounak.pal@siemens.com
- Durgapur** - 713216
4/6, Matangini Hazra Bithi
Ground Floor, City Center
☎ : +91 343 2605286
Mobile: +91 9830185007
E-mail: sourav.paul@siemens.com
- Guwahati** - 781003
G1, Hill View Apartment, Navagraha Path
Chenikuthi Hill Side
☎ : +91 361 2663988
Mobile: +91 9864037562, 9864110684
E-mail: amarnath.karmakar@siemens.com,
biplab.datta@siemens.com
- Jamshedpur** - 831005
823, Udaygiri, Vijaya's Heritage, Ulyan, Kadma
☎ : +91 657 6451637
Mobile: +91 9934311352
E-mail: shaibal.parial@siemens.com
- Ranchi** - 834001
Flat No. 403, Rishab Tower
Near Line Tank, Behind Firayalels
E-mail: sourav.dasgupta@siemens.com
- Rourkela** - 769004
T-15 Civil Town
☎ : +91 661 2401724
Mobile: +91 9437041724
E-mail: sanjoy.ganguly@siemens.com
- Sambalpur** - 768 004
Pradhan Para, Near Jamkani Mandir
Back Side of LIC Div Off, Airhapani, Orissa
☎ : +91 663 2541258
Mobile: +91 094385 29778
E-mail: samir.chintak@siemens.com

Siemens Ltd.

Automation and Drives - Motors
Thane Belapur Road
Thane - 400 601
Fax +91 22 27623727
E-mail: motors.in@siemens.com
www.siemens.com/industry

Siemens Ltd.

MOT-02-120-052
(This replaces MOT-02-120-045)

Order No: 102018508
Customer Care Toll free no. 1800 220 987. Email: adscs.india@siemens.com

Product upgradation is a continuous process. Hence, data in this booklet is subject to change without prior notice. For the latest information, please get in touch with our Sales Offices.