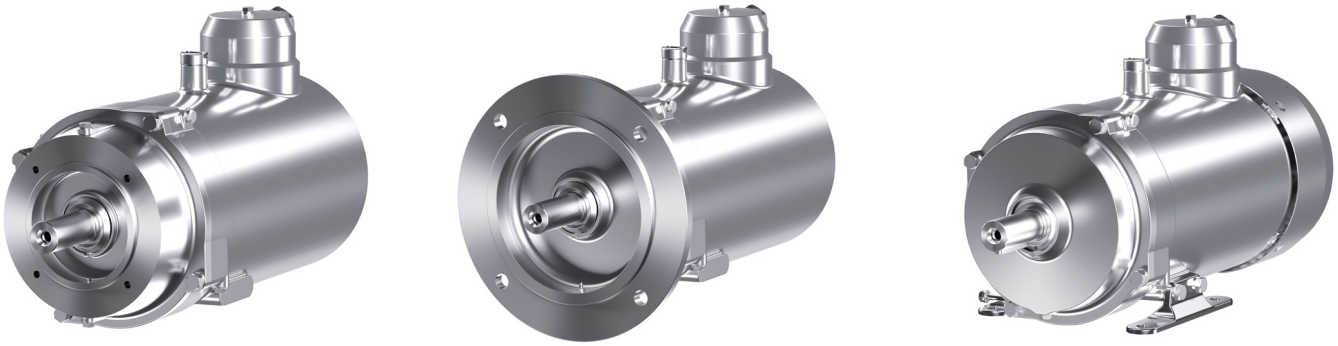
PRODUCT NOTE

IEC stainless steel encapsulated motors

Uncompromised hygiene, reliability and productivity



Sanitary design is the key feature of our stainless steel motor, engineered for the food and beverage industry fulfilling the hygienic design principals. This enables the food and beverage machinery to be effectively cleaned-in-place (CIP). The smoothly finished surface with laser engraved markings and self-draining design minimises the risk of micro-organisms to grow. The bearings are lubricated with H1 food grade grease, ensuring safe operations in food processing environments.

Reliable performance in extreme conditions
Stainless steel is the preferred material for food and beverage processes/operations, it is easy to clean and resistant to rust and corrosion. The IP69 rating provides ultimate protection against high pressure (100 bar) hot water (80°C) sprays at close range. The windings of this motor are fully encapsulated, providing long lifetime in extreme humid conditions.

Meeting the efficiency requirements around the world
The motor is available in IE3 premium efficiency class. The wide coverage of MEPS (Minimum Energy Performance Standards) around the world enable simple sourcing of motors from ABB. The motor is rated for different voltage and frequency variations including 50 Hz and 60 Hz.

Ideal for various food processing applications
Our stainless steel motor is a perfect solution for harsh industries like meat, poultry, fish, dairy, beverage and basically wherever high food safety is essential. We understand how costly production down time is to your bottom line, the features packed into this motor will prevent motor failures in the harshest conditions, thus improving your productivity by avoiding unwanted interruptions in the process. Downtime for maintenance, cleaning and equipment replacement is minimized. Productivity is maximized.

Contact us to let us know how we can help in your application or machinery.

Food safety and reliability	
IP69 protection	Withstands extreme washdown conditions
Encapsulated windings	Long lifetime in extreme humid conditions
H1 food grade grease	Safe operation in food processing environment
TENV cooling (80-90 frames)	Very easy to clean
IE3 efficiency	Lower operation costs and lower surface temperature

Technical data
IEC Stainless steel encapsulated motors

Output kW	Motor type	Product code	Cooling method	Speed r/min	Efficiency IEC60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor cos j	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD^2 kgm^2	Weight kg	Sound pressure level L_{PA} dB
3000 r/min = 2 poles				**400 V 50 Hz**									**CENELEC design**			
0,55	M3MA 80MA 2	3GMA081310-••B	IC410	2899	80,5	79,9	76,7	0,89	1,11	7,5	1,81	2,3	3,8	0,0034	23	50
0,75	M3MA 80MB 2	3GMA081320-••B	IC410	2891	84,6	84,7	82,3	0,88	1,45	7,7	2,48	2,3	3,7	0,00339	23	47
1,1	M3MA 80MC 2	3GMA081330-••B	IC410	2877	83,2	83,6	82,1	0,90	2,12	7,9	3,64	2,4	3,8	0,00328	23	47
1,5	M3MA 90MA 2	3GMA091310-••B	IC410	2903	88,3	89,0	88,2	0,91	2,71	8,7	4,93	2,6	4,3	0,0354	52	44
2,2	M3MA 90MB 2	3GMA091320-••B	IC410	2921	89,8	90,2	89,3	0,89	4,0	10,8	7,19	3,4	5,3	0,0354	52	44
3	M3MA 100LA 2	3GMA101510-••B	IC411	2905	88,9	89,2	87,8	0,92	5,34	9,1	9,86	2,7	4,3	0,0131	60,5	62
1500 r/min = 4 poles				**400 V 50 Hz**									**CENELEC design**			
0,37	M3MA 80MA 4	3GMA082310-••B	IC410	1456	81,3	79,4	74,0	0,68	0,98	7,6	2,47	3,9	5,4	0,0049	23	50
0,55	M3MA 80MB 4	3GMA082320-••B	IC410	1445	83,5	82,7	79,4	0,77	1,23	6,8	3,64	2,6	3,9	0,0059	23	50
0,75	M3MA 80MC 4	3GMA082330-••B	IC410	1436	83,4	82,6	79,0	0,76	1,7	7,5	5,0	3,4	4,5	0,0067	23	50
1,1	M3MA 90MA 4	3GMA092310-••B	IC410	1444	84,6	85,1	83,5	0,84	2,2	7,0	7,3	2,3	3,6	0,0375	48	44
1,5	M3MA 90MB 4	3GMA092320-••B	IC410	1437	86,5	87,5	86,9	0,87	2,8	6,5	9,97	1,9	3,2	0,0138	52	44
2,2	M3MA 100LA 4	3GMA102510-••B	IC411	1461	88,0	87,4	85,1	0,68	5,36	8,7	14,4	2,7	5,2	0,0178	57	62
3	M3MA 100LB 4	3GMA102520-••B	IC411	1465	88,3	87,8	85,5	0,67	7,24	9,0	19,6	2,8	4,9	0,0178	57	62
1000 r/min = 6 poles				**400 V 50 Hz**									**CENELEC design**			
0,37	M3MA 80MA 6	3GMA083310-••B	IC410	960	78,7	76,9	71,3	0,58	1,15	5,4	3,73	2,7	3,9	0,0129	23	47
0,55	M3MA 90MA 6	3GMA093310-••B	IC410	959	80,9	80,0	76,3	0,67	1,46	5,3	5,48	2,1	3,3	0,0117	48	44
0,75	M3MA 90MB 6	3GMA093320-••B	IC410	964	83,1	82,1	78,4	0,64	2,02	5,4	7,43	2,1	3,4	0,014	52	44
1,1	M3MA 90MC 6	3GMA093330-••B	IC410	959	82,5	81,9	78,8	0,66	2,91	5,4	11,0	2,1	3,4	0,014	52	44
1,5	M3MA 100LA 6	3GMA103510-••B	IC411	977	88,6	88,0	85,5	0,64	3,8	6,7	14,7	1,8	4,0	0,0181	58	62
3600 r/min = 2 poles				**460 V 60 Hz**									**CENELEC design**			
0,55	M3MA 80MA 2	3GMA081310-••B	IC410	3508	80,8	79,3	75,1	0,88	0,97	8,5	1,5	2,4	4,4	0,0034	23	50
0,75	M3MA 80MB 2	3GMA081320-••B	IC410	3504	77,0	75,2	70,1	0,87	1,28	8,9	2,04	2,4	4,4	0,00339	23	47
1,1	M3MA 80MC 2	3GMA081330-••B	IC410	3492	84,0	84,0	82,6	0,89	1,84	9,3	3	2,5	4,5	0,00328	23	47
1,5	M3MA 90MA 2	3GMA091310-••B	IC410	3513	85,5	85,4	82,7	0,9	2,71	9,8	4,08	2,7	4,9	0,0354	52	44
2,2	M3MA 90MB 2	3GMA091320-••B	IC410	3531	86,5	86,1	84,0	0,87	3,53	12,4	5,95	3,6	6,2	0,0354	52	44
3	M3MA 100LA 2	3GMA101510-••B	IC411	3516	88,5	87,7	85,2	0,91	4,69	10,7	8,15	3,0	5,1	0,0131	60,5	62
1800 r/min = 4 poles				**460 V 60 Hz**									**CENELEC design**			
0,37	M3MA 80MA 4	3GMA082310-••B	IC410	1758	81,6	78,9	73,3	0,64	0,9	8,5	2,04	4,3	6,4	0,0049	23	50
0,55	M3MA 80MB 4	3GMA082320-••B	IC410	1743	83,9	82,6	78,7	0,76	1,08	7,9	3,01	2,8	4,5	0,0059	23	50
0,75	M3MA 80MC 4	3GMA082330-••B	IC410	1748	85,5	84,0	80,3	0,72	1,58	8,6	5	3,7	5,3	0,0067	23	50
1,1	M3MA 90MA 4	3GMA092310-••B	IC410	1751	86,5	86,1	83,7	0,82	1,98	8,1	6	2,5	4,2	0,0375	48	44
1,5	M3MA 90MB 4	3GMA092320-••B	IC410	1745	86,5	86,6	85,0	0,85	2,51	7,6	8,21	2,1	3,7	0,0138	52	44
2,2	M3MA 100LA 4	3GMA102510-••B	IC411	1779	89,5	88,5	85,3	0,65	4,76	10,3	11,8	3,4	6,3	0,0178	57	66
3	M3MA 100LB 4	3GMA102520-••B	IC411	1771	89,5	88,3	85,3	0,66	6,43	10,3	16,2	3,1	5,8	0,0178	57	62
1200 r/min = 6 poles				**460 V 60 Hz**									**CENELEC design**			
0,37	M3MA 80MA 6	3GMA083310-••B	IC410	1172	79,2	76,5	70,5	0,57	1,05	5,9	3,07	2,8	4,5	0,0129	23	47
0,55	M3MA 90MA 6	3GMA093310-••B	IC410	1165	81,7	79,8	75,2	0,63	1,46	5,9	4,51	2,1	3,8	0,0117	48	44
0,75	M3MA 90MB 6	3GMA093320-••B	IC410	1168	82,5	80,5	75,7	0,61	1,85	5,9	6,13	2,2	4,0	0,014	52	44
1,5	M3MA 100LA 6	3GMA103510-••B	IC411	1180	88,5	87,2	83,9	0,62	3,38	7,5	12,1	1,9	4,7	0,0181	58	62

Product code - two bullets will be replaced with:

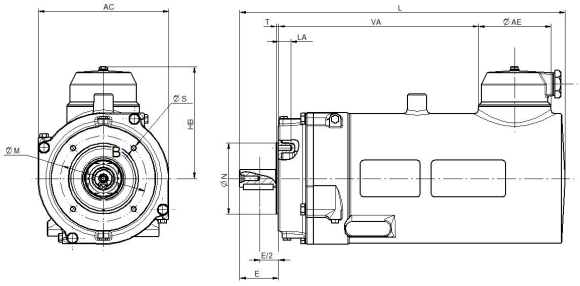
Mounting arrangement (position 12):
A = Foot-mounted, top-mounted terminal box - IM1001, B3 (frame size 100)
B = Flange-mounted, large flange - IM3001, B5 (frame sizes 80-100)
C = Flange-mounted, small flange - IM3601, B14 (frame sizes 80-100)

Voltage and frequency (position 13:
S = 230 VD, 400 VY, 220 VD, 380 VY, 50 Hz
440 VY, 460 VD, 60 Hz

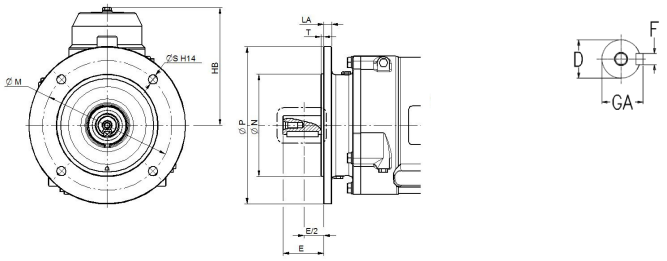
Dimension drawings

IEC stainless steel encapsulated motors, IEC 80-90

Flange-mounted B14



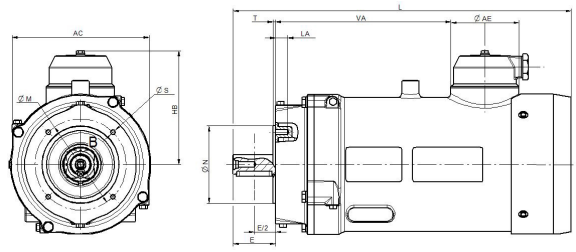
Flange-mounted B5



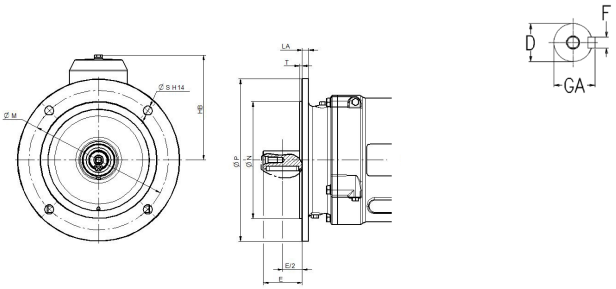
Motor size	AC	Ø AE	Ø D	DB	E	EG	F	G	GA	HB	L	VA	Flange-mounted B5 M	N	P	S	T	Flange-mounted B14 M	N	P	S	T
80	156	97	19	M6	40	19	6	15,5	21,5	140	354	247	156	130	200	14	3,5	100	80	120	M6	3
90	175	97	24	M8	50	19	8	20	27	149.5	435,5	268,5	165	130	200	14	3,5	115	95	140	M8	3

IEC stainless steel encapsulated motors, IEC 100

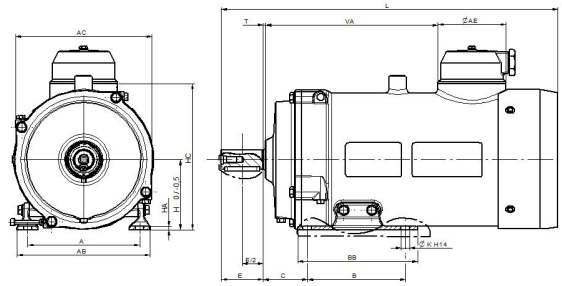
Flange-mounted B14



Flange-mounted B5



Foot-mounted B3

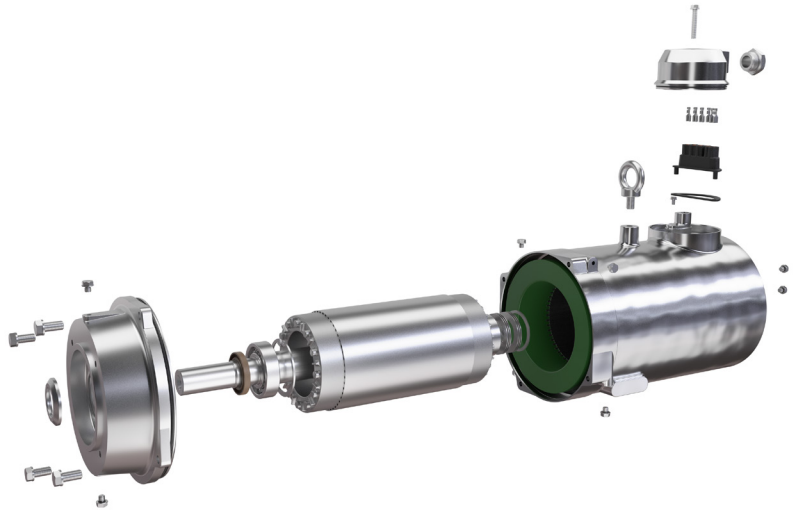


Motor size	AC	Ø AE	Ø D	DB	E	EG	F	G	GA	HB	L	VA B3	VA B5/B14	Flange-mounted B5 M	N	P	S	T	Flange-mounted B14 M	N	P	S	T
100	194,5	97	28	M10	60	22	8	24	31	161,6	480,5	249,5		215	180	250	14,5	4	130	110	159	M8	3,5

Motors in brief

Size	M3MA	80	90	100
Stator frame, shaft	Material	Stainless steel AISI 304		
Bearings	D-end	6205-2Z	6206-2Z	6206-2Z
	N-end	6204-2Z	6205-2Z	6205-2Z
		Heat stabilized bearings, withstand wide temperature range -20°C to +150°C		
Axially locked bearings	Retaining ring	Locked at D-end		
Bearing seals	D- and N-end	Seal on D-end, Gamma-ring externally and radial seal internally		
Lubrication		Permanently lubricated shielded bearing with H1 grease		
Measuring nipples for conditioning monitoring		Not included		
Fan		No fan	No fan	Nylon
Cooling		TENV / IC410	TENV / IC410	TEFC / IC411
Rating plate		Laser engraved on the frame		
Terminal box	Material	Stainless steel AISI 304		
Connections		Suitable for M25 x 1.5 IP69 cable gland		
Stator winding		Encapsulated winding with epoxy resin Elantron MC622-W58		
Rotor	Material	Die-cast aluminum		
Balancing method		Half-key balancing		
Keyway		Closed keyway		
Lifting lugs		No	Removable lifting lug kit included	
Drain holes		Drain holes closed upon high pressure water cleaning, plugged with stainless steel screws		
Enclosure		IP 69K		

Designed for ultimate reliability in extreme conditions



- Heat stabilized bearings with H1 food grade grease
- Windings encapsulated with epoxy resin - environmental protection against water and humidity
- Rotatable terminal box cover allows to adjust cable exit in all directions
- Suitable for cable gland and various types of IP69 connectors
- Drain water large channels guarantee effective and easy cleaning
- Squirrel cage rotor technology for IE3 efficiency
- Stainless steel AISI 304 frame and hygienic design
- Water drain holes suitable for horizontal and vertical mounting

abb.com/motors&generators
abb.com/food-beverage

9AKK107257 EN 03-2018