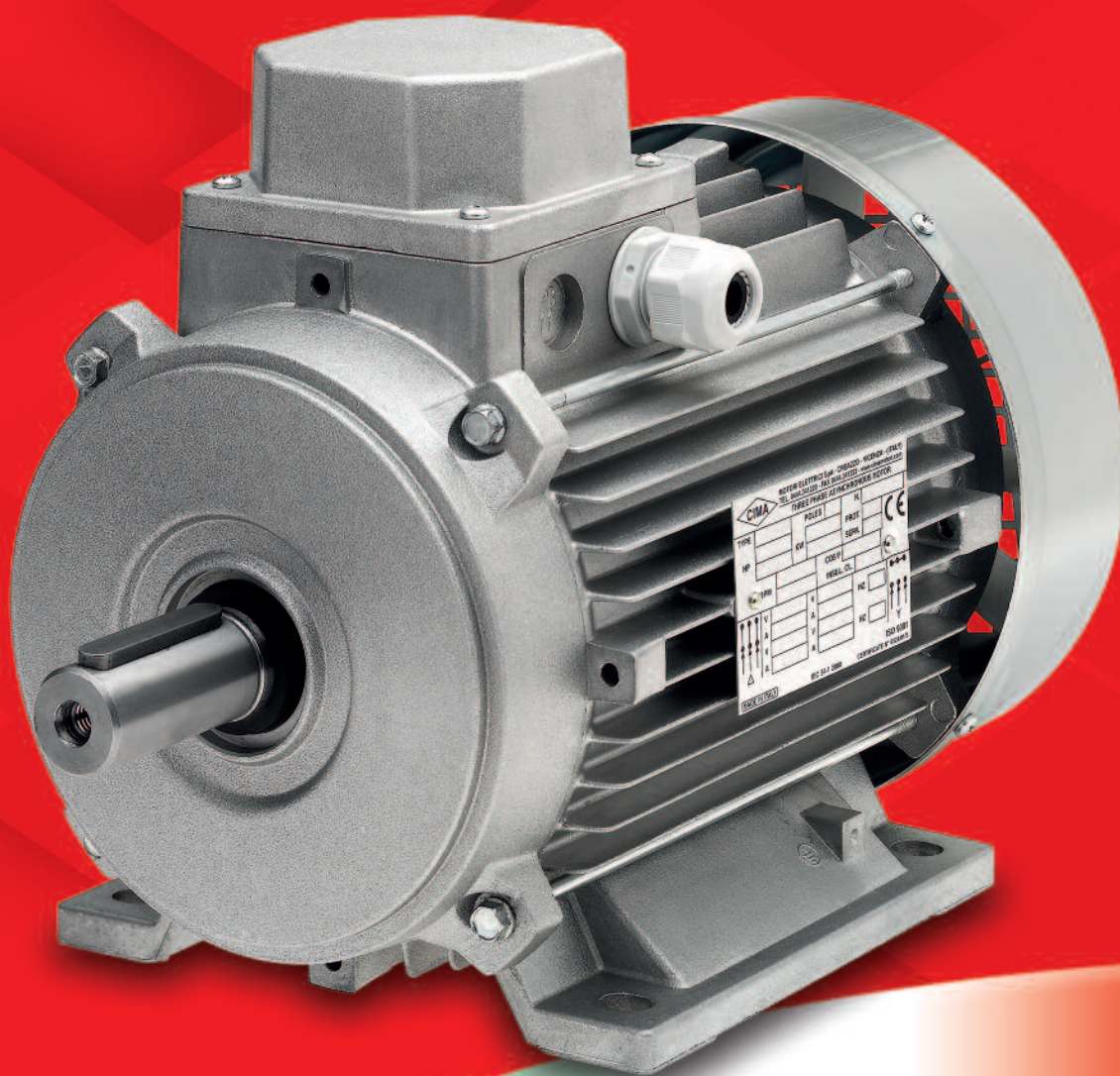




ELECTRIC MOTORS

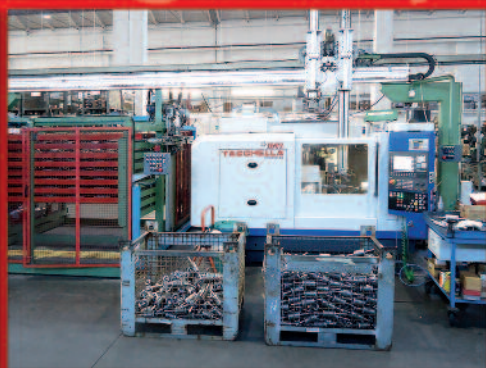
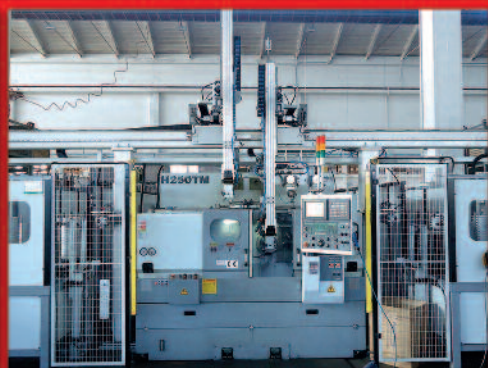


100% Made in Italy

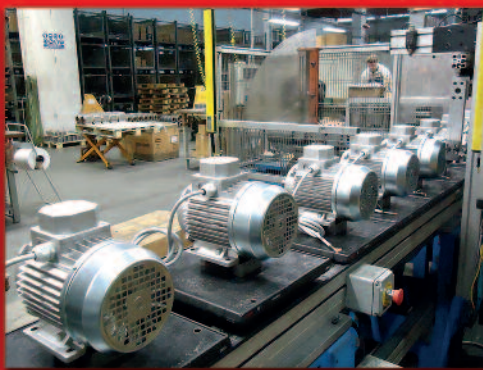
windings and cables dept



mechanical workings dept



assembly dept



THREE PHASE MOTORS UP TO 40 KW

SINGLE PHASE MOTORS UP TO 11 KW



All manufacturing phases and working checks are regulated by quality system UNI EN ISO 9001:2008



Member of CISQ Federation

RINA

ISO 9001:2008
Sistema Qualità Certificato





ELECTRIC MOTORS

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Cima S.p.A Electric motors, is manufacturing single phase, three phase and double polarity asynchronous motors, as well as special motors, since 1977. The motors are totally enclosed, fan cooled, aluminium housing and copper winding. All motors are prepared in insulation class F or H, IP55 normal protection degree, tropicalized, on request till protection IP66, according to main norms IEC 60034 – IEC 60072. Powers and frame sizes are unified (MEC) from frame size 56 up to 200M, or according to customer drawings. All motors are manufactured in Italy in our factory, using modern and advanced technologies. Around 2000 motors are daily produced and tested one by one to supply only high quality motors certified ISO9001:2008. Quality is our first aim.



2 POLES Volt 230/50 Hz (3000 rpm)

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (230V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp										
56M	0.09	0.12	2765	0.31	0.9	0.96	43.0	0.87	2.8	3.0	0.000086	2
56M	0.13	0.18	2720	0.43	1.1	0.96	49.0	0.45	2.5	2.4	0.000086	2.5
56M*	0.18	0.25	2773	0.62	1.6	0.92	54.1	0.80	3.2	2.8	0.000116	3.5
63M	0.13	0.18	2780	0.42	1.0	0.99	56.0	0.48	2.5	1.9	0.000122	4.0
63M	0.18	0.25	2680	0.64	1.6	0.98	52.8	0.61	2.2	1.8	0.000142	4.3
63M	0.25	0.35	2733	0.87	2.1	0.97	54.5	0.62	2.6	1.7	0.000172	4.6
63M*	0.37	0.5	2665	1.33	2.8	0.97	58.6	0.47	2.4	1.4	0.000232	5.0
63M*	0.55	0.75	2750	1.92	3.7	0.95	68.0	0.40	3.0	1.5	0.000322	5.2
71M	0.37	0.5	2662	1.33	2.8	0.99	58.2	0.50	2.4	1.3	0.000290	6.3
71M	0.55	0.75	2764	1.90	3.5	0.99	69.3	0.59	3.0	1.4	0.000400	7.2
71M*	0.75	1	2730	2.57	4.9	0.97	67.0	0.51	3.3	1.5	0.000500	8.5
71M*	1.1	1.5	2720	3.51	7.6	0.96	66.0	0.90	3.3	1.4	0.000700	9.3
80M	0.75	1	2770	2.59	5.1	0.88	73.6	0.79	3.2	1.8	0.000857	8.8
80M	1.1	1.5	2662	3.95	7.1	0.96	67.6	0.62	3.1	1.5	0.000987	10.8
80M*	1.5	2	2710	5.28	6.9	0.96	69.6	0.57	3.7	1.9	0.001257	11.9
80M*	1.85	2.5	2721	6.50	12.2	0.94	70.6	0.58	3.5	1.6	0.001517	13.4
90S	1.1	1.5	2750	4.69	7.5	0.96	67.0	0.74	3.3	1.7	0.001375	13.8
90S	1.5	2	2748	5.21	9.2	0.98	72.7	0.60	3.4	1.6	0.001545	14.1
90L	1.85	2.5	2725	6.48	11.6	0.97	71.2	0.55	3.1	1.7	0.001739	14.7
90L	2.2	3	2732	7.68	13.5	0.98	71.7	0.59	3.7	1.7	0.002089	16.5
90L*	2.6	3.5	2760	8.91	15.4	0.97	75.0	0.57	3.6	1.6	0.002269	18.4
100M	2.2	3	2829	7.43	12.9	0.98	75.8	0.67	3.9	1.9	0.003297	20.8
100M	3	4	2797	10.24	17.4	0.98	76.2	0.54	3.5	1.7	0.003897	23.0
112M	4	5.5	2730	14.00	23.2	0.99	75.5	0.53	3.6	1.5	0.005766	29.5
112M*	5.5	7.5	2810	18.76	31.0	0.98	79.0	0.62	3.8	1.6	0.007216	34.5
132S	5.5	7.5	2860	18.36	30.5	0.99	78.8	0.43	3.5	1.5	0.014341	42.2
132S	7.5	10	2870	24.95	41.2	0.99	80.0	0.35	6.3	1.3	0.015401	50.0

2 POLES Volt 220/60 Hz (3600 rpm)

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (230V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp										
56M	0.09	0.12	3300	0.27	0.9	0.96	46.0	0.46	2.3	2.9	0.000086	2
56M	0.13	0.18	3350	0.35	1.1	0.96	50.0	0.45	2.4	2.7	0.000086	2.5
56M*	0.18	0.25	3380	0.52	1.6	0.96	52.0	0.43	2.6	2.4	0.000116	3.5
63M	0.13	0.18	3220	0.36	1.0	0.98	55.0	0.48	2.5	2.0	0.000122	4.0
63M	0.18	0.25	3250	0.54	1.5	0.98	55.0	0.45	2.5	2.3	0.000142	4.3
63M	0.25	0.35	3280	0.73	2.5	0.95	51.2	0.75	2.6	2.1	0.000172	4.6
63M*	0.37	0.5	3350	1.05	2.6	0.96	64.0	0.45	3.0	2.2	0.000232	5.0
63M*	0.55	0.75	3380	1.56	3.7	0.96	67.0	0.45	3.0	2.4	0.000322	5.2
71M	0.37	0.5	3350	1.05	2.6	0.97	64.0	0.56	2.8	2.5	0.000290	6.3
71M*	0.55	0.75	3350	1.57	3.7	0.97	67.0	0.55	2.8	2.6	0.000400	7.2
71M*	0.75	1	3350	2.10	4.9	0.97	68.0	0.55	3.0	2.4	0.000500	8.5
71M*	1.1	1.5	3350	3.15	7.4	0.96	68.0	0.60	3.0	1.9	0.000700	9.3
80M	0.75	1	3320	2.12	5.4	0.95	62.0	0.65	2.6	2.0	0.000857	8.8
80M	1.1	1.5	3320	3.17	7.8	0.95	65.0	0.65	2.6	2.2	0.000987	10.8
80M*	1.5	2	3330	4.22	9.9	0.95	68.0	0.65	2.8	1.9	0.001257	11.9
80M*	1.85	2.5	3379	5.23	12.0	0.96	72.8	0.55	4.2	1.6	0.001517	13.4
90S	1.1	1.5	3380	3.12	7.5	0.96	67.0	0.74	3.2	1.8	0.001375	13.8
90S	1.5	2	3350	3.91	9.8	0.96	68.0	0.74	3.3	2.1	0.001545	13.8
90L	1.85	2.5	3350	4.89	12.0	0.96	69.0	0.70	3.3	1.9	0.001739	14.7
90L	2.2	3	3422	6.14	14.0	0.97	73.6	0.63	4.9	2.3	0.002089	16.5
90L*	2.6	3.5	3380	7.34	16.2	0.96	72.0	0.75	3.3	2.2	0.002269	18.4
100M	2.2	3	3403	6.17	13.9	0.99	72.1	0.62	4.4	2.4	0.003297	20.8
100M	3	4	3365	8.51	20.4	0.99	66.7	0.56	3.8	1.5	0.003897	23.0
112M	4	5.5	3386	11.28	24.7	0.99	73.5	0.49	4.2	2.1	0.005766	29.5
112M*	5.5	7.5	3416	15.38	33.7	0.99	74.0	0.45	4.3	2.7	0.007216	34.5
132S	5.5	7.5	3420	15.41	32.2	0.98	76.0	0.36	3.2	2.1	0.014341	42.2
132S	7.5	10	3450	20.37	40.8	0.98	80.0	0.44	3.3	2.0	0.015401	50.0

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❖ four poles

4 POLES Volt 230/50 Hz (1500 rpm)

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (230V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp										
56M	0.06	0.08	1320	0.44	0.7	0.92	39.0	0.55	2.2	2.3	0.000126	3
56M	0.09	0.12	1320	0.67	1.0	0.93	43.0	0.55	2.3	2.1	0.000176	3.2
56M*	0.13	0.18	1340	0.87	1.3	0.92	46.0	0.55	2.5	2.0	0.000226	3.2
63M	0.09	0.12	1320	0.67	1.0	0.93	43.0	0.55	2.3	1.7	0.000172	4.2
63M	0.13	0.18	1350	0.87	1.1	0.95	50.0	0.67	2.2	1.8	0.000222	4.6
63M	0.18	0.25	1350	1.30	1.6	0.95	53.0	0.63	2.2	1.5	0.000292	4.8
63M*	0.25	0.35	1320	1.77	2.1	0.91	55.0	0.53	2.2	1.5	0.000382	5.1
71M	0.25	0.35	1320	1.56	2.2	0.95	51.0	0.80	2.2	2.2	0.000740	5.7
71M	0.37	0.5	1310	2.68	3.2	0.92	55.0	0.71	2.6	2.1	0.000102	6.6
71M*	0.55	0.75	1320	4.00	4.4	0.94	58.0	0.70	2.8	2.4	0.000138	7.2
80M	0.37	0.5	1340	2.62	3.0	0.97	55.0	0.70	2.4	2.0	0.001447	7.6
80M	0.55	0.75	1340	3.51	4.3	0.95	61.0	0.65	2.6	2.1	0.001907	8.9
80M	0.75	1	1350	4.69	5.5	0.95	64.0	0.65	2.8	1.8	0.002677	9.9
80M*	1.1	1.5	1340	7.85	7.7	0.95	65.0	0.55	3.2	1.7	0.003457	11.2
90S	1.1	1.5	1350	7.81	7.1	0.97	70.0	0.55	3.0	1.9	0.002735	13.7
90L	1.5	2	1330	10.57	9.6	0.98	65.0	0.62	2.3	1.9	0.003185	15.2
90L*	1.85	2.5	1330	13.20	12.3	0.97	67.0	0.62	2.5	1.8	0.004119	17.5
90L*	2.2	3	1300	16.20	14.7	0.97	68.0	0.50	2.7	1.7	0.004429	17.5
100M	2.2	3	1400	15.06	13.0	0.98	75.0	0.53	3.9	1.5	0.006637	22.6
112M	3	4	1390	20.20	17.1	0.99	76.0	0.40	3.3	1.4	0.010536	29.0
112M	4	5.5	1380	28.00	23.8	0.98	75.0	0.48	3.5	2.1	0.013476	32.5
132S	4	5.5	1400	27.60	23.6	0.98	76.0	0.40	3.4	1.9	0.023261	37.0
132S	5.5	7.5	1410	37.50	30.0	0.98	81.0	0.38	3.6	1.7	0.028691	42.0
132M	7.5	10	1420	49.90	39.5	0.99	82.0	0.28	3.5	1.8	0.037889	50.0

❖ four poles

4 POLES Volt 220/60 Hz (1800 rpm)

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (230V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp										
56M	0.06	0.08	1620	0.36	0.7	0.90	41.0	0.55	2.2	1.9	0.000126	3
56M	0.09	0.12	1620	0.54	1.0	0.92	45.0	0.55	2.3	1.7	0.000176	3.2
56M*	0.13	0.18	1640	0.71	1.2	0.92	50.0	0.55	2.4	1.6	0.000226	3.2
63M	0.09	0.12	1620	0.54	0.9	0.92	45.0	0.60	2.2	1.4	0.000172	4.2
63M	0.13	0.18	1650	0.71	1.1	0.94	50.0	0.65	2.2	1.5	0.000222	4.6
63M	0.18	0.25	1650	0.98	1.7	0.94	52.0	0.65	2.2	1.4	0.000292	4.6
63M*	0.25	0.35	1650	1.45	2.0	0.94	56.0	0.60	2.2	1.3	0.000382	5.1
71M	0.25	0.35	1620	1.30	2.1	0.94	54.0	0.70	2.2	1.8	0.000740	5.7
71M	0.37	0.5	1650	1.96	3.0	0.92	58.0	0.70	2.8	1.7	0.000102	6.6
71M*	0.55	0.75	1650	3.20	4.3	0.92	60.0	0.70	2.8	1.8	0.000138	7.2
80M	0.37	0.5	1630	1.96	2.8	0.95	61.0	0.65	2.6	1.6	0.001447	7.6
80M	0.55	0.75	1640	2.93	4.0	0.96	63.0	0.65	2.6	1.7	0.001907	8.9
80M	0.75	1	1650	3.91	5.1	0.96	65.0	0.65	2.8	1.5	0.002677	9.9
80M*	1.1	1.5	1640	6.43	7.7	0.95	66.0	0.65	2.8	1.6	0.003457	11.2
90S	1.1	1.5	1600	5.86	8.1	0.96	62.0	0.65	2.4	1.5	0.002735	13.7
90L	1.5	2	1600	7.81	10.2	0.96	65.0	0.60	2.3	1.5	0.003185	15.2
90L*	1.85	2.5	1630	9.76	12.2	0.97	68.0	0.60	2.5	1.4	0.004119	17.5
90L*	2.2	3	1630	12.63	14.1	0.97	70.0	0.60	2.5	1.3	0.004429	17.5
100M	2.2	3	1650	11.72	13.8	0.97	72.0	0.53	2.6	1.4	0.006637	22.6
112M	3	4	1670	15.62	17.0	0.97	78.0	0.45	3.0	1.1	0.010536	29.0
112M	4	5.5	1670	23.15	23.3	0.97	78.0	0.45	3.0	1.7	0.013476	32.5
132S	4	5.5	1700	22.74	23.9	0.97	76.0	0.40	3.4	1.5	0.023261	37.0
132S	5.5	7.5	1710	30.83	30.5	0.97	81.0	0.36	3.5	1.3	0.028691	42.0
132M	7.5	10	1720	40.87	40.2	0.97	82.0	0.32	3.5	1.4	0.037889	50.0

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⋯ six poles

6 POLES Volt 230/50 Hz (1000 rpm)

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (230V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp										
63M	0.09	0.12	880	1.00	1.2	0.92	38.0	0.40	3.0	1.6	0.000281	4.6
63M	0.13	0.18	880	1.33	1.4	0.92	40.0	0.40	3.0	1.4	0.000342	4.8
71M	0.18	0.25	900	1.97	1.8	0.94	48.0	0.40	3.2	1.5	0.000740	5.7
71M	0.25	0.35	900	2.60	2.2	0.94	53.0	0.40	3.2	1.3	0.000950	6.0
71M*	0.37	0.5	900	3.90	3.0	0.94	56.0	0.40	3.2	1.1	0.001450	8.8
80M	0.37	0.5	900	3.90	3.1	0.94	54.0	0.40	3.2	1.6	0.001907	8.9
80M	0.55	0.75	900	5.85	4.4	0.94	58.0	0.40	3.2	1.4	0.002527	9.9
80M*	0.75	1	900	7.80	5.6	0.94	61.0	0.40	3.4	1.5	0.003147	11.2
90S	0.75	1	900	7.80	5.4	0.94	63.0	0.38	3.4	1.5	0.002575	12
90L	1.1	1.5	900	11.70	7.9	0.94	65.0	0.38	3.6	1.3	0.003359	15.2
90L*	1.5	2	900	15.60	10.2	0.94	67.0	0.38	3.6	1.1	0.004269	17.5
100M	1.5	2	980	15.30	10.0	0.94	68.0	0.38	3.6	1.2	0.004677	18.5
100M*	2.2	3	920	22.90	14.4	0.94	71.0	0.38	3.6	1.3	0.006637	20.5
112M	2.2	3	930	22.70	14.0	0.95	72.0	0.36	3.8	1.2	0.008846	24.0
112M*	3	4	930	30.20	18.0	0.95	75.0	0.36	3.8	1.2	0.011376	29.0
132S	3	4	930	30.20	17.7	0.95	76.0	0.34	3.0	1.3	0.023861	41.0
132M	4	5.5	930	41.60	23.8	0.95	78.0	0.34	3.0	1.2	0.031449	43.0
132M	5.5	7.5	930	56.70	31.2	0.95	81.0	0.34	3.0	1.1	0.041359	50.0

⋯ six poles

6 POLES Volt 220/60 Hz (1200 rpm)

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (230V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp										
63M	0.09	0.12	1070	0.82	1.1	0.90	41.0	0.40	3.1	1.5	0.000281	4.6
63M	0.13	0.18	1070	1.09	1.4	0.90	43.0	0.40	3.1	1.3	0.000342	4.8
71M	0.18	0.25	1090	1.61	1.7	0.92	51.0	0.40	3.3	1.6	0.000740	5.7
71M	0.25	0.35	1090	2.15	2.1	0.92	55.0	0.40	3.3	1.2	0.000950	6.0
71M*	0.37	0.5	1090	3.23	3.0	0.92	58.0	0.40	3.3	1.2	0.001450	8.8
80M	0.37	0.5	1090	3.23	3.0	0.92	57.0	0.40	3.3	1.4	0.001907	8.9
80M	0.55	0.75	1090	4.84	4.3	0.92	61.0	0.40	3.3	1.3	0.002527	9.9
80M*	0.75	1	1090	6.45	5.5	0.92	63.0	0.40	3.5	1.4	0.003147	11.2
90S	0.75	1	1090	6.45	5.3	0.92	65.0	0.38	3.5	1.4	0.002575	12
90L	1.1	1.5	1090	9.67	7.8	0.92	67.0	0.38	3.7	1.1	0.003359	15.2
90L*	1.5	2	1090	12.90	10.1	0.92	69.0	0.38	3.7	1.0	0.004269	17.5
100M	1.5	2	1110	12.66	9.9	0.92	70.0	0.38	3.7	1.1	0.004677	18.5
100M*	2.2	3	1110	19.00	14.3	0.92	73.0	0.38	3.7	1.0	0.006637	20.5
112M	2.2	3	1120	18.83	13.8	0.94	74.0	0.36	3.9	1.1	0.008846	24.0
112M*	3	4	1120	25.10	17.7	0.94	77.0	0.36	3.9	1.0	0.011376	29.0
132S	3	4	1120	25.10	17.5	0.94	78.0	0.34	3.2	1.1	0.023861	41.0
132M	4	5.5	1120	34.52	23.4	0.94	80.0	0.34	3.2	1.0	0.031449	43.0
132M	5.5	7.5	1120	47.07	30.8	0.94	83.0	0.34	3.2	0.9	0.041359	50.0

*POWERS NOT INCLUDED FOR THE UNIFIED SERIES.

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2 POLES Volt 400/50-60 Hz (3000 - 3600 rpm) - Standard Efficiency

Frame size IEC	Rated Output		Hz	n rpm	Tn Torque Nm	In (400V) A	Cosφ	Eff η%	Tstart Tn	Istart In	Tmax Tn	J kgm²	Weight kg
	kW	Hp											
56M	0.09	0.12	50	2680	0.33	0.4	0.67	50.0	3.0	3.1	4.0	0.000069	2.5
			60	3240	0.27	0.4	0.70	51.0	2.5	2.7	3.3		
56M	0.13	0.18	50	2740	0.42	0.5	0.62	53.6	3.3	3.5	6.0	0.000082	2.8
			60	3260	0.35	0.4	0.71	57.0	2.8	2.9	5.0		
56M*	0.18	0.25	50	2771	0.62	0.8	0.53	58.3	4.2	3.3	5.4	0.000111	3.2
			60	3325	0.53	0.7	0.62	60.0	3.5	2.7	4.5		
63M	0.18	0.25	50	2657	0.64	0.7	0.71	58.3	2.5	3.0	4.1	0.000139	3.8
			60	3149	0.55	0.7	0.79	59.0	2.1	2.5	3.4		
63M	0.25	0.35	50	2630	0.91	0.9	0.74	61.9	2.6	3.2	3.0	0.000175	4.0
			60	3160	0.76	0.8	0.79	73.0	2.2	2.2	2.5		
63M*	0.37	0.5	50	2760	1.29	1.3	0.66	65.8	3.3	3.6	3.7	0.000229	4.5
			60	3315	1.06	1.1	0.75	67.0	2.7	3.0	3.1		
63M*	0.55	0.75	50	2760	1.90	1.7	0.69	69.4	3.6	4.1	3.6	0.000303	5.0
			60	3362	1.56	1.4	0.77	70.0	3.0	3.4	3.0		
71M	0.37	0.5	50	2770	1.27	1.1	0.75	65.8	2.5	3.8	2.7	0.000294	5.5
			60	3330	1.06	1.0	0.81	66.0	2.1	3.0	2.2		
71M	0.55	0.75	50	2770	1.89	1.4	0.76	69.4	2.5	4.1	2.4	0.000362	6.0
			60	3330	1.58	1.3	0.82	70.0	2.1	3.4	2.0		
71M*	0.75	1	50	2740	2.57	2.0	0.76	72.1	3.7	4.5	3.4	0.000567	7.0
			60	3280	2.15	1.9	0.80	77.0	3.1	3.7	2.9		
71M*	1.1	1.5	50	2790	3.80	2.9	0.76	75.0	3.8	5.3	3.6	0.000636	8.5
			60	3350	3.14	2.5	0.82	78.5	3.1	4.4	3.0		
80M	0.75	1	50	2825	2.54	1.9	0.78	72.1	2.5	4.6	2.6	0.000721	8.0
			60	3390	2.11	1.7	0.84	77.0	2.1	3.8	2.2		
80M	1.1	1.5	50	2830	3.72	2.6	0.79	75.0	2.5	4.9	2.6	0.000854	10.0
			60	3385	3.10	2.4	0.86	78.5	2.1	4.1	2.2		
80M*	1.5	2	50	2840	5.04	3.5	0.78	77.2	3.3	6.0	3.5	0.001199	10.5
			60	3410	4.20	3.1	0.84	81.0	2.8	5.0	2.9		
80M*	2.2	3	50	2805	7.49	5.1	0.82	79.7	3.6	6.1	3.2	0.001385	13.0
			60	3370	6.23	4.4	0.87	81.5	3.0	5.1	3.0		
90S	1.5	2	50	2775	5.16	3.4	0.85	77.2	2.4	4.7	2.4	0.001194	12.0
			60	3340	4.28	3.2	0.88	81.0	2.0	3.9	2.0		
90L	2.2	3	50	2805	7.49	4.8	0.84	79.7	2.7	5.4	2.8	0.001648	14.5
			60	3370	6.23	4.2	0.88	81.5	2.3	4.5	2.4		
90L*	3	4	50	2828	10.13	6.6	0.81	81.5	3.4	6.0	3.4	0.002091	16.5
			60	3395	8.44	6.0	0.86	84.5	2.8	5.0	2.8		
100M	3	4	50	2848	10.10	6.5	0.82	81.5	2.7	5.8	2.9	0.002991	19.5
			60	3426	8.37	6.1	0.88	84.5	2.2	4.8	2.4		
100M*	4	5.5	50	2866	13.32	8.5	0.83	83.1	2.9	6.4	2.9	0.003898	22.0
			60	3439	11.19	8.3	0.89	84.5	2.4	5.3	2.4		
112M	4	5.5	50	2836	13.47	8.2	0.87	83.1	2.6	6.3	2.8	0.004554	24.0
			60	3423	11.16	8.1	0.90	84.5	2.2	5.2	2.3		
112M*	5.5	7.5	50	2871	18.30	11.3	0.84	84.7	3.6	7.2	3.7	0.005763	29.0
			60	3418	15.37	10.8	0.92	86.0	3.1	6.3	3.2		
112M*	7.5	10	50	2871	24.95	15.0	0.85	86.0	3.8	7.5	3.7	0.007213	34.0
			60	3451	20.75	14.0	0.91	87.5	3.1	6.2	3.1		
132S	5.5	7.5	50	2881	18.32	18.8	0.85	84.7	2.1	5.1	3.0	0.011139	36.0
			60	3478	15.10	11.9	0.87	86.0	1.7	4.2	2.5		
132S	7.5	10	50	2911	24.60	14.5	0.86	86.0	2.6	7.1	3.7	0.014338	42.5
			60	3497	20.48	13.6	0.89	87.5	2.2	5.9	3.1		
132M*	9.2	12.5	50	2908	30.21	18.1	0.87	86.9	2.8	6.6	3.1	0.016619	47.0
			60	3490	25.17	15.0	0.91	87.5	2.3	5.5	2.6		
132M*	11	15	50	2915	36.04	22.1	0.86	87.6	3.4	8.0	4.0	0.019818	53.5
			60	3500	30.00	21.1	0.90	87.5	2.8	6.6	3.3		
132M*	15	20	50	2916	49.12	28.3	0.86	88.7	3.3	5.8	3.1	0.024084	62.0
			60	3504	40.88	26.6	0.90	88.5	2.7	4.8	2.6		
160M	11	15	50	2910	36.20	21.3	0.86	87.6	2.8	6.7	3.0	0.030080	75.0
			60	3500	30.10	20.4	0.90	87.5	2.3	6.0	2.5		
160M	15	20	50	2910	48.10	27.4	0.87	88.7	2.9	7.0	3.2	0.037453	82.0
			60	3500	40.00	26.8	0.90	88.5	2.4	6.3	2.7		
160L	18.5	25	50	2915	60.30	34.5	0.88	89.3	2.9	6.4	3.2	0.045254	89.5
			60	3500	50.20	32.7	0.91	89.5	2.4	5.8	2.7		
160L*	22	30	50	2920	72.10	40.2	0.88	89.9	3.0	7.4	3.4	0.052626	94.0
			60	3510	60.10	39.4	0.91	89.5	2.5	6.7	2.8		
160L*	26	35	50	2930	84.00	46.4	0.88	90.3	3.0	7.5	3.2	0.059999	104.0
			60	3520	69.90	45.4	0.91	90.2	2.5	6.8	2.7		
160L*	30	40	50	2930	96.00	53.0	0.88	90.7	3.2	7.5	3.5	0.067372	111.0
			60	3520	79.90	51.9	0.91	90.2	2.7	6.8	2.9		
180M	22	30	50	2930	72.00	39.4	0.90	89.9	2.6	7.0	2.9	0.062596	110.0
			60	3520	59.90	38.9	0.92	89.5	2.2	6.3	2.4		
180L*	30	40	50	2935	95.80	51.9	0.90	90.7	2.8	7.3	3.0	0.077997	123.0
			60	3520	79.90	51.3	0.92	90.2	2.3	6.5	2.5		
180L*	37	50	50	2940	119.50	64.2	0.90	91.2	2.8	7.5	3.0	0.092861	139.0
			60	3530	99.60	63.5	0.92	91.5	2.3	6.7	2.5		
180L*	45	60	50	2945	143.20	77.0	0.90	91.7	3.0	7.5	3.3	0.107393	152.0
			60	3530	119.50	76.1	0.92	91.7	2.5	6.7	2.7		
200M	30	40	50	2935	95.80	51.9	0.90	90.7	2.8	7.3	3.0	0.116000	123.0
			60	3520	79.90	51.3	0.92	90.2	2.3	6.5	2.5		
200M	37	50	50	2940	119.50	64.2	0.90	91.2	2.8	7.5	3.1	0.196000	139.0
			60	3530	99.60	63.5	0.92	91.5	2.3	6.7	2.6		
200M*	45	60	50	2945	143.20	77.0	0.90	91.7	3.0	7.5	3.2	0.230000	152.0
			60	3530	119.50	76.1	0.92	91.7	2.5	6.7	2.7		

4 POLES Volt 400/50-60 Hz (1500 - 1800 rpm) - Standard Efficiency

Frame size IEC	Rated Output		Hz	n rpm	T _n Torque Nm	I _n (400V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp											
56M	0.06	0.09	50	1320	0.44	0.4	0.55	44.5	3.0	2.4	3.1	0.000126	2.8
			60	1600	0.36	0.3	0.60	45.0	2.5	2.2	2.6		
56M	0.09	0.12	50	1341	0.64	0.6	0.55	50.0	3.3	2.7	3.7	0.000176	3.0
			60	1617	0.53	0.5	0.60	51.0	2.7	2.2	3.1		
56M*	0.13	0.18	50	1400	0.86	0.7	0.49	53.6	4.3	3.0	4.6	0.000226	3.2
			60	1690	0.68	0.6	0.52	54.0	3.6	2.5	3.8		
63M	0.09	0.12	50	1320	0.67	0.4	0.74	50.0	2.3	2.7	2.5	0.000172	3.0
			60	1600	0.55	0.3	0.79	51.0	1.9	2.5	2.1		
63M	0.13	0.18	50	1347	0.85	0.6	0.64	53.6	2.4	2.9	3.2	0.000222	3.5
			60	1617	0.71	0.5	0.67	54.0	2.0	2.4	2.7		
63M	0.18	0.25	50	1334	1.28	0.8	0.62	58.3	2.9	3.1	2.8	0.000242	4.0
			60	1610	1.07	1.0	0.68	59.0	2.4	2.6	2.3		
63M*	0.22	0.30	50	1356	1.57	0.9	0.66	60.5	2.5	3.0	2.6	0.000292	4.5
			60	1630	1.30	0.8	0.68	61.0	2.1	2.5	2.2		
63M*	0.25	0.35	50	1356	1.76	1.0	0.61	61.9	2.6	3.0	2.7	0.000340	5.0
			60	1630	1.46	0.9	0.65	62.5	2.2	2.5	2.3		
71M	0.25	0.35	50	1400	1.67	0.8	0.73	61.9	2.3	3.5	2.5	0.000590	5.0
			60	1660	1.41	0.7	0.79	62.5	1.9	3.1	2.1		
71M	0.37	0.50	50	1378	2.56	1.1	0.76	65.8	2.2	3.7	2.3	0.000810	5.5
			60	1660	2.13	0.9	0.79	68.0	1.8	3.1	1.9		
71M*	0.55	0.75	50	1360	3.86	1.6	0.74	69.4	2.7	4.0	2.6	0.000950	7.5
			60	1630	3.22	1.4	0.81	70.0	2.2	3.3	2.2		
71M*	0.75	1	50	1365	5.25	2.1	0.74	72.1	2.8	4.2	2.8	0.001240	8.0
			60	1640	4.37	1.8	0.79	78.0	2.3	3.5	2.3		
80M	0.55	0.75	50	1360	3.86	1.6	0.74	69.4	2.5	3.7	2.6	0.001590	8.0
			60	1632	3.22	1.4	0.79	70.0	2.1	3.1	2.2		
80M	0.75	1	50	1395	5.13	1.9	0.79	72.1	2.5	4.4	2.5	0.001900	9.0
			60	1678	4.27	1.6	0.85	78.0	2.1	3.7	2.1		
80M*	1.1	1.5	50	1390	7.56	2.8	0.78	75.0	2.6	4.4	2.5	0.002680	11.0
			60	1670	6.29	2.6	0.84	79.0	2.2	3.7	2.1		
80M*	1.5	2	50	1385	10.34	3.8	0.76	77.2	3.4	5.3	3.4	0.003460	12.0
			60	1670	8.58	3.3	0.83	81.5	2.8	4.4	2.8		
90S	1.1	1.5	50	1400	7.50	2.8	0.78	75.0	2.3	4.4	2.6	0.002120	12.5
			60	1680	6.25	2.5	0.83	79.0	1.9	3.7	2.2		
90L	1.5	2	50	1406	10.18	3.5	0.79	77.2	2.4	4.8	2.6	0.002800	14.5
			60	1684	8.51	3.3	0.85	81.5	2.0	4.0	2.2		
90L*	1.85	2.5	50	1390	12.64	4.3	0.79	78.6	2.6	4.5	2.8	0.003200	16.5
			60	1670	10.60	4.0	0.84	83.0	1.7	4.0	2.3		
90L*	2.2	3	50	1390	15.10	5.4	0.73	79.7	2.8	5.0	2.8	0.003820	17.5
			60	1680	12.50	4.8	0.83	83.0	2.3	4.5	2.3		
100M	2.2	3	50	1405	14.95	5.3	0.78	79.7	2.5	4.5	2.5	0.004670	18.5
			60	1690	12.43	4.9	0.82	83.0	2.1	3.7	2.1		
100M	3	4	50	1400	20.46	6.9	0.80	81.5	2.3	4.6	2.5	0.006150	20.5
			60	1685	17.00	6.3	0.85	85.0	1.9	3.8	2.1		
100M*	4	5.5	50	1400	27.50	9.3	0.80	83.1	2.5	4.6	2.6	0.007620	27.5
			60	1700	22.80	8.4	0.84	85.0	2.1	4.1	2.2		
112M	4	5.5	50	1423	26.84	9.0	0.79	83.1	2.7	5.3	2.8	0.010000	29.0
			60	1708	22.36	8.3	0.85	85.0	2.2	4.4	2.3		
112M*	5.5	7.5	50	1421	36.96	11.0	0.78	84.7	2.3	5.0	2.5	0.012200	32.0
			60	1705	30.80	9.6	0.84	87.0	1.9	4.2	2.1		
132S	5.5	7.5	50	1430	36.73	11.8	0.82	84.7	2.1	4.3	2.0	0.023200	41.0
			60	1720	30.54	11.0	0.84	87.0	1.7	3.6	1.7		
132M	7.5	10	50	1435	49.90	15.1	0.82	86.0	2.5	5.4	2.5	0.028800	49.0
			60	1722	41.59	14.9	0.86	87.5	2.1	4.5	2.1		
132M*	9.2	12.5	50	1448	60.67	19.4	0.80	86.9	3.0	6.7	2.4	0.037800	60.0
			60	1742	50.43	17.7	0.84	87.5	2.5	5.6	2.0		
132M*	11	15	50	1430	73.46	23.0	0.83	87.6	2.4	5.4	2.4	0.041500	64.0
			60	1720	61.07	21.8	0.86	88.5	2.0	4.5	2.0		
160M	11	15	50	1455	72.19	22.4	0.82	87.6	1.8	4.4	2.0	0.059700	78.0
			60	1740	60.37	21.8	0.84	88.5	1.5	3.7	1.7		
160L	15	20	50	1451	98.72	27.8	0.84	88.7	2.1	5.1	2.2	0.077200	91.5
			60	1738	82.42	26.9	0.86	89.5	1.7	4.2	1.8		
160L*	18.5	25	50	1455	120.80	35.1	0.85	89.3	2.8	6.4	2.8	0.094200	104.0
			60	1750	100.40	34.3	0.87	90.5	2.3	5.8	2.3		
160L*	22	30	50	1460	144.40	41.7	0.85	89.9	2.8	6.5	2.8	0.109400	115.0
			60	1750	120.50	40.7	0.87	91.0	2.3	5.9	2.3		
180M	18.5	25	50	1453	121.58	37.0	0.82	89.3	1.9	4.4	1.9	0.121900	119.0
			60	1744	101.30	35.2	0.85	90.5	1.6	3.6	1.6		
180L	22	30	50	1460	144.00	42.3	0.82	89.9	2.1	4.8	1.9	0.144200	132.0
			60	1752	120.00	40.2	0.85	91.0	1.7	4.0	1.6		
180L*	26	35	50	1460	168.50	47.5	0.86	90.3	2.8	6.6	2.8	0.169100	146.0
			60	1750	140.60	46.4	0.88	91.7	2.3	6.0	2.3		
180L*	30	40	50	1480	193.57	57.5	0.83	90.7	2.7	6.7	2.6	0.193900	159.0
			60	1770	161.85	55.0	0.86	91.7	2.2	5.7	2.2		
200M	26	35	50	1460	168.50	47.5	0.86	90.3	2.8	6.6	2.9	0.169100	146.0
			60	1750	140.60	46.4	0.88	91.7	2.3	6.0	2.4		
200M	30	40	50	1480	193.57	57.5	0.83	90.7	2.7	6.7	2.6	0.193900	159.0
			60	1770	161.85	55.0	0.86	91.7	2.2	5.7	2.2		

*POWERS NOT INCLUDED FOR THE UNIFIED SERIES.

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6 POLES Volt 400/50-60 Hz (1000 - 1200 rpm) - Standard Efficiency

Frame size IEC	Rated Output		Hz	n rpm	T _n Torque Nm	I _n (400V) A	Cosφ	Eff η%	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp											
63M	0.09	0.12	50	744	1.15	0.6	0.70	50.1	1.4	1.7	1.6	0.000272	4
			60	890	0.97	0.6	0.71	52.0	1.2	1.4	1.3		
63M	0.13	0.18	50	843	1.36	0.8	0.59	53.2	1.9	1.8	2.2	0.000331	5
			60	1000	1.15	0.7	0.62	54.0	1.6	1.5	1.8		
71M	0.18	0.25	50	882	1.95	0.8	0.68	57.3	2.1	2.5	2.1	0.000810	5.5
			60	1060	1.62	0.8	0.70	58.0	1.7	2.1	1.7		
71M	0.25	0.35	50	905	2.64	1.1	0.64	60.5	2.1	2.8	2.2	0.001090	7.5
			60	1090	2.19	0.9	0.67	62.0	1.7	2.3	1.8		
71M*	0.37	0.50	50	885	4.00	1.2	0.68	64.1	1.8	2.6	1.9	0.001240	8
			60	1062	3.33	1.1	0.70	65.0	1.5	2.2	1.6		
80M	0.37	0.5	50	890	3.97	1.2	0.75	64.1	1.9	3.0	2.1	0.001590	8.2
			60	1070	3.30	1.1	0.76	65.0	1.6	2.5	1.7		
80M	0.55	0.75	50	885	5.93	1.8	0.70	67.5	2.1	3.1	2.2	0.002210	9.2
			60	1064	4.94	1.6	0.72	68.0	1.7	2.6	1.8		
80M*	0.75	1	50	926	7.73	2.2	0.70	70.0	2.7	4.1	2.8	0.003140	11.5
			60	1112	6.44	2.0	0.75	73.0	2.2	3.4	2.3		
90S	0.75	1	50	930	7.70	2.5	0.67	70.0	2.1	3.0	2.2	0.002570	13
			60	1115	6.42	2.3	0.70	73.0	1.7	2.5	1.8		
90L	1.1	1.5	50	922	11.39	3.2	0.68	72.9	2.5	3.9	2.6	0.003820	15
			60	1108	9.48	2.8	0.75	75.0	2.1	3.2	2.2		
90L*	1.50	2	50	920	15.57	4.2	0.70	75.2	2.2	3.6	2.3	0.004110	17
			60	1105	12.96	3.9	0.74	77.0	1.8	3.0	1.9		
100M	1.5	2	50	924	15.50	4.4	0.69	75.2	2.2	3.6	2.3	0.006140	19.0
			60	1110	12.90	4.0	0.73	77.1	1.8	3.0	1.9		
100M*	2.2	3	50	905	23.20	6.1	0.72	77.7	1.9	3.4	2.1	0.007130	20.5
			60	1090	19.27	5.5	0.76	78.5	1.6	2.8	1.7		
112M	2.2	3	50	928	22.64	5.9	0.72	77.7	2.1	3.9	2.3	0.010530	24
			60	1110	18.92	5.5	0.74	78.5	1.7	3.2	1.9		
112M*	3	4	50	948	30.22	7.5	0.72	79.7	1.9	3.0	2.1	0.013376	28
			60	1140	25.13	6.9	0.75	83.5	1.6	2.5	1.7		
132S	3	4	50	955	30.00	7.8	0.73	79.7	2.1	3.8	2.3	0.028820	41
			60	1145	25.00	7.2	0.76	83.5	1.7	3.2	1.9		
132M	4	5.5	50	947	40.33	9.2	0.79	81.4	1.6	4.5	2.3	0.031450	49
			60	1133	33.71	8.5	0.84	83.5	1.3	3.7	1.9		
132M	5.5	7.5	50	953	55.11	12.5	0.77	83.1	2.1	5.0	2.5	0.041360	60
			60	1145	45.87	11.6	0.79	85.0	1.7	4.2	2.1		
132M*	7.5	10	50	960	74.60	15.7	0.80	84.7	1.9	4.5	2.1	0.043840	90
			60	1152	62.17	14.6	0.83	86.0	1.6	3.7	1.7		
160M	7.5	10	50	970	73.83	16.6	0.76	84.7	1.8	4.6	2.0	0.089400	94
			60	1161	61.69	15.9	0.82	86.0	1.5	3.8	1.7		
160L	11	15	50	972	108.07	22.9	0.80	86.4	1.9	4.7	2.1	0.137200	105
			60	1164	90.20	21.8	0.82	89.0	1.6	3.9	1.7		
160L*	15	20	50	974	147.06	31.2	0.79	87.7	2.0	4.5	2.2	0.148300	118
			60	1165	122.95	29.9	0.81	89.5	1.7	3.7	1.8		
180L	15	20	50	975	146.91	32.1	0.77	87.7	2.1	4.4	2.4	0.148700	130
			60	1170	122.43	31.2	0.79	89.5	1.7	3.7	2.0		
180L*	18.5	25	50	978	180.64	37.2	0.81	88.6	2.2	4.6	2.4	0.164400	142
			60	1169	151.12	35.7	0.83	90.2	1.8	3.8	2.0		
180L*	22	30	50	976	215.25	42.4	0.84	89.2	2.3	4.5	2.5	0.180100	150
			60	1170	179.56	40.6	0.86	91.0	1.9	3.7	2.1		

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: two poles

2 POLES Volt 400/50 Hz (3000 rpm) - High Efficiency

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (400V) A	Eff η			Cos ϕ	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp				100%	75%	50%						
71M*	0.75	1	2787	2.6	1.8	77.4	78.5	76.6	0.79	3.5	5.6	3.6	0.0005	7.5
80M	0.75	1	2847	2.5	1.7	77.4	79.0	76.8	0.79	2.8	5.3	2.8	0.0008	8.5
80M	1.1	1.5	2864	3.7	2.4	79.6	79.8	77.7	0.81	3.4	6.9	3.5	0.0010	10.2
90S	1.5	2	2867	5.0	3.2	81.3	80.7	80.5	0.84	3.2	7.0	3.3	0.0015	13.0
90L	2.2	3	2865	7.3	4.5	83.2	83.1	82.2	0.86	3.8	8.1	3.9	0.0021	16.5
90L*	3	4	2890	9.9	6.0	84.6	84.7	83.1	0.85	3.7	7.8	3.8	0.0023	19.0
100M	3	4	2895	9.9	6.2	84.6	84.9	83.5	0.83	3.2	7.6	3.5	0.0036	21.0
100M*	4	5.5	2900	13.2	8.0	85.8	85.6	83.1	0.84	3.4	7.5	3.7	0.0039	23.0
112M	4	5.5	2905	13.2	7.8	85.8	85.7	83.9	0.86	3.9	8.9	4.0	0.0058	27.0
112M*	5.5	7.5	2916	18.1	10.9	87.0	87.1	85.2	0.84	2.2	9.8	4.5	0.0074	32.5
132S	5.5	7.5	2915	18.1	11.3	87.0	87.2	86.7	0.81	3.1	7.1	3.3	0.0133	41.0
132S	7.5	10	2935	24.4	15.3	88.1	87.8	86.5	0.81	3.7	8	3.8	0.0175	45.0
132M*	11	15	2944	35.7	21.0	89.4	89.5	88.0	0.86	3.8	7.5	4.0	0.0227	61.0
160M	11	15	2934	35.8	21.5	89.4	89.3	88.2	0.86	3.7	7	4.0	0.0338	76.0
160M	15	20	2942	48.7	28.0	90.3	90.4	89.5	0.87	3	7.2	3.3	0.0424	88.0
160L	18.5	25	2942	60.0	34.0	90.9	91.0	90.2	0.88	2.8	7.2	3.1	0.0514	92.0
180M	22	30	2948	71.3	40.0	91.3	91.5	90.6	0.88	2.6	7.1	2.9	0.0663	124.0
180L	30	40	2950	97.1	52.0	92.0	92.1	91.0	0.89	2.2	7.0	2.8	0.0836	136.0
180L	37	50	2945	120.0	64.0	92.5	92.6	91.4	0.9	2	7.3	2.6	0.1003	146.0

: four poles

4 POLES Volt 400/50 Hz (1500 rpm) - High Efficiency

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (400V) A	Eff η			Cos ϕ	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp				100%	75%	50%						
80M	0.75	1	1436	5.0	1.8	79.6	78.8	77.6	0.76	3.6	6.7	3.6	0.0032	12.5
90S	1.1	1.5	1430	7.4	2.6	81.4	81.7	80.5	0.73	3.0	5.4	3.1	0.0030	13.5
90L	1.5	2	1427	10.0	3.4	82.8	82.1	81.0	0.77	2.9	5.8	3.1	0.0038	17.0
100M	2.2	3	1433	14.7	4.8	84.3	84.4	83.5	0.78	2.8	5.7	2.9	0.0062	21.3
100M	3	4	1433	20.0	6.7	85.5	86.1	84.7	0.77	2.9	6	3.3	0.0072	26.0
112M	4	5.5	1432	26.7	8.5	86.6	86.7	86.1	0.79	2.7	5.9	3.0	0.0122	31.0
132S	5.5	7.5	1455	36.1	11.7	87.7	87.5	86.8	0.78	2.9	5.8	3.0	0.0269	47.0
132M	7.5	10	1460	49.0	16.4	88.7	88.8	88.0	0.76	3.0	5.9	3.1	0.0343	55.0
160M	11	15	1468	71.6	22.1	89.8	90.0	89.6	0.80	2.9	6	3.0	0.0636	88.0
160L	15	20	1470	97.4	29.8	90.6	90.4	90.0	0.80	2.7	6	2.9	0.0829	106.0
180M	18.5	25	1472	120.0	36.1	91.2	91.0	89.8	0.81	2.5	6	2.6	0.1437	136.0
180L	22	30	1465	143.4	40.0	91.6	91.9	91.5	0.87	2.3	6	2.4	0.1690	152.0
180L	30	40	1470	194.9	54.6	92.3	92.5	92.0	0.86	2.4	5.9	2.5	0.2188	170.0

: six poles

6 POLES Volt 400/50 Hz (1000 rpm) - High Efficiency

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (400V) A	Eff η			Cos ϕ	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp				100%	75%	50%						
90S	0.75	1	925	7.7	2.2	75.9	74.3	72.8	0.66	1.8	3.9	2.5	0.0041	13.0
90L	1.1	1.5	932	11.3	3.1	78.1	75.7	72.2	0.65	2.4	3.6	2.4	0.0061	17.0
100M	1.5	2	942	15.2	4.0	79.8	78.0	73.0	0.67	2.3	3.8	2.5	0.0000	19.5
112M	2.2	3	950	22.1	5.6	81.8	81.9	78.3	0.68	2.4	4.1	2.6	0.0114	28.0
132S	3	4	955	30.0	7.2	83.3	83.0	81.0	0.72	2.3	4.3	2.5	0.0251	40.0
132M	4	5.5	953	40.0	9.6	84.6	84.5	82.5	0.71	2.4	5.0	2.8	0.0339	48.0
132M	5.5	7.5	955	55.0	12.9	86.0	85.8	84.4	0.71	2.6	5.5	2.9	0.0452	58.0
160M	7.5	10	970	73.8	16.2	87.2	87.1	86.0	0.76	2.6	4.6	3.0	0.0894	90.0
160L	11	15	970	108.3	23.2	88.7	88.5	87.3	0.77	2.7	4.7	3.0	0.1316	115.0
180L	15	20	975	146.9	31.1	89.7	89.3	88.0	0.78	2.7	4.4	3.0	0.1801	140.0
180L	18.5	25	978	180.6	35.1	90.4	90.4	89.2	0.84	2.6	4.6	2.8	0.1879	152.0
180L	22	30	980	214.4	41.5	90.9	90.9	89.8	0.84	2.7	4.5	2.9	0.1958	180.0

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2 POLES Volt 400/50 Hz (3000 rpm) - Premium Efficiency

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (400V) A	Eff η			Cos ϕ	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp				100%	75%	50%						
80M	0.75	1	2905	2.5	1.8	80.7	80.1	78.2	0.77	4.7	5.6	7.8	0.0006	7.5
80M	1.1	1.5	2900	3.6	2.5	82.7	82.5	79.1	0.77	5	6.7	5.2	0.0008	11.5
90S	1.5	2	2895	5.0	3.7	84.2	84.6	83.2	0.78	5.0	7.0	5.1	0.0018	14.5
90L	2.2	3	2900	7.2	4.6	86.2	86.2	84.3	0.79	4.9	7.8	4.6	0.0024	19.5
100M	3	4	2920	9.8	6.7	87.4	87.1	85.1	0.75	4.1	7.6	4.5	0.0040	21.3
112M	4	5.5	2920	13.1	8.2	88.4	88.0	86.0	0.81	4.8	8	5.1	0.0065	28.0
132S	5.5	7.5	2925	18.0	10.3	89.2	88.2	85.7	0.86	4.3	8.2	4.4	0.0180	42.0
132S	7.5	10	2927	24.5	14.6	90.1	89.6	88.0	0.85	4.2	8.5	4.4	0.0190	45.0
160M	11	15	2930	35.9	19.8	91.2	90.7	90.0	0.87	4	8.7	4.2	0.0350	74.0
160M	15	20	2925	49.0	27.0	91.9	91.2	91.0	0.88	4.8	9	5.0	0.0450	89.0
160L	18.5	25	2930	60.3	33.8	92.4	92.7	91.5	0.88	5	8	5.2	0.0540	106.0
180M	22	30	2936	71.6	40.0	92.7	93.0	92.2	0.87	5.2	8.3	5.2	0.0690	130.0
180L	30	40	2940	97.4	51.6	93.3	93.5	92.4	0.9	2.8	7.0	3.0	0.0860	140.0
180L	37	50	2940	120.2	62.5	93.7	93.6	92.8	0.91	3	7	3.2	0.1350	162.0

4 POLES Volt 400/50 Hz (1500 rpm) - Premium Efficiency

Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (400V) A	Eff η			Cos ϕ	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp				100%	75%	50%						
80M	0.75	1	1445	5.0	1.7	82.5	81.6	80.8	0.77	2.8	5.7	3.2	0.0035	12.0
90S	1.1	1.5	1435	7.3	2.6	84.1	84.2	83.2	0.74	3.0	5.5	3.3	0.0037	14.5
90L	1.5	2	1430	10.0	3.3	85.3	85.2	84.3	0.76	3.1	6.0	3.4	0.0041	18.0
100M	2.2	3	1443	14.6	4.8	86.7	86.4	83.3	0.77	2.8	5.6	3.0	0.0064	23.0
112M	3	4	1440	19.9	6.3	87.7	87.2	85.0	0.78	2.8	5.4	3.1	0.0200	28.0
132S	4	5.5	1445	26.4	8.2	88.6	88.3	87.2	0.80	2.4	5.3	2.5	0.0210	41.0
132S	5.5	7.5	1450	36.2	11.4	89.6	89.8	89.2	0.78	2.5	5.8	2.6	0.0280	45.0
132M	7.5	10	1462	49.0	15.6	90.4	90.5	89.9	0.77	2.4	5.0	2.5	0.0370	61.0
160M	11	15	1465	71.7	21.7	91.4	91.5	90.6	0.80	2.4	5.8	2.5	0.0680	89.0
160L	15	20	1470	97.4	29.9	92.1	92.3	91.7	0.81	2.6	6	2.6	0.0870	105.0
180M	18.5	25	1465	120.6	33.9	92.6	92.4	91.8	0.85	2.5	6	2.5	0.1730	142.0
180L	22	30	1470	142.9	39.2	93.0	92.9	92.0	0.87	2.2	6	2.6	0.1870	165.0

6 POLES Volt 400/50 Hz (1000 rpm) - Premium Efficiency

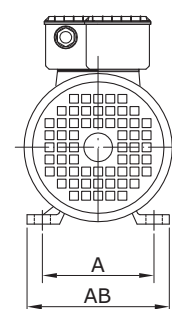
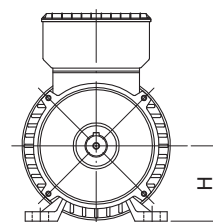
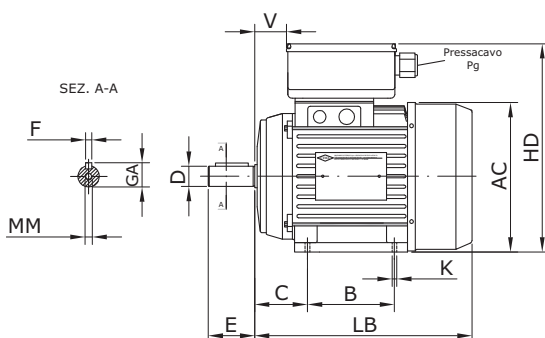
Frame size IEC	Rated Output		n rpm	T _n Torque Nm	I _n (400V) A	Eff η			Cos ϕ	T _{start} T _n	I _{start} I _n	T _{max} T _n	J kgm ²	Weight kg
	kW	Hp				100%	75%	50%						
90S	0.75	1	932	7.7	2.1	78.9	79.1	78.2	0.65	2.2,8	4.0	2.7	0.0050	14.5
90L	1.1	1.5	940	11.2	3.0	81.0	81.1	79.2	0.66	2.1	5.2	3.0	0.0070	19.5
100M	1.5	2	945	15.2	3.9	82.5	82.4	81.3	0.68	2.2	4.7	2.5	0.0078	23.0
112M	2.2	3	955	22.0	5.6	84.3	84.5	83.4	0.67	2.2	5	2.6	0.0132	29.0
132S	3	4	940	30.5	7.0	85.6	85.7	84.2	0.73	2.3	4.8	2.8	0.0295	42.0
132S	4	5.5	950	40.2	9.2	86.8	87.0	85.4	0.72	2.4	5.4	2.9	0.0381	48.0
132M	5.5	7.5	952	55.2	12.4	88.0	88.1	87.2	0.73	2.6	6.0	3.0	0.0510	66.0
160M	7.5	10	970	73.8	15.8	89.1	89.0	88.3	0.77	2.6	4.7	3.0	0.0950	95.0
160L	11	15	972	108.1	23.1	90.3	91.4	89.2	0.76	2.6	4.6	3.0	0.1540	115.0
180M	15	20	975	146.9	30.1	91.2	91.4	91.0	0.79	2.7	4.5	3.1	0.1910	146.0
180L	18.5	25	978	180.6	35.5	91.7	91.8	90.8	0.82	2.5	4.8	2.8	0.1980	190.0

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DIMENSIONS B3 SINGLE PHASE (mm)

TIPO	A	AB	AC	B	C	D(Ø)	MM	E	F(h9)	GA	H	LB	K	Pg	HD	V
56	90	108	113	71	36	9j6	M3	20	4	10.2	56	170	6	11	147	18
63	100	120	124	80	40	11j6	M4	23	4	12.5	63	183	7	11	175	23
71	112	134	142	90	45	14j6	M5	30	5	16	71	215	7	11	191	27,5
80	125	152	158	100	50	19j6	M6	40	6	21.5	80	240	9	13,5	225	25
90S	140	170	178	100	56	24j6	M8	50	8	27	90	255	9	13,5	245	29,5
90L	140	170	178	125	56	24j6	M8	50	8	27	90	280	9	13,5	245	29,5
100	160	192	194	140	63	28j6	M10	60	8	31	100	305	11	13,5	273	20,5
112(*)	190	220	220	140	70	28j6	M10	60	8	31	112	332	11	13,5	265	46
132S(*)	216	268	262	178	89	38k6	M12	80	10	41	132	382	11	21	300	54,5
132M(*)	216	268	262	178	89	38k6	M12	80	10	41	132	420	11	21	300	54,5

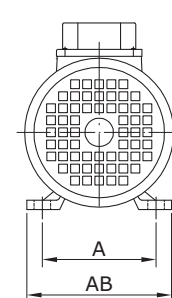
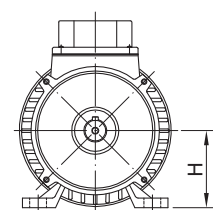
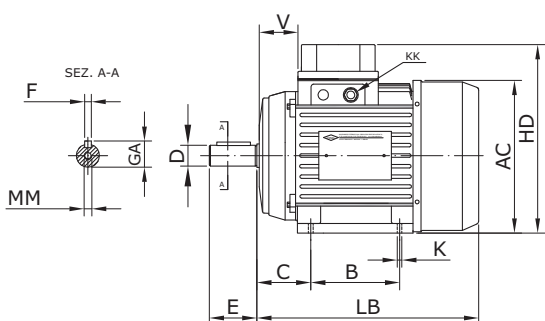


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DIMENSIONS B3 THREE PHASE (mm)

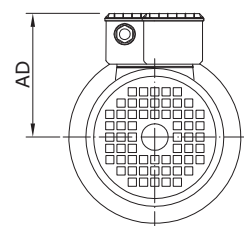
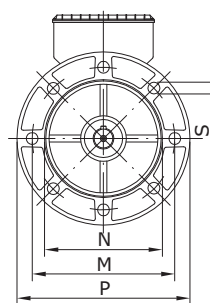
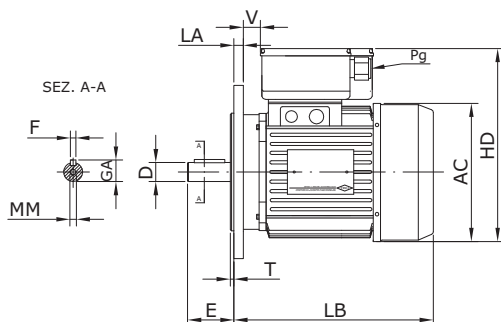
TIPO	A	AB	AC	B	C	D(Ø)	MM	E	F(h9)	GA	KK	LB	HD	K	H	V
56	90	108	113	71	36	9j6	M3	20	3	10.2	M16	170	147	6	56	19
63	100	120	124	80	40	11j6	M4	23	4	12.5	M16	183	155	7	63	22.5
71	112	134	142	90	45	14j6	M5	30	5	16	M20	215	171	7	71	26.5
80	125	152	158	100	50	19j6	M6	40	6	21.5	M20	240	200	9	80	33.5
90S	140	170	178	100	56	24j6	M8	50	8	27	M20	255	216	9	90	29.5
90L	140	170	178	125	56	24j6	M8	50	8	27	M20	280	216	9	90	29.5
100	160	192	194	140	63	28j6	M10	60	8	31	M20	305	238	11	100	38
112	190	220	220	140	70	28j6	M10	60	8	31	M25	332	267	11	112	46
132S	216	268	262	140	89	38k6	M12	80	10	41	M25	382	300	11	132	45.5
132M	216	268	262	178	89	38k6	M12	80	10	41	M25	420	300	11	132	45.5
160M	254	320	310	210	120	42k6	M16	110	12	45	M32	497	380	15	160	61
160L	254	320	310	254	120	42k6	M16	110	12	45	M32	546	380	15	160	61
180M	270	355	356	241	121	48k6	M16	110	14	51.5	M40	586	420	15	180	80
180L	270	355	356	279	121	48k6	M16	110	14	51.5	M40	626	420	15	180	80
200	318	400	356	305	133	55k6	M20	110	16	59	M40	626	440	19	200	80



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DIMENSIONS B5 SINGLE PHASE (mm)

TIPO	AD	AC	D(Ø)	MM	E	LA	M(Ø)	N(Ø)	P(Ø)	S(Ø)	T	F ^(h9)	GA	LB	HD	Pg	V
56	85	113	9j6	M3	20	8.5	100	80	120	7	2.5	3	10.2	170	139	11	8.5
63	125	124	11j6	M4	23	7.5	115	95	140	9	3	4	12.5	183	154	11	15.5
71R	133	142	11j6	M4	23	9	115	95	140	9	3	4	12.5	215	172	11	21
71	133	142	14j6	M5	30	9	130	110	160	9	3.5	5	16.0	215	172	11	21
80R	140	158	14j6	M5	30	9	130	110	160	9	3.5	5	16	240	220	13.5	21
80	140	158	19j6	M6	40	8.5	165	130	200	11.5	3.5	6	21.5	240	220	13.5	19
90R	147	178	19j6	M6	40	10	130	110	160	11.5	3.5	6	21.5	255	237	13.5	21
90S	147	178	24j6	M8	50	10	165	130	200	11.5	3.5	8	27	255	237	13.5	21
90L	147	178	24j6	M8	50	10	165	130	200	11.5	3.5	8	27	280	237	13.5	21
100R	170	194	24j6	M8	50	10	165	130	200	11.5	3.5	8	27	305	267	13.5	10.5
100	170	194	28j6	M10	60	10.5	215	180	250	14	4	8	31	305	267	13.5	10.5
112(*)	149	220	28j6	M10	60	11	215	180	250	14	4	8	31	332	261	13.5	20
132S(*)	168	262	38 k6	M12	80	16	265	230	300	14	4	10	41	382	296	21	54.5
132M(*)	168	262	38 k6	M12	80	16	265	230	300	14	4	10	41	420	296	21	54.5

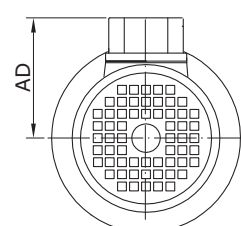
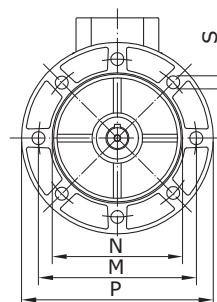
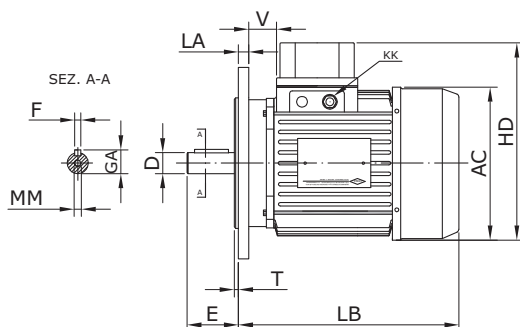


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DIMENSIONS B5 THREE PHASE (mm)

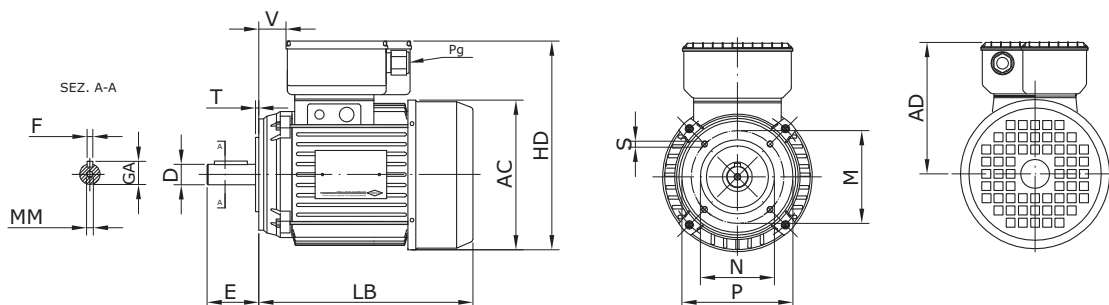
TIPO	AD	AC	D(Ø)	MM	E	M(Ø)	N(Ø)	P(Ø)	S(Ø)	T	F ^(h9)	GA	KK	LB	HD	LA	V
56	91	108	9j6	M3	20	100	80	120	7	2.5	3	10.2	M16	170	147	8.5	11.5
63	92	124	11j6	M4	23	115	95	140	9	3	4	12.5	M16	183	155	7.5	21.5
71R	100	142	11j6	M4	23	115	95	140	9	3	4	12.5	M20	215	171	7.5	26.5
71	100	142	14j6	M5	30	130	110	160	9	3.5	5	16	M20	215	171	9	26.5
80R	120	158	14j6	M5	30	130	110	160	9	3.5	5	16	M20	240	200	9	27
80	120	158	19j6	M6	40	165	130	200	11.5	3.5	6	21.5	M20	240	200	8.5	27
90R	126	178	19j6	M6	40	130	110	160	9	3.5	6	21.5	M20	255	216	10	31
90S	126	178	24j6	M8	50	165	130	200	11.5	3.5	8	27	M20	255	216	10	31
90L	126	178	24j6	M8	50	165	130	200	11.5	3.5	8	27	M20	280	216	10	31
100R	138	194	24j6	M8	50	165	130	200	11.5	3.5	8	27	M20	305	238	10	37
100	138	194	28j6	M10	60	215	180	250	14	4	8	31	M20	305	238	10.5	37
112	155	220	28j6	M10	60	215	180	250	14	4	8	31	M25	332	267	11	37
132S	168	262	38k6	M12	80	265	230	300	14	4	10	41	M25	382	300	14.5	42
132M	168	262	38k6	M12	80	265	230	300	14	4	10	41	M25	420	300	14.5	42
160M	233	309	42k6	M16	110	300	250	350	18	5	12	45	M32	497	380	14	60
160L	233	309	42k6	M16	110	300	250	350	18	5	12	45	M32	541	380	14	60
180M	253	350	48k6	M16	110	300	250	350	19	5	14	51.5	M40	586	417	20	54
180L	253	350	48k6	M16	110	300	250	350	19	5	14	51.5	M40	626	417	20	54
200	253	350	55k6	M20	110	350	300	400	19	5	16	59	M40	626	417	20	54



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DIMENSIONS B14 SINGLE PHASE (mm)

TIPO	AD	AC	D(Ø)	MM	E	M(Ø)	N(Ø)	P(Ø)	S(Ø)	T	F ^(h9)	GA	LB	Pg	HD	V
56	85	113	9j6	M3	20	65	50	80	M5	2.5	3	10.2	170	11	139	17
63	125	124	11j6	M4	23	75	60	90	M5	2.5	4	12.5	183	11	154	21.5
71	133	142	14j6	M5	30	85	70	105	M6	2.5	5	16	215	11	172	30
80	140	158	19j6	M6	40	100	80	120	M6	3	6	21.5	240	13.5	220	27.5
90S	147	178	24j6	M8	50	115	95	140	M8	3	8	27	255	13.5	237	31
90L	147	178	24j6	M8	50	115	95	140	M8	3	8	27	280	13.5	237	31
100	170	194	28j6	M10	60	130	110	160	M8	3.5	8	31	305	13.5	267	21
112(*)	/	220	28j6	M10	60	130	110	160	M8	3.5	8	31	332	13.5	261	20
132S(*)	/	262	38k6	M12	80	165	130	200	M10	3.5	10	41	382	21	296	54
132M(*)	/	262	38k6	M12	80	165	130	200	M10	3.5	10	41	420	21	296	54

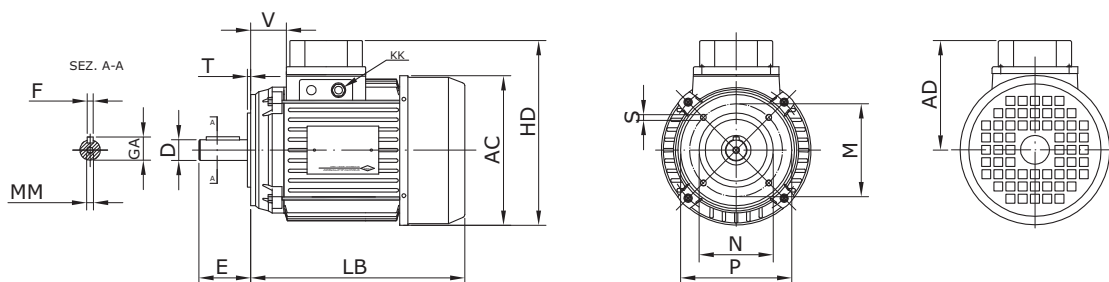


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DIMENSIONS B14 THREE PHASE (mm)

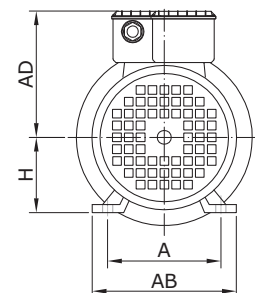
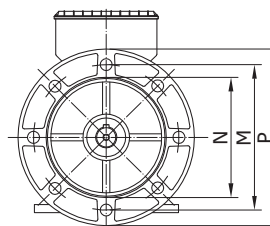
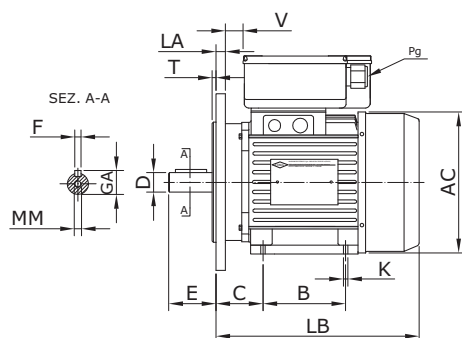
TIPO	AD	AC	D(Ø)	MM	E	M(Ø)	N(Ø)	P(Ø)	S(Ø)	T	F ^(h9)	GA	KK	LB	HD	V
56	91	108	9J6	M3	20	65	50	80	M5	2.5	3	10.2	M16	170	147	23.5
63	92	124	11j6	M4	23	75	60	90	M5	2.5	4	12.5	M16	183	155	24
71	100	142	14j6	M5	30	85	70	105	M6	2.5	5	16	M20	215	171	27
80	120	158	19j6	M6	40	100	80	120	M6	3	6	21.5	M20	240	200	33.5
90S	126	178	24j6	M8	50	115	95	140	M8	3	8	27	M20	255	216	35
90L	126	178	24j6	M8	50	115	95	140	M8	3	8	27	M20	280	216	39.5
100	138	194	28j6	M10	60	130	110	160	M8	3.5	8	31	M20	305	238	39.5
112	155	220	28j6	M10	60	130	110	160	M8	3.5	8	31	M25	332	267	46
132S	168	262	38k6	M12	80	165	130	200	M10	3.5	10	41	M25	382	300	47.5
132M	168	262	38k6	M12	80	165	130	200	M10	3.5	10	41	M25	420	300	54.5
160M	233	309	42k6	M16	110	215	180	250	M12	5	12	45	M32	497	380	72
160L	233	309	42k6	M16	110	215	180	250	M12	5	12	45	M32	541	380	72
180M	253	350	48k6	M16	110	/	/	/	/	/	14	51.5	M40	586	417	74
180L	253	350	48k8	M16	110	/	/	/	/	/	14	51.5	M40	626	417	74
200	253	350	55k6	M20	110	/	/	/	/	/	16	59	M40	626	417	74



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DIMENSIONS B3-B5 SINGLE PHASE (mm)

TIPO	A	AB	AD	AC	B	C	D(Ø)	H	MM	E	M(Ø)	N(Ø)	P(Ø)	S(Ø)	F ^(h9)	GA	K	Pg	LB	T	LA	V
56	90	108	85	113	71	36	9j6	56	M3	20	100	80	120	7	3	10.2	6	11	170	2.5	8.5	8.5
63	100	120	125	124	80	40	11j6	63	M4	23	115	95	140	9	4	12.5	7	11	183	3	7.5	15.5
71R	112	134	133	142	90	45	11j6	71	M4	23	115	95	140	9	4	12.5	7	11	215	3	9	21
71	112	134	133	142	90	45	14j6	71	M5	30	130	110	160	9	5	16	7	11	215	3.5	9	21
80R	125	152	140	158	100	50	14j6	80	M5	30	130	110	160	9	5	16	9	13.5	240	3.5	9	19
80	125	152	140	158	100	50	19j6	80	M6	40	165	130	200	11.5	6	21.5	9	13.5	240	3.5	8.5	19
90R	140	170	147	178	100	56	19j6	90	M6	40	130	110	160	9	6	21.5	9	13.5	255	3.5	10	21
90S	140	170	147	178	100	56	24j6	90	M8	50	165	130	200	11.5	8	27	9	13.5	255	3.5	10	21
90L	140	170	147	178	125	56	24j6	90	M8	50	165	130	200	11.5	8	27	9	13.5	280	3.5	10	25
100R	160	192	170	194	140	63	24j6	100	M8	50	165	130	200	11.5	8	27	11	13.5	305	3.5	10.5	15
100	160	192	170	194	140	63	28j6	100	M10	60	215	180	250	14	8	31	11	13.5	305	4	10.5	15
112*	190	220	/	220	140	70	28j6	112	M10	60	215	180	250	14	8	31	11	13.5	332	4	11	/
132S*	216	268	/	262	140	89	38k6	132	M12	80	265	230	300	14	10	41	11	21	382	4	14.5	/
132M*	216	268	/	262	178	89	38k6	132	M12	80	265	230	300	14	10	41	11	21	420	4	14.5	/

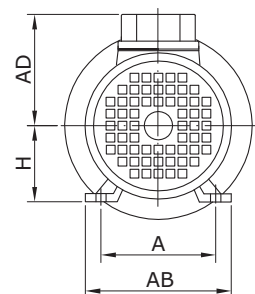
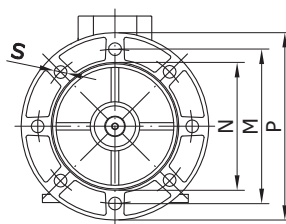
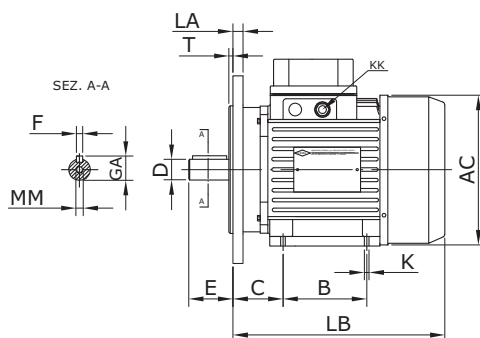


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DIMENSIONS B3-B5 THREE PHASE (mm)

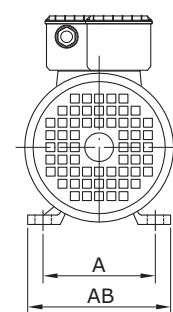
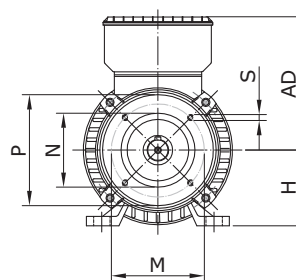
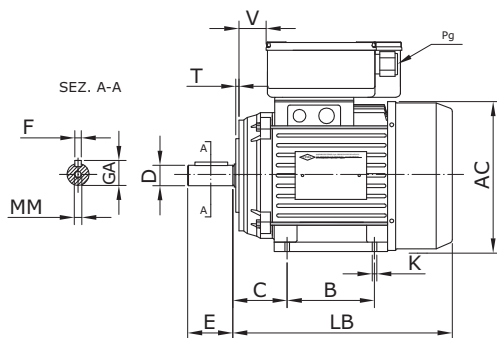
TIPO	A	AB	AD	AC	B	C	D(Ø)	H	MM	E	M(Ø)	N(Ø)	P(Ø)	S(Ø)	F ^(h9)	GA	K	KK	LB	T	LA	V
56	90	108	91	113	71	36	9j6	56	M3	20	100	80	120	7	3	10.2	6	M16	170	2.5	8.5	11.5
63	100	120	92	124	80	40	11j6	63	M4	23	115	95	140	9	4	12.5	7	M16	183	3	7.5	21.5
71R	112	134	100	142	90	45	11j6	71	M4	23	115	95	140	9	4	12.5	7	M20	215	3	9	26.5
71	112	134	100	142	90	45	14j6	71	M5	30	130	110	160	9	5	16	7	M20	215	3.5	9	26.5
80R	125	152	120	158	100	50	14j6	80	M5	30	130	110	160	9	5	16	9	M20	240	3.5	8.5	27
80	125	152	120	158	100	50	19j6	80	M6	40	165	130	200	11.5	6	21.5	9	M20	240	3.5	8.5	27
90R	140	170	126	178	100	56	19j6	90	M6	40	130	110	160	9	6	21.5	9	M20	255	3.5	10	31
90S	140	170	126	178	100	56	24j6	90	M8	50	165	130	200	11.5	8	27	9	M20	255	3.5	10	31
90L	140	170	126	178	125	56	24j6	90	M8	50	165	130	200	11.5	8	27	9	M20	280	3.5	10	31
100R	160	192	138	194	140	63	24j6	100	M8	50	165	130	200	11.5	8	27	11	M20	305	3.5	10.5	37
100	160	192	138	194	140	63	28j6	100	M10	60	215	180	250	14	8	31	11	M20	305	4	10.5	37
112	190	220	155	220	140	70	28j6	112	M10	60	215	180	250	14	8	31	11	M25	332	4	11	37.5
132S	216	268	168	262	140	89	38k6	132	M12	80	265	230	300	14	10	41	11	M25	382	4	14.5	42
132M	216	268	168	262	178	89	38k6	132	M12	80	265	230	300	14	10	41	11	M25	420	4	14.5	42
160M	254	320	233	310	210	120	42k6	160	M16	110	300	250	350	18	12	45	15	M32	497	5	14	60
160L	254	320	233	310	254	120	42k6	160	M16	110	300	250	350	18	12	45	15	M32	546	5	14	60
180M	270	355	253	356	241	121	48k6	180	M16	110	300	250	350	19	14	51.5	15	M40	586	5	20	54
180L	270	355	253	356	279	121	48k6	180	M16	110	300	250	350	19	14	51.5	15	M40	626	5	20	54
200	318	400	253	356	279	133	55k6	200	M20	110	350	300	400	19	16	59	19	M40	626	5	20	54



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DIMENSIONS B3-B14 SINGLE PHASE (mm)

TIPO	A	AB	AD	AC	B	C	D(Ø)	H	MM	E	M(Ø)	N(Ø)	P(Ø)	S(Ø)	T	F ^(h9)	GA	K	Pg	LB	HD	V
56	90	108	85	113	71	36	9j6	56	M3	20	65	50	80	M5	2.5	3	10.2	6	11	170	139	17
63	100	120	125	124	80	40	11j6	63	M4	23	75	60	90	M5	2.5	4	12.5	7	11	183	154	21.5
71	112	134	133	142	90	45	14j6	71	M5	30	85	70	105	M6	2.5	5	16	7	11	215	172	30
80	125	152	140	158	100	50	19j6	80	M6	40	100	80	120	M6	3	6	21.5	9	13.5	240	220	27.5
90S	140	170	147	178	100	56	24j6	90	M8	50	115	95	140	M8	3	8	27	9	13.5	255	237	31
90L	140	170	147	178	125	56	24j6	90	M8	50	115	95	140	M8	3	8	27	9	13.5	280	237	31
100	160	192	170	194	140	63	28j6	100	M10	60	130	110	160	M8	3.5	8	31	11	13.5	305	267	21
112*	190	220	/	220	140	70	28j6	112	M10	60	130	110	160	M8	3.5	8	31	11	13.5	332	261	/
132S*	216	268	/	262	140	89	38k6	132	M12	80	165	130	200	M10	3.5	10	41	11	21	382	300	45.5
132M*	216	268	/	262	178	89	38k6	132	M12	80	165	130	200	M10	3.5	10	41	11	21	420	300	45.5

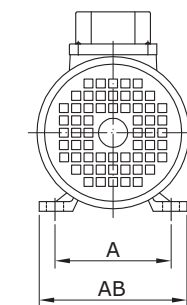
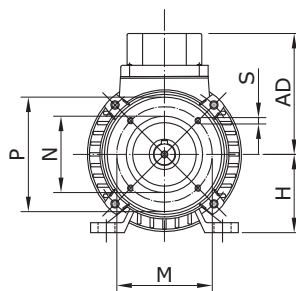
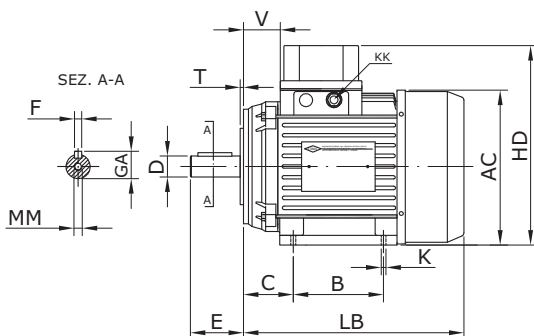


*WITHOUT CAPACITOR BOX, THE CAPACITOR IS OUTSIDE.

WE RESERVE THE RIGHT TO CHANGE THE DATA WITHOUT PRIOR NOTICE. Rev. 1-2013

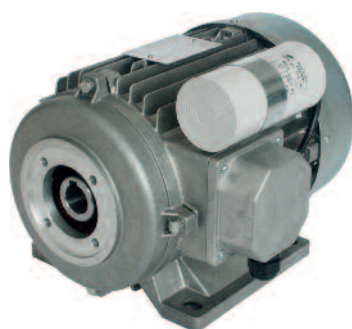
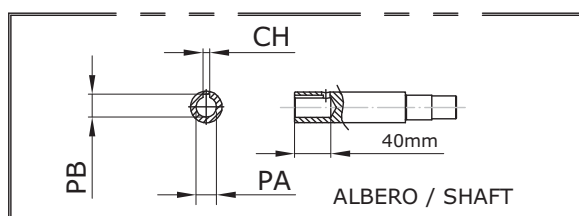
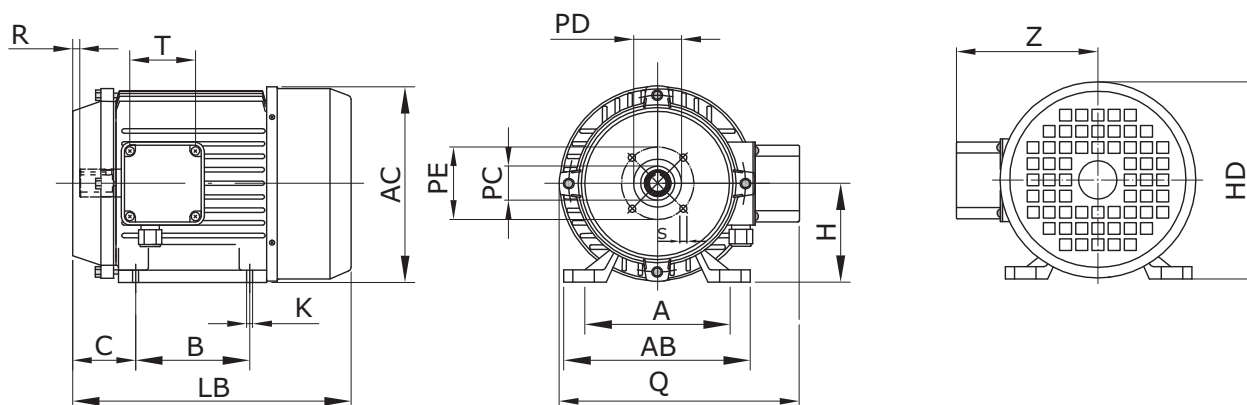
DIMENSIONS B3-B14 THREE PHASE (mm)

TIPO	A	AB	AD	AC	B	C	D(Ø)	H	MM	E	M(Ø)	N(Ø)	P(Ø)	S(Ø)	T	F ^(h9)	GA	K	KK	LB	HD	V
56	90	108	91	113	71	36	9j6	56	M3	20	65	50	80	M5	2.5	3	10.2	6	M16	170	147	23.5
63	100	120	92	124	80	40	11j6	63	M4	23	75	60	90	M5	2.5	4	12.5	7	M16	183	155	24
71	112	134	100	142	90	45	14j6	71	M5	30	85	70	105	M6	2.5	5	16	7	M20	215	171	27
80	125	152	120	158	100	50	19j6	80	M6	40	100	80	120	M6	3	6	21.5	9	M20	240	200	33.5
90S	140	170	126	178	100	56	24j6	90	M8	50	115	95	140	M8	3	8	27	9	M20	255	216	35
90L	140	170	126	178	125	56	24j6	90	M8	50	115	95	140	M8	3	8	27	9	M20	280	216	39.5
100	160	192	138	194	140	63	28j6	100	M10	60	130	110	160	M8	3.5	8	31	11	M20	305	238	39.5
112	190	220	155	220	140	70	28j6	112	M10	60	130	110	160	M8	3.5	8	31	11	M25	332	267	46
132S	216	268	168	262	140	89	38k6	132	M12	80	165	130	200	M10	3.5	10	41	11	M25	382	300	47.3
132M	216	268	168	262	178	89	38k6	132	M12	80	165	130	200	M10	3.5	10	41	11	M25	420	300	54.5
160M	254	320	233	310	210	120	42k6	160	M16	110	215	180	250	M12	5	12	45	15	M32	497	393	72
160L	254	320	233	310	254	120	42k6	160	M16	110	215	180	250	M12	5	12	45	15	M32	541	393	72
180M	270	355	253	356	241	121	48k6	180	M16	110	/	/	/	/	/	14	51.5	15	M40	586	433	74
180L	270	355	253	356	279	121	48k6	180	M16	110	/	/	/	/	/	14	51.5	15	M40	626	433	74
200	270	355	253	356	279	121	55k6	200	M20	110	/	/	/	/	/	16	59	15	M40	626	433	74



WE RESERVE THE RIGHT TO CHANGE THE DATA WITHOUT PRIOR NOTICE. Rev. 1-2013

HOLLOW SHAFT					DIMENSIONS B3-B14 THREE PHASE (mm)														
TIPO	A	AB	AC	S (Ø)	B	C	R	CH	LB	Z	Q	PA	PB	PC	PD	PE	T	H	HD
100	160	192	194	7.5	140	60	10	8	301.5	140	236	24	37.5	60	90	75.5	70	100	194
112	190	220	220	9	140	68	4.5	8	328.5	153	260	24	38	45.5	61	87	95	112	220
132S	216	268	262	9	140	86	7	8	378.5	182	305	24	50	60	61	87	95	132	260
132M	216	268	262	9	178	86	7	8	416.5	182	305	24	50	60	61	87	95	132	260



SINGLE PHASE MOTOR

CIMA MOTORI ELETTRICI SpA - CREAZZO VICENZA (ITALY)
TEL. 0444/341220 - FAX 0444/341223 - www.cimamotori.com

SINGLE PHASE ASYNCHRONOUS MOTOR

TYPE POLES N.

HP kW PROT.

SERV.

RPM COS. φ

INSUL. CL.

V A HZ

V A HZ

COND. μ F V

ISO 9001

MADE IN ITALY IEC 60034-1 CERTIFICATE N°6329/01/S

THREE PHASE MOTOR

CIMA MOTORI ELETTRICI SpA - CREAZZO VICENZA (ITALY)
TEL. 0444/341220 - FAX 0444/341223 - www.cimamotori.com

THREE PHASE ASYNCHRONOUS MOTOR

TYPE POLES N.

HP kW PROT.

SERV.

RPM COS. φ

INSUL. CL.

V A HZ

V A HZ

V A HZ

ISO 9001

MADE IN ITALY IEC 60034-1 CERTIFICATE N°6329/01/S

IE2 IE3 MOTOR

CIMA MOTORI ELETTRICI SpA - CREAZZO - VICENZA - (ITALY)
TEL. 0444.341220 - FAX 0444.341223 - www.cimamotori.com

THREE PHASE ASYNCHRONOUS MOTOR

IE2 Type Code

S/N Year

Duty IP Ins. CL.

Volt kW Poles A rpm Cos φ Hz

Δ

Y

Y

100% 75% 50%

ISO 9001

MADE IN ITALY IEC 60034-1 CERTIFICATE N°6329/01/S

TYPE motor type and frame

POLES number of poles

N. serial number

HP rated output

kW rated output

PROT. degree of protection (see page 21)

SERV. duty type. A continuous, short-time or periodic duty, comprising one or more loads remaining constants for the duration specified, or a non-periodic duty in which generally load and speed vary within the permissible operating range

RPM rated speed RPM (Revolutions Per Minute)

COS φ power factor

INSUL.CL. insulation class. Thermal class of insulation (see page 20)

V V delta/star connection rated voltage. Standard voltages and frequencies in use are as follows:

- three phase motors: 230/400V 50Hz tolerance $\pm 10\%$ on voltage
- single phase motors: 230V 50Hz tolerance $\pm 5\%$

A delta/star connection rated current

Hz rated frequency

COND. μ F output of capacitor

η 100% full load efficiency

η 75% $\frac{3}{4}$ load efficiency

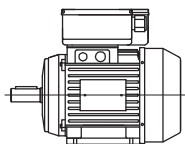
η 50% $\frac{1}{2}$ load efficiency

Year year of production

IE energy efficiency

Basic positions

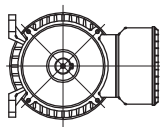
Different mounting positions (same motor)



B3

IM B3

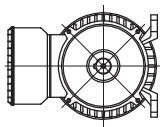
IM 1001



B6

IM B6

IM 1051



B7

IM B7

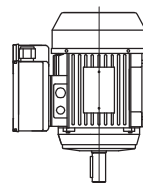
IM 1061



B8

IM B8

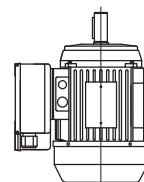
IM 1071



V5

IM V5

IM 1011

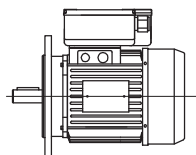


V6

IM V6

IM 1031

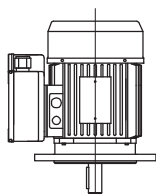
FEET MOUNTING



B5

IM B5

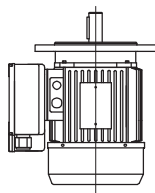
IM 3001



V1

IM V1

IM 3011

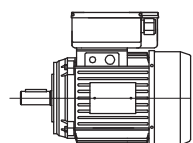


V3

IM V3

IM 3031

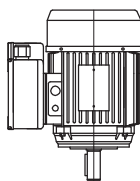
Plain holes flange



B14

IM B14

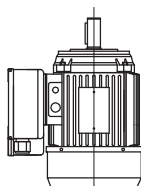
IM 3601



V18

IM V18

IM 3611

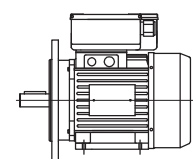


V19

IM V19

IM 3631

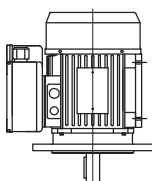
Threaded holes flange



B3/B5

IM B35

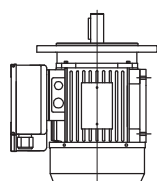
IM 2001



V1/V5

IM V15

IM 2011

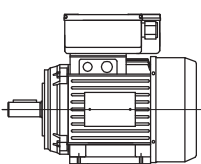


V3/V6

IM V36

IM 2031

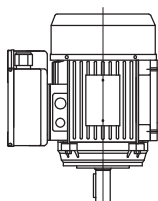
Feet and flange with plain holes



B3/B14

IM B34

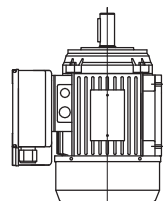
IM 2101



V1/V5

IM V15

IM 2111



V3/V6

IM V36

IM 2131

Feet and flange
with threaded holes



Cima's standard motors insulation class is F, in accordance with IEC 60034-1 . The allowed temperature raise limit for insulation class F is 105°C (by resistance method). Motors with Class H insulation can be manufactured on customer's request.

Altitude

Standard motors are designed to operate up to 1000m above the sea level.

Altitude (m)	1000	1500	2000	2500	3000	3500	4000
Altitude factor	1	0.98	0.94	0.91	0.87	0.83	0.78

Maximum and minimum ambient air temperatures

Standard motors are designed to operate in ambient temperatures between -15°C and +40°C.

Ambient Temperature (°C)	40	45	50	55	60
Temperature factor	1	0.97	0.93	0.88	0.82

$$\text{EFFECTIVE POWER} = \text{Rated power} \times \text{Temperature factor} \times \text{Altitude factor}$$

Tropicalized painting

All our standard motors windings are treated with high hygroscopic protection factor paint in order to preserve them from condensation and humidity. This protection avoids the reduction of the insulation properties of the windings.

If the motor must be used in difficult and adverse environments, Cima should be informed.



IP PROTECTION DEGREES

protection

CEI EN 60529/1997 directive classifies electric devices protection's degree.

IP degree is indicated with **two characteristic numbers**:

IP 6 5

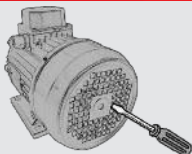
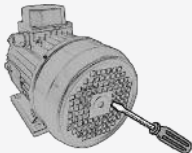
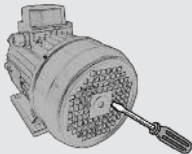
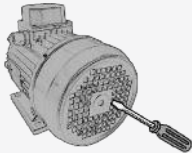
Characteristic letters (international protection)

First characteristic number (0 to 6)

Second characteristic number (0 to 6)

FIRST NUMBER

The **first number** indicates the protection degree against penetration of extraneous solid bodies.

IP	FIRST NUMBER MEANING	
0	No protection	
1	Protected against solid bodies with diameter > 52 mm	
2	Protected against solid bodies with diameter > 12 mm	
3	Protected against solid bodies with diameter > 2,5 mm	
4	Protected against solid bodies with diameter > 1 mm	
5	Protected against dust (no harmful device)	
6	Completely protected against dust	

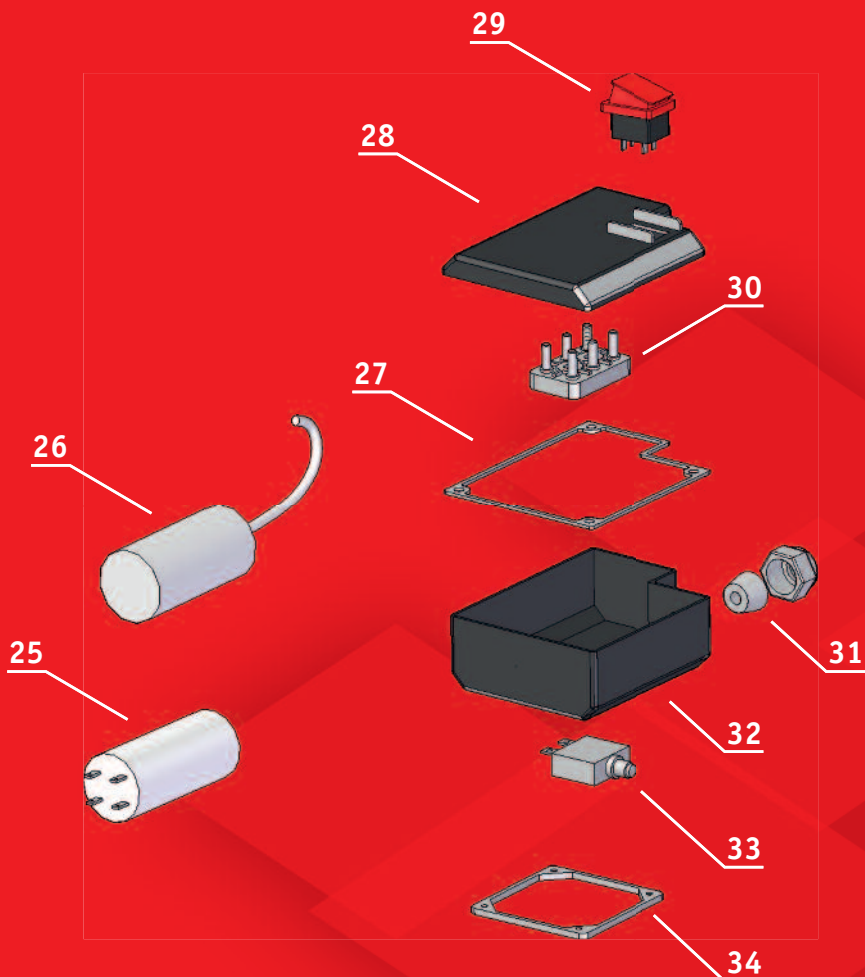
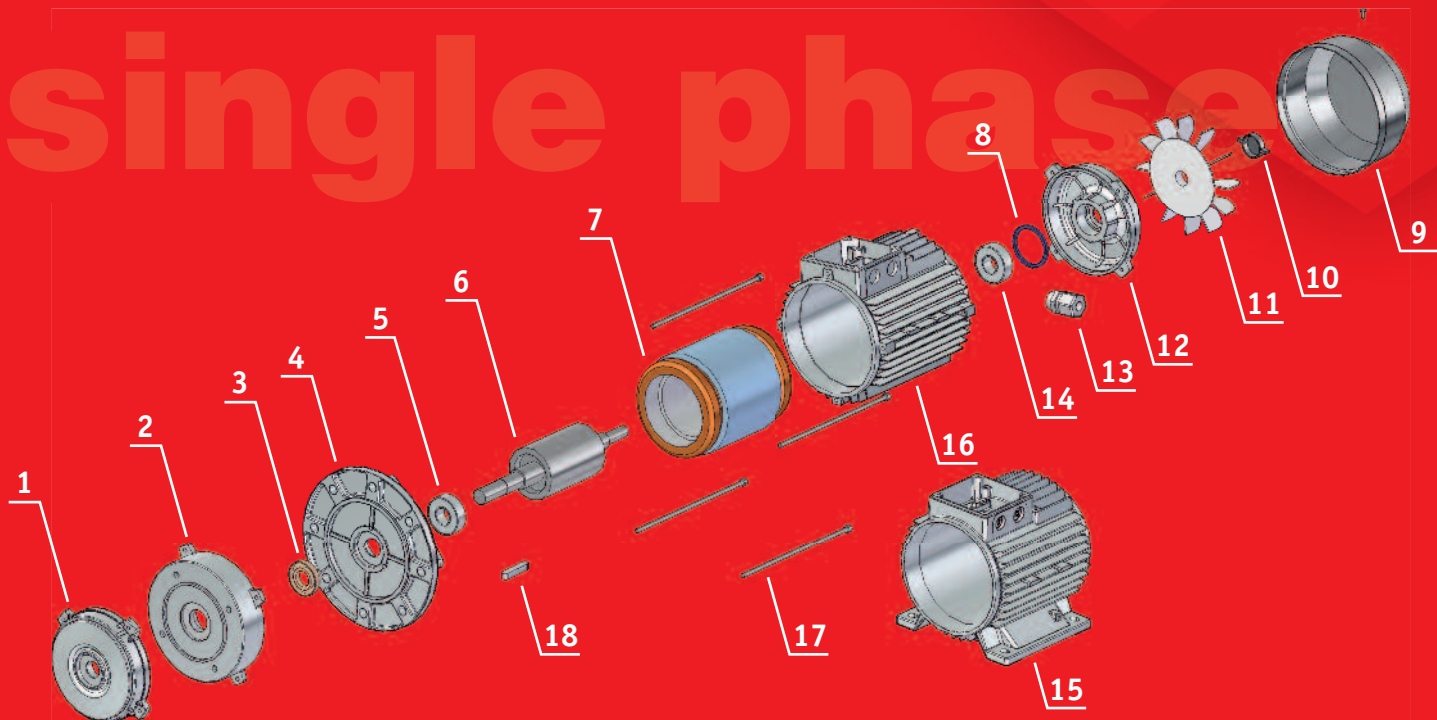
SECOND NUMBER

The **second number** indicates the protection degree against penetration of liquids.

IP	SECOND NUMBER MEANING	
0	No protection	
1	Protected against vertically-falling drops of water	
2	Protected against drops of water or rain-water falling at up to 15° from the vertical	
3	Protected against drops of water or rain-water falling at up to 60° from the vertical	
4	Protected against water sprays from all directions	
5	Protected against jets of water	
6	Protected against heavy jets of water	

single phase

LIST OF MOTOR PARTS - SINGLE PHASE MOTOR



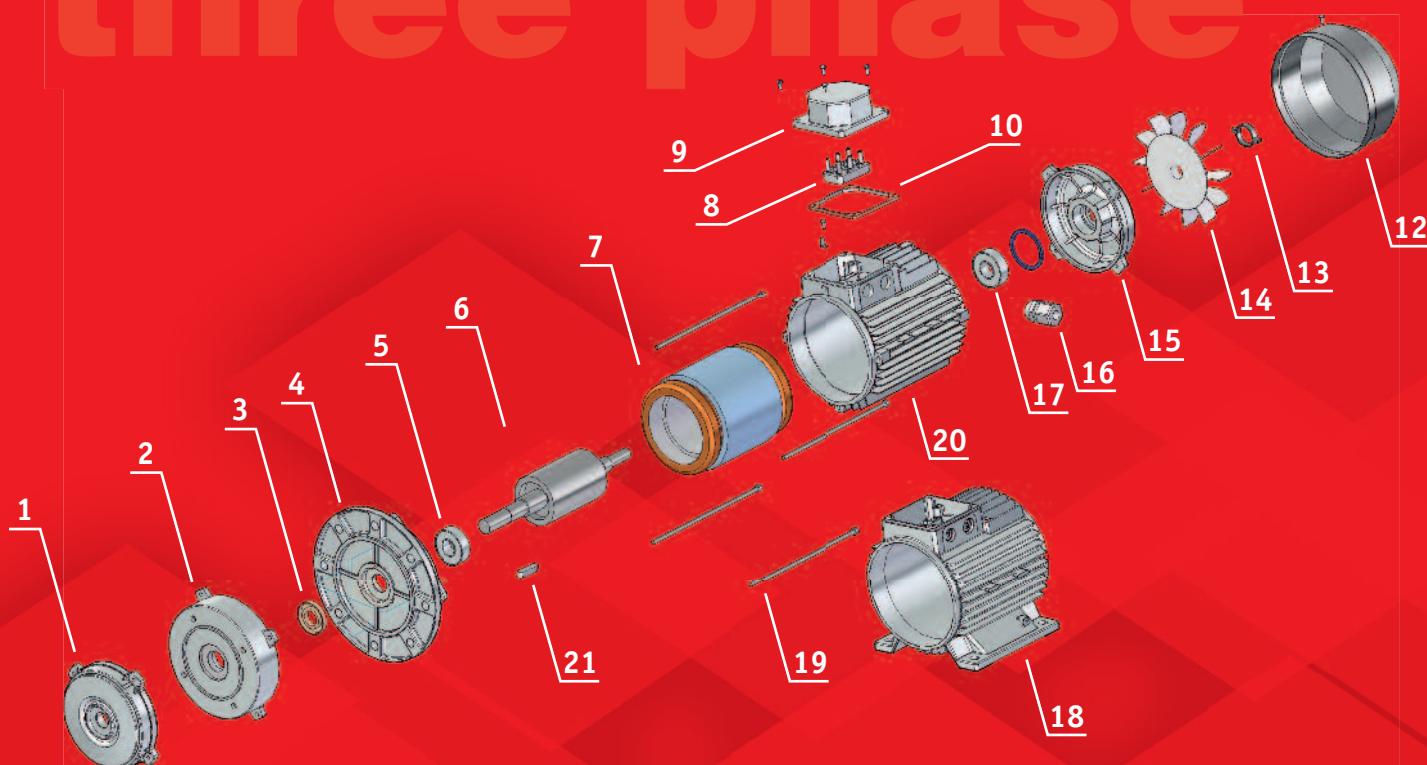
SINGLE PHASE MOTOR		
Ref.	Description	N°
1	Front shield	1
2	Flange B14	1
3	Ring seal	1
4	Flange B5	1
5	Front Bearing	1
6	Rotor shaft	1
7	Winding	1
8	Spring washer	1
9	Fan cover	1
10	Ring	1
11	Fan	1
12	Rear shield	1
13	Cable gland	1
14	Rear Bearing	1
15	Housing case B3	1
16	Housing case B5	1
17	Tie rod	4
18	Key	1
25	Electronic Capacitor	1
26	Start capacitor	1
27	Electric box gasket	1
28	Electric box cover	1
29	Switch	1
30	Terminal board	1
31	Cable gland	1
32	Electric box	1
33	Reset	1
34	Gasket	



LIST OF MOTOR PARTS - THREE PHASE MOTOR

three phase

three phase



THREE PHASE MOTOR

Ref.	Description	N°
1	Front shield	1
2	Flange B14	1
3	Ring seal	1
4	Flange B5	1
5	Front Bearing	1
6	Rotor shaft	1
7	Winding	1
8	Terminal board	1
9	Terminal cover	1
10	Gasket	1

Ref.	Description	N°
11	Spring washer	1
12	Fan cover	1
13	Ring	1
14	Fan	1
15	Rear shield	1
16	Cable gland	1
17	Rear Bearing	1
18	Housing case B3	1
19	Tie rod	4
20	Housing case B5	1
21	Key	1





CAPACITOR MAX: 1x 31,5 μ F V 450

SIZE: 125x110 H=30

MATERIAL: PLASTIC

Pg 9

CODE: 1712

MEC 56 - MEC 63 - MEC 71



CAPACITOR MAX: 1x 31,5 μ F V 450

SIZE: 90x120 H=45

MATERIAL: PLASTIC

Pg 9

CODE: 1607

MEC 56 - MEC 63 - MEC 71



CAPACITOR MAX: 1x 70 μ F V 450

SIZE: 110x140 H=55

MATERIAL: PLASTIC

Pg 13,5

CODE: 1594

MEC 80 - MEC 90S - MEC 90L - MEC 100



CAPACITOR MAX: a) 1x 70 μ F V 450

b) 1x40 μ F + 1x50 μ F 450 V

SIZE: 130x175 H=60

MATERIAL: PLASTIC

Pg 13,5

CODE: 1596

MEC 80 - MEC 90S - MEC 90L - MEC 100



CAPACITOR MAX: 1x 31,5 μ F V 450

SIZE: 120x130 H=50

MATERIAL: PLASTIC

Pg 11

CODE: 1595

MEC 63 - MEC 71



CAPACITOR MAX: a) 1x 70 μ F V 450

b) 1x40 μ F + 1x50 μ F 450 V

SIZE: 115x140 H=60

MATERIAL: PLASTIC

M20

CODE: 1620

MEC 80 - MEC 90S - MEC 90L - MEC 100



CAPACITOR MAX: 1x 31,5 μ F V 450

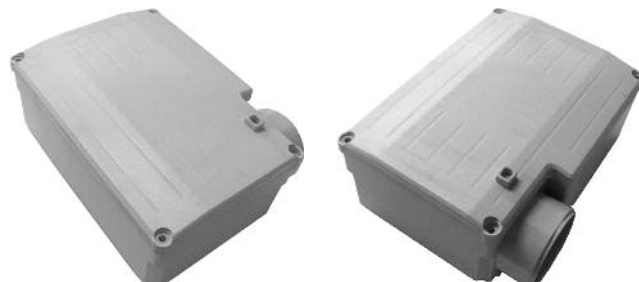
SIZE: 90x120 h=50

MATERIAL: PLASTIC

Pg 9

CODE: 2054

MEC 56 - MEC 63 - MEC 71



SIZE: 120x170 H=60

MATERIAL: PLASTIC

Pg

CODE: 2263 2261 (MEC 71)

MEC 80 - MEC 90S - MEC 90L - MEC 100



SIZE: 100x140 H=45

MATERIAL: ALUMINIUM

Pg 13,5

CODE: 1779

MEC 80 - MEC 90S - MEC 90L - MEC 100



SIZE: 110x110 H=50

MATERIAL: ALUMINIUM

CODE: 1774

MEC 80 - MEC 90S - MEC 90L - MEC 100



SIZE: 90x130 H=40

MATERIAL: ALUMINIUM

Pg 11

CODE: 2408

MEC 63 - MEC 71

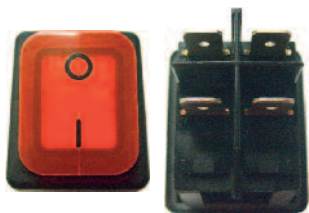


SIZE: 100x100

MATERIAL: PLASTIC

CODE: 1610

MEC 80 - MEC 90S - MEC 90L - MEC 100



SWITCH 0 - I

lighted

CODE: 1967

V 230 - 12 A



SWITCH 0 - I

CODE: 1941

V 230 - 10 A



REVERSE SWITCH I - II

CODE: 1968

V 230 - 10 A

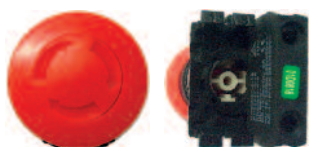


SAFETY SWITCH

min. voltage coil

CODE: 1992

V 230 - 16 A



EMERGENCY BUTTON

CODE: 2199

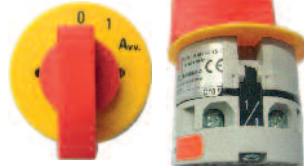
V 230 - 12 A



ROTATING REVERSE SWITCH

CODE: 2319

V 230 - 16 A



STARTING SWITCH

CODE: 2191

V 230 - 12 A



SAFETY SWITCH

min. voltage coil

CODE: 2209

V 110 - 16 A



SAFETY SWITCH

min. voltage coil

emergency stop

CODE: 2897

V 230 - 10 A



SAFETY SWITCH

min. voltage

motor brake

CODE: 2255

V 230 - 16 A

THREE PHASE MOTORS SWITCHES

switches



SAFETY SWITCH
min. voltage coil

CODE: 2189

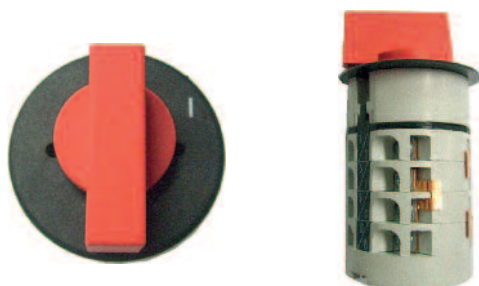
V 400



MAGNETOTHERMIC MOTOR SAFETY DEVICE

CODE: 2571 + 2572

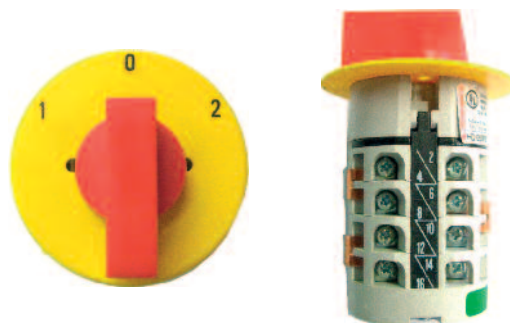
V 400



SWITCH 1 SPEED

CODE: 2019

V 400



COMMUTATOR 2 SPEEDS

CODE: 1986

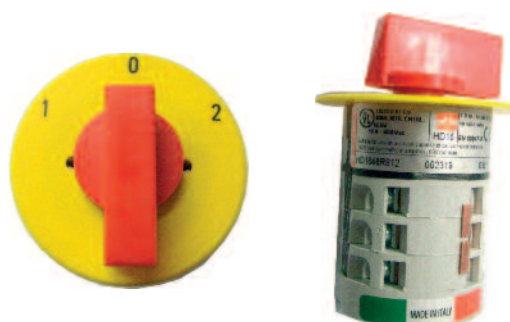
V 400



SAFETY SWITCH
min. voltage coil - motor rotation brake

CODE: 2057

V 400



ROTATING REVERSE SWITCH

CODE: 2437

V 400

CUSTOMER'S DATA

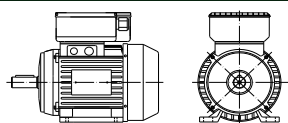
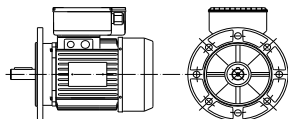
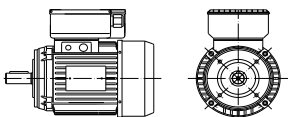
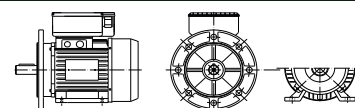
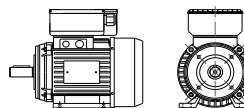
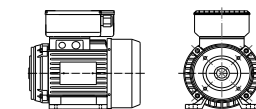
Company Name:	
Factory Address:	
City:	
VAT no.:	Tax Registration N°:
Tel.:	Fax:
E-Mail:	Website:
Date:	Compiled by:



TECHNICAL DATA

SIZE:	☐ MEC 56	☐ MEC 63	☐ MEC 71	☐ MEC 80	☐ MEC 90S	☐ MEC 90L
	☐ MEC 100	☐ MEC 112	☐ MEC 132			
POLES:	☐ 2 poles (3.000 rpm)	☐ 4 poles (1.500 rpm)	☐ 6 poles (1.000 rpm)	☐ 2-4 poles (3.000-1500 rpm)	☐ _____	
kW: _____		HP: _____		VOLTAGE: _____		FREQUENCY: _____
IP DEGREE:	☐ IP 54	☐ IP 55	☐ IP 65	☐ IP _____		
DUTY:	☐ S1	☐ S3	☐ S6	☐ S _____		
MOTOR PROTECTION:	☐ THERMIC		☐ CIRCUIT BREAKER	☐ SWITCH		
ENVIRONMENT TEMP.:	☐ +5°C +40°C		☐ _____			
ROTATION:	☐ CLOCKWISE		☐ COUNTER CLOCKWISE	☐ ROT. BIPHASE		
MOTOR SHAFT:	☐ STD		☐ SPECIAL			
FLANGE:	☐ STD		☐ SPECIAL			

SHAPE

☐ B3

☐ B5

☐ B14

☐ B3+B5

☐ B3+B14

☐ B3 HOLLOW SHAFT


FURTHER INFORMATION

QUANTITY PER BATCH (n° pc.) _____

ORDER FORM FOR THREE PHASE MOTOR

three phase

CUSTOMER'S DATA

Company Name:	
Factory Address:	
City:	
VAT no.:	Tax Registration N°:
Tel.:	Fax:
E-Mail:	Website:
Date:	Compiled by:

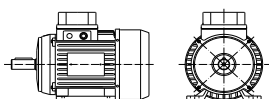
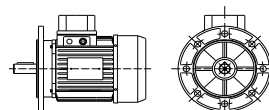
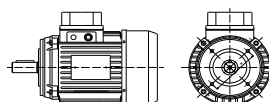
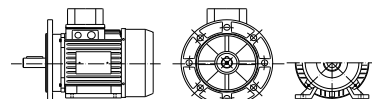
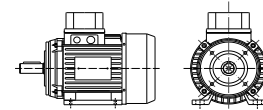
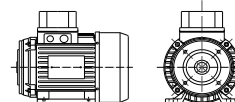


TECHNICAL DATA

SIZE:	☐ MEC 56	☐ MEC 63	☐ MEC 71	☐ MEC 80	☐ MEC 90S	☐ MEC 90L
	☐ MEC 100	☐ MEC 112	☐ MEC 132	☐ MEC 160	☐ MEC 180	☐ MEC 200
POLES:	☐ 2 poles (3.000 rpm)	☐ 4 poles (1.500 rpm)	☐ 6 poles (1.000 rpm)	☐ 2-4 poles (3.000-1500 rpm)	☐ _____	

kW: _____	HP: _____	VOLTAGE: _____	FREQUENCY: _____
IP DEGREE:	☐ IP 54	☐ IP 55	☐ IP 65 ☐ IP _____
DUTY:	☐ S1	☐ S3	☐ S6 ☐ S _____
INVERTER PRED.:	☐ YES		☐ NO
ENVIRONMENT TEMP.:	☐ +5°C +40°C		☐ _____
VARIABLE SPEED:	☐ YES		☐ NO
MOTOR SHAFT:	☐ STD		☐ SPECIAL
FLANGE:	☐ STD		☐ SPECIAL

SHAPE

☐ B3

☐ B5

☐ B14

☐ B3+B5

☐ B3+B14

☐ B3 HOLLOW SHAFT


FURTHER INFORMATION

QUANTITY PER BATCH (n° pc.) _____



AREAS IN WHICH WE OPERATE - Specific motors

applications

Industrial vacuum cleaners



Floor washers



Pellet tanks



Gates automation



Meat grinders



Mixers



Tomato squeezers



Industrial fan



Power/hydraulic units



Pumps



Vacuum pumps



Air compressors



Wood splitters



Cement mixer



Industrial saws



AREAS IN WHICH WE OPERATE - Specific motors applications

Wine machinery



Farms ventilation



Bio-shredders



Pressure washers



Lifts



Blenders



Gear motors

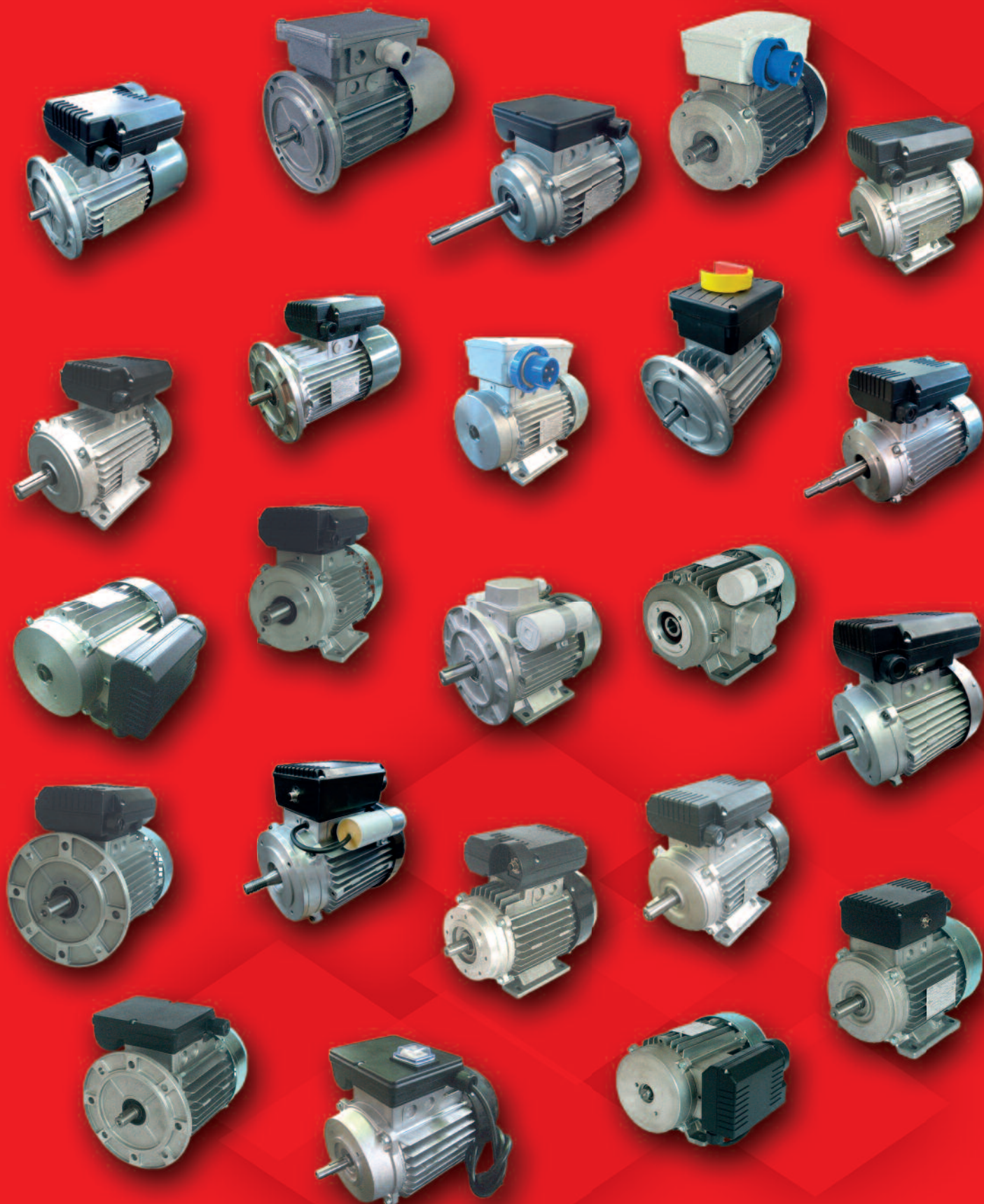


Winches



Livestock facilities







Directions on safety measures and particular instructions for single phase and three phase asynchronous electric motors and special executions.

Carefully read the below-mentioned instructions before executing any operation of movement, transport, installation, putting into service, maintenance or repair of electric motors.

The following symbology indicates reference to the safety measures and additional instructions mentioned in this user guide



Safety and guarantee instructions



Danger: instructions and signals



Adhere scrupulously to safety measures and instructions included in this manual, for prevention of accidents and damages to people and/or objects and for environmental preservation.

Electric machinery, single phase and three phase asynchronous motors, supplied on low voltage, contain rotating parts in movement and can reach high temperature on external surface (housing). The improper use of electric motors can cause damages to people and/or things and produce damage to the environment.



All operations of movement, transport, installation putting into service, maintenance or repair must be carried out by qualified staff and supervised by superintendents (see IEC 364 and VDE 0105) The improper use of electric motors (partly-completed-machinery) can cause damages to people and/or objects and to the environment. Electric machinery must be installed and used by qualified personnel.

1) GENERAL INSTRUCTIONS

Three phase and single phase asynchronous electric motors comply with construction harmonized Directive EN60034-1. They therefore correspond to what is prescribed by Low Voltage Directive 73/23/EEC (amended by 93/68/EEC). The electric motor, considered as a component, **partly-completed-machinery**, is compliant concerning:

Machinery Directive 2006/42/EC provided that the installation has been correctly realized by the machinery manufacturer (for example: compliant with our installation instructions and to EN 60 204 "Electrical Equipment of

Industrial Machines".

EMC Directive 89/336/EEC (amended by 92/31/EEC and 93/68/EEC) regarding intrinsic characteristics concerning emission and immunity level.

All electric motors, as components, are considered **partly-completed-machinery** (Directive 2006/42/EC). They are set for being incorporated into appliances or completed systems and they must not be put into service until the machines they have been incorporated to, comply with the Machinery Directive (Declaration of Incorporation – Directive 2006/42/EC).

The machinery manufacturer is responsible for the conformity of a complete installation with the Machinery Directive and EMC Directive.

We suggest to carefully read the following instructions before putting motors into service; every operation of installation, putting into service, maintenance and protection of the motor must be carried out by qualified personnel in full observance of all existing legal requirements and technical standards, as well as safety prescriptions for electrical equipment of machinery according to what European Directive EN60201-1 has declared. This documentation integrates and does not substitute any legal requirements, technical standards or safety prescriptions concerning electric motors.

The manufacturer accepts no liability for accident or damage resulting from improper use or failure to adhere to safety rules or anyway EEC existing directives regarding electric motors.



Pay particular attention to the nameplate's indications. The conditions of use must correspond to the data indicated on the nameplate besides this manual's general instructions.

2) TRANSPORT AND HANDLING

Any kind of damages found at delivery time must be immediately contested to the transport company. Do not proceed with the putting into service of electric motors found damaged.



Handle motors with caution and with reference to their weight according to the rule in force (Art 167 and ff. Gov. Decrees 03/08/2009 nr 106 turned into Gov. Decree 09/04/2008 nr 81). Use eyebolts only if they are connected to the motor and specially measured for lifting. Possibly use adequate tools.

3) MECHANICAL INSTALLATION

 Before installation verify that: the electric motor is not visually damaged (damages due to transport or storage); the data on the nameplate correspond to the conditions of use and the intended application of the electric motor; supply voltage is the same as the network voltage; the allowed tolerance is 230/400V $\pm 10\%$ with 50Hz as well as 60Hz ($\pm 5\%$ for different voltages and/or single phase); ambient temperature is between -20°C and $+40^{\circ}\text{C}$; altitude is <1000 meters above sea level; different conditions or ambient temperature and/or higher altitudes imply the application of a corrective factor of the power. Relative humidity is $<90\%$ for motors with tropicalization degree TROP1; tropicalization degree is TROP2 for environments with relative humidity $>90\%$ and/or high thermal excursion with possibility of condensation; the IP protection degree mentioned on the electric motors is suitable to the ambient conditions according to IEC34-5. By lifting the motor, please use the intended points; eyebolts present on motors are suitable only for the lifting of the motor and not other machines coupled to it; verify that the components connected to the electric motor, are in conformity with the electric motor data.

 **Preliminary operations:** Remove all fasteners or protections used for the transport (ex. protection of motor end shaft exit) and verify that the motor shaft rotates freely; verify that the motor has not absorbed humidity, in particular after a long storage, by measuring that insulation resistance is $>10\text{M}$ at 20°C ; This measure must be carried out applying a 500V continuous voltage between the phases to earth; the windings must be discharged immediately after the measure. If the insulation resistance is not sufficient, the motor must be dried with warm air or through an insulation transformer by connecting in series the windings of each phase and applying an auxiliary alternate voltage equal to 10-20% of the nominal voltage, in order to obtain a sufficient resistance.

 **Mechanical installation of the motor:** We recommend to fix the electric motor adequately according to earth, type of assembly and mounting position; assemble the motor on a flat, rigid and vibration-free base, resistant to deformations; carefully align the motor and the machine to avoid stress not admitted on the motor shaft, observing the max radial and axial charges admitted; a misalignment or a forced keying can cause, during running, anomalous overheatings that could

endanger safety; in case of vertical installations, be careful that nothing falls inside the ventilation openings. During the assembly avoid damages on bearings, by using the motor shaft as a support, having previously dismantled the fan cover; do not strain or bump the motor shaft end.

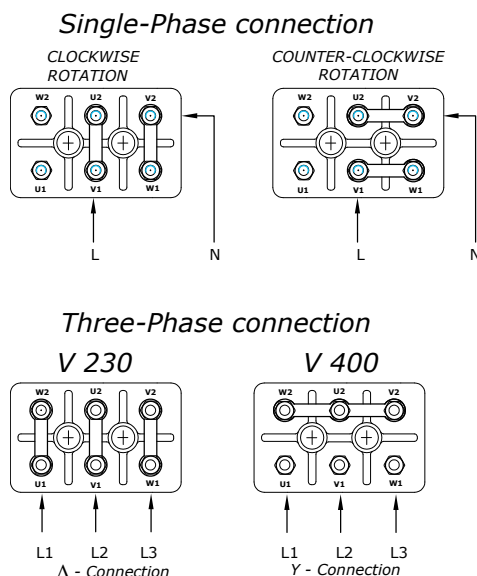
 The motor must be installed in a suitable position to allow: the reading of the data on nameplate, inspection of the terminal box, cleaning of the motor, absence of parts in movement outside protections, an adequate ventilation; avoiding any obstruction to the air intakes and the entrance of swarf, dust or liquids and all situations that can cause overheating; in case of humid environments, the terminal box should be set in order for the entrance of the cables to be placed downwards; verify there is no condensation; if there are condensation drainage holes, remove any possible condense and then replace plastic plugs to restore IP protection degree; carry out this operation only after having disconnected the power supply. If the motor is equipped with anti-condensation heaters, verify the motor is not supplied or running yet before putting the anti-condensation heaters into service; verify also that the supply voltage of the anti-condensation heaters is equal to the specified voltage.

4) ELECTRICAL INSTALLATION AND USE

 Connect the motor to the supply mains following the wiring diagram indicated on the motor plate. Do not connect or start the motor in absence of the wiring diagram; do not start the motor with free shaft key. Before connection, check that the motor conductors are correctly tightened on the terminal box; for the cable connection, use the connection tools supplied; the cable terminals used for the wiring of the cable must be of insulated type in order to grant the respect of the minimum distances between live parts and non active metallic parts; the choice of the cable gland must be congruent to the external diameter of the cable used; all cable entrances not used must be sealed in order to restore IP protection degree. The supply cables and the grounding cables must comply strictly to the applicable regulations selecting cables and conductors suitable for the required capacity and insulation; the wiring of connections and cables' section must comply with EN60204-1.

All motors are suitable for the grounding inside the terminal box and outside on the motor housing; the points of application of the earth terminals are marked with the symbol 

The fixing of the earth cable must be done avoiding any loosening. Before the putting into service, verify the sense of rotation of the motor; if the motor has to run in the opposite direction instead of the established one, for three phase motors it is enough to commutate 2 phases, for single phase motors, follow the wiring diagram. The sense of rotation is clockwise viewing the motor from the drive side opposite to the fan. In case of backstop device, do not start the motor in the block direction. For checking reasons, the backstop device can be activated only once in the block direction at a voltage lower than half the supply voltage. After wiring operations, meticulously re-assemble the terminal box and its gasket. Do not touch the motor housing when the motor is running, as the operating temperatures may reach values $> 50^{\circ}\text{C}$.



5) PROTECTIONS FOR ELECTRIC MOTORS

 All electric circuits must be protected against damages resulting from faults or anomalous workings, due to: short-circuit overloads, overload current, interruption/reduction of the supply voltage, excessive speed of the machines parts, overheating because of frequent startings. For the safety of people and/or objects, protections must be provided against direct or indirect contacts due to insulation failures. In case the shaft stops rotating because of current inversion, precautions must be taken for the stop of rotation on the opposite sense: when the safety of the machine depends on the sense of rotation, it is necessary to take measures in order to avoid an inversion of phases; moreover, the sense of rotation must be indicated with a label in a visible position.

6) ESSENTIAL SAFETY REQUIREMENTS (ESR)

 **Acoustic emissions.** Single phase and three phase electric motors comply with Gov. Decree 195 dd.10/04/2006 n. 195 for the regulation of sound emissions as they come under sound emissions degree inferior to the presson of 80 dB(A)

 **Vibrations** Electric motors are considered partly-completed-machinery, therefore the evaluation of vibrations, must be done by the manufacturer of the end machine, coming under the reference directive, considering what follows: vibrations emitted by the single electric motor comply with the parameters considered by the rule of the Gov. Dec. nr. 187 dd. 19/08/2005.

7) MAINTENANCE

Before any intervention on electric motors or in the nearby areas select the power mains supply off and wait for the stop of the masses in movement, wait until the surface temperature is lower than 50°C in order to avoid any possible burn. Periodically verify: absence of possible deposit of dust, oil, dirt on the fan or fan cover; the conditions of the seal ring; the tightening of the connections; the absence of vibrations and noise. Any disassembly of components not authorized by the builder will invalidate the warranty and release the builder from all liability.

8) STORAGE

 Motors must be stored in mild, dry and clean ambients, under shelter against bad weather, without vibrations and/or bumps. Shaft ends must be protected with anticorrosive paint or grease (in case of seal ring, avoid any contact with protections).

9) GUARANTEE CONDITIONS

Cima SpA guarantees its products for a duration of 12 months after the delivery date. The guarantee covers the repair or replacement of defective components at its factory. The guarantee does not cover any damage caused by inexperience, improper use, negligence, tampering and the electric components.

CE MARK

The European Community, in order to allow European manufacturers to sell their products making reference only to one standard within the territory of the European Community, has issued different guidelines in order to define the common safety requirements, known as Essential Health and Safety Requirements.

To support each directive the Community legislature has developed specific European Norms (EN) harmonizing them in order to exceed the differences between the norms of each single Country, as these differences were impeding the free movement of the goods within the EU territory.

On this base, when an EU manufacturer is able to fulfill into his production all these guidelines, he is granted that his product can be sold in each Country of the EU.

The CE brand (Conformité Européenne) indicates that the product satisfies all the EU guidelines and it can be set on the product directly from the manufacturer, at the end of the production process, as a proof that the requirements of all rules have been respected.

The 3 European directives applicable to the projecting and manufacturing of electric motors take into consideration the following risks:

- Mechanical
- Electro magnetic
- Electric

MACHINE DIRECTIVE 2006/42/EEC

Contents: Machine requirement for operator safety and health

Within this directive, Electric Motors are considered as partly completed machineries as they are components that will be assembled in machineries or complete systems and should not be put into service before the machineries on which they are applied are not in line with the Machinery Directive (incorporation certificate - directive 2006/42/CE)

In the use of the motor it is necessary to grant the full respect of the Norm EN60204-1 (Machine safety – electric machinery equipment. Part 1: general rules) and of the safety and operation instructions reported in the manufacturer's user manual. CIMA S.p.A. motors totally fulfill this directive, granting to the machineries on which they are installed the possibility to circulate freely within the European Community territory.

Following norms can be applied:

- **EN ISO 12100:** Safety of machinery – general principles for design. Risk assessment and risk reduction
- **EN ISO 13857:** Safety of machinery – safety distances to prevent hazard zones being reached by upper and lower limbs

ELECTROMAGNETIC COMPATIBILITY DIRECTIVE EMC 2004/108/EEC

Contents: Equipment requirements for electromagnetic compatibility

The EMC directive takes into consideration the possibility that the electric motor can cause electromagnetic disturbs or that its function can be affected from them. The directive gives on this base the guidelines to reduce the electromagnetic disturb generated and gives the motor's immunity requirement that refers to its capability to work in a safety way also if electromagnetic disturbs are present.

The test of immunity and emissivity that Cima S.p.A. made on its motors confirm that they are suitable to be used in the environments reported in the following rules:

- **UNI EN 50081-1 (emission):** Generic emission standard. Residential, commercial and light industry
- **UNI EN 50082-1 (immunity):** Generic immunity standard. Residential, commercial and light industry
- **UNI EN 50082-2 (emission):** Generic emission standard. Industrial environment
- **UNI EN 50082-2 (immunity):** Generic immunity standard. Industrial environment
- **UNI EN 61000-3-2:** Limits for harmonic current emissions
- **UNI EN 61000-3-3:** Limitation of voltage fluctuations and flicker in Low-voltage Supply Systems

LOW TENSION DIRECTIVE 2006/95/EEC

Contents: Equipment requirements with regards to electrical shocks, high surface temperatures and flammability

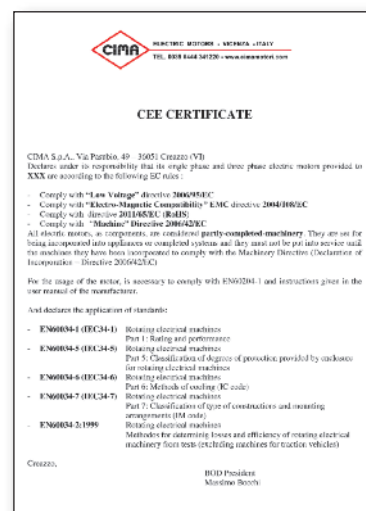
The norm has been studied with the aim to harmonize the laws of the different member Countries in terms of electric machineries. In particular the norm take care about the safety of people using machineries and components with nominal tension included between 50 and 1000 Volts in alternate

current and between 75 and 1500 Volts in direct current. Electric motors must comply with these requirements as they are components design within the application of this directive.

Cima S.p.A. motors respect the requirements of the low tension directive, as they are manufactured respecting the following rules:

- **UNI EN 60034-1:** Rotating electric machines: ratings and performance
- **UNI EN 60034-2:** Rotating electric machines: methods for determining losses and efficiency
- **UNI EN 60034-5:** Rotating electric machines: degrees of protection provided by the integral design of rotating electrical machine
- **UNI EN 60034-6:** Rotating electric machines: methods of cooling
- **UNI EN 60034-7:** Rotating electric machines: classification of types of constructions and mounting arrangements
- **UNI EN 60034-8:** Rotating electric machines: terminal markings and direction of rotation
- **UNI EN 60034-9:** Rotating electric machines: noise limits
- **UNI EN 60034-12:** Rotating electric machines: starting performance of single-speed three phase cage induction motors
- **UNI EN 60034-14:** Rotating electric machines: mechanical vibration of certain machines with shaft heights 56mm and higher

The CE Mark on the plate applied to the motor certifies that the motor has been produced in accordance with all the above mentioned Norms and certifies the DECLARATION OF CONFORMITY of Cima S.p.A products



RoHS (Restriction of certain Hazardous Substances) 2011/65/EEC

The new RoHS 2011/65/EEC directive (named also RoHS2) about the restriction of certain hazardous substances into electronic and electric machinery (re-melting) limits the use of:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr6)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ethers (PBDE)

for the protection of some electronic and electric machineries sold within the European Union.

The reason for the limitation of the use of these hazardous substances is that they can be released in the environment, creating a threat for human, animal and environment health, in particular when they reach the waste treatment phase.

The new RoHS directive introduce the obligation to label the CE brand and the declaration of conformity: before selling into the market electric or electronic machineries (AEE) a manufacturer/distributor/importer must ensure that the correct procedure for the evaluation of the conformity, in line with the A form of the attachment II of the decision n° 768/2008/EEC has been applied, and put the CE brand on the finished product.

From January 2013 the electronic products reporting the CE brand must satisfy this new directive.

Moreover the new RoHS directive will be applicable to new product categories, and with new time limits, if compared to the previous one:

- 22nd of July 2014 medical devices, control and monitoring devices
- 22nd of July 2016 medical devices for in vitro diagnosis
- 22nd of July 2017 industrial instruments for control and monitoring
- 22nd of July 2019 other electric or electronic devices not included in the above categories

These categories will be added to:

- big household electric appliances
- small household electric appliances
- computer and telecommunication equipment
- consumer equipments
- lighting equipments
- electric and electronic devices
- toys and free time equipments
- vending machines

The RoHS directive can be legally applied only to finished products included in the above categories. It is not applicable to fix tools, and industrial plants. In the same way it is not applicable to components and sub-assembly needed to realize the finished product, or needed for the repair and maintenance of existing products.

The manufacturers of the above mentioned products must anyway use components in line with the norm.



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Export Dept.

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export1@cimamotori.com

Logistic Dept.

logistica@cimamotori.com

Purchasing dept.

ufficio.acquisti@cimamotori.com

Quality dept.

ufficio.qualita@cimamotori.com

Technical dept.

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ufficio.tecnico1@cimamotori.com

Account dept.

amministrazione@cimamotori.com



ELECTRIC MOTORS

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