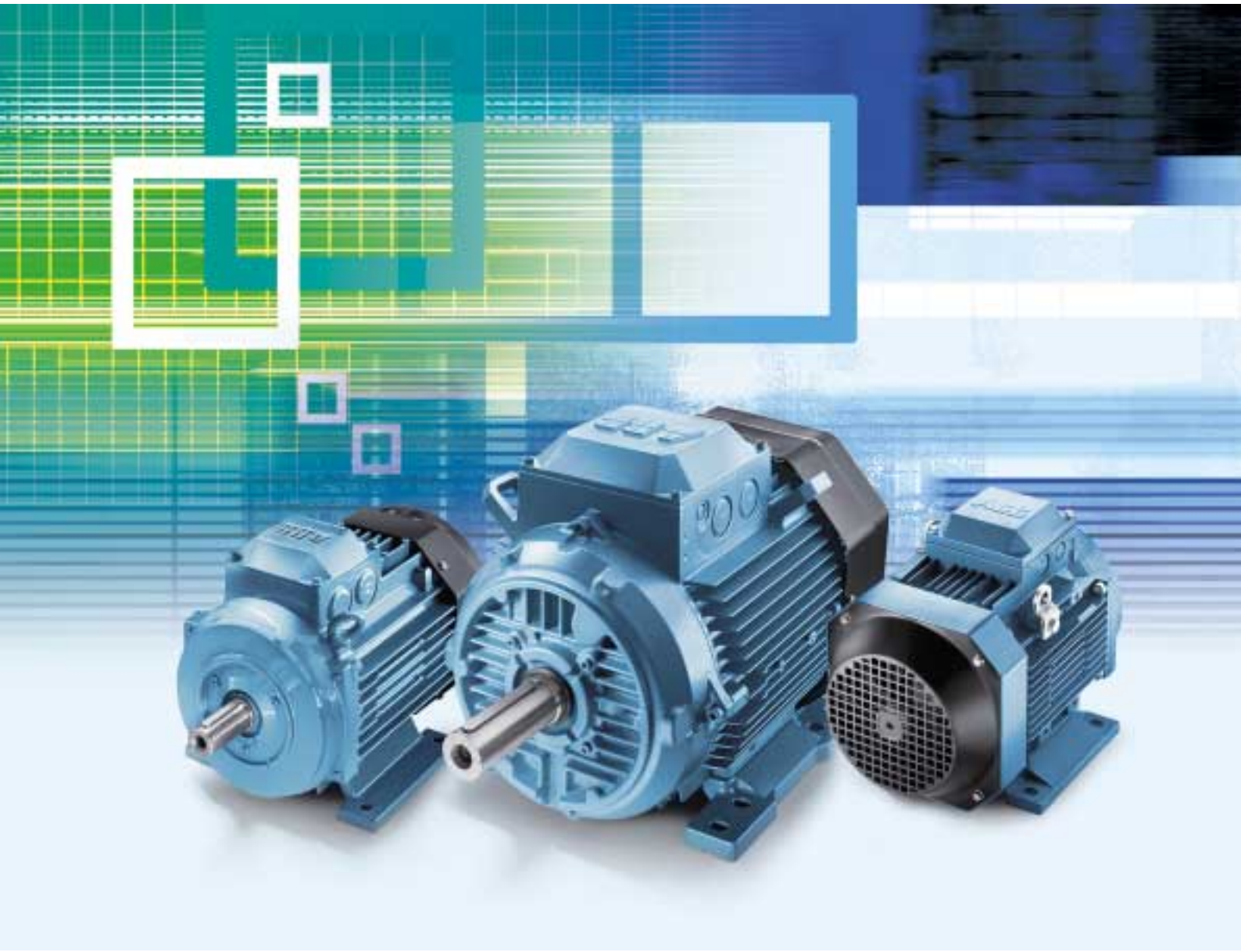
General Performance Motors

New Aluminum Motors



Low Voltage General Performance Motors

Simplicity

General performance motors are best suited for basic applications where simplicity and off-the-shelf availability are paramount. With ABB quality and support these motors have the features appreciated by volume customers and serial OEM's.

Motors are of EFF2 efficiency and have 1 year warranty.

ABB is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 110,000 people.

General Performance Motors

This catalogue contains technical data for the new motor types only. All other frame sizes are presented in our General purpose motors catalogue EN 12-2006.
A complete new catalogue for General performance motors will be published later in 2008.

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ABB reserves the right to change the design, technical specification and dimensions without prior notice.

Efficiency values now acc. to new efficiency measuring method standard IEC/EN 60034-2-1; 2007 September

The new standard IEC/EN 60034-2-1, which came into force September 2007, introduces new rules concerning the testing methods to be used for determining losses and efficiency.

It offers two ways of determining the efficiency; direct method and indirect method. The new standard specifies following parameters for determining the efficiency according to indirect method:

– reference temperature
– three options for determining additional load losses: measurement, estimation and mathematical.

Under the new standard ABB uses the indirect calculation method, additional load losses determined from measuring.

The motor documentation must state which method is used.

The motor efficiencies do not change, only the testing method is changed. The efficiency figure quoted may be lower than the efficiency figure by the old method. Therefore EFF1 motors are still EFF1 motors even if the new efficiency figure is below the existing EFF1/EFF2 curve.

The efficiency values on the technical data pages in this catalogue are given according to both new and old calculation methods.

The table below shows the differences between old and new standard.

Old efficiency testing standard EN/IEC 60034-2: 1996
Direct method
Indirect method: • PLL (= additional losses) estimated at 0.5 % of input power at rated load
Winding losses in stator and rotor determined at 95°C.
New efficiency testing standard IEC/EN 60034-2-1: 2007 September
Direct method
Indirect method: • Measurement; PLL calculated from load tests • Estimation; PLL at 2.5% - 1.0% of input power at rated load between 0.1 kW and 1000 kW • Mathematical calculation; Eh star - alternative indirect method with mathematical calculation of PLL
Winding losses in stator and rotor determined at [25°C + actual temperature rise measured]

EU motor efficiency level classification

A Europe-wide agreement ensures that the efficiency levels of electric motors manufactured in Europe are clearly displayed. In contrast to the American legislation on motor efficiency the European agreement does not establish mandatory efficiency levels.

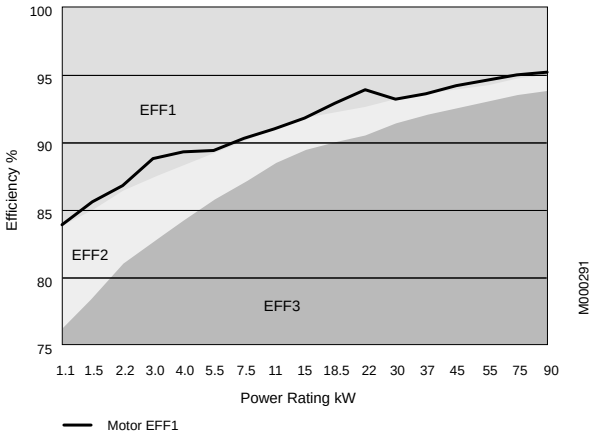
It basically establishes three classes giving motor manufacturers an incentive to qualify for a higher class.

Output kW	2-pole Boarderline		4-pole Boarderline	
	EFF2/EFF3	EFF1/EFF2	EFF2/EFF3	EFF1/EFF2
1.1	76.2	82.8	76.2	83.8
1.5	78.5	84.1	78.5	85.0
2.2	81.0	85.6	81.0	86.4
3	82.6	86.7	82.6	87.4
4	84.2	87.6	84.2	88.3
5.5	85.7	88.6	85.7	89.2
7.5	87.0	89.5	87.0	90.1
11	88.4	90.5	88.4	91.0
15	89.4	91.3	89.4	91.8
18.5	90.0	91.8	90.0	92.2
22	90.5	92.2	90.5	92.6
30	91.4	92.9	91.4	93.2
37	92.0	93.3	92.0	93.6
45	92.5	93.7	92.5	93.9
55	93.0	94.0	93.0	94.2
75	93.6	94.6	93.6	94.7
90	93.9	95.0	93.9	95.0

These efficiency levels apply to 2- and 4-pole, three phase squirrel cage induction motors rated for 400 V, 50 Hz with S1 duty class with the output 1.1 to 90 kW, which account for the largest volume on the market.

The efficiency of motors from different manufacturers are collated in a database, EURODEEM, published by the European Commission. It is accessible over the Internet at http://iamest.jrc.it/projects/eem/eurodeem.htm.

ABB three phase induction motors, 400 V 50 Hz, EU efficiency levels, 4 pole



General Performance Aluminum Motors

New Aluminum Motors
M2AA 71 to 132

Frame sizes	**71 to 132**
Output range	**0.25 to 22 kW**
Poles	**2 to 6 poles**

General Performance Aluminum Motors 71 to 132 New Design

1

With the new General performance aluminum motors our customers will benefit from simplicity and availability. The motors have all the features that are needed to run a standard application, at the same time providing ABB quality and reliability.

The new generation of General performance motors is based on the new product design which has been developed in response to market demands and is based on customer feedback.

Based on the information from and results of the market analysis, attention was paid to four key focus areas:

- **The right product**
- **World-wide availability**
- **Quality**
- **On-time delivery**

Improved design with new features and benefits

The new design of the aluminum motors offers many new features compared to the old design, the main features being:

- Adapted to market demands and aimed at standard applications
  - off-the-shelf availability
- The large range of two-piece flanges have been kept so you can select the best fitting for the machine; existing rings and cast iron ring holders are valid
- The motors have plastic fan covers as standard
- Foot-mounted motors have fixed feet
- Feet can be fixed to flange-mounted motors B5 as a modification
- Permanently greased bearings throughout range

Technical information and documentation

Data sheets and individual dimension drawings can be found on the Internet at www.abb.com/motors&generators, Online Motor Data Search.

The technical data on the new motor sizes as presented in this leaflet will be included in the main product catalogue “General performance motors”, to be published later in 2008. For all other sizes please consult the existing product catalogue: ‘Catalogue BU/General purpose motors EN 12-2006’

General performance aluminum motors

Technical data for totally enclosed squirrel cage three phase motors

EFF2

IP 55, IC 411; Insulation class F, temperature rise class B

Output kW	Motor type	Product code	Speed r/min	Efficiency, IEC 60034-2-1; 2007		Efficiency, IEC 60034-2; 1996		Power factor cos φ 100%	Current		Torque			Moment of inertia J=1/4GD² kgm²	Weight Foot-mounted kg	Sound pressure level dB(A)
				Full load 100 %	3/4 load 75 %	Full load 100 %	3/4 load 75 %		I_N A	$\frac{I_S}{I_N}$	T_N Nm	$\frac{T_s}{T_N}$	$\frac{T_{max}}{T_N}$			
3000 r/min = 2 poles			**400 V 50 Hz**												**Basic design**	
0.37	**M2AA 71A**	3GAA 071 001-••E	2800	71.2	69.8	72.0	71.5	0.83	0.900	5.5	1.26	2.6	2.8	0.000350	4.9	58
0.55	**M2AA 71B**	3GAA 071 002-••E	2800	73.8	73.5	74.6	74.2	0.80	1.350	5.5	1.87	2.7	3.0	0.000450	5.9	58
0.75	**M2AA 80A**	3GAA 081 001-••E	2840	76.0	75.7	77.0	76.5	0.82	1.750	5.3	2.52	2.6	3.4	0.000690	8.5	60
1.1	**M2AA 80B**	3GAA 081 002-••E	2840	79.2	78.5	80.0	79.0	0.83	2.400	5.8	2.70	2.8	3.6	0.000900	10.5	60
1.5	**M2AA 90 S**	3GAA 091 001-••E	2870	78.9	76.8	80.1	77.1	0.82	3.35	5.5	5.0	2.4	3.0	0.0019	13	63
2.2	**M2AA 90 L**	3GAA 091 002-••E	2885	82.1	82.5	83.6	83.9	0.87	4.37	6.0	7.5	2.5	3.0	0.0024	16	63
3	**M2AA 100 L**	3GAA 101 001-••E	2900	85.2	85.4	86.0	85.5	0.88	5.95	7.5	10	2.7	3.6	0.0041	21	65
4	**M2AA 112 M**	3GAA 111 101-••E	2895	84.8	85.2	85.6	86.1	0.89	7.6	7.2	13.2	2.7	3.3	0.0061	26	67
5.5	**M2AA 132 SA**	3GAA 131 001-••E	2845	85.8	86.4	86.2	87.0	0.87	10.8	6.8	18.5	2.8	3.2	0.014	38	75
7.5	**M2AA 132 SB**	3GAA 131 002-••E	2850	87.0	88.0	88.2	89.3	0.88	14	7.0	25.2	2.9	3.4	0.016	43	73
3000 r/min = 2 poles			**400 V 50 Hz**												**High-output design**	
0.75	**M2AA 71C**	3GAA 071 003-••E	2760	75.1	74.8	76.0	75.5	0.80	1.800	5.4	2.59	3.0	3.4	0.000560	6.5	58
1.5 [1]	**M2AA 80C**	3GAA 081 003-••E	2840	79.8	78.6	81.5	81	0.84	3.200	6.0	5.04	2.8	3.6	0.001100	11	60
1500 r/min = 4 poles			**400 V 50 Hz**												**Basic design**	
0.25	**M2AA 71A**	3GAA 072 001-••E	1380	64.9	64.1	65.5	64.5	0.76	0.750	3.8	1.73	2.2	2.4	0.000660	5.2	45
0.37	**M2AA 71B**	3GAA 072 002-••E	1370	66.8	65.9	67.5	66.5	0.76	1.050	3.8	2.58	2.4	2.5	0.000800	5.9	45
0.55	**M2AA 71C**	3GAA 072 003-••E	1370	69.1	68.3	70.0	69.0	0.76	1.550	4.3	3.83	2.7	2.7	0.001100	6.5	45
0.55	**M2AA 80A**	3GAA 082 001-••E	1390	70.3	70.9	71.0	71.5	0.80	1.450	4.4	3.78	2.1	2.7	0.001300	8.5	50
0.75	**M2AA 80B**	3GAA 082 002-••E	1405	73.8	73.2	74.5	74.0	0.80	1.850	5.2	5.10	2.5	3.1	0.001900	10	50
1.1	**M2AA 90 S**	3GAA 092 001-••E	1410	76.8	75.9	77.5	76.4	0.81	2.59	5.0	7.5	2.2	2.7	0.0032	13	50
1.5	**M2AA 90 L**	3GAA 092 002-••E	1420	79.1	77.8	80.3	78.1	0.79	3.45	5.0	10	2.4	2.9	0.0043	16	50
2.2	**M2AA 100 LA**	3GAA 102 001-••E	1430	82.2	81.9	83.0	82.7	0.81	4.8	5.5	15	2.4	2.9	0.0069	21	64
3	**M2AA 100 LB**	3GAA 102 002-••E	1430	84	83	85.0	83.9	0.81	6.48	5.5	20	2.5	2.9	0.0082	24	66
4	**M2AA 112 M**	3GAA 112 101-••E	1430	85	86.3	85.3	86.5	0.82	8.2	6.2	26.7	2	3.2	0.01	29	60
5.5	**M2AA 132 S**	3GAA 132 001-••E	1435	86.3	86.7	87.0	87.3	0.8	11.7	6.0	36.6	2.2	2.7	0.031	41	66
7.5	**M2AA 132 M**	3GAA 132 002-••E	1455	87.9	88.2	88.6	88.9	0.8	15.7	6.0	49.3	2.2	2.7	0.038	49	66
1500 r/min = 4 poles			**400 V 50 Hz**												**High-output design**	
0.95 [1]	**M2AA 80C**	3GAA 082 003-••E	1400	75.7	76.1	76.5	76.8	0.81	2.200	5.4	6.48	2.5	3.1	0.002300	10.5	50
1.1 [1]	**M2AA 80C**	3GAA 082 004-••E	1390	75.3	76	76.3	77.0	0.81	2.550	5.2	7.56	2.4	2.9	0.002300	10.5	50
1000 r/min = 6 poles			**400 V 50 Hz**												**Basic design**	
0.18	**M2AA 71A**	3GAA 073 001-••E	880	52	50.8	53.5	52.0	0.73	0.700	2.9	1.95	2.4	2.4	0.000920	5.5	42
0.25	**M2AA 71B**	3GAA 073 002-••E	870	57.2	56.7	58.5	56	0.71	0.900	3.3	2.74	2.6	2.6	0.001200	6.5	42
0.37	**M2AA 80A**	3GAA 083 001-••E	910	62.7	61.1	63.5	63.0	0.72	1.200	3.8	3.88	2.6	2.6	0.002000	9	47
0.55	**M2AA 80B**	3GAA 083 002-••E	910	64.3	63.8	65.0	64.5	0.74	1.650	3.7	5.77	2.4	2.4	0.002600	10	47
0.75	**M3AA 90 S**	3GAA 093 001-••E	930	70.2	69.8	71.5	70.7	0.67	2.36	4.0	7.5	1.9	2.3	0.0032	13	44
1.1	**M3AA 90 L**	3GAA 093 002-••E	930	73.4	71.7	74.4	72.5	0.69	3.25	4.0	11	2.1	2.4	0.0043	16	44
1.5	**M3AA 100 L**	3GAA 103 001-••E	950	78.8	76.3	80.0	77.0	0.71	3.92	4.5	15	1.9	2.3	0.0082	23	49
2.2	**M3AA 112 M**	3GAA 113 101-••E	950	79.3	79.7	80.1	80.3	0.67	5.9	4.6	22.1	2.4	2.8	0.01	28	54
3	**M2AA 132 S**	3GAA 133 001-••E	965	84.3	85.1	85.4	86.0	0.71	7.2	4.8	29.8	1.8	2.4	0.031	40	57
4	**M2AA 132 MA**	3GAA 133 002-••E	955	84.3	84.8	85.5	85.7	0.71	10	5.2	40	1.8	2.7	0.038	47	61
5.5	**M2AA 132 MB**	3GAA 133 003-••E	955	85.2	86	86.0	86.6	0.78	11.9	5.0	54.9	2.0	2.4	0.045	55	57
1000 r/min = 6 poles			**400 V 50 Hz**												**High-output design**	
0.37	**M2AA 71C**	3GAA 073 003-••E	870	60.8	60	61.5	60.5	0.70	1.250	3.3	4.06	2.8	2.8	0.001500	7	2.8
0.75 [1]	**M2AA 80C**	3GAA 083 003-••E	905	66.8	66.2	67.5	67.0	0.74	2.200	3.9	7.91	2.5	2.3	0.003100	11	47

[1] Temperature rise class F.

Efficiency values are given according to both IEC/EN 60034-2-1; 2007 and IEC 60034-2; 1996. Please note that the values are not comparable without knowing the testing method. ABB has calculated the new efficiency values acc. to indirect method, stray losses (additional losses) determined from measuring.

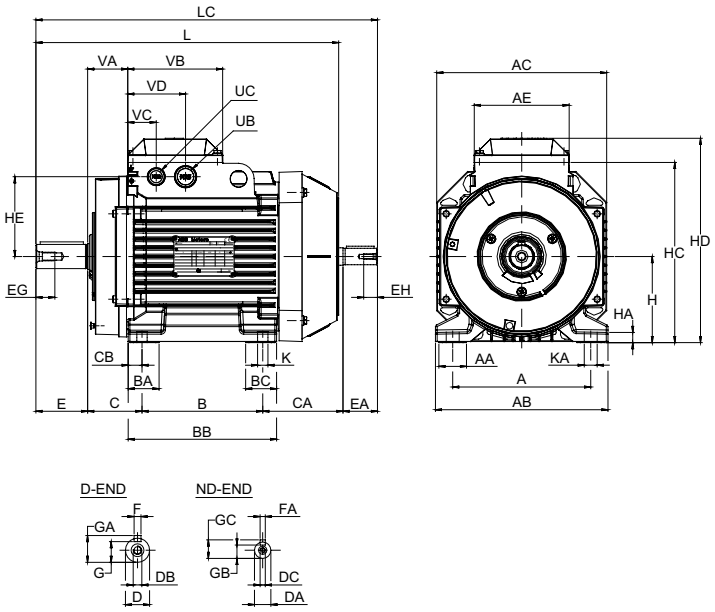
General performance aluminum motors - Variants codes

The following variant codes are available for general performance motors as modification from stocked motor. More information from ABB.

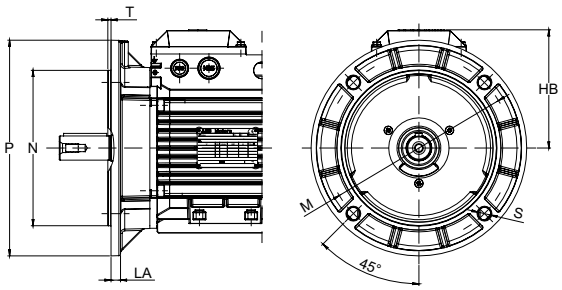
Code	Variant
Cooling system	
053	Metal fan cover.
Earthing Bolt	
067	**External earthing bolt.**
Heating Elements	
451	Heating element, 200-240 V.
Mounting arrangements	
008	IM 2101 foot/flange mounted, IEC flange, from IM 1001 (B34 from B3).
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).
047	IM 3601 flange mounted, IEC flange, from IM 3001 (B14 from B5).
048	IM 3001 flange mounted, IEC flange, from IM 3601 (B5 from B14).
200	Flange ring holder
218	Flange ring FT85
219	Flange ring FT100
220	Flange ring FF100
223	Flange ring FF115
224	Flange ring FT115
226	Flange ring FF130
227	Flange ring FT130
233	Flange ring FF165
234	Flange ring FT165
243	Flange ring FF215
244	Flange ring FT215
253	Flange ring FF265
254	Flange ring FT265
Protection	
005	Metal protective roof, vertical motor, shaft down.
Rating & Instruction plates	
002	Restamping voltage, frequency and output, continuous duty.
Stator winding temperature sensors	
122	Bimetal detectors, break type (NCC), (3 in series), 150°C, in stator winding.
436	PTC - thermistors (3 in series), 150°C, in stator winding.
Terminal Box	
230	Standard metal cable glands.
375	Standard plastic cable gland.
Testing	
145	Type test report from a catalogue motor, 400 V 50 Hz.
148	Routine test report.

Dimension drawings

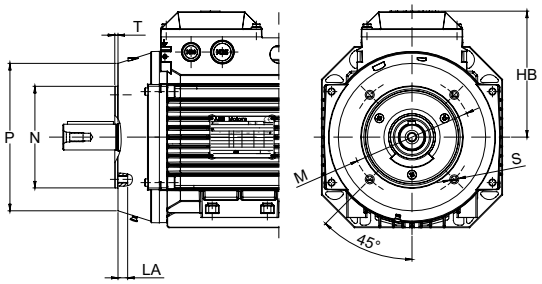
Foot-mounted motor; IM B3 (IM 1001), IM 1002



Flange-mounted motor, large flange; IM B5 (IM 3001), IM 3002



Flange-mounted motor, small flange; IM B14 (IM 3601)



IM B3 (IM 1001), IM 1002

Motor size	A	AA	AB	AC	AE	B	BA	BB	BC	C	CA	CB	D	DA	DB	DC	E	EA	EG	EH	F
71	112	23	136	130	97	90	24.5	110	24.5	45	79.5	10	14	11	M5	M4	30	23	12.5	10	5
80	125	27	154	150	97	100	32	125	32	50	80.5	12.5	19	14	M6	M5	40	30	16	12.5	6
90S	140	27	170	177	110	100	32	125	32	56	83.5	12.5	24	14	M8	M5	50	30	19	12.5	8
90L	140	27	170	177	110	125	32	150	32	56	83.5	12.5	24	14	M8	M5	50	30	19	12.5	8
100	160	32	200	197	110	140	36	172	36	63	93	16	28	19	M10	M6	60	40	22	16	8
112	190	32	230	197	110	140	36	172	36	70	126	16	28	19	M10	M6	60	40	22	16	8

Motor size	FA	G	GA	GB	GC	H	HA	HC	HD	HE	K	KA	L	LC	UB	UC	VA	VB	VC	VD
71	4	11	16	8.5	12.5	71	9	151	180	63.5	7	10	239.5	267.5	M20	M20	34.5	97	30.5	66.5
80	5	15.5	21.5	11	16	80	10	164.5	193.5	68	10	14	265.5	300.5	M20	M20	37.5	97	30.5	66.5
90S	5	20	27	11	16	90	10	189	217	82.5	10	14	284.5	319.5	M25	M20	43.5	110	33	67
90L	5	20	27	11	16	90	10	189	217	82.5	10	14	309.5	344.5	M25	M20	43.5	110	33	67
100	6	24	31	15.5	21.5	100	12	209	237	92.5	12	15	351	396	M25	M20	46.5	110	33	67
112	6	24	31	15.5	21.5	112	12	221	249	92.5	12	15	393	436	M25	M20	46.5	110	33	67

IM B5 (IM 3001), IM 3002

Motor size	HB	LA	M	N	P	S	T
71	109	10	130	110	160	10	3.5
80	113.5	9.5	165	130	200	12	3.5
90S	127	10	165	130	200	12	3.5
90L	127	10	165	130	200	12	3.5
100	137	11	215	180	250	15	4
112	137	11	215	180	250	15	4

IM B14 (IM 3601), IM 3602

Motor size	HB	LA	M	N	P	S	T
71	109	11	85	70	105	M6	2.5
80	113.5	11	100	80	120	M6	3
90S	127	13	115	95	140	M8	3
90L	127	13	115	95	140	M8	3
100	137	14	130	110	160	M8	3.5
112	137	14	130	110	160	M8	3.5

Tolerances:

A,B	+ - 0.8	H	+0 -0.5
D, DA	ISO j6	N	ISO j6
F, FA	ISO h9	C, CA	+- 0.8

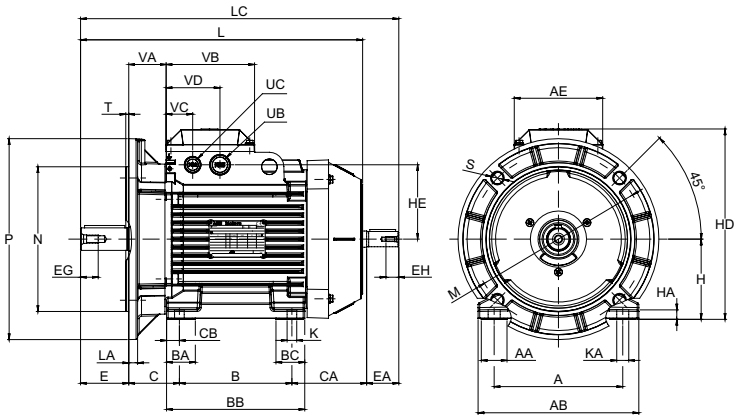
Above table gives the main dimensions in mm.

For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

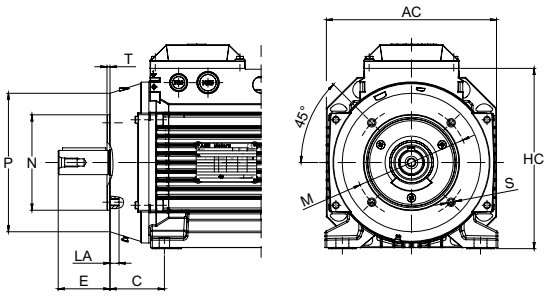
General performance aluminum motors M2AA 71-112

Dimension drawings

Foot- and flange-mounted motor;
IM B35 (IM 2001), IM 2002, large flange



Foot- and flange-mounted motor;
IM B34 (IM 2101), IM 2102, small flange



IM B35 (IM 2001), IM 2002; IM B34 (IM2101), IM 2102

Motor size	A	AA	AB	AC	AE	B	BA	BB	BC	C	CA	CB	D	DA	DB	DC	E	EA	EG	EH	F	FA
71	112	23	136	130	97	90	24.5	110	24.5	45	79.5	10	14	11	M5	M4	30	23	12.5	10	5	4
80	125	27	154	150	97	100	32	125	32	50	80.5	12.5	19	14	M6	M5	40	30	16	12.5	6	5
90S	140	27	170	177	110	100	32	125	32	56	83.5	12.5	24	14	M8	M5	50	30	19	12.5	8	5
90L	140	27	170	177	110	125	32	150	32	56	83.5	12.5	24	14	M8	M5	50	30	19	12.5	8	5
100	160	32	200	197	110	140	36	172	36	63	93	16	28	19	M10	M6	60	40	22	16	8	6
112	190	32	230	197	110	140	36	172	36	70	126	16	28	19	M10	M6	60	40	22	16	8	6

Motor size	G	GA	GB	GC	H	HA	HC	HD	HE	K	KA	L	LC	UB	UC	VA	VB	VC	VD
71	11	16	8.5	12.5	71	9	151	180	63.5	7	10	239.5	267.5	M20	M20	34.5	97	30.5	66.5
80	15.5	21.5	11	16	80	10	164.5	193.5	68	10	14	265.5	300.5	M20	M20	37.5	97	30.5	66.5
90S	20	27	11	16	90	10	189	217	82.5	10	14	284.5	319.5	M25	M20	43.5	110	33	67
90L	20	27	11	16	90	10	189	217	82.5	10	14	309.5	344.5	M25	M20	43.5	110	33	67
100	24	31	15.5	21.5	100	12	209	237	92.5	12	15	351	396	M25	M20	46.5	110	33	67
112	24	31	15.5	21.5	112	12	221	249	92.5	12	15	393	436	M25	M20	46.5	110	33	67

IM B35 (IM 2001), IM 2002

Motor size	HB	LA	M	N	P	S	T
71	109	10	130	110	160	10	3.5
80	113.5	9.5	165	130	200	12	3.5
90S	127	10	165	130	200	12	3.5
90L	127	10	165	130	200	12	3.5
100	137	11	215	180	250	15	4
112	137	11	215	180	250	15	4

IM B34 (IM 2101), IM 2102

Motor size	HB	LA	M	N	P	S	T
71	109	11	85	70	105	M6	2.5
80	113.5	11	100	80	120	M6	3
90S	127	13	115	95	140	M8	3
90L	127	13	115	95	140	M8	3
100	137	14	130	110	160	M8	3.5
112	137	14	130	110	160	M8	3.5

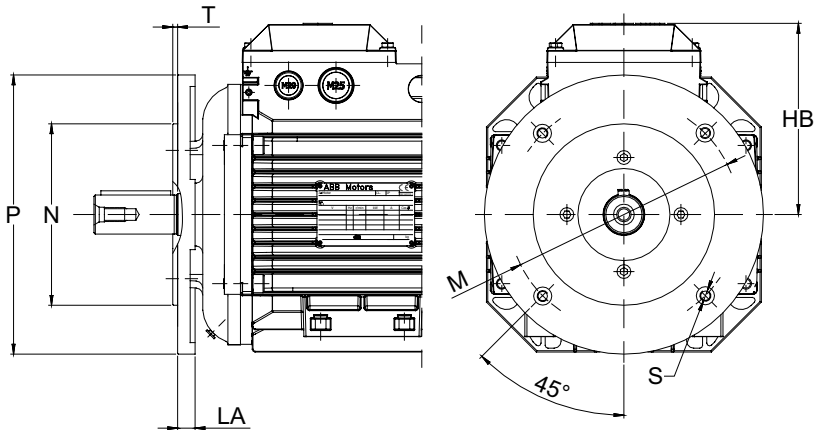
Tolerances:

A,B	+ - 0.8	H	+0 -0.5
D, DA	ISO j6	N	ISO j6
F, FA	ISO h9	C, CA	+- 0.8

Above table gives the main dimensions in mm.

For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Dimension drawings
Special design with two-piece flanges



Motor size	IEC Flange	Flange dimensions HB	P	M	N	LA	S[2]	T	Variant code [1] FF	FT
71	FT85	105	105	85	70	7.5	M6	2.5	-	218
	FF100 / FT100	105	120	100	80	7.5	M6	3	220	219
	FF115 / FT115	105	140	115	95	9.5	M8	3	223	224
	FF130 / FT130	105	160	130	110	9.5	M8	3.5	226	227
	FF165 / FT165	105	200	165	130	10.5	M10	3.5	233	234
80	FT85	110	105	85	70	7.5	M6	2.5	-	218
	FF100 / FT100	110	120	100	80	7.5	M6	3	220	219
	FF115 / FT115	110	140	115	95	9.5	M8	3	223	224
	FF130 / FT130	110	160	130	110	9.5	M8	3.5	226	227
	FF165 / FT165	110	200	165	130	10.5	M10	3.5	233	234
90	FT85	127	105	85	70	7.5	M6	2.5	-	218
	FF100 / FT100	127	120	100	80	7.5	M6	3	220	219
	FF115 / FT115	127	140	115	95	9.5	M8	3	223	224
	FF130 / FT130	127	160	130	110	9.5	M8	3.5	226	227
	FF165 / FT165	127	200	165	130	10.5	M10	3.5	233	234
100	FF130 / FT130	137	160	130	110	9.5	M8	3.5	226	227
	FF165 / FT165	137	200	165	130	10.5	M10	3.5	233	234
	FF215 / FT215	137	250	215	180	12.5	M12	4	243	244
112	FF130 / FT130	137	160	130	110	9.5	M8	3.5	226	227
	FF165 / FT165	137	200	165	130	10.5	M10	3.5	233	234
	FF215 / FT215	137	250	215	180	12.5	M12	4	243	244
132	FF215 / FT215	164	250	215	180	12.5	M12	4	243	244
	FF265 / FT265	164	300	265	230	16	M12	4	253	254

Data for smaller frame sizes on request.

[1] Variant code 200 'Flange ring holder' must be added when using the variant codes mentioned below.
[2] Flanges with clearance (FF) or tapped (FT) holes for indicated screws.

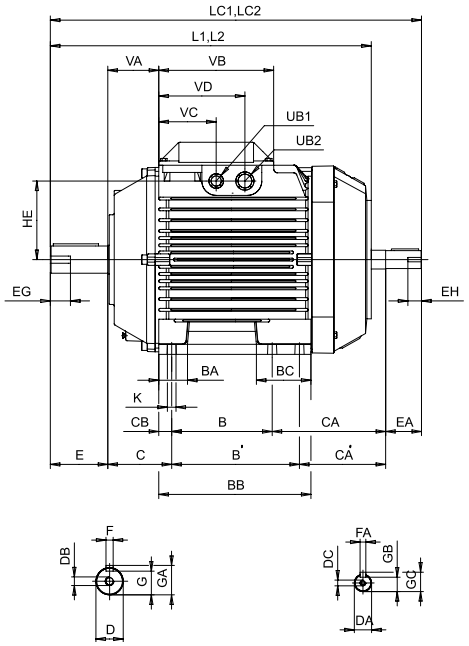
Tolerances:
N ISO j6

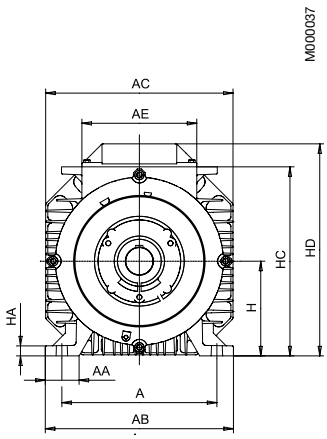
Above table gives the main dimensions in mm.
For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

General performance aluminum motors M2AA 132

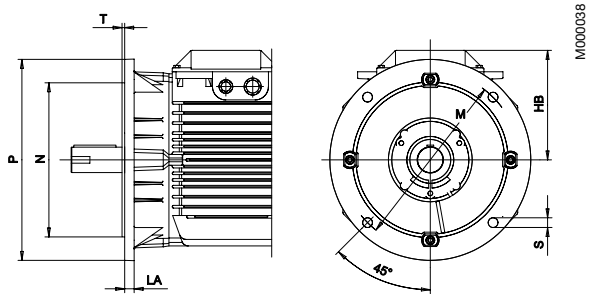
Dimension drawings

Foot-mounted motor; IM B 3 (IM 1001), IM 1002

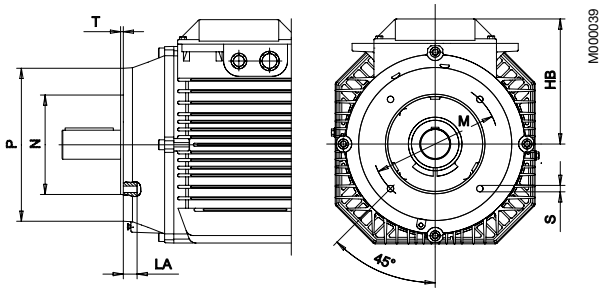




Flange-mounted motor, large flange; IM B 5 (IM 3001), IM 3002



Flange-mounted motor, small flange; IM B 14 (IM 3601), IM 3602



IM B3 (IM 1001), IM 1002

Motor size	A	AA	AB	AC	AE	B	B'	BA	BB	BC	C	CA	CA'	CB	D	DA	DB	DC	E	EA	EG	EH	F	FA
132	216	47	262	261	160	140	178[A]	40	212	76	89	158	120	18	38	24	M12	M8	80	50	28	19	10	8

Motor size	G	GA	GB	GC	H	HA	HC	HD	HE	K	KA	L	LC	UB	UC	VA	VB	VC	VD
132	33	41	20	27	132	14	263.5	295.5	109.5	12	15	447[G]	517	M20	M25	71	160	80	120

IM B5 (IM3001), IM 3002

Motor size	HB	LA	M	N	P	S	T
132	163.5	14	265	230	300	14.5	4

IM B14 (IM3601), IM 3602

Motor size	HB	LA	M	N	P	S	T
132	163.5	14.5	165	130	200	M10	3.5

Tolerances

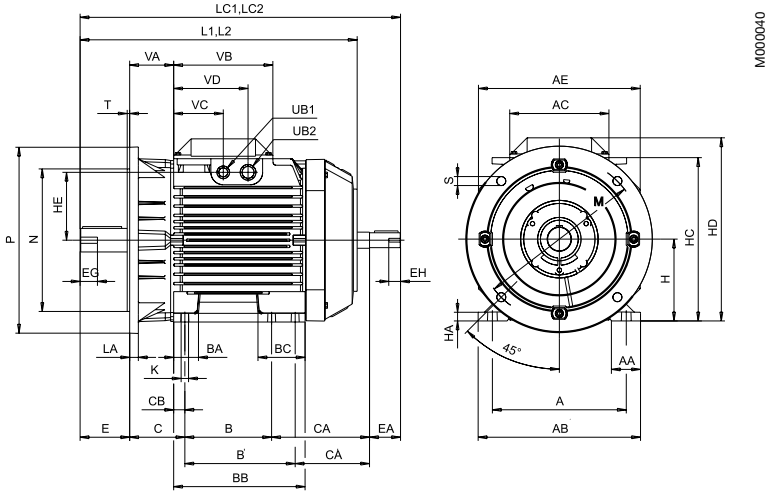
A, B	ISO js14
C, CA	+2 -2
D	ISO k6
DA	ISO j6
F, FA	ISO h9
H	+0 -0.5
N	ISO j6

[A] Not according to IEC
[G] For variant code 053 increased by 5.5 mm

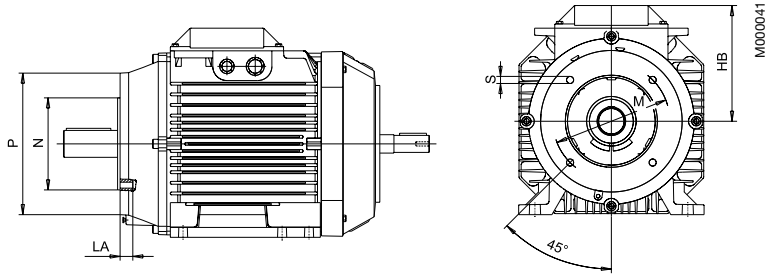
Above table gives the main dimensions in mm.
For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Dimension drawings

Foot- and flange-mounted motor; IM B 35 (IM 2001), IM 2002, large flange



Foot- and flange-mounted motor; IM B 34 (IM 2101), IM 2102, small flange



IM B35 (IM 2001), IM 2002; IM B34 (IM2101), IM 2102

Motor size	A	AA	AB	AC	AE	B	B'	BA	BB	BC	C	CA	CA'	CB	D	DA	DB	DC	E	EA	EG	EH	F	FA
132	216	47	262	160	261	140	178[A]	40	212	76	89	158	120	18	38	24	M12	M8	80	50	28	19	10	8

Motor size	G	GA	GB	GC	H	HA	HC	HD	HE	K	KA	L	LC	UB	UC	VA	VB	VC	VD
132	33	41	20	27	132	14	263.5	295.5	109.5	12	15	447[G]	517	M20	M25	71	160	80	120

IM B35 (IM2001), IM2002

Motor size	HB	LA	M	N	P	S	T
132	163.5	14	265	230	300	14.5	4

IM B34 (IM2101), IM2102

Motor size	HB	LA	M	N	P	S	T
132	163.5	14.5	165	130	200	M10	3.5

Tolerances

A, B	ISO js14
C, CA	+2 -2
D	ISO k6
DA	ISO j6
F, FA	ISO h9
H	+0 -0.5
N	ISO j6

[A] Not according to IEC
[G] For variant code 053 increased by 5.5 mm

Above table gives the main dimensions in mm.

For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

General performance aluminum motors in brief

Size		71	80	90	100	112	132
Stator and feet	Material	Diecast aluminum alloy					
	Paint colour shade	Munsell blue 8B 4.5/3.25 / NCS 4822 B05G					
	Surface treatment	Polyester powder paint , ≥ 30µm		Polyester powder paint, ≥ 30µm			
Feet		Fixed feet		Fixed feet			
	Material	Aluminum alloy		Aluminum alloy, integrated with stator.			
Bearing end shields	Material	Diecast aluminum alloy					
	Paint colour shade	Munsell blue 8B 4.5/3.25 / NCS 4822 B05G					
	Surface treatment	Polyester powder paint, ≥ 30µm		Polyester powder paint, ≥ 30µm			
Bearings	D-end	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6306-2Z/C3	6306-2Z/C3	6208-2Z/C3
	N-end	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6205-2Z/C3	6206-2Z/C3
Axially-locked bearings	Inner bearing cover	D-end		D-end			
Bearing seals	D-end	V-ring					
	N-end	Labyrinth seal.					
Lubrication		Permanently lubricated shielded bearings.					
		Grease temperature range -40°C to +160°C.					
Terminal box	Material	Diecast aluminum alloy,base integrated with stator.					
	Surface treatment	Similar to stator.					
	Screws	Steel 5G, galvanised.		Steel 5G, galvanised			
Connections	Knock-out openings	2 x (M20 + M20)		2 x (M20 + M25)			
	Max Cu-area mm^2	4		6			
	Terminal box	Cable lugs, 6 terminals		Screw terminals, 6 terminals			Cable lugs, 6 terminals
Fan	Material	Polypropylene. Reinforced with 20% glass fibre.					
Fan cover	Material	Polypropylene					
Stator winding	Material	Copper					
	Impregnation	Polyester varnish. Tropicalised.					
	Insulation class	Insulation class F. Temperature rise class B, unless otherwise stated.					
Stator winding temperature sensors		Optional					
Rotor winding	Material	Diecast aluminum					
Balancing method		Half key balancing					
Key ways		Closed keyway					
Heating elements	On request	8 W	25 W				
Enclosure		IP 55					
Cooling method		IC 411					
Drain holes		Drain holes with closable plastic plugs, open on delivery					
Eye bolts				Part of the frame			

General Performance Aluminum Motors

New Aluminum Motors
M2AA 160 to 250

Frame sizes	**160 to 250**
Output range	**7.5 to 55 kW**
Poles	**2 to 6 poles**

Voltage up to 690 V

General Performance Aluminum Motors 160 to 250 New Design

2

With the new General performance aluminum motors our customer will benefit from simplicity and availability. The motors have all the features that are needed to run a standard application, at the same time providing ABB quality and reliability.

The new generation of General performance motors is based on the new product design, which has been developed in response to market demands and is based on customer feed-back and on a failure modes and effects analysis (FMEA).

Based on the information from and result of the market analysis, attention was paid to four key focus areas:

- **The right product**
- **World-wide availability**
- **Quality**
- **On-time delivery**

Improved design with new features and benefits

The new motors M2AA 160 to 250 are of a completely new generation that will replace the existing M2AA 160 to 250 with the main features:

- Adapted to market demands and aimed at standard applications
- Off-the-shelf availability
- Reduced bearing and winding temperature – increased lifetime
- Robust and reliable – cast iron end shields
- Improved mechanical and electrical design – longer lifetime
- Permanently greased bearings throughout the range
- Improved and harmonized shaft sealing

Technical information and documentation

Data sheets and individual dimension drawings can be found on the Internet at www.abb.com/motors&generators, Online Motor Data Search.

The technical data of the new motor sizes as presented in this leaflet will be included in the main product catalogue “General performance motors”, to be published later in 2008. For all other sizes please consult the existing product catalogue: ‘Catalogue BU/General purpose motors EN 12-2006’.

General performance aluminum motors

Technical data for totally enclosed squirrel cage three phase motors

IP 55, IC 411; Insulation class F, temperature rise class B

Output kW	Type designation	Product code	Speed r/min	Efficiency, IEC 60034-2-1; 2007		Efficiency, IEC 60034-2; 1996		Power factor cos φ	Current		Torque			Moment of inertia J=1/4 GD² kgm²	Weight kg	Sound pressure level LP dB(A)
				Full load 100 %	3/4 load 75 %	Full load 100 %	3/4 load 75 %		I_N A	$\frac{I_S}{I_N}$	T_N Nm	$\frac{T_S}{T_N}$	$\frac{T_{max}}{T_N}$			
2-poles = 3000 r/min			**400 V 50 Hz**										**Basic design**			
11	**M2AA 160 MLA**	3GAA 161 041-••G	2916	88.0	88.5	88.6	89.1	0.89	20.5	6.8	36	2.1	2.7	0.039	82	73
15	**M2AA 160 MLB**	3GAA 161 042-••G	2914	89.1	89.7	89.9	90.5	0.90	27	7.5	49	2.5	3.1	0.049	96	73
18.5	**M2AA 160 MLC**	3GAA 161 043-••G	2935	89.8	90.1	90.5	90.8	0.91	32.5	7.2	60	2.2	3.2	0.054	104	73
22	**M2AA 180 MLA**	3GAA 181 041-••G	2928	90.4	90.6	91.0	91.2	0.90	39	7.7	72	2.8	3.3	0.059	118	75
30	**M2AA 200 MLA**	3GAA 201 041-••G	2948	91.1	91.1	91.8	91.8	0.88	54	7.7	97	2.8	3.6	0.093	160	75
37	**M2AA 200 MLB**	3GAA 201 042-••G	2949	91.6	92.0	92.4	92.8	0.92	63	7.9	120	2.5	3.4	0.118	185	75
45	**M2AA 225 SMA**	3GAA 221 041-••G	2948	92.1	92.3	92.9	93.1	0.91	78	7.7	146	2.7	2.9	0.198	236	75
55	**M2AA 250 SMA**	3GAA 251 041-••G	2964	92.4	92.4	93.3	93.3	0.91	94	7.3	177	2.3	2.3	0.281	295	75
4-poles = 1500 r/min			**400 V 50 Hz**										**Basic design**			
11	**M2AA 160 MLA**	3GAA 162 041-••G	1459	88.2	89.0	89.0	89.8	0.81	22.5	6.5	72	2.3	2.6	0.068	84	62
15	**M2AA 160 MLB**	3GAA 162 042-••G	1462	89.2	89.8	89.9	90.5	0.82	29.5	7.1	98	2.6	3.3	0.085	98	62
18.5	**M2AA 180 MLA**	3GAA 182 041-••G	1465	89.8	90.3	90.5	91.0	0.82	36	7.7	121	3.2	3.5	0.103	116	64
22	**M2AA 180 MLB**	3GAA 182 042-••G	1463	90.4	90.9	91.0	91.5	0.83	42	8.3	144	3.3	3.9	0.122	131	64
30	**M2AA 200 MLA**	3GAA 202 041-••G	1475	91.1	91.5	91.8	92.2	0.83	57	7.7	194	2.7	3.2	0.22	187	67
37	**M2AA 225 SMA**	3GAA 222 041-••G	1477	91.6	91.9	92.4	92.7	0.84	69	6.9	239	2.3	2.7	0.317	231	68
45	**M2AA 225 SMB**	3GAA 222 042-••G	1478	92.1	92.4	92.9	93.2	0.84	84	7.4	291	2.4	3.0	0.374	257	68
55	**M2AA 250 SMA**	3GAA 252 041-••G	1478	92.4	92.7	93.3	93.6	0.85	100	7.8	355	2.7	2.7	0.485	297	68
6-poles = 1000 r/min			**400 V 50 Hz**										**Basic design**			
7.5	**M2AA 160 MLA**	3GAA 163 041-••G	968	85.4	86.3	86.7	87.6	0.77	16.1	6.4	74	1.8	3.0	0.071	84	61
11	**M2AA 160 MLB**	3GAA 163 042-••G	968	87.0	87.7	88.1	88.7	0.77	23.5	7.3	109	2.1	3.4	0.102	110	61
15	**M2AA 180 MLA**	3GAA 183 041-••G	968	88.1	88.6	89.5	90.0	0.75	32.5	7.7	148	2.3	3.8	0.139	137	61
18.5	**M2AA 200 MLA**	3GAA 203 041-••G	975	89.1	90.0	90.5	91.4	0.77	38.5	5.9	181	1.9	2.5	0.218	186	65
22 [1)]	**M2AA 200 MLB**	3GAA 203 042-••G	969	89.3	90.5	90.5	91.7	0.76	46.5	5.4	217	1.8	2.3	0.218	198	65
30	**M2AA 225 SMA**	3GAA 223 041-••G	985	90.6	91.0	91.9	92.3	0.83	57	7.0	291	2.4	2.8	0.547	257	65
37	**M2AA 250 SMA**	3GAA 253 041-••G	985	91.2	91.6	92.4	92.8	0.82	71	6.7	359	2.3	2.7	0.728	291	65

[1)] Temperature rise class F

Efficiency values are given according to both IEC/EN 60034-2-1; 2007 and IEC 60034-2; 1996. Please note that the values are not comparable without knowing the testing method. ABB has calculated the new efficiency values acc. to indirect method. stray losses (additional losses) determined from measuring.

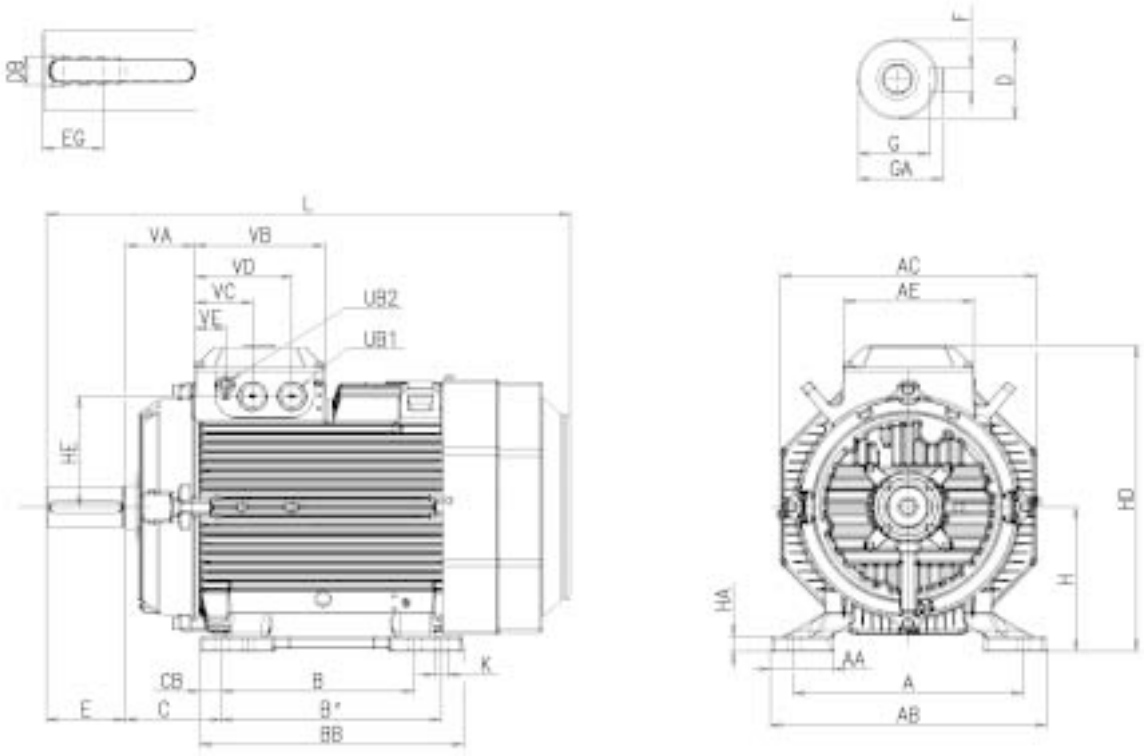
General performance aluminum motors - variant codes

The following variant codes are available for general performance motors as modification from stocked motor. More information from ABB.

Code	Variant
Bearings and lubrication	
036	Transport lock for bearings.
037	Roller bearing at D-end.
041	Bearings regreasable via grease nipples.
188	63-series bearings.
Drain Holes	
065	Plugged existing drain holes.
Earthing Bolt	
067	External earthing bolt.
Heating Elements	
450	Heating element, 100-120V.
451	Heating element, 200-240V.
Mounting arrangements	
009	IM 2001 foot/flange mounted, IEC flange, from IM 1001 (B35 from B3).
066	Modified for non-standard mounting position. Specify IM xxxx. Use for all mounting arrangements excluding IM B3 (1001) and IM B5 (3001).
Protection	
005	Metal protective roof, vertical motor, shaft down.
Rating & Instruction plates	
002	Restamping voltage, frequency and output, continuous duty.
Stator winding temperature sensors	
121	Bimetal detectors, break type (NCC), (3 in series), 150°C, in stator winding.
122	Bimetal detectors, break type (NCC), (3 in series), 150°C, in stator winding.
127	Bimetal detectors, break type (NCC), (3 in series, 130°C & 3 in series, 150°C), in stator winding.
435	PTC - thermistors (3 in series), 130°C, in stator winding.
436	PTC - thermistors (3 in series), 150°C, in stator winding.
441	PTC - thermistors (3 in series, 130°C & 3 in series, 150°C), in stator winding.
Terminal Box	
230	Standard metal cable glands.
Testing	
140	Test confirmation.
145	Type test report from a catalogue motor, 400V 50Hz.

Dimension drawings

Foot-mounted motor; IM B3 (IM 1001), IM 1002



IM B3 (IM 1001), IM 1002

Motor size	A	AA	AB	AC	AE	B	B'	BA	BB	C	CB	D	DB	E	EG	F
160 [2]	254	54	310	323	180	210	254	84	294	108	20	42	M16	110	36	12
160 [3]	254	54	310	323	180	210	254	84	294	108	20	42	M16	110	36	12
180	279	66	340	323	180	241	279	78	319	121	20	48	M16	110	36	14
200	318	87	382	354	180	267	305	98	365	133	30	55	M20	110	42	16

Motor size	G	GA	H	HA	HD	HE	K	L	UB1 [1]	UB2 [1]	VA	VB	VC	VD	VE
160 [2]	37	45	160	20	370	139	14.5	584	2*M40	M16	88,5	180	80	135	43
160 [3]	37	45	160	20	370	139	14.5	681	2*M40	M16	88.5	180	80	135	43
180	42.5	51.5	180	20	390	139	14.5	681	2*M40	M16	88.5	180	80	135	43
200	49	59	200	20	425	154	18.5	726	2*M40	M16	88.5	180	80	134	43

Tolerances

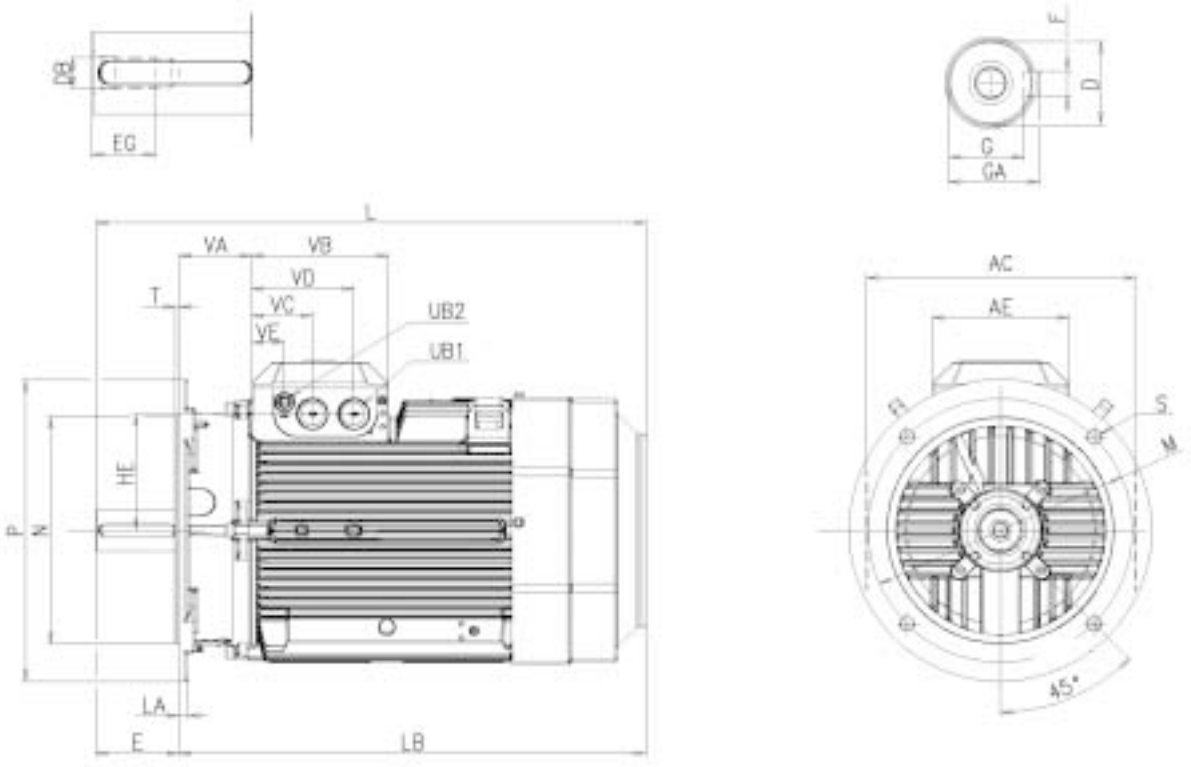
A, B	ISO js14
C	± 0.8
D 42-48	ISO k6
D 55	ISO m6
F	ISO h9
H	+0 -0.5

[1] Knockout openings.
[2] 2-pole, 4-pole and MLA 6-pole
[3] MLB 6-pole

Above table gives the main dimensions in mm.
For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Dimension drawings

Flange-mounted motor; IM B5 (IM 3001), IM 3002



IM B5 (IM 3001), IM 3002

Motor size	AC	AE	D	DB	E[4]	EG	F	G	GA	HB	HE	L	M
160 [2]	323	180	42	M16	110	36	12	37	45	210	139	584	300
160 [3]	323	180	42	M16	110	36	12	37	45	210	139	681	300
180	323	180	48	M16	110	36	14	42.5	51.5	210	139	681	300
200	354	180	55	M20	110	42	16	49	59	210	154	726	350

Motor size	N	P	S	T	UB1[1]	UB2[1]	VA	VB	VC	VD	VE
160 [2]	250	350	19	5	2*M40	M16	88.5	180	80	135	43
160 [3]	250	350	19	5	2*M40	M16	88.5	180	80	135	43
180	250	350	19	5	2*M40	M16	88.5	180	80	135	43
200	300	400	19	5	2*M40	M16	88.5	180	80	135	43

Tolerances

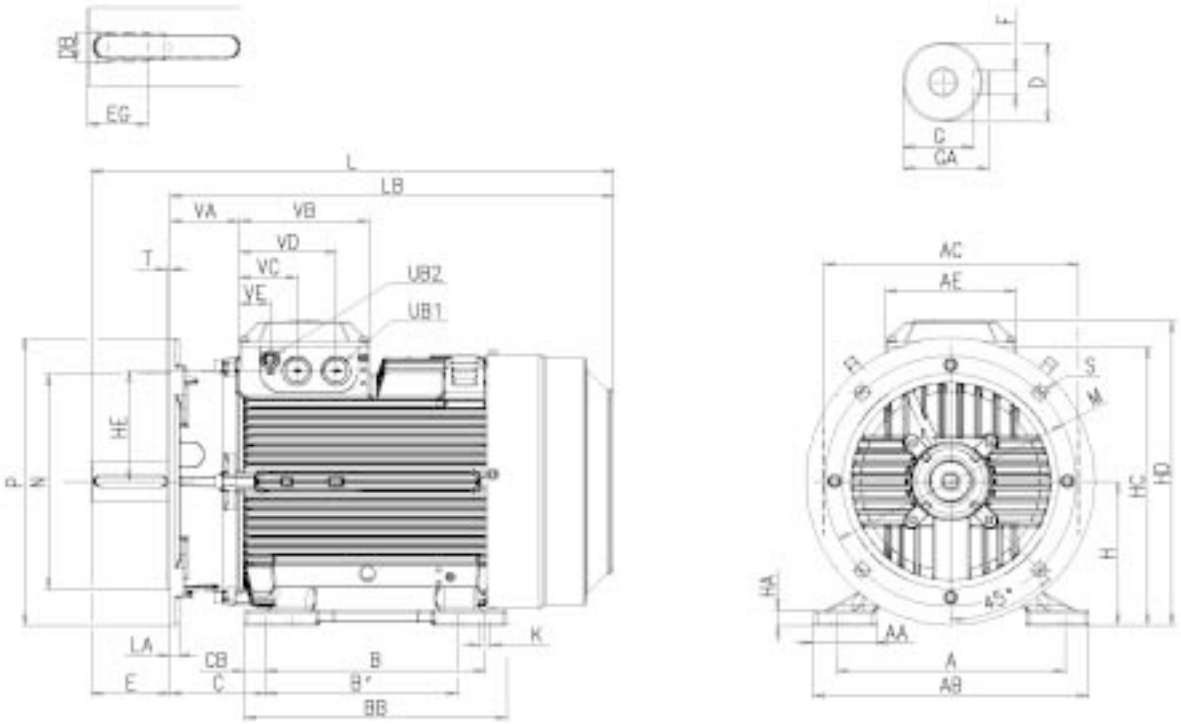
D 42-48	ISO k6
D 55	ISO m6
F	ISO h9
N	ISO j6

[1] Knockout openings.
[2] 2-pole, 4-pole and MLA 6-pole
[3] MLB 6-pole
[4] Shoulder of shaft extension and contact surface of flange are in the same plane.

Above table gives the main dimensions in mm.
For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Dimension drawings

Foot- and flange-mounted motor; IM B35 (IM 2001), IM 2002 IM 2002



IM B35 (IM 2001), IM 2002

Motor size	A	AA	AB	AC	AE	B	B'	BA	BB	C	CB	D	DB	E[4]	EG	F	G	GA
160 [2]	254	54	310	323	180	210	254	84	294	108	20	42	M16	110	36	12	37	45
160 [3]	254	54	310	323	180	210	254	84	294	108	20	42	M16	110	36	12	37	45
180	279	66	340	323	180	241	279	78	319	121	20	48	M16	110	36	14	42.5	51.5
200	318	87	382	354	180	267	305	98	365	133	30	55	M20	110	42	16	49	59

Motor size	H	HA	HD	HE	K	L	M	N	P	S	T	UB1[1]	UB2[1]	VA	VB	VC	VD	VE
160 [2]	160	20	370	139	14.5	584	300	250	350	19	5	2*M40	M16	88.5	180	80	135	43
160 [3]	160	20	370	139	14.5	681	300	250	350	19	5	2*M40	M16	88.5	180	80	135	43
180	180	20	390	139	14.5	681	300	250	350	19	5	2*M40	M16	88.5	180	80	135	43
200	200	20	425	154	18.5	726	350	300	400	19	5	2*M40	M16	88.5	180	80	135	43

Tolerances

A, B	ISO js14
C	± 0.8
D 42-48	ISO k6
D 55	ISO m6
F	ISO h9
H	+0 - 0.5
N	ISO j6

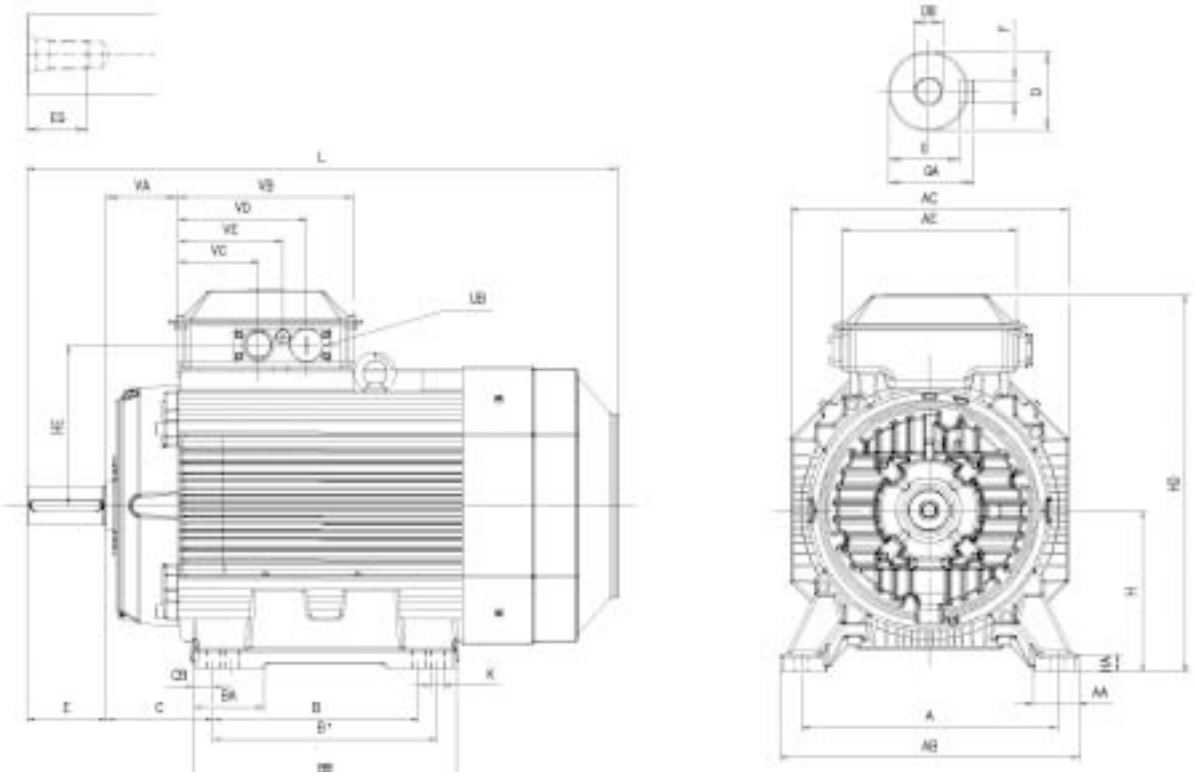
[1] Knockout openings.
[2] 2-pole, 4-pole and MLA 6-pole
[3] MLB 6-pole
[4] Shoulder of shaft extension and contact surface of flange are in the same plane.

Above table gives the main dimensions in mm.
For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

General performance aluminum motors M2AA 225 - 250

Dimension drawings

Foot-mounted motor; IM B3 (IM 1001), IM 1002



IM B3 (IM 1001), IM 1002

Motor size	A	AA	AB	AC	AE	B	B'	BA	BB	C	CB	D	DB	E	EG	F	G	GA
225-2p	356	64	416	386	243	286	311	81.5	365	149	27	55	M20	110	42	16	49	59
225 4-6p	356	64	416	386	243	286	311	81.5	365	149	27	60	M20	140	42	18	53	64
250-2p	406	76	472	425	243	311	349	99.5	409	168	30	60	M20	140	42	18	53	64
250 4-6p	406	76	472	425	243	311	349	99.5	409	168	30	65	M20	140	42	18	58	69

Motor size	H	HA	HD[2]	HD[3]	HE [2]	HE[3]	K	L	UB[1]	VA	VB	VC[2]	VC[3]	VD[2]	VD[3]	VE[2]	VE[3]
225-2p	225	25	525	557	223	239	18	821	2xFL 13	101	243	112	77	179	167	145	122
225 4-6p	225	25	525	557	223	239	18	851	2xFL 13	101	243	112	77	179	167	145	122
250-2p	250	40	571	571	244	260	22	880	2xFL 13	94	243	112	77	179	167	145	122
250 4-6p	250	40	571	571	244	260	22	880	2xFL 13	94	243	112	77	179	167	145	122

Tolerances

A, B	ISO js14
C	± 0.8
D 55-65	ISO m6
F	ISO h9
H	+0 - 0.5

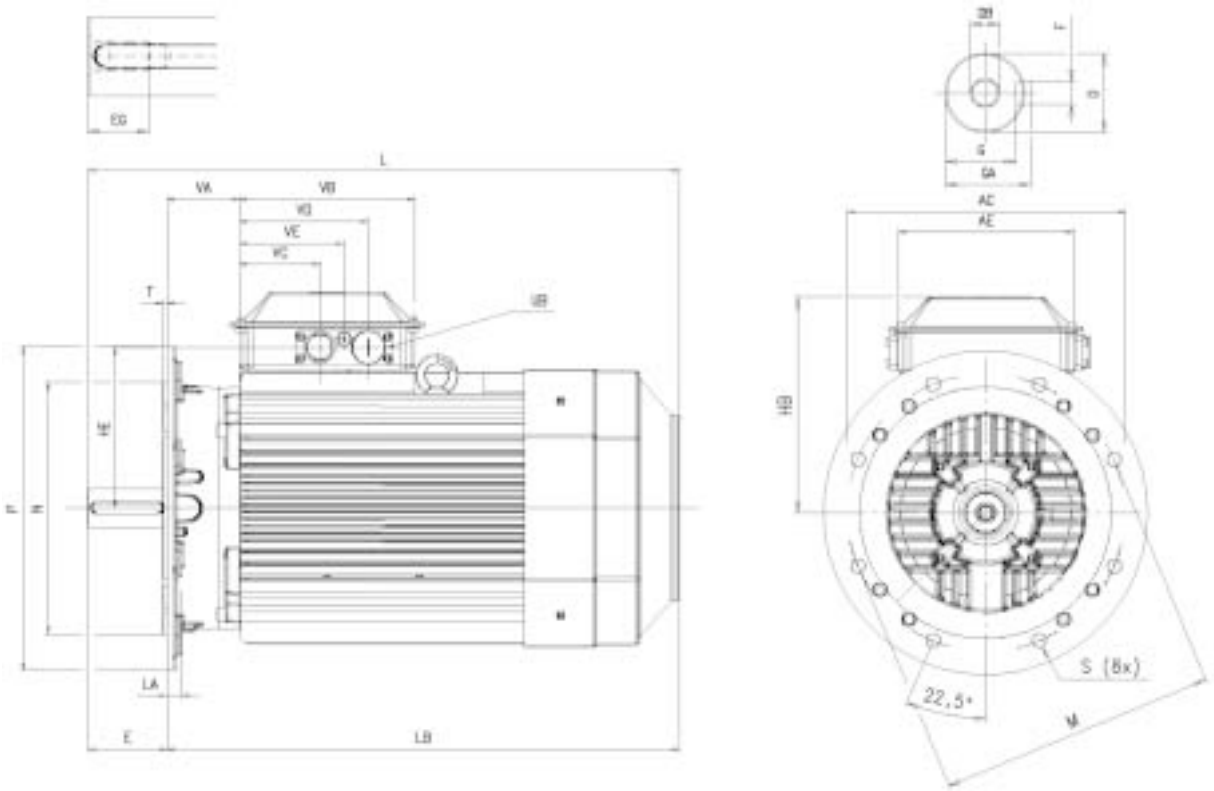
[1] Flange opening is provided with pipe flange FL 13, with tapped lead-in holes plugged with sealing plugs.
Single- and two-speed motors: 2 x M40 + M16.
Motors for 230 V 50 Hz have pipe flange FL 21 and 2 x M63 + M16.
[2] For flange opening FL 13: 2 x M40 + M16.
[3] For extra large terminal box with flange opening FL 21: 2 x M63 + M16.

Above table gives the main dimensions in mm.

For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Dimension drawings

Flange-mounted motor; IM B5 (IM 3001), IM 3002



IM B5 (IM 3001), IM 3002

Motor size	AC	AE	D	DB	E[1]	EG	F	G	GA	HB[3]	HB[4]	HE[3]	HE[4]	L	LA
225-2p	386	243	55	M20	110	42	16	49	59	300	332	223	239	821	20
225 4-6p	386	243	60	M20	140	42	18	53	64	300	332	223	239	851	20
250-2p	425	243	60	M20	140	42	18	53	64	300	354	244	260	880	24
250 4-6p	425	243	65	M20	140	42	18	53	64	322	354	244	260	880	24

Motor size	M	N	P	S	T	UB[2]	VA	VB	VC[3]	VC[4]	VD[3]	VD[4]	VE[3]	VE[4]
225-2p	400	350	450	19	5	2 x FL 13	101	243	112	77	179	167	145	122
225 4-6p	400	350	450	19	5	2 x FL 13	101	243	112	77	179	167	145	122
250-2p	400	350	550	19	5	2 x FL 13	94	243	112	77	179	167	145	122
250 4-6p	500	450	550	19	5	2 x FL 13	94	243	112	77	179	167	145	122

Tolerances

D 55-65	ISO m6
F	ISO h9
H	+0 -0.5
N	ISO js6

[1] Shoulder of shaft extension and contact surface of flange are in the same plane.
[2] Flange opening is provided with pipe flange FL 13, with tapped lead-in holes plugged with sealing plugs. Single- and two-speed motors: 2 x M40 + M16. Motors for 230 V 50 Hz have pipe flange FL 21 and 2 x M63 + M16.
[3] For flange opening FL 13: 2 x M40 + M16.
[4] For extra large terminal box with flange opening FL 21: 2 x M63 + M16.

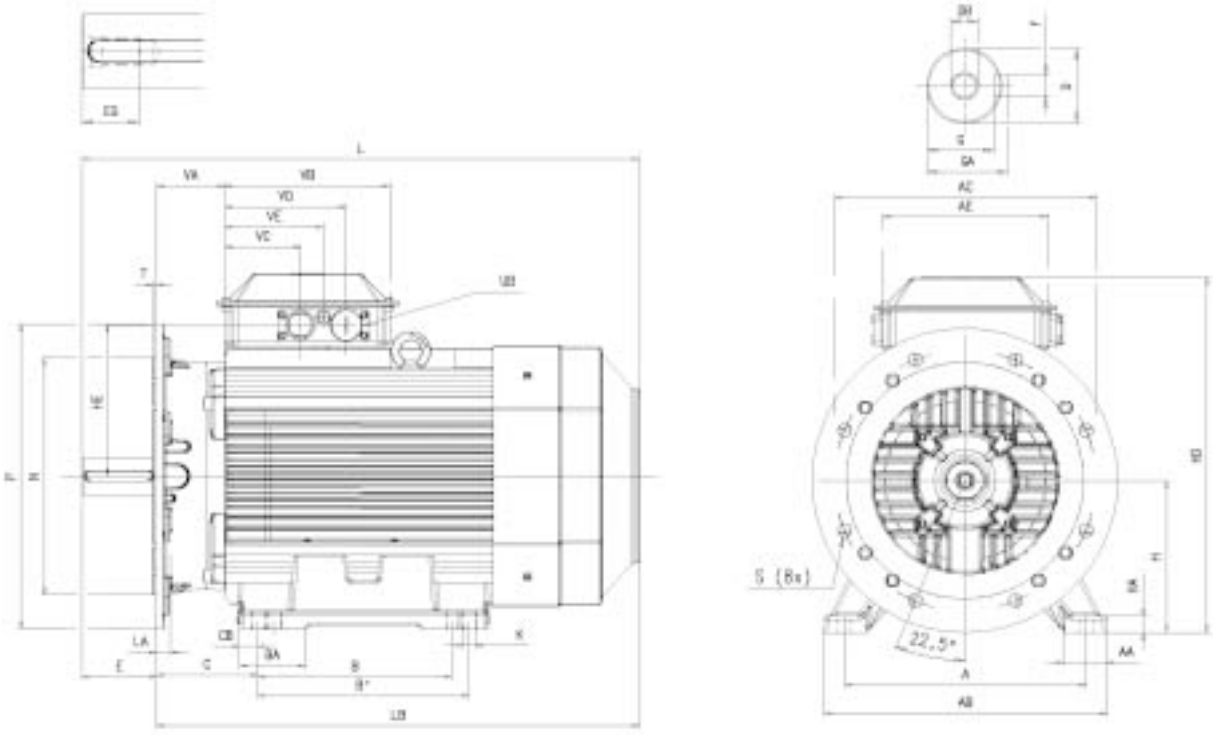
Above table gives the main dimensions in mm.

For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

General performance aluminum motors M2AA 225 - 250

Dimension drawings

Foot- and flange-mounted motor; IM B35 (IM 2001), IM 2002



IM B35 (IM 2001), IM 2002

Motor size	A	AA	AB	AC	AE	B	B'	BA	BB	C	CB	D	DB	E[1]	EG	F	G	GA	H	HA	HD[3]	HD[4]
225-2p	356	64	416	386	243	286	311	81.5	365	149	27	55	M20	110	42	16	49	59	225	25	525	557
225 4-6p	356	64	416	386	243	286	311	81.5	365	149	27	60	M20	140	42	18	53	64	225	25	525	557
250-2p	406	76	472	425	243	311	349	99.5	409	168	30	60	M20	140	42	18	53	64	250	40	571	604
250 4-6p	406	76	472	425	243	311	349	99.5	409	168	30	65	M20	140	42	18	53	64	250	40	571	604

Motor size	HE[3]	HE[4]	K	L	LA	LB	M	N	P	S	T	UB[2]	VA	VB	VC[3]	VC[4]	VD[3]	VD[4]	VE[3]	VE[4]
225-2p	223	239	18	821	20	711	400	350	450	19	5	2 x FL 13	101	243	112	77	179	167	145	122
225 4-6p	223	239	18	851	20	711	400	350	450	19	5	2 x FL 13	101	243	112	77	179	167	145	122
250-2p	244	260	22	880	24	740	500	450	550	19	5	2 x FL 13	94	243	112	77	179	167	145	122
250 4-6p	244	260	22	880	24	740	500	450	550	19	5	2 x FL 13	94	243	112	77	179	167	145	122

Tolerances

A, B	ISO js14
C	± 0.8
D 55-65	ISO m6
F	ISO h9
H	+0 - 0.5
N	ISO j6

1) Shoulder of shaft extension and contact surface of flange are in the same plane.

2) Flange opening is provided with pipe flange FL 13, with tapped lead-in holes plugged with sealing plugs.
Single- and two-speed motors: 2 x M40 + M16.
Motors for 230 V 50 Hz have pipe flange FL 21 and 2 x M63 + M16.

3) For flange opening FL 13: 2 x M40 + M16.

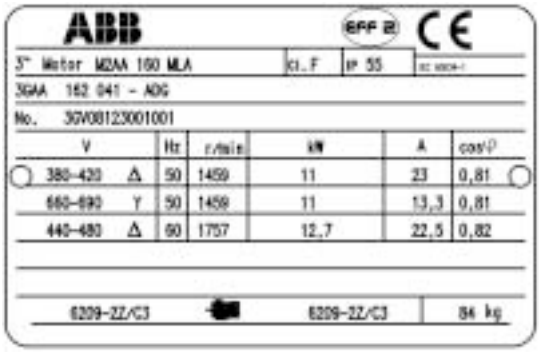
4) For extra large terminal box with flange opening FL 21: 2 x M63 + M16.

Above table gives the main dimensions in mm.

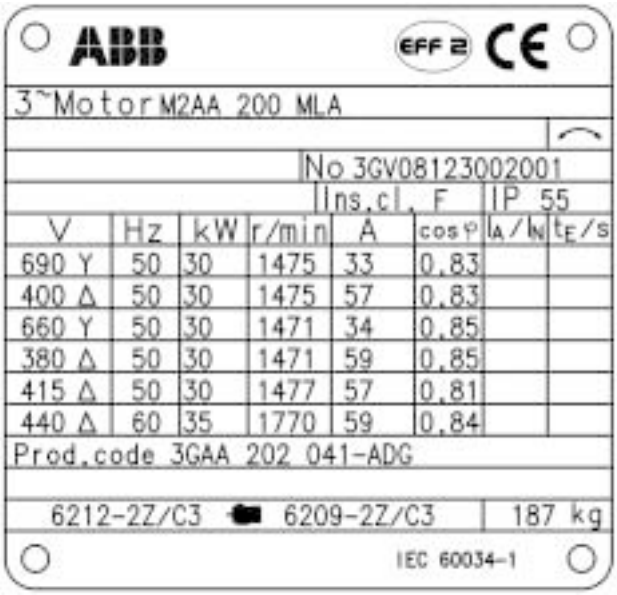
For detailed drawings please see our web-pages 'www.abb.com/motors&generators' or contact ABB.

Rating plates

Motor sizes 160 to 180

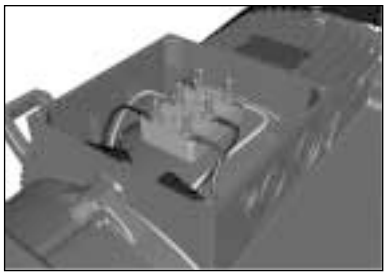


Motor sizes 200 to 250

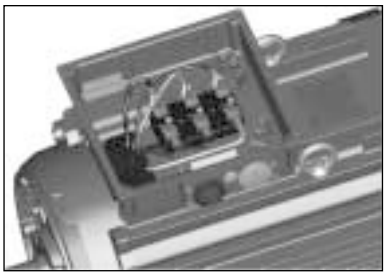


Terminal box

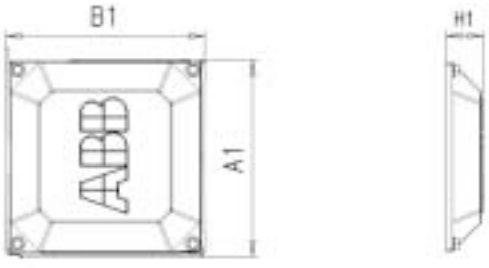
Terminal box for motor sizes 160 to 200



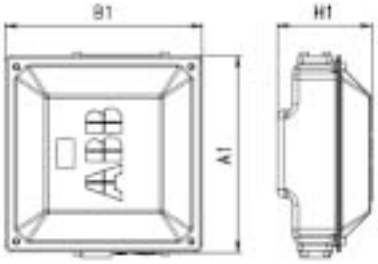
Terminal box for motor sizes 225 to 250



Dimension drawing for motor sizes 160 to 200



Dimension drawing for motor sizes 225 to 250



Motor size	A1	B1	H1
M2AA 160 to 200	180	180	36

Motor size	A1	B1	H1
M2AA 225 to 250	269	269	129

General performance aluminum motors in brief

Size	M2AA	160	180	200	225	250
Stator	Material	Diecast aluminum alloy.			Extruded aluminum alloy	
	Paint colour shade	Munsell blue 8B 4.5/3.25 / NCS 4822 B05G				
	Surface treatment	Polyester powder paint, ≥ 100 µm				
Feet	Material	Aluminum alloy, bolted to the stator		Cast iron bolted to the stator		
Bearing end shields	Material	Cast iron EN-GJL-200/GG 20/GRS 200				
	Paint colour shade	Munsell blue 8B 4.5/3.25 / NCS 4822 B05G				
	Surface treatment	Two-pack epoxy paint,thickness ≥ 100 µm		Two-pack epoxy paint, thickness ≥ 100 µm		
Bearings	D-end	6209-2Z/C3	6210-2Z/C3	6212-2Z/C3	6213-2Z/C3	6215-2Z/C3
	N-end	6209-2Z/C3	6209-2Z/C3	6209-2Z/C3	6210-2Z/C3	6212-2Z/C3
Axially-locked bearings	Inner bearing cover	D-end				
Bearing seals		Axial seal as standard				
Lubrication		Permanently lubricated shielded bearings. Wide temperature range grease.				
Terminal box	Material	Diecast aluminum alloy,base integrated with stator.			Deep-drawn steel sheet, bolted to stator.	
	Surface treatment	Polyester powderpaint, ≥ 100 µm			Phosphated. Polyester paint.	
	Screws	Steel 8.8, zinc electroplated and chromated				
Connections	Knock-out openings Flange-openings	(2 x M40 + M16) + (2 x M40)			2 x FL13, 2 x M40 2 x FL 21, 2 x M63 (voltage code S)	
	Screws	M6			M10	
	Max Cu-area mm^2	35			70	
	Terminal box	6 terminals for connection with cable lugs (not included)				
Fan	Material	Polypropylene. Reinforced with 20% glass fibre.				
Fan cover	Material	Hot dip galvanized steel				
	Paint colour shade	Black, NCS 8801-B09G				
	Surface treatment	Polyester powder paint, ≥ 100 µm				
Stator winding	Material	Copper.				
	Impregnation	Polyester varnish. Tropicalised.				
	Insulation class	Insulation class F. Temperature rise class B, unless otherwise stated.				
Stator winding temperature sensors		Optional				
Rotor winding	Material	Diecast aluminum.				
Balancing method		Half key balancing.				
Key ways		Closed keyway				
Heating elements	On request	25 W		50 W		
Enclosure		IP 55				
Cooling method		IC 411				
Drain holes		Drain holes with closable plastic plugs, open on delivery.				

Notes:

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