



AC MOTORS



INTEGRATED ELECTRIC COMPANY PVT LTD

Bangalore, India

Established in 1982, Integrated Electric (IEC) manufactures high quality electrical rotating machines and drives in a wide range and variety. Its product basket includes DC Motors between 0.37 and 2500kW, AC Motors between 0.12 and 1000kW, AC Drives between 0.5 and 300kW, AC Generators between 7.5 and 320kVA and DC and AC Variable Speed Diesel Generator Sets.

IEC's AC Motors are divided into four types depending on the configuration.

The IES Series of Standard AC Motors range from 0.12kW to 200kW in frame sizes 63 to 315 and are available in 2, 4, 6 and 8 pole designs. These motors are suitable for a variety of industrial, domestic, agricultural and other general purpose applications. They are characterized by streamlined design, efficient cooling and noiseless running and they confirm to all national and international standards. All motors are of IE2 efficiency (where applicable).

The IED Series of AC Motors range from 160kW to 1000kW in frame sizes 315 to 450 and are available in 2, 4, 6 and 8 pole designs. These motors have a dual air circuit which help in developing higher power ratings and are suitable for a variety of industrial applications. All motors are of IE2 efficiency (where applicable).

The IEL Series of Inverter Duty AC Motors range from 0.37kW to 1000kW in frame sizes 90 to 450. These motors are made suitable for lower speed (minimum 10% rated) operation by using a separately driven constant speed cooling fan. They are suitable for both constant torque operation (by maintaining constant V/f ratio) and for constant kW operation (by weakening the flux) and can be used in applications like extruders, lifts, fans, winders etc.

The IEL Series of Square Frame AC Motors range from 3.7kW to 150kW in frame sizes 100 to 180. These are usually open type motors and have a high power to weight ratio. They are cooled with a separate fan and are suitable for low speed operation using an inverter. These rotors have a low inertia and are ideal for application requiring superior dynamic response.

There are two dedicated manufacturing facilities available for the manufacture of these machines. The production is organized to provide flexibility and short lead times. IEC's major strength is in the manufacture of special products that meet specific application requirements. The company has been ISO 9001 certified since 1998 and spares no effort to ensure that a high level of quality is maintained. The process of continuous improvement permeates throughout the organization and results in our delivering better value to the customer year after year.

General Specifications

- Design Ambient is 50°C and Altitude is 1000m above MSL
- Class F insulation (Class H optional) is used with temperature rise restricted to Class B limits
- Motors have CE certification
- Dual coated enameled wire of Class 200°C is used on all motors (Corona Resistant Copper is optionally used for motors driven by AC Drives)
- Terminal box is mounted on top upto Frame 315 (RHS/LHS optional) and RHS/LHS for Frames 355 to 450
- Terminal Boards are with 6 terminals
- Duty Cycle: Standard designs are S1 duty. Motors for duty cycles S2 to S8 can be offered on request. Motors are designed to withstand 3 consecutive starts from a cold condition and 2 consecutive starts in a hot condition in an hour
- Cooling: IC411 for IES/IED motors, IC416 for IEI motors and 100 frame IEL motors, IC06 for IEL motors of Frame 112 and above
- Protection: IP55 for IES/IED and IEI motors and IP23 for IEL motors. Optionally IP56, IP65 and IP66 can be offered for IES/IED motors
- Optional accessories like Thermistors, RTDs, BTDS, Space heaters etc. can be provided
- Bearings:
 - Sealed for life bearings for IES/IEI frames 63-160, IEL frames 100 & 112
 - Regreasable bearings for IES/IED/IEI frames 180 – 450, IEL frames 132 – 180
 - Roller bearings on DE side for IES/IED/IEI by default for frames 280 – 450 (non 2 pole motors) and IEL frames 132-180. Optionally can be provided for IES/IEI frames 180-250
- Mountings available are B3/B5/B6/B7/B14/B34/B35/V1/V3/V5/V6
- Standards adhered to are:
 - Efficiency: IS12615:2011 and IEC60034-30 for IES/IED/IEI machines with 2/4/6 poles
 - Efficiency: IS325 for machines not covered by IEC60034-30
 - Performance: IEC60034-1
 - Dimensions: IS1231, IS2223 and IS2254 as applicable
 - Protection: IEC60034-5
 - Cooling: IEC60034-6
 - Mechanical Vibration: IS12075 and IEC60034-14
 - Noise: IS12065 and IEC60034-09
 - Standard Outputs: IEC60072
 - Methods of determining losses and efficiency: IEC60034-2
 - Tolerances on Main Parameters: IEC60034-1

BEARING DETAILS

FRAME	DE	NDE	FRAME	DE	NDE
63	6202 C3 ZZ	6202 C3 ZZ	180	6310 C3	6310 C3
71	6203 C3 ZZ	6203 C3 ZZ	200	6312 C3	6312 C3
80	6204 C3 ZZ	6204 C3 ZZ	225	6313 C3	6313 C3
90	6205 C3 ZZ	6205 C3 ZZ	250	6315 C3	6315 C3
100	6206 C3 ZZ	6206 C3 ZZ	280(2P)	6316 C3	6316 C3
112	6306 C3 ZZ	6306 C3 ZZ	280(4,6,8P)	NU 317 C3	6317 C3
132	6208 C3 ZZ	6208 C3 ZZ	315(2P)	6318 C3	6318 C3
160	6309 C3 ZZ	6209 C3 ZZ	315(4,6,8P)	NU 318 C3	6318 C3

STANDARD IE2 EFFICIENCY MOTORS

3000 RPM

IES MOTORS- 2POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
0.18	63	2760	63.0	0.80	0.50	5.0	2.0	2.5	0.0006
0.25	63	2760	63.9	0.80	0.68	5.0	2.0	2.5	0.0008
0.37	71	2800	72.2	0.84	0.85	6.5	2.4	2.7	0.0014
0.55	71	2800	74.8	0.85	1.20	6.5	2.4	2.7	0.0018
0.75	80	2810	77.4	0.87	1.50	6.5	2.0	2.5	0.0027
1.1	80	2820	79.6	0.87	2.20	6.5	2.0	2.6	0.0036
1.5	90S	2850	81.3	0.87	3.00	6.5	1.9	2.6	0.006
2.2	90L	2855	83.2	0.88	4.20	7.0	1.9	2.7	0.007
3.7	100L	2860	85.5	0.88	6.80	7.0	1.9	3.0	0.015
5.5	132S	2880	87.0	0.86	10.20	7.0	2.0	2.8	0.053
7.5	132S	2880	88.1	0.88	13.50	7.0	2.0	3.0	0.053
9.3	160M	2890	88.9	0.90	16.20	7.0	2.1	2.8	0.130
11.0	160M	2925	89.4	0.90	19.00	7.0	2.2	2.9	0.130
15.0	160M	2925	90.3	0.90	25.70	7.0	2.0	2.7	0.178
18.5	160L	2930	90.9	0.90	31.50	7.0	2.0	2.7	0.213
22	180M	2930	91.3	0.90	37.20	7.0	2.1	2.9	0.297
30	200L	2935	92.0	0.90	50.40	7.0	2.0	2.5	0.621
37	200L	2935	92.5	0.90	61.80	7.0	2.0	2.5	0.640
45	225M	2940	92.9	0.90	74.90	7.0	2.0	2.7	1.09
55	250M	2955	93.2	0.90	91.20	7.0	1.9	2.2	1.44
75	280S	2960	93.8	0.90	123.6	7.0	2.0	2.3	2.49
90	280M	2970	94.1	0.90	147.8	7.0	2.0	2.2	2.96
110	315S	2970	94.3	0.90	180.3	7.0	1.7	2.5	5.80
132	315M	2980	94.6	0.90	215.7	7.0	1.7	2.5	6.98
160	315L	2980	94.8	0.90	260.9	7.0	1.7	2.5	8.46
180	315L	2980	95.6	0.90	291.1	7.0	2.0	2.5	10.20
200	315L	2980	95.0	0.90	325.4	7.0	2.0	2.5	10.20

1500 RPM

IES MOTORS- 4POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
0.18	63	1360	65.0	0.65	0.60	4.0	2.4	2.5	0.0012
0.25	71	1370	66.7	0.65	0.80	4.0	2.2	2.4	0.0023
0.37	71	1370	70.1	0.67	1.10	6.0	2.3	2.4	0.0030
0.55	80	1380	75.1	0.73	1.40	6.0	2.0	2.0	0.0044
0.75	80	1390	79.6	0.73	1.80	6.0	1.9	2.0	0.0059
1.1	90S	1400	81.4	0.73	2.60	6.0	1.9	2.6	0.0090
1.5	90L	1405	82.8	0.75	3.40	6.0	2.0	2.8	0.013
2.2	100L	1410	84.3	0.78	4.70	7.0	1.8	2.7	0.024
3.7	112M	1435	86.3	0.81	7.40	7.0	2.0	2.5	0.048
5.5	132S	1440	87.7	0.81	10.80	7.0	2.0	3.0	0.126
7.5	132M	1450	88.7	0.83	14.20	7.0	2.0	3.1	0.126
9.3	160M	1450	89.3	0.84	17.30	7.0	1.8	2.9	0.248
11.0	160M	1455	89.8	0.82	20.80	7.0	1.9	2.9	0.274
15.0	160L	1465	90.6	0.82	28.10	7.0	1.9	3.0	0.366
18.5	180M	1470	91.2	0.82	34.40	7.0	1.8	2.7	0.606
22	180L	1470	91.6	0.83	40.30	7.0	1.8	2.7	0.657
30	200L	1472	92.3	0.86	52.60	7.0	2.1	2.9	1.060
37	225S	1475	92.7	0.86	64.60	7.0	2.1	2.5	1.678
45	225M	1472	93.1	0.87	77.30	7.0	2.2	2.6	1.968
55	250M	1480	93.5	0.88	93.00	7.0	1.9	2.7	3.00
75	280S	1485	94.0	0.87	127.6	7.0	2.0	2.5	4.80
90	280M	1485	94.2	0.87	152.8	7.0	1.9	2.4	5.77
110	315S	1485	94.5	0.87	186.1	7.0	1.8	2.6	12.42
132	315M	1485	94.7	0.88	220.4	7.0	1.8	2.6	15.77
160	315L	1485	94.9	0.88	266.5	7.0	1.8	2.6	15.83
180	315L	1485	93.9	0.88	303.1	7.0	1.7	2.6	17.78
200	315L	1485	95.1	0.90	325.1	7.0	1.7	2.6	17.78

Not covered under IEC60034-30

STANDARD IE2 EFFICIENCY MOTORS

1000 RPM

IES MOTORS- 6POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
0.37	80	930	69.0	0.67	1.10	6.0	2.0	2.4	0.0088
0.55	80	930	72.9	0.68	1.50	6.0	2.0	2.4	0.011
0.75	90S	935	75.9	0.66	2.10	6.0	1.9	2.1	0.015
1.1	90L	935	78.1	0.68	2.90	6.0	1.9	2.3	0.020
1.5	100L	940	79.8	0.70	3.70	6.0	2.2	2.2	0.042
2.2	112M	950	81.8	0.77	4.90	7.0	1.8	2.3	0.075
3.7	132S	955	84.3	0.75	8.10	7.0	1.8	2.3	0.154
5.5	132M	955	86.0	0.76	11.70	7.0	1.8	2.0	0.184
7.5	160M	965	87.2	0.80	15.00	7.0	1.8	2.8	0.377
11.0	160L	965	88.7	0.81	21.30	7.0	1.8	2.8	0.514
15.0	180L	975	89.7	0.76	30.60	7.0	1.8	3.0	0.763
18.5	200L	980	90.4	0.82	34.70	7.0	1.8	2.8	1.380
22	200L	980	90.9	0.82	41.10	7.0	1.8	2.9	1.590
30	225M	985	91.7	0.81	56.20	7.0	1.9	2.0	3.070
37	250M	985	92.2	0.82	68.10	7.0	1.8	2.1	5.680
45	280S	990	92.7	0.81	83.40	7.0	1.9	2.2	5.880
55	280M	990	93.1	0.81	101.50	7.0	1.9	2.2	7.100
75	315S	990	93.7	0.85	131.00	7.0	1.8	2.6	17.90
90	315M	990	94.0	0.85	156.70	7.0	1.8	2.4	22.00
110	315L	990	94.3	0.85	190.90	7.0	1.8	2.4	26.85
132	315L	990	94.6	0.86	225.70	7.0	1.8	2.4	32.93
160	315L	990	94.8	0.86	273.00	7.0	2.2	2.8	32.93

750 RPM

IES MOTORS- 8POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
0.37	90S	700	62.0	0.61	1.40	3.0	1.9	2.0	0.015
0.55	90L	700	67.0	0.61	1.90	3.0	1.9	2.0	0.020
0.75	100L	700	70.0	0.60	2.50	3.5	1.9	2.4	0.031
1.1	100L	700	72.0	0.65	3.30	3.5	1.8	2.1	0.042
1.5	112M	710	74.0	0.65	4.30	3.5	1.8	2.3	0.076
2.2	132S	715	77.0	0.68	5.90	3.5	1.8	2.0	0.102
3.7	160M	722	80.0	0.74	8.70	4.5	1.8	2.5	0.322
5.5	160M	722	82.5	0.75	12.40	4.5	1.8	2.5	0.425
7.5	160L	722	84.0	0.75	16.60	4.5	1.8	2.5	0.579
11.0	180L	730	86.0	0.75	23.70	5.0	1.7	2.6	1.070
15.0	200L	730	87.0	0.77	31.20	5.0	1.7	2.2	1.590
18.5	225S	735	88.0	0.78	37.50	5.0	1.7	2.3	2.540
22	225M	735	88.5	0.78	44.40	5.0	1.7	2.3	3.070
30	250M	740	90.0	0.78	59.50	5.0	1.6	2.3	5.680
37	280S	740	90.5	0.80	71.00	6.0	1.9	2.5	7.800
45	280M	740	91.0	0.80	86.00	6.0	1.9	2.5	9.200
55	315S	740	91.5	0.79	105.90	6.0	1.9	2.3	17.90
75	315M	740	92.5	0.79	142.80	6.0	1.8	2.3	22.00
90	315L	740	93.0	0.80	168.30	6.0	1.8	2.3	26.85
110	315L	740	93.5	0.80	204.60	6.0	1.8	2.3	32.80

Not covered under IEC60034-30

Dimensions on page: 12 (a), 12 (b), 14 (a), 14 (b) & 16 (a)

“Dual coated enamelled copper and VPI treatment as standard”

DUAL AIR CIRCUIT IE2 EFFICIENCY MOTORS

3000 RPM		IED MOTORS- 2POLE - 415V - 50Hz							
Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
250	315	2979	95.0	0.90	407	7.0	1.6	2.6	22.89
315	315	2979	95.0	0.90	513	7.0	1.6	2.6	26.96
280	355	2980	95.0	0.90	456	7.0	1.6	2.6	15.70
355	355	2980	95.0	0.90	578	7.0	1.6	2.6	19.77
400	355	2980	95.0	0.90	651	7.0	1.6	2.6	22.28
500	355	2982	95.0	0.90	814	7.0	1.6	2.6	27.85
560	400	2985	95.0	0.91	901	7.0	1.6	2.6	37.07
630	400	2985	95.0	0.91	1014	7.0	1.6	2.6	41.70
710	400	2985	95.0	0.91	1143	7.0	1.6	2.6	47.00
800	450	2986	95.0	0.91	1287	7.0	0.9	2.6	64.50
900	450	2986	95.0	0.91	1448	7.0	0.9	2.6	72.50
1000	450	2986	95.0	0.91	1609	7.0	0.9	2.6	82.00

1500 RPM		IED MOTORS- 4POLE - 415V - 50Hz							
Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
200	315	1486	95.1	0.86	340	7.0	1.7	2.6	18.10
225	315	1486	95.1	0.86	383	7.0	1.7	2.6	20.30
250	315	1488	95.1	0.87	420	7.0	1.8	2.7	22.50
280	315	1488	95.1	0.87	471	7.0	1.8	2.7	25.00
315	315	1488	95.1	0.87	530	7.0	1.8	2.7	28.00
225	355	1488	95.1	0.87	378	7.0	1.7	2.6	22.50
250	355	1488	95.1	0.87	420	7.0	1.7	2.6	24.00
280	355	1488	95.1	0.87	471	7.0	1.8	2.7	25.30
315	355	1488	95.1	0.87	530	7.0	1.8	2.7	28.40
355	355	1488	95.1	0.87	597	7.0	1.8	2.7	32.00
400	355	1488	95.1	0.87	673	7.0	1.8	2.8	36.00
500	355	1488	95.1	0.88	831	7.0	1.8	2.8	45.00
560	400	1490	95.1	0.88	931	7.0	1.7	2.8	62.60
630	400	1490	95.1	0.88	1047	7.0	1.7	2.7	70.50
710	400	1490	95.1	0.88	1180	7.0	1.7	2.7	79.40
800	450	1490	95.1	0.88	1330	7.0	1.7	2.7	100.70
900	450	1490	95.1	0.88	1496	7.0	1.7	2.7	113.30
1000	450	1490	95.1	0.89	1644	7.0	1.7	2.7	127.70
Not covered under IEC60034-30									



Higher outputs in smaller frame sizes.....



DUAL AIR CIRCUIT IE2 EFFICIENCY MOTORS

1000 RPM		IED MOTORS- 6POLE - 415V - 50Hz							
Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
200	315	988	95.0	0.85	345	7.0	1.6	2.6	35.00
225	315	988	95.0	0.85	388	7.0	1.6	2.6	39.50
250	315	988	95.0	0.85	431	7.0	1.7	2.6	43.50
200	355	989	95.0	0.85	345	7.0	1.7	2.6	36.00
225	355	989	95.0	0.85	388	7.0	1.7	2.6	39.00
250	355	989	95.0	0.85	431	7.0	1.7	2.6	43.00
280	355	989	95.0	0.85	482	7.0	1.7	2.6	48.00
315	355	990	95.0	0.85	543	7.0	1.7	2.6	54.00
355	355	990	95.0	0.85	612	7.0	1.6	2.6	60.50
400	355	990	95.0	0.86	681	7.0	1.6	2.5	68.00
450	400	991	95.0	0.86	766	7.0	1.6	2.6	90.00
500	400	991	95.0	0.86	851	7.0	1.6	2.6	100.60
560	400	991	95.0	0.86	954	7.0	1.6	2.6	113.30
630	450	991	95.0	0.86	1073	7.0	1.7	2.6	155.00
710	450	991	95.0	0.86	1209	7.0	1.6	2.6	174.00
800	450	991	95.0	0.86	1362	7.0	1.6	2.6	196.00

750 RPM		IED MOTORS- 8POLE - 415V - 50Hz							
Output (kW)	Frame	Speed (RPM)	Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
160	315	739	94.5	0.81	291	6.5	1.6	2.6	35.00
180	315	739	94.5	0.81	327	6.5	1.6	2.6	35.00
200	315	739	94.7	0.81	363	6.5	1.7	2.5	45.00
160	355	740	94.7	0.81	290	6.5	1.7	2.5	40.00
180	355	740	94.7	0.81	326	6.5	1.7	2.5	45.00
200	355	740	94.7	0.81	363	6.5	1.7	2.5	50.00
225	355	740	94.7	0.81	408	6.5	1.7	2.5	56.00
250	355	741	95.2	0.81	451	6.5	1.6	2.5	62.00
315	355	741	95.3	0.81	568	6.5	1.6	2.5	78.00
355	400	742	95.6	0.81	638	6.5	1.7	2.6	110.20
400	400	742	95.7	0.81	718	6.5	1.6	2.5	124.00
450	400	742	95.8	0.81	807	6.5	1.6	2.5	140.00
500	450	744	96.0	0.81	895	6.5	1.6	2.5	180.00
560	450	744	96.1	0.81	1001	6.5	1.6	2.5	202.00
630	450	744	96.1	0.81	1126	6.5	1.6	2.5	227.50
Not covered under IEC60034-30									

Dimensions on page: 17 (a)

“Cost effective.....”

STANDARD INVERTER DUTY MOTORS

3000 RPM

IEI MOTORS- 2POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
1.5	90S	2850	77.2	0.87	3.00	6.5	1.9	2.6	0.006
2.2	90L	2855	79.7	0.88	4.20	7.0	1.9	2.7	0.007
3.7	100L	2860	82.7	0.88	6.80	7.0	1.9	3.0	0.015
5.5	132S	2880	84.7	0.86	10.20	7.0	2.0	2.8	0.053
7.5	132S	2880	86.0	0.88	13.50	7.0	2.0	3.0	0.053
9.3	160M	2890	86.9	0.90	16.20	7.0	2.1	2.8	0.130
11	160M	2925	87.6	0.90	19.00	7.0	2.2	2.9	0.130
15	160M	2925	88.7	0.90	25.70	7.0	2.0	2.7	0.178
18.5	160L	2930	89.3	0.90	31.50	7.0	2.0	2.7	0.213
22	180M	2930	89.9	0.90	37.20	7.0	2.1	2.9	0.297
30	200L	2935	90.7	0.90	50.40	7.0	2.0	2.5	0.621
37	200L	2935	91.2	0.90	61.80	7.0	2.0	2.5	0.640
45	225M	2940	91.7	0.90	74.90	7.0	2.0	2.7	1.09
55	250M	2955	92.1	0.90	91.20	7.0	1.9	2.2	1.44
75	280S	2960	92.7	0.90	123.60	7.0	2.0	2.3	2.49
90	280M	2970	93.0	0.90	147.80	7.0	2.0	2.2	2.96
110	315S	2970	93.3	0.90	180.30	7.0	1.7	2.5	5.80
132	315M	2980	93.5	0.90	215.70	7.0	1.7	2.5	6.98
160	315L	2980	93.8	0.90	260.90	7.0	1.7	2.5	8.46
180	315L	2980	93.9	0.90	291.10	7.0	2.0	2.5	10.20
200	315L	2980	94.0	0.90	325.4	7.0	2.0	2.5	10.20

1500 RPM

IEI MOTORS- 4POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
1.1	90S	1400	75.0	0.73	2.60	6.0	1.9	2.6	0.009
1.5	90L	1405	77.2	0.75	3.40	6.0	2.0	2.8	0.013
2.2	100L	1410	79.7	0.78	4.70	7.0	1.8	2.7	0.024
3.7	112M	1435	82.7	0.81	7.40	7.0	2.0	2.5	0.048
5.5	132S	1440	84.7	0.81	10.80	7.0	2.0	3.0	0.126
7.5	132M	1450	86.0	0.83	14.20	7.0	2.0	3.1	0.126
9.3	160M	1450	86.9	0.84	17.30	7.0	1.8	2.9	0.248
11	160M	1455	87.6	0.82	20.80	7.0	1.9	2.9	0.274
15	160L	1465	88.7	0.82	28.10	7.0	1.9	3.0	0.366
18.5	180M	1470	89.3	0.82	34.40	7.0	1.8	2.7	0.606
22	180L	1470	89.9	0.83	40.30	7.0	1.8	2.7	0.657
30	200L	1472	90.7	0.86	52.60	7.0	2.1	2.9	1.060
37	225S	1475	91.2	0.86	64.60	7.0	2.1	2.5	1.68
45	225M	1472	91.7	0.87	77.30	7.0	2.2	2.6	1.97
55	250M	1480	92.1	0.88	93.00	7.0	1.9	2.7	3.00
75	280S	1485	92.7	0.87	127.60	7.0	2.0	2.5	4.80
90	280M	1485	93.0	0.87	152.80	7.0	1.9	2.4	5.77
110	315S	1485	93.3	0.87	186.10	7.0	1.8	2.6	12.42
132	315M	1485	93.5	0.88	220.40	7.0	1.8	2.6	15.77
160	315L	1485	93.8	0.88	266.50	7.0	1.8	2.6	15.83
180	315L	1485	93.9	0.88	303.10	7.0	1.7	2.6	17.78
200	315L	1485	94.0	0.90	325.10	7.0	1.7	2.6	17.78

Dimensions on page: 12 (c), 12 (d), 14 (c), 14 (d) & 16 (b)



Axially cooled with a separate fan to allow 1:10 speed variation in the constant torque range.....



STANDARD INVERTER DUTY MOTORS

1000 RPM

IEI MOTORS- 6POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
0.75	90S	935	70.0	0.66	2.10	6.0	1.9	2.1	0.015
1.1	90L	935	72.9	0.68	2.90	6.0	1.9	2.3	0.020
1.5	100L	940	75.2	0.70	3.70	6.0	2.2	2.2	0.042
2.2	112M	950	77.7	0.77	4.90	7.0	1.8	2.3	0.075
3.7	132S	955	80.9	0.75	8.10	7.0	1.8	2.3	0.154
5.5	132M	955	83.1	0.76	11.70	7.0	1.8	2.0	0.184
7.5	160M	965	84.7	0.80	15.00	7.0	1.8	2.8	0.377
11	160L	965	86.4	0.81	21.30	7.0	1.8	2.8	0.514
15	180L	975	87.7	0.76	30.60	7.0	1.8	3.0	0.763
18.5	200L	980	88.6	0.82	34.70	7.0	1.8	2.8	1.380
22	200L	980	89.2	0.82	41.10	7.0	1.8	2.9	1.590
30	225M	985	90.2	0.81	56.20	7.0	1.9	2.0	3.070
37.0	250M	985	90.8	0.82	68.10	7.0	1.8	2.1	5.68
45.0	280S	990	91.4	0.81	83.40	7.0	1.9	2.2	5.88
55	280M	990	91.9	0.81	101.50	7.0	1.9	2.2	7.10
75	315S	990	92.6	0.85	131.00	7.0	1.8	2.6	17.90
90	315M	990	92.9	0.85	156.70	7.0	1.8	2.4	22.00
110	315L	990	93.3	0.85	190.90	7.0	1.8	2.4	26.85
132	315L	990	93.5	0.86	225.70	7.0	1.8	2.4	32.93

750 RPM

IEI MOTORS- 8POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm ²)
0.37	90S	700	62.0	0.61	1.4	3.0	1.9	2.0	0.015
0.55	90L	700	67.0	0.61	1.9	3.0	1.9	2.0	0.020
0.75	100L	700	70.0	0.60	2.5	3.5	1.9	2.4	0.031
1.1	100L	700	72.0	0.65	3.3	3.5	1.8	2.1	0.042
1.5	112M	710	74.0	0.65	4.3	3.5	1.8	2.3	0.076
2.2	132S	715	77.0	0.68	5.9	3.5	1.8	2.0	0.102
3.7	160M	722	80.0	0.74	8.7	4.5	1.8	2.5	0.322
5.5	160M	722	82.5	0.75	12.4	4.5	1.8	2.5	0.425
7.5	160L	722	84.0	0.75	16.6	4.5	1.8	2.5	0.579
11.0	180L	730	86.0	0.75	23.7	5.0	1.7	2.6	1.070
15.0	200L	730	87.0	0.77	31.2	5.0	1.7	2.2	1.590
18.5	225S	735	88.0	0.78	37.5	5.0	1.7	2.3	2.540
22	225M	735	88.5	0.78	44.4	5.0	1.7	2.3	3.070
30	250M	740	90.0	0.78	59.5	5.0	1.6	2.3	5.680
37	280S	740	90.5	0.80	71.0	6.0	1.9	2.5	7.800
45	280M	740	91.0	0.80	86.0	6.0	1.9	2.5	9.200
55	315S	740	91.5	0.79	105.9	6.0	1.9	2.3	17.900
75	315M	740	92.5	0.79	142.8	6.0	1.8	2.3	22.00
90	315L	740	93.0	0.80	168.3	6.0	1.8	2.3	26.85
110	315L	740	93.5	0.80	204.6	6.0	1.8	2.3	32.80

Not covered under IEC60034-30

Cooling Motor Rating

Frame	90-160	180	200-250	280	315
Watts	90	130	160	220	3700

DUAL AIR CIRCUIT INVERTER DUTY MOTORS

3000 RPM

IEI MOTORS- 2POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm2)
250	315	2979	94.0	0.90	407.0	7.0	1.6	2.6	22.89
315	315	2979	94.0	0.90	513.0	7.0	1.6	2.6	26.96
280	355	2980	94.0	0.90	456.0	7.0	1.6	2.6	15.70
355	355	2980	94.0	0.90	578.0	7.0	1.6	2.6	19.77
400	355	2980	94.0	0.90	651.0	7.0	1.6	2.6	22.28
500	355	2982	94.0	0.90	814.0	7.0	1.6	2.6	27.85
560	400	2985	94.0	0.91	901.0	7.0	1.6	2.6	37.07
630	400	2985	94.0	0.91	1014.0	7.0	1.6	2.6	41.70
710	400	2985	94.0	0.91	1143.0	7.0	1.6	2.6	47.00
800	450	2986	94.0	0.91	1287.0	7.0	0.9	2.6	64.50
900	450	2986	94.0	0.91	1448.0	7.0	0.9	2.6	72.50
1000	450	2986	94.0	0.91	1609.0	7.0	0.9	2.6	82.00

1500 RPM

IEI MOTORS- 4POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} /I _{FL} (pu)	T _{ST} /T _{FL} (pu)	T _{MAX} /T _{FL} (pu)	GD ² (kgm2)
200	315	1486	95.1	0.86	340	7.0	1.7	2.6	18.10
225	315	1486	94.0	0.86	383.0	7.0	1.7	2.6	20.30
250	315	1488	94.0	0.87	420.0	7.0	1.8	2.7	22.50
280	315	1488	94.0	0.87	471.0	7.0	1.8	2.7	25.00
315	315	1488	94.0	0.87	530.0	7.0	1.8	2.7	28.00
225	355	1488	94.0	0.87	378.0	7.0	1.7	2.6	22.50
250	355	1488	94.0	0.87	420.0	7.0	1.7	2.6	24.00
280	355	1488	94.0	0.87	471.0	7.0	1.8	2.7	25.30
315	355	1488	94.0	0.87	530.0	7.0	1.8	2.7	28.40
355	355	1488	94.0	0.87	597.0	7.0	1.8	2.7	32.00
400	355	1488	94.0	0.87	673.0	7.0	1.8	2.8	36.00
500	355	1488	94.0	0.88	831.0	7.0	1.8	2.8	45.00
560	400	1490	94.0	0.88	931.0	7.0	1.7	2.8	62.60
630	400	1490	94.0	0.88	1047.0	7.0	1.7	2.7	70.50
710	400	1490	94.0	0.88	1180.0	7.0	1.7	2.7	79.40
800	450	1490	94.0	0.88	1330.0	7.0	1.7	2.7	100.70
900	450	1490	94.0	0.88	1496.0	7.0	1.7	2.7	113.30
1000	450	1490	94.0	0.89	1644.0	7.0	1.7	2.7	127.70

Not covered under IEC60034-30



Application specific designs.....



DUAL AIR CIRCUIT INVERTER DUTY MOTORS

1000 RPM

IEI MOTORS- 6POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} / I _{FL} (pu)	T _{ST} / T _{FL} (pu)	T _{MAX} / T _{FL} (pu)	GD ² (kgm2)
160	315	990	93.8	0.86	273.0	7.0	1.6	2.6	35.00
200	315	988	94.0	0.85	345.0	7.0	1.6	2.6	35.00
225	315	988	94.0	0.85	388.0	7.0	1.6	2.6	39.50
250	315	988	94.0	0.85	431.0	7.0	1.7	2.6	43.50
200	355	989	94.0	0.85	345.0	7.0	1.7	2.6	36.00
225	355	989	94.0	0.85	388.0	7.0	1.7	2.6	39.00
250	355	989	94.0	0.85	431.0	7.0	1.7	2.6	43.00
280	355	989	94.0	0.85	482.0	7.0	1.7	2.6	48.00
315	355	990	94.0	0.85	543.0	7.0	1.7	2.6	54.00
355	355	990	94.0	0.85	612.0	7.0	1.6	2.6	60.50
400	355	990	94.0	0.86	681.0	7.0	1.6	2.5	68.00
450	400	991	94.0	0.86	766.0	7.0	1.6	2.6	90.00
500	400	991	94.0	0.86	851.0	7.0	1.6	2.6	100.60
560	400	991	94.0	0.86	954.0	7.0	1.6	2.6	113.30
630	450	991	94.0	0.86	1073.0	7.0	1.7	2.6	155.00
710	450	991	94.0	0.86	1209.0	7.0	1.6	2.6	174.00
800	450	991	94.0	0.86	1362.0	7.0	1.6	2.6	196.00

750 RPM

IEI MOTORS- 8POLE - 415V - 50Hz

Output (kW)	Frame	Speed (RPM)	Minimum Efficiency (%)	Cos Ø	I _{FL} (Amps)	I _{SC} / I _{FL} (pu)	T _{ST} / T _{FL} (pu)	T _{MAX} / T _{FL} (pu)	GD ² (kgm2)
160	315	739	94.5	0.81	291.0	6.5	1.6	2.6	35.00
180	315	739	94.5	0.81	327.0	6.5	1.6	2.6	35.00
200	315	739	94.7	0.81	363.0	6.5	1.7	2.5	45.00
160	355	740	94.7	0.81	290.0	6.5	1.7	2.5	40.00
180	355	740	94.7	0.81	326.0	6.5	1.7	2.5	45.00
200	355	740	94.7	0.81	363.0	6.5	1.7	2.5	50.00
225	355	740	94.7	0.81	408.0	6.5	1.7	2.5	56.00
250	355	741	95.2	0.81	451.0	6.5	1.6	2.5	62.00
315	355	741	95.3	0.81	568.0	6.5	1.6	2.5	78.00
355	400	742	95.6	0.81	638.0	6.5	1.7	2.6	110.20
400	400	742	95.7	0.81	718.0	6.5	1.6	2.5	124.00
450	400	742	95.8	0.81	807.0	6.5	1.6	2.5	140.00
500	450	744	96.0	0.81	895.0	6.5	1.6	2.5	180.00
560	450	744	96.1	0.81	1001.0	6.5	1.6	2.5	202.00
630	450	744	96.1	0.81	1126.0	6.5	1.6	2.5	227.50

Not covered under IEC60034-30

Dimensions on page: 17 (b)

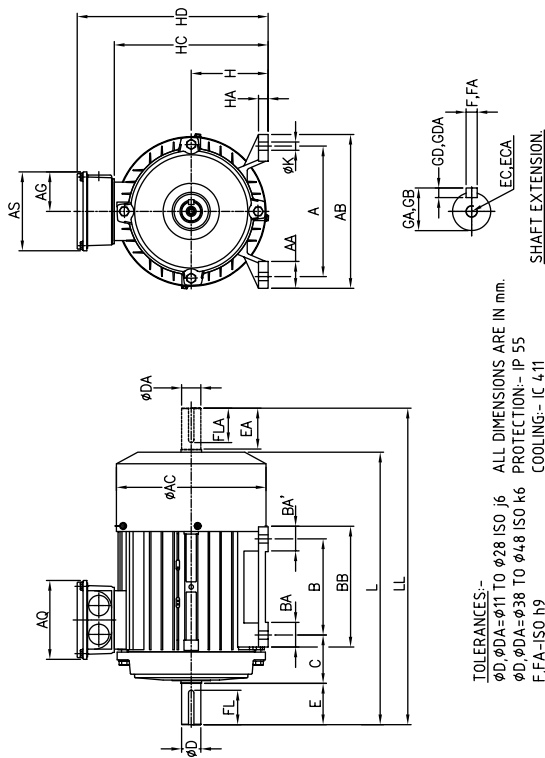
Note: Cooling Fan Motor Rating for 315-355 Frames is 3.7kW
Cooling Fan Motor Rating for 400-450 Frames is 5.5kW



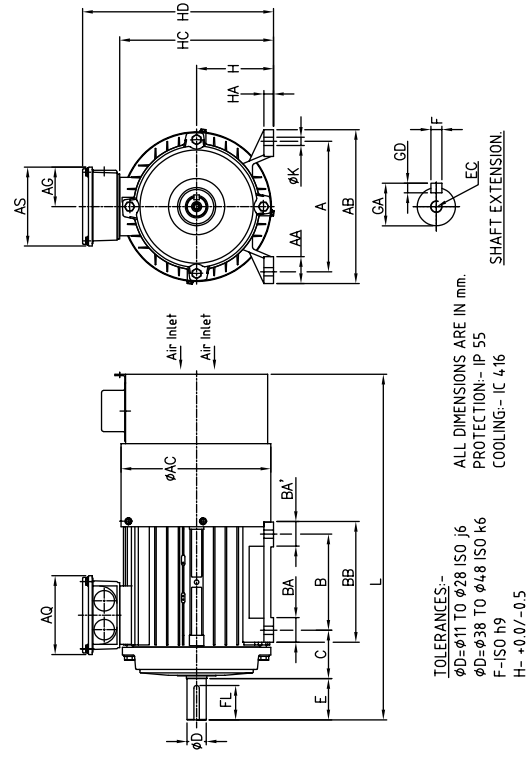
*Ideal for demanding applications like
the Sugar Centrifuge.....*



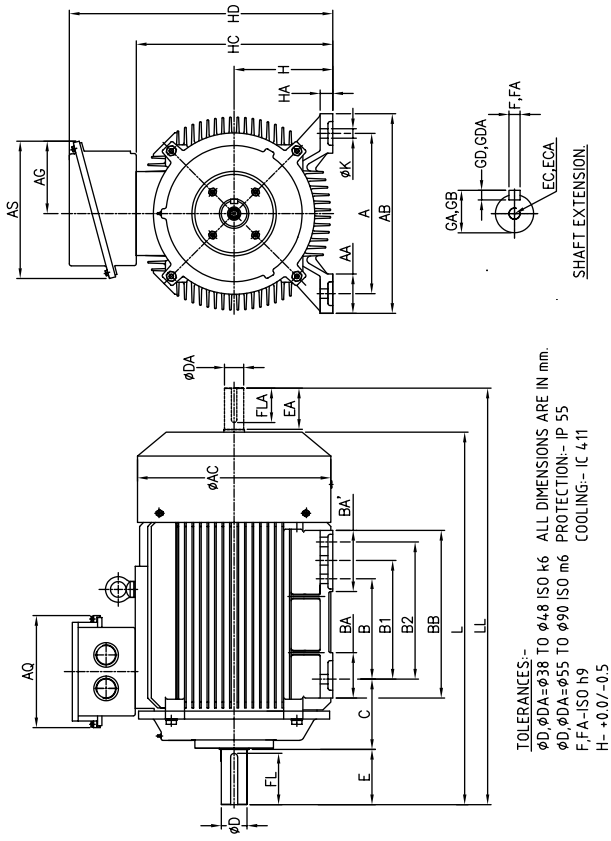
12 (a) FRAME 63 - 160 (IES), B3 MOUNTING



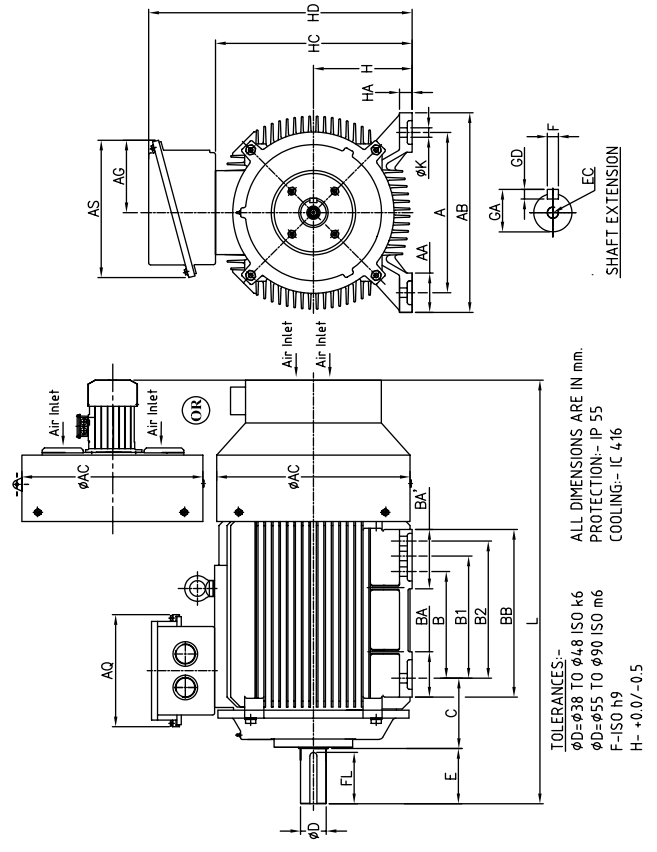
12 (c) FRAME 90 - 160 (IEI), B3 MOUNTING



12 (b) FRAME 180 - 315 (IES), B3 MOUNTING



12 (d) FRAME 180 - 315 (IEI), B3 MOUNTING



FRAME 63 - 315(IES) : B3 MOUNTING

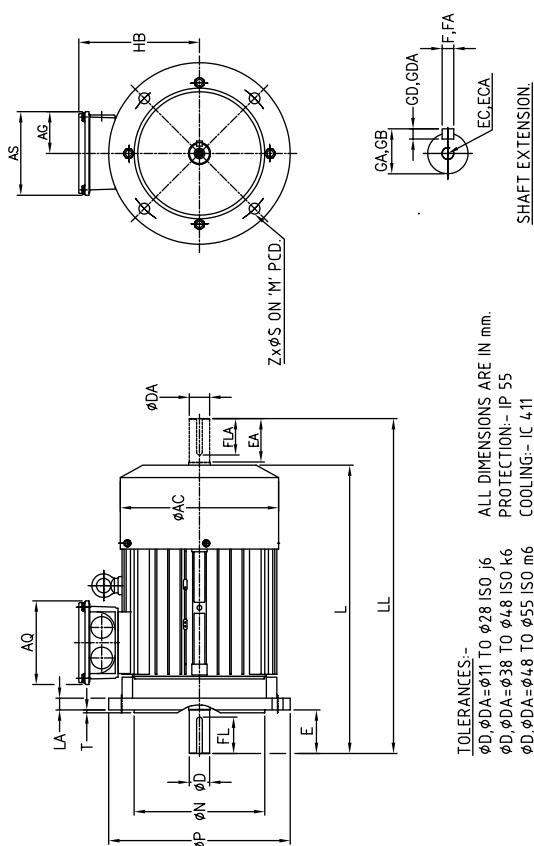
Frame	A	AA	AB	ØAC	AQ	AS	AG	B	B1	B2	BB	BA	BA'	C	ØD	E	FL	F	GD	GA	H	HA	HC	HD	ØK	L	EC	ØDA	EA	FLA	FA	GDA	GB	LL	ECA
63	100	23	122	123	102	102	51	80	-	-	105	25	25	40	11	23	18	4	4	12.5	63	10	131	183	7	214	M4	9	20	17	3	3	10.2	240	M4
71	112	30	136	138	102	102	51	90	-	-	108	25	25	45	14	30	25	5	5	16.0	71	12	148	199	8	238	M4	11	23	18	4	4	12.5	266.5	M4
80	125	32	156	156	127	127	64	100	-	-	125	28	28	50	19	40	34	6	6	21.5	80	14	168	218	10	277	M5	14	30	25	5	5	16.0	313.5	M4
90S	140	35	175	177	127	127	64	100	-	-	130	30	35	56	24	50	40	8	7	27.0	90	14	181	246	10	303	M6	19	40	34	6	6	21.5	348	M5
90L	140	35	175	177	127	127	64	125	-	-	155	30	35	56	24	50	40	8	7	27.0	90	14	181	246	10	328	M6	19	40	34	6	6	21.5	373	M5
100L	160	40	196	194	127	127	64	140	-	-	176	36	36	63	28	60	50	8	7	31.0	100	12	202	264	12	379	M8	19	40	34	6	6	21.5	424	M5
112M	190	47	226	218	127	127	64	140	-	-	176	36	36	70	28	60	50	8	7	31.0	112	12	224	286	12	397	M8	24	50	40	8	7	27.0	450	M6
132S	216	55	260	258	125	125	63	140	-	-	214	36	74	89	38	80	60	10	8	41.0	132	15	265	326	12	497	M8	28	60	50	8	7	31.0	560	M8
132M	216	55	260	258	125	125	63	178	-	-	214	36	74	89	38	80	60	10	8	41.0	132	15	265	326	12	497	M8	28	60	50	8	7	31.0	560	M8
160M	254	56	307	308	197	197	99	210	-	-	256	45	45	108	42	110	100	12	8	45.0	160	18	325	410	15	608	M16	38	80	60	10	8	41.0	693	M16
160L	254	56	307	308	197	197	99	254	-	-	300	45	45	108	42	110	100	12	8	45.0	160	18	325	410	15	652	M16	38	80	60	10	8	41.0	737	M16
180M/L	279	66	330	352	210	255	144	241	279	-	330	63	105	121	48	110	103	14	9	51.5	180	22	359	475	15	714	M16	48	110	103	14	9	51.5	829	M16
200L	318	80	398	388	210	255	144	305	-	-	355	85	85	133	55	110	105	16	10	59.0	200	25	400	515	19	775	M20	55	110	105	16	10	59.0	890	M10
225M (2P)	356	80	436	442	270	335	175	-	311	-	366	100	100	149	55	110	105	16	10	59.0	225	25	448	625	19	828	M20	55	110	105	16	10	59.0	943	M10
225M/S (4.6&8P)	356	80	436	442	270	335	175	286	311	-	366	100	100	149	60	140	135	18	11	64.0	225	25	448	625	19	858	M20	60	140	135	18	11	64.0	1003	M10
250M (2P)	406	100	506	490	270	335	175	349	-	-	425	115	115	168	60	140	135	18	11	64.0	250	32	498	680	24	944	M20	60	140	135	18	11	64.0	1089	M10
250M (4.6,8P)	406	100	506	490	270	335	175	349	-	-	425	115	115	168	65	140	135	18	11	69.0	250	32	498	680	24	944	M20	65	140	135	18	11	69.0	1089	M10
280S/M (2P)	457	124	548	544	315	395	215	368	419	-	490	100	151	190	65	140	130	18	11	69.0	280	40	564	745	24	1074	M20	65	140	130	18	11	69.0	1219	M20
280S/M (4.6,8P)	457	124	548	544	315	395	215	368	419	-	490	100	151	190	75	140	130	20	12	79.5	280	40	564	745	24	1074	M20	75	140	130	20	12	79.5	1219	M20
315 (4.6,8P)	508	119	608	632	315	395	215	406	457	508	602	125	220	216	80	170	150	22	14	85.0	315	50	632	812	28	1280	M20	80	170	150	22	14	85.0	1485	M20
315S (2P)	508	119	608	632	315	395	215	406	457	508	602	125	220	216	65	140	130	18	11	69.0	315	50	632	812	28	1280	M20	65	140	130	18	11	69.0	1425	M20
315M/L (2P)	508	119	608	632	315	395	215	406	457	508	602	125	220	216	70	140	130	20	12	74.5	315	50	632	812	28	1280	M20	65	140	130	18	11	69.0	1425	M20

FRAME 90 - 315(IEI) : B3 MOUNTING

Frame	A	AA	AB	ØAC	AQ	AS	AG	B	B1	B2	BB	BA	BA'	C	ØD	E	FL	F	GD	GA	H	HA	HC	HD	ØK	L	EC
90S	140	35	175	177	127	127	64	100	-	-	130	30	35	56	24	50	40	8	7	27.0	90	14	181	241	10	400	M6
90L	140	35	175	177	127	127	64	125	-	-	155	30	35	56	24	50	40	8	7	27.0	90	14	181	241	10	425	M6
100L	160	40	196	194	127	127	64	140	-	-	176	36	36	63	28	60	50	8	7	31.0	100	12	202	262	12	480	M8
112M	190	47	226	218	127	127	64	140	-	-	176	36	36	70	28	60	50	8	7	31.0	112	12	224	284	12	503	M8
132S	216	55	260	258	125	125	63	140	-	-	214	36	74	89	38	80	60	10	8	41.0	132	15	265	326	12	598	M8
132M	216	55	260	258	125	125	63	178	-	-	214	36	74	89	38	80	60	10	8	41.0	132	15	265	326	12	598	M8
160M	254	56	307	308	197	197	99	210	-	-	256	45	45	108	42	110	100	12	8	45.0	160	18	325	410	15	706	M16
160L	254	56	307	308	197	197	99	254	-	-	300	45	45	108	42	110	100	12	8	45.0	160	18	325	410	15	750	M16
180M/L	279	66	330	352	210	255	144	241	279	-	330	63	105	121	48	110	103	14	9	51.5	180	22	359	475	15	800	M16
200L	318	80	398	388	210	255	144	305	-	-	355	85	85	133	55	110	105	16	10	59.0	200	25	400	515	19	840	M20
225M (2P)	356	80	436	442	270	335	175	-	311	-	366	100	100	149	55	110	105	16	10	59.0	225	25	448	625	19	890	M20
225M/S (4,6&8P)	356	80	436	442	270	335	175	286	311	-	366	100	100	149	60	140	135	18	11	64.0	225	25	448	625	19	920	M20
250M (2P)	406	100	506	490	270	335	175	349	-	-	425	115	115	168	60	140	135	18	11	64.0	250	32	498	675	24	986	M20
250M (4,6,8P)	406	100	506	490	270	335	175	349	-	-	425	115	115	168	65	140	135	18	11	69.0	250	32	498	675	24	986	M20
280S/M (4,6,8P)	457	124	548	544	315	395	215	368	419	-	490	100	151	190	75	140	130	20	12	79.5	280	40	564	745	24	1100	M20
280S/M (2P)	457	124	548	544	315	395	215	368	419	-	490	100	151	190	65	140	130	18	11	69.0	280	40	564	745	24	1100	M20
315(4,6,8P)	508	119	608	632	315	395	215	406	457	508	602	125	220	216	80	170	150	22	14	85.0	315	50	632	812	28	1718	M20
315S(2P)	508	119	608	632	315	395	215	406	457	508	602	125	220	216	65	140	130	18	11	69.0	315	50	632	812	28	1688	M20
315M/L(2P)	508	119	608	632	315	395	215	406	457	508	602	125	220	216	70	140	130	20	12	74.5	315	50	632	812	28	1688	M20

Design Features: Second shaft extension will be supplied only on request.
Dimensions ØDA, EA, FLA, FA, GDA, GB, LL, ECA are for Second shaft extension only

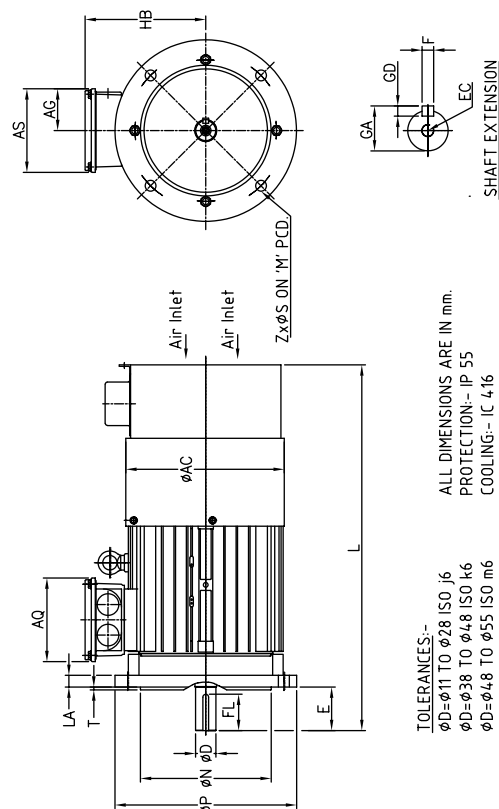
14(a) FRAME 63 - 200 (IES), B5 MOUNTING



TOLERANCES:-
 ϕ D, ϕ DA- ϕ 11 TO ϕ 28 ISO j6
 ϕ D, ϕ DA- ϕ 38 TO ϕ 48 ISO k6
 ϕ D, ϕ DA- ϕ 48 TO ϕ 55 ISO m6
 F, FA-ISO h9
 H- +0.0/-0.5

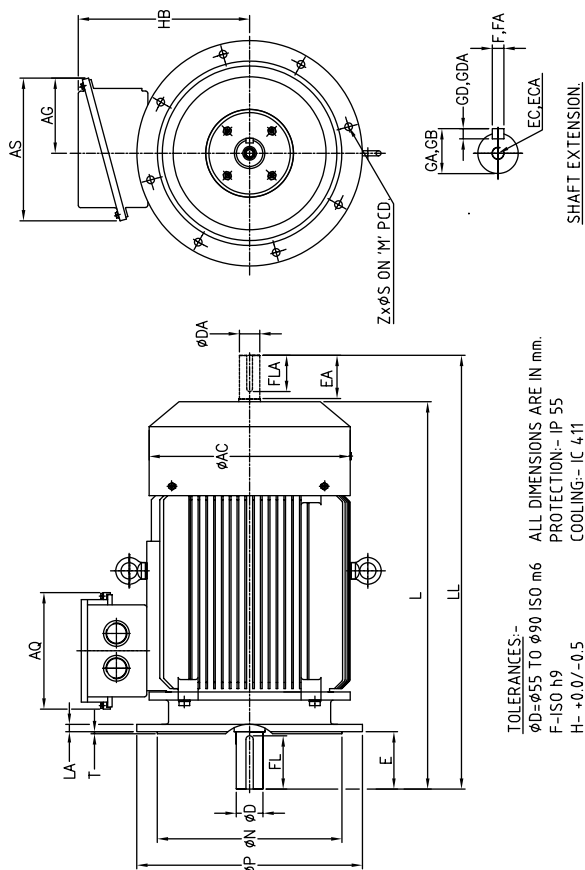
ALL DIMENSIONS ARE IN mm.
 PROTECTION:- IP 55
 COOLING:- IC 411

14(c) FRAME 90 - 200 (IEI), B5 MOUNTING



TOLERANCES:-
 $\phi D = \phi 11$ TO $\phi 28$ ISO j6
 $\phi D = \phi 38$ TO $\phi 4.8$ ISO k6
 $\phi D = \phi 48$ TO $\phi 55$ ISO m6
 F-ISO h9
 h- + 0/-0.5
 N-ISO j6

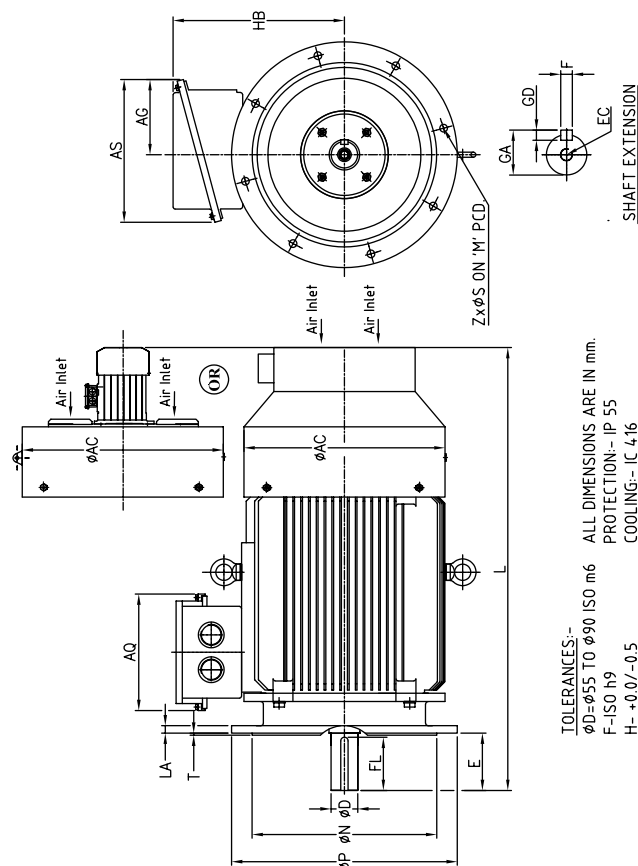
14(b) FRAME 225 - 315 (IES), B5 MOUNTING



TOLERANCES:-
 $\phi D \pm 0.55$ TO $\phi 90$ ISO m6
 F-ISO h9
 H- +0.0/-0.5

ALL DIMENSIONS ARE IN mm.
 PROTECTION:- IP 55
 COOLING:- IC 411

14 (d) FRAME 225 - 315 (IEI), B5 MOUNTING



TOLERANCES:-
 $\phi D = \phi 55$ TO $\phi 90$ ISO m6
 F-ISO h9
 H- +0.0/-0.5

ALL DIMENSIONS ARE IN mm.
 PROTECTION:- IP 55
 COOLING:- IC 416

FRAME 63 - 315(IES) : B5 MOUNTING

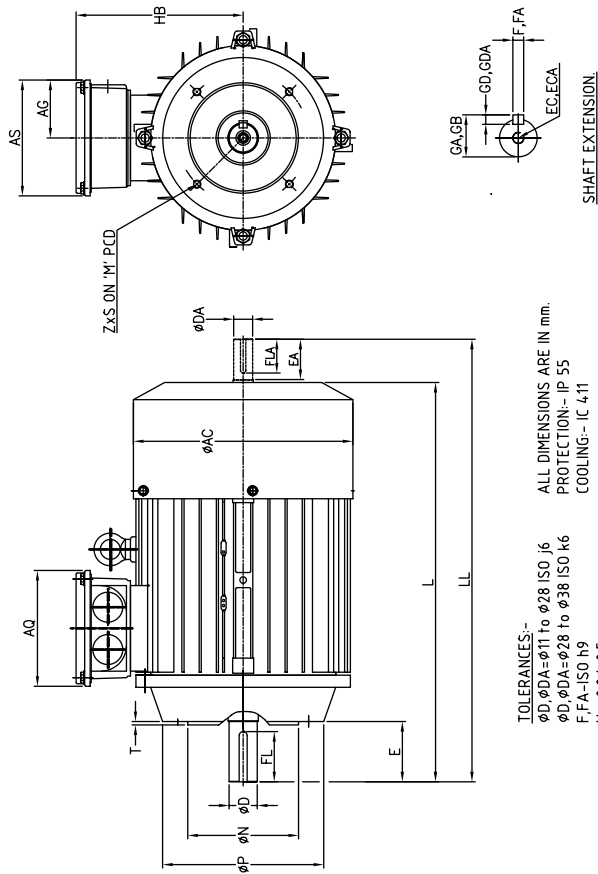
Frame	ØAC	AQ	AS	AG	ØD	E	FL	F	GD	GA	HB	L	M	ØN	ØP	ØS	T	LA	EC	ØDA	EA	FLA	FA	GDA	GB	LL	ECA	Z
63	123	102	102	51	11	23	18	4	4	12.5	120	214	115	95	140	9	3.0	9	M4	9	20	17	3	3	10.2	240	M4	4
71	138	102	102	51	14	30	25	5	5	16.0	128	238	130	110	160	9	3.5	10	M4	11	23	18	4	4	12.5	267	M4	4
80	156	127	127	64	19	40	34	6	6	21.5	138	277	165	130	200	12	3.5	11	M5	14	30	25	5	5	16.0	314	M4	4
90S	177	127	127	64	24	50	40	8	7	27.0	156	303	165	130	200	12	3.5	10	M6	19	40	34	6	6	21.5	348	M5	4
90L	177	127	127	64	24	50	40	8	7	27.0	156	328	165	130	200	12	3.5	10	M6	19	40	34	6	6	21.5	373	M5	4
100L	194	127	127	64	28	60	50	8	7	31.0	164	379	215	180	250	15	4.0	12	M8	19	40	34	6	6	21.5	424	M5	4
112M	218	127	127	64	28	60	50	8	7	31.0	174	397	215	180	250	15	4.0	12	M8	24	50	40	8	7	27.0	450	M6	4
132S/M	258	125	125	63	38	80	60	10	8	41.0	194	497	265	230	300	15	4.0	12	M8	28	60	50	8	7	31.0	560	M8	4
160M	308	197	197	99	42	110	100	12	8	45.0	250	608	300	250	350	19	5.0	13	M16	38	80	60	10	8	41.0	693	M16	4
160L	308	197	197	99	42	110	100	12	8	45.0	250	652	300	250	350	19	5.0	13	M16	38	80	60	10	8	41.0	737	M16	4
180M/L	352	210	255	144	48	110	103	14	9	51.5	295	714	300	250	350	19	5.0	13	M16	48	110	103	14	9	51.5	829	M16	4
200L	388	210	255	144	55	110	105	16	10	59.0	315	775	350	300	400	19	5.0	15	M20	55	110	105	16	10	59.0	890	M10	4
225M (2P)	442	270	335	175	55	110	105	16	10	59.0	400	828	400	350	450	19	5.0	16	M20	55	110	105	16	10	59.0	943	M10	8
225M/S (4,6&8P)	442	270	335	175	60	140	135	18	11	64.0	400	858	400	350	450	19	5.0	16	M20	60	140	135	18	11	64.0	1003	M10	8
250M (2P)	490	270	335	175	65	140	135	18	11	64.0	425	944	500	450	550	19	5.0	18	M20	60	140	135	18	11	64.0	1089	M10	8
250M (4,6,8P)	490	270	335	175	65	140	135	18	11	69.0	425	944	500	450	550	19	5.0	18	M20	65	140	135	18	11	69.0	1089	M10	8
280S/M (4,6,8P)	544	315	395	215	75	140	130	20	12	79.5	465	1074	500	450	550	19	5.0	18	M20	65	140	130	18	11	69.0	1219	M20	8
280S (2P)	544	315	395	215	65	140	130	18	11	69.0	465	1074	500	450	550	19	5.0	18	M20	75	140	130	20	12	79.5	1219	M20	8
315(4,6,8P)	632	315	395	215	80	170	150	22	14	85.0	497	1310	600	550	660	24	6.0	22	M20	80	170	150	22	14	85.0	1485	M20	8
315S (2P)	632	315	395	215	65	140	130	18	11	69.0	497	1280	600	550	660	24	6.0	22	M20	65	140	130	18	11	69.0	1425	M20	8
315M/L (2P)	632	315	395	215	70	140	130	20	12	74.5	497	1280	600	550	660	24	6.0	22	M20	65	140	130	18	11	69.0	1425	M20	8

FRAME 90 - 315(IEI) : B5 MOUNTING

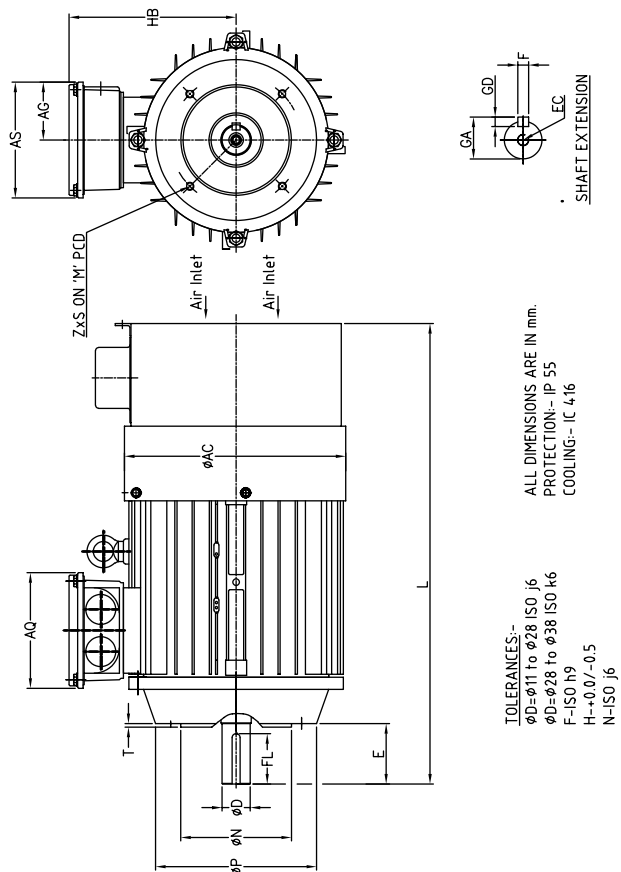
Frame	ØAC	AQ	AS	AG	ØD	E	FL	F	GD	GA	HB	L	M	ØN	ØP	ØS	T	LA	EC	Z
90S	177	127	127	64	24	50	40	8	7	27.0	156	400	165	130	200	12	3.5	10	M6	4
90L	177	127	127	64	24	50	40	8	7	27.0	156	425	165	130	200	12	3.5	10	M6	4
100L	194	127	127	64	28	60	50	8	7	31.0	164	480	215	180	250	15	4.0	12	M8	4
112M	218	127	127	64	28	60	50	8	7	31.0	174	503	215	180	250	15	4.0	12	M8	4
132S/M	258	125	125	63	38	80	60	10	8	41.0	194	598	265	230	300	15	4.0	12	M8	4
160M	308	197	197	99	42	110	100	12	8	45.0	250	706	300	250	350	19	5.0	13	M16	4
160L	308	197	197	99	42	110	100	12	8	45.0	250	750	300	250	350	19	5.0	13	M16	4
180M/L	352	210	255	144	48	110	103	14	9	51.5	295	800	300	250	350	19	5.0	13	M16	4
200L	388	210	255	144	55	110	105	16	10	59.0	315	840	350	300	400	19	5.0	15	M20	4
225M (2P)	442	270	335	175	55	110	105	16	10	59.0	400	890	400	350	450	19	5.0	16	M20	8
225M/S (4,6&8P)	442	270	335	175	60	140	135	18	11	64.0	400	920	400	350	450	19	5.0	16	M20	8
250M (2P)	490	270	335	175	60	140	135	18	11	64.0	425	986	500	450	550	19	5.0	18	M20	8
250M/S (4,6,8P)	490	270	335	175	65	140	135	18	11	69.0	425	986	500	450	550	19	5.0	18	M20	8
280M/S (4,6,8P)	544	315	395	215	75	140	130	20	12	79.5	465	1100	500	450	550	19	5.0	18	M20	8
280M/S (2P)	544	315	395	215	65	140	130	18	11	69.0	465	1100	500	450	550	19	5.0	18	M20	8
315(4,6,8P)	632	315	395	215	80	170	150	22	14	85.0	497	1718	600	550	660	24	6.0	22	M20	8
315S (2P)	632	315	395	215	65	140	130	18	11	69.0	497	1688	600	550	660	24	6.0	22	M20	8
315M/L (2P)	632	315	395	215	70	140	130	20	12	74.5	497	1688	600	550	660	24	6.0	22	M20	8

Design Features: Second shaft extension will be supplied only on request.
Dimensions ØDA,EA,FLA,FA,GDA,GB,LL,ECA are for Second shaft extension only

16 (a) FRAME 63 - 132 (IES), B14 MOUNTING



16 (b) FRAME 90 - 132 (IEI), B14 MOUNTING



FRAME 63 - 132(IES) : B14 MOUNTING

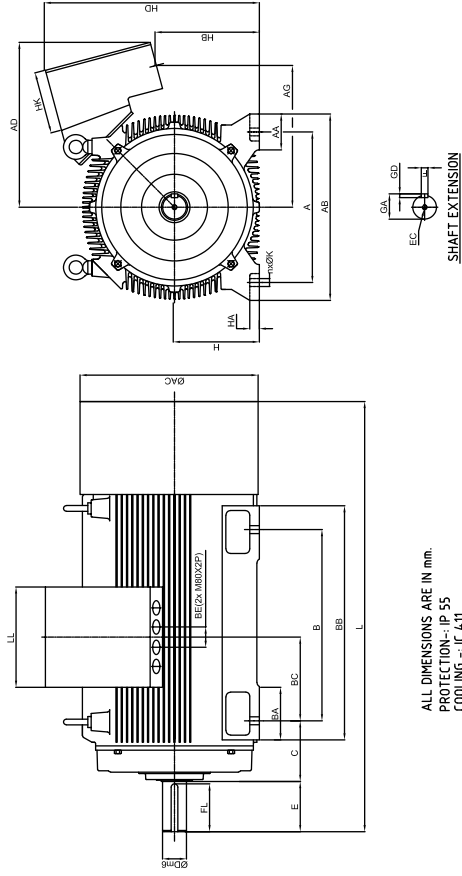
Frame	ØAC	AQ	AS	AG	ØD	E	FL	F	GD	GA	HB	L	M	ØN	ØP	S	T	EC	ØDA	EA	FLA	FA	GDA	GB	LL	ECA	Z
63	123	102	102	51	11	23	18	4	4	12.5	105	214	75	60	90	M5	2.5	M4	9	20	17	3	3	10.2	240.0	M4	4
71	138	102	102	51	14	30	25	5	5	16.0	114	238	85	70	105	M6	2.5	M4	11	23	18	4	4	12.5	266.5	M4	4
80	156	127	127	64	19	40	34	6	6	21.5	138	277	100	80	120	M6	3.0	M5	14	30	25	5	5	16.0	313.5	M4	4
90S	177	127	127	64	24	50	40	8	7	27.0	141	303	115	95	140	M8	3.0	M6	19	40	34	6	6	21.5	348.0	M5	4
90L	177	127	127	64	24	50	40	8	7	27.0	141	328	115	95	140	M8	3.0	M6	19	40	34	6	6	21.5	373.0	M5	4
100L	194	127	127	64	28	60	50	8	7	31.0	162	379	130	110	160	M8	3.5	M8	19	40	34	6	6	21.5	424.0	M5	4
112M	218	127	127	64	28	60	50	8	7	31.0	172	397	130	110	160	M8	3.5	M8	24	50	40	8	7	27.0	450.0	M6	4
132SM	258	125	125	63	38	80	60	10	8	41.0	194	497	165	130	200	M12	3.5	M8	28	60	50	8	7	31.0	560.0	M8	4

FRAME 90 - 132(IEI) : B14 MOUNTING

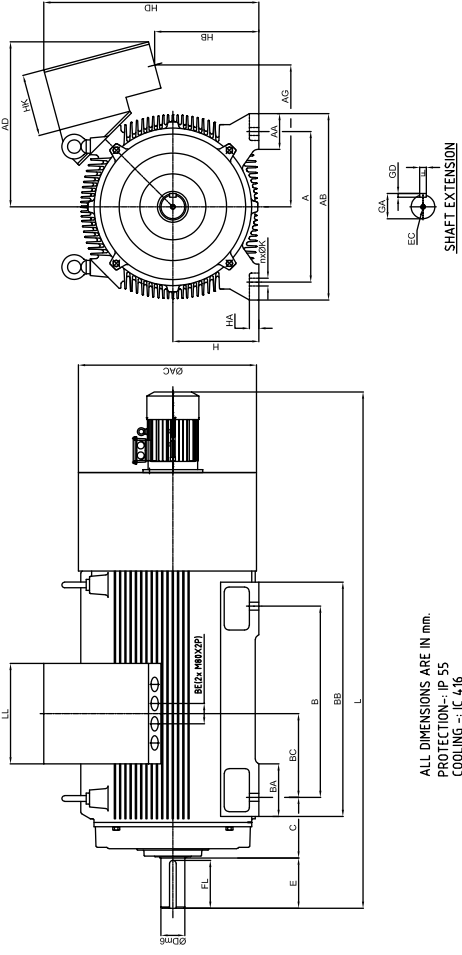
Frame	ØAC	AQ	AS	AG	ØD	E	FL	F	GD	GA	HB	L	M	ØN	ØP	S	T	EC	Z
90S	177	127	127	64	24	50	40	8	7	27.0	141	400	115	95	140	M8	3.0	M6	4
90L	177	127	127	64	24	50	40	8	7	27.0	141	425	115	95	140	M8	3.0	M6	4
100L	194	127	127	64	28	60	50	8	7	31.0	162	480	130	110	160	M8	3.5	M8	4
112M	218	127	127	64	28	60	50	8	7	31.0	172	503	130	110	160	M8	3.5	M8	4
132S/M	258	125	125	63	38	80	60	10	8	41.0	194	598	165	130	200	M12	3.5	M8	4

Design Features: Second shaft extension will be supplied only on request.
 Dimensions ØDA, EA, FLA, FA, GDA, GB, LL, ECA are for Second shaft extension only

17 (a) FRAME 315 TO 450 (IED), B3 MOUNTING



17 (b) FRAME 315 TO 450 (IEI), B3 MOUNTING



FRAME 315 TO 400(IEI) : B3 MOUNTING

Frame	A	AA	AB	AG	AD	ØAC	ØAB	B	BA	BB	BC	BE	C	ØD	E	H	HA	HB	HD	HK	nXØK	L	LL	GA	GD	F	EC
315	560	120	680	409	482	700	780	630	220	780	100	180	180	85	170	315	30	525	765	150	4XØ26	1476	305	91	14	22	M24
355	630	150	780	790	710	600	980	800	220	980	200	135	224	100	210	355	40	450	900	280	4XØ35	1800	420	106	16	28	M24
400	710	150	860	830	720	620	1080	900	220	1080	250	135	224	110	210	400	45	450	970	280	4XØ35	1915	420	116	16	28	M24

FRAME 355 AND 400(IEI) : B3 MOUNTING

Frame	A	AA	AB	AG	AD	ØAC	ØAB	B	BA	BB	BC	BE	C	ØD	E	H	HA	HB	HD	HK	nXØK	L	LL	GA	GD	F	EC
355	630	150	780	790	710	600	980	800	220	980	200	135	224	100	210	355	40	450	900	280	4XØ35	2160	420	106	16	28	M24
400	710	150	860	830	720	620	1080	900	220	1080	250	135	224	110	210	400	45	450	970	280	4XØ35	2200	420	116	16	28	M24

SQUARE FRAME AC MOTORS

SELECTION & ORDERING DATA IP 23, IC 06 / * IP 54, IC 416, 50Deg. Amb, Insulation Class 'F'

Type	100*			112					132				160				180		
Frame Size	S	M	L	S	M	L	P	X	M	L	P	X	S	M	L	P	S	M	L
Power [KW] @ 1500rpm	3.7	5.5	7.5	7.5	11	15	18.5	22	29	32	37	45	56	63	75	81	90	120	150
Torque [Nm]	24	35	48	48	70	96	118	140	185	204	236	287	357	401	478	516	573	764	956
Rotor inertia J [kgm2]	0.009 to 0.02			0.02 to 0.13					0.09 to 0.16				0.25 to 0.4				0.50 to 0.90		

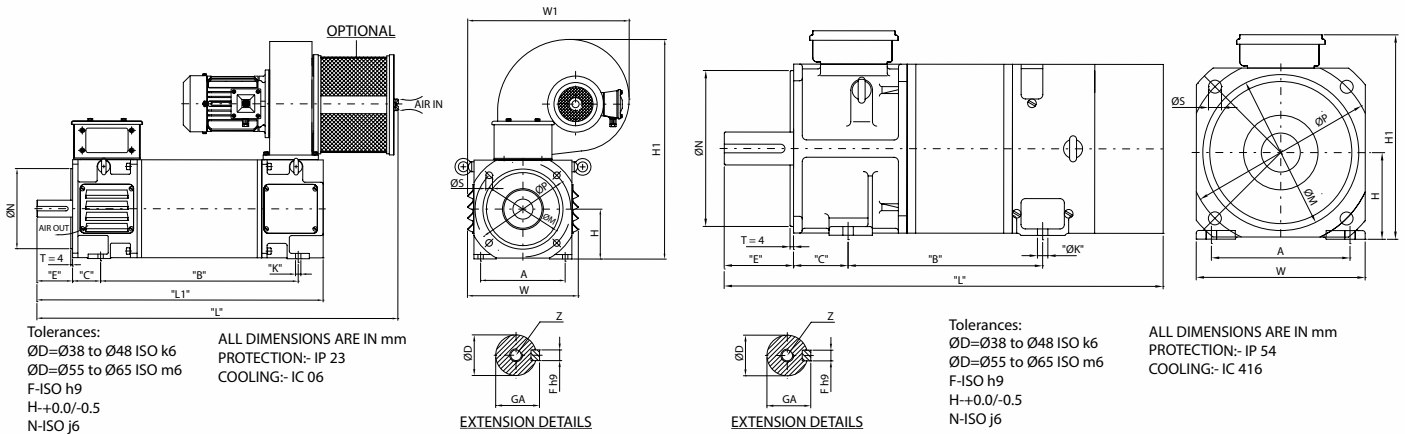
	600 RPM - (21 Hz)				750 RPM - (26 Hz)				1000 RPM - (34.6 Hz)				1500 RPM - (52 Hz)			
Frame	kW	Amps	Pf	%n	kW	Amps	Pf	%n	kW	Amps	Pf	%n	kW	Amps	Pf	%n
100S*	1.5	3.7	0.78	76.1	1.8	4.4	0.78	76.8	2.5	5.7	0.80	80.3	3.7	8.1	0.79	85.4
100M*	2.2	5.4	0.78	76.0	2.7	6.5	0.78	78.0	3.7	8.3	0.80	81.4	5.5	11.8	0.79	86.6
100L*	3.0	7.4	0.78	76.0	3.7	8.6	0.78	79.7	5.0	11.1	0.80	82.1	7.5	15.7	0.79	87.5
112S	3.0	7.4	0.78	75.9	3.7	8.7	0.79	79.5	5.0	10.8	0.81	83.3	7.5	15.6	0.80	87.5
112M	4.4	10.7	0.76	78.6	5.5	12.5	0.77	82.4	7.3	15.3	0.81	85.4	11	22.4	0.80	89.3
112L	6.0	13.4	0.81	80.0	7.5	16.7	0.78	83.7	10.0	21.4	0.78	86.9	15	30.3	0.80	90.2
112P	7.4	16.8	0.80	79.8	9.3	20.1	0.79	83.8	12.3	25.3	0.79	87.1	18.5	36.8	0.81	90.1
112X	9.0	20.8	0.77	80.1	11.0	24.5	0.77	84.1	14.5	30.9	0.78	87.6	22	44.0	0.80	90.5
132M	11.0	24.3	0.80	82.4	14.0	29.0	0.81	85.8	18.5	37.8	0.79	89.0	28	55.4	0.81	90.7
132L	12.5	27.7	0.78	84.2	16.0	32.9	0.82	85.9	21.0	41.6	0.82	85.5	32	63.9	0.79	91.3
132P	14.5	32.9	0.76	83.5	18.5	39.6	0.79	85.9	24.0	48.2	0.81	88.5	37	71.7	0.82	91.5
132X	17.2	36.9	0.81	83.5	21.5	44.8	0.80	86.3	28.8	58.1	0.81	88.9	43	82.4	0.82	91.5
160S	22.0	43.0	0.85	86.8	28.0	54.0	0.84	88.9	37.3	70.0	0.83	91.7	56	102.6	0.85	93.0
160M	25.0	49.5	0.84	87.6	31.0	59.3	0.85	88.7	42.0	78.9	0.84	91.9	63	116.0	0.84	93.3
160L	30.0	58.4	0.85	87.6	36.0	68.8	0.84	90.1	50.0	93.6	0.84	91.7	75	137.2	0.84	93.5
160P	33.0	64.2	0.85	87.6	41.0	78.7	0.84	90.0	54.0	102.6	0.85	91.5	81	148.6	0.84	93.7
180S	35.0	68.0	0.85	87.6	45.0	86.5	0.84	90.0	60.0	112.5	0.84	92.0	90	165.0	0.84	94.0
180M	46.0	89.0	0.85	88.0	60.0	114.3	0.84	91.6	80.0	151.0	0.84	92.0	120	220.0	0.84	94.0
180L	57.0	110.0	0.85	88.2	75.0	142.5	0.84	91.0	100.0	187.0	0.84	92.2	150	271.5	0.85	94.0

FRAME 112 TO 180

IP 23 IC 06

FRAME 100

IP 54 IC 416



IEL OVERALL DIMENSIONS

FRAME	A	C	$\varnothing D$	E	F	GA	H	$\varnothing K$	$\varnothing M$	$\varnothing P$	$\varnothing S$	W	W1	H1	Z
100	160	63	38	80	10	41.0	100	12	180	215	15	190	-	236	M12
112	190	63	38	80	10	41.0	112	12	180	215	15	250	445	500	M12
132	216	89	42	110	12	45.3	132	12	250	300	19	291	475	655	M16
160	254	97	55	110	16	59.0	160	14	300	350	19	345	495	720	M20
180	279	121	65	140	18	69.0	180	14	300	350	19	385	495	755	M20

FRAME	100S	100M	100L	112S	112M	112L	112P	112X	132M	132L	132P	132X
B	218	253	303	284	329	379	399	444	400	420	455	505
L	538	593	643	651	696	746	766	811	840.5	860.5	895.5	945.5
L1	-	-	-	483	528	578	598	643	672.5	692.5	727.5	777.5

FRAME	160S	160M	160L	160P	180S	180M	180L
B	550	585	650	680	537	612	682
L	989.5	1024.5	1089.5	1119.5	1043.5	1118.5	1188.5
L1	822	857	922	952	457	532	602

Cooling Motor Rating			
Frame	100	112	132-180
Watts	61W,1 $\varnothing$	250W,3 $\varnothing$	370W,3 $\varnothing$

Motors for Special Applications

Drive Solution for Batch type Sugar Centrifuge Application

IEC has developed a complete system solution for 1750Kg basket batch type sugar centrifuge. The system includes AC Motor, harmonic filter, front-end converter, sensorless vector control based inverter, PLC, HMI and required protection switchgear.

Typical Motor Rating – 250kW/8pole – Vertical Flange Mounting – V1
Any other sugar centrifuge basket capacity can also be supplied upon request.



Brake Motors

Combination of AC Motor and Electromagnetic DC Brake.
Brake is a “Fail Proof Type” i.e., brake comes into action immediately and stops the driven equipment instantly when the power to the motor is switched off or if power fails. Motors are available in frames 63 to 315 in 2/4/6/8P in IES or IEI versions.
Provision for mounting of encoder can also be provided.



Ginning Motors

Specially designed for Ginning application requiring low temperature rise and low No Load Current. Motors are fitted with a special fan cowl (Canopy).

Motor rating – 3.7kW/1500rpm/132S/IE2



Crane Duty Motors

Motors specially designed for Crane duty are available.

Frame: 71 to 315 **kW:** 0.37kW to 160kW **Poles:** 4/6/8

Enclosure: IP55 **Suitable for:** AC Drive as well as DOL starting

Cooling: IC411 or IC416 depending on the requirement

Ambient Temperature: 50 Deg C

Insulation: Class “F” **Duty:** S4

CDF: 25% 40% 60% **No of Starts/Hour:** 150, 300



Dual Speed and Three Speed Motors

IEC can also offer Dual as well as Three Speed motors against specific enquiries.

Range available for frames 80 to 315.



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