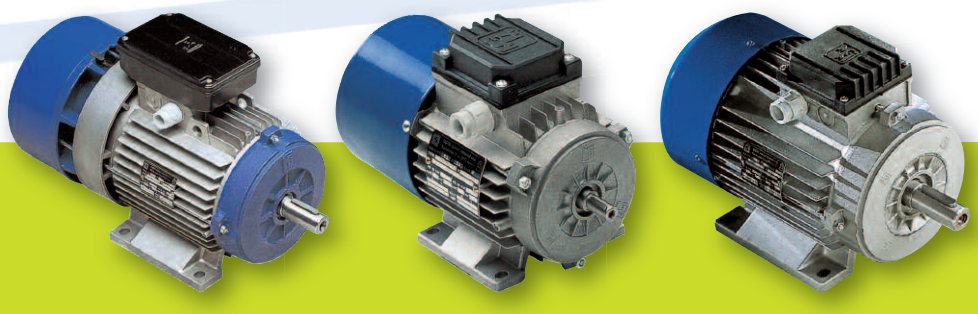


General Characteristics

BAX-BA SERIES
- Brake Motors
- IEC Metric Motors from 71 to 315 frame size
- Motors with NEMA dimensioned shafts and flanges available
- BAX Series comply with IE3 (Premium) efficiency class
- Totally Enclosed Fan Cooled (TEFC)
- IP54 enclosure (IP55 and IP56 on request)
- F class insulation (H class on request)
- AC or DC Brake
- Very high brake torque
- Heavy Duty Cycle
- Low Maintenance
- Aluminum frame up to 132 frame size, cast iron from 160 to 280 frame size
- Cast iron flanges starting from 100 frame size
- Screw in style brake release
- Hex hole on nondrive shaft end for manual rotation (on request starting from 160 frame size)
- cCSAus approval (mark) on request

BMX-BM SERIES
- Brake Motors
- IEC Metric Motors from 56 to 225 frame size
- Motors with NEMA dimensioned shafts and flanges available
- BMX Series comply with IE3 (Premium) efficiency class
- Totally Enclosed Fan Cooled (TEFC)
- IP54 enclosure (IP55 and IP56 on request)
- F class insulation (H class on request)
- DC Brake
- Low noise brake
- Aluminum frame up to 132 frame size, cast iron from 160 to 225 frame size
- Cast iron flange starting from 100 frame size
- cCSAus approval (mark) on request

SMX-SM SERIES
- AC Three phase squirrel cage induction motors
- IEC Metric Motors from 56 to 280 frame size
- Motors with NEMA dimensioned shafts and flanges available
- SMX Series comply with IE3 (Premium) efficiency class
- Totally Enclosed Fan Cooled (TEFC)
- IP55 enclosure (IP56 on request)
- F class insulation (H class on request)
- Aluminum frame up to 132 frame size, cast iron from 160 to 225 frame size
- Cast iron flange starting from 100 frame size
- cCSAus approval (mark) on request

The following options are also available:
- High moment of inertia Flywheel for traversing - PV (BAPV, BMPV Series)
- Forced Cooling - SV, - AV (BASV, BMAV, SMAV Series)
- Built-in Encoder - E (BAE, BME, SME Series)

Please refer to MGM general catalog for further technical details.

EFFICIENCY

International standard IEC 60034-30-1 defines efficiency classes through the code "IE" followed by a number.

IE1 (standard efficiency)
IE2 (high efficiency)
IE3 (premium efficiency)
IE4 (super premium efficiency)

Commission Regulation 640/2009 (amended by regulation 4/2014), currently in force in Europe determines motors minimum efficiency levels and it applies to squirrel cage induction motors with single speed (2, 4, and 6 poles), three-phase 50Hz or 60Hz, power from 0.75 kW up to 375 kW, nominal voltage up to 1000 V and working on continuous duty (S1).

From 1 January 2017, motors covered by this regulation must have a minimun efficiency class of IE3, or minimun IE2 if they are driven by an inverter (VFD).

SMX induction motors have IE3 efficiency level and comply with the European regulation.

Some motor categories such as brake motors and double speed motors are exempted from this regulation.
BAX and BMX Series is also available with IE3 efficiency level even if not required by the European regulation.

BAX and BMX Series motors are recommended where continuous duty is required with prolonged operation in order to allow an effective energy savings. The increased purchasing price for IE3 efficiency class motors quickly recovered due to the total saving in energy cost.

For a quick calculation of the annual money saving using a motor with an efficiency (eff_a) instead of a motor with an efficiency (eff_b) with the same rated power you can consider the following formula:

Annual money saving = Hyear x kW x %FL x Costkwh x ($1/eff_a - 1/eff_b$)

Hyear = annual motor running (hours)
kW = motor rated power (kW)
% FL = fraction of full load power at which motors effectively run
Costkwh = electricity cost
eff_a = motor 'a' efficiency (%) at the effective load condition / 100
eff_b = motor 'b' efficiency (%) at the effective load condition / 100

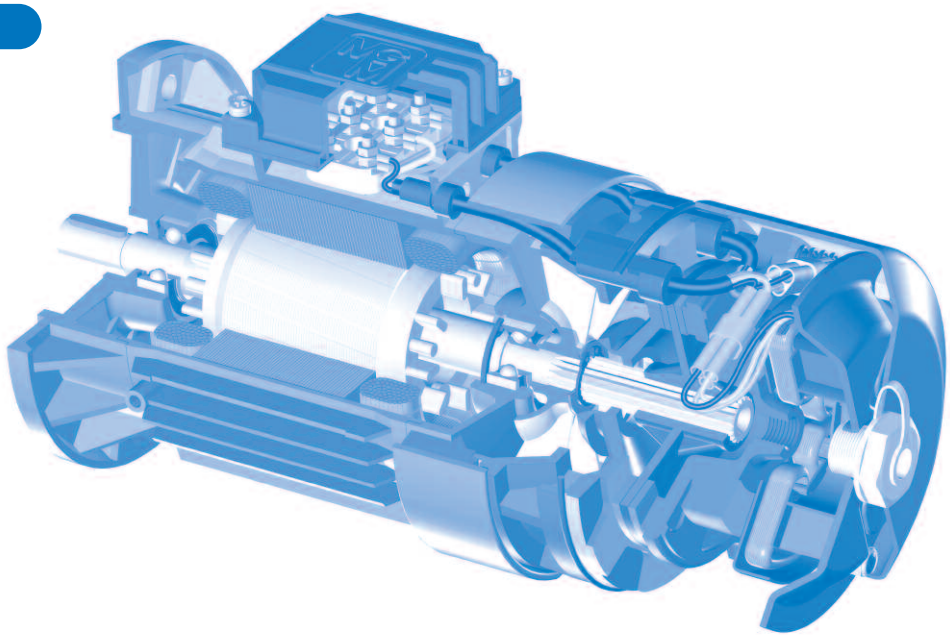
Higher motor efficiency doesn't necessarily turn out in a significant energy saving for intermittent duty applications, frequent starts and stop or short operation times.
BAX and BMX Series IE3 (premium) efficiency motors have a moment of inertia greater than the equivalent motors in the BA and BM Series. Therefore BA and BM Series are recommended for applications with high starts and stops frequency.

BAX, BMX and SMX Series motors maintain the same dimensions as BA, BM and SM Series motors.

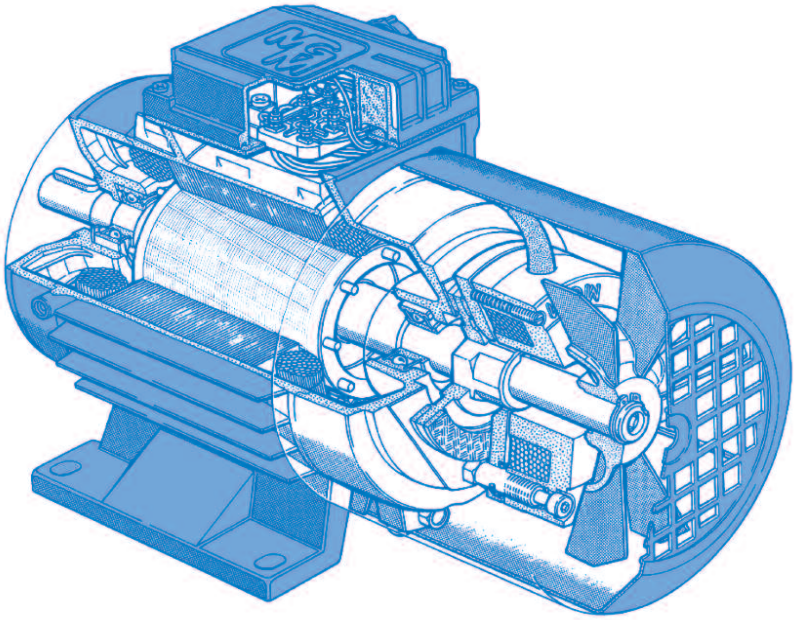
Motor Efficiency regulations are different for each country with regards to minimum efficiency level, exclusions and deadlines.

As regulations are subject to changes please contact MGM technical department for most updated information about efficiency regulations.

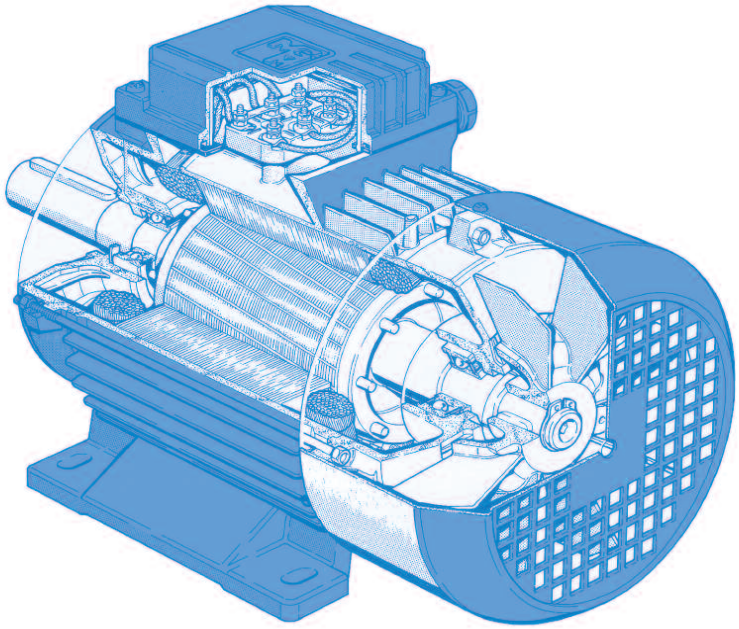
BAX-BA Series



BMX-BM Series



SMX-SM Series

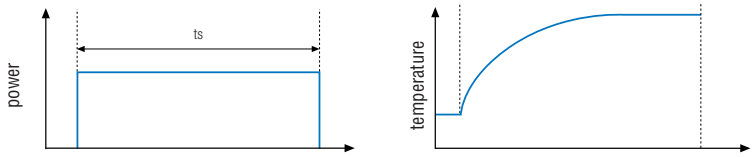


Service Duty Types

The most common duty types are described in this paragraph and a method to calculate the permissible power rise-up is given. Please contact MGM for different types of duty.

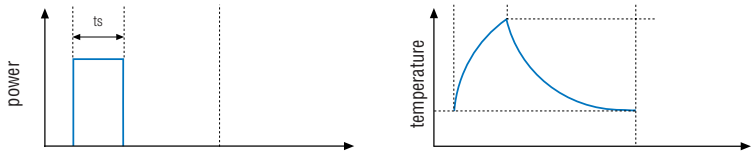
Continuous duty S1

The motor operates with constant load for a period of time sufficient to achieve the thermal equilibrium.



Limited length duty S2

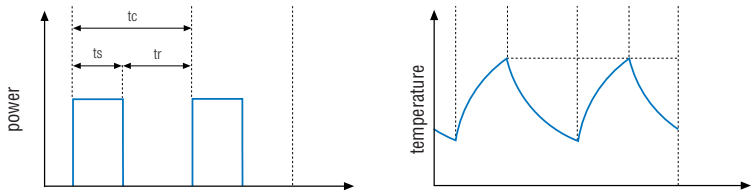
The motor operates with constant load for a limited period of time not sufficient to achieve a thermal equilibrium. The remaining period of the cycle is a rest period, during which the motor cools down to the ambient temperature again.



Periodic intermittent duty S3

The motors follows a cycle including an operation period with constant load (ts) and a rest period (tr). The synthetic indication of the duty is given by the intermittent percentage ratio related to a period of time, which usually is 60 min. (f.e. 15% - 60 min.)

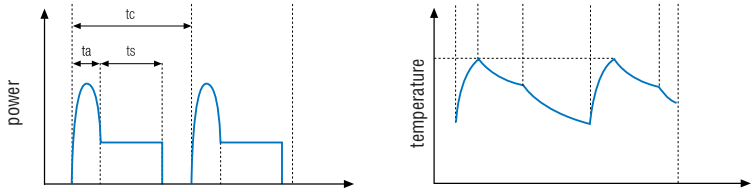
$$\text{Intermittence ratio} = \frac{ts}{ts + tr} \cdot 100\%$$



Periodic intermittent duty with starting S4

The motor operates on identical cycles, significant start-up time (ta) and a period with a constant load (ts). The motor rests on the remainder of the cycle time (tr). Intermittent duty means that no thermal equilibrium is reached during the operating part of the cycle.

The proper indication for this cycle is S4 followed by the intermittent duty ratio, by the motor moment of inertia (J_M) and by the load moment of inertia (J_{ext}), with the latter two referred to the motor shaft. S4 Intermittent duty power temperature.



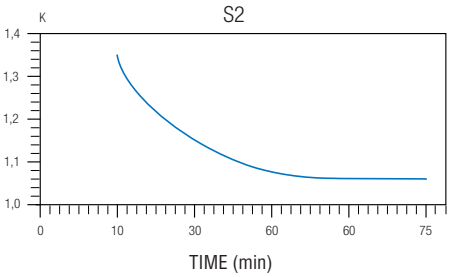
Example: S4 25 % J_M = 0,15 kgm^2 J_{ext} = 0,7 kgm^2

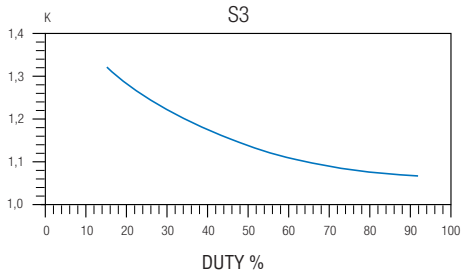
Intermittent duty ratio = (ta + ts) / tc

In case of limited length duty (S2) or periodic intermittent duty (S3) you can obtain an increased power than that achieved in a continous duty due to the reduced motor warming; starting torque remains unchanged. As an indication for the single speed motors you can use the following formula:

Available Power = K • Rated power

Where "K" is a coefficient obtainable from the diagrams on the right side.





Motor type	2 pole kW	4 pole kW	6 pole kW	8 pole kW	2 / 4 pole kW	4 / 8 pole kW	2 / 6 pole kW	2 / 8 pole kW	4 / 6 pole kW	4 / 12 pole kW S3 40%	2 / 12 pole kW S3 40%	4 / 16 pole kW S4 40% - 4 pole S4 25% - 16 pole
56 A	0.09	0.06	0.04									
56 B	0.12	0.09	0.06									
63 A	0.18	0.12										
63 B	0.25	0.18			0.22/0.15							
63 C	0.37	0.22	0.09		0.26/0.17			0.18/0.04				
63 D	0.45	0.30	0.12	0.07								
71 A	0.37	0.25	0.18	0.08	0.25/0.18	0.13/0.07						
71 B	0.55	0.37	0.25	0.11	0.37/0.25	0.18/0.09	0.25/0.08	0.25/0.06				
71 C	0.75	0.55				0.22/0.12	0.35/0.1	0.35/0.07	0.18/0.11			
71 D		0.65										
80 A	0.75	0.55	0.37	0.18	0.65/0.45	0.25/0.18	0.37/0.12	0.37/0.09	0.25/0.18	0.25/0.05		
80 B	1.1	0.75	0.55	0.25	0.88/0.62	0.37/0.25	0.55/0.18	0.55/0.12	0.37/0.25	0.37/0.07	0.45/0.07	
80 C		0.90										
90 SA	1.5	1.10	0.75	0.37		0.75/0.37	0.9/0.3		0.55/0.37	0.4/0.13		
90 SB					1.3/0.9			0.75/0.18			0.75/0.11	
90 LA	2.2	1.50	1.10	0.55	1.8/1.2		1.2/0.4	1.1/0.25		0.55/0.18	1.1/0.15	
90 LB		1.85	1.30	0.65	2.2/1.5	1.1/0.6	1.4/0.5	1.3/0.3	0.75/0.55	0.75/0.22		
90 LC		2.2										
100 LA	3.0	2.2	1.50	0.75	2.2/1.5		1.6/0.6	1.6/0.4	1.1/0.8	0.9/0.25		
100 LB		3.0	1.85	1.1	3.1/2.3	1.6/0.9	2.2/0.8	2.2/0.5	1.5/1.0	1.1/0.35	1.85/0.25	
112 MB	4.0	4.0	2.2	1.5	4.5/3.3	2.2/1.2	3.0/1.0	3.0/0.8	2.0/1.3	1.5/0.45	3.0/0.45	
112 MC	5.5	5.5										
132 SA	5.5									2.5/0.8		
132 SB	7.5	5.5	3.0	2.2	5.0/4.5	3.0/2.0	4.0/1.3	4.0/1.1	2.2/1.5		4.0/0.65	
132 MA	9.2	7.5	4.0		6.0/5.0	4.0/2.7	5.5/1.8	5.5/1.5	3.0/2.2	3.0/1.0	5.5/0.9	2.8/0.7
132 MB	11.0	9.2	5.5	3.0	7.5/6.0	6.0/4.0	7.0/2.2	7.0/1.8	3.7/2.5	4.0/1.3	7.0/1.1	4.0/1.1
132 MBX		11.0										
160 MA	11.0	9.2		4.0	9.5/8.0							5.5/1.3
160 MB	15.0	11.0	7.5	5.5	11.0/9.0	6.5/4.5	8.0/2.5	8.0/2.2	5.5/3.7	4.8/1.6	8.0/1.3	7.3/1.8
160 LA	18.5	15.0	9.2	7.5	13.0/11.0	9.5/6.0	11.0/3.6	11.0/3.0			11.0/1.8	
160 LB			11.0						7.5/5.0	7.3/2.4		10.0/2.5
180 LA	22.0	18.5			17.0/14.0	11.0/8.0			11.0/7.5			13.2/3.0
180 LB		22.0	15.0	11.0	20.5/17.0	14.0/9.0	16.0/6.5	16.0/4.0	13.0/8.8		16.0/2.6	
200 LA			18.5	15.0		18.0/11.0						
200 LB		30.0	22.0		24.0/20.0	21.0/13.0		18.5/4.5	15.0/10.5			16.0/4.0
225 S		37.0			37.0/30.0	30.0/18.0		24.0/6.0				19.0/4.8
225 M		45.0	30.0	22.0	45.0/35.0	35.0/25.0		30.0/7.5				24.0/6.0
225 MX		55.0	37.0									30.0/7.5
250 M		55.0	37.0	30.0		42.0/30.0						30.0/7.5
280 S		75.0	45.0	37.0		45.0/33.0						45.0/10.0
280 M		90.0	55.0	45.0		55.0/40.0						55.0/12.0
315 S		110.0	75.0	55.0								
315 M		132.0	90.0	75.0		86.0/58.0						

BAX-BMX-SMX

IE3 - 50 Hz

Series	Motor type	Power		RPM	In (A) 400V 50 Hz	Tn (Nm)	Ts/Tn	Is/In	100%		75%		50%	
		Hp	kW						Eff.	cos φ	Eff.	cos φ	Eff.	cos φ
2 pole - 3000 RPM														
BAX-BMX-SMX	80 A2	1.0	0.75	2845	1.55	2.52	4.3	7.5	80.7	0.81	81.0	0.75	79.0	0.62
BAX-BMX-SMX	80 B2	1.5	1.10	2870	2.40	3.66	4.3	7.5	82.7	0.81	83.0	0.73	80.9	0.58
BAX-BMX-SMX	90 SA2	2.0	1.50	2890	3.15	4.96	4.2	9.5	84.6	0.81	85.1	0.73	82.8	0.58
BAX-BMX-SMX	90 LA2	3.0	2.20	2870	4.50	7.32	4.2	9.7	85.9	0.83	86.4	0.75	84.1	0.60
BAX-BMX-SMX	100 LB2	4.0	3.00	2900	6.00	9.88	4.5	10.9	87.1	0.83	87.1	0.75	85.3	0.60
BAX-BMX-SMX	112 MC2	5.5	4.00	2945	7.80	13.00	4.6	10.9	88.1	0.84	88.1	0.76	86.3	0.61
BAX-BMX-SMX	132 SA2	7.5	5.50	2940	10.80	17.90	4.5	10.9	89.2	0.82	89.6	0.74	87.4	0.59
BAX-BMX-SMX	132 SB2	10.0	7.50	2940	14.25	24.40	4.5	10.9	91.0	0.82	91.3	0.76	89.6	0.64
BAX-BMX-SMX	160 MA2	15.0	11.0	2945	20.40	35.70	4.5	11.6	91.7	0.85	91.9	0.80	90.0	0.78
BAX-BMX-SMX	160 MB2	20.0	15.0	2950	26.90	48.60	4.6	11.8	91.9	0.89	92.0	0.85	90.7	0.80
BAX-BMX-SMX	160 LA2	25.0	18.5	2955	33.70	59.80	4.6	10.7	92.6	0.86	92.6	0.81	91.6	0.71
BAX-BMX-SMX	180 LA2	30.0	22.0	2955	38.10	71.10	4.6	11.0	92.7	0.90	92.7	0.87	91.7	0.81
BAX-BMX-SMX	200 LA2	40.0	30.0	2955	51.65	97.00	4.7	11.2	93.4	0.90	93.5	0.87	92.3	0.81
BAX-BMX-SMX	200 LB2	50.0	37.0	2955	62.70	119.60	4.7	11.2	93.9	0.91	94.0	0.85	92.1	0.80
4 pole - 1500 RPM														
BAX-BMX-SMX	80 B4	1.0	0.75	1415	2.00	5.06	3.3	5.8	82.5	0.67	82.8	0.60	81.2	0.47
BAX-BMX-SMX	90 SA4	1.5	1.10	1425	2.50	7.37	3.3	6.1	84.1	0.76	84.6	0.67	82.6	0.53
BAX-BMX-SMX	90 LA4	2.0	1.50	1430	3.30	10.00	3.5	6.3	85.3	0.78	85.8	0.69	83.8	0.55
BAX-BMX-SMX	100 LA4	3.0	2.20	1445	4.60	14.50	3.3	7.0	87.0	0.80	87.5	0.71	85.5	0.57
BAX-BMX-SMX	112 MB4	4.0	3.00	1455	6.60	19.70	3.4	7.0	87.7	0.75	87.8	0.66	85.8	0.52
BAX-BMX-SMX	112 MC4	5.5	4.00	1455	8.40	26.30	3.3	8.0	88.6	0.78	88.7	0.69	86.7	0.55
BAX-BMX-SMX	132 SB4	7.5	5.50	1457	11.10	36.00	3.1	7.8	89.6	0.80	90.0	0.71	89.3	0.57
BAX-BMX-SMX	132 MA4	10.0	7.50	1457	14.90	49.20	3.1	7.8	90.4	0.81	90.7	0.73	90.2	0.61
BAX-BMX-SMX	160 MB4	15.0	11.0	1470	21.20	71.50	3.8	9.1	91.4	0.78	91.6	0.71	91.0	0.59
BAX-BMX-SMX	160 LA4	20.0	15.0	1470	30.20	97.40	3.5	9.1	92.1	0.78	92.3	0.71	91.8	0.59
BAX-BMX-SMX	180 LA4	25.0	18.5	1475	37.10	119.80	3.5	9.1	92.6	0.78	92.6	0.72	91.6	0.59
BAX-BMX-SMX	180 LB4	30.0	22.0	1475	41.70	142.40	3.5	9.1	93.0	0.82	93.0	0.73	92.0	0.68
BAX-BMX-SMX	200 LB4	40.0	30.0	1475	53.20	194.20	3.3	9.0	93.6	0.87	93.7	0.78	91.6	0.73
BAHX-BMX-SMX	225 S4	50.0	37.0	1480	66.20	238.70	2.7	8.5	93.9	0.86	94.4	0.77	91.9	0.72
BAHX-BMX-SMX	225 M4	60.0	45.0	1480	79.30	290.40	2.8	8.8	94.2	0.87	94.7	0.78	92.2	0.73
BAHX-BMX-SMX	250 M4	75.0	55.0	1480	96.60	354.90	3.2	9.8	94.6	0.87	95.1	0.78	92.6	0.73
BAHX-BMX-SMX	280 S4	100.0	75.0	1488	136.40	481.30	2.4	8.0	95.4	0.83	95.5	0.79	95.0	0.69
BAHX-BMX-SMX	280 M4	120.0	90.0	1488	160.70	577.60	2.6	9.6	95.2	0.85	95.5	0.76	93.2	0.71
6 pole - 1000 RPM														
BAX-BMX-SMX	90 SA6	1.0	0.75	935	2.10	7.70	2.5	5.5	79.0	0.66	79.4	0.57	77.2	0.52
BAX-BMX-SMX	90 LA6	1.5	1.10	935	3.30	11.20	2.8	5.6	81.0	0.60	81.4	0.51	79.2	0.46
BAX-BMX-SMX	100 LA6	2.0	1.50	955	4.20	15.00	3.0	5.3	82.5	0.62	82.9	0.53	80.7	0.48
BAX-BMX-SMX	112 MC6	3.0	2.20	960	5.00	21.90	2.4	6.4	84.3	0.75	84.4	0.66	82.5	0.61
BAX-BMX-SMX	132 SB6	4.0	3.00	965	6.80	29.70	3.1	8.1	85.6	0.75	85.8	0.66	83.8	0.61
BAX-BMX-SMX	132 MA6	5.5	4.00	965	9.20	39.60	2.8	7.8	87.1	0.72	87.3	0.63	85.7	0.50
BAX-BMX-SMX	132 MB6	7.5	5.50	965	12.50	54.40	2.8	7.8	88.0	0.72	88.2	0.63	86.6	0.50
BAX-BMX-SMX	160 MB6	10.0	7.50	965	15.80	74.20	2.7	9.1	89.1	0.77	89.3	0.68	87.3	0.63
BAX-BMX-SMX	160 LB6	15.0	11.0	965	22.90	108.90	2.7	9.1	90.3	0.77	90.5	0.68	88.5	0.63
BAX-BMX-SMX	180 LB6	20.0	15.0	970	31.30	147.70	2.8	9.4	91.2	0.76	91.2	0.67	90.0	0.54
BAX-BMX-SMX	200 LA6	25.0	18.5	980	37.40	180.30	3.7	8.6	91.7	0.80	91.8	0.71	89.9	0.58
BAX-BMX-SMX	200 LB6	30.0	22.0	975	43.10	215.50	3.1	7.3	92.2	0.80	92.3	0.71	90.4	0.58
BAHX-BMX-SMX	225 M6	40.0	30.0	980	55.60	292.30	3.2	7.8	92.9	0.84	93.0	0.75	91.1	0.62
BAHX-BMX-SMX	250 M6	50.0	37.0	980	68.20	360.50	3.2	7.9	93.3	0.84	93.4	0.75	91.5	0.62
BAHX-BMX-SMX	280 S6	60.0	45.0	985	81.60	436.30	3.2	7.6	93.7	0.85	93.8	0.76	91.9	0.63
BAHX-BMX-SMX	280 M6	75.0	55.0	985	99.40	533.20	3.0	7.2	94.1	0.85	94.2	0.76	92.3	0.63

1. Induction motors covered by the EU efficiency regulation (rated power ≥ 0,75 kW) must have a minimum efficiency class of IE3 (or IE2 if they are driven by an inverter). Brake motors are exempted by this regulation.
2. Motor characteristic values reported in the tables refer ambient temperature max. 40 °C, altitude up to1000 m. above sea level operating conditions.
3. MGM Motori Elettrici S.p.A. has made every effort to make this data complete and accurate. Since products are continuously being improved, all data is subject to change or correction. The data presented here is for general information to provide an overview of MGM capabilities. For specific applications, installation and operating instructions, certified dimensions, capabilities and performance data, and pricing and availability, contact MGM staff.

IE1 - 50 Hz

Motor type	Power		RPM	In (A) 400V 50Hz	cos φ	Tn (Nm)	Ts/Tn	Is/In	Eff.
	Hp	kW							
2 pole - 3000 RPM									
BM-SM 56 A2	0.12	0.09	2820	0.38	0.60	0.30	3.0	3.8	59.3
BM-SM 56 B2	0.16	0.12	2760	0.40	0.69	0.42	3.0	3.8	53.5
BM-SM 63 A2	0.25	0.18	2800	0.60	0.71	0.61	3.0	3.5	60.3
BM-SM 63 B2	0.33	0.25	2800	0.75	0.76	0.85	3.5	5.0	64.7
BM-SM 63 C2	0.50	0.37	2760	1.00	0.80	1.26	2.5	3.8	69.0
BA-BM-SM 71 A2	0.50	0.37	2810	0.90	0.78	1.26	2.6	4.5	69.4
BA-BM-SM 71 B2	0.75	0.55	2810	1.40	0.78	1.87	2.6	4.5	72.0
BA-BM 71 C2 *	1.0	0.75	2810	1.8	0.80	2.55	2.5	4.5	73.2
BA-BM 80 A2	1.0	0.75	2800	1.7	0.86	2.56	3.1	5.3	74.0
BA-BM 80 B2	1.5	1.1	2800	2.4	0.86	3.75	3.1	5.3	76.5
BA-BM 90 SA2	2.0	1.5	2850	3.2	0.86	5.03	3.0	6.9	77.2
BA-BM 90 LA2	3.0	2.2	2840	4.5	0.86	7.40	3.0	6.9	79.7
BA-BM 100 LA2	4.0	3.0	2900	6.3	0.81	9.88	3.2	8.1	81.5
BA-BM 112 MB2	5.5	4.0	2880	8.1	0.84	13.26	2.5	7.4	83.1
BA-BM 112 MC2 *	7.5	5.5	2880	11.4	0.85	18.24	2.5	7.4	84.7
BA-BM 132 SA2	7.5	5.5	2890	10.8	0.86	18.17	2.8	7.4	84.7
BA-BM 132 SB2	10.0	7.5	2890	14.6	0.85	24.78	2.8	7.4	86.9
BA-BM 132 MA2 *	12.5	9.2	2890	17.9	0.85	30.40	2.8	7.4	86.9
BA-BM 132 MB2 *	15.0	11.0	2890	21.4	0.85	36.35	2.8	7.4	85.7
BA-BM 160 MA2	15.0	11.0	2920	19.5	0.94	35.98	3.0	8.8	88.0
BA-BM 160 MB2	20.0	15.0	2930	26.3	0.93	48.89	3.1	8.8	89.2
BA-BM 160 LA2	25.0	18.5	2930	32.4	0.93	60.30	3.1	8.8	89.4
BA-BM 180 LA2	30.0	22.0	2950	36.7	0.95	71.22	2.7	9.0	89.9

1. Motor characteristic values reported in the tables refer ambient temperature max. 40 °C, altitude up to1000 m. above sea level operating conditions.
2. MGM Motori Elettrici S.p.A. has made every effort to make this data complete and accurate. Since products are continuously being improved, all data is subject to change or correction. The data presented here is for general information to provide an overview of MGM capabilities. For specific applications, installation and operating instructions, certified dimensions, capabilities and performance data, and pricing and availability, contact MGM staff.
3. Efficiency data at 50% and 75% of the full load are avaible in the specific product documentation.
4. The international standard IEC 60034-30-1 doesn't specify efficiency classes for motors with rated power less than 0,12 kW. Induction motors covered by the EU efficiency regulation (rated power ≥ 0,75 kW) must have a minimum efficiency class of IE3 (or IE2 if they are driven by an inverter). Brake motors are exempted by this regulation.
5. The '*' beside the motor type identifies non-standard motor powers for their frame size. Such motors might not meet the IE1 efficiency class.

BA-BM-SM

IE1 - 50 Hz

Motor type	Power		RPM	In (A) 400V 50Hz	cos φ	Tn (Nm)	Ts/Tn	Is/In	Eff.
	Hp	kW							
4 pole - 1500 RPM									
BM-SM 56 A4	0.08	0.06	1390	0.40	0.48	0.41	3.0	2.2	45.0
BM-SM 56 B4	0.12	0.09	1320	0.41	0.61	0.65	3.0	2.2	55.0
BM-SM 56 C4 *	0.16	0.12	1320	0.55	0.61	0.87	3.0	2.2	54.0
BM-SM 63 A4	0.16	0.12	1330	0.45	0.70	0.86	2.0	2.4	55.0
BM-SM 63 B4	0.25	0.18	1350	0.60	0.71	1.27	3.0	2.8	61.0
BM-SM 63 C4 *	0.30	0.22	1350	0.75	0.66	1.56	2.8	3.1	63.0
BM-SM 63 D4 *	0.40	0.30	1350	1.05	0.64	2.12	2.8	3.0	55.5
BA-BM-SM 71 A4	0.33	0.25	1400	0.8	0.65	1.71	2.5	3.7	63.0
BA-BM-SM 71 B4	0.50	0.37	1400	1.10	0.68	2.52	2.7	3.9	67.0
BA-BM-SM 71 C4 *	0.75	0.55	1360	1.65	0.70	3.86	2.4	3.7	70.0
BA-BM-SM 71 D4 *	0.85	0.65	1350	2.00	0.69	4.60	2.1	3.7	71.7
BA-BM-SM 80 A4	0.75	0.55	1400	1.70	0.69	3.75	2.1	4.0	70.0
BA-BM 80 B4	1.0	0.75	1400	2.20	0.67	5.12	2.5	4.3	73.5
BA-BM 80 C4 *	1.2	0.90	1390	2.60	0.67	6.18	2.8	4.5	73.6
BA-BM 90 SA4	1.5	1.1	1400	2.7	0.77	7.50	2.3	4.6	77.4
BA-BM 90 LA4	2.0	1.5	1400	3.6	0.75	10.23	2.7	4.8	78.3
BA-BM 90 LB4 *	2.5	1.85	1400	4.3	0.77	12.62	2.7	5.8	78.7
BA-BM 90 LC4 *	3.0	2.2	1390	5.4	0.75	15.12	2.7	5.0	77.3
BA-BM 100 LA4	3.0	2.2	1410	5.0	0.78	14.90	2.5	5.4	80.8
BA-BM 100 LB4	4.0	3.0	1410	6.5	0.80	20.32	2.8	6.4	83.1
BA-BM 112 MB4	5.5	4.0	1415	8.1	0.84	27.00	2.6	6.4	83.7
BA-BM 112 MC4 *	7.5	5.5	1420	11.5	0.83	36.99	2.8	6.9	84.7
BA-BM 132 SB4	7.5	5.5	1430	11.3	0.82	36.73	2.4	6.0	85.2
BA-BM 132 MA4 *	10.0	7.5	1435	14.8	0.84	49.91	2.4	6.0	86.4
BA-BM 132 MB4	12.5	9.2	1445	18.3	0.85	60.80	2.5	6.3	87.3
BA-BM 132 MBX4 *	15.0	11.0	1440	21.7	0.86	72.95	2.5	6.0	87.6
BA-BM 160 MA4	12.5	9.2	1460	18.6	0.84	60.18	3.0	7.0	87.2
BA-BM 160 MB4	15.0	11.0	1460	21.2	0.85	71.95	2.9	7.0	88.0
BA-BM 160 LA4	20.0	15.0	1460	28.5	0.87	98.12	2.7	7.0	89.7
BA-BM 180 LA4	25.0	18.5	1460	33.7	0.89	121.01	2.9	8.0	90.6
BA-BM 180 LB4	30.0	22.0	1460	41.8	0.85	143.90	2.5	7.6	90.0
BA-BM 200 LB4	40.0	30.0	1455	56.5	0.87	196.91	2.5	7.4	90.7
BAH-BM 225 S4	50.0	37.0	1475	68.1	0.85	239.56	2.5	7.9	92.6
BAH-BM 225 M4	60.0	45.0	1475	82.6	0.85	291.36	2.5	7.9	92.7
BAH-BM 250 M4	75.0	55.0	1470	100	0.85	357.00	3.5	8.8	92.9
BAH-BM 280 S4	100.0	75.0	1480	132	0.86	487.00	2.8	8.0	93.2
BAH-BM 280 M4	125.0	90.0	1470	157	0.88	584.00	2.7	7.5	93.7

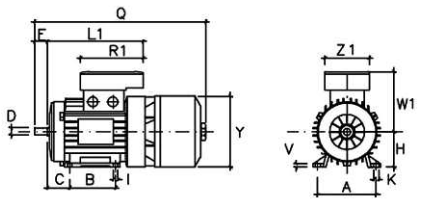
IE1 - 50 Hz

Motor type	Power		RPM	In (A) 400V 50Hz	cos φ	Tn (Nm)	Ts/Tn	Is/In	Eff.
	Hp	kW							
6 pole - 1000 RPM									
BM-SM 56 B6	0.08	0.06	850	0.45	0.71	0.67	1.9	1.5	25.6
BM-SM 63 C6	0.12	0.09	890	0.50	0.56	0.97	2.4	1.9	42.7
BM-SM 63 D6	0.16	0.12	870	0.60	0.60	1.32	2.7	1.9	45.0
BA-BM-SM 71 A6	0.25	0.18	875	0.60	0.71	1.96	2.0	2.6	56.0
BA-BM-SM 71 B6	0.33	0.25	900	0.80	0.71	2.65	2.0	2.8	59.0
BA-BM-SM 80 A6	0.50	0.37	910	1.25	0.67	3.88	2.6	3.4	64.0
BA-BM-SM 80 B6	0.75	0.55	900	1.8	0.68	5.84	2.2	2.8	65.8
BA-BM 90 SA6	1.00	0.75	910	2.3	0.68	7.87	2.1	3.5	70.1
BA-BM 90 LA6	1.50	1.10	910	3.2	0.68	11.54	2.2	3.6	72.9
BA-BM 90 LB6 *	1.75	1.30	910	3.9	0.68	13.64	2.5	4.0	74.2
BA-BM 100 LA6	2.0	1.50	930	3.9	0.71	15.40	2.3	4.3	78.6
BA-BM 100 LB6 *	2.5	1.85	920	5.0	0.68	19.20	2.6	4.5	76.6
BA-BM 112 MB6	3.0	2.2	945	5.2	0.79	22.23	2.0	5.3	78.2
BA-BM 132 SB6	4.0	3.0	960	7.2	0.72	29.84	2.5	6.5	83.0
BA-BM 132 MA6	5.5	4.0	960	9.5	0.72	39.79	2.3	6.5	83.9
BA-BM 132 MB6	7.5	5.5	960	12.3	0.75	54.71	2.3	6.5	84.3
BA-BM 160 MB6	10.0	7.5	965	15.9	0.79	74.22	2.2	7.1	85.3
BA-BM 160 LA6 *	12.5	9.2	970	18.3	0.81	90.58	2.2	7.1	87.0
BA-BM 160 LB6	15.0	11.0	970	22.7	0.80	108.30	2.5	7.5	88.0
BA-BM 180 LB6	20.0	15.0	970	29.4	0.84	147.68	2.3	7.8	89.0
BA-BM 200 LA6	25.0	18.5	970	38.1	0.82	182.14	2.2	8.0	88.6
BA-BM 200 LB6	30.0	22.0	965	43.5	0.85	217.72	2.2	8.0	89.2
BAH-BM 225 M6	40.0	30.0	980	60.7	0.78	292.35	2.6	6.5	91.6
BAH-BM 250 M6	50.0	37.0	985	73.0	0.78	358.00	2.7	6.6	92.0
BAH-BM 280 S6	60.0	45.0	985	87.0	0.80	436.00	2.6	6.3	92.5
BAH-BM 280 M6	75.0	55.0	985	105.0	0.80	533.00	2.5	6.0	92.8

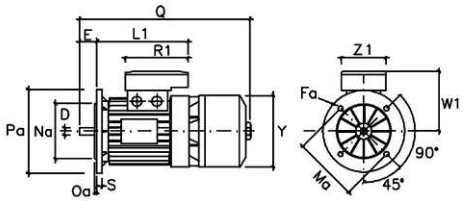
1. Motor characteristic values reported in the tables refer ambient temperature max. 40 °C, altitude up to1000 m. above sea level operating conditions.
2. MGM Motori Elettrici S.p.A. has made every effort to make this data complete and accurate. Since products are continuously being improved, all data is subject to change or correction. The data presented here is for general information to provide an overview of MGM capabilities. For specific applications, installation and operating instructions, certified dimensions, capabilities and performance data, and pricing and availability, contact MGM staff.
3. Efficiency data at 50% and 75% of the full load are avaible in the specific product documentation.
4. The international standard IEC 60034-30-1 doesn't specify efficiency classes for motors with rated power less than 0,12 kW. Induction motors covered by the EU efficiency regulation (rated power ≥ 0,75 kW) must have a minimum efficiency class of IE3 (or IE2 if they are driven by an inverter). Brake motors are exempted by this regulation.
5. The '*' beside the motor type identifies non-standard motor powers for their frame size. Such motors might not meet the IE1 efficiency class.

	71	80	90S	90L	100L	112M	132S	132M	160M	160L	180L	200L	225S	225M	250M	280S	280M
A	112	125	140	140	160	190	216	216	254	254	279	318	356	356	406	457	457
B	90	100	100	125	140	140	140	178	210	254	279	305	286	311	349	368	419
C	45	50	56	56	63	70	89	89	108	108	121	133	149	149	168	190	190
D*	14	19	24	24	28	28	38	38	42	42	48	55	60	60	65	75	75
d	M5	M6	M8	M8	M10	M10	M12	M12	M16	M16	M16	M16	M16	M16	M16	M20	M20
E*	30	40	50	50	60	60	80	80	110	110	110	110	140	140	140	140	140
Fa	10	12	12	12	14.5	14.5	14.5	14.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5
Fb	M6	M6	M8	M8	M8	M8	M10	M10									
f	5	6	8	8	8	8	10	10	12	12	14	16	18	18	18	20	20
g	11	15.5	20	20	24	24	33	33	37	37	42.5	49	53	53	58	67.5	67.5
H	71	80	90	90	100	112	132	132	160	160	180	200	225	225	250	280	280
h	5	6	7	7	7	7	8	8	8	8	9	10	11	11	11	12	12
I	7	10	10	10	12	12	12	12	14.5	14.5	15	18.5	18	18	24	24	24
K	10.5	14	14	14	16	16	22	22	24	24	24	30	33	33	33	24	24
L	148	162	171	196													
L1	184	194	207	232	254	262	294	339	373	395	420	446	440	440	435	435	435
Ma	130	165	165	165	215	215	265	265	300	300	300	350	400	400	500	500	500
Mb	85	100	115	115	130	130	165	165									
Na	110	130	130	130	180	180	230	230	250	250	250	300	350	350	450	450	450
Nb	70	80	95	95	110	110	130	130									
Oa	3.5	3.5	3.5	3.5	4	4	4	4	5	5	5	5	5	5	5	5	5
Ob	2.5	3	3	3	3.5	3.5	3.5	3.5									
Pa	160	200	200	200	250	250	300	300	350	350	350	400	450	450	550	550	550
Pb	105	120	140	140	160	160	200	200									
Q	344	380	412	436	487	505	600	638	745	789	988	988	977	1002	1135	1210	1275
$Q_{BAF/BAPV}$	368	403	436	460	511	531	628	666	778	822	907	932					
R	80	80	98.5	98.5													
R1	135	135	170	170	170	170	199	199	268	268	268	268	327	327	327	327	327
S	10	12	12	12	14	14	15	15	15	15	15	15	20	20	18	18	18
V	8	9.5	10.5	10.5	12.5	13.5	16	16	21	21	24	24	32	32	32	40	40
W	105	113	127	127					165	165	188	188	224	224	261	278	278
W1	121	130	148	148	162	176	210	210	246	246	266	266	341	341	361	438	438
Y	145	160	180	180	196	218	265	265	324	324	357	357	430	430	493	493	493
Z	75	75	98.5	98.5													
Z1	86	86	112	112	112	112	151	151	167	167	167	167	200	200	200	200	200

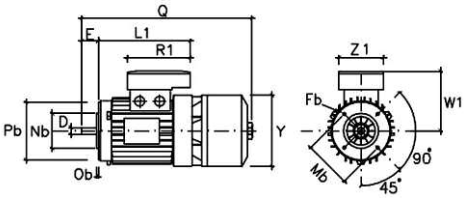
BAX-BA B3



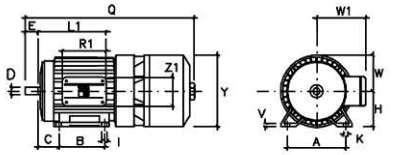
BAX-BA B5



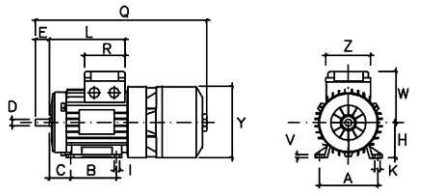
BAX-BA B14



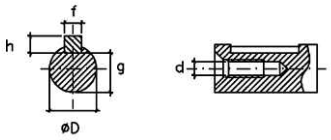
BAX-BA 160÷280 B3



Single terminal board box



Shaft End

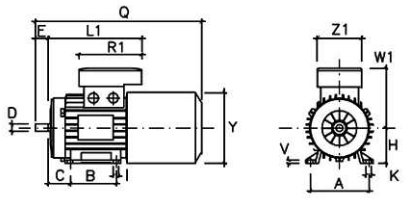


* 225S-225M 2 poles D=55mm, E=110mm

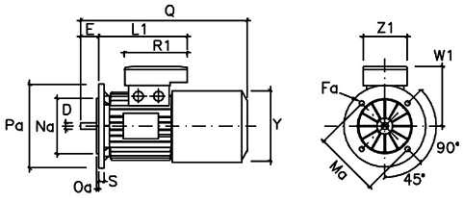
$Q_{BAF/BAPV}$ is the Q dimension for BAF and BAPV Series. • Cable glands are M20 on size 71 and 80, M25 on size 90 up to 112, M32 on size 132, M40 on size 160 up to 200, M50 on size 225-250.

	56	63	71	80	90S	90L	100L	112M	132S	132M	160M	160L	180	200	225S	225M
A	90	100	112	125	140	140	160	190	216	216	254	254	279	318	356	356
B	71	80	90	100	100	125	140	140	140	178	210	254	279	305	286	311
C	36	40	45	50	56	56	63	70	89	89	108	108	121	133	149	149
D	9	11	14	19	24	24	28	28	38	38	42	42	48	55	60	60
d	M4	M4	M5	M6	M8	M8	M10	M10	M12	M12	M16	M16	M16	M20	M20	M20
E	20	23	30	40	50	50	60	60	80	80	110	110	110	110	140	140
Fa	7	10	10	12	12	12	14.5	14.5	14.5	14.5	18.5	18.5	18,5	18,5	18,5	18,5
Fb	M5	M5	M6	M6	M8	M8	M8	M8	M10	M10						
f	3	4	5	6	8	8	8	8	10	10	12	12	14	16	18	18
g	7.2	8.5	11	15.5	20	20	24	24	33	33	37	37	42,5	49	53	53
H	56	63	71	80	90	90	100	112	132	132	160	160	180	200	225	225
h	3	4	5	6	7	7	7	7	8	8	8	8	9	10	11	11
I	6	7	7	10	10	10	12	12	12	12	14.5	14.5	14,5	18,5	18	18
K	11	10.5	10.5	14	14	14	16	16	22	22	24	24	24	30	18	18
L	99	130	148	162	171	196										
L1		166	184	194	207	232	254	262	294	339	373	395	420,5	445,5	440	440
Ma	100	115	130	165	165	165	215	215	265	265	300	300	300	350	400	400
Mb	65	75	85	100	115	115	130	130	165	165						
Na	80	95	110	130	130	130	180	180	230	230	250	250	250	300	350	350
Nb	50	60	70	80	95	95	110	110	130	130						
Oa	3	3	3.5	3.5	3.5	3.5	4	4	4	4	5	5	5	5	5	5
Ob	2.5	2.5	2.5	3	3	3	3.5	3.5	3.5	3.5						
Pa	120	140	160	200	200	200	250	250	300	300	350	350	350	400	450	450
Pb	80	90	105	120	140	140	160	160	200	200						
Q	230	260	295	330	360	385	435	470	565	604	716	760	863	888	961	961
R	75	80	80	80	98.5	98.5										
R1		135	135	135	170	170	170	170	199	199	268	268	268	268	327	327
S	8	10	10	12	12	12	14	14	15	15	15	15	19,5	15	20	20
V	7	7	8	9.5	10.5	10.5	12.5	14	16	16	21	21	24	24	32	32
W	93	97	105	113	127	127					155	155	179	179	224	224
W1		111	121	130	148	148	162	176	210	210	246	246	269,5	269,5	337	337
Y	110	121	136	153	178	178	198	219.5	258	258	309.5	309.5	355	355	433	433
Z	75	75	75	75	98.5	98.5										
Z1		86	86	86	112	112	112	112	151	151	167	167	166	166	202	202

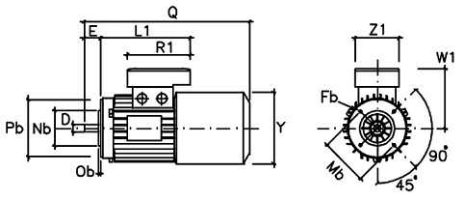
BMX-BM B3



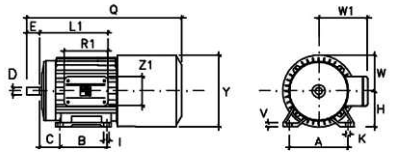
BMX-BM B5



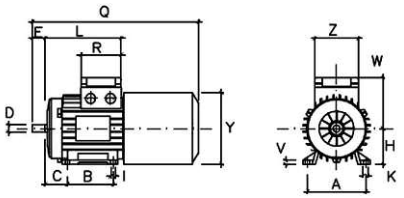
BMX-BM B14



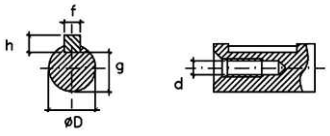
BMX-BM 160÷225 B3



Single terminal board box



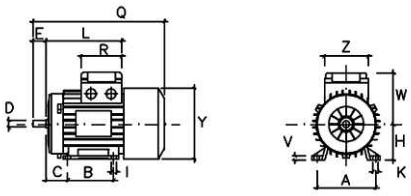
Shaft End



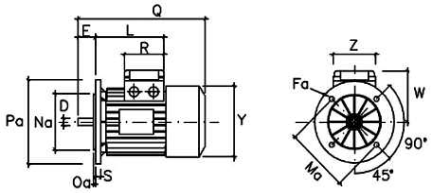
Cable glands are M16 on size 56 and 63, M20 on size 71 and 80, M25 on size 90 up to 112, M32 on size 132, M40 on size 160 up to 200, M50 on size 225.

	56	63	71	80	90S	90L	100L	112M	132S	132M	160M	160L	180L	200L	225S	225M
A	90	100	112	125	140	140	160	190	216	216	254	254	279	318	356	356
B	71	80	90	100	100	125	140	140	140	178	210	254	279	305	286	311
C	36	40	45	50	56	56	63	70	89	89	108	108	121	133	149	149
D*	9	11	14	19	24	24	28	28	38	38	42	42	48	55	60	60
d	M3	M4	M5	M6	M8	M8	M10	M10	M12	M12	M16	M16	M16	M16	M16	M16
E*	20	23	30	40	50	50	60	60	80	80	110	110	110	110	140	140
Fa	6.6	9.5	9.5	11.5	11.5	11.5	14	14	14	14	18	18	18	18	18.5	18.5
Fb	M5	M5	M6	M6	M8	M8	M8	M8	M10	M10						
f	3	4	5	6	8	8	8	8	10	10	12	12	14	16	18	18
g	7.2	8.5	11	15.5	20	20	24	24	33	33	37	37	42.5	49	53	53
H	56	63	71	80	90	90	100	112	132	132	160	160	180	200	225	225
h	3	4	5	6	7	7	7	7	8	8	8	8	9	10	11	11
I	6	7	7	10	10	10	12	12	12	12	14.5	14.5	15	18.5	18	18
K	11	10.5	10.5	14	14	14	16	16	22	22	24	24	24	30	33	33
L	99	111	117	123	140	140	152	153	171	171						
L1		167	145	150	177	177	188	190	300	300	373	395	420	446	452	464.5
Ma	100	115	130	165	165	165	215	215	265	265	300	300	300	350	400	400
Mb	65	75	85	100	115	115	130	130	165	165						
Na	80	95	110	130	130	130	180	180	230	230	250	250	250	300	350	350
Nb	50	60	70	80	95	95	110	110	130	130						
Oa	3	3	3.5	3.5	3.5	3.5	4	4	4	4	5	5	5	5	5	5
Ob	2.5	2.5	2.5	3	3	3	3.5	3.5	3.5	3.5						
Pa	120	140	160	200	200	200	250	250	300	300	350	350	350	400	450	450
Pb	80	90	105	120	140	140	160	160	200	200						
Q	193	223	253	202	305	330	373	390	468	506	602	646	706	731	808	833
R	75	80	80	80	98.5	98.5	98.5	98.5	108	108						
R1		135	135	135	170	170	170	170	199	199	268	268	268	268	268	268
S	6	10	10	12	12	12	14	14	15	15	15	15	15	15	16	16
V	7	7	8	9.5	10.5	10.5	12.5	13.5	16	16	21	21	24	24	30	30
W	93	97	105	113	127	127	138	158	198	198	158	158	188	188	218	218
W1		111	121	131	148	148	162	176	210	210	246	246	266	266	322	322
Y	110	120	138	155	174	174	192	217	260	260	315	315	355	355	430	430
Z	75	75	75	75	98.5	98.5	98.5	98.5	108	108						
Z1		86	86	86	112	112	112	112	151	151	167	167	167	167	167	167

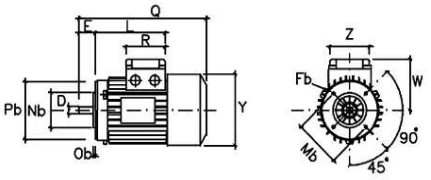
SMX-SM B3



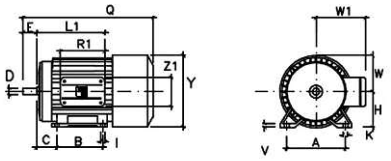
SMX-SM B5



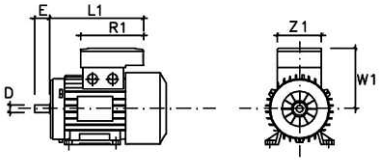
SMX-SM B14



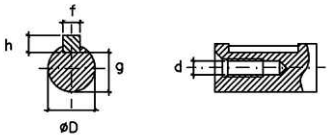
SMX-SM 160÷225 B3



Single terminal board box



Shaft End



* 225S-225M 2 poles D=55mm, E=110mm

Cable glands are M16 on size 56 and 63, M20 on size 71 and 80, M25 on size 90 up to 112, M32 on size 132, M40 on size 160 up to 200, M50 on size 225.

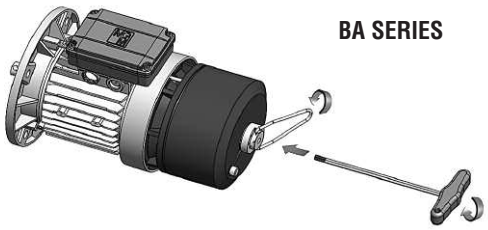
Manual brake release and shaft rotation

A manual brake release might be needed to perform maintenance on a machine where a motor is installed, as well as to manually operate a machine in case of a power supply failure. BA Series motors are equipped with a central screw to manually release the brake (for the BAH Series motors there are 2 side screws). This is a "locking" type brake release so that the brake stays disengaged until the screw is tightened on the brake assembly. Upon request the brake can be provided with a non-locking mechanism (fulcrum style).

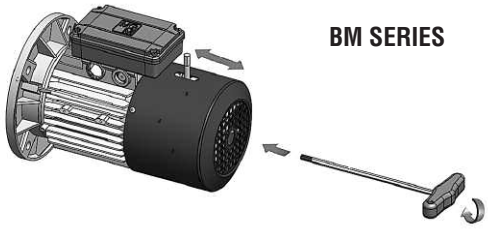
On BM Series motors, we can provide an optional hand release lever (non-locking type) to manually release the brake. The lever is mounted on the same side as the terminal box, unless otherwise requested.

BA and BM Series motors up to frame size 132mm (NEMA 245) come equipped with a hex socket on the non-drive end to manually rotate the shaft with a hex wrench once the brake is disengaged. This standard feature (MGM patent) is very useful for applications requiring manual positioning or a machine reset. Most of the time this feature prevents from requiring motors with special double shaft extension needed for manual rotation. Upon request it's also possible to have motors equipped with this hex socket on frame sizes 160 and over (IEC 160 to 315).

Safety warning: When the brake is manually released the motor shaft is no longer engaged by the brake, therefore the shaft is free to rotate. For this reason the manual brake release must be operated only when there are no safety concerns for any applied or suspended load. The brake must always be properly re-engaged once manual intervention is completed. Motors shall never be started with any tool inserted into a motors hex socket; such tools must be properly removed after any manual intervention. Failure to heed these warnings could lead to serious injury and / or damage.



BA SERIES



BM SERIES

Brake torque and reaction time

Frame Size				56	63	71	80	90	100	112	132	160	180	200	225	250	280
Maximum brake torque	BAX-BA	AC Brake	Nm / Lb-in.	-	-	14 / 124	18 / 159	38 / 337	50 / 443	80 / 708	150 / 1328	190 / 1683	300 / 2657	300 / 2657	600 / 5310	700 / 6198	1000 / 8857
	BAX-BA	DC Brake	Nm / Lb-in.	-	-	9 / 80	15 / 133	30 / 266	42 / 372	60 / 531	120 / 1063	155 / 1373	180 / 1594	180 / 1594	600 / 5310	-	-
	BMX-BM	DC Brake	Nm / Lb-in.	2 / 17	5 / 44	5 / 44	10 / 88	20 / 177	40 / 354	60 / 531	100 / 885	150 / 1328	250 / 2212	250 / 2212	400 / 3540	-	-
Brake electrical reaction time	BAX-BA	AC Brake	ms	-	-	7	7	7	9	9	12	12	12	12	14	14	14
	BAX-BA	DC Brake[1]	ms	-	-	80	80	80	80	80	85	85	90	90	100	-	-
	BAX-BA	DC Brake[2]	ms	-	-	20	20	20	30	30	30	30	30	30	35	-	-
	BMX-BM	DC Brake[1]	ms	60	90	90	145	180	225	290	420	570	600	600	900	-	-
	BMX-BM	DC Brake[2]	ms	25	35	35	50	60	75	90	120	150	180	180	200	-	-

([1]) standard - ([2]) quick

Hoist motors

BAPK Series brake motors are available starting from 100 up to 225 frame size. Powers and poles are the same as the BA Series motors (see BA technical data). BAPK Series motors have the same BA Series motor construction but with some special components inside. Single and most of the two speed BAPK motors are fitted with a special rotor (P rotor) that increases the starting torque (locked rotor torque) by 20% about and that reduces the starting current (locked rotor current) by 10% about.

The brake assembly of a BAPK motors is just the same of the standard BA Series with 2 braking surfaces but with a special brake disc (K brake disc) with steel hub. The BAPK Series motors are equipped as standard with an AC brake.

Dimensions are the same as the BA Series. To purchase BAPK Series motors the writing BAPK has to be clearly stated in the order (i.e. BAPK 112 MB4/16).

K brake disc

The K brake disc is provided as standard on motors starting from 160 frame size while it's available on request on motors from 90 up to 132 frame size. As for the case of the BA standard brake, which is made of a special aluminium/thermoplastic material, the K brake disc has two friction surfaces and it has a nucleus and a steel hub, which guarantee a higher sturdiness. K brake disc is strongly recommended for hoisting application, safety application or under high environment temperature (60° C or above).

K brake disc has a shorter lasting than standard brake disc as a consequence of the increased moment of inertia therefore it's advisable to use the standard brake disc on heavy start/stop duty cycle application where the k disc is not necessary. To purchase motors with K brake disc, the writing BAK has to be clearly stated in the order (i.e. BAK 112 MB4). For further information please contact MGM.

BAH-BAHS

BA Series brake motors come manufactured as BAH (or BAHS) Series starting from frame size 225 up to 315.
BAH motors are designed for hard environment and hard duty cycles. BAH Series motors are designed in order to have a significant thermal reserve and to withstand overloads. The external motor case components (terminal board box, casing, shield, flange, end shield, brake friction surface, and brake cover) are made of cast iron in order to provide a greater mechanical strength and to be suitable for harsh environment (i.e. marine application). Upon request, the motor body can be made of ductile cast iron. Shafts are made of 39NiCrMo3 steel. The standard protection (enclosure) rating is IP55, with IP56 and IP66 available upon request.

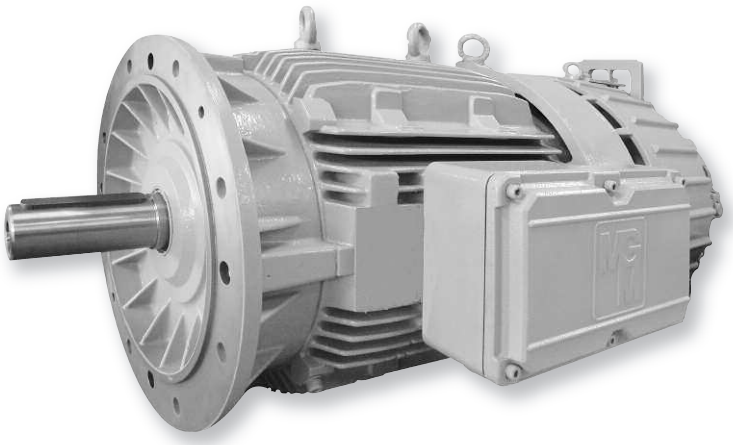
Feet are casted on the frame rather screwed on B3 mounting motors in order to ensure a greater sturdiness of the structure particularly important for brake motor applications undergoing high stresses during the starts and stops.

The brake engages when not energized ensuring precision and safety when stopping in both motor rotation directions without axial shaft sliding. The brake unit is properly dimensioned in order to be suitable both as a holding brake as well as a dynamic brake.

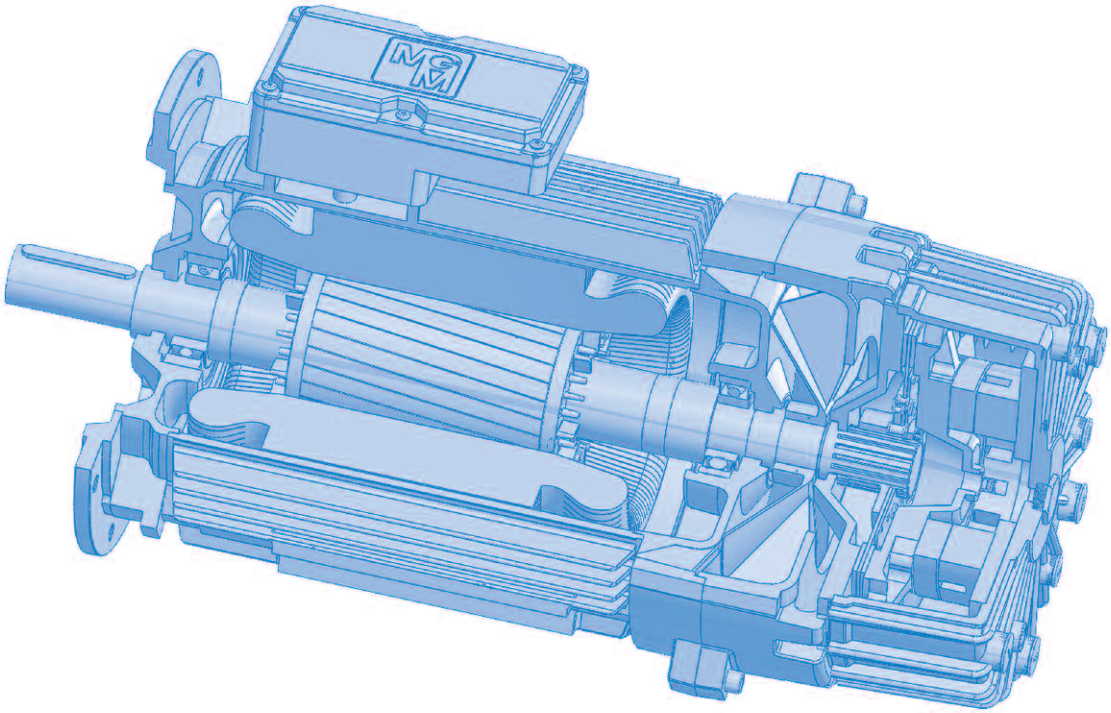
MGM standard insulation is class F while class H is available on request. The brake is asbestos free, with a compound made in order to limit brake sticking risk and to allow higher cycling and longer life. The braking surface is self-ventilated to dissipate the heat developed during long stops or high-frequency stops. The brake moving element and the brake coil have a magnetic cores made of laminated magnetic steel to reduce the electrical losses and to allow a very fast brake response time.
BAH Series motors main features are a very sturdy construction, an extremely fast brake reaction time (both when releasing and when engaging), a high brake torque, a consistent stopping time, and the capability to withstand very frequent cycles and an intense work load.
All BAH Series motors are suitable to be supplied by inverter (VFD-Variable Frequency Drive).

The following options are available upon request:
- special shaft dimensions (DE-side) or double extended shaft (NDE-side)
- encoder
- manual Brake Release system, locking or non-locking system
- anti-Condensation Heater on the motor and/or on brake windings
- thermistors (PTC) or Bi-Metallic (PTO) thermal protectors
- non-Ventilated execution (BAHS)

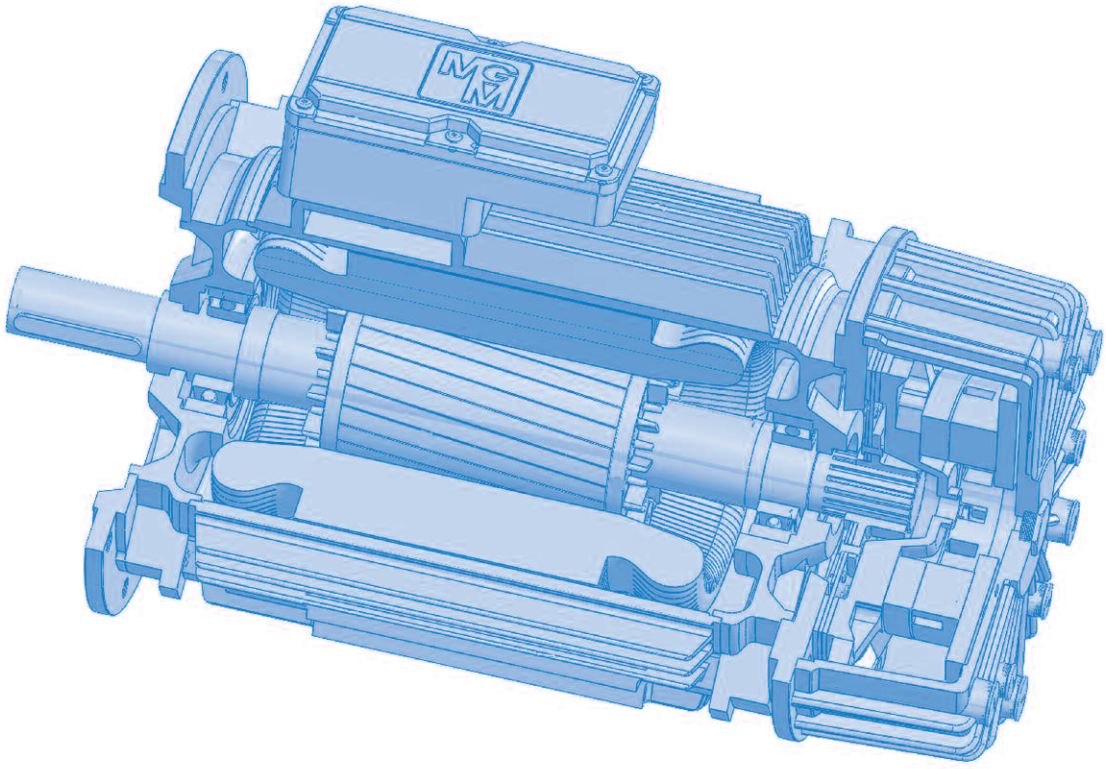
BAH Series



BAH Series



BAHS Series



Motors With Forced Cooling

AC electric motors operating in non standard conditions (low frequency inverter duty, long overcharge periods, heavy duty cycles) could need additional cooling servo-fan. BASV Series motors with forced cooling are provided with two additional cooling servo-fans fixed on the motor frame. This cooling system is an MGM patent.

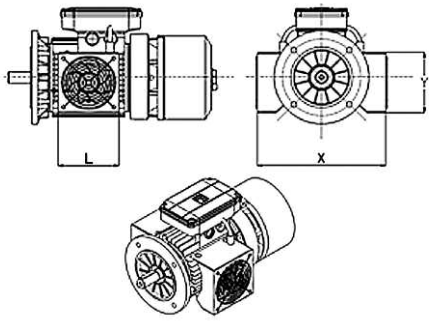
SV Series motors have the following features:

1. Two additional cooling servo fans are installed in addition to the standard self-cooling fan.
2. The whole heating surface is increased as the fan fixing system is itself a heat dissipation element, in addition to the existing fins on the frame.
3. Low noise level.
4. Servo ventilation does not add to the motors length.
5. Manual brake release with manual rotation.
6. Uniform winding cooling along the whole motor length.
7. The brake friction surface is cooled on the motor side.

Where forced cooling is used to limit the operating temperature in heavy start/stop duty application, it should be noted that the efficiency of the forced cooling increases with the number of pole of the motor. It's hard to estimate the amount of hot air removed by the forced cooling fans but it can be roughly said that it is the same as the air removed by the standard servo-fan of a 4 pole motor operating at 50 Hz.
It is advisable to use thermal protectors in heavy operating conditions. The table below shows technical details of fans supplied at 230V single-phase. The servo-fans can be supplied both at 50Hz or 60Hz. On request forced cooling fans can be provided with different voltage supply.

Motor type	Dim X (mm)	Dim Y (mm)	Dim L (mm)	Volt	Watt
BASV 71	210	107	102	1~230	2x16
BASV 80	230	108	120	1~230	2x16
BASV 90	270	129	129	1~230	2x20
BASV 100	280	129	134	1~230	2x20
BASV 112	300	142	142	1~230	2x20
BASV 132	348	169	169	1~230	2x20
BASV 160	431	184	190	1~230	2x36
BASV 180	485	211	211	1~230	2x36
BASV 200	485	211	211	1~230	2x36
BASV 225	522	221	221	1~230	2x36

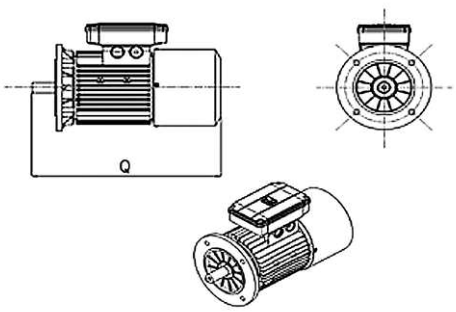
BASV Series



BMAV and SMAV motors, with axial forced cooling, are also available (the additional servo-fan is located in the rear part of the motor replacing the self-ventilating fan).

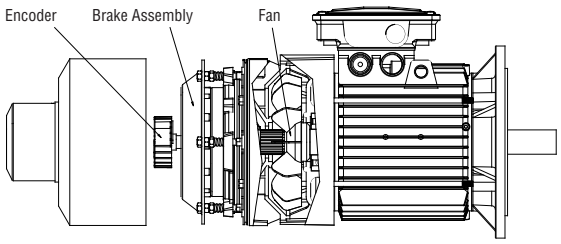
Motor type	Dim Q (mm)	Volt	Watt
BMAV-SMAV 56	250	1~230	16
BMAV-SMAV 63	280	1~230	16
BMAV-SMAV 71	315	1~230	16
BMAV-SMAV 80	364	1~230	16
BMAV-SMAV 90	390	1~230	36
BMAV-SMAV 100	415	1~230	36
BMAV-SMAV 112	465	1~230	36
BMAV-SMAV 132	604	3~400	93
BMAV-SMAV 160	734	3~400	93
BMAV-SMAV 180	825	3~400	123
BMAV-SMAV 200	825	3~400	123
BMAV-SMAV 225	1065	3~400	123

BMAV-SMAV Series

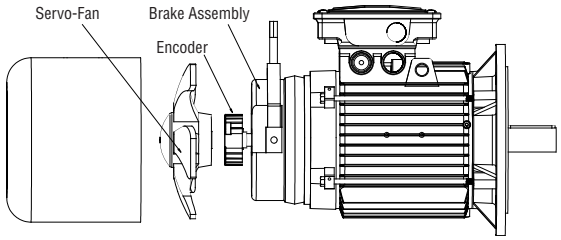


MGM manufactures two series of brake motors with built-in Encoder:

BAE Series: Asynchronous three phase fan cooled brake motors with built-in encoder and frame size from 71 up to 280. The encoder is located at the nondrive end in a safe place protected by a well closed cover. Forced ventilation is available on request. The motor is provided as standard with separate brake supply. The brake coil is AC as standard, while DC is available on request.



BMEAV Series: Asynchronous three phase brake motors with DC brake with axial forced ventilation, built-in encoder and frame size from 63 up to 225. The encoder is located at the nondrive end between the brake and servo fan. The motor is supplied as standard with separate brake supply. Side manual return brake release is available on request.



SMEAV Series: Asynchronous three phase motors with axial forced ventilation, built-in encoder and frame size from 63 up to 225. The encoder is located at the nondrive end.

BAE, **BMEAV** and **SMEAV** Series motors are ready to be supplied by a VFD (inverter). These motor series are manufactured with high grade dynamic balancing and with a winding insulation capable of withstanding higher electrical and mechanical stresses.
The dimensions and couplings are the same as those of a standard motor (special shaft and flanges are available on request).
Wiring connections are easy to carry out and power leads are isolated from control leads.
cCSAus approval is available.

Encoder mounted motors
The following specifications are required to select the proper encoder:
- Encoder type (incremental - absolute)
- Pulses Per Revolution (PPR)
- Zero Pulse (with / without)
- Supply Voltage of the Encoder
- Electronic Output Configuration
- IP Enclosure (On BAE motors the encoder comes totally enclosed underneath a protection cover)
- Encoder Interface
- Code (for absolute encoder only)
- Single Turn or Multi Turn

The Encoder output cable is available with a connector or with loose wires.

Contact MGM for further specifications.

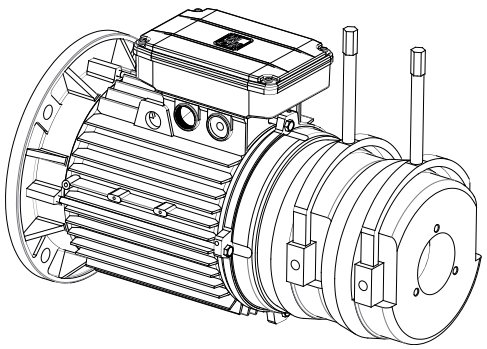
Double Brake Motors

BMBM Series consist of three phase AC brake motors with twin DC brakes working independently of each other, starting from 63 up to 315 frame sizes and power range from 0.18 kW up to 132 kW. BMBM Series main feature is a very high reliability in those lifting applications where there are high demands of safety and silence. For these reasons BMBM Series motors are particularly suitable to be used in TV-cine studios and theatre stages.

The motor brakes in case of power supply failure. The braking action is always secured through a very quick and precise stop assuring a safe and a prompt stop in case of unintentional power supply failure. The brake components and assembly are designed with special features to be noiseless during stops. The manual brake release is made up of two levers (one for each brake) so to avoid unwanted starts. It's possible to release the brake just using one hand.

The two brakes are supplied through independent rectifiers which are positioned in the terminal box. Rectifiers are provided with over-voltage protection device and with EMC filter. It's possible to have two types of wirings connection to the rectifier for each brake, in relation to the intervention time required. All BMBM Series motors are suitable for inverter use; on request, it's possible to have the motor with a built-in encoder or to have the motor ready for the encoder to be easily mounted at customer's place. The brake disc friction material is asbestos free and the brake lining has a high friction factor and is long-lasting. The winding insulation class is F. Class H is available upon request. Motor construction type is Totally Enclosed Not Ventilated (TENV), with IP 54 enclosure rating (IP 55 and external cooling are available upon request). BMBM Series motors tolerate a high overload level and being not self-cooled have to be used on intermittent duty only. On request it's possible to provide motors with thermo-protection devices. Frame is made of die cast, light metal on motors up to 132 frame size and of cast iron on motors from 160 up to 315 frame size. Feet are frame integrated (they are not simply attached to the frame) on IM B3 mounting (foot mounted) and it makes the motor very sturdy since this motors are used in critical applications. Shields and flanges are made of aluminum up to 90 frame size and of cast iron for above sizes.

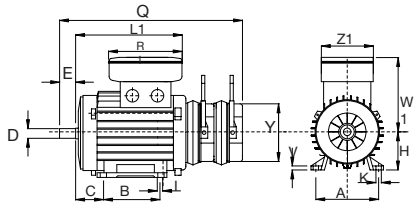
Frame size (mm)	Brake torque (Nm)	Power consumption (W)
63	2 x 3,5	2 x 22
71	2 x 3,5	2 x 22
80	2 x 7,0	2 x 28
90	2 x 14	2 x 34
100	2 x 28	2 x 42
112	2 x 42	2 x 50
132	2 x 70	2 x 64
160	2 x 107	2 x 76
180	2 x 150	2 x 100
200	2 x 250	2 x 140
225	2 x 375	2 x 140
250	2 x 800	2 x 144
280	2 x 800	2 x 144
315	2 x 1000	2 x 144



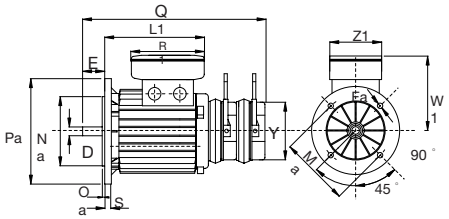
Different braking torques for each of the frame sizes stated here above are available on request.
Please contact MGM organization for more information.

Size	63	71	80	90S	90L	100	112	132S	132M	160M	160L	180L	200
A	100	112	125	140	140	160	190	216	216	254	254	279	316
B	80	90	100	100	125	140	140	140	178	210	254	279	305
C	40	45	50	56	56	63	70	89	89	108	108	121	133
D	11	14	19	24	24	28	28	38	38	42	42	48	55
d	M4	M5	M6	M8	M8	M10	M10	M12	M12	M16	M16	M16	M16
E	23	30	40	50	50	60	60	80	80	110	110	110	110
Fa	9.5	9.5	11.5	11.5	11.5	14.5	14.5	14.5	14.5	18.5	18.5	18.5	18.5
Fb	M5	M6	M6	M8	M8	M8	M8	M10	M10				
f	4	5	6	8	8	8	8	10	10	12	12	14	16
g	8.5	11	15.5	20	20	24	24	33	33	37	37	42.5	49
H	63	71	80	90	90	100	112	132	132	160	160	180	200
h	4	5	6	7	7	7	7	8	8	8	8	9	10
I	7	7	9	10	10	12	12	12	12	14	14	14	18
L1	166	180	194	207	232	254	262	248	260	314	337	399	424
Ma	115	130	165	165	165	215	215	265	265	300	300	300	350
Mb	75	85	100	115	115	130	130	165	165				
Na	95	110	130	130	130	180	180	230	230	250	250	250	300
Nb	60	70	80	95	95	110	110	130	130				
Oa	3	3.5	3.5	3.5	3.5	4	4	4	4	5	5	5	5
Ob	2.5	2.5	3	3	3	3.5	3.5	3.5	3.5				
Pa	140	160	200	200	200	250	250	300	300	350	350	350	400
Pb	90	105	120	140	140	160	160	200	200				
Q	298	303	342	380	405	456	491	567	605	719	763	832	873
R1	135	135	135	170	170	170	170	180	180	260	260	260	260
S	10	10	12	12	12	14	14	14	14	15	15	15	18
V	7	8.5	9.5	10.5	10.5	13	13.5	18	18	18	18	21	21
W1	111	120	131	148	148	162	176	196	196	267	267	277	277
Y	85	85	105	130	130	150	170	195	195	225	225	258	306
Z1	86	86	86	112	112	112	112	120	120	184	184	184	184

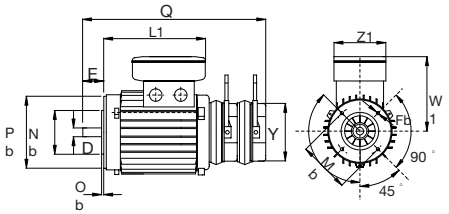
BMBM B3



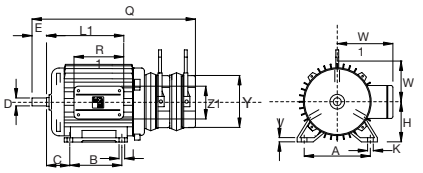
BMBM B5



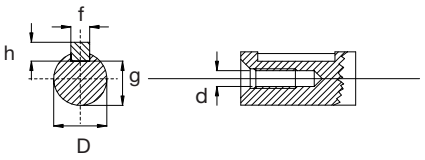
BMBM B14



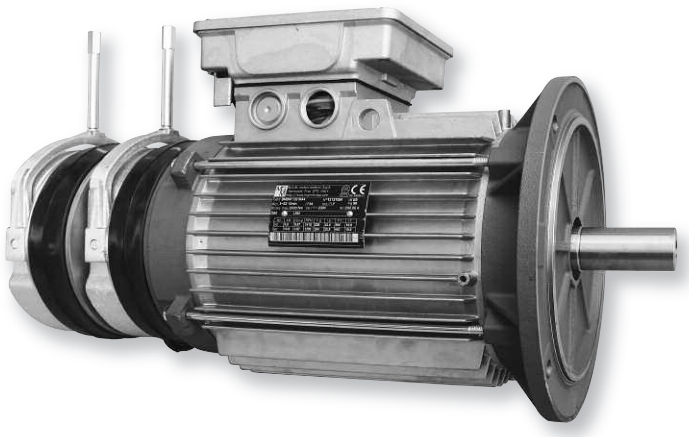
BMBM 160M/L-180L-200 B3



Shaft End



BMBM Series



For information on BMBM motors with twin brakes with frame size 225-250-280-315, contact MGM.

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