

High Efficiency Induction Motors

MAQ - BAQ SERIES
90 - 280 mm FRAME SIZES



High efficiency (EFF I) three phase asynchronous motors.

ENERGY SAVING

Marelli Motori have undersigned the voluntary agreement with CEMEP who, in co-operation with the European Commission, designated energy efficiency classes for three phase squirrel cage induction motors, TEFC, 1.1 to 90 kW, 2 and 4 poles, rated for 400 V, 50 Hz, S1 duty in standard design. These classes are identified as (EFF 1), (EFF 2) and (EFF 3) in descending order. The replacement of standard motors with the new (EFF I) design will lead to the following benefits:

- Increased lifetime of the motor and its bearings, due to reduced operating temperatures;
- Better capability of the motor to run under voltage variations, poor voltage and current wave shapes;
- Increased resistance to handle overload conditions.



DATA SHEET (EFF I) MOTORS

RATED OUTPUT	MOTOR TYPE		SPEED	CURRENT	EFF		POWER FACTOR	FOR D.O.L STARTING		BREAKDOWN TORQUE	SOUND PRESSURE LEVEL	MOMENT OF INERTIA	WEIGHT IM1001 (IMB3)
P kW	Series	Type	rpm min ⁻¹	I _n A	4/4 %	3/4	cos φ	I _s /I _n p.u.	T _s /T _n p.u.	T _{max} /T _n p.u.	LPA dB(A)	J kg m ²	Approx. kg

3000 rpm - 2 pole - 400 V - 3 phase - 50 Hz

1,5	MAQ	90 S2	2885	3,0	84,1	81,2	0,85	7,5	2,2	2,3	62	0,001	13,5
2,2	MAQ	90 L2	2875	4,3	85,6	83,0	0,87	7,6	2,2	2,3	62	0,002	15,5
3	MAQ	100 LA2	2880	5,6	86,7	83,5	0,87	8,1	2,2	2,3	66	0,004	23,4
4	MAQ	112 M2	2900	7,9	87,6	85,3	0,88	8,3	2,2	2,3	67	0,005	28,8
5,5	MAQ	132 SA2	2920	10,7	88,6	85,2	0,88	8,3	2,2	2,3	70	0,012	45,3
7,5	MAQ	132 SB2	2915	14,5	89,5	86,2	0,88	7,7	2,2	2,3	70	0,013	47,7
11	BAQ	160 MA2	2940	19,7	90,5	91,5	0,89	7,5	2,2	2,3	76	0,044	98
15	BAQ	160 MB2	2940	26,6	91,3	91,7	0,89	7,5	2,2	2,3	76	0,051	118
18,5	BAQ	160 L2	2945	32,3	91,8	90,4	0,90	7,5	2	2,3	76	0,062	138
22	BAQ	180 M2	2945	39	92,2	90,5	0,90	7,5	2	2,3	79	0,071	163
30	BAQ	200 LA2	2960	52	92,9	92,1	0,90	7,5	2	2,3	82	0,131	235
37	BAQ	200 LB2	2960	64	93,3	93,5	0,90	7,5	2	2,3	82	0,201	247
45	BAQ	225 M2	2975	77	93,7	91,5	0,90	7,5	2	2,3	82	0,222	315
55	BAQ	250 M2	2975	94	94,0	93,5	0,90	7,5	2	2,3	83	0,413	405
75	BAQ	280 S2	2980	126	94,6	91,9	0,91	7,5	2	2,3	84	0,721	560
90	BAQ	280 M2	2980	150	95,0	91,9	0,91	7,5	2	2,3	84	0,861	636

1500 rpm - 4 pole - 400 V - 3 phase - 50 Hz

1,1	MAQ	90 S4	1440	0,1	83,8	82,3	0,77	6,8	2,3	2,3	51	0,002	14,5
1,5	MAQ	90 L4	1440	0,2	85,0	83,4	0,77	7,0	2,3	2,3	51	0,003	17,0
2,2	MAQ	100 LA4	1450	0,2	86,4	85,5	0,81	7,4	2,3	2,3	54	0,006	23,5
3	MAQ	100 LB4	1445	0,3	87,4	84,7	0,82	7,4	2,3	2,3	54	0,007	26,5
4	MAQ	112 M4	1450	8,4	88,3	88,2	0,82	7,5	2,3	2,3	55	0,011	35,0
5,5	MAQ	132 S4	1455	11,3	89,2	91,1	0,83	7,8	2,3	2,3	61	0,023	48,5
7,5	MAQ	132 MA4	1455	15,1	90,1	90,8	0,84	7,4	2,3	2,3	61	0,030	62
11	BAQ	160 M4	1470	20,5	91,0	91,9	0,84	7	2,2	2,3	65	0,076	123
15	BAQ	160 L4	1470	27,7	91,8	92,0	0,85	7,5	2,2	2,3	65	0,101	141
18,5	BAQ	180 M4	1470	34	92,2	92,4	0,85	7,5	2,2	2,3	66	0,138	163
22	BAQ	180 L4	1470	40	92,6	92,8	0,85	7,5	2,2	2,3	66	0,151	173
30	BAQ	200 L4	1475	54	93,2	93,8	0,86	7,2	2,2	2,3	69	0,195	231
37	BAQ	225 S4	1480	66	93,6	93,9	0,87	7,2	2,2	2,3	71	0,356	338
45	BAQ	225 M4	1480	80	93,9	94,2	0,87	4,2	2,2	2,3	71	0,521	381
55	BAQ	250 M4	1480	97	94,2	94,4	0,87	7,2	2,2	2,3	73	0,692	422
75	BAQ	280 S4	1485	131	94,7	94,9	0,87	7,2	2,2	2,3	76	1,301	586
90	BAQ	280 M4	1485	157	95,0	94,9	0,87	7,2	2,2	2,3	76	1,471	695

TECHNICAL CHARACTERISTICS

- Rated outputs and frame sizes in accordance with IEC 60034 standards;
- Continuous duty (S1) with sufficient thermal margins, to withstand short overloads;
- Protection degree IP 55;
- Insulation class F;
- Maximum ambient temperature: +40°C;
- Installation ≤1000 m a.s.l.

GENERAL SPECIFICATIONS

- Terminal box can be rotate by 90°;
- Drive end locked bearing from 160 mm frame size;
- PTC in main terminal box from 160 mm frame size;
- Grease nipples (drive end and non drive end) as standard from 160 mm frame size;
- Standard removable feet will be available up to 200 mm frame size.

CONSTRUCTION MATERIALS

- Frame - Aluminium, Cast Iron;
- Endshields - Aluminium, Cast Iron;
- Fan cowl - Steel;
- Fan - Plastic;
- Terminal box - Aluminium, Cast Iron.

CABLE GLANDS

Frame Size	90	100	112	132	160	180	200	225	250	280
Q.ty	2	2	2	2	2	2	2	2	2	2
Type	M20	M25	M25	M25	M32	M32	M40	M50	M50	M50

DIMENSIONS

Frame Size	Poles	General B3 - B5 - B35 - V1				Anti Rain B5 V1	Flange B5 - B35 - V1							Shaft Extension B3 - B5 - B35 - V1				Feet B3 - B35											
		AC	AD	L	W		LD	M	N	P	S	T	Z	LA	D	E	F	GA	A	AA	AB	B	BB	BC	C	H	HA	HD	K

Aluminum

90 S	2-4	176	150	325	115	355	165	130	200	12	3,5	4	10	24	50	8	20	140	37	175	100	130	15	56	90	13	240	10
90 L	2-4	176	150	350	115	380	165	130	200	12	3,5	4	10	24	50	8	20	140	37	175	125	155	15	56	90	13	240	10
100	2-4	199	165	388	145	430	215	180	250	15	4	4	12	28	60	8	24	160	45	200	140	180	20	63	100	14	265	12
112	2-4	220	180	405	148	445	215	180	250	15	4	4	12	28	60	8	24	190	45	230	140	180	20	70	112	14	291	12
132 S	2-4	259	200	467	166	507	265	230	300	15	4	4	13	38	80	10	33	216	45	255	140	190	25	89	132	16	322	12
132 M	2-4	259	300	505	166	547	265	230	300	15	4	4	13	38	80	10	33	216	45	255	178	228	25	89	132	16	322	12

Cast Iron

160 M	2-4	313	242	605	282	655	300	250	350	19	5	4	16	42	110	12	37	254	60	314	210	262	26	108	160	17	402	15
160 L	2-4	313	242	650	282	700	300	250	350	19	5	4	16	42	110	12	37	254	60	314	254	306	26	108	160	17	402	15
180 M	2-4	360	259	687	351	747	300	250	350	19	5	4	18	48	110	14	42,5	279	75	348	241	300	29,5	121	180	27	439	15
180 L	4	360	259	725	371	785	300	250	350	19	5	4	18	48	110	14	42,5	279	75	348	279	338	29,5	121	180	27	439	15
200 L	2-4	399	297	768	395	828	350	300	400	19	5	8	20	55	110	16	49	318	80	388	305	358	26,5	133	200	28	497	19
225 S	4	465	328	814	423	894	400	350	450	19	5	8	20	60	140	18	53	356	80	436	286	339	26,5	149	225	31	553	19
225 M	2	465	328	809	405	889	400	350	450	19	5	8	20	55	110	16	49	356	80	436	311	386	37,5	149	225	31	553	19
	4	465	328	809	435	919	400	350	450	19	5	8	20	60	140	18	53	356	80	436	311	386	37,5	149	225	31	553	19
250 M	2	506	366	918	482	998	500	450	550	19	5	8	23	60	140	18	53	406	92	484	349	443	47	168	250	34	616	24
	4	506	366	918	482	998	500	450	550	19	5	8	23	65	140	18	58	406	92	484	349	443	47	168	250	34	616	24
280 S	2	559	388	984	514	1074	500	450	550	19	5	8	23	65	140	18	58	457	100	557	368	459	45,5	190	280	35	668	24
	4	559	388	984	514	1074	500	450	550	19	5	8	23	75	140	20	67,5	457	100	557	368	459	45,5	190	280	35	668	24
280 M	2	559	388	1035	514	1115	500	450	550	19	5	8	23	65	140	18	58	457	100	557	419	510	45,5	190	280	35	668	24
	4	559	388	1035	514	1115	500	450	550	19	5	8	23	75	140	20	67,5	457	100	557	419	510	45,5	190	280	35	668	24

Frame Size	Poles	General B14				Anti Rain B14	Flange B14					
		AC	AD	L	W		LD	M	N	P	S	T

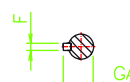
Aluminum

90 S	2-4	176	150	325	115	355	115	95	140	8	3	4
90 L	2-4	176	150	350	115	380	115	95	140	8	3	4
100	2-4	199	165	388	145	430	130	110	160	8	3,5	4
112	2-4	220	180	405	148	445	130	110	160	8	3,5	4
132 S	2-4	259	200	467	166	507	165	130	200	10	3,5	4
132 M	2-4	259	300	505	166	547	165	130	200	10	3,5	4

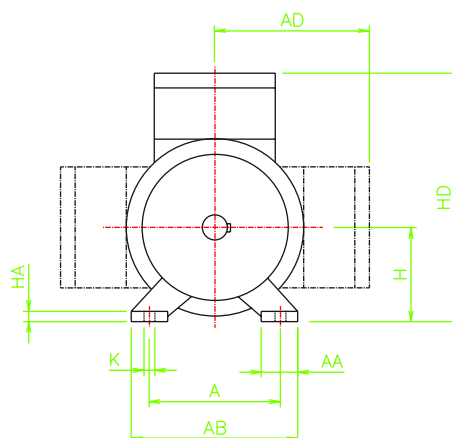
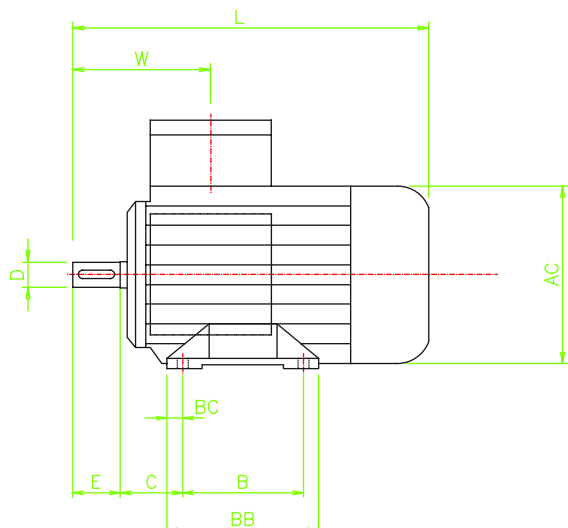
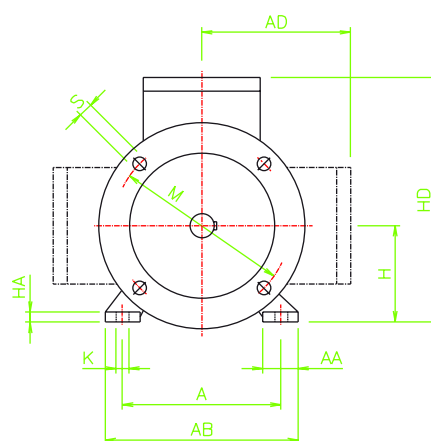
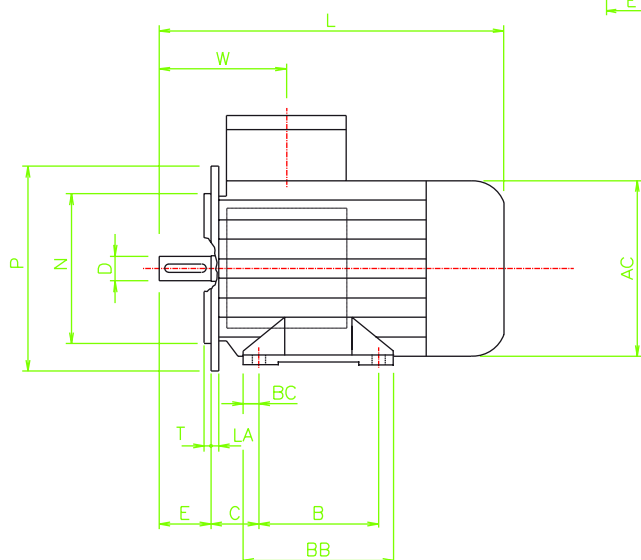
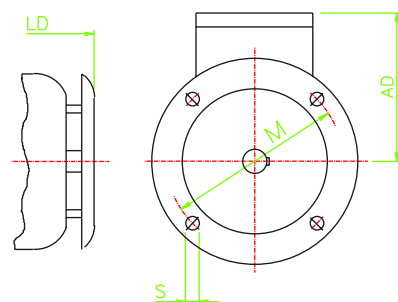
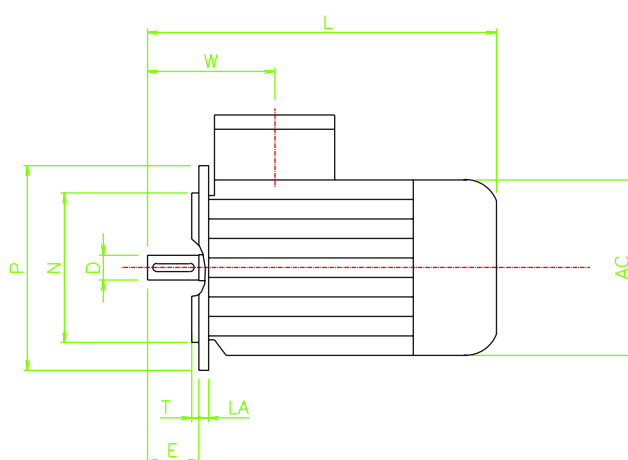
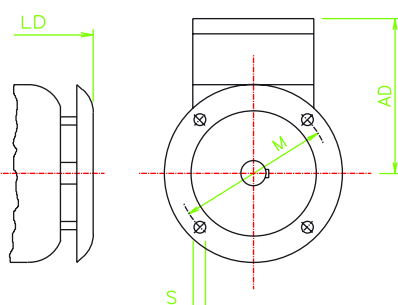
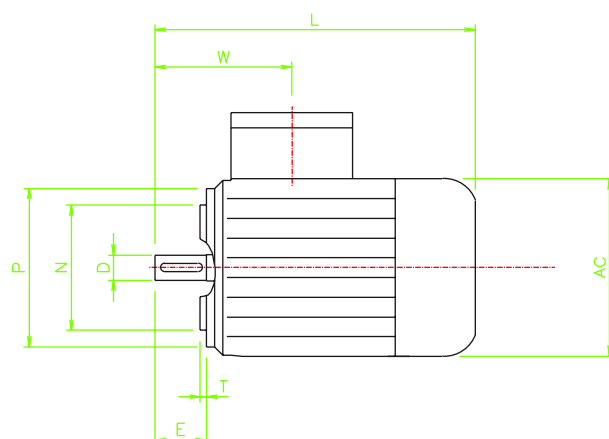
Shaft Extension B3 - B5 - B35 - V1			
D	E	F	GA

24	50	8	20
24	50	8	20
28	60	8	24
28	60	8	24
38	80	10	33
38	80	10	33

DIAGRAMS



SHAFT EXTENSION

DIAGRAMS

IM B3 (IM 1001)
IM B5 (IM 3001) - V1 (IM 3011)

IM B35 (IM 2001)
IM B14 (IM 3601)


THE COMPANY

MarelliMotori manufacturing facility and worldwide headquarters is located in Arzignano, city of Vicenza, Italy.

MarelliMotori is a leading global supplier of low and high voltage motors and generators.

MarelliMotori has over 100 years of experience with these products and is recognised as a leading supplier to the Industrial, Petrochemical and Marine Industries. MarelliMotori offers a range of high quality, energy efficient and reliable Electric Motors suitable for diverse applications.

MarelliMotori manufactures products to meet customer needs and in accordance with their requirements. Customer service and product support is an integral part of achieving MarelliMotori's goal of Total Customer Satisfaction.

EFFICIENCY CLASSIFICATION

This agreement, undersigned by MarelliMotori, establishes a classification scheme which, based on easy to read information, will ensure users of the correct selection of the motors.

Motors covered by this classification

Three phase squirrel cage induction motors, TEFC, 1.1 to 90 kW, 2 and 4 poles, rated for 400 V, 50 Hz, S1 duty class, in standard design.

Efficiency classes

Essentially there will be three classes, identified as **EFF 1**, **EFF 2** and **EFF 3**.

Efficiency Information

In the catalogue the efficiency, expressed as a percentage at full load and three quarters load, will be specified.

Motor Labelling

A label giving information about the efficiency class will appear on the motor rating plate.

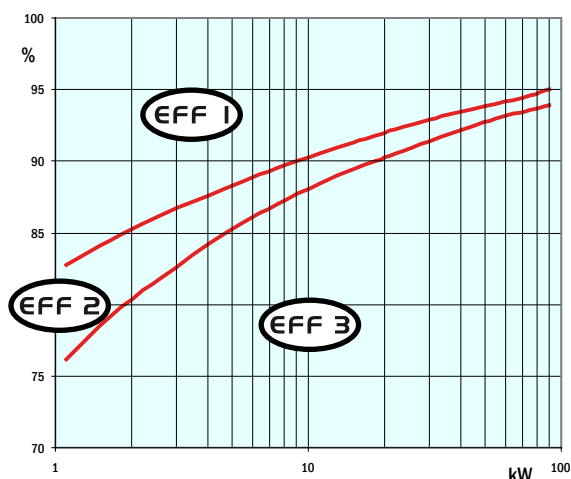


An accurate calculation of the energy savings associated with the use of a high efficiency motor is available by consulting the database EURODEEM (The European Database of Efficient Electric Motors), developed by the European Commission. This can be found on the Internet at:

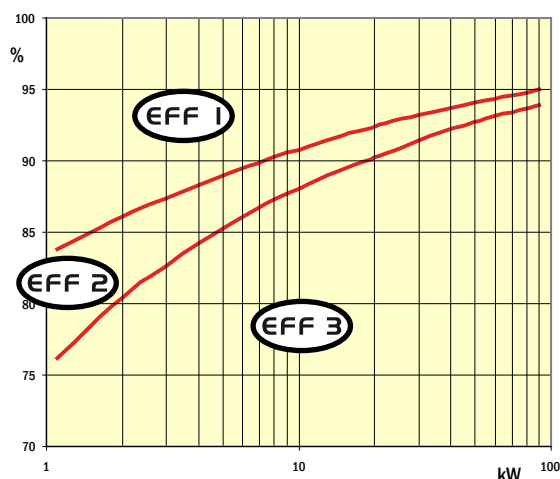
<http://re.jrc.ec.europa.eu/energyefficiency/eurodeem/>

		Power (kW)																
Poles	Efficiency	1,1	1,5	2,2	3	4	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90
2	eff2/eff3	76,2	78,5	81,0	82,6	84,2	85,7	87,0	88,4	89,4	90,0	90,5	91,4	92,0	92,5	93,0	93,6	93,9
	eff1/eff2	82,8	84,1	85,6	86,7	87,6	88,6	89,5	90,5	91,3	91,8	92,2	92,9	93,3	93,7	94,0	94,6	95,0
4	eff2/eff3	76,2	78,5	81,0	82,6	84,2	85,7	87,0	88,4	89,4	90,0	90,5	91,4	92,0	92,5	93,0	93,6	93,9
	eff1/eff2	83,8	85	86,4	87,4	88,3	89,2	90,1	91	91,8	92,2	92,6	93,2	93,6	93,9	94,2	94,7	95,0

2 poles



4 poles





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