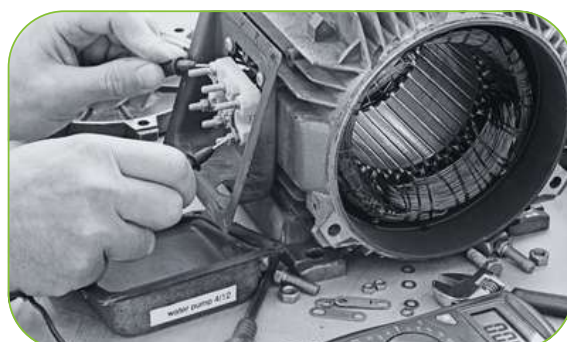




HPT
HIGH POWER TRANSMISSION

ELECTRICS MOTORS



General features

The motors ranges are projected to satisfy the wide industry applications.

The material constructions and procedures are according the European Standards (CE marking). Electrical, mechanical and test methods comply with EN 60034. UL insulation system available on request.

Windings

All motors are winded by enamelled copper wires and impregnated by resin. Tropicalization treatment of windings are varnished with high hygroscopic characteristics for ambient with humidity over 60% on request.

Fan cover

Standard motor with steel fan cover. Plastic fan cover on request.

Different position of terminal box available on request

Degree of protection up to IP65.

Insulation class

The motors can be manufactured with insulation class F and H. The standard rise of temperature is B class. Special insulation class on request. (Tab. page 12)

Duty

Standard motors are S1 duty. Other duties available on request.

Frame

Alluminium die-casting with removable feet up to frame 160. Cast iron frame up to 355.

Rotors

Die-cast squirrel cage electric motors with aluminium or aluminium (Al- Si). Standard shaft are made by C45 and key-shaft comply with IEC 600 72-1.

Special shaft design or material (Stainless Steel) on request.

Flanges and shields

Flanges and shields are according to IEC 60072-1 standard.

Special flange on request.

The IP degrees

The protection of the motors comply with EN 60034-5 and EN 60259. (Tab. page 12)

Terminal Box

Standard terminal box position on top side. Cable gland exit on right side looking from DE.

Venilation

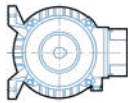
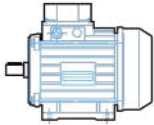
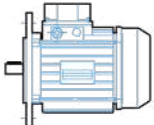
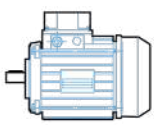
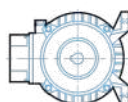
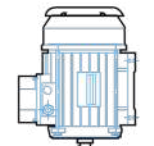
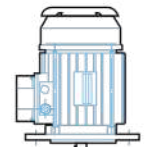
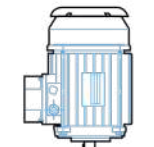
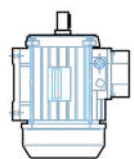
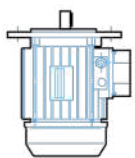
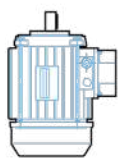
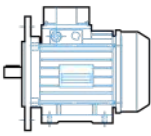
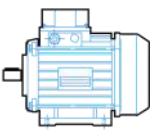
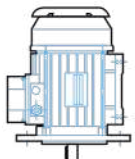
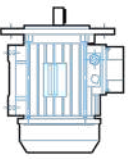
TEFC IC 411

International IEC Standards

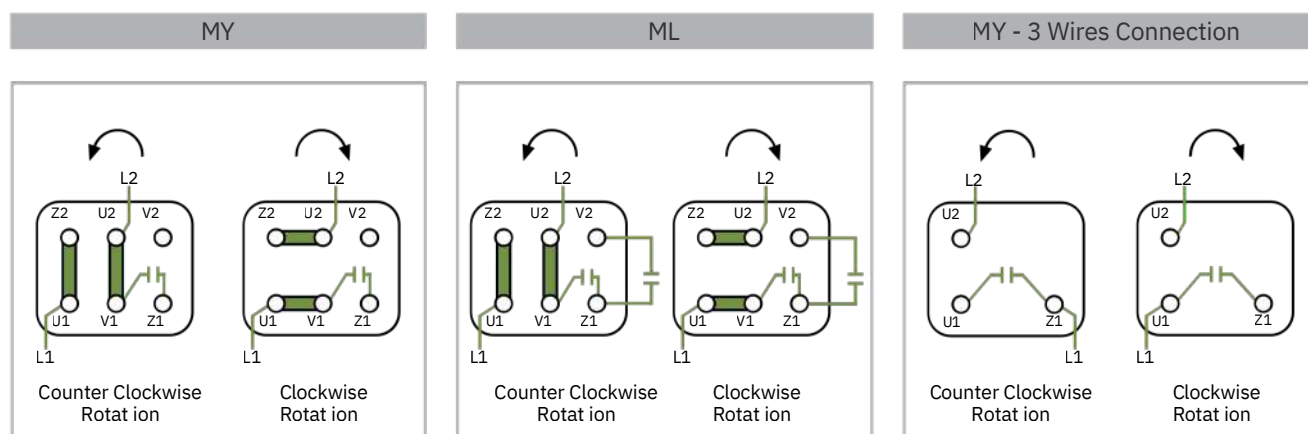
Rating and performance	IEC 60034-1
Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)	IEC 60034-2
Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification	IEC 60034-5
Methods of cooling (IC Code)	IEC 60034-6
Classification of types of construction, mounting arrangements and terminal box position (IM Code)	IEC 60034-7
Terminal markings and direction of rotation	IEC 60034-8
Noise limits	IEC 60034-9
Starting performance of single-speed three-phase cage induction motors	IEC 60034-12
Mechanical vibration of certain machines with shaft heights 56 mm and higher - Measurement, evaluation and limits of vibration severity	IEC 60034-14
General purpose three-phase induction motors having standard dimensions and outputs. Frame numbers 56 to 315 and flange numbers 65 to 740	IEC 60072-1
Degrees of protection provided by enclosures (IP Code)	IEC 60529
Rated voltage for low voltage mains power	IEC 60038

Mountings

According to IEC 60034-7, there are two ways to define the configuration and installation position for an electric motor, the first way is defined the letters IM (International Mounting) followed by another letter (B = horizontal shaft; V = vertical shaft) and from a number, the second way is a more general code composed by the letters IM and from four numbers.

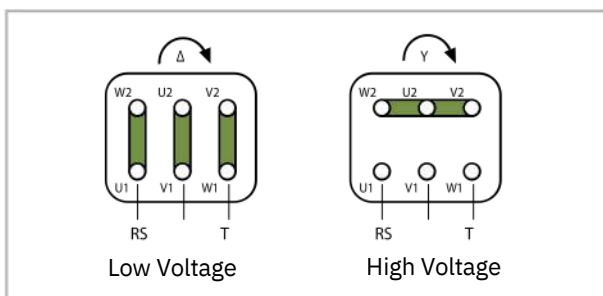
Motors with feet B3		Flange-mounted motors B5	Flange-mounted motors B14
IM 1051 (IM B6) 	IM 1001 (IM B3) 	IM 3001 (IM B5) 	IM 3601 (IM B14) 
IM 1061 (IM B7) 	IM 1011 (IM V5) 	IM 3011 (IM V1) 	IM 3611 (IM V18) 
IM 1071 (IM B8) 	IM 1031 (IM V6) 	IM 3031 (IM V3) 	IM 3631 (IM V19) 
IM 2001 (IM B35)  B3/B 5	IM 2101 (IM B34)  B3/B14	IM 2011 (IM V15)  V1/V5	IM 2031 (IM V36)  V3/V6

Electrical connections single-phase motors

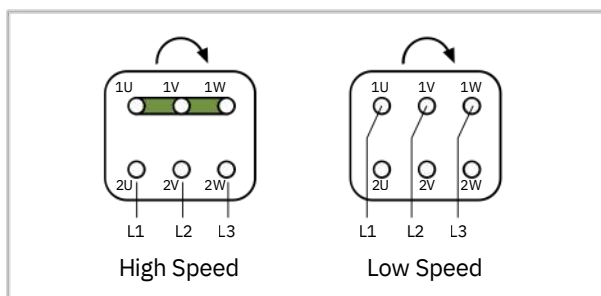


Electrical connections three-phase motors

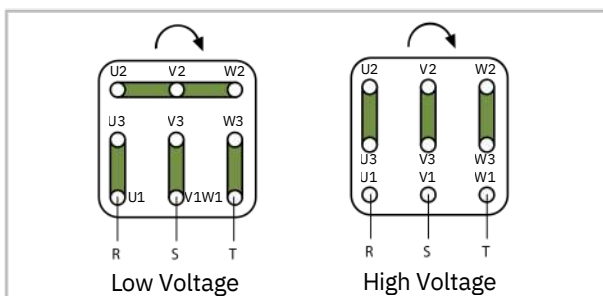
Single Speed



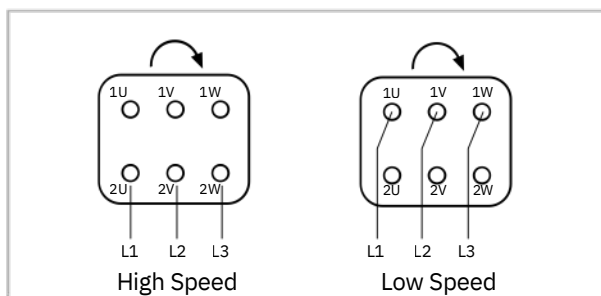
Dual Speed Single Winding



Single Speed 9 Wires



Dual speed Double Winding



Noise levels

Noise level - (CEI EN 60034-9)

Sound pressure and power levels were measured on three-phase motors, one meter away from the machine, and weighted according to curve A (ISO R 1680). At 50 Hz for relative values, at 60 Hz this increases by an average of 4 dbA.

Ventilation IC411 - Protection IP55		Sound Pressure (Lpa) - Sound Pressure (LwA)						
Motor Size	2 POLES		4 POLES		6 POLES		8 POLES	
	(Lpa) [dB]	(LwA) [dB]	(Lpa) [dB]	(LwA) [dB]	(Lpa) [dB]	(LwA) [dB]	(Lpa) [dB]	(LwA) [dB]
56	69	78	63	72	58	67	54	63
63	75	84	67	76	61	70	58	67
71	75	84	67	76	61	70	58	67
80	75	84	70	79	63	72	61	70
90	75	85	70	80	66	76	66	76
100	77	87	70	80	66	76	66	76
112	78	88	73	83	66	73	66	73
132	69	78	63	72	58	67	54	63
160	75	84	67	76	61	70	58	67
180	75	84	67	76	61	70	58	67

Bearings

Axially-free bearings, locked or with grease nipple upon request.

Size	MS/MY SERIES		MC/ML SERIES		MSEJ SERIES	
	DE	NDE	DE	NDE	DE	NDE
56	6201 2RS	6201 2RS				
63	6201 2RS	6201 2RS	6201 2RS	6201 2RS	6201 2RS	6202 2RS
71	6202 2RS	6202 2RS	6202 2RS	6202 2RS	6202 2RS	6203 2RS
80	6204 2RS	6204 2RS	6204 2RS	6204 2RS	6204 2RS	6204 2RS
90	6205 2RS	6205 2RS	6205 2RS	6204 2RS	6205 2RS	6205 2RS
100	6206 2RS	6206 2RS	6206 2RS	6206 2RS	6206 2RS	6206 2RS
112	6306 2RS	6306 2RS	6306 2RS	6306 2RS	6306 2RS	6306 2RS
132	6308 2RS	6308 2RS			6308 2RS	6308 2RS
160	6309 2RS	6309 2RS			6309 2RS	6309 2RS
180					6311 2RS	6311 2RS

Oil Seals

Size	Front Oil Seal	Back Oil Seal
56	Ø12 x Ø22x5	Ø12 x Ø22x5
63	Ø12 x Ø24x7	Ø12 x Ø24x7
71	Ø15 x Ø25x7	Ø15 x Ø25x7
80	Ø20 x Ø35x7	Ø20 x Ø35x7
90	Ø25 x Ø37x7	Ø25 x Ø37x7
100	Ø30 x Ø42x7	Ø30 x Ø42x7
112	Ø30 x Ø44x7	Ø30 x Ø44x7
132	Ø40 x Ø58x8	Ø40 x Ø58x8
160	Ø45 x Ø65x8	Ø45 x Ø65x8

Operation at 60Hz Frequency

Our single-phase motors are manufactured in 230 Volt rated voltage and 50 Hz frequency. Our three-phase motors are manufactured in 400 Volt rated voltage and 50 Hz frequency.

Motors manufactured according to 50 Hz rated frequency can practically used at 60Hz frequency. However increase in frequency causes change in speed and torque, then also the motor power changes as well. The working conditions are shown in below table.

Plate Voltage	Plate Voltage	RPM	Nominal Power	Nominal current	Nominal torque	Starting current	Starting torque	Max. torque
50 Hz	60 Hz							
230 +/-10%	230 +/-10%	1.2	1	0.95	0.83	0.83	0.83	0.83
230 +/-10%	254 +/-5%	1.2	1.1	1.02	0.96	0.93	0.93	0.93
230 +/-10%	277 +/-5%	1.2	1.2	1	1	1	1	1
400 +/-10%	400 +/-10%	1.2	1	0.95	0.83	0.83	0.83	0.83
400 +/-10%	440 +/-10%	1.2	1.1	1.02	0.96	0.93	0.93	0.93
400 +/-10%	460 +/-10%	1.2	1.15	1	0.96	0.96	0.96	0.96
400 +/-10%	480 +/-10%	1.2	1.2	1	1	1	1	1

Protection Classes

Our motors are manufactured according to the IEC 60034-5 standard, protecting them against dust and squirting liquids. Our standard motors are manufactured in IP 55 protection class. Other protection available upon request.

As shown in the below table, the first digit in the IP (Ingress Protection) diagram describes the protection against solid materials. The second digit shows the protection against liquid materials.

IP 5 5			
Protection Against Solid Materials	First Number	Second Protection	Protection Against Liquid Materials
Unprotected	0	0	Unprotected
Protection against objects greater than 50 mm	1	1	Protection against water coming vertically
Protection against objects greater than 12 mm	2	2	Protection against water coming vertically up to 15 ° angle
Protection against objects greater than 2.5 mm	3	3	Protection against water coming vertically up to 60 ° angle
Protection against objects greater than 1 mm	4	4	Protection against water splashing from all directions
Protection against dust	5	5	Protection against water squirting from all directions
Complete protection against dust	6	6	Protection against powerful water squirting from all directions
		7	Protection against temporary water submersion between 0.15m and 1m
		8	Protection against permanent water submersion

Insulation Classification

Under specified measuring conditions in accordance with IEC 60034-1 standard, the insulation F class for an electric motor means at ambient temperature of 40°C the temperature rise of its windings may be max. 105°C with the additional temperature margin of 10°C.

Other insulation class on request. Please contact our sales department.

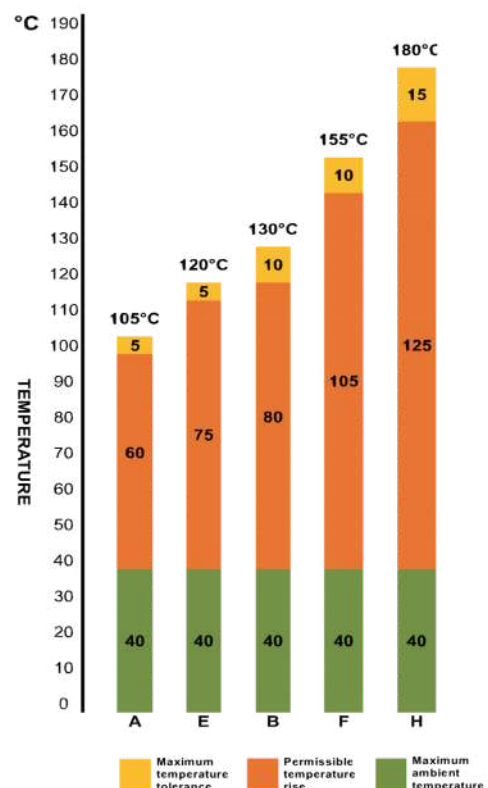
Working Conditions

Glong motors are manufactured to operate continuously at rated power in S1 duty type at 40°C ambient temperature and at an altitude up to 1000 m.

The tables of technical data are referred to an ambient temperature of 40°C and an altitude up to 1000 a.s.l.

For different environment conditions the motor rated power will decrease.

Please contact our technical department for special request.



The motors are normally built for S1 duty. Otherwise intermittent duties can be done on request. Please contact our sales department.

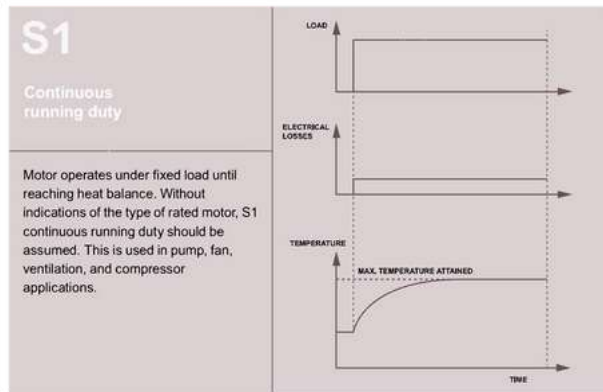


FIGURE 10: S-1 DUTY TYPE - Continuous running duty

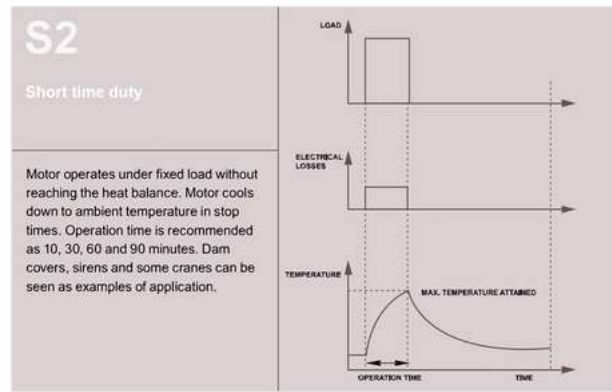


FIGURE 11: S-2 DUTY TYPE - Short-time duty

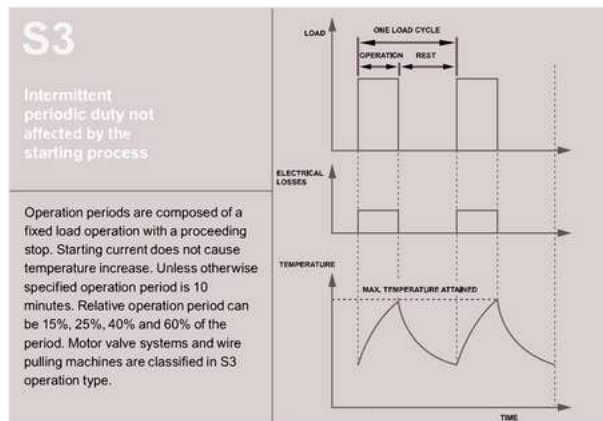


FIGURE 12: S-3 DUTY TYPE - Intermittent periodic duty

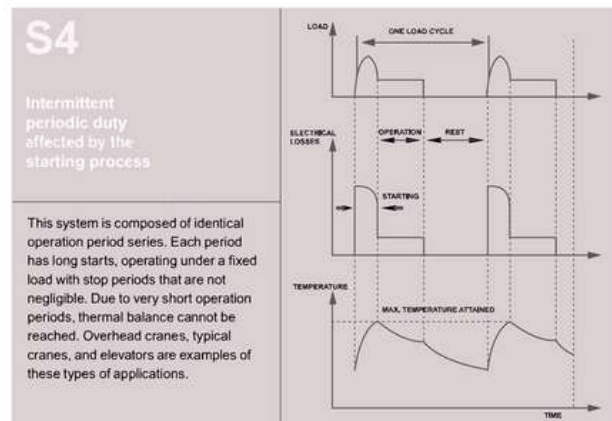


FIGURE 13: S-4 DUTY TYPE – Intermittent periodic duty with starting process

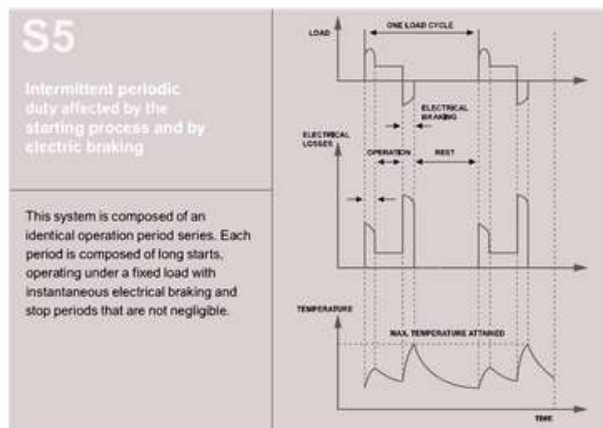


FIGURE 14: S-5 DUTY TYPE - Intermittent periodic duty with electric braking

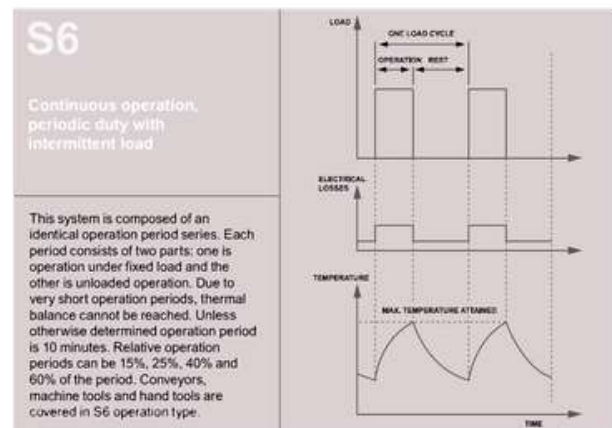
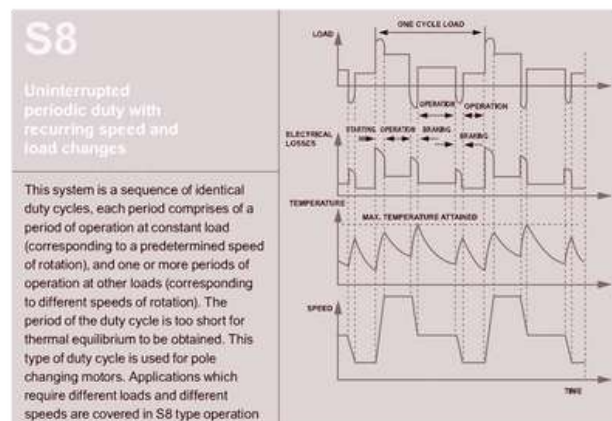
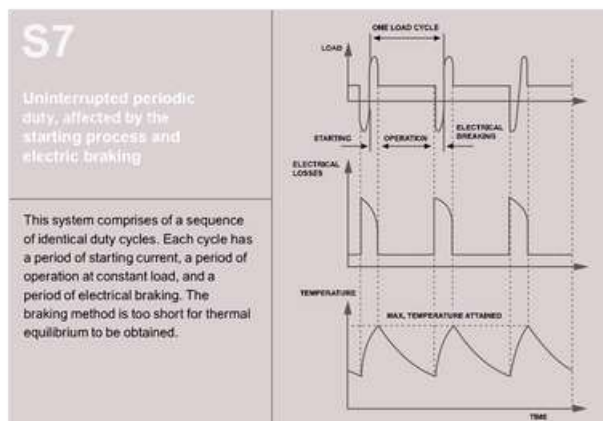
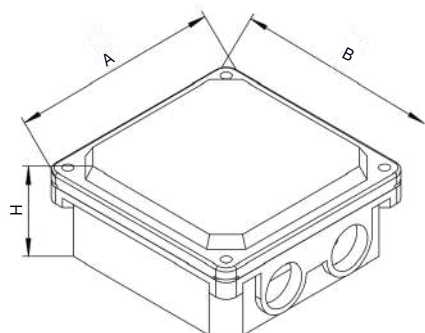


FIGURE 15: S-6 DUTY TYPE – Continuous operation duty with intermittent load



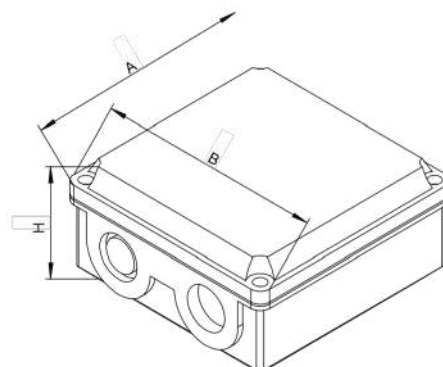
Terminal box size

Terminal box for MS, EMS, HMS and MSD are made in die casting alluminium, for Y2 and EY2 are made in cast-iron and for MC, MY and MYT in PPO. All of them has IP55 as standard protection degree.



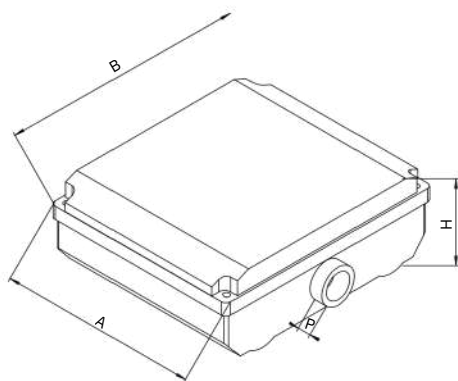
MS/EMS/HMS SERIES

TYPE	A	B	H
MS/EMS/HMS 56	88	88	39
MS/EMS/HMS 63-71	90	90	44
MS/EMS/HMS 80-100	105	105	51
MS/EMS/HMS 112-132	112	112	54



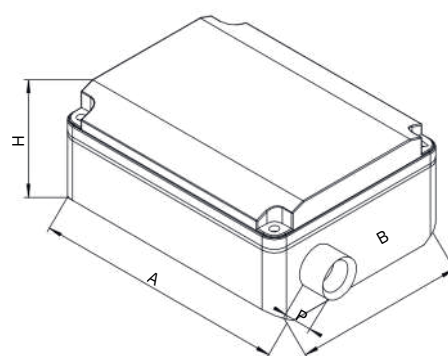
MS/EMS/HMS SERIES

TYPE	A	B	H
MS/EMS/HMS 56	88	88	43
MS/EMS/HMS 63-71	94	94	48
MS/EMS/HMS 80-100	105	105	56
MS/EMS/HMS 112-132	119	112	62
MS/EMS/HMS 160	143	146	70



MY SERIES

TYPE	A	B	H	P
MY56	114	100	45	
MY 63 -1	117	93	55	13
MY80-100	140	110	65.5	18.6



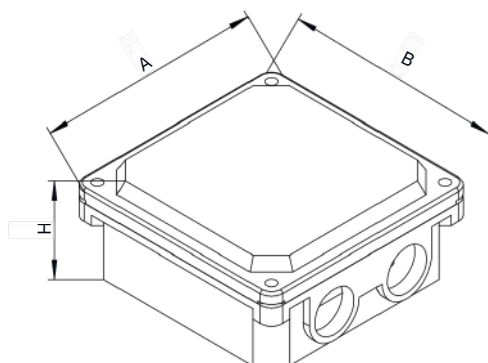
ML SERIES

TYPE	A	B	H	P
ML63 - 71	107	136	67	18.6
ML80 - 100	150	176	65	18.6
ML112	152	193	71	



Terminal box size

NEW COMPACT MS/EMS/HMS SERIES



TYPE	A	B	H
MS/EMS/HMS 56	80	80	42
MS/EMS/HMS 63-71	80	80	42
MS/EMS/HMS 80-100	100	100	45
MS/EMS/HMS 112-132	119	119	54

Nameplate

Terminal box for MS, EMS, HMS and MSD are made in die casting aluminium, for Y2 and EY2 are made in cast-iron and for MC, MY and MYT in PPO. All of them has IP55 as standard protection degree.

										CE IEC60034
Mot. Ph-T ype					NO.					
					S		Efficiency η %			
VH	Z	HP	KW	A	rpm	cos φ	4/43	1/4	1/2	
BRG DE			BRG NDEC			L.F	IP55K	g		

TYPE	L x W	Mounting hole
56#-71#	73x42	60
80 # -132 #	82x42	65
160#	99x50	80

Axially locked shaft

Motors with a locked bearing on the front or rear shield.

Operating temperature

The motors in standard design can work in environment temperature down to -15°C. For lower temperature ranges please contact our technical department.

Condensate drain holes

Condensation drain hole available on request.
Please contact our technical department.
Rain fan cover

Balanced windings bi-phase motors

Balanced windings on single phase motor available on request.

Special voltages and frequencies

The standard three phase motors are produced at the following nominal voltages and frequencies: 230/400V 50 Hz up to 4kW, 400/690V 50Hz oltre 4kW.

For single phase motor 230 50Hz. With tolerances according to IEC.

For different voltage frequencies please contact our technical department.

Special shafts

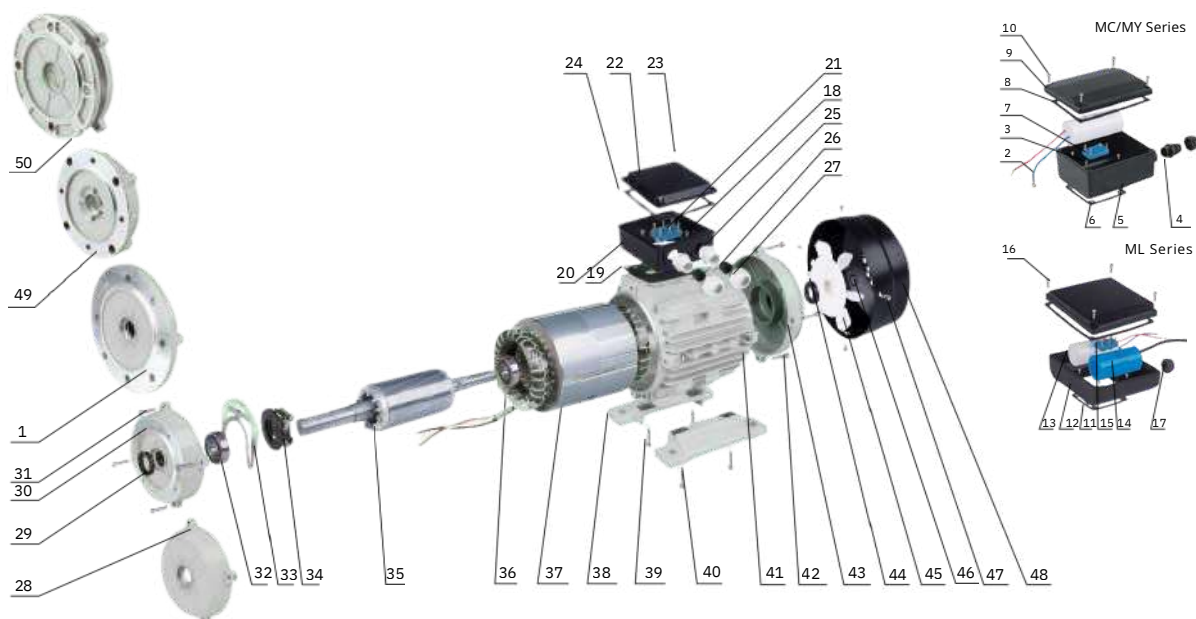
Standard shaft made with C45. Special design or different material request.

Special flanges

Special flanges



Aluminium Housing Motor Expanded Diagram



No.	Description	No.	Description	No.	Description	No.	Description	No.	Description
1	B5 Flange B5	6	Washer	11	Washer	16	Screw	21	Terminal Block
2	Run Capacitor	7	Terminal Block	12	Terminal Block	17	Terminal Box Screw	22	Terminal Box Cover
3	Screw	8	Terminal Seal	13	Run Capacitor	18	Screw	23	Screw
4	Terminal Box Plug Screw	9	Terminal Box Cover	14	Start Capacitor	19	Washer	24	Terminal Seal
5	Terminal Box	10	Screw	15	Terminal Block	20	Terminal Box	25	Plug Screw

No.	Description	No.	Description	No.	Description	No.	Description	No.	Description
26	Sealed Ring	31	Bolt	36	Bearing	41	Motor Body	46	Snap Ring
27	Terminal Box Plug Screw	32	Bearing	37	Stator	42	Screw	47	Screw
28	B3 Flange B3	33	Centrifugal Switch Botom	38	Bottom Foot	43	End Cover	48	Fan Cover
29	Seal	34	Centrifugal Switch	39	Screw	44	Seal	49	B14 Flange B14
30	B14 Flange B14	35	Rotor	40	Spring Washer	45	Fan	50	B5R Flange B5R



ALUMINUM HOUSING

MS EMS HMS MSD SERIES

THREE-PHASE ASYNCHRONOUS MOTORS

OPERATING CONDITIONS

- Ambient temperature: -15°C40°C
- Above sea level: not exceed 1000M
- Rated voltage: $\pm 5\%$
- Protection Class: IP44/IP54/IP55
- Insulation Class: B/F
- Cooling method: IC411
- Duty: continuous(S)

MATERIALS

- Housing: Aluminium
- Cover: Aluminium
- Terminal Box: Aluminium Fan: PP
- Fan Cover: A3
- Shaft: C45

MS series aluminium housing three-phase asynchronous motors, with latest design in entirety, It s made of superior materials and conform to the IEC standard.

MS motors have good performance, safety reliable operation and nice appearance, it can be maintained very conveniently while with low noises, little vibration, light weight and simple construction. These series motors can be used for general drive.

MS SERIES TECHNICAL DATA AT 50HZ

TYPE	Power (KW)	CURRENT (A)						Speed (r/min)	Eff (%)	Power Factor Cos Φ	Rated Torque Tn (N.m)	Tst/Tn (Times)	Tmax/Tn (Times)	Ist/In (Times)	Weight (kg)
		220V	380V	660V	230V	400V	690V								
MS561-2	0.09	0.79	0.46	0.27	0.77	0.44	0.26	2680	45.0	0.65	0.32	2.2	2.4	6	2.8
MS562-2	0.12	1.02	0.59	0.34	0.97	0.56	0.33	2680	45.0	0.69	0.43	2.2	2.4	6	3.2
MS563-2	0.18	1.24	0.72	0.42	1.18	0.68	0.39	2750	52.8	0.72	0.63	2.2	2.4	6	3.5
MS631-2	0.18	1.19	0.69	0.40	1.15	0.66	0.38	2710	52.8	0.75	0.63	2.2	2.4	6	4
MS632-2	0.25	1.45	0.84	0.48	1.39	0.80	0.46	2710	58.2	0.78	0.88	2.2	2.4	6	4.4
MS633-2	0.37	1.95	1.13	0.65	1.86	1.07	0.62	2710	63.9	0.78	1.30	2.2	2.4	6	4.9
MS711-2	0.37	1.94	1.12	0.65	1.84	1.06	0.61	2730	63.9	0.79	1.29	2.2	2.4	6	5.6
MS712-2	0.55	2.66	1.54	0.89	2.54	1.46	0.85	2760	69.0	0.79	1.90	2.2	2.4	6	6.3
MS713-2	0.75	3.33	1.93	1.11	3.18	1.83	1.06	2730	72.1	0.82	2.62	2.2	2.4	6	7.1
MS801-2	0.75	3.33	1.93	1.11	3.18	1.83	1.06	2270	72.1	0.82	2.59	2.2	2.4	6	9.1
MS802-2	1.1	4.63	2.68	1.54	4.44	2.55	1.48	2270	75.0	0.83	3.79	2.2	2.4	6	9.96
MS803-2	1.5	6.15	3.56	2.05	5.88	3.38	1.96	2800	77.2	0.83	5.12	2.2	2.4	6	11.7
MS90S-2	1.5	6.08	3.52	2.03	5.81	3.34	1.94	2840	77.2	0.84	5.04	2.2	2.4	6	12.3
MS90L1-2	2.2	8.53	4.94	2.84	8.16	4.69	2.72	2840	79.7	0.85	7.40	2.2	2.4	6	15
MS90L2-2	3	11.3	6.52	3.75	10.8	6.19	3.54	2840	81.5	0.86	10.09	2.2	2.4	6	18.5
MS100L1-2	3	11.1	6.43	3.70	10.6	6.11	3.54	2840	81.5	0.87	10.09	2.2	2.3	7	22.3
MS100L2-2	4	14.5	8.41	4.84	13.9	7.99	4.63	2850	83.1	0.87	13.40	2.2	2.3	7.5	25.2
MS112M1-2	4	15.5	8.41	4.84	13.9	7.99	4.63	2880	83.1	0.87	13.26	2.2	2.3	7.5	26.7
MS112M1-2	5.5	19.4	11.2	6.45	18.5	10.7	6.17	2880	84.7	0.88	18.24	2.2	2.3	7.5	30.2
MS112M1-2	7.5	26.0	15.1	8.67	24.9	14.3	8.29	2920	86.0	0.88	24.53	2	2.2	7.5	42.2
MS132S1-2	5.5	19.4	11.2	6.45	18.5	10.7	6.17	2900	84.7	0.88	18.11	2	2.2	7.5	38.5
MS132S2-2	7.5	26.0	15.1	8.67	24.9	14.3	8.29	2920	86.0	0.88	24.53	2	2.2	7.5	42.2
MS132M1-2	9.2	31.5	18.3	10.5	30.2	17.4	10.1	2930	86.0	0.89	29.99	2	2.2	7.5	51.4
MS132M2-2	11	36.6	21.2	12.2	35.0	20.1	11.7	2930	87.6	0.9	35.85	2	2.2	7.5	58.8
MS132LC-2	15	48.8	28.2	16.3	46.6	26.8	15.6	2940	88.7	0.91	48.72	2	2.2	7.5	88
MS160M1-2	11	36.6	21.2	12.2	35.0	20.1	11.7	2940	87.6	0.9	35.73	2	2.2	7.5	75
MS160M2-2	15	48.8	28.2	16.3	46.6	26.8	15.6	2940	88.7	0.91	48.72	2	2.2	7.5	88
MS160L-2	18.5	59.8	34.6	19.9	57.1	32.9	19.1	2940	89.3	0.91	60.09	2	2.2	7.5	99
MS180M-2	22	71.3	41.3	23.6	68.2	39.2	22.7	2940	90.0	0.9	120	2	2.3	7.5	71.5
MS200L1-2	30	96.2	55.7	32.1	92	52.9	30.7	2950	91.0	0.9	140	2	2.3	7.5	97.5
MS200L1-2	37	117.3	67.9	39.1	112.2	64.5	37.4	2950	92.0	0.9	155	2	2.3	7.5	119.8

Note 220/440V 60Hz 220/380/440V 60Hz and special voltage models are available on request. Above motor weight only for reference.



MS SERIES TECHNICAL DATA AT 50HZ

TYPE	Power (KW)	Current (A)						Speed (r/min)	Eff (%)	Power Factor Cos Φ	Rated Torque Tn(N.m)	Tst/Tn (Times)	Tmax/Tn (Times)	Ist/In (Times)	Weight (kg)
		220V	380V	660V	230V	400V	690V								
MS561-4	0.06	0.55	0.32	0.18	0.52	0.30	0.17	1320	48.5	0.59	0.43	2.3	2.4	6	3
MS562-4	0.09	0.77	0.45	0.26	0.74	0.43	0.25	1320	50.0	0.61	0.65	2.3	2.4	6	3.3
MS563-4	0.12	1.0	0.58	0.33	0.96	0.55	0.32	1320	50.0	0.63	0.87	2.2	2.4	6	3.5
MS631-4	0.12	0.99	0.57	0.33	0.94	0.54	0.31	1350	50.0	0.64	0.85	2.2	2.4	6	3.9
MS632-4	0.18	1.28	0.74	0.43	1.22	0.70	0.41	1350	57.0	0.65	1.27	2.2	2.4	6	4.3
MS633-4	0.25	1.62	0.94	0.54	1.55	0.89	0.52	1350	61.5	0.66	1.77	2.2	2.4	6	5.0
MS711-4	0.25	1.49	0.86	0.50	1.45	0.82	0.48	1350	61.5	0.72	1.77	2.2	2.4	6	5.4
MS712-4	0.37	1.99	1.15	0.66	1.90	1.09	0.63	1370	66.0	0.74	2.58	2.2	2.4	6	6.5
MS713-4	0.55	2.75	1.59	0.92	2.63	1.51	0.88	1380	70.0	0.75	3.81	2.2	2.4	6	7.2
MS801-4	0.55	2.75	1.59	0.92	2.63	1.51	0.88	1380	70.0	0.75	3.83	2.2	2.4	6	8.2
MS802-4	0.75	3.5	2.03	1.17	3.36	1.93	1.12	1380	72.1	0.78	5.19	2.2	2.4	6	10
MS803-4	1.1	4.92	2.85	1.64	4.71	2.71	1.57	1390	75.0	0.78	7.56	2.2	2.4	6	11.5
MS90S-4	1.1	4.87	2.82	1.62	4.66	2.68	1.55	1400	75.0	0.79	7.50	2.2	2.4	6	12.5
MS90L1-4	1.5	6.39	3.70	2.13	6.10	3.51	2.04	1400	77.2	0.8	10.23	2.2	2.4	6	14.6
MS90L2-4	2.2	9.05	5.24	3.02	8.66	4.98	2.89	1400	79.7	0.8	15.01	2.2	2.3	7	18.5
MS100L1-4	2.2	8.95	5.18	2.98	8.56	4.92	2.15	1420	79.7	0.81	14.80	2.2	2.3	7	21
MS100L2-4	3	11.8	6.384	3.94	11.3	6.5	3.77	1420	81.5	0.81	20.18	2.2	2.4	7	23.4
MS100L3-4	4	15.4	8.9	5.12	14.7	8.45	4.90	1430	83.1	0.82	26.71	2.2	2.2	7	28.8
MS112M-4	4	15.3	8.8	5.08	14.6	8.39	4.86	1430	83.1	0.83	26.71	2.2	2.2	7	30
MS112L-4	5.5	20.4	11.8	6.79	19.5	11.2	6.49	1440	84.7	0.83	36.48	2.2	2.2	7	34.8
MS132S-4	5.5	20.1	11.7	6.71	19.3	11.1	6.42	1450	84.7	0.84	36.22	2.2	2.2	7	40.5
MS132M-4	7.5	26.9	15.6	8.98	25.8	14.8	8.59	1450	86.0	0.85	49.40	2.2	2.2	7	49.5
MS132L1-4	9.2	33.0	19.1	11.0	31.6	18.2	10.5	1460	86.0	0.85	60.18	2.2	2.2	7	58.2
MS132L2-4	10	35.3	20.4	11.8	33.7	19.4	11.2	1460	87.6	0.85	65.41	2.2	2.2	7	59.2
MS132L3-4	11	38.3	22.2	12.8	36.7	21.1	12.2	1460	87.6	0.86	71.95	2.2	2.2	7.5	65
MS160M-4	11	37.9	21.9	12.6	36.2	20.8	12.1	1460	87.6	0.87	71.95	2.2	2.2	7.5	78.3
MS160L-4	15	51.0	29.5	17.0	48.8	28.1	16.3	1460	88.7	0.87	98.12	2.2	2.2	7.5	98.5
MS180M-4	18.5	62.7	36.3	20.9	60	34.5	20	1470	90	0.86	120.2	2.2	2.3	7.5	125
MS180L-4	22	73.8	42.7	24.6	70.6	40.6	23.5	1470	91	0.86	142.9	2.2	2.3	7.5	140
MS200L-4	30	99.5	57.6	33.2	95.1	54.7	31.7	1470	92	0.86	194.9	2.2	2.3	7.2	160
MS631-6	0.09	1.02	0.59	0.34	0.97	0.56	0.33	840	38.3	0.61	1.02	2	2	3.5	5.1
MS632-6	0.12	1.33	0.77	0.44	1.27	0.73	0.42	850	38.3	0.62	1.35	2	2	3.5	5.25
MS711-6	0.18	1.59	0.92	0.53	1.51	0.87	0.50	880	45.5	0.66	1.95	1.6	1.7	4	6
MS712-6	0.25	1.80	1.04	0.60	1.72	0.99	0.57	900	52.1	0.7	2.65	2.1	2.2	4	6.5
MS713-6	0.37	2.37	1.37	0.79	2.26	1.30	0.75	890	59.7	0.69	3.97	2	2.1	4	7.2
MS801-6	0.37	2.33	1.35	0.78	2.23	1.28	0.74	900	59.7	0.7	3.393	1.9	1.9	4	8.2
MS802-6	0.55	3.06	1.77	1.02	2.92	1.68	0.97	900	65.8	0.72	5.84	2	2.3	4	9.9
MS803-6	0.75	3.90	2.26	1.30	3.74	2.15	1.25	900	70.0	0.72	7.96	2	2.3	4	11.4
MS90S-6	0.75	3.90	2.26	1.30	3.74	2.15	1.25	920	70.0	0.72	7.79	2.2	2.2	5.5	11.7
MS90L1-6	1.1	5.42	3.14	1.81	5.18	2.98	1.73	925	72.9	0.73	11.36	2.2	2.2	5.5	15.1
MS100L-6	1.5	6.89	3.99	2.30	6.59	3.79	2.20	945	75.2	0.76	15.16	2.2	2.2	6	19.1
MS112M-6	2.2	9.78	5.66	3.26	9.36	5.38	3.12	955	77.7	0.76	22.00	2.2	2.2	6	25.4
MS132S-6	3	13.0	7.53	4.34	12.4	7.15	4.15	960	79.7	0.76	29.84	2	2	6.5	36.1
MS132M1-6	4	17.0	9.82	5.65	16.2	9.33	5.41	960	81.4	0.76	39.79	2	2	6.5	45
MS132M2-6	5.5	22.6	13.1	7.52	21.6	12.4	7.19	960	83.1	0.77	54.71	2	2	6.5	55.5
MS132L-6	7.5	30.2	17.5	10.1	28.9	16.6	9.62	960	84.7	0.77	74.61	2	2	6.5	60
MS160M-6	7.5	29.1	16.8	9.69	27.8	16.0	9.26	960	84.7	0.8	74.61	2	2.2	6.5	72
MS160L-6	11	42.3	24.5	14.1	40.5	23.3	13.5	960	86.4	0.79	109.43	2	2.2	6.5	92
MS180L-6	15	54.6	31.6	18.2	52.2	30	17.4	970	89	0.81	147.7	2	2.1	7	130
MS200L1-6	18.5	66.7	38.6	22.2	63.7	36.6	21.2	970	90	0.81	182.1	2.1	2.1	7	150
MS200L2-6	22	77.4	44.8	25.8	73.9	42.5	24.6	970	90	0.83	216.6	2.1	2.1	7	165
MS711-8	0.09	1.37	0.79	0.46	1.30	0.75	0.44	680	31.0	0.56	1.26	1.5	1.7	3	6
MS712-8	0.12	1.73	1.00	0.58	1.65	0.95	0.55	690	31.0	0.59	1.66	1.6	1.7	2.7	6.8
MS801-8	0.18	2.04	1.18	0.68	0.95	1.12	0.65	680	38.0	0.61	2.53	1.5	1.7	2.8	9.9
MS802-8	0.25	2.47	1.43	0.82	2.37	1.36	0.79	680	43.4	0.61	3.51	1.6	2	2.7	10.9
MS90S-8	0.37	3.11	1.80	1.04	2.97	1.71	0.99	680	49.7	0.63	5.20	1.6	1.8	2.8	14.8
MS90L-8	0.55	3.97	2.30	1.32	3.79	2.18	1.26	680	56.1	0.65	7.72	1.6	1.8	3	17.2
MS100L1-8	0.75	4.80	2.78	1.60	4.59	2.64	1.53	710	61.2	0.67	10.09	1.7	2.1	3.5	17.5
MS100L2-8	1.1	6.29	3.64	2.10	6.02	3.46	2.01	710	66.5	0.69	14.80	1.7	2.1	3.5	19.7

MS SERIES TECHNICAL DATA AT 50HZ

TYPE	POWER (KW)							Speed (r/min)	Eff (%)	Power factor Cos Φ	Rated Torque Tn (N.m)	Tst/Tn (Times)	Tmax/Tn (Times)	Ist/In (Times)	Weight (kg)
		220V	380V	660V	230V	400V	690V								
MSI12M-8	1.5	8.12	4.78	2.71	7.90	4.54	2.63	710	70.2	0.68	20.18	1.8	2.1	4.2	25.6
MSI32S-8	2.2	11.0	6.35	3.66	10.5	6.03	3.5	720	74.2	0.71	29.18	2	2	5.5	35.5
MSI32M-8	3	14.0	8.11	4.67	13.4	7.70	4.46	720	77.0	0.73	39.79	2	2	5.5	45
MSI60M1-8	4	18.2	10.5	6.06	17.4	9.99	5.79	730	79.2	0.73	52.33	1.9	2.1	6	60
MSI60M2-8	5.5	24.0	13.9	7.99	22.9	13.2	7.64	720	81.4	0.74	72.95	2	2.2	6	72
MSI60L-8	7.5	34.6	18.3	10.5	30.2	17.4	10.1	720	83.1	0.75	99.48	1.9	2.2	6	92
MSI80L-8	11	43.4	25.1	14.5	41.5	23.9	13.8	730	87.5	0.76	143.9	2	2.2	6.6	130
MS200L-8	15	58.9	34.1	19.6	56.4	32.4	18.8	730	88	0.76	196.2	2	2.2	6.6	150

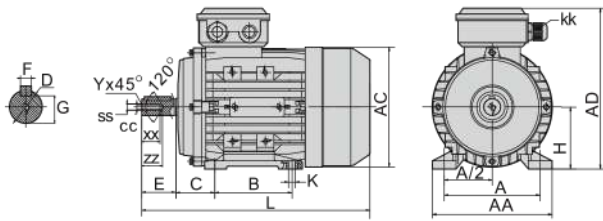
EMS SERIES IE2 EFFICIENCY MOTORS TECHNICAL DATA AT 50HZ

TYPE	POWER (KW)							Speed (r/min)	Eff (%)	Power factor Cos Φ	Rated Torque Tn (N.m)	Tst/Tn (Times)	Tmax/Tn (Times)	Ist/In (Times)	Weight (kg)
		220V	380V	660V	230V	400V	690V								
EMS801-2	0.75	3.10	1.79	1.03	2.95	1.71	0.98	2840	77.4	0.82	2.52	2.3	2.3	6.8	8.75
EMS802-2	1.1	4.37	2.52	1.46	4.16	2.40	1.39	2850	79.6	0.83	3.69	2.3	2.3	7.1	9.8
EMS90S-2	1.5	5.76	3.33	1.92	5.49	3.17	1.83	2850	81.3	0.84	5.03	2.3	2.3	7.3	13.2
EMS90L-2	2.2	8.16	4.71	2.72	7.78	4.49	2.59	2860	83.2	0.85	7.35	2.3	2.3	7.6	15.6
EMS100L-2	3	10.70	6.18	3.57	10.19	5.88	3.40	2880	84.6	0.87	9.95	2.3	2.3	7.8	22.4
EMS112M-2	4	13.90	8.03	4.63	13.25	7.65	4.41	2890	85.8	0.88	13.22	2.2	2.3	8.1	26
EMS132S-2	5.5	18.85	10.89	6.28	17.96	10.37	5.99	2900	87	0.88	18.11	2.2	2.3	8.2	41.8
EMS132M-2	7.5	25.10	14.49	8.37	23.91	13.81	7.97	2910	88.1	0.89	24.61	2.2	2.3	7.8	47
EMS160M1-2	11	36.28	20.95	12.09	34.56	19.96	11.52	2930	89.4	0.89	35.85	2.2	2.3	7.9	89.5
EMS160M2-2	15	48.98	28.28	16.33	46.66	26.94	15.55	2930	90.3	0.89	48.89	2.2	2.3	7.9	96
EMS160L-2	18.5	60.01	34.65	20.01	57.17	33.01	19.06	2940	90.9	0.89	60.09	2.2	2.3	8	106
EMS180M-2	22	71	41.1	26.7	68	39.1	22.7	2940	91.3	0.89	71.5	2.2	2.3	8.1	140
EMS200L1-2	30	96.2	55.7	32.1	92	52.9	30.7	2950	92	0.89	97.1	2	2.3	7.5	155
EMS200L2-2	37	118	68.3	39.3	112.9	64.9	37.6	2950	92.5	0.89	119.8	2	2.3	7.5	175
EMS802-4	0.75	3.25	1.88	1.08	3.10	1.79	1.03	1410	79.6	0.76	5.08	2.3	2.3	6.4	8.2
EMS90S-4	1.1	4.61	2.66	1.54	4.39	2.53	1.46	1420	81.4	0.77	7.40	2.3	2.3	6.6	14.1
EMS90L-4	1.5	6.10	3.52	2.03	5.81	3.35	1.94	1420	82.8	0.78	10.09	2.3	2.3	6.7	16.5
EMS100L1-4	2.2	8.56	4.94	2.95	8.16	4.71	2.72	1440	84.3	0.8	14.59	2.3	2.3	7.3	22
EMS100L2-4	3	11.37	6.56	3.79	10.83	6.25	3.61	1440	85.5	0.81	19.90	2.3	2.3	7.5	24.2
EMS112M-4	4	14.97	8.64	4.99	14.26	8.23	4.75	1440	86.6	0.81	26.53	2.3	2.3	7.5	29
EMS132S-4	5.5	20.07	11.59	6.69	19.12	11.04	6.37	1450	87.7	0.82	36.22	2	2.3	7.5	42.3
EMS132M-4	7.5	26.74	15.44	8.91	25.47	14.70	8.49	1450	88.7	0.83	49.40	2	2.3	7.3	54
EMS160M-4	11	38.73	22.36	12.91	36.90	21.30	12.30	1450	89.8	0.83	72.45	2	2.3	7.4	83
EMS160L-4	15	51.73	29.87	17.24	49.28	28.45	16.42	1450	90.6	0.84	98.79	2	2.1	7.5	102
EMS180M-4	18.5	62.7	36.3	20.9	60	34.5	20	1470	91.2	0.85	120.2	2	2.3	7.6	135
EMS180L-4	22	74.1	42.9	24.7	71	40.8	23.7	1470	91.6	0.85	142.9	2.1	2.3	7.7	155
EMS200L-4	30	100.4	58.1	33.5	96	55.2	32	1470	92.3	0.85	194.9	2.1	2.3	7.1	175
EMS90S-6	0.75	3.65	2.11	1.22	3.48	2.01	1.16	925	75.9	0.71	7.74	2	2.1	5.8	13.8
EMS90L-6	1.1	5.13	2.96	1.71	4.89	2.82	1.63	930	78.1	0.72	11.30	2	2.1	5.9	20.8
EMS100L-6	1.5	6.85	3.96	2.28	6.53	3.77	2.18	940	79.8	0.72	15.24	2	2.1	5.9	21.6
EMS112M-6	2.2	9.80	5.66	3.27	9.34	5.39	3.11	945	81.8	0.72	22.23	2	2.1	6.2	27.2
EMS132S-6	3	13.13	7.58	4.38	12.51	7.22	4.17	960	83.3	0.72	29.84	2	2.1	6.4	34
EMS132M1-6	4	16.77	9.68	5.59	15.97	9.22	5.32	960	84.6	0.74	39.79	2	2.1	6.6	45.6
EMS132M2-6	5.5	22.38	12.92	7.46	21.32	12.31	7.11	960	86	0.75	54.71	2	2.1	6.8	54.7
EMS160M-6	7.5	28.94	16.71	9.65	27.57	15.92	9.19	970	87.2	0.78	73.84	2	2.1	6.8	89
EMS160L-6	11	41.20	23.79	13.73	39.25	22.66	13.08	970	88.7	0.79	108.30	2	2.1	6.9	96
EMS180L-6	15	54.9	31.8	18.3	52.5	30.2	17.5	970	89.7	0.8	147.7	2	2.1	7.3	145
EMS200L1-6	18.5	66.3	38.4	22.1	63.5	36.5	21.2	970	90.4	0.81	182.1	2	2.1	7.2	175
EMS200L2-6	22	77.4	44.8	25.8	74.1	42.6	24.7	970	90.9	0.82	216.6	2	2.1	7.3	190

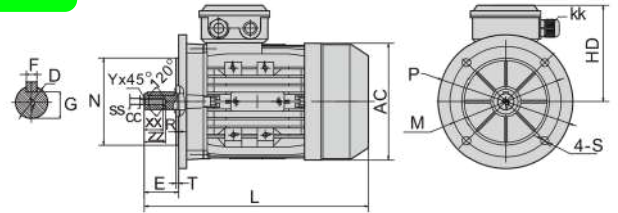
HMS SERIES IE3 EFFICIENCY MOTORS TECHNICAL DATA AT 50HZ

TYPE	POWER (KW)							Speed (r/min)	Eff (%)	Power factor Cos Φ	Rated Torque Tn (N.m)	Tst/Tn (Times)	Tmax/Tn (Times)	Ist/In (Times)	Weight (kg)
		220V	380V	660V	230V	400V	690V								
HMS801-2	0.75	2.97	1.72	0.99	2.85	1.64	0.95	2840	80.7	0.82	2.52	2.3	2.3	7.0	10.4
HMS802-2	1.10	4.21	2.43	1.40	4.02	2.32	1.34	2850	82.7	0.83	3.69	2.2	2.3	7.3	13.3
HMS90L1-2	1.50	5.57	3.21	1.86	5.32	3.07	1.77	2850	84.2	0.84	5.03	2.2	2.3	7.6	12.45
HMS90L2-2	2.20	7.91	4.57	2.64	7.56	4.37	2.52	2860	85.9	0.85	7.35	2.2	2.3	7.6	15.4
HMS100L1-2	3	10.39	6	3.46	9.94	5.74	3.31	2890	87.1	0.87	9.91	2.2	2.3	7.8	28
HMS112M-2	4	13.54	7.82	4.51	12.95	7.48	4.32	2890	88.1	0.88	13.22	2.2	2.3	7.8	34.4
HMS132S-2	5.5	18.39	10.62	6.13	17.59	10.16	5.86	2900	89.2	0.88	18.11	2.0	2.3	8.3	38
HMS132L-2	7.5	24.82	14.33	8.28	23.75	13.71	7.92	2910	90.1	0.88	24.61	2.0	2.3	8.3	65
HMS160M1-2	11	35.57	20.53	11.86	34.02	19.64	11.34	2940	91.2	0.89	35.73	2.0	2.3	7.9	86.30
HMS160M2-2	15	48.13	27.79	16.04	46.04	26.58	15.35	2930	91.9	0.89	48.89	2.0	2.3	8.1	101.40
HMS160L-2	18.5	59.04	34.09	19.68	56.47	32.61	18.83	2940	92.4	0.89	60.09	2.0	2.3	8.1	119.70
HMS180M-2	22	70	40.5	23.3	67	38.5	22.3	2940	92.7	0.89	71.5	2.0	2.3	8.2	150
HMS802-4	0.75	3.18	1.84	1.06	3.04	1.76	1.01	1410	82.5	0.75	5.08	2.3	2.3	6.6	12.8
HMS90L1-4	1.10	4.52	2.61	1.51	4.32	2.49	1.44	1420	84.1	0.76	7.4	2.3	2.3	6.8	16.2
HMS90L2-4	1.5	5.99	3.46	2	5.73	3.31	1.91	1420	85.3	0.77	10.09	2.3	2.3	7.0	19.2
HMS100L1-4	2.2	8.22	4.75	2.74	7.86	4.54	2.62	1440	86.7	0.81	14.59	2.3	2.3	7.6	25
HMS100L2-4	3	10.95	6.32	3.65	10.47	6.05	3.49	1440	87.7	0.82	19.90	2.3	2.3	7.6	29.5
HMS112L-4	4	14.45	8.34	4.82	13.82	7.98	4.61	1440	88.6	0.82	26.53	2.2	2.3	7.6	37.8
HMS132L-4	5.5	19.41	11.21	6.47	18.57	10.72	6.19	1450	89.6	0.83	36.22	2.0	2.3	7.8	58.7
HMS132LC-4	7.5	25.92	14.97	8.64	24.79	14.31	8.26	1450	90.4	0.84	49.40	2.0	2.3	7.9	68
HMS160M-4	11	37.16	21.45	12.39	35.54	20.52	11.85	1450	91.4	0.85	72.45	2.2	2.3	7.5	97
HMS160L-4	15	49.70	28.70	16.57	47.54	27.45	15.85	1450	92.1	0.86	98.79	2.2	2.3	7.7	111.8
HMS180M-4	18.5	61	35.3	20.3	58.3	33.5	19.4	1470	92.6	0.86	120.2	2.0	2.3	7.8	145
HMS180L-4	22	72.2	41.8	24.1	69	39.7	23	1470	93	0.86	142.9	2.0	2.3	7.8	165
HMS90L1-6	0.75	3.51	2.03	1.17	3.36	1.94	1.12	940	78.9	0.71	7.62	2.0	2.1	6.0	18.20
HMS90L2-6	1.1	4.88	2.82	1.63	4.67	2.70	1.56	950	81.0	0.73	11.06	2.0	2.1	6.0	24.30
HMS100L-6	1.5	6.54	3.77	2.18	6.25	3.61	2.08	950	82.5	0.73	15.08	2.0	2.1	6.5	25.70
HMS112M-6	2.2	9.26	5.34	3.09	8.85	5.11	2.95	960	84.3	0.74	21.89	2.0	2.1	6.6	32.0
HMS132S-6	3	12.43	7.18	4.14	11.89	6.86	3.96	970	85.6	0.74	29.54	2.0	2.1	6.8	34
HMS132M-6	4	16.34	9.44	5.45	15.63	9.03	5.21	970	86.8	0.74	39.38	2.0	2.1	6.8	45
HMS132L-6	5.5	21.87	12.63	7.29	20.92	12.08	6.97	970	88.0	0.75	54.15	2.0	2.1	7.0	63.0
HMS160M-6	7.5	27.96	16.14	9.32	26.75	15.44	8.92	970	89.1	0.79	73.84	2.0	2.1	7.0	103
HMS160L-6	11	39.96	23.07	13.32	38.22	22.07	12.74	970	90.3	0.80	108.30	2.0	2.1	7.2	140.90
HMS180L-6	15	53.4	30.9	17.8	51	29.3	17	970	91.2	0.81	147.7	2.0	2.1	7.3	170

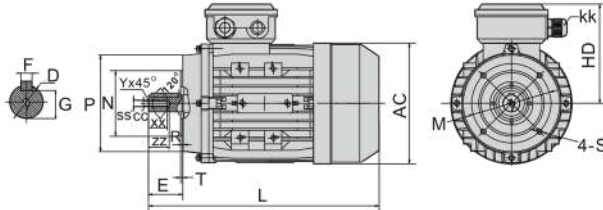
IMB3



IMB5



IMB14



B3 OVERALL & INSTALLATION DIMENTION

Frame	H	A	B	C	D	E	F	G	K	AA	AD	AC	L	KK	SS	XX	ZZ	CC	Y
56	56	90	71	36	9	20	3	7.2	5.8X5.8	110	156/151	Ø112	195	1-M16X1.5	M3	8	12	2.5	0.5
63	63	100	80	40	11	23	4	8.5	7X10	120	173/169	Ø121	230	1-M16X1.5	M4	10	15	3.3	0.8
71	71	112	90	45	14	30	5	11	7X10	132	188/184	Ø140	260	1-M20X1.5	M5	12	18	4.2	0.8
80	80	125	100	50	19	40	6	15.5	10X13	160	217/212	Ø156	295	1-M20X1.5	M6	16	22	5	1
90S	90	140	100	56	24	50	8	20	10X13	175	235/230	Ø175	315	1-M20X1.5	M8	20	25	6.8	1
90L/L2	90	140	125	56	24	50	8	20	10X13	175	235/230	Ø175	335/365	1-M20X1.5	M8	20	25	6.8	1
100	100	160	140	63	28	60	8	24	12X16	196	253/248	Ø200	400	1-M20X1.5	M10	22	28	8.5	1.5
112M/L	112	190	140	70	28	60	8	24	12X16	220	282/274	Ø220	400/440	2-M25X1.5	M10	22	28	8.5	1.5
132S	132	216	140	89	38	80	10	33	12X16	252	325/317	Ø260	440	2-M25X1.5	M12	28	34	10.2	1.5
132M/L	132	216	178	89	38	80	10	33	12X16	252	325/317	Ø260	480/500	2-M25X1.5	M12	28	34	10.2	1.5
132LC	132	216	178	89	38	80	10	33	12X16	252	325/317	Ø260	530	2-M25X1.5	M12	28	34	10.2	1.5
160M/L	160	254	210/254	108	42	110	12	37	15X19	290	390	Ø320	640	2-M32X1.5	M16	35	42	14.2	2
180M/L	180	279	241/279	121	48	110	14	42.5	15X25	355	455	Ø360	670/710	2-M32X1.5	M16	35	42	14.2	2
200	200	318	305	133	55	110	16	49	19X29	375	475	Ø360	710	2-M32X1.5	M20	42	53	18.2	2

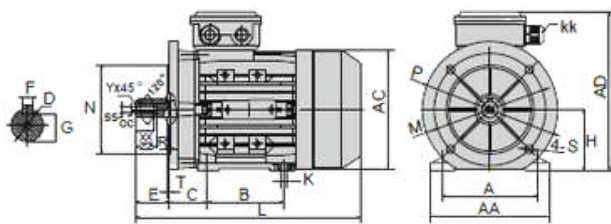
B5 OVERALL & INSTALLATION DIMENTION

Frame	B5							B5R							D	E	F	G	KK	AC	HD	L	SS	XX	ZZ	CC	Y
	M	N	P	T	S	R		M	N	P	T	S	R														
56	Ø100	Ø80	Ø120	3.0	Ø7	0								0	Ø9	20	3	7.2	1-M16X1.5	Ø112	100/96	195	M3	8	12	2.5	0.5
63	Ø115	Ø95	Ø140	3.0	Ø10	0								0	Ø11	23	4	8.5	1-M16X1.5	Ø121	110/106	222	M4	10	15	3.3	0.8
71	Ø130	Ø110	Ø160	3.5	Ø10	0	Ø115	Ø95	Ø140	3.0	Ø10	0		0	Ø14	30	5	11	1-M20X1.5	Ø140	117/113	260	M5	12	18	4.2	0.8
80	Ø165	Ø130	Ø200	3.5	Ø12	0	Ø130	Ø110	Ø160	3.5	Ø12	0		0	Ø19	40	6	15.5	1-M20X1.5	Ø156	137/132	295	M6	16	22	5	1
90S	Ø165	Ø130	Ø200	3.5	Ø12	0	Ø130	Ø110	Ø160	3.5	Ø12	0		0	Ø24	50	8	20	1-M20X1.5	Ø175	145/140	315	M8	20	25	6.8	1
90L/L2	Ø165	Ø130	Ø200	3.5	Ø12	0	Ø130	Ø110	Ø160	3.5	Ø12	0		0	Ø24	50	8	20	1-M20X1.5	Ø175	145/140	335/365	M8	20	25	6.8	1
100	Ø215	Ø180	Ø250	4.0	Ø15	0	Ø165	Ø130	Ø200	3.5	Ø12	0		0	Ø28	60	8	24	1-M20X1.5	Ø200	152/157	400	M10	22	28	8.5	1.5
112M/L	Ø215	Ø180	Ø250	4.0	Ø15	0	Ø165	Ø130	Ø200	3.5	Ø12	0		0	Ø28	60	8	24	1-M25X1.5	Ø220	180/172	400/440	M10	22	28	8.5	1.5
132S	Ø265	Ø230	Ø300	4.0	Ø15	0	Ø215	Ø180	Ø250	4.0	Ø15	0		0	Ø38	80	10	33	1-M25X1.5	Ø260	193/185	435	M12	28	34	10.2	1.5
132M/L	Ø265	Ø230	Ø300	4.0	Ø15	0	Ø215	Ø180	Ø250	4.0	Ø15	0		0	Ø38	80	10	33	1-M25X1.5	Ø260	193/185	470/500	M12	28	34	10.2	1.5
132LC	Ø265	Ø230	Ø300	4.0	Ø15	0	Ø215	Ø180	Ø250	4.0	Ø15	0		0	Ø38	80	10	33	1-M25X1.5	Ø260	193/185	530	M12	28	34	10.2	1.5
160M/L	Ø300	Ø250	Ø350	5.0	Ø19	0									Ø42	110	12	37	1-M32X1.5	Ø320	230	640	M16	35	42	14.2	2
180M/L	Ø300	Ø250	Ø350	5.0	Ø19	0									Ø48	110	14	42.5	1-M32X1.5	Ø360	275	670/710	M16	35	42	14.2	2
200	Ø350	Ø300	Ø400	5.0	Ø19	0									Ø55	110	16	49.0	1-M32X1.5	Ø360	275	710	M20	42	53	18.2	2

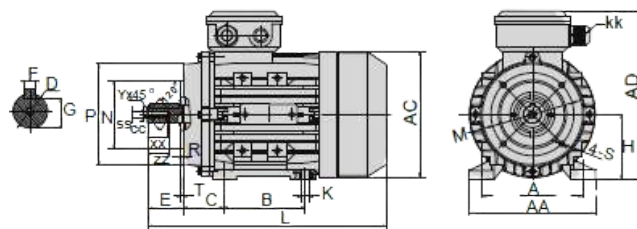
B14 OVERALL & INSTALLATION DIMENTION

Frame	B14						B14B						D	E	F	G	KK	AC	HD	L	SS	XX	ZZ	CC	Y
	N	M	P	T	S	R	N	M	P	T	S	R													
56	Ø50	Ø65	Ø80	2.5	M5	0							Ø9	20	3	7.2	1-M16X1.5	Ø112	100/96	195	M3	8	12	2.5	0.5
63	Ø60	Ø75	Ø90	2.5	M5	0	Ø80	Ø100	Ø120	3.0	M6	0	Ø11	23	4	8.5	1-M16X1.5	Ø121	110/106	222	M4	10	15	3.3	0.8
71	Ø70	Ø85	Ø105	2.5	M6	0	Ø95	Ø115	Ø140	3.0	M8	0	Ø14	30	5	11	1-M20X1.5	Ø140	117/113	260	M5	12	18	4.2	0.8
80	Ø80	Ø100	Ø120	3.0	M6	0	Ø110	Ø130	Ø160	3.5	M8	0	Ø19	40	6	15.5	1-M20X1.5	Ø156	137/132	295	M6	16	22	5	1
90S	Ø95	Ø115	Ø140	3.0	M8	0	Ø110	Ø130	Ø160	3.5	M8	0	Ø24	50	8	20	1-M20X1.5	Ø175	145/140	315	M8	20	25	6.8	1
90L/L2	Ø95	Ø115	Ø140	3.0	M8	0	Ø110	Ø130	Ø160	3.5	M8	0	Ø24	50	8	20	1-M20X1.5	Ø175	145/140	335/365	M8	20	25	6.8	1
100	Ø110	Ø130	Ø160	3.5	M8	0	Ø130	Ø165	Ø200	3.5	M10	0	Ø28	60	8	24	1-M20X1.5	Ø200	152/157	400	M10	22	28	8.5	1.5
112	Ø110	Ø130	Ø160	3.5	M8	0	Ø130	Ø165	Ø200	3.5	M10	0	Ø28	60	8	24	2-M25X1.5	Ø220	180/172	400/440	M10	22	28	8.5	1.5
132S	Ø130	Ø165	Ø200	3.5	M10	0	Ø180	Ø215	Ø250	4.0	M12	0	Ø38	80	10	33	2-M25X1.5	Ø260	193/185	435	M12	28	34	10.2	1.5
132M/L	Ø130	Ø165	Ø200	3.5	M10	0	Ø180	Ø215	Ø250	4.0	M12	0	Ø38	80	10	33	2-M25X1.5	Ø260	193/185	470/500	M12	28	34	10.2	1.5
132LC	Ø130	Ø165	Ø200	3.5	M10	0	Ø180	Ø215	Ø250	4.0	M12	0	Ø38	80	10	33	2-M25X1.5	Ø260	193/185	530	M12	28	34	10.2	1.5

IMB35



IMB34



B35 OVERALL & INSTALLATION DIMENTION

Frame	H	B35							B35R						A	B	C	D	E	F
		M	N	P	T	R	S	N	M	P	T	R	S							
56	56	Ø100	Ø80	Ø120	3.0	0	Ø7							90	71	36	9	20	3	
63	63	Ø115	Ø95	Ø140	3.0	0	Ø10	0	0	0	0	0	0	100	80	40	11	23	4	
71	71	Ø130	Ø110	Ø160	3.5	0	Ø10	Ø95	Ø115	Ø140	3.0	0	Ø10	112	90	45	14	30	5	
80	80	Ø165	Ø130	Ø200	3.5	0	Ø12	Ø110	Ø130	Ø160	3.0	0	Ø10	125	100	50	19	40	6	
90S	90	Ø165	Ø130	Ø200	3.5	0	Ø12	Ø110	Ø130	Ø160	3.0	0	Ø12	140	100	56	24	50	8	
90L1/L2	90	Ø165	Ø130	Ø200	3.5	0	Ø12	Ø110	Ø130	Ø160	3.0	0	Ø12	140	125	56	24	50	8	
100	100	Ø215	Ø180	Ø250	4.0	0	Ø15	Ø130	Ø165	Ø200	3.0	0	Ø12	160	140	63	28	60	8	
112	112	Ø215	Ø180	Ø250	4.0	0	Ø15	Ø130	Ø165	Ø200	3.0	0	Ø12	190	140	70	28	60	8	
132S	132	Ø265	Ø230	Ø300	4.0	0	Ø15	Ø180	Ø215	Ø250	3.0	0	Ø15	216	140	89	38	80	10	
132M/L	132	Ø265	Ø230	Ø300	4.0	0	Ø15	Ø180	Ø215	Ø250	3.0	0	Ø15	216	178	89	38	80	10	
132LC	132	Ø265	Ø230	Ø300	4.0	0	Ø15	Ø180	Ø215	Ø250	3.0	0	Ø15	216	178	89	38	80	10	
160M/L	160	Ø300	Ø250	Ø350	5.0	0	Ø19							254	219/254	108	42	110	12	
180M/L	180	Ø300	Ø250	Ø360	5.0	0	Ø19							279	241/279	121	48	110	14	
200	200	Ø350	Ø300	Ø400	5.0	0	Ø19							318	305	133	55	110	16	

Frame	G	K	KK	AA	AD	AC	L	SS	XX	ZZ	CC	Y
56	7.2	5.8X5.8	1-M16X1.5	110	156/151	120	195	M3	8	12	2.5	0.5
63	8.5	7X10	1-M16X1.5	120	173/169	130	230	M4	10	15	3.3	0.8
71	11	7X10	1-M20X1.5	132	188/184	145	260	M5	12	18	4.2	0.8
80	15.5	10X13	1-M20X1.5	160	217/212	165	295	M6	16	22	5	1
90S	20	10X13	1-M20X1.5	175	235/230	185	315	M8	20	25	6.8	1
90L1/L2	20	10X13	1-M20X1.5	175	235/230	185	335/365	M8	20	25	6.8	1
100	24	10X13	1-M20X1.5	196	252/247	205	400	M10	22	28	8.5	1.5
112	24	12X16	2-M25X1.5	220	292/284	230	400	M10	22	28	8.5	1.5
132S	33	12X16	2-M25X1.5	252	325/317	270	440	M12	28	34	10.2	1.5
132M/L	33	12X16	2-M25X1.5	252	325/317	270	480/500	M12	28	34	10.2	1.5
132LC	33	12X16	2-M25X1.5	252	325/317	270	530	M12	28	34	10.2	1.5
160M/L	37	15X19	2-M32X1.5	290	290	320	640	M16	35	42	14.2	1.5
180M/L	42.5	15X25	2-M32X1.5	355	455	360	670/710	M16	35	42	14.2	1.5
200	49	19X29	2-M32X1.5	375	475	360	710	M20	42	53	18.2	2

B34 OVERALL & INSTALLATION DIMENTION

Frame	H	B34								A	B	C	D	E	F	G	K	KK
		M	N	P	T	R	S	N	M									
56	56	Ø65	Ø50	Ø80	2.5	0	M5			90	71	36	Ø9	20	3	7.2	5.8X5.8	1-M16X1.5
63	63	Ø75	Ø60	Ø90	2.5	0	M5	Ø90	Ø100	100	80	40	Ø11	23	4	8.5	5.8X5.8	1-M16X1.5
71	71	Ø85	Ø70	Ø105	2.5	0	M6	Ø95	Ø115	112	90	45	Ø14	30	5	11	7X10	1-M20X1.5
80	80	Ø100	Ø80	Ø120	3.0	0	M6	Ø110	Ø130	125	100	50	Ø19	40	6	15.5	10X13	1-M20X1.5
90S	90	Ø115	Ø95	Ø140	3.0	0	M8	Ø110	Ø130	140	100	56	Ø24	50	8	20	10X13	1-M20X1.5
90L1/L2	90	Ø115	Ø95	Ø140	3.0	0	M8	Ø110	Ø130	140	125	56	Ø24	50	8	20	10X13	1-M20X1.5
100	100	Ø130	Ø110	Ø160	3.0	0	M8	Ø130	Ø165	160	140	63	Ø28	60	8	24	10X13	1-M20X1.5
112	112	Ø130	Ø110	Ø160	3.0	0	M8	Ø130	Ø165	190	140	70	Ø28	60	8	24	12X16	1-M25X1.5
132S	132	Ø165	Ø130	Ø200	3.0	0	M10	Ø180	Ø215	216	140	89	Ø38	80	10	33	12X16	1-M25X1.5
132M/L	132	Ø165	Ø130	Ø200	3.0	0	M10	Ø180	Ø215	216	178	89	Ø38	80	10	33	12X16	1-M25X1.5
132LC	132	Ø165	Ø130	Ø200	3.0	0	M10	Ø180	Ø215	216	178	89	Ø38	80	10	33	12X16	1-M25X1.5

Frame	B34B				AC	AD	AA	L	SS	XX	ZZ	CC	Y
	P	T	R	S									
56	0	0	0	0	Ø120	156/151	110	195	M3	8	12	2.5	0.5
63	Ø120	3.0	0	M6	Ø130	173/169	120	230	M4	10	15	3.3	0.8
71	Ø140	3.0	0	M8	Ø145	188/184	132	260	M5	12	18	4.2	0.8
80	Ø160	3.5	0	M8	Ø165	217/212	160	295	M6	16	22	5	1
90S	Ø160	3.5	0	M8	Ø185	235/230	175	315	M8	20	25	6.8	1
90L1/L2	Ø160	3.5	0	M8	Ø185	235/230	175	335/365	M8	20	25	6.8	1
100	Ø200	3.5	0	M10	Ø205	252/247	196	400	M10	22	28	8.5	1.5
112	Ø200	3.5	0	M10	Ø230	292/284	220	400	M10	22	28	8.5	1.5
132S	Ø250	4.0	0	M12	Ø270	325/317	252	440	M12	28	34	10.2	1.5
132M/L	Ø250	4.0	0	M12	Ø270	325/317	252	480/500	M12	28	34	10.2	1.5
132LC	Ø250	4.0	0	M12	Ø270	325/317	252	530	M12	28	34	10.2	1.5



ALUMINIUM HOUSING

AC SERIES

ASYNCHRONOUS THREE-PHASE BRAKE MOTORS WITH SQUIRREL CAGE ROTOR - DIRECT CURRENT BRAKE

AC series-enclosed construction externally ventilated-sizes 63-160.

The brake motors of the AC series result from coupling an asynchronous three-phase motor and an electromagnetic D.C. Brake Unit.

Due to their reliability and operating safety as well as their quick braking time (connection & disconnection time = 5/80 milliseconds) they are suitable for a great variety of application, as :

- Braking of loads or torques on the driving shaft.
- Braking of rotating masses to reduce and lost-time.
- Braking operations to increase the set-up precision.
- Braking of machine parts, according to safety rules

AC SERIES TECHNICAL DATA AT 380V 50Hz

TYPE	Rated Output (KW)	Speed (r/min)	Eff (%)	Power Factor	- Rated Current (A)			Tst/Tn (Times)	Tmax/Tn (Times)	Tmin/Tn (Times)	Ist/In	Noise dB (A)
					230V	400V	690V					
MSEJ631-2	0.18	2710	63	0.75	0.95	0.55	0.32	2.2	2.4	1.6	6	61
MSEJ632-2	0.25	2710	65	0.78	1.23	0.71	0.41	2.2	2.4	1.6	6	61
MSEJ633-2	0.37	2710	65	0.78	1.82	1.05	0.61	2.2	2.4	1.6	6	62
MSEJ711-2	0.37	2730	70	0.79	1.67	0.97	0.56	2.2	2.4	1.6	6	64
MSEJ712-2	0.55	2730	71	0.79	2.45	1.42	0.82	2.2	2.4	1.6	6	64
MSEJ713-2	0.75	2730	72	0.82	3.18	1.83	1.08	2.2	2.4	1.5	6	65
MSEJ801-2	0.75	2770	73	0.84	3.06	1.77	1.02	2.2	2.4	1.5	6	67
MSEJ802-2	1.1	2770	76	0.83	4.35	2.51	1.45	2.2	2.4	1.5	6	67
MSEJ803-2	1.5	2800	78	0.83	5.87	3.32	1.92	2.2	2.4	1.5	6	70
MSEJ90S-2	1.5	2840	78	0.84	5.76	3.28	1.90	2.2	2.4	1.5	6	72
MSEJ90L1-2	2.2	2840	81	0.85	8.0	4.61	2.66	2.2	2.4	1.4	6	72
MSEJ90L2-2	3.	2840	82	0.86	10.56	6.10	3.52	2.2	2.4	1.4	6	74
MSEJ100L1-2	3	2840	82	0.87	10.44	6.03	3.48	2.2	2.3	1.4	7	76
MSEJ100L2-2	4	2850	84	0.87	13.65	7.88	4.55	2.2	2.3	1.4	7.5	77
MSEJ112M-2	4	2880	84	0.87	13.65	7.88	4.55	2.2	2.3	1.4	7.5	77
MSEJ112L-2	5.5	2880	85	0.88	18.23	10.53	6.08	2.2	2.3	1.2	7.5	78
MSEJ132S1-2	5.5	2900	85	0.88	18.23	10.53	6.08	2	2.2	1.2	7.5	80
MSEJ132S2-2	7.5	2920	87	0.88	24.49	14.14	8.16	2	2.2	1.2	7.5	80
MSEJ132M1-2	9.2	2930	88	0.89	29.87	17.25	9.96	2	2.2	1.2	7.5	81
MSEJ132M2-2	11	2930	88	0.9	34.57	19.96	11.52	2	2.2	1.2	7.5	83
MSEJ160M1-2	11	2940	88	0.9	34.57	19.96	11.52	2	2.2	1.2	7.5	86
MSEJ160M2-2	15	2940	88	0.91	46.09	26.61	15.36	2	2.2	1.2	7.5	86
MSEJ160L-2	18.5	2940	90	0.91	56.47	32.6	18.82	2	2.2	1.1	7.5	86

AC SERIES TECHNICAL DATA AT 380V 50Hz

TYPE	Rated Output (KW)	Speed (r/min)	Eff (%)	Power Factor	- Rated Current (A)			Tst/Tn (Times)	Tmax/Tn (Times)	Tmin/Tn (Times)	Ist/In	Noise dB (A)
					230V	400V	690V					
MSEJ631-4	0.12	1350	57	0.64	0.82	0.47	0.27	2.2	2.4	1.7	6	52
MSEJ632-4	0.18	1350	59	0.65	1.17	0.68	0.39	2.2	2.4	1.7	6	52
MSEJ633-4	0.25	1350	60	0.66	1.58	0.91	0.53	2.2	2.4	1.7	6	54
MSEJ711-4	0.25	1350	60	0.72	1.45	0.84	0.48	2.2	2.4	1.7	6	55
MSEJ712-4	0.37	1370	65	0.74	1.92	1.11	0.64	2.2	2.4	1.7	6	55
MSEJ713-4	0.55	1380	66	0.75	2.78	1.60	0.93	2.2	2.4	1.7	6	57
MSEJ801-4	0.55	1370	67	0.75	2.74	1.58	0.91	2.2	2.4	1.7	6	58
MSEJ802-4	0.75	1380	72	0.78	3.34	1.93	1.11	2.2	2.4	1.6	6	58
MSEJ803-4	1.1	1390	76	0.78	4.63	2.67	1.54	2.2	2.4	1.6	6	60
MSEJ90S-4	1.1	1400	76	0.79	4.57	2.64	1.52	2.2	2.4	1.6	6	61
MSEJ90L-4	1.5	1400	78	0.8	5.97	3.54	1.99	2.2	2.4	1.6	6	61
MSEJ90L2-4	2.2	1400	81	0.8	8.45	4.90	2.83	2.2	2.4	1.5	7	63
MSEJ100L1-4	2.2	1420	81	0.81	8.38	4.84	2.79	2.2	2.3	1.5	7	64
MSEJ100L2-4	3	1420	82	0.81	11.21	6.47	3.74	2.2	2.3	1.5	7	64
MSEJ100L3-4	4	1430	84	0.82	14.18	8.36	4.83	2.2	2.3	1.5	7	65
MSEJ112M-4	4	1430	84	0.83	14.31	8.26	4.77	2.2	2.2	1.5	7	65
MSEJ112L-4	5.5	1440	85	0.83	19.33	11.16	6.44	2.2	2.2	1.4	7	68
MSEJ132S-4	5.5	1450	85	0.84	19.1	11.03	6.37	2.2	2.2	1.4	7	71
MSEJ132M-4	7.5	1450	87	0.85	25.35	14.64	8.45	2.2	2.2	1.4	7	71
MSEJ132L1-4	9.2	1460	87	0.85	30.92	17.85	10.31	2.2	2.2	1.4	7	74
MSEJ132L2-4	10	1460	88	0.85	33.42	19.3	11.14	2.2	2.2	1.4	7.5	74
MSEJ132L3-4	11	1460	88	0.86	36.17	20.88	12.06	2.2	2.2	1.4	7.5	74
MSEJ160M-4	11	1460	88	0.87	35.76	20.64	11.92	2.2	2.2	1.4	7.5	75
MSEJ160L-4	15	1460	88	0.87	48.76	28.15	16.25	2.2	2.2	1.4	7.5	75

AC SERIES TECHNICAL DATA AT 380V 50Hz

TYPE	Rated Output (KW)	Speed (n/min)	Eff (%)	Power Factor	- Rated Current (A)			Tst/Tn (Times)	Tmax/Tn (Times)	Tmin/Tn (Times)	Ist/In	Noise dB (A)
					230V	400V	690V					
MSEJ631-6	0.09	840	42	0.61	0.88	0.51	0.29	2	2	1.5	3.5	50
MSEJ632-6	0.12	850	45	0.62	1.08	0.62	0.36	2	2	1.5	3.5	50
MSEJ711-6	0.18	880	56	0.66	1.22	0.70	0.41	1.6	1.7	1.5	4	52
MSEJ712-6	0.25	900	59	0.7	1.51	0.87	0.50	2.1	2.2	1.5	4	52
MSEJ713-6	0.37	890	61	0.69	2.2	1.27	0.73	2	2.1	1.5	4	54
MSEJ801-6	0.37	900	62	0.7	2.13	1.23	0.71	1.9	1.9	1.5	4	56
MSEJ802-6	0.55	900	67	0.72	2.85	1.65	0.95	2	2.3	1.5	4	56
MSEJ803-6	0.75	900	68	0.72	3.83	2.21	1.28	2	2.3	1.5	4	58
MSEJ90S-6	0.75	920	69	0.72	3.77	2.18	1.26	2.2	2.2	1.5	5.5	59
MSEJ90L-6	1.1	925	72	0.73	5.23	3.02	1.74	2.2	2.2	1.3	5.5	59
MSEJ100L-6	1.5	945	74	0.76	6.67	3.85	2.22	2.2	2.2	1.3	6	61
MSEJ112M-6	2.2	955	78	0.76	9.28	5.36	3.09	2.2	2.2	1.3	6	64
MSEJ132S-6	3	960	79	0.76	12.49	7.21	4.16	2	2	1.3	6.5	64
MSEJ132M1-6	4	960	80	0.76	16.35	9.44	5.45	2	2	1.3	6.5	68
MSEJ132M2-6	5.5	960	83	0.77	21.51	12.42	7.17	2	2	1.3	6.5	68
MSEJ132L-6	7.5	960	85	0.77	28.65	16.54	9.55	2	2	1.3	6.5	68
MSEJ160M-6	7.5	960	86	0.8	27.25	45.73	9.08	2	2	1.3	6.5	68
MSEJ160L-6	11	960	87	0.79	39.78	22.97	13.26	2	2	1.2	6.5	73

TYPE	Brake Type k	Brake Torque Nm	Brake Rated Power W	J Brake Pd' kgm²	No. of Starts/Hr Under no load	Delayed Cut-in Time Msec.	Quick Cut-in Time Msec.	Cut Out Time Msec.	Noise dB(A)
MSEJ 63	K1	6	15	0.00005	3000	45	20	10	50
MSEJ 71	K2	6	20	0.00014	3000	50	30	15	52
MSEJ 80	K3	12	25	0.00021	1300	55	30	15	56
MSEJ 90S	K4	20	30	0.00039	1100	65	40	15	59
MSEJ 90S	K4D	23	30	0.00078	1100	65	40	15	59
MSEJ 90L	K4	20	30	0.00039	1100	65	40	15	59
MSEJ 90L	K4D	23	30	0.00078	1100	65	40	15	59
MSEJ 100L	K5	40	45	0.00104	900	75	45	20	61
MSEJ 100L	K6	46	50	0.00135	900	180	85	25	61
MSEJ 112MT	K5	40	45	0.00104	880	75	45	20	64
MSEJ 112M	K6	60	50	0.00135	880	180	85	25	64
MSEJ 132S	K7	90	55	0.00219	480	200	95	50	64
MSEJ 132S	K7D	125	55	0.00438	480	200	95	50	64
MSEJ 132M	K7	90	55	0.00219	450	200	95	50	68
MSEJ 132M	K7D	125	55	0.00438	480	200	95	50	68
MSEJ 160MT	K7D	180	55	0.00438	350	200	95	50	68
MSEJ 160L	K8	200	60	0.00408	350	210	100	60	73
MSEJ 160L	K8D	400	60	0.00816	350	210	100	60	73

ELECTROMAGNETIC DIRECT CURRENT BRAKE SERIES EJ

OPERATING PRINCIPLE

The direct current brake is fed by means of an electronic circuit with diode bridge (rectifier) situated inside the terminal-box. When feeding the electromagnet(5), the movable anchor(4) is attracted towards the same, thus loading the braking torque springs(9) and allowing the disk(2), equipped with friction packing and fitted on the groove hub (6) to turn solitarily the motor shaft(1) by means of a key (7).

By interrupting the feeling, the movable anchor(4), pushed by the braking torque springs(9), exerts a pressure upon the friction surface of the disk(2), thus causing its stopping.

ADJUSTMENT OF THE AIR GAP

The air gap (11) is the distance between the electromagnet(5) and the movable anchor (9).

The air gap has to be regularly checked, since due to the wear of the friction packing (2) it tends to increase.

Act on the brake adjusters (3) after having unloosen the screws (8) to bring the air gap to the required value.

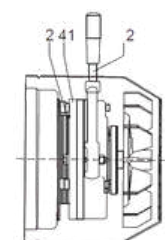
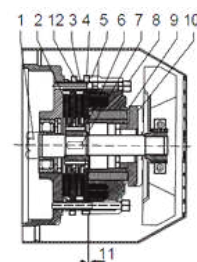
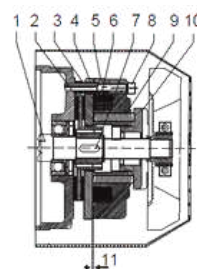
Act on the ring nut (10) which acts on the braking torque springs (9) to adjust the braking torque.

Pis. Contact our technical department for information on the air gap adjustment values.

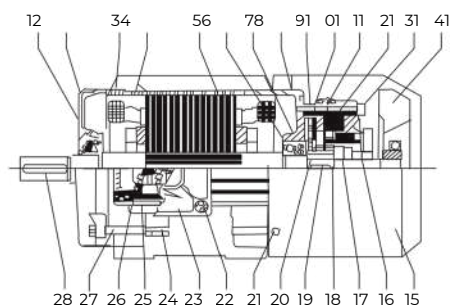
HANDRELEASE WITH LEVER

Upon request a hand release with lever can be supplied.

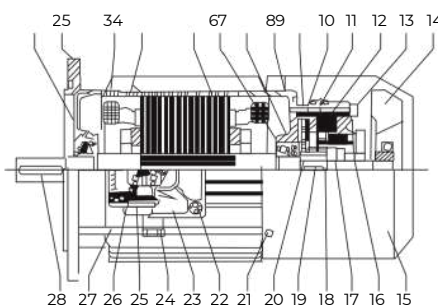
In case of a current cutoff, acting on the lever (12), the release, connected to the movable anchor (4) overcomes the springs pressure, thus detaching the movable anchor from the disc friction packing (2) allowing the shaft to turn.



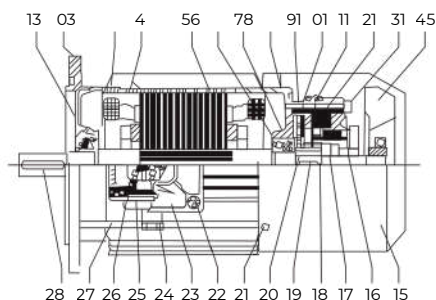
AC Brake Motors B3 63 ~ 112



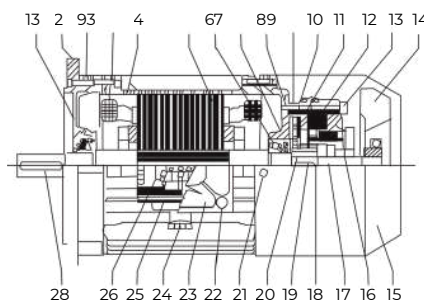
AC Brake Motors B3 132 ~ 160



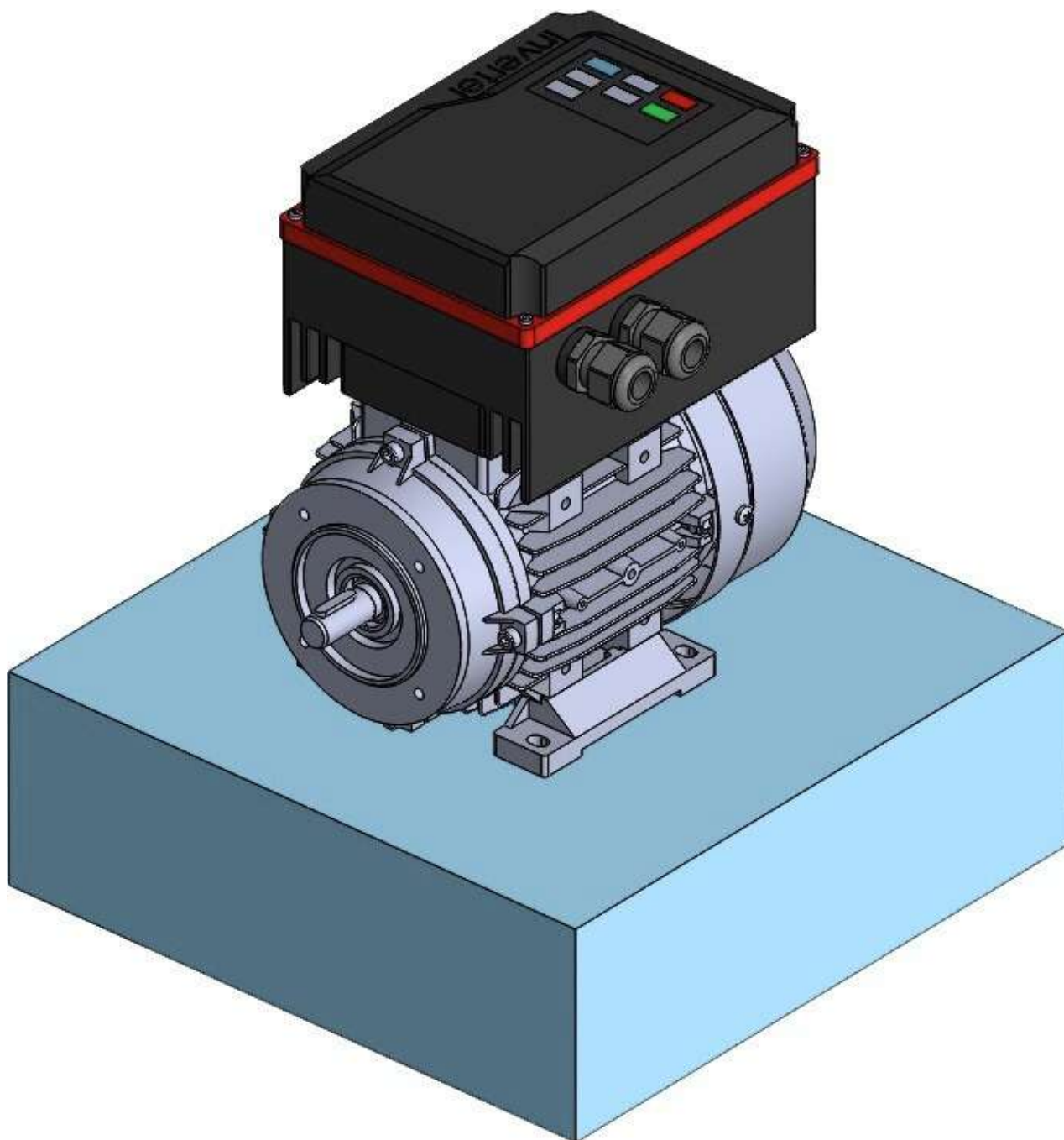
AC Brake Motors B5 63 ~ 112



AC Brake Motors B5 132 ~ 160



1. Front bearing
2. Front shield
3. Winding
4. Frame with stator package
5. Shaft with rotor
6. Rear bearing
7. Spring
8. Rear shield
9. Adjusting bush
10. Brake disc
11. Moving anchor
12. Electromagnet coil with diode
13. Fixing screws for brake
14. Cooling fan
15. Fan hood
16. Ring nut
17. Spring
18. See gearing
19. Key brake side
20. Toothed pinion
21. Fixing screw for fan hood
22. Fixing crew for terminal-box
23. Terminal-box
24. Cable gland
25. Seal
26. Terminal-block
27. Tie-bolt
28. Coupling side key
29. Fixing screw for shield
30. Flange shield



MOTOINVERTER

DECENTRALIZED MOTOR DRIVE

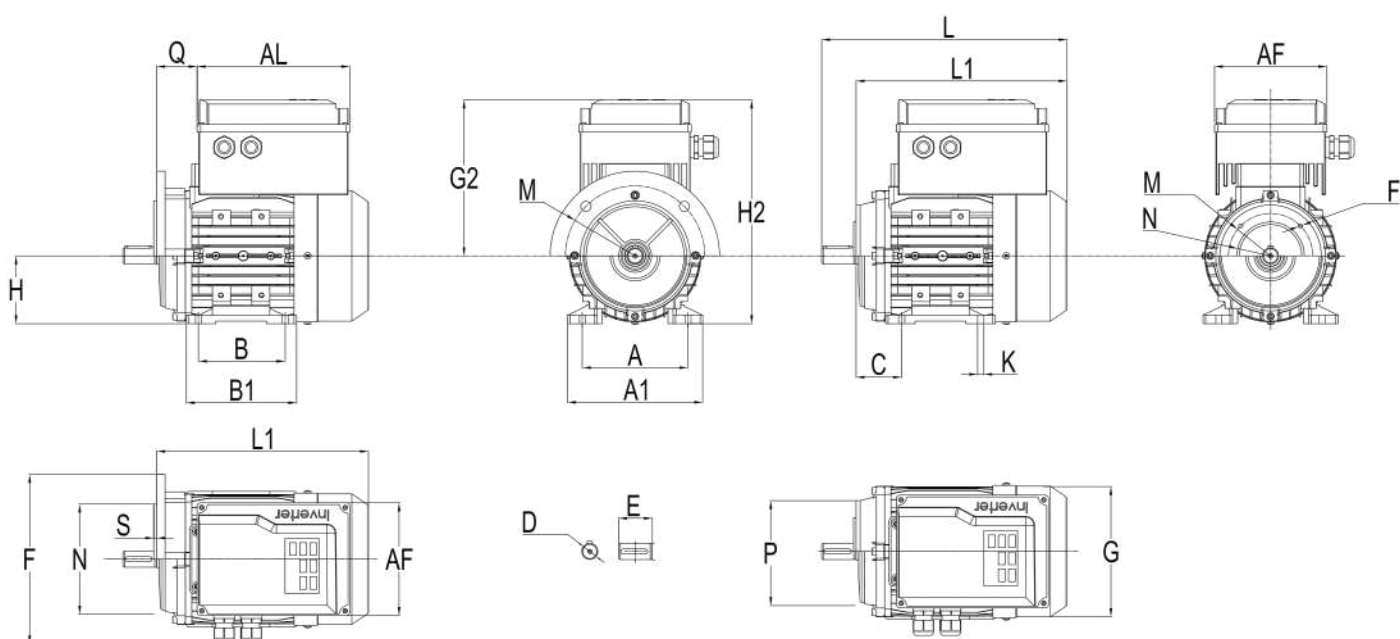
Single-phase **220V** power supply versions

Three-phase **380V** power supply versions

FEATURES

Multi-purpose inverter, suitable for common applications – Power up to 2.2 kW in single- or three-phase versions – IP65 inverter protection, motor IP55 (higher on request) – Aluminium motor, all mounting options: B3-B5-B14-B35-B34 – Forced ventilation on request – Fully programmable scalar V/f inverter, PID, MODBUS RS485 remote control – Output frequency 0–400 Hz – 150% overload for over 1 minute (constant torque) – Firmware programs for pump control – 3 digital inputs, 1 analog input (0–10 V, 0/4–20 mA) – 2 programmable onboard relays

DIMENSIONS



B3													
Gr. (H)	D	E	A	A1	B	B1	C	K	H2	G	G2	L	L1
63	11	23	100	120	80	101	40	7	230	125	167	203	180
71	14	30	112	135	90	112	45	7	245	140	174	245	215
80	19	40	125	152	100	124	50	9	265	160	185	276	236
90S	24	50	140	170	100	131	56	9	281	171	191	300	250
90L	24	50	140	170	125	156	56	9	281	171	191	325	275
100	28	60	160	192	140	164	63	12	300	197	200	370	310

B5							B14						
Gr. (H)	D	E	N	M	P	F	N	M	P	F	Q	AF	AL
63	11	23	95	115	140	9,5	60	75	90	M5	17	133	180
71	14	30	110	130	160	9,5	70	85	105	M6	24	133	180
80	19	40	130	165	200	11,5	80	100	120	M6	48	133	180
90S	24	50	130	165	200	11,5	95	115	140	M8	50	133	180
90L	24	50	130	165	200	11,5	95	115	140	M8	50	133	180
100	28	60	180	215	250	11,5	110	130	160	M8	46	133	180

CERTIFICATE OF COMPLIANCE

Certificate Number E522232
Report Reference E522232-20210520
Issue Date 2021-MAY-20

Issued to: CROSA s.a.s.
C.so Canale, 68, 12051 ALBA, ITALY

This certificate confirms that
representative samples of

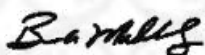
MOTORS FOR APPLIANCE APPLICATIONS -
COMPONENT
See Addendum page for models

Have been investigated by UL in accordance with the
component requirements in the Standard(s) indicated on
this Certificate. UL Recognized components are incomplete
in certain constructional features or restricted in
performance capabilities and are intended for installation in
complete equipment submitted for investigation to UL LLC.

Standard(s) for Safety: Standards for Rotating Electrical Machines - General
Requirements - UL 1004-1;
Standard for Motors and generators - CSA C22.2 No. 100-
14

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information.

This **Certificate of Compliance** does not provide authorization to apply the UL Recognized Component Mark. Only
the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.
Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified
and covered under UL's Follow-Up Services.
Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please
contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



CERTIFICATE OF COMPLIANCE

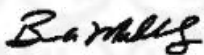
Certificate Number E522232
Report Reference E522232-20210520
Issue Date 2021-MAY-20

THIS IS TO CERTIFY THAT REPRESENTATIVE SAMPLES OF THE PRODUCT AS SPECIFIED ON THIS CERTIFICATE WERE TESTED ACCORDING TO THE CURRENT UL REQUIREMENTS.

Products Covered

Products Designation

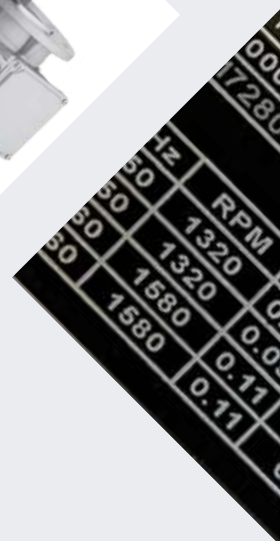
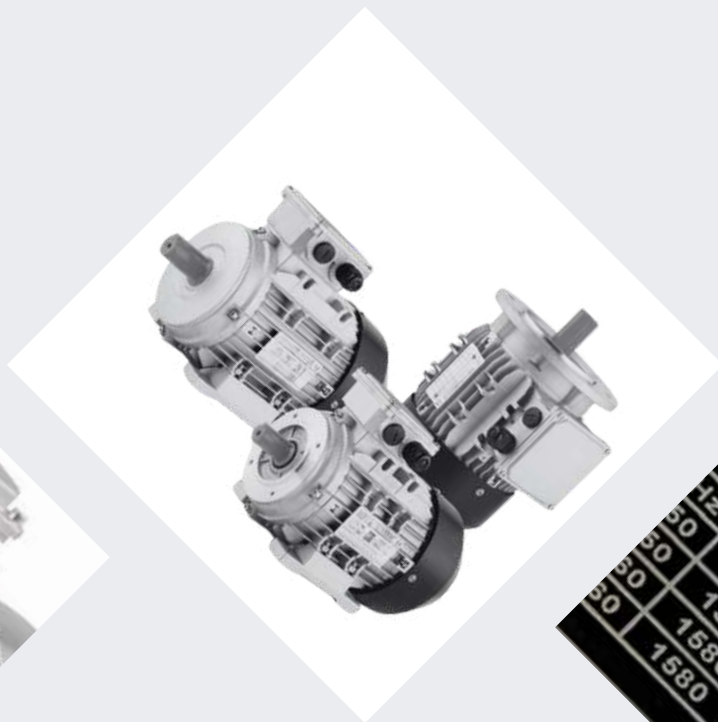
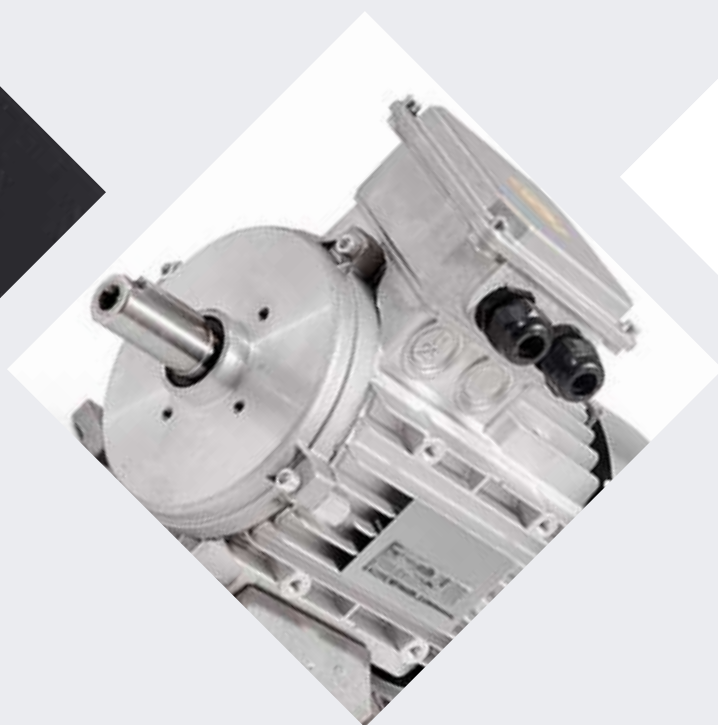
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Bruce Mahrenholz, Director North American Certification Program
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Corso Canale, 68 -12051 Alba (CN)



+39 0173 440136



info@crosa.it