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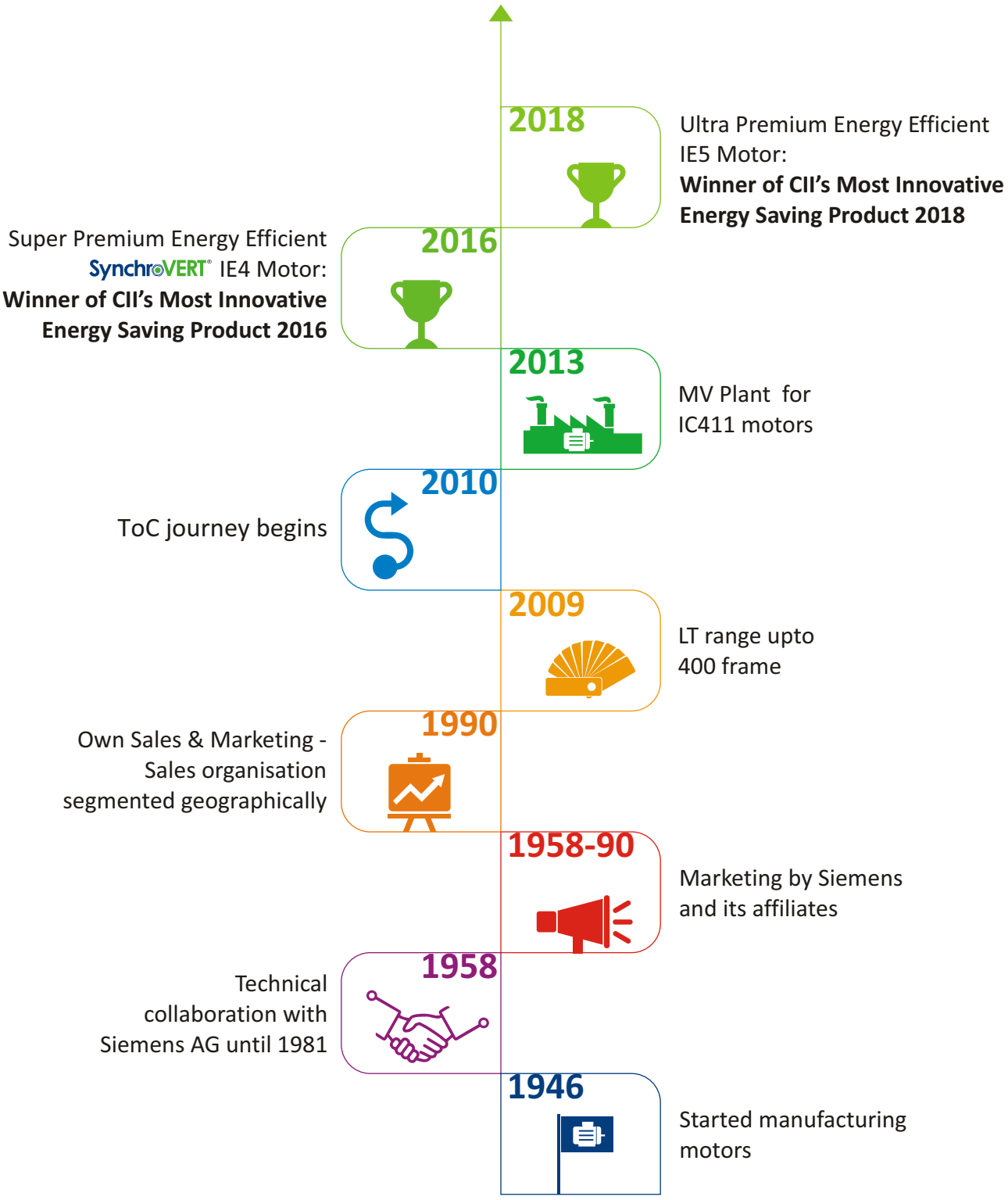
Bharat Bijlee

LV Motors: Premium Efficiency IE3 Safe Area

Reliable | Energy Efficient

A MOTOR FOR EVERY NEED

BHARAT BIJLEE MOTORS: MILESTONES



MOTORS DIVISION: KEY HIGHLIGHTS

- Customised motors for special applications
- Supply chain based on Theory of Constraints principles ensures short lead times, reliable deliveries and superior availability
- Annual production capacity of 250,000 motors
- Rigorous process control and quality assurance
- Complete range of energy efficient motors available from stock
- Pan-India Dealer and Service network

In the past few decades, India has witnessed significant economic growth due to liberalization and industrialization. The contribution of industries and services towards the Indian economy (GDP) has been increasing over a period of time. However, this is accompanied by an increase in energy demand, most of which is obtained through conventional sources of energy, which today contributes to 82% of the total power produced in our country. This ever-increasing demand leads to increase in all other aspects associated with it, which include air pollution and emission of greenhouse gases due to burning of fossil fuels (non-renewable source of energy). In view of this situation, it becomes imperative to explore new and viable solutions to save energy. This includes usage of energy efficient equipment especially in industries, as it accounts for over half the consumption of electricity and 60 to 70% of which is utilized by electric motors.

The operating cost of an electric motor is about 95% of the total cost incurred during its lifecycle that ranges between 15 to 20 years. Organizations which have proactively invested in energy efficient motors have reaped the benefits of better output, increased cost savings or both.

Bharat Bijlee has been a fore runner in energy efficiency. With a strong in-house design team, indigenous and state of the art manufacturing facility equipped with a SCADA controlled test bed, we have successfully developed a wide range of premium efficiency IE3 series motors. Over the years, Bharat Bijlee has gained the trust of its customers and with the ability to deliver beyond customers' expectations, this trust has only grown stronger. Known for its product and service quality, there is more to what makes Bharat Bijlee a preferred brand across the country.

Our IE3 motors have been successfully working across all sectors and in all possible applications over the years and have exceeded expectations of performance and reliability. Owing to this, Bharat Bijlee is one of the most trusted brands in the country today.

Why Bharat Bijlee?

- Motors suited for all applications across all sectors
- The most suitable solutions to extremely harsh and severe applications
- Customized motors designed and manufactured to suit application specific needs
- Motors conform to relevant IS/IEC standards

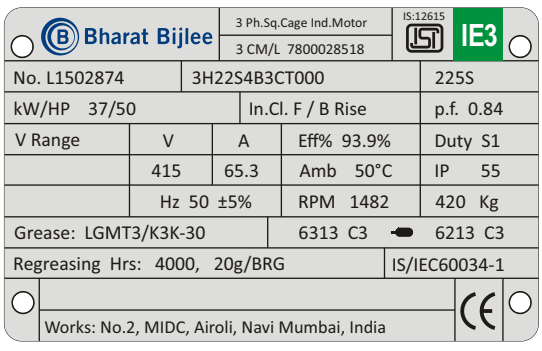
A MOTOR FOR EVERY NEED

REFERENCE STANDARDS

IS/IEC 60034-1	Three Phase Induction motor specifications (“Rotating Electrical Machines - Part 1: Rating & Performance”)
IS : 900	Code of practice for installation & maintenance of induction motors
IS : 1231	Dimensions of foot mounted A.C induction motors
IS : 2223	Dimensions of flange mounted A.C induction motors
IS : 4029	Guide for testing three phase induction motors (For Standard TEFC SCR Motors)
IS : 4889	Methods of determination of efficiency of rotating electric machines (For Standard TEFC SCR Motors)
IS/IEC 60034-5	Degree of protection provided by the integral design of Rotating Electrical Machines (IP code classification)
IS : 6362/IEC 60034-6	Designation of method of cooling for Rotating Electrical Machines / Method of cooling (IC code)
IS:12065/IEC 60034-9	Permissible limits of noise level for Rotating Electric Machines
IS : 12075	Mechanical Vibration of Rotating Electrical Machines
IS : 12615	Energy Efficient Induction Motors Three Phase Squirrel Cage
IEC 60034-30	Rotating Electrical Machines - Efficiency classes of line operated AC motors (IE code)
IEC 60072-1	Dimension & Output rating of Rotating Electrical machines
IS : 15999 (Part 2 /Sec 1)	Standard Methods for determining Losses and Efficiency from Tests (For IE Series Motors)

BEARING CHART

Fr. Size	Bearing Nos.	
	D.E.	N.D.E.
80	6004 2Z	6004 2Z
90 S & L	6205 2Z	6205 2Z
100L	6206 2Z	6205 2Z
112M	6206 2Z	6205 2Z
132 S / M	6208 2Z	6208 2Z
160 M/L	6309 2Z	6209 2Z
180 M/L 4P	6310 2Z	6309 2Z
180 M/L (2, 6, 8 Pole)	6310 2Z	6210 2Z
200 L	6312 2Z	6212 2Z
225 S/M	6313	6213
250M	6315	6215
280S/M (2 Pole)	6316	6316
280S/M (4, 6, 8 Pole)	6317	6316
315S/M & L	6319	6319
355L	6322	6322



SCADA Test Facility

ADVANTAGES OF BHARAT BIJLEE PREMIUM EFFICIENCY IE3 MOTOR

- Higher efficiency
- Optimized ventilation system for cooler operation and reduced noise
- Reduced life cycle cost
- Highly reliable under most demanding conditions
- Short payback period
- Carbon Credits
- Inverter grade winding
- A sustainable future

The operating cost of a motor accounts for major expenditure during its life cycle. Opting for premium efficient motors allows the user to realize energy cost savings in a reasonably short time span.

Comparison of IE2 v/s IE3 motor for 2.2 kW & 22 kW is depicted in the table below clearly showing:

- Annual energy saving for one motor
- Payback period
- Total savings over the lifespan of one motor

Aspect	Energy Savings Observed in 2.2 kW / 4Pole motor		Energy Savings Observed in 22 kW / 4Pole motor	
	IE3	IE2	IE3	IE2
kW Rating	2.2	2.2	22	22
Purchase Cost of Motor (INR)	10696	9352	62892	54821
Motor Efficiency	86.70%	84.30%	93.00%	91.60%
Per Hour kW Consumption	2.54	2.61	23.66	24.02
Annual running Hours: 300 Days X 16 Hrs	4800	4800	4800	4800
Power Consumption/Annum (kW)	12180	12527	113548	115284
Average energy cost (INR/kWH)	7	7	7	7
Average energy cost /annum (INR)	85260	87687	794839	806987
Annual Saving when IE3 motor is used (INR)	2,427		12,148	
Motor Cost Differential (INR)	1,344		8,071	
Payback Period for differential amount (Months)	7		8	
Saving Over 20 year Life (INR)	48,546		2,42,964	

For 20 motors each of 2.2 & 22 kW, the savings shall be Rs.10 & 50 lakhs respectively thus totaling to 60 lakhs during the motors' lifespan of 20 years.

GENERAL TECHNICAL SPECIFICATIONS

Range

- **Series:** 3 Phase Squirrel Cage Induction, IE3 Safe Area Motors
- **kW Rating:** 0.55 to 355
- **Frame:** 80 to 355
- **Polarity:** 2, 4, 6, 8

Standard Feature	Optional Feature
Voltage: 415V	Any other voltage on request
Frequency: 50 Hz	60 Hz
IP55	IP56, IP65, IP66
B3 Mounting	B5, B35, B14 (upto 132 Frame)
Ambient: 50°C	Any other on request
TB Position : Top	Any other on request
Aluminium Construction: 90 to 132 Frame Cast Iron Construction: 80 Frame, 160 Frame & Above	Cast Iron construction: 90 to 132 Frame
Insulation: Class F	Insulation: Class H
IC411: Totally Enclosed Fan Cooled	IC410: Natural Ventilation IC416: Forced Cooling for 132 Frame & above
Sealed Bearing: upto 200 Frame Online Greasing Arrangement: 225 Frame & Above	Online Greasing Arrangement: 160 to 200 Frame
Paint Shade: Acrylic base, RAL5000	Any other shade or material on request
Fan Cover: Steel	
Thermal Protection in DCCA** Motors: 3 nos. simplex RTD	Simplex & duplex RTD: 250 Frame & Above BTD: 250 Frame & above Thermister: 80 Frame & Above
Space Heater for DCCA Motors	Space Heater: 90 Frame & Above
Inverter Duty Application for all frames	
Packing: Thermocol / Corrugated Boxes: Upto 132 Frame Packing: Wooden Packing Boxes: 160 Frame & Above	Wooden Pallets Sea Worthy / Export Packing Case
For standard bearings, kindly refer to the bearing chart	Insulated Bearing: 160 Frame & Above / Hybrid Bearing: 132 to 225 Frame Cylindrical Roller Bearing on DE Side: 160 Frame & Above

Our other optional features:

- Space heater for 90 frame & above
- Non standard shaft material, diameter & extension
- Front bearing locking arrangement
- SS Hardware, canopy, water flinger, non standard paint & paint shade, cable gland
- Provision for hollow shaft encoder mounting
- High temperature grease
- Reduced & special grades of vibration as per IS 12075 can be provided on request

** Please confirm with our nearest sales office

Bharat Bijlee

LV MOTORS: IE3 SAFE AREA

Performance Data : IE3 Efficiency Series for Safe Area Application

Applicable standard for testing & efficiency determination : IS15999
Voltage: 415V +/- 10%
Frequency: 50Hz +/- 5%
Combined Variation: +/- 10%

Ambient: 50°C
Duty: S1 (Continuous)
3000 rpm (2 Pole)

Insulation: Class F
Temperature Rise: Class B
Protection: IP55

Rated Output		Frame size	Type Reference	Operating characteristics at rated output									With DOL starting			Rotor GD²	Net Weight B3 constr.
				Rated Speed	Rated Current	Rated Torque	Power Factor			% Efficiency			Starting Current to Rated Current Ratio	Starting Torque to Rated Torque Ratio	Pullout Torque to Rated Torque Ratio		
kW	HP		B3 construction	RPM	Amps.	kg-m	FL	3/4L	1/2L	FL	3/4L	1/2L				kgm²	kg
0.75	1.0	80	3H0802B3CT000	2840	1.54	0.257	0.84	0.80	0.68	80.7	80.7	78.0	6.0	3.0	3.5	0.0091	17
1.1	1.50	80	3H0802E3CT000	2840	2.20	0.377	0.84	0.80	0.68	82.7	82.7	80.0	6.0	3.0	3.5	0.0113	18
1.5	2.0	90S	3H09S2B3AT000	2850	2.88	0.510	0.86	0.81	0.72	84.2	84.2	84.2	6.5	2.8	3.0	0.0066	18
2.2	3.0	90L	3H09L2E3AT000	2850	4.14	0.75	0.86	0.80	0.71	85.9	85.9	85.5	6.5	3.0	3.3	0.0084	21
3.7	5.0	100L	3H10L2B3AT000	2890	6.74	1.25	0.87	0.82	0.73	87.8	87.8	87.3	7.0	3.0	3.1	0.0158	26
5.5	7.5	132S	3H13S2C3AT000	2935	9.53	1.83	0.90	0.87	0.81	89.2	89.2	87.5	7.0	2.3	3.0	0.0878	62
7.50	10.00	132S	3H13S2H3AT000	2935	12.90	2.49	0.90	0.87	0.81	90.10	90.10	88.70	7.00	2.30	3.00	0.0936	65
9.30	12.50	160M	3H16M2B3CT000	2945	16.59	3.08	0.86	0.83	0.76	90.70	90.70	88.70	6.50	2.50	3.00	0.1900	120
11	15	160M	3H16M2E3CT000	2945	19.5	3.64	0.86	0.83	0.76	91.2	91.2	89.2	6.5	2.5	3.0	0.2200	127
15	20.0	160M	3H16M2H3CT000	2945	26.1	4.96	0.87	0.84	0.77	91.9	91.9	90.0	6.5	2.5	3.0	0.3000	144
18.5	25	160L	3H16L2M3CT000	2945	31.7	6.1	0.88	0.86	0.79	92.4	92.4	90.8	6.5	2.5	3.0	0.3740	161
22	30	180M	3H18M2B3CT000	2960	37.5	7.2	0.88	0.84	0.78	92.7	92.7	91.0	6.5	2.6	3.0	0.5000	192
30	40	200L	3H20L2B3CT000	2970	51.4	9.8	0.87	0.85	0.79	93.3	93.3	91.5	6.5	2.2	2.8	0.91	306
37	50	200L	3H20L2E3CT000	2970	63.1	12.1	0.87	0.85	0.79	93.7	93.7	92.0	6.5	2.2	2.8	1.13	315
45	60	225M	3H22M2B3CT000	2970	74.0	14.8	0.90	0.88	0.82	94.0	94.0	93.0	6.6	2.1	2.7	2.11	475
55	75	250M	3H25M2E3CT000	2970	91.2	18.0	0.89	0.86	0.80	94.3	94.3	93.0	6.5	2.4	2.8	2.60	550
75	100	280S	3H28S2E3CT000	2970	121.1	24.6	0.91	0.89	0.86	94.7	94.7	92.7	7.0	2.0	2.7	3.08	675
90	120	280M	3H28M2H3CT000	2970	144.8	29.5	0.91	0.89	0.86	95.0	95.0	93.0	7.0	2.0	2.7	3.69	760
110	150	315S	3H31S2E3CT000	2982	179	35.9	0.90	0.86	0.80	95.2	94.6	93.0	7.0	2.2	2.5	5.00	940
132	180	315L	3H31L2H3CT000	2982	214	43.1	0.90	0.86	0.80	95.4	94.8	93.2	7.0	2.2	2.5	6.20	1100
150	200	315L	3H31L2A3CT000	2982	246	49	0.89	0.85	0.80	95.5	94.9	93.5	7.0	2.2	2.5	7.70	1390
160	215	315L	3H31L2M3CT000	2982	262	52	0.89	0.85	0.80	95.6	95.0	93.6	7.0	2.2	2.5	7.70	1390
180	240	355L	3H35L2A3CT000	2987	284	59	0.92	0.89	0.86	95.7	95.7	93.7	7.0	1.8	2.4	12.00	1680
200	270	355L	3H35L2B3CT000	2988	316	65	0.92	0.89	0.84	95.8	95.8	93.8	7.0	2.0	2.5	12.00	1680
225	335	355L	3H35L2C3CT000	2987	355	73	0.92	0.89	0.84	95.8	95.8	93.8	6.5	1.8	2.4	12.00	1680
250	335	355L	3H35L2E3CT000	2988	395	81	0.92	0.90	0.86	95.8	95.8	93.8	7.0	2.0	2.5	14.70	1870
280	375	355L	3H35L2G3CT000	2987	442	91	0.92	0.90	0.86	95.8	95.8	93.8	6.5	1.8	2.4	14.70	1870

Note: All performance values are subject to tolerance as per IS/IEC 60034-1

LV MOTORS: IE3 SAFE AREA

Performance Data : IE3 Efficiency Series for Safe Area Application

Applicable standard for testing & efficiency determination : IS15999
Voltage: 415V +/- 10%
Frequency: 50Hz +/- 5%
Combined Variation: +/- 10%

Ambient: 50°C
Duty: S1 (Continuous)
1500 rpm (4 Pole)

Insulation: Class F
Temperature Rise: Class B
Protection: IP55

Rated Output		Frame size	Type Reference	Operating characteristics at rated output									With DOL starting			Rotor GD²	Net Weight B3 constr.
				Rated Speed	Rated Current	Rated Torque	Power Factor			% Efficiency			Starting Current to Rated Current Ratio	Starting Torque to Rated Torque Ratio	Pullout Torque to Rated Torque Ratio		
kW	HP		B3 construction	RPM	Amps.	kg-m	FL	3/4L	1/2L	FL	3/4L	1/2L				kgm²	kg
0.55	0.8	80	3H0804B3CT000	1425	1.26	0.376	0.78	0.74	0.60	78.0	78.0	77.0	5.0	2.2	2.8	0.0110	17
0.75	1.00	80	3H0804E3CT000	1430	1.62	0.511	0.78	0.74	0.60	82.5	82.5	82.5	5.0	2.6	2.8	0.0150	19
1.1	1.5	90S	3H09S4B3AT000	1425	2.33	0.750	0.78	0.70	0.55	84.1	84.1	82.5	5.5	2.5	2.7	0.0121	17
1.5	2.0	90L	3H09L4E3AT000	1425	3.14	1.03	0.78	0.70	0.55	85.3	85.3	84.5	6.0	2.5	2.7	0.0149	20
2.2	3.0	100L	3H10L4B3AT000	1435	4.53	1.49	0.78	0.72	0.60	86.7	86.7	85.8	6.0	2.5	3.0	0.0245	26
3.7	5.0	112M	3H11M4B3AT000	1455	7.37	2.48	0.79	0.74	0.60	88.4	88.4	86.5	6.5	3.0	3.5	0.0588	37
5.50	7.50	132S	3H13S4C3AT000	1455	10.30	3.68	0.83	0.78	0.66	89.60	89.60	88.40	6.50	2.50	3.00	0.1173	52
7.50	10.00	132M	3H13M4H3AT000	1455	13.90	5.02	0.83	0.78	0.66	90.40	90.40	89.40	6.50	2.50	3.30	0.1570	70
9.3	12.5	160M	3H16M4E3CT000	1470	17.3	6.16	0.82	0.77	0.68	91.0	91.0	90.0	6.5	2.7	3.2	0.3400	124
11	15.0	160M	3H16M4H3CT000	1470	20.4	7.29	0.82	0.77	0.68	91.4	91.4	90.8	6.5	2.7	3.2	0.3750	135
15	20	160L	3H16L4M3CT000	1470	27.3	9.9	0.83	0.78	0.70	92.1	92.1	91.1	6.5	2.7	3.2	0.5200	153
18.5	25	180M	3H18M4B3CT000	1470	31.9	12.3	0.87	0.84	0.76	92.6	92.6	92.0	6.5	2.5	3.0	0.7500	200
22	30	180L	3H18L4E3CT000	1470	37.8	14.6	0.87	0.84	0.76	93.0	93.0	92.5	6.5	2.5	3.0	0.86	220
30	40	200L	3H20L4B3CT000	1475	51.3	19.8	0.87	0.84	0.77	93.6	93.6	91.5	6.5	2.6	3.0	1.38	295
37	50	225S	3H22S4B3CT000	1482	66.0	24.3	0.83	0.80	0.74	93.9	93.9	93.4	6.0	2.0	2.6	2.30	400
45	60	225M	3H22M4E3CT000	1482	80.1	29.6	0.83	0.80	0.74	94.2	94.2	93.6	6.0	2.0	2.6	2.83	430
55	75	250M	3H25M4B3CT000	1480	96.3	36.2	0.84	0.80	0.72	94.6	94.6	93.8	6.0	2.0	2.6	3.06	500
75	100	280S	3H28S4B3CT000	1485	127.7	49.2	0.86	0.82	0.74	95.0	95.0	94.5	6.5	2.5	3.0	5.53	670
90	120	280M	3H28M4H3CT000	1485	153	59.0	0.86	0.82	0.74	95.2	95.2	95.0	6.5	2.5	3.0	6.36	735
110	150	315S	3H31S4G3CT000	1488	189	72.0	0.85	0.82	0.74	95.4	95.4	93.9	6.8	2.5	3.0	11.70	965
132	180	315M	3H31M4K3CT000	1488	226	86	0.85	0.82	0.74	95.6	95.6	94.1	6.8	2.5	3.0	14.00	1115
160	215	315L	3H31L4P3CT000	1490	277	105	0.84	0.80	0.72	95.8	95.8	94.5	6.6	2.5	3.0	15.60	1225
180	240	315L	3H31L4T3CT000	1491	311	118	0.84	0.80	0.72	95.9	95.9	94.6	6.6	2.7	3.0	17.80	1290
200	270	315L	3H31L4W3CT000	1491	345	131	0.84	0.80	0.72	96.0	96.0	95.0	6.6	2.7	3.0	17.80	1290
225	300	355L	3H35L4B3CT000	1490	375	147	0.87	0.83	0.72	96.0	96.0	95.0	6.0	1.7	2.4	23.30	1680
250	335	355L	3H35L4E3CT000	1492	416	163	0.87	0.83	0.72	96	96	95.0	6.5	1.8	2.4	32.70	1855
315	422	355L	3H35L4H3CT000	1492	525	206	0.87	0.83	0.72	96.0	96	95.0	6.5	1.8	2.4	37.90	2025

Note: All performance values are subject to tolerance as per IS/IEC 60034-1

Bharat Bijlee

LV MOTORS: IE3 SAFE AREA

Performance Data: IE3 Efficiency Series for Safe Area Application

Applicable standard for testing & efficiency determination : IS15999
Voltage: 415V +/- 10%
Frequency: 50Hz +/- 5%
Combined Variation: +/- 10%

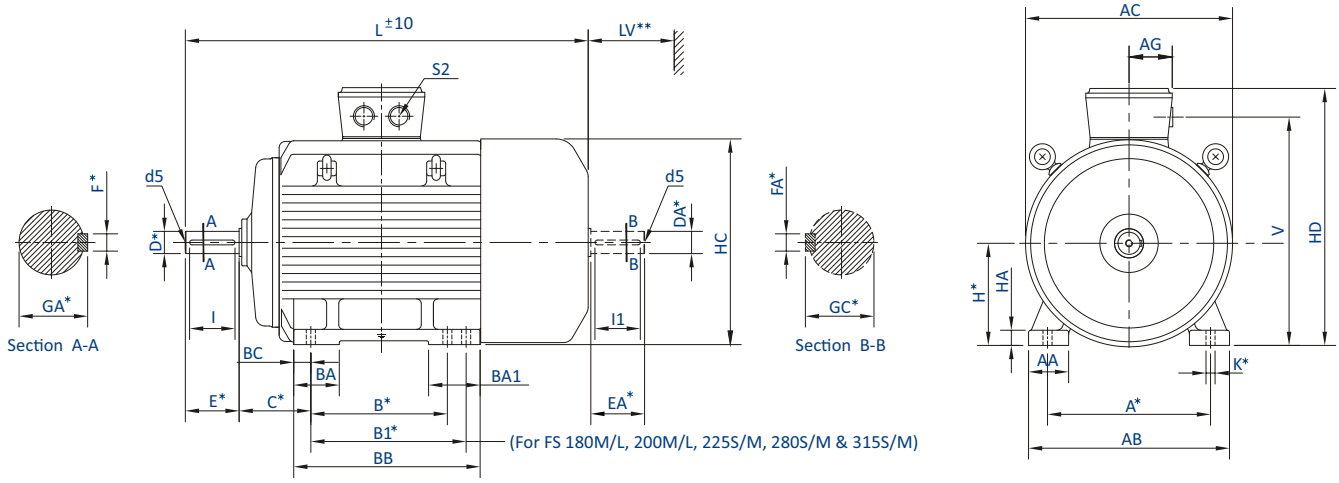
Ambient: 50°C
Duty: S1 (Continuous)
1000 rpm (6 Pole)

Insulation: Class F
Temperature Rise: Class B
Protection: IP55

Rated Output		Frame size	Type Reference	Operating characteristics at rated output									With DOL starting			Rotor GD²	Net Weight B3 constr.
				Rated Speed	Rated Current	Rated Torque	Power Factor			% Efficiency			Starting Current to Rated Current Ratio	Starting Torque to Rated Torque Ratio	Pullout Torque to Rated Torque Ratio		
kW	HP		B3 construction	RPM	Amps.	kg-m	FL	3/4L	1/2L	FL	3/4L	1/2L				kgm²	kg
0.75	1.0	90S	3H09S6B3AT000	945	1.84	0.773	0.72	0.62	0.52	78.9	78.9	78.9	4.0	2.1	2.5	0.0174	25
1.1	1.50	90L	3H09L6E3AT000	945	2.62	1.134	0.72	0.62	0.52	81.0	81.0	81.0	4.0	2.1	2.5	0.0250	27
1.5	2.0	100L	3H10L6B3AT000	935	3.51	1.560	0.72	0.62	0.54	82.5	82.5	81.0	4.5	2.3	2.5	0.0275	24
2.2	3.0	112M	3H11M6B3AT000	960	4.84	2.23	0.75	0.68	0.55	84.3	84.3	81.0	6.0	2.3	2.5	0.0691	36
3.7	5.0	132S	3H13S6C3AT000	960	7.83	3.75	0.76	0.70	0.58	86.5	86.5	86.0	5.5	2.2	2.6	0.1210	50
5.5	7.5	132M	3H13M6H3AT000	965	11.30	5.55	0.77	0.70	0.60	88.0	88.0	87.5	5.5	2.2	2.6	0.1800	70
7.50	10.00	160M	3H16M6B3CT000	970	14.64	7.53	0.80	0.76	0.68	89.10	89.10	89.10	5.50	2.50	3.00	0.4500	125
9.30	12.50	160L	3H16L6E3CT000	975	18.01	9.29	0.80	0.76	0.68	89.80	89.80	89.80	5.50	2.50	3.00	0.5600	138
11	15	160L	3H16L6H3CT000	975	21.2	10.99	0.80	0.76	0.68	90.3	90.3	90.3	5.5	2.5	3.0	0.6460	145
15	20.0	180L	3H18L6B3CT000	977	27.6	14.95	0.83	0.78	0.72	91.2	91.2	91.2	5.5	2.5	3.0	1.2000	210
18.5	25	200L	3H20L6B3CT000	977	32.3	18.4	0.87	0.83	0.75	91.7	91.7	91.5	6.5	2.6	3.2	1.8100	295
22	30	200L	3H20L6E3CT000	977	37.7	21.9	0.88	0.85	0.76	92.2	92.2	92.2	6.5	2.6	3.2	2.1000	302
30	40	225M	3H22M6B3CT000	984	51.1	29.7	0.88	0.84	0.77	92.9	92.9	92.5	6.5	3.0	3.5	3.51	410
37	50	250M	3H25M6B3CT000	982	62.0	36.7	0.89	0.86	0.79	93.3	93.3	92.8	6.5	2.8	3.2	3.72	528
45	60	280S	3H28S6B3CT000	984	78.6	44.5	0.85	0.80	0.72	93.7	93.7	92.9	6.0	2.6	3.2	5.11	573
55	75	280M	3H28M6E3CT000	984	93.5	54.4	0.87	0.84	0.78	94.1	94.1	93.2	6.0	2.6	3.2	6.16	620
75	100	315S	3H31S6B3CT000	992	129.8	73.6	0.85	0.82	0.72	94.6	94.6	93.6	6.0	2.5	3.0	10.70	830
90	120	315M	3H31M6E3CT000	992	155.2	88.4	0.85	0.82	0.72	94.9	94.9	93.9	6.0	2.5	3.0	12.40	912
110	150	315M	3H31M6H3CT000	992	189	108.0	0.85	0.82	0.72	95.1	95.1	94.2	6.0	2.5	3.0	15.50	1010
132	180	315L	3H31L6M3CT000	992	229	129.6	0.84	0.80	0.72	95.4	95.4	94.4	6.0	2.5	3.0	18.00	1175
160	215	355L	3H35L6B3CT000	990	277	157	0.84	0.81	0.71	95.6	95.6	93.0	6.0	2.0	2.5	28.70	1670
180	240	355L	3H35L6C3CT000	990	319	177	0.82	0.78	0.66	95.7	95.7	94.0	6.0	2.0	2.5	28.70	1670
200	270	355L	3H35L6E3CT000	991	346	197	0.84	0.80	0.70	95.8	95.8	94.1	6.0	2.0	2.5	35.50	1780
250	335	355L	3H35L6H3CT000	991	432	246	0.84	0.80	0.70	95.8	95.8	94.1	6.0	2.0	2.5	43.30	1995

Note: All performance values are subject to tolerance as per IS/IEC 60034-1

DIMENSIONAL DRAWING: IE3 EFFICIENCY SERIES FOR SAFE AREA APPLICATION FOOT MOUNTED (B3) MOTORS

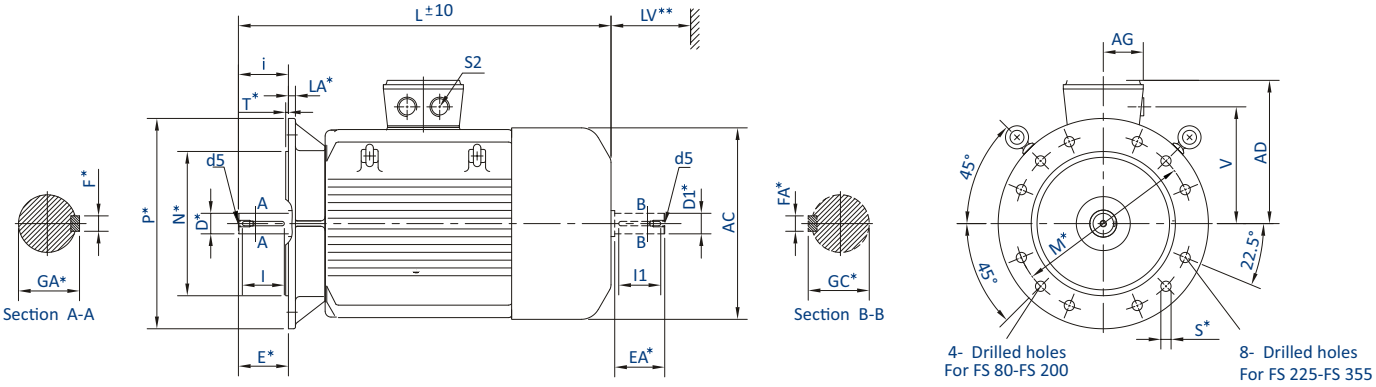


		FIXING						GENERAL												TERMINAL BOX			SHAFT					
IEC Fr. Size	Pole	A*	B*	B1*	C*	H*	K*	AB	BB	AA	BA	BA1	BC	HA	HC	HD	L	LV**	AC	V	AG	S2 BSC	D* DA*	E* EA*	F* FA*	GA* GC*	I I1	d5
80	2&4	125	100	–	50	80	10	150	124	32	36	–	12	9	168	220	292	30	174	191	40	1x3/4"	19	40	6	21.5	35	M6
90S	2,4&6	140	100	–	56	90	10	168	125	34	31.5	–	13	12	177	230	336	35	174	199	52	2x3/4"	24	50	8	27	45	M8
	8																302											
90L	2,4&6		125						150								361											
	8																327											
100L	2&4	160	140	–	63	100	12	190	174	43.5	36	–	17	12	198	257	387	40	195	225	56	2x1"	28	60	8	31	55	M10
	6&8																366											
112M	4&6	190	140	–	70	112	12	220	174	47	36	–	17	12	222	282	419	45	220	246	56	2x1"	28	60	8	31	55	M10
	8																388											
132S	2	216	140	–	89	132	12	256	180	54	50	–	20	16	262	328	518	50	260	291	63	2x1"	38	80	10	41	70	M12
	4																475											
	6&8																459											
132M	4&6		178						218		54						556											
160M	2(9.3kW),4(9.3kW)&6	254	210	–	108	160	15	310	250	58	70	–	20	20	318	383	605	60	316	346	63	2x1"	42	110	12	45	105	M16
	2(11kW)&4(11kW)																635											
	2(15kW)																654											
	8																585											
160L	2		254						294								697											
	4&6(11kW)																679											
	6																649											
	8																629											
180M/L	2,4&6	279	241	279	121	180	15	344	319	65	70	108	20	26	377	470	728	70	394	414	97	2x1 1/2"	48	110	14	51.5	100	M16
200M/L	2,4&6	318	267	305	133	200	19	398	355	85	85	120	25	32	419	536	803	80	438	468	155	2x2"	55	110	16	59	100	M20
225S/M	2	356	286	311	149	225	19	436	361	85	85	85	25	34	461	579	855	90	472	511	155	2x2"	55	110	16	59	100	M20
	4&6																885						60	140	18	64	130	
250M	2	406	349	–	168	250	24	506	425	100	115	–	46	42	495	665	993	100	489	578	243	2x2"	60	140	18	64	130	M20
	4&6																914						65	140	18	69	130	
280S/M	2	457	368	419	190	280	24	540	490	100	110	149	37	42	552	725	1010	115	544	638	243	2x2"	65	140	18	69	130	M20
	4&6																						75	140	20	79.5	130	
315S/M	2	508	406	457	216	315	28	605	540	120	120	155	43	45	617	834	1175	130	604	728	278	2x2"	65	140	18	69	130	M20
	4&6																1167						80	170	22	85	160	
315L	2		508	–					593			–					1342					2x2 1/2"	65	140	18	69	130	
	4&6																1332						90	170	25	95	160	M24
355L	2	610	630	–	254	355	28	710	770	110	170	–	70	45	703	939	1461	145	695	850	403	2x3"	75	140	20	79.5	130	M20
	4&6																1491						95	170	25	100	160	M24

Notes: * This is a mandatory dimension for all standard motors
**Minimum distance for efficient cooling of motor to be maintained by user
1. All dimensions are in mm unless otherwise specified
2. Tolerances on mandatory dimensions are as per IS:1231
3. For non standard motors, dimensions may change. Please contact sales office for details

Notes: 1. Eyebolt is not provided for frame sizes 80 & 90
2. TB Position: To be read as: when viewed from DE side / viewed parallel to the shaft / Cable Entry
(a) 160 to 225 Frame: Top / Center /RHS when viewed from DE side
(b) 80 to 132 Frame: 250 to 355 Frame: Top / Towards drive end / RHS when viewed from DE side

DIMENSIONAL DRAWING: IE3 EFFICIENCY SERIES FOR SAFE AREA APPLICATION FLANGE MOUNTED (B5) MOTORS

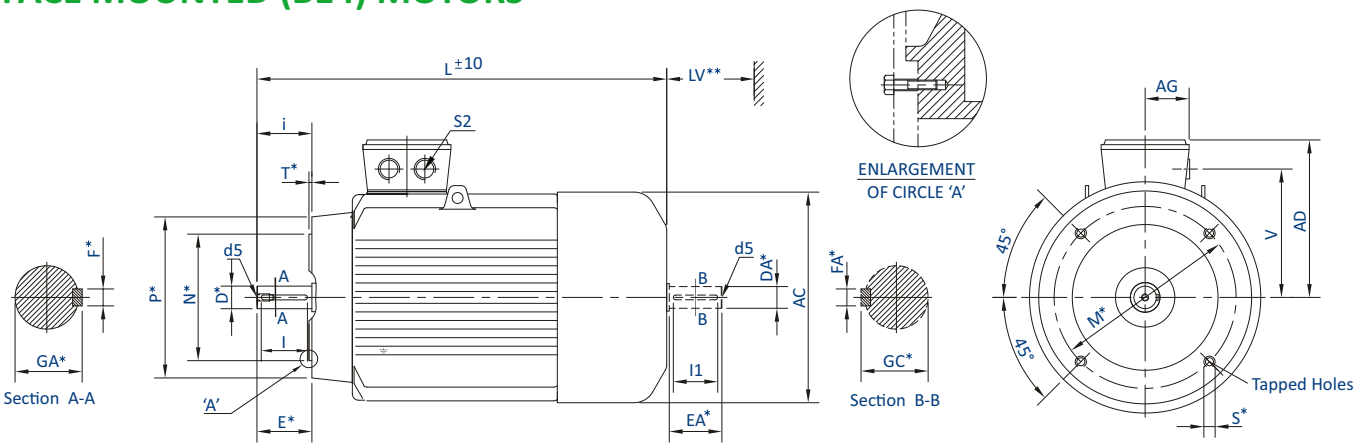


		FIXING					GENERAL						TERMINAL BOX			SHAFT					
IEC Fr. Size	Pole	P*	N*	M*	i	S*	T*	LA*	AD	L	LV**	AC	V	AG	S2 BSC	D* DA*	E* EA*	F* FA*	GA* GC*	l l1	d5
80	2&4	200	130	165	40	12	3.5	10	140	292	30	174	111	40	1x3/4"	19	40	6	21.5	35	M6
90S	2,4&6	200	130	165	50	12	3.5	10	140	336	35	174	109	52	2x3/4"	24	50	8	27	45	M8
	8									302											
90L	2,4&6									361											
	8									327											
100L	2&4	250	180	215	60	15	4	11	157	387	40	195	125	56	2x1"	28	60	8	31	55	M10
	6&8									366											
112M	4&6	250	180	215	60	15	4	11	170	419	45	220	134	56	2x1"	28	60	8	31	55	M10
	8									388											
132S	2	300	230	265	80	15	4	12	196	518	50	260	159	63	2x1"	38	80	10	41	70	M12
	4									475											
	6&8									459											
132M	4&6									556											
160M	2(9.3kW),4(9.3kW)&6	350	250	300	110	19	5	13	220	605	60	316	186	63	2x1"	42	110	12	45	105	M16
	2(11kW)&4(11kW)									635											
	2(15kW)									654											
	8									585											
160L	2									697											
	4&6(11kW)									679											
	6									649											
	8									629											
180M/L	2,4&6	350	250	300	110	19	5	13	290	728	70	394	234	97	2x1 1/2"	48	110	14	51.5	100	M16
200M/L	2,4&6	400	300	350	110	19	5	15	336	803	80	438	268	155	2x2"	55	110	16	59	100	M20
225S/M	2	450	350	400	110	19	5	16	354	855	90	472	286	155	2x2"	55	110	16	59	100	M20
	4&6				140					885						60	140	18	64	130	
250M	2	550	450	500	140	19	5	18	415	993	100	489	328	243	2x2"	60	140	18	64	130	M20
	4&6									914						65	140	18	69	130	
280S/M	2	550	450	500	140	19	5	18	445	1010	115	544	358	243	2x2"	65	140	18	69	130	M20
	4&6															75	140	20	79.5	130	
315S/M	2	660	550	600	140	24	6	22	519	1175	130	604	413	278	2x2"	65	140	18	69	130	M20
	4&6				170					1167						80	170	22	85	160	
315L	2				140					1342					2x2 1/2"	65	140	18	69	130	
	4&6				170					1332						90	170	25	95	160	M24
355L	2	800	680	740	140	24	6	25	584	1461	145	695	495	403	2x3"	75	140	20	79.5	130	M20
	4&6				170					1491						95	170	25	100	160	M24

Notes: * This is a mandatory dimension for all standard motors
**Minimum distance for efficient cooling of motor to be maintained by user
1. All dimensions are in mm unless otherwise specified
2. Tolerances on mandatory dimensions are as per IS:2223
3. For non standard motors, dimensions may change. Please contact sales office for details

Notes: 1. Eyebolt is not provided for frame sizes 80 & 90
2. TB Position: To be read as: when viewed parallel to the shaft
(a) 160 to 225 Frame: Center
(b) 80 to 132 Frame: 250 to 355 Frame: Towards drive end

DIMENSIONAL DRAWING: IE3 EFFICIENCY SERIES FOR SAFE AREA APPLICATION FACE MOUNTED (B14) MOTORS



		FIXING					GENERAL					TERMINAL BOX			SHAFT					
IEC Fr. Size	Pole	P*	N*	M*	i	S*	T*	AD	L	LV**	AC	V	AG	S2 BSC	D* DA*	E* EA*	F* FA*	GA* GC*	I I1	d5
90S	2,4&6	140	95	115	50	M8X12	3	140	336	35	174	109	52	2x3/4"	24	50	8	27	45	M8
	8								302											
90L	2,4&6								361											
	8								327											
100L	2&4	160	110	130	60	M8X12	3.5	157	387	40	195	125	56	2x1"	28	60	8	31	55	M10
	6&8								366											
112M	4&6	160	110	130	60	M8X12	3.5	170	419	45	220	134	56	2x1"	28	60	8	31	55	M10
	8								388											

Notes: * This is a mandatory dimension for all standard motors
**Minimum distance for efficient cooling of motor to be maintained by user
1. All dimensions are in mm unless otherwise specified
2. Tolerances on mandatory dimensions are as per IS: 2223
3. For non standard motors, dimensions may change. Please contact sales office for details

Notes: 1. Eyebolt is not provided for frame size 90
2. For the dimensional drawing of 132 frame / B14 mounting, kindly contact our nearest sales office
3. TB Position: To be read as: when viewed parallel to the shaft
(a) 90 to 132 Frame: Towards drive end

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Torque Transducer

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LV MOTORS PRODUCT RANGE

Motors Conform to relevant Indian Standards (IS) & IEC 60034 series
Voltage: 415V +/- 10%, Frequency: 50 Hz +/- 5%, Combined Variation: +/- 10%

Motor Type	Frame	Power (kW)	Polarity		Standard Technical Specifications
IE2 Motors IE3 Motors Large LT Motors (DCCA)	71 to 355 80 to 355 355 to 450	0.37 to 355 0.55 to 355 250 to 1250	2, 4, 6 2, 4, 6 2, 4, 6, 8		• Ambient: 50° C • Ambient for DCCA: 40° C • Mounting: B3, B5, B35, V1 • Inverter Grade Winding: For IE3 and DCCA • Duty: S1 • RTD & BTD: For DCCA motors
IE4 MOTORS	112 to 225	1.5 to 45	4		• Ambient: 50° C • Mounting: B3, B5, B35, V1 • Inverter Duty Winding • Duty: S1 • VPI: With Class H solvent less Resin
Standard Flame Proof Motors IE2 Flame Proof Motors IE3 Flame Proof Motors	80 to 315 80 to 315 80 to 315	0.37 to 200 0.37 to 200 0.75 to 180	2, 4, 6, 8 2, 4, 6, 8 2, 4, 6		• Ambient: 45° C • Mounting: B3, B5, B35, V1 • Inverter Grade Winding: For IE3 Motors • Duty: S1
IE2 Non - Sparking Motors	71 to 355	0.37 to 355	2, 4, 6		• Ambient: 50° C • Mounting: B3, B5, B35, V1 (B14 upto 132 Frame) • Duty: S1
Crane & Hoist Duty Motors	71 to 355	0.37 to 400	4, 6, 8		• Ambient: 45° C • Mounting: B3, B5, B35, V1 (B14 upto 132 Frame) • Duty: S2, S3, S4, S5 • Offered in DOL & Converter Fed Supply
Brake Motors (With Integral DC Brake)	71 to 132	0.37 to 9.3	2, 4, 6, 8		• Ambient: 50° C • Duty: S1, S2, S3, S4, S5 • Mounting: B3, B5, B35 • Integral DC Brake
Brake Motors (With External Mounted Brake)	71 to 200	0.37 to 22	2, 4, 6		• Ambient: 50° C • Duty: S1, S2, S3, S4, S5 • Mounting: B3, B5, B35 • External Mounted DC Brake/Arrangement
Slip Ring Motors	100 to 160	1.1 to 10	4, 6		• Ambient: 45° C • Mounting: B3, B35 • Duty: S3, S4, S5
Textile Motors	100 to 160	1.1 to 15	4, 6, 8		• Ambient: 50° C • Mounting: B3, B5, B35 • Duty: S1
Cane Unloader Motors	160 to 225	11 to 30	6		• Ambient: 45° C • Start/Stop per Hour: upto 900 • Mounting: B3, B5, B35 • Forced Cooling • Thermostat • Duty: S5, 50% CDF • Shaft Material: EN24

Insulation: Class F with temperature rise limited to Class 'B'
Cooling: IC411, Altitude: up to 1000m above MSL, Rotation: Bi-directional

Optional Features		Applications
• Non Standard Voltage: upto 690V • Shaft Material: EN24 • Enclosure: IP56 / 65 / 66 • Forced Cooling: 132 to 450 Frame • Space Heater: 90 Frame onwards • Roller Bearing: 160 Frame onwards • RTD & BTD: 250 Frame onwards • Insulation: Class H • Thermistor: 80 to 355L	• Insulated Bearing: 160 Frame onwards • High Temperature Grease: Suitable up to 200° C • Higher Polarity on request • SS Hardware • Non std shaft diameter / extension (subject to confirmation) • Non Standard Paint • Provision for Encoder Mounting • Low Vibration as per IS or IEC	Most common applications comprising of: Pump, Fan, Compressor, Packing Machinery, Coiler/De-coiler, Agro Equipment, Food Processing Equipment, Paper Machinery, Agitator, Dairy Equipment, Machine Tool, Air Conditioning, Material Handling, Plastic Machinery, Textile Machinery, Cooling Tower, Crusher, Material Handling
• Shaft Material: EN24 • Enclosure: IP56 / 65 / 66 • Roller Bearing: 160 Frame onwards • Insulation: Class H • Space Heater: 90 frame onwards • Thermistor: 80 to 225 Frame	• Non std shaft diameter / extension (subject to confirmation) • Non Standard Paint • Provision for Encoder Mounting • Low Vibration as per IS or IEC	Fans, HVAC, Pumps,Textiles,hydraulic press
• Non Standard Voltage: 550V • Shaft Material: EN24 • Enclosure: IP56 / 65 / 66 • Space Heater: 90 Frame onwards • Roller Bearing: 160 Frame onwards • Insulation: Class H • 8 pole motor on request • Thermistor: 80 to 315 L	• Insulated Bearing: 160 Frame onwards • Intermittent Duty S3, S4: 80 to 132 Frame in 4 pole only • Non std shaft diameter / extension • Motors for Inverter Duty • Test facility for combined Testing with VFD • Non Standard Paint • Low Vibration as per IS or IEC	Most common applications comprising of: Pump, Fan, Compressor, Material Handling, Agitator, LPG Bottling Plant, Pharma Machinery, Chemical Plant Machinery, Machinery for mines
• Shaft Material: EN24 • Enclosure: IP56 / 65 / 66 • Roller Bearing: 160 Frame onwards • Insulation: Class H	• Insulated Bearing: 160 Frame onwards • Higher Polarity on request • Non std shaft diameter / extension • Motors for Inverter Duty • Test facility for combined testing with VFD • Non Standard Paint • Low Vibration as per IS or IEC	Pump, Fan, Compressor, Material Handling, Agitator, Pharma Machinery
• Non Standard Voltage: 380 to 460V • Shaft Material: EN24 • Enclosure: IP56 / 65 / 66 • Space Heater: 90 Frame onwards • Roller Bearing: 160 Frame onwards • BTD: 250 Frame & above • Insulation: Class H • Thermistor: 80 to 355 L	• Insulated Bearing: 160 Frame onwards • Non std shaft diameter & extension • Motors for Inverter Duty • Non Standard Paint • Low Vibration as per IS or IEC	Crane, Hoist, Lift, Material Handling, Car Stacker, Door Opening
• Non Standard Voltage: upto 460V • Manual Release Arrangement: For 90 to 132 Frame • Motors for Inverter Duty	• Non std shaft diameter & extension • Double Shaft Extension for brake arrangement • Non Standard Paint	Crane, Hoist, Material Handling, Textile, Pharma to name a few
• Non Standard Voltage: upto 460V • Manual Release Arrangement • Motors for Inverter Duty	• Double Shaft Extension for brake arrangement • Non Standard Paint • Higher Braking Torque	Crane, Hoist, Material Handling, Textile, Pharma to name a few
• Non std shaft diameter & extension	• Non Standard Paint	Crane, Hoist, Lift, Material Handling
• Non Standard Voltage: upto 500V • Insulation: Class H	• Motors for Inverter Duty • Non Standard Paint • Low Vibration as per IS	Ginning, Textile Machinery
• Insulation: Class H • Thermistor	• Insulated Bearing: 160 Frame onwards • Non Standard Paint	Cane Loading-Unloading Machine

CERTIFICATIONS

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SynchroVERT IE4 Motor:
Winner of CII's Most Innovative Energy Saving Product 2016

New Product

Ultra Premium Energy Efficient
IE5 Motor:
Winner of CII's Most Innovative Energy Saving Product 2018

Upcoming Product

ISO 14001:2015

OHSAS 18001:2007

ISO 9001:2015

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