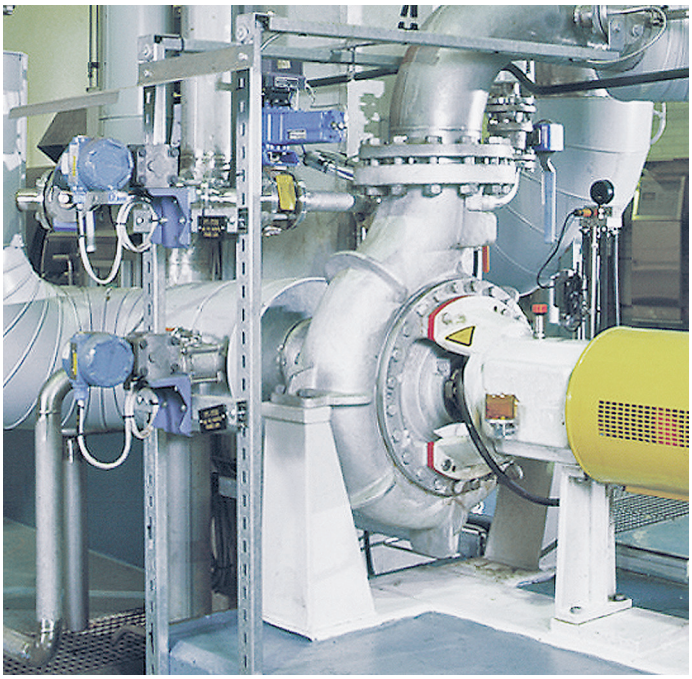
Catalog | January 2017

Standard low voltage motors
Regional catalog for Middle-East and Africa

With expertise, and a comprehensive portfolio of products and life-cycle services, we help value-minded industrial customers improve their energy efficiency and productivity.



Standard low voltage motors, Regional catalog, Middle East and Africa

Sizes 71 to 450, 0.09 to 1000 kW

Standard low voltage motors
Regional catalog, Middle East and Africa

ABB has been manufacturing electric motors for more than 125 years, and today ABB motors are operating in almost every industry and application around the world. The motors are based on extensive engineering skills and application knowledge, and they have gained a solid reputation for quality, reliability and efficiency.

Standard low voltage (LV) motors are offered in two product ranges: General performance and Process performance motors. Benefiting from a wide choice of variants and accessories, these two ranges form a comprehensive portfolio of motors that provide good scope for customization and meet the needs of a broad spectrum of industries and applications. With many alternatives available, ABB sales personnel can provide support in selecting the optimal motor for each application.

ABB motors are available in all the official IE (International Efficiency) classes from IE1 to IE4. By using high efficiency motors, customers can ensure they comply with efficiency requirements such as MEPS (Minimum Energy Performance Standards) while cutting energy consumption and reducing environmental impact. For even higher efficiency, the motors can be used with variable speed drives (VSDs). ABB is a major supplier of VSDs, enabling customers to source their motors and drives from the same manufacturer for optimal performance.

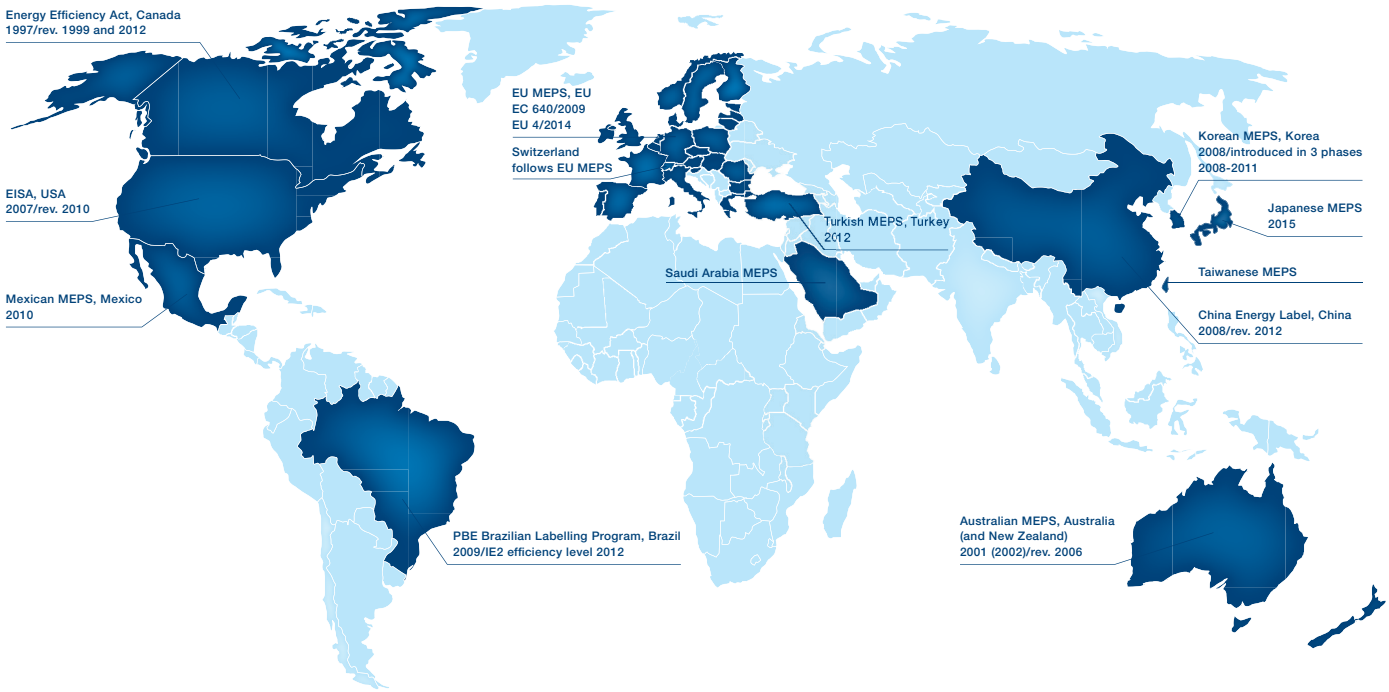
A strong focus on R&D ensures that ABB maintains its position as a technology leader. Recent developments in the LV motor space include further improved efficiencies, and a smart solution for remote condition monitoring that enables motor users to reduce downtime, increase motor lifetime and save energy.

ABB closely follows the development of both national and international standards, and supplies products that help customers to meet official requirements. All ABB motors comply with IEC (International Electrotechnical Commission) standards as a minimum.

As a global player, ABB manufactures standard LV motors in several locations around the world. Proven global product platforms provide the basis for consistent quality, regardless of where the motors are manufactured. An important advantage of global manufacturing is that customers get easy access to reliable after-sales services, no matter where they are located.

In addition to standard LV motors, ABB produces LV motors for areas where explosive atmospheres may be present, and special purpose motors. LV motors for special purposes include versions for smoke ventilation fans, marine applications, mining applications, food and beverage equipment, and more. For information on these motors please refer to the relevant catalogs.

International motor efficiency standards



Since the validation of IEC/EN 60034-30:2008 and its refined version IEC/EN 60034-30-1: 2014 , a worldwide energy efficiency classification system has existed for low voltage three-phase asynchronous motors. This system increases the level of harmonization in efficiency regulations around the world and also covers motors for explosive atmospheres. IEC/EN 60034-30-1: 2014 defines International Efficiency (IE) classes for single speed, three-phase, 50 and 60 Hz induction motors. The standard is part of an effort to unify motor testing procedures as well as efficiency and product labeling requirements to enable motor purchasers worldwide to easily recognize premium efficiency products. The efficiency levels defined in IEC/EN 60034-30-1 are based on test methods specified in IEC/EN 60034-2-1 which has been updated to edition 2.0, 2014-06.

To promote transparency in the market, IEC 60034-30 states that both the efficiency class and efficiency value must be shown on the motor rating plate and in product documentation. The documentation must clearly indicate the efficiency testing method used as the different methods can produce differing results.

Minimum energy performance standards

While the IEC sets guidelines for motor testing and efficiency classes, the organization does not regulate efficiency. The biggest drivers for mandatory Minimum Energy Performance Standard (MEPS) levels for electric motors are global climate change, government targets to cut the CO_2 emissions and rising electricity demand, especially in developing countries. The whole value chain, from manufacturer up to end user, must be aware of the legislation in order to meet local requirements and additionally save energy and reduce carbon footprint.

Harmonized standards and the increasing adoption of MEPS around the world are good news. However, it is important to remember that harmonization is an ongoing process. Even though MEPS are already in effect in several regions, they are evolving and they differ in terms of scope and requirements. At the same time, new countries are planning to adopt their own MEPS. To get the latest information please visit www.abb.com/motors&generators/energyefficiency.

IEC/EN 60034-30-1: 2014

IEC/EN 60034-30-1:2014 defines four International Efficiency (IE) classes for single speed electric motors that are rated according to IEC 60034-1 or IEC 60079-0 (explosive atmospheres) and designed for operation on sinusoidal voltage.

- IE4 = Super premium efficiency
- IE3 = Premium efficiency, identical to 'NEMA Premium' in the USA for 60 Hz
- IE2 = High efficiency, identical to EPAct in the USA for 60 Hz
- IE1 = Standard efficiency

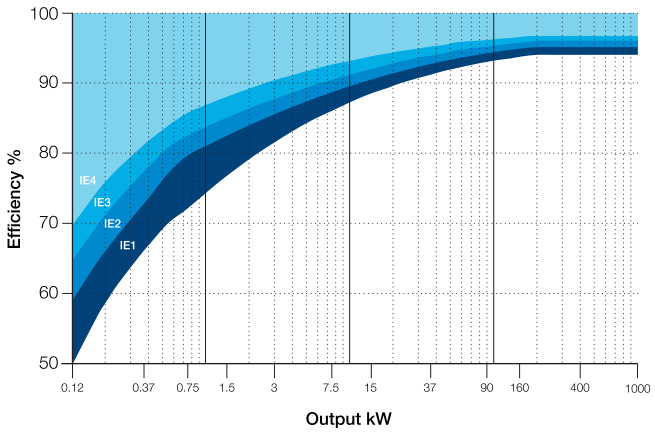
Efficiency levels defined in IEC/EN 60034-30-1 are based on test methods specified in IEC 60034-2-1.

IEC/EN 60034-30-1 covers power range 120 W to 1000 kW. All technical constructions of electric motors are covered as long as they are rated for direct on-line operation. The coverage of the standard includes:

- Single speed electric motors (single and three-phase), 50 and 60 Hz
- 2, 4, 6 and 8 poles
- Rated output P_N from 0.12 kW to 1000 kW
- Rated voltage U_N above 50 V up to 1 kV
- Motors, capable of continuous operation at their rated power with a temperature rise within the specified insulation temperature class
- Motors, marked with any ambient temperature within the range of -20 °C to +60 °C
- Motors, marked with an altitude up to 4000 m above sea level

The following motors are excluded from IEC/EN 60034-30-1:

- Single-speed motors with 10 or more poles or multi-speed motors
- Motors completely integrated into a machine (for example, pump, fan or compressor) that cannot be tested separately from machine
- Brake motors, when the brake can not be dismantled or separately fed



IE Classes - 4-pole motors

ABB and efficiency standards

ABB determines efficiency values according to IEC 60034-2-1 using the low uncertainty method (i.e. indirect method), with additional load losses determined by measurement.

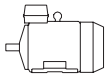
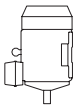
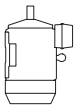
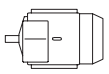
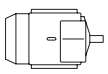
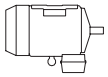
As the world market leader, ABB offers the largest range of LV motors available. It has long advocated the need for efficiency in motors, and high efficiency products have formed the core of its portfolio for many years. The core of ABB's Process performance range is based on full range in IE2 and IE3 motors - with many available from stock. We also supply IE4 motors for additional energy savings.

Minimum efficiency values defined in IEC/EN 60034-30-1: 2014 (reference values at 50 Hz, based on test methods specified in IEC 60034-2-1 which has been updated to edition 2.0, 2014-06).

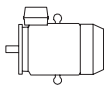
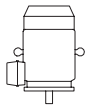
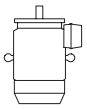
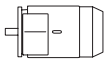
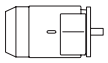
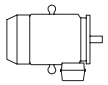
Output	IE1 Standard efficiency				IE2 High efficiency				IE3 Premium efficiency				IE4 Super Premium efficiency			
kW	2 pole	4 pole	6 pole	8 pole	2 pole	4 pole	6 pole	8 pole	2 pole	4 pole	6 pole	8 pole	2 pole	4 pole	6 pole	8 pole
0.12	45.0	50.0	38.3	31.0	53.6	59.1	50.6	39.8	60.8	64.8	57.7	50.7	66.5	69.8	64.9	62.3
0.18	52.8	57.0	45.5	38.0	60.4	64.7	56.6	45.9	65.9	69.9	63.9	58.7	70.8	74.7	70.1	67.2
0.20	54.6	58.5	47.6	39.7	61.9	65.9	58.2	47.4	67.2	71.1	65.4	60.6	71.9	75.8	71.4	68.4
0.25	58.2	61.5	52.1	43.4	64.8	68.5	61.6	50.6	69.7	73.5	68.6	64.1	74.3	77.9	74.1	70.8
0.37	63.9	66.0	59.7	49.7	69.5	72.7	67.6	56.1	73.8	77.3	73.5	69.3	78.1	81.1	78.0	74.3
0.40	64.9	66.8	61.1	50.9	70.4	73.5	68.8	57.2	74.6	78.0	74.4	70.1	78.9	81.7	78.7	74.9
0.55	69.0	70.0	65.8	56.1	74.1	77.1	73.1	61.7	77.8	80.8	77.2	73.0	81.5	83.9	80.9	77.0
0.75	72.1	72.1	70.0	61.2	77.4	79.6	75.9	66.2	80.7	82.5	78.9	75.0	83.5	85.7	82.7	78.4
1.1	75.0	75.0	72.9	66.5	79.6	81.4	78.1	70.8	82.7	84.1	81.0	77.7	85.2	87.2	84.5	80.8
1.5	77.2	77.2	75.2	70.2	81.3	82.8	79.8	74.1	84.2	85.3	82.5	79.7	86.5	88.2	85.9	82.6
2.2	79.7	79.7	77.7	74.2	83.2	84.3	81.8	77.6	85.9	86.7	84.3	81.9	88.0	89,5	87.4	84.5
3	81.5	81.5	79.7	77.0	84.6	85.5	83.3	80.0	87.1	87.7	85.6	83.5	89.1	90.4	88.6	85.9
4	83.1	83.1	81.4	79.2	85.8	86.6	84.6	81.9	88.1	88.6	86.8	84.8	90.0	91.1	89.5	87.1
5.5	84.7	84.7	93.1	81.4	87.0	87.7	86.0	83.8	89.2	89.6	88.0	86.2	90.9	91.9	90.5	88.3
7.5	86.0	86.0	84.7	83.1	88.1	88.7	87.2	85.3	90.1	90.4	89.1	87.3	91.7	92.6	91.3	89.3
11	87.6	87.6	86.4	85.0	89.4	89.8	88.7	86.9	91.2	91.4	90.3	88.6	92.6	93.3	92.3	90.4
15	88.7	88.7	87.7	86.2	90.3	90.6	89.7	88.0	91.9	92.1	91.2	89.6	93.3	93.9	92.9	91.2
18.5	89.3	89.3	88.6	86.9	90.9	91.2	90.4	88.6	82.4	92.6	91.7	90.1	93.7	94.2	93.4	91.7
22	89.9	89.9	89.2	87.4	91.3	91.6	90.9	89.1	92.7	93.0	92.2	90.6	94.0	94.5	93.7	92.1
30	90.7	90.7	90.2	88.3	92.0	92.3	91.7	89.8	93.3	93.6	92.9	91.3	94.5	94.9	94.2	92.7
37	91.2	91.2	90.8	88.8	92.5	92.7	92.2	90.3	93.7	93.9	93.3	91.8	94.8	95.2	94.5	93.1
45	91.7	91.7	91.4	89.2	92.9	93.1	92.7	90.7	94.0	94.2	93.7	92.2	95.0	95.4	94.8	93.4
55	92.1	92.1	91.9	89.7	93.2	93.5	93.1	91.0	94.3	94.6	94.1	92.5	95.3	95.7	95.1	93.7
75	92.7	92.7	92.6	90.3	93.8	94.0	93.7	91.6	94.7	95.0	94.6	93.1	95.6	96.0	95.4	94.2
90	93.0	93.0	92.9	90.7	94.1	94.2	94.0	91.9	95.0	95.2	94.9	93.4	95.8	96.1	95.6	94.4
110	93.3	93.3	93.3	91.1	94.3	94.5	94.3	92.3	95.2	95,4	95.1	93.7	96.0	96.3	95.8	94.7
132	93.5	93.5	93.5	91.5	94.6	94.7	94.6	92.6	95.4	95.6	95.4	94.0	96.2	96.4	96.0	94.9
160	93.8	93.8	93.8	91.9	94.8	94.9	94.8	93.0	95.6	95.8	95.6	94.3	96.3	96.6	96.2	95.1
200	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6	96.5	96.7	96.3	95.4
250	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6	96.5	96.7	96.5	95.4
315	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6	96.5	96.7	96.6	95.4
355	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6	96.5	96.7	96.6	95.4
400	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6	96.5	96.7	96.6	95.4
450	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6	96.5	96.7	96.6	95.4
500-1000	94.0	94.0	94.0	92.5	95.0	95.1	95.0	93.5	95.8	96.0	95.8	94.6	96.5	96.7	96.6	95.4

Mounting arrangements

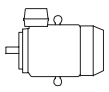
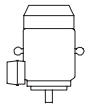
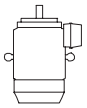
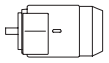
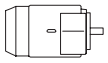
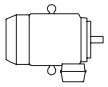
Foot-mounted motor

Code I / code II						**Product code pos. 12**
						A: foot-mounted, term. box top R: foot-mounted, term. box RHS L: foot-mounted, term. box LHS
IM B3	IM V5	IM V6	IM B6	IM B7	IM B8	
IM 1001	IM 1011	IM 1031	IM 1051	IM 1061	IM 1071	

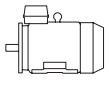
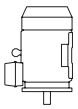
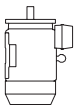
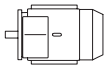
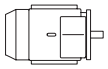
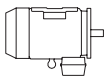
Flange-mounted motor, large flange

Code I / code II						**Product code pos. 12**
						B: flange mounted, large flange
IM B5	IM V1	IM V3	*)	*)	*)	
IM 3001	IM 3011	IM 3031	IM 3051	IM 3061	IM 3071	

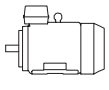
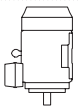
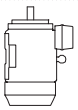
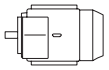
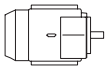
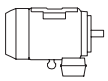
Flange-mounted motor, small flange

Code I / code II						**Product code pos. 12**
						C: flange mounted, small flange
IM B14	IM V18	IM V19	*)	*)	*)	
IM 3601	IM 3611	IM 3631	IM 3651	IM 3661	IM 3671	

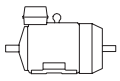
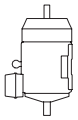
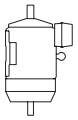
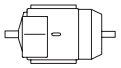
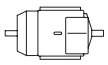
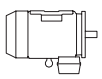
Foot- and flange-mounted motor with feet, large flange

Code I / code II						**Product code pos. 12**
						H: foot/flange-mounted, term. box top S: foot/flange-mounted, term. box RHS T: foot/flange-mounted, term. box LHS
IM B35	IM V15	IM V35	*)	*)	*)	
IM 2001	IM 2011	IM 2031	IM 2051	IM 2061	IM 2071	

Foot- and flange-mounted motor with feet, small flange

Code I / code II						**Product code pos. 12**
						J: foot/flange-mounted, small flange
IM B34	IM V17					
IM 2101	IM 2111	IM 2131	IM 2151	IM 2161	IM 2171	

Foot-mounted motor, shaft with free extensions

Code I / code II						**Product code pos. 12**
						
IM 1002	IM 1012	IM 1032	IM 1052	IM 1062	IM 1072	

*) Not stated in IEC 60034-7.
Note: If the motor is mounted shaft upwards, take measures to prevent water or any other liquid from running down the shaft into the motor.

General information
Cooling

Designation system concerning methods of cooling refers to standard IEC 60034-6.

Explanation of the product code

International Cooling	Circuit arrangement	Primary coolant	Method of movement of primary coolant	Secondary coolant	Method of movement of secondary coolant
IC	4	(A)	1	(A)	6
	1	2	3	4	5

Position 1

0:	Free circulation (open circuit)
4:	Free circulatio (open circuit)

Position 2

A:	For air (omitted for simplifi ed designation)

Position 3

0:	Free convection
1:	Self-circulation
6:	Machine-mounted independent component

Position 4

A:	For air (omitted for simplifi ed designation)
W:	For water

Position 5

0:	Free convection
1:	Self-circulation
6:	Machine-mounted independent component
8:	Relative displacement

General information
Degrees of protection: IP code/IK code

Classification of degrees of protection provided by enclosures of rotating machines are refers to:

– Standard IEC 60034-5 or EN 60529 for IP code
– Standard EN 50102 for IK code

IP protection

Protection of persons against getting in contact with (or approaching) live parts and against contact with moving parts inside the enclosure. Also protection of the machine against ingress of solid foreign objects. Protection of machines against the harmful effects due to the ingress of water.

Explanation of the IP code

Ingress protection	Degree of protection to persons and to parts of the motors inside the enclosure	Degree of protection provided by the enclosure with respect to harmful effects due to ingress of water
IP	5	5
	1	2

Position 1	
2:	Motors protected against solid objects greater than 12 mm
4:	Motors protected against solid objects greater than 1 mm
5:	Dust-protected motors
6:	Dust-tight motors

Position 2	
3:	Motors protected against spraying water
4:	Motors protected against splashing water
5:	Motors protected against water jets
6:	Motors protected against heavy seas

IK code

Classification of degrees of protection provided by enclosure for motors against external mechanical impacts.

Explanation of the IK code

International mechanical protection	Characteristic group
IK	08
	1

Position 1

Relation between IK code and impact energy:

IK code	Impact energy/Joule
0:	Not protected according to EN 50102
01:	0.15
02:	0.2
03:	0.35
04:	0.5
05:	0.7
06:	1
07:	2
08:	5 (ABB Standard)
09:	10
10:	20

General information
Insulation

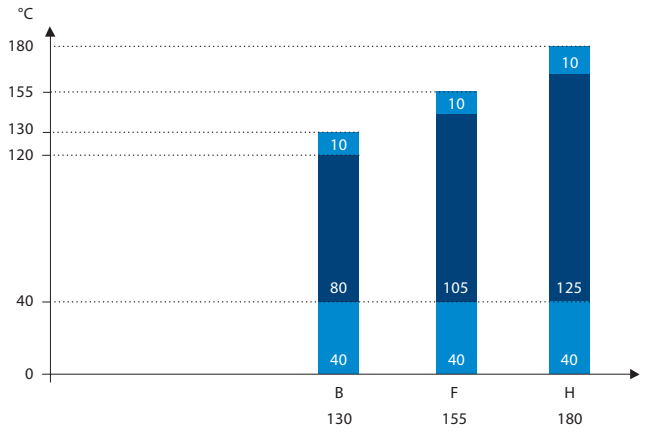
ABB uses class F insulation, which, with temperature rise B, is the most common requirement among industry today.

The use of class F insulation with class B temperature rise gives ABB products a 25 °C safety margin. This can be used to increase the loading for limited periods, to operate at higher ambient temperatures or altitudes, or with greater voltage and frequency tolerances. It can also be used to extend insulation. For instance, a 10 K temperature reduction will extend the insulation life.

Thermal class 130 (B)
– Nominal ambient temperature 40 °C
– Max permissible temperature rise 80 K
– Hot spot temperature margin 10 K

Thermal class 155 (F)
– Nominal ambient temperature 40 °C
– Max permissible temperature rise 105 K
– Hot spot temperature margin 10 K

Thermal class 180 (H)
– Nominal ambient temperature 40 °C
– Max permissible temperature rise 125 K
– Hot spot temperature margin 10 K



Safety margins per thermal class

General information
Voltage and frequency

The impact on temperature rise caused by voltage and frequency fluctuation is defined in IEC 60034-1. The standard divides the combinations into two zones, A and B. Zone A is the combination of voltage deviation of +/-5 % and frequency deviation of +/-2 %. Zone B is the combination of voltage deviation of +/-10 % and frequency deviation of +3/-5 %. This is illustrated in figure below.

Motors are capable of supplying the rated torque in both zones A and B, but the temperature rise will be higher than at rated voltage and frequency. Motors can be run in zone B only for a short period of time.

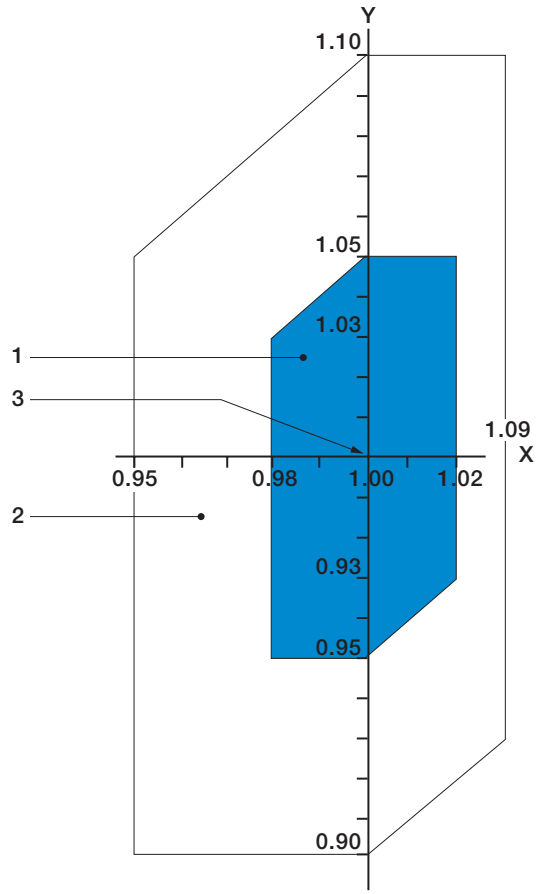


Figure Voltage and frequency deviation in zones A and B.

Key	
X axis	frequency p.u.
Y axis	voltage p.u.
1	zone A
2	zone B (outsice zone A
3	rating point

Process performance cast iron motors
Sizes 71 to 450, 0.09 to 1000 kW

Process performance motors

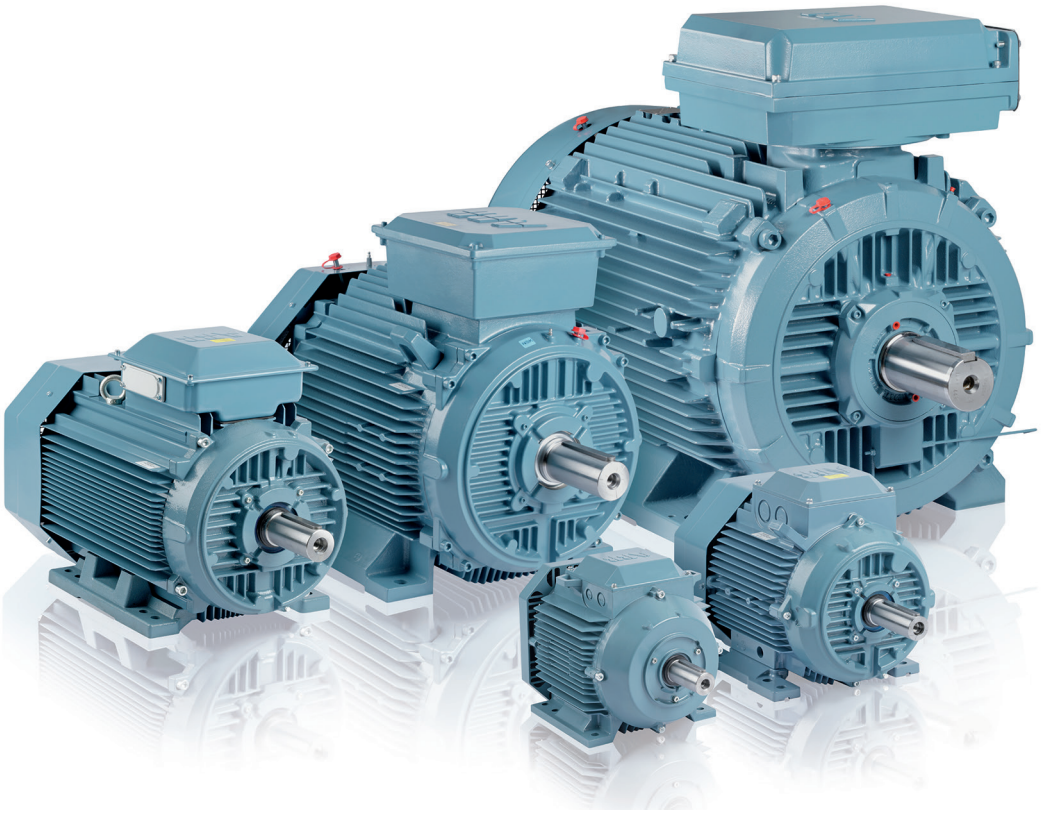


ABB Process performance motors are tough, high quality products designed for durability in the most demanding environments and applications. They are ideally suited to process industries and heavy duty applications – sectors like mining, cement and paper - where motors have to meet high requirements for reliability, availability and efficiency in harsh conditions.

Components like the frames, end shields and terminal boxes have been further strengthened to make them extra robust. An improved sealing system on the bearings provides superior protection against the entry of dust and other contaminants.

Process performance motors provide great flexibility for customer specific solutions and can be individually designed to meet the exact demands of the application. There is a wide range of variant codes for process industry applications, as well as selected accessories including vibration and speed monitoring solutions. In addition the motors can be modified – including foot and flange adaptations – to ensure a good utilization level of motors kept in stock. These motors are available in aluminum (up to IE3) and cast iron (up to IE4).

Some standard designs are available from stock, while customer and application specific solutions are manufactured to order.

- 0.09 – 1,000 kW
- IE2, IE3 & IE4
- 2, 4, & 6 poles
- Crushers, pumps, fans, compressors, conveyors, mixers, and other process industry applications (all variant codes available)

If you are interested in aluminum motors, please contact ABB.

Ordering information

Explanation of the product code

Motor type	Motor size	Product code	Mounting arrangement code, Voltage and frequency code, Generation code	Variant codes
M3BP	160MLC	3GBP 161 033	- ADG	003, etc.
		1 2 3 4 5 6 7	8 9 10 11 12 13 14	

When placing an order, specify motor type, size and product code according to the following example.

Example	
Motor type	M3BP 160 MLC
Pole number	2
Mounting arrangement (IM-code)	IM B3 (IM 1001)
Rated output	18.5 kW
Product code	3GBP161033-ADG
Variant codes if needed	

Positions 1 to 4

3GBP:	Totally enclosed fan cooled squirrel cage motor with cast iron frame

Positions 5 and 6

IEC size

07:	71
08:	80
09:	90
10:	100
12:	112
13:	132
16:	160
18:	180
20:	200
22:	225
25:	250
28:	280
31:	315
35:	355
40:	400
45:	450

Position 7

Speed (Pole pairs)

1:	2 poles
2:	4 poles
3:	6 poles
4:	8 poles
5:	10 poles
6:	12 poles
7:	> 12 poles
8:	Two-speed motors for fan drive motors for constant torque
9:	Multi-speed motors, two-speed

Positions 8 to 10

Serial number

Position 11

-(dash)

Position 12 (marked with black dot in data tables)

Mounting arrangement

A:	Foot-mounted, top-mounted terminal box
R:	Foot-mounted, terminal box RHS seen from D-end
L:	Foot-mounted, terminal box LHS seen from D-end
B:	Flange-mounted, large flange
C:	Flange-mounted, small flange (sizes 71 to 112)
H:	Foot- and flange-mounted, terminal box top-mounted
J:	Foot- and flange-mounted, small flange with tapped holes
S:	Foot- and flange-mounted, terminal box RHS seen from D-end
T:	Foot- and flange-mounted, terminal box LHS seen from D-end
V:	Flange-mounted, special flange
F:	Foot- and flange-mounted. Special flange

Position 13 (marked with black dot in data tables)

Voltage and frequency

Single-speed motors

B:	380 VΔ 50 Hz
D:	400 VΔ, 415 VΔ, 690 VY 50 Hz
E:	500 VΔ 50 Hz
F:	500 VY 50 Hz
S:	230 VΔ, 400 VY, 415 VY 50 Hz
T:	660 VΔ 50 Hz
U:	690 VΔ 50 Hz
X:	Other rated voltage, connection or frequency, 690 V maximum

Two-speed motors

A:	220 V 50 Hz
B:	380 V 50 Hz
D:	400 V 50 Hz
E:	500 V 50 Hz
S:	230 V 50 Hz
X:	Other rated voltage, connection or frequency, 690 V maximum
Remark:	For voltage code X the variant code “209 Non-standard voltage or frequency (special winding)” must be ordered.

Position 14

Generation code

A, B, C...G...K: The product code must be, if needed, followed by variant codes.

Efficiency values are given according to IEC 60034-2-1; 2014

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

Technical data
IE2 Process performance cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles					400 V 50 Hz				CENELEC-design							
0.37		M3BP 71MA 2	3GBP071321-••B	2768	74,8	75,4	72,4	0,78	0,9	4,5	1,3	2,2	2,3	0,000390	11	58
0.55		M3BP 71MB 2	3GBP071322-••B	2813	77,8	78,3	76,0	0,79	1,3	4,3	1,9	2,4	2,5	0,000510	11	56
0.75		M3BP 80MB 2	3GBP081322-••B	2895	80,6	79,6	75,6	0,74	1,8	7,7	2,4	4,2	4,2	0,00100	16	57
1.1		M3BP 80MC 2	3GBP081323-••B	2870	81,8	81,7	78,9	0,80	2,4	7,5	3,6	3,7	4,6	0,00120	18	60
1.5		M3BP 90SLB 2	3GBP091322-••B	2900	82,2	82,9	81,3	0,87	3,3	7,5	4,9	2,5	2,6	0,00254	24	69
2.2		M3BP 90SLC 2	3GBP091323-••B	2885	84,7	86,8	85,7	0,88	4,2	6,8	7,2	1,9	2,5	0,00280	25	64
3		M3BP 100LB 2	3GBP101322-••B	2925	85,2	84,9	82,7	0,87	5,8	9,1	9,7	3,1	3,5	0,00528	36	68
4		M3BP 112MB 2	3GBP111322-••B	2895	86,1	87,0	86,6	0,89	7,5	8,1	13,1	2,9	3,2	0,00575	37	70
5.5		M3BP 132SMB 2	3GBP131322-••B	2865	87,7	88,4	87,7	0,86	10,0	7,0	18,3	2,0	2,7	0,0128	68	70
7.5		M3BP 132SMC 2	3GBP131324-••B	2890	88,2	88,5	87,5	0,88	13,7	7,3	24,9	2,0	3,6	0,0136	70	70
11		M3BP 160MLA 2	3GBP161410-••G	2938	90,6	91,5	91,1	0,9	19,2	7,5	35,7	2,4	3,1	0,044	127	69
15		M3BP 160MLB 2	3GBP161420-••G	2934	91,5	92,4	92,2	0,90	26,0	7,5	48,8	2,5	3,3	0,053	141	69
22		M3BP 180MLA 2	3GBP181410-••G	2952	92,2	92,7	92,2	0,87	23,8	7,1	71,1	2,8	3,3	0,076	190	69
37		M3BP 200MLB 2	3GBP201420-••G	2959	93,4	93,7	92,9	0,90	63,5	8,2	119	3,0	3,3	0,20	298	72
45		M3BP 225SMA2	3GBP221210-••G	2961	93,6	93,9	93,1	0,88	78,8	6,7	145	2,5	2,5	0,24	347	74
55		M3BP 250SMA 2	3GBP251210-••G	2967	94,1	94,4	93,8	0,88	95,8	6,8	177	2,2	2,7	0,51	405	75
75		M3BP 280SMA 2	3GBP281210-••G	2978	94,3	94,1	92,8	0,88	130	7,6	240	2,1	3,0	0,80	625	77
90	[3]	M3BP 280SMB 2	3GBP281220-••G	2976	94,6	94,7	93,8	0,89	154	7,4	288	2,1	2,9	0,90	665	77
110	[3]	M3BP 315SMA 2	3GBP311210-••G	2982	94,9	94,4	92,9	0,86	197	7,4	352	2,2	3,2	1,20	940	78
132		M3BP 315SMB 2	3GBP311220-••G	2982	95,1	94,8	93,6	0,88	227	7,4	422	2,2	3,0	1,40	940	78
160	[3]	M3BP 315SMC 2	3GBP311230-••G	2981	95,4	95,2	94,2	0,89	271	7,5	512	2,3	3,0	1,70	1025	78
200	[3]	M2BP 315MLA 2	3GBP311410-••G	2980	95,7	95,7	94,9	0,90	335	7,7	640	2,6	3,0	2,10	1190	78
250	[3]	M3BP 355SMA 2	3GBP351210-••G	2984	95,7	95,5	94,5	0,89	423	7,7	800	2,1	3,3	3,00	1600	83
315	[3]	M3BP 355SMB 2	3GBP351220-••G	2980	95,7	95,6	95,0	0,89	531	7,0	1009	2,1	3,0	3,40	1680	83
355	[3]	M3BP 355SMC 2	3GBP351230-••G	2984	95,7	95,7	94,9	0,88	603	7,2	1136	2,2	3,0	3,60	1750	83
400	[3]	M3BP 355MLA 2	3GBP351410-••G	2982	96,9	96,6	95,9	0,88	677	7,1	1280	2,3	2,9	4,10	2000	83
450	[3]	M3BP 355MLB 2	3GBP351420-••G	2983	97,1	97,0	96,4	0,90	743	7,9	1440	2,2	2,9	4,30	2080	83
500	[3]	M3BP 355LKA 2	3GBP351810-••G	2982	96,9	96,9	96,5	0,90	827	7,5	1601	2,0	3,9	4,80	2320	83
560	[3]	M3BP 400LA 2	3GBP401510-••G	2988	97,2	97,2	96,6	0,89	934	7,8	1789	2,5	3,7	7,90	2950	82
560	[3]	M3BP 355LKB 2	3GBP351820-••G	2983	97,0	97,0	96,5	0,90	925	8,0	1792	2,2	4,1	5,20	2460	83
630	[2]	M3BP 400LB 2	3GBP401520-••G	2987	97,4	97,2	96,7	0,89	1049	7,6	2014	2,6	3,7	8,20	3050	82
710	[2]	M3BP 400LC 2	3GBP401530-••G	2987	97,5	97,4	96,9	0,89	1178	7,2	2270	2,6	3,4	9,30	3300	82
800	[1] [2]	M3BP 450LA 2	3GBP451510-••G	2990	97,4	97,2	96,6	0,87	1362	7,8	2555	1,3	3,4	12,20	4000	85
900	[1] [2]	M3BP 450LB 2	3GBP451520-••G	2990	97,0	96,8	96,2	0,87	1534	7,6	2874	1,5	3,1	13,50	4200	85

[1] Temperature rise class F

[2] Undirectional fan, variant code 044 or 045 is mandatory

[3] 3dB(A) sound pressure level reduction with unidirectional fan construction. Direction of rotation must be stated when ordering, see variant codes 044 and 045

Technical data
IE2 Process performance cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_s/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles					400 V 50 Hz				High-output design							
22		M3BP 160MLD 2	3GBP161440-••G	2933	91,7	92,8	92,8	0,90	38,0	8,1	71,6	3,2	3,6	0,0630	170	69
27		M3BP 160MLE 2	3GBP161450-••G	2939	92,2	93,1	93,0	0,90	46,4	8,8	87,7	3,4	3,8	0,0720	184	69
30		M3BP 180MLB 2	3GBP181420-••G	2950	92,7	93,5	93,3	0,88	53,0	7,9	97,1	2,8	3,3	0,0920	208	69
45	1)	M3BP 200MLC 2	3GBP201430-••G	2957	93,3	93,8	93,2	0,88	79,1	8,1	145	3,1	3,3	0,196	298	72
55	1)	M3BP 200MLD 2	3GBP201440-••G	2953	93,8	94,4	94,3	0,89	95,0	7,8	177	2,9	3,3	0,217	314	72
55		M3BP 225SMB 2	3GBP221220-••G	2961	93,9	94,3	93,6	0,88	96,0	6,5	177	2,4	2,5	0,274	369	74
75	1)	M3BP 225SMC 2	3GBP221230-••G	2969	94,4	94,6	94,0	0,84	136	7,4	241	3,2	3,1	0,309	396	74
75		M3BP 250SMB 2	3GBP251220-••G	2970	94,5	94,8	94,4	0,89	128	7,6	241	2,8	3,1	0,583	451	75
80	1)	M3BP 225SMD 2	3GBP221240-••G	2964	94,4	94,8	94,3	0,87	140	7,3	257	3,0	2,8	0,329	410	74
90	1)	M3BP 250SMC 2	3GBP251230-••G	2971	94,9	95,2	94,8	0,89	153	7,6	289	2,5	3,1	0,644	487	75
110	3)	M3BP 280SMC 2	3GBP281230-••G	2978	95,1	95,1	94,5	0,90	186	7,9	352	2,4	3,0	1,15	725	77
132	3)	M3BP 280MLA 2	3GBP281410-••G	2977	95,3	95,3	94,8	0,90	221	7,5	423	2,5	3,0	1,40	840	81
160	3)	M3BP 280MLB 2	3GBP281420-••G	2976	95,5	95,7	95,3	0,91	265	7,6	513	2,8	3,0	1,55	890	81
250	3)	M3BP 315LKA 2	3GBP311810-••G	2980	95,7	95,7	95,2	0,89	423	8,1	801	2,8	2,9	2,65	1440	78
315	3)	M3BP 315LKC 2	3GBP311830-••G	2981	95,7	95,7	95,4	0,89	533	8,8	1009	3,2	3,2	3,30	1630	78

[1] Temperature rise class F

[2] -3 dB(A) sound pressure level reduction with unidirectional fan construction. The direction of rotation of the fan must be stated when ordering, see variant codes 045 and 045.

Technical data
IE2 Process performance cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles					400 V 50 Hz				CENELEC-design							
0.25		M3BP 71MA 4	3GBP072321-••B	1365	68,3	70,7	69,6	0,81	0,6	3,5	1,7	1,9	2,0	0,000740	10	45
0.37		M3BP 71MB 4	3GBP072322-••B	1380	72,4	74,5	74,7	0,83	0,9	4,6	2,5	1,6	2,1	0,000880	11	45
0.55		M3BP 80MA 4	3GBP082321-••B	1415	74,5	73,8	70,0	0,73	1,4	5,0	3,7	2,0	2,8	0,00144	15	45
0.75		M3BP 80MD 4	3GBP082324-••B	1430	81,0	81,0	78,2	0,73	1,8	5,3	5,0	2,7	3,2	0,00205	17	50
1.1		M3BP 90SLB 4	3GBP092322-••B	1435	83,6	84,1	82,4	0,80	2,4	6,5	7,3	2,4	3,4	0,00440	25	50
1.5		M3BP 90SLD 4	3GBP092325-••B	1430	84,3	85,1	83,9	0,83	3,0	6,3	10,0	2,7	3,4	0,00530	27	56
2.2		M3BP 100LC 4	3GBP102323-••B	1450	85,9	85,1	83,4	0,78	4,6	7,7	14,5	2,7	4,1	0,00948	36	56
3		M3BP 100LD 4	3GBP102324-••B	1450	86,8	86,9	85,3	0,79	6,1	7,7	19,8	2,9	3,4	0,0110	38	58
4		M3BP 112MB 4	3GBP112322-••B	1440	86,8	87,7	87,3	0,82	7,9	7,0	26,5	2,5	2,9	0,0125	44	59
5.5		M3BP 132SMB 4	3GBP132322-••B	1460	89,0	89,8	88,9	0,80	10,8	6,7	36,0	2,2	3,2	0,0328	70	67
7.5		M3BP 132SMC 4	3GBP132323-••B	1450	89,3	90,1	90,0	0,81	14,5	7,2	49,4	2,5	3,5	0,0366	73	64
11		M3BP 160MLA 4	3GBP162410-••G	1466	90,4	91,6	91,3	0,84	20,9	6,8	71,6	2,2	2,8	0,0810	135	62
15		M3BP 160MLB 4	3GBP162420-••G	1470	91,4	92,3	92,2	0,83	28,5	7,1	97,4	2,6	3,0	0,0990	165	62
18.5		M3BP 180MLA 4	3GBP182410-••G	1477	91,9	92,8	92,6	0,84	34,5	7,2	119	2,6	2,9	0,166	205	62
22		M3BP 180MLB 4	3GBP182420-••G	1475	92,3	93,3	93,2	0,84	40,9	7,3	142	2,6	3,0	0,195	222	62
30		M3BP 200MLA 4	3GBP202410-••G	1480	93,2	94,0	93,7	0,84	55,3	7,4	193	2,8	3,0	0,309	291	63
37		M3BP 225SMA 4	3GBP222210-••G	1479	93,4	93,9	93,4	0,84	68,0	7,1	238	2,6	2,9	0,356	324	66
45		M3BP 225SMB 4	3GBP222220-••G	1480	93,9	94,3	93,9	0,85	81,3	7,5	290	2,8	3,2	0,440	356	66
55		M3BP 250SMA 4	3GBP252210-••G	1480	94,4	94,9	94,6	0,85	98,9	7,0	354	2,6	2,9	0,765	414	67
75		M3BP 280SMA 4	3GBP282210-••G	1484	94,5	94,7	94,4	0,85	134	6,9	482	2,5	2,8	1,25	625	68
90		M3BP 280SMB 4	3GBP282220-••G	1483	94,7	95,0	94,5	0,85	160	7,2	579	2,5	2,7	1,50	665	68
110		M3BP 315SMA 4	3GBP312210-••G	1487	95,1	95,1	94,3	0,86	194	7,2	706	2,3	2,8	2,30	900	70
132		M3BP 315SMB 4	3GBP312220-••G	1487	95,4	95,4	94,7	0,86	232	7,1	847	2,3	2,7	2,60	960	70
160		M3BP 315SMC 4	3GBP312230-••G	1487	95,3	95,3	94,8	0,85	284	7,2	1027	2,4	2,9	2,90	1000	70
200		M3BP 315MLA 4	3GBP312410-••G	1486	95,6	95,6	95,3	0,86	351	7,2	1285	2,5	2,9	3,50	1160	70
250		M3BP 355SMA 4	3GBP352210-••G	1488	95,9	96,0	95,5	0,85	442	7,1	1604	2,3	2,7	5,90	1610	74
315		M3BP 355SMB 4	3GBP352220-••G	1488	95,9	96,2	95,8	0,86	550	7,3	2021	2,3	2,8	6,90	1780	74
355		M3BP 355SMC 4	3GBP352230-••G	1487	95,9	96,2	95,9	0,87	614	6,8	2279	2,4	2,7	7,20	1820	78
400		M3BP 355MLA 4	3GBP352410-••G	1489	96,3	96,3	95,9	0,85	705	6,8	2565	2,3	2,6	8,40	2140	78
450		M3BP 355MLB 4	3GBP352420-••G	1490	96,7	96,7	96,1	0,86	780	6,9	2884	2,3	2,9	8,40	2140	78
500		M3BP 355LKA 4	3GBP352810-••G	1490	97,0	97,0	96,5	0,86	865	6,8	3204	2,0	3,0	10,0	2500	78
560	[1]	M3BP 355LKB 4	3GBP352820-••G	1490	96,9	96,9	96,5	0,85	981	7,2	3588	2,6	2,7	10,6	2600	78
560	[1]	M3BP 400LA 4	3GBP402510-••G	1491	96,8	96,8	96,3	0,85	982	7,4	3586	2,4	2,8	15,0	3200	78
630		M3BP 400LB 4	3GBP402520-••G	1491	97,0	97,0	96,5	0,87	1077	7,6	4034	2,2	2,9	16,0	3300	78
710	[1]	M3BP 400LC 4	3GBP402530-••G	1491	97,1	97,1	96,7	0,86	1227	7,6	4547	2,4	3,0	17,0	3400	78
800		M3BP 450LA 4	3GBP452510-••G	1491	96,9	96,9	96,4	0,86	1396	7,0	5121	1,3	2,8	23,0	4050	85
900		M3BP 450LB 4	3GBP452520-••G	1492	97,1	97,0	96,5	0,86	1573	7,0	5761	1,3	2,8	25,0	4350	85
1000	[1]	M3BP 450LC 4	3GBP452530-••G	1491	97,2	97,2	96,7	0,86	1724	6,8	6404	1,3	2,7	30,0	4700	85

[1] Temperature rise class F

Technical data
IE2 Process performance cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_s/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles					400 V 50 Hz				High-output design							
18.5		M3BP 160MLC 4	3GBP162430-••G	1469	91,4	92,4	92,2	0,84	34,7	7,6	120	3,0	3,2	0,110	173	62
22	1)	M3BP 160MLD 4	3GBP162440-••G	1463	91,6	93,0	93,2	0,85	40,7	6,9	143	2,5	2,9	0,125	187	62
30	1)	M3BP 180MLC 4	3GBP182430-••G	1474	92,3	93,5	93,5	0,83	56,5	7,3	194	2,7	2,9	0,217	235	62
37		M3BP 200MLB 4	3GBP202420-••G	1479	93,4	94,4	94,4	0,85	67,2	7,1	238	2,6	2,9	0,343	307	63
45	1)	M3BP 200MLC 4	3GBP202430-••G	1479	93,6	94,4	94,2	0,83	83,6	7,5	290	2,9	3,2	0,366	319	63
55		M3BP 225SMC 4	3GBP222230-••G	1478	94,0	94,6	94,4	0,85	99,3	7,4	355	2,9	3,1	0,474	370	66
64		M3BP 225SMD 4	3GBP222240-••G	1480	94,2	94,6	94,1	0,85	115	8,2	412	3,3	3,3	0,542	399	66
75	1)	M3BP 250SMB 4	3GBP252220-••G	1478	94,4	95,1	94,8	0,85	134	7,3	484	2,8	3,1	0,866	450	67
90	1)	M3BP 250SMC 4	3GBP252230-••G	1478	94,6	95,3	95,0	0,84	163	7,4	581	3,1	3,3	0,941	478	67
110		M3BP 280SMC 4	3GBP282230-••G	1485	95,1	95,4	95,1	0,86	193	7,6	707	3,0	3,0	1,85	725	68
132		M3BP 280MLA 4	3GBP282410-••G	1483	95,3	95,5	95,1	0,86	232	7,0	849	2,7	2,8	2,30	840	75
160		M3BP 280MLB 4	3GBP282420-••G	1484	95,6	95,9	95,7	0,85	284	7,4	1029	2,9	2,9	2,50	890	75
250		M3BP 315LKA 4	3GBP312810-••G	1487	95,7	95,8	95,2	0,85	443	7,4	1605	2,5	2,9	4,40	1410	78
280		M3BP 315LKB 4	3GBP312820-••G	1487	95,8	95,9	95,4	0,87	491	7,6	1798	2,6	3,0	5,00	1520	78
315		M3BP 315LKC 4	3GBP312830-••G	1488	95,8	95,9	95,3	0,86	559	7,8	2021	2,6	3,2	5,50	1600	78

[1] Temperature rise class F

Technical data
IE2 Process performance cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles					400 V 50 Hz				CENELEC-design							
0.18		M3BP 71MA 6	3GBP073321-••B	900	63,7	63,8	59,0	0,71	0,6	3,1	1,9	2,0	2,1	0,000890	10	42
0.25		M3BP 71MB 6	3GBP073322-••B	915	67,2	65,5	59,5	0,69	0,8	3,7	2,6	2,6	2,7	0,00110	12	42
0.37		M3BP 80MA 6	3GBP083321-••B	925	71,0	70,0	65,0	0,69	1,1	4,1	3,8	2,4	2,5	0,00187	15	47
0.55		M3BP 80MB 6	3GBP083322-••B	920	73,9	75,0	72,8	0,71	1,5	3,8	5,7	1,8	2,2	0,00239	17	47
0.75		M3BP 90SLC 6	3GBP093323-••B	960	78,7	77,2	72,5	0,58	2,3	4,5	7,4	2,4	3,1	0,00491	25	44
1.1		M3BP 90SLE 6	3GBP093324-••B	930	78,2	78,7	76,5	0,66	3,0	4,0	11,2	1,9	2,3	0,00540	28	44
1.5		M3BP 100L 6	3GBP103322-••B	950	82,2	83,0	81,6	0,69	3,7	4,3	15,0	1,5	2,7	0,00873	37	49
2.2		M3BP 112MB 6	3GBP113322-••B	950	82,5	83,7	81,6	0,69	5,5	4,4	22,1	1,7	2,3	0,0125	44	66
3		M3BP 132SMB 6	3GBP133321-••B	975	85,3	84,2	81,2	0,63	8,0	5,5	29,4	1,8	2,9	0,0334	69	57
4		M3BP 132SMC 6	3GBP133322-••B	960	84,9	85,3	83,9	0,68	10,0	4,6	39,7	1,5	2,2	0,0334	69	57
5.5		M3BP 132SMF 6	3GBP133324-••B	965	86,1	86,5	85,4	0,71	12,9	5,1	54,4	2,0	2,3	0,0487	86	57
7.5		M3BP 160MLA 6	3GBP163410-••G	975	88,5	89,9	89,7	0,79	15,4	7,4	73,4	1,7	3,2	0,087	134	59
11		M3BP 160MLB 6	3GBP163420-••G	972	89,3	90,6	90,5	0,79	22,5	7,5	108	1,9	2,9	0,114	172	59
15		M3BP 180MLA 6	3GBP183410-••G	977	90,2	91,2	90,7	0,76	31,5	5,8	146	1,8	2,7	0,168	207	59
18.5		M3BP 200MLA 6	3GBP203410-••G	988	91,6	92,2	91,7	0,80	36,4	6,7	178	2,3	2,9	0,382	269	63
22		M3BP 200MLB 6	3GBP203420-••G	987	92,0	92,9	92,7	0,82	42,0	6,6	212	2,2	2,8	0,448	291	63
30		M3BP 225SMA 6	3GBP223210-••G	986	92,6	93,3	92,8	0,83	56,2	7,0	290	2,6	2,9	0,663	349	63
37		M3BP 250SMA 6	3GBP253210-••G	989	93,1	93,8	93,4	0,82	69,9	6,8	357	2,4	2,7	1,13	395	63
45		M3BP 280SMA 6	3GBP283210-••G	990	93,4	93,8	93,5	0,83	83,8	7,0	434	2,5	2,5	1,85	605	66
55		M3BP 280SMB 6	3GBP283220-••G	990	93,8	94,2	93,9	0,84	100	7,0	530	2,7	2,6	2,20	645	66
75		M3BP 315SMA 6	3GBP313210-••G	992	94,4	94,4	93,5	0,82	139	7,4	721	2,4	2,8	3,20	830	70
90		M3BP 315SMB 6	3GBP313220-••G	992	94,8	94,7	94,1	0,84	166	7,5	866	2,4	2,8	4,10	930	70
110		M3BP 315SMC 6	3GBP313230-••G	991	95,0	95,0	94,6	0,83	201	7,4	1059	2,5	2,9	4,90	1000	70
132		M3BP 315MLA 6	3GBP313410-••G	991	95,3	95,4	94,9	0,83	240	7,5	1271	2,7	3,0	5,80	1150	68
160		M3BP 355SMA 6	3GBP353810-••G	992	94,9	95,2	95,0	0,83	293	6,3	1540	2,3	2,2	7,90	1520	75
200		M3BP 355SMB 6	3GBP353220-••G	993	95,7	95,9	95,7	0,83	364	7,2	1923	2,2	2,7	9,70	1680	75
250		M3BP 355SMC 6	3GBP353230-••G	993	95,7	95,8	95,4	0,82	460	7,4	2404	2,6	2,9	11,3	1820	75
315		M3BP 355MLB 6	3GBP353420-••G	992	95,7	96,0	95,5	0,83	570	7,0	3032	2,5	2,7	13,5	2180	75
355		M3BP 355LKA 6	3GBP353810-••G	992	95,7	95,9	95,4	0,81	658	7,6	3417	2,7	2,9	15,5	2500	75
400		M3BP 355LKB 6	3GBP353820-••G	992	96,0	96,0	95,5	0,83	724	7,2	3850	2,6	2,6	16,5	2600	75
400		M3BP 400LA 6	3GBP403510-••G	993	96,2	96,2	95,6	0,82	731	7,1	3846	2,3	2,7	17,0	2900	76
450		M3BP 400LB 6	3GBP403520-••G	994	96,6	96,6	96,1	0,82	819	7,4	4323	2,4	2,8	20,5	3150	76
500		M3BP 400LC 6	3GBP403530-••G	993	96,6	96,5	96,1	0,83	891	7,2	4809	2,5	2,7	22,0	3300	76
560		M3BP 400LD 6	3GBP403540-••G	993	96,9	96,9	96,4	0,85	984	7,4	5386	2,4	2,8	24,0	3400	77
630		M3BP 450LA 6	3GBP453510-••G	994	96,7	96,7	96,3	0,84	1127	6,5	6053	1,1	2,5	31,0	4150	81
710		M3BP 450LB 6	3GBP453520-••G	995	96,9	97,0	96,5	0,85	1244	7,0	6814	1,3	2,5	37,0	4500	81
800	[1]	M3BP 450LC 6	3GBP453530-••G	995	96,9	96,9	96,4	0,84	1415	7,2	7677	1,3	2,7	41,0	4800	81

[1] Temperature rise class F

Technical data
IE2 Process performance cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles					400 V 50 Hz				High-output design							
15		M3BP 160MLC 6	3GBP163430-••G	971	89,7	91,2	91,2	0,77	31,3	7,3	147	1,8	3,6	0,131	185	59
18.5		M3BP 180MLB 6	3GBP183420-••G	975	90,7	92,0	92,0	0,79	37,2	5,8	181	1,7	2,7	0,198	221	59
30	1)	M3BP 200MLC 6	3GBP203430-••G	985	92,0	93,1	92,8	0,83	56,7	6,9	290	2,3	2,8	0,531	318	63
37		M3BP 225SMB 6	3GBP223220-••G	985	93,1	94,0	94,0	0,83	69,1	6,6	358	2,3	2,6	0,821	393	63
45	1)	M3BP 225SMC 6	3GBP223230-••G	984	92,7	93,9	94,0	0,83	84,4	6,4	436	2,3	2,6	0,821	393	63
45		M3BP 250SMB 6	3GBP253220-••G	989	93,4	94,1	93,9	0,83	83,7	7,0	434	2,5	2,7	1,37	441	63
55	1)	M3BP 250SMC 6	3GBP253230-••G	988	93,2	94,1	94,0	0,84	101	7,1	531	2,6	2,8	1,50	468	63
75		M3BP 280SMC 6	3GBP283230-••G	990	94,2	94,7	94,5	0,84	137	7,3	723	2,8	2,7	2,85	725	66
90		M3BP 280MLA 6	3GBP283410-••G	990	94,1	94,3	93,7	0,81	170	7,1	868	2,4	2,5	3,10	840	70
110		M3BP 280MLB 6	3GBP283420-••G	990	94,5	94,8	94,4	0,82	205	7,5	1061	2,7	2,6	4,10	890	70
160		M3BP 315LKA 6	3GBP313810-••G	992	95,3	95,3	94,7	0,83	291	7,5	1540	2,6	2,8	7,30	1410	74
180		M3BP 315LKB 6	3GBP313820-••G	992	95,3	95,4	94,8	0,83	328	7,4	1732	2,6	2,8	8,30	1520	74
200		M3BP 315LKC 6	3GBP313830-••G	989	95,4	95,6	95,3	0,85	360	6,8	1931	2,5	2,6	9,20	1600	74

1) Temperature rise class F

Technical data
Process performance cast iron motors, 750 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
Efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
750 r/min = 8 poles					400 V 50 Hz				CENELEC-design							
0.09		M3BP 71MA 8	3GBP074101-••B	660	49,4	46,4	39,7	0,60	0,4	2,7	1,3	2,0	2,5	0,000890	11	40
0.12		M3BP 71MB 8	3GBP074102-••B	670	51,5	47,6	40,0	0,56	0,6	2,7	1,7	2,0	2,5	0,00110	12	43
0.18		M3BP 80MA 8	3GBP084101-••B	700	57,4	53,7	46,1	0,62	0,8	3,2	2,5	2,1	2,8	0,00187	15	45
0.25		M3BP 80MB 8	3GBP084102-••B	680	61,5	61,3	53,5	0,65	0,9	3,1	3,5	1,9	2,6	0,00239	17	50
0.37		M3BP 90SLB 8	3GBP094102-••B	705	66,3	64,0	57,0	0,54	1,4	2,8	5,0	1,9	2,5	0,00444	24	50
0.55		M3BP 90SLC 8	3GBP094103-••B	655	61,8	65,6	65,2	0,67	1,9	2,6	8,0	1,4	1,9	0,00491	25	53
0.75		M3BP 100LA 8	3GBP104101-••B	710	74,0	72,3	67,1	0,61	2,5	3,7	10,1	1,8	2,6	0,00720	30	46
1.1		M3BP 100LB 8	3GBP104102-••B	695	76,0	76,4	74,5	0,66	3,1	3,6	15,1	1,6	2,3	0,00871	30	53
1.5		M3BP 112M 8	3GBP114101-••B	690	74,4	75,9	74,1	0,74	4,1	3,5	20,9	1,9	2,6	0,0106	39	55
2.2		M3BP 132SMA 8	3GBP134101-••B	715	79,7	79,5	77,1	0,66	6,5	4,7	29,2	1,6	2,8	0,0334	70	56
3		M3BP 132SMB 8	3GBP134102-••B	715	79,9	79,7	76,6	0,64	8,5	4,7	39,7	1,7	2,8	0,040	75	58
4		M3BP 160MLA 8	3GBP164410-••G	728	84,0	85,1	83,6	0,67	10,2	5,4	52,4	1,5	2,6	0,068	120	59
5.5		M3BP 160MLB 8	3GBP164420-••G	726	84,6	85,9	84,8	0,67	13,9	5,6	72,3	1,4	2,6	0,085	134	59
7.5		M3BP 160MLC 8	3GBP164430-••G	727	86,0	87,3	86,5	0,65	19,3	4,7	98,5	1,5	2,8	0,132	184	59
11		M3BP 180MLA 8	3GBP184410-••G	731	86,7	88,3	87,8	0,67	27,3	4,4	143	1,8	2,6	0,214	233	59
15	1)	M3BP 200MLA 8	3GBP204410-••G	737	89,5	90,8	90,3	0,74	32,4	5,3	194	2,0	2,4	0,450	290	60
18.5		M3BP 225SMA 8	3GBP224210-••G	739	90,0	91,1	90,6	0,73	40,1	5,2	239	2,0	2,3	0,669	350	63
22		M3BP 225SMB 8	3GBP224220-••G	738	90,5	91,4	91,0	0,74	46,8	5,5	284	2,0	2,3	0,722	363	63
30		M3BP 250SMA 8	3GBP254210-••G	742	91,2	91,8	91,1	0,71	66,0	5,8	386	2,6	2,4	1,40	440	63
37		M3BP 280SMA 8	3GBP284210-••G	742	92,7	92,9	92,2	0,79	72,6	7,3	476	1,7	3,0	1,85	605	65
45		M3BP 280SMB 8	3GBP284220-••G	741	93,2	93,4	92,8	0,78	89,2	7,6	579	1,8	3,1	2,20	645	65
55		M3BP 315SMA 8	3GBP314210-••G	742	93,4	93,9	93,4	0,79	106	7,1	707	1,6	2,7	3,20	830	62
75		M3BP 315SMB 8	3GBP314220-••G	741	93,7	93,8	93,7	0,82	146	7,1	966	1,7	2,7	4,10	930	62
90		M3BP 315SMC 8	3GBP314230-••G	741	94,0	94,3	94,0	0,82	170	7,4	1159	1,8	2,7	4,90	1000	64
110		M3BP 315MLA 8	3GBP314410-••G	740	94,0	94,2	94,3	0,83	211	7,3	1419	1,8	2,7	5,80	1150	72
132		M3BP 355SMA 8	3GBP354210-••G	744	94,7	94,6	94,2	0,80	256	7,5	1694	1,5	2,6	7,90	1520	69
160		M3BP 355SMB 8	3GBP354220-••G	744	95,2	95,2	94,8	0,77	293	7,6	1926	1,6	2,6	9,70	1680	69
200		M3BP 355SMC 8	3GBP354230-••G	742	95,3	95,7	95,5	0,79	385	7,4	2576	1,6	2,6	11,3	1820	69
250		M3BP 355MLB 8	3GBP354420-••G	743	95,4	95,5	95,0	0,80	472	7,5	3213	1,6	2,7	13,5	2180	72
315		M3BP 400LA 8	3GBP404510-••G	743	96,1	96,0	95,6	0,81	592	7,0	4043	1,2	2,6	17,0	2900	71
315	1)	M3BP 355LKB 8	3GBP354820-••G	742	95,5	95,7	95,2	0,80	595	7,9	4053	1,7	2,7	16,5	2600	75
355		M3BP 400LB 8	3GBP404520-••G	743	96,2	96,3	96,1	0,83	641	6,8	4562	1,2	2,5	21,0	3200	71
400		M3BP 400LC 8	3GBP404530-••G	744	96,3	96,4	96,1	0,82	735	7,4	5134	1,3	2,7	24,0	3400	71
450		M3BP 450LA 8	3GBP454510-••G	744	96,2	96,5	96,2	0,83	813	6,0	5775	1,0	2,5	26,0	3750	80
500		M3BP 450LB 8	3GBP454520-••G	744	96,3	96,4	96,2	0,83	902	6,4	6417	1,0	2,6	29,0	4000	80
560		M3BP 450LC 8	3GBP454530-••G	744	96,4	96,5	96,1	0,82	1038	7,0	7188	1,2	2,9	35,0	4350	80
630	1)	M3BP 450LD 8	3GBP454540-••G	745	96,6	96,7	96,2	0,81	1162	7,6	8075	1,3	3,2	41,0	4800	80

1) Temperature rise class F

Technical data
Process performance cast iron motors, 750 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
Efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD^2kgm^2	Weight kg	Sound pressure Level L_{PA} dB
750 r/min = 8 poles					400 V 50 Hz				High-output design							
18.5		M3BP 200MLB 8	3GBP204420-••G	739	90,0	90,8	90,2	0,74	40,0	5,4	239	2,1	2,3	0,530	318	60
30		M3BP 225SMC 8	3GBP224230-••G	737	91,2	92,3	92,1	0,73	64,7	5,6	388	2,3	2,4	0,828	393	63
37		M3BP 250SMB 8	3GBP254220-••G	740	91,7	92,8	92,5	0,73	78,9	5,4	477	2,6	2,3	1,51	468	63
45	1)	M3BP 250SMC 8	3GBP254230-••G	738	92,1	93,4	93,4	0,74	95,1	5,6	582	2,3	2,4	1,51	468	63
55		M3BP 280SMC 8	3GBP284230-••G	741	93,4	93,7	93,6	0,80	107	7,9	708	1,9	3,1	2,85	725	65
75		M3BP 280MLB 8	3GBP284420-••G	739	93,7	93,9	93,3	0,80	144	6,7	969	1,7	2,6	4,10	890	72
132		M3BP 315LKA 8	3GBP314810-••G	740	94,1	94,4	94,2	0,83	243	7,3	1703	1,8	2,6	7,30	1410	74
150	1)	M3BP 315LKB 8	3GBP314820-••G	741	94,1	94,7	94,6	0,83	278	7,7	1938	1,9	2,7	8,30	1520	74
160	1)	M3BP 315LKC 8	3GBP314830-••G	739	94,2	94,7	94,7	0,83	297	7,7	2068	1,9	2,8	9,20	1600	74

1) Temperature rise class F

Technical data
Process performance cast iron motors, 600 and 500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
600 r/min = 10 poles					400 V 50 Hz				CENELEC-design							
37		M3BP 280SMB 10	3GBP285220-••G	593	92,5	92,3	90,9	0,73	79,0	6,6	595	1,6	3,0	2,20	645	60
45		M3BP 280SMC 10	3GBP285230-••G	592	93,0	92,9	91,7	0,75	93,1	6,7	725	1,6	2,8	2,85	725	60
55		M3BP 315SMB 10	3GBP315220-••G	594	93,8	93,8	92,9	0,78	108	6,7	884	1,6	2,7	4,10	930	70
75		M3BP 315SMC 10	3GBP315230-••G	593	93,6	93,7	92,8	0,78	148	6,6	1207	1,5	2,8	4,90	1000	70
90		M3BP 315MLA 10	3GBP315410-••G	593	93,7	93,8	93,0	0,78	177	6,6	1449	1,7	2,7	5,80	1150	70
110		M3BP 355SMA 10	3GBP355210-••G	595	94,5	94,5	93,6	0,76	221	6,6	1765	1,3	2,5	7,90	1520	73
132		M3BP 355SMB 10	3GBP355220-••G	594	94,8	94,9	94,2	0,79	254	6,6	2122	1,3	2,4	9,70	1680	73
160		M3BP 355SMC 10	3GBP355230-••G	594	94,8	94,9	94,2	0,77	316	6,9	2572	1,4	2,5	11,3	1820	76
200		M3BP 355MLB 10	3GBP355420-••G	594	95,0	95,1	94,5	0,78	389	6,5	3215	1,4	2,4	13,5	2180	77
250	1)	M3BP 355LKB 10	3GBP355820-••G	593	95,1	95,3	94,8	0,78	486	6,3	4025	1,4	2,3	16,5	2600	79
250		M3BP 400LB 10	3GBP405520-••G	595	95,3	95,3	94,5	0,74	511	6,2	4012	1,3	2,3	20,0	3100	79
315		M3BP 400LC 10	3GBP405530-••G	595	95,4	95,4	94,7	0,74	644	6,2	5055	1,3	2,3	24,0	3400	79
355		M3BP 450LA 10	3GBP455510-••G	596	95,9	95,9	95,2	0,72	742	5,8	5687	1,1	2,2	31,0	4050	82
355		M3BP 450LB 10	3GBP455520-••G	596	95,3	95,2	94,3	0,71	757	6,3	5687	1,1	2,3	34,0	4250	82
400		M3BP 450LB 10	3GBP455520-••G	596	95,9	95,9	95,1	0,72	836	5,7	6408	1,0	2,1	34,0	4250	82
400		M3BP 450LC 10	3GBP455530-••G	596	95,4	95,3	94,5	0,72	840	6,4	6408	1,1	2,4	38,0	4550	82
450		M3BP 450LC 10	3GBP455530-••G	596	96,1	96,1	95,4	0,73	925	5,8	7210	1,0	2,1	38,0	4550	82
450		M3BP 450LD 10	3GBP455540-••G	596	95,4	95,3	94,4	0,70	972	6,4	7210	1,2	2,4	42,0	4800	82
500	1)	M3BP 450LD 10	3GBP455540-••G	596	96,1	96,1	95,4	0,71	1057	5,9	8011	1,1	2,2	42,0	4800	82

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
500 r/min = 12 poles					400 V 50 Hz				CENELEC-design							
30		M3BP 280SMB 12	3GBP286220-••G	493	90,2	89,5	86,9	0,59	81,3	5,8	581	1,9	3,0	2,20	645	71
37		M3BP 280SMC 12	3GBP286230-••G	493	90,6	89,8	87,2	0,58	101	6,3	716	2,0	3,2	2,85	725	71
45		M3BP 315SMB 12	3GBP316220-••G	494	92,8	92,9	92,0	0,76	92,0	6,5	869	1,6	2,6	4,10	930	71
55		M3BP 315SMC 12	3GBP316230-••G	493	93,0	93,2	92,4	0,77	110	6,5	1065	1,6	2,6	4,90	1000	71
75		M3BP 315MLA 12	3GBP316410-••G	493	93,2	93,4	92,8	0,76	152	6,3	1452	1,5	2,5	5,80	1150	71
90		M3BP 355SMA 12	3GBP356210-••G	495	93,5	93,5	92,5	0,72	192	5,7	1736	1,3	2,4	7,90	1520	75
110		M3BP 355SMB 12	3GBP356220-••G	495	93,8	93,8	92,7	0,71	238	6,0	2122	1,4	2,5	9,70	1680	75
132		M3BP 355SMC 12	3GBP356230-••G	495	93,9	93,9	92,9	0,71	285	6,0	2546	1,4	2,5	11,3	1820	77
160		M3BP 355MLB 12	3GBP356420-••G	494	93,8	94,0	93,3	0,74	332	5,7	3092	1,3	2,4	13,5	2180	77
200	1)	M3BP 355LKB 12	3GBP356820-••G	494	93,9	94,1	93,4	0,73	421	5,8	3866	1,4	2,4	16,5	2600	79
200		M3BP 400LB 12	3GBP406520-••G	495	95,0	95,0	94,3	0,79	384	5,4	3858	1,1	2,2	20,0	3100	82
250		M3BP 400LC 12	3GBP406530-••G	495	95,2	95,2	94,5	0,79	479	5,7	4822	1,1	2,2	24,0	3400	82
315		M3BP 450LB 12	3GBP456520-••G	496	95,6	95,6	94,8	0,76	625	5,5	6064	1,0	2,1	34,0	4300	82
355		M3BP 450LC 12	3GBP456530-••G	495	95,6	95,6	95,0	0,76	705	5,3	6848	1,0	2,0	38,0	4550	82
400	1)	M3BP 450LD 12	3GBP456540-••G	495	95,7	95,8	95,2	0,77	783	5,3	7716	1,0	2,0	42,0	4800	82

1) Temperature rise class F

Technical data
IE3 Process performance cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles					400 V 50 Hz				CENELEC-design							
0.37		M3BP 71MC 2	3GBP071330-••L	2743	73,8	74,4	71,7	0,76	0,94	4,9	1,26	2,3	2,8	0,00088	10	58
0.55		M3BP 71ME 2	3GBP071350-••L	2755	77,8	79,3	78,4	0,83	1,25	6,8	1,9	2,8	3,1	0,00045	11	56
0.75		M3BP 80MC 2	3GBP081330-••L	2879	80,7	81,0	78,8	0,82	1,6	7,2	2,5	3,4	4,2	0,0010	17	57
1.1		M3BP 80ME 2	3GBP081350-••L	2865	82,7	83,8	83,1	0,84	2,3	7,2	3,7	3,5	4,1	0,00120	18	60
1.5		M3BP 90SLA 2	3GBP091010-••L	2901	84,2	84,8	83,8	0,89	2,9	7,7	4,9	2,1	3,5	0,00280	27	69
2.2		M3BP 90LA 2	3GBP091510-••L	2904	85,9	86,3	84,8	0,89	4,2	8,8	7,2	3,1	3,8	0,00360	30	64
3		M3BP 100MLA 2	3GBP101410-••L	2895	87,1	87,9	87,3	0,92	5,4	8,2	9,9	3,3	3,9	0,00130	42	68
4		M3BP 112ME 2	3GBP111350-••L	2882	88,1	89,9	90,9	0,93	6,9	8,3	13,0	2,9	3,7	0,0139	56	70
5.5		M3BP 132SMC 2	3GBP131230-••L	2908	89,2	89,5	88,5	0,90	9,8	7,6	18,0	2,3	3,8	0,0182	69	70
7.5		M3BP 132SME 2	3GBP131250-••L	2916	90,1	90,5	90,1	0,90	13,3	8,4	24,6	2,5	4,3	0,0203	75	70
11		M3BP 160MLA 2	3GBP161410-••L	2943	91,2	92,0	91,6	0,91	19,1	7,2	35,6	2,6	3,6	0,0570	144	69
15		M3BP 160MLB 2	3GBP161420-••L	2947	91,9	92,2	91,8	0,88	26,5	8,2	48,5	3,2	4,2	0,0630	152	69
18.5		M3BP 160MLC 2	3GBP161430-••L	2949	92,4	93,0	92,6	0,90	32,0	9,0	59,8	3,3	3,9	0,0760	164	73
22		M3BP 180MLA 2	3GBP181410-••L	2956	92,7	93,1	92,7	0,90	37,7	7,8	71,0	3,4	3,8	0,110	205	73
30		M3BP 200MLA 2	3GBP201410-••L	2957	93,3	93,8	93,6	0,88	52,4	7,5	96,9	2,5	3,1	0,182	263	73
37		M3BP 200MLB 2	3GBP201420-••L	2960	93,7	94,2	94,1	0,89	64,2	8,2	120	3,1	3,4	0,222	289	73
45		M3BP 225SMA 2	3GBP221210-••L	2968	94,0	94,0	93,0	0,87	79,6	7,3	145	3,2	3,1	0,296	335	76
55		M3BP 250SMA 2	3GBP251210-••L	2968	94,3	93,7	93,6	0,89	94,8	6,8	177	2,4	3,0	0,426	400	76
75		M3BP 280SMB 2	3GBP281220-••L	2978	94,7	94,4	93,5	0,88	130	7,0	240	2,3	3,0	0,90	665	74
90		M3BP 280SMC 2	3GBP281230-••L	2975	95,0	95,0	94,2	0,88	158	6,4	289	2,1	2,8	0,990	690	74
110		M3BP 315SMB 2	3GBP311220-••L	2982	95,2	94,9	93,9	0,87	192	7,0	352	1,8	2,7	1,30	910	78
132		M3BP 315SMC 2	3GBP311230-••L	2982	95,4	95,4	94,6	0,87	229	6,8	422	2,0	2,8	1,50	965	78
160		M3BP 315SMD 2	3GBP311240-••L	2983	95,6	95,6	94,9	0,87	275	7,4	512	2,2	2,8	1,70	1025	78
200		M3BP 315MLA 2	3GBP311410-••L	2983	95,8	95,8	95,3	0,88	342	7,7	640	2,5	3,1	2,10	1190	81
250	2)	M3BP 355SMA 2	3GBP351210-••L	2985	95,8	95,6	94,6	0,89	423	7,7	800	2,1	3,3	3,00	1600	83
315	2)	M3BP 355SMB 2	3GBP351220-••L	2980	95,8	95,7	95,0	0,89	529	7,0	1009	2,1	3,0	3,40	1680	83
355	2)	M3BP 355SMC 2	3GBP351230-••L	2984	95,8	95,8	95,0	0,88	605	7,2	1136	2,2	3,0	3,60	1750	83

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles					400 V 50 Hz				High-output design							
22		M3BP 160MLD 2	3GBP161440-••L	2944	92,7	93,5	93,5	0,90	38,0	8,4	71,4	3,2	3,7	0,0710	174	74
30		M3BP 180MLB 2	3GBP181420-••L	2957	93,3	94,0	93,9	0,88	52,7	8,7	96,9	3,0	3,8	0,104	215	74
37		M3BP 180MLC 2	3GBP181430-••L	2952	93,7	94,5	94,5	0,88	64,7	8,7	120	3,1	3,7	0,115	229	74
45		M3BP 200MLC 2	3GBP201430-••L	2955	94,0	94,5	94,4	0,89	77,6	8,0	145	2,9	3,3	0,214	305	77
55		M3BP 225SMB 2	3GBP221220-••L	2966	94,3	94,6	94,1	0,88	95,6	7,4	177	2,9	2,9	0,274	355	79
75		M3BP 225SMC 2	3GBP221230-••L	2966	94,7	94,8	94,1	0,88	129	8,1	241	3,3	3,0	0,329	408	79
75		M3BP 250SMB 2	3GBP251220-••L	2971	94,7	95,1	94,8	0,90	127	7,9	241	2,8	3,3	0,644	479	81
90	1)	M3BP 250SMC 2	3GBP251230-••L	2968	95,0	95,4	95,0	0,90	151	8,4	290	2,7	3,4	0,644	495	81
110		M3BP 280SMD 2	3GBP281240-••L	2977	95,2	95,2	94,4	0,88	190	7,5	353	2,4	3,1	1,150	725	75
250		M3BP 315LKB 2	3GBP311820-••L	2983	95,8	96,0	95,5	0,90	419	7,7	800	2,5	3,3	2,90	1540	81

[1] Temperature rise class F

[2] 3dB(A) sound pressure level reduction with unidirectional fan construction. Direction of rotation must be stated when ordering, see variant codes 044 and 045

Technical data
IE3 Process performance cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles					400 V 50 Hz				CENELEC-design							
0.75		M3BP 80MD 2	3GBP081340-••K	2872	82,1	82,5	80,9	0,87	1,51	6,2	2,43	2,9	3,4	0,0012	18	57
1.1		M3BP 80MG 2	3GBP081370-••K	2862	84,2	85,1	84,3	0,87	2,1	6,3	3,65	3	3,5	0,0014	19	60
1.5		M3BP 90LB 2	3GBP091520-••K	2892	86,4	87,4	86,7	0,89	2,7	7,3	4,8	2,0	3,2	0,00310	31	69
2.2		M3BP 90LC 2	3GBP091530-••K	2900	87,6	88,3	87,4	0,89	4,0	9,1	7,3	3,4	4,1	0,00440	35	64
3		M3BP 100LKA 2	3GBP101810-••K	2907	89,0	89,4	88,5	0,89	5,4	8,8	9,9	3,3	4,3	0,00860	50	68
4		M3BP 112MG 2	3GBP111370-••K	2882	88,4	89,9	90,5	0,93	7,0	8,1	13,3	2,8	4,1	0,0132	56	70
5.5		M3BP 132SMF 2	3GBP131260-••K	2902	90,7	91,3	91,0	0,90	9,7	7,3	18,2	2,7	4,2	0,0218	77	67
7.5		M3BP 132SMG 2	3GBP131270-••K	2907	91,3	92,1	92,1	0,90	13,2	8,1	24,7	3,2	4,7	0,0218	77	70
11		M3BP 160MLA 2	3GBP161410-••K	2943	92,1	92,7	92,4	0,92	18,7	8,1	35,6	2,7	3,4	0,0520	151	69
15		M3BP 160MLB 2	3GBP161420-••K	2943	92,5	93,4	93,2	0,92	25,4	8,4	48,6	3,1	3,4	0,0620	163	69
18.5		M3BP 160MLC 2	3GBP161430-••K	2942	93,1	93,9	93,9	0,93	30,8	8,3	60,0	3,1	3,6	0,0720	176	69
22		M3BP 180MLA 2	3GBP181410-••K	2957	93,2	93,9	93,8	0,91	37,4	8,1	71,0	2,6	3,2	0,116	230	69
30		M3BP 200MLA 2	3GBP201410-••K	2958	94,2	94,9	94,7	0,90	51,0	7,8	96,8	2,8	3,1	0,196	289	72
37		M3BP 200MLB 2	3GBP201420-••K	2960	94,7	95,2	95,0	0,91	61,9	8,8	119	3,1	3,4	0,217	301	72
45		M3BP 225SMA 2	3GBP221210-••K	2972	94,9	95,1	94,7	0,89	76,8	7,8	144	3,1	3,0	0,323	387	74
55		M3BP 250SMA 2	3GBP251210-••K	2975	95,2	95,4	95,0	0,89	93,6	8,0	176	2,8	3,3	0,579	439	75
75		M3BP 280SMB 2	3GBP281220-••K	2980	95,5	95,5	94,9	0,87	129	7,3	240	2,1	2,9	0,90	665	77
90		M3BP 280SMC 2	3GBP281230-••K	2981	95,7	95,6	95,0	0,88	153	8,0	288	2,5	3,1	1,150	725	77
110		M3BP 315SMB 2	3GBP311220-••K	2982	95,9	95,9	95,2	0,88	189	6,7	352	1,9	2,6	1,40	940	77
132		M3BP 315SMC 2	3GBP311230-••K	2986	96,1	96,2	95,9	0,88	226	7,9	422	2,4	3,0	1,70	1025	77
160		M3BP 315MLA 2	3GBP311410-••K	2983	96,2	96,5	96,2	0,90	268	7,3	512	2,2	2,7	2,10	1190	77
200	[1]	M3BP 355SMA 2	3GBP351210-••K	2985	96,4	96,1	95,3	0,89	336	7,6	640	2,0	3,1	3,00	1600	83
250	[1]	M3BP 355SMB 2	3GBP351220-••K	2983	96,4	96,5	96,1	0,90	415	7,6	800	2,2	3,0	3,40	1680	83
315	[1]	M3BP 355SMC 2	3GBP351230-••K	2984	96,4	96,4	95,9	0,89	533	7,8	1008	2,3	2,8	3,60	1750	83
355		M3BP 355MLA 2	3GBP351410-••K	2981	96,4	96,7	96,3	0,90	595	7,5	1137	2,3	2,6	4,10	2000	83

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles				400 V 50 Hz				High-output design							
200	M3BP 315MLB 2	3GBP311420-••K	2983	96,4	96,7	96,6	0,90	333	6,8	640	1,9	2,6	2,20	1220	77
250	M3BP 315LKB 2	3GBP311820-••K	2982	96,4	96,7	96,7	0,91	413	7,9	800	2,5	2,7	2,90	1540	77

[1] 3dB(A) sound pressure level reduction with unidirectional fan construction. Direction of rotation must be stated when ordering, see variant codes 044 and 045

Technical data
IE3 Process performance cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles				400 V 50 Hz				CENELEC-design							
0.25	M3BP 71MD 4	3GBP072340-••L	1416	73,5	75,1	73,8	0,8	0,6	4,8	1,68	2	2,6	0,0009	11	45
0.37	M3BP 71MLE 4	3GBP072450-••L	1432	77,3	77,4	74,5	0,76	0,9	5,8	2,46	2,7	3,3	0,00122	15	45
0.55	M3BP 80MLC 4	3GBP082430-••L	1444	80,8	81,6	80,1	0,8	1,2	6,7	4	3	3,5	0,0028	20	45
0.75	M3BP 80MLE 4	3GBP082450-••L	1448	82,5	82,5	80,1	0,78	1,7	7,4	4,9	3,5	4,0	0,00330	22	50
1.1	M3BP 90LA 4	3GBP092510-••L	1443	84,1	84,6	83,5	0,76	2,4	5,2	7,3	3,4	4,2	0,00490	28	56
1.5	M3BP 90LB 4	3GBP092520-••L	1445	85,3	85,0	82,6	0,77	3,3	5,7	9,9	3,8	4,6	0,00670	32	56
2.2	M3BP 100LA 4	3GBP102510-••L	1448	86,7	89,0	86,1	0,81	4,5	7,5	14,0	2,3	3,6	0,0109	38	56
3	M3BP 100MLB 4	3GBP102420-••L	1444	87,7	88,4	87,6	0,81	6,1	7,0	19,8	3,3	4,1	0,0121	42	58
4	M3BP 112ME 4	3GBP112350-••L	1453	88,6	88,9	88,0	0,74	8,9	7,8	26,0	3,5	4,3	0,0188	52	59
5.5	M3BP 132SMB 4	3GBP132220-••L	1463	89,6	89,8	88,7	0,74	11,9	7,6	36,0	2,8	3,9	0,0295	68	70
7.5	M3BP 132SME 4	3GBP132250-••L	1462	90,4	90,8	90,2	0,76	15,7	7,9	49,0	3,0	4,0	0,0376	78	64
11	M3BP 160MLA 4	3GBP162410-••L	1477	91,4	91,8	91,1	0,82	21,1	7,6	71,3	2,6	3,3	0,110	160	61
15	M3BP 160MLB 4	3GBP162420-••L	1477	92,1	92,4	91,6	0,82	28,5	8,2	97,0	3,0	3,7	0,135	179	61
18.5	M3BP 180MLA 4	3GBP182410-••L	1481	92,6	93,2	92,9	0,83	34,9	7,2	119	2,8	3,0	0,219	215	60
22	M3BP 180MLB 4	3GBP182420-••L	1481	93,0	93,5	93,3	0,82	41,4	6,5	142	3,0	3,2	0,243	229	60
30	M3BP 200MLA 4	3GBP202410-••L	1483	93,6	93,8	93,4	0,84	54,8	7,5	193	2,7	3,2	0,385	292	63
37	M3BP 225SMA 4	3GBP222210-••L	1482	93,9	94,1	93,8	0,83	68,9	7,2	239	3,1	3,1	0,427	322	67
45	M3BP 225SMB 4	3GBP222220-••L	1482	94,2	94,4	94,0	0,84	82,3	8,0	290	3,2	3,5	0,525	357	66
55	M3BP 250SMA 4	3GBP252210-••L	1482	94,6	94,7	94,0	0,84	100	7,1	354	2,9	3,4	0,694	406	68
75	M3BP 280SMB 4	3GBP282220-••L	1485	95,0	95,2	94,8	0,86	133	6,4	483	2,3	2,8	1,380	645	75
90	M3BP 280SMC 4	3GBP282230-••L	1485	95,2	95,5	95,2	0,86	158	7,1	578	2,5	2,9	1,730	700	75
110	M3BP 315SMB 4	3GBP312220-••L	1489	95,4	95,5	94,9	0,84	195	7,0	705	2,1	3,0	2,430	930	71
132	M3BP 315SMC 4	3GBP312230-••L	1488	95,6	95,9	95,5	0,86	231	6,7	847	2,2	2,9	2,90	1000	71
160	M3BP 315SMD 4	3GBP312240-••L	1488	95,8	96,0	95,8	0,85	282	6,9	1026	2,2	3,0	3,20	1065	71
200	M3BP 315MLB 4	3GBP312420-••L	1487	96,0	96,4	96,4	0,86	351	6,8	1284	2,4	3,0	3,90	1220	74
250	M3BP 355SMA 4	3GBP352210-••L	1491	96,0	96,0	95,6	0,86	435	6,4	1601	2,1	2,9	5,90	1610	78
315	M3BP 355SMB 4	3GBP352220-••L	1491	96,0	96,1	95,7	0,85	550	7,3	2018	2,4	3,3	6,90	1780	78
355	M3BP 355SMC 4	3GBP352230-••L	1490	96,0	96,2	95,8	0,86	616	6,3	2273	2,3	2,8	7,20	1820	78

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles				400 V 50 Hz				High-output design							
18.5	M3BP 160MLC 4	3GBP162430-••L	1473	92,6	93,3	93,1	0,82	35,1	8,3	120	3,1	3,5	0,124	180	67
37	M3BP 200MLB 4	3GBP202420-••L	1480	93,9	94,8	94,8	0,82	69,3	7,5	239	2,8	2,9	0,362	305	68
55	M3BP 225SMC 4	3GBP222230-••L	1478	94,6	94,9	94,8	0,84	99,9	7,7	355	3,3	3,3	0,536	391	71
75	M3BP 250SMB 4	3GBP252220-••L	1482	95,0	95,4	95,0	0,84	135	7,9	483	3,3	3,5	0,941	464	73
110	M3BP 280SMD 4	3GBP282240-••L	1486	95,4	95,7	95,3	0,85	196	7,3	707	2,7	3,0	1,950	750	76
132	M3BP 280MLA 4	3GBP282410-••L	1483	95,6	95,9	95,7	0,86	232	7,0	849	2,7	2,8	2,30	840	75
160	M3BP 280MLB 4	3GBP282420-••L	1484	95,8	96,0	95,8	0,86	280	7,4	1029	2,9	2,9	2,50	890	75
250	M3BP 315LKA 4	3GBP312810-••L	1488	96,0	96,3	96,1	0,85	442	6,9	1604	2,5	3,2	4,40	1410	78
280	M3BP 315LKB 4	3GBP312820-••L	1488	96,0	96,2	96,0	0,86	490	7,8	1797	2,7	3,1	5,00	1520	78
315	M3BP 315LKC 4	3GBP312830-••L	1489	96,0	96,1	95,8	0,85	557	8,3	2020	3,0	3,3	5,50	1600	78

Technical data
IE3 Process performance cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles				400 V 50 Hz				CENELEC-design							
0.55	M3BP 80MLD 4	3GBP082440-••K	1439	82,9	84,2	83,5	0,81	1,18	6,3	3,6	2,7	3,3	0,0028	20	45
0.75	M3BP 80MLG 4	3GBP082470-••K	1445	84,1	85	83,8	0,79	1,62	7	4,97	3,1	3,8	0,0033	22	57
1.1	M3BP 90LC 4	3GBP092530-••K	1444	87,1	87,5	86,4	0,79	2,3	7,2	7,3	2,7	3,7	0,00670	33	56
1.5	M3BP 90LD 4	3GBP092540-••K	1442	87,1	88,1	87,6	0,78	3,1	7,8	10,0	3,4	4,5	0,00720	34	56
2.2	M3BP 100LKA 4	3GBP102810-••K	1452	89,4	90,3	90,2	0,83	4,2	7,4	14,5	2,2	3,9	0,0146	49	56
3	M3BP 100LKB 4	3GBP102820-••K	1452	89,4	90,5	90,5	0,83	5,8	7,5	19,7	2,3	4,0	0,0146	49	58
4	M3BP 112MG 4	3GBP112370-••K	1454	88,6	89,1	88,6	0,75	8,7	7,5	26,3	3,5	3,7	0,0176	52	1978
5.5	M3BP 132SMF 4	3GBP132260-••K	1462	90,7	91,6	91,6	0,81	10,8	7,3	35,9	2,4	3,4	0,0401	81	67
7.5	M3BP 132SMG 4	3GBP132270-••K	1457	90,4	91,5	91,7	0,81	14,8	7,3	49,1	2,4	3,4	0,0401	81	64
11	M3BP 160MLA 4	3GBP162410-••K	1473	92,2	93,0	92,7	0,84	20,4	7,7	71,3	2,6	2,9	0,108	165	62
15	M3BP 160MLB 4	3GBP162420-••K	1474	92,6	93,4	93,2	0,84	27,8	7,9	97,1	2,8	3,3	0,125	181	62
18.5	M3BP 180MLA 4	3GBP182410-••K	1481	93,3	94,0	93,8	0,82	34,9	7,6	119	3,0	3,1	0,217	224	62
22	M3BP 180MLB 4	3GBP182420-••K	1480	93,3	94,1	94,1	0,82	41,5	8,2	141	2,8	3,1	0,217	229	62
30	M3BP 200MLA 4	3GBP202410-••K	1484	94,4	94,8	94,6	0,84	54,6	8,3	193	3,0	3,3	0,366	299	63
37	M3BP 225SMA 4	3GBP222210-••K	1482	94,9	95,5	95,4	0,86	65,4	7,7	238	2,8	3,1	0,536	376	66
45	M3BP 225SMB 4	3GBP222220-••K	1482	95,2	95,6	95,5	0,85	80,2	7,9	289	2,8	3,2	0,536	377	66
55	M3BP 250SMA 4	3GBP252210-••K	1485	95,4	95,9	95,7	0,85	97,8	7,9	353	3,0	3,3	0,933	458	67
75	M3BP 280SMB 4	3GBP282220-••K	1486	95,9	96,2	96,1	0,85	134	7,4	482	2,5	2,8	1,50	665	72
90	M3BP 280SMC 4	3GBP282230-••K	1487	96,0	96,2	95,9	0,85	161	7,9	578	2,9	3,0	1,850	725	72
110	M3BP 315SMC 4	3GBP312230-••K	1491	96,2	96,5	96,1	0,85	194	7,8	704	2,4	3,1	2,90	1000	68
132	M3BP 315SMD 4	3GBP312240-••K	1490	96,3	96,6	96,2	0,85	234	7,9	846	2,6	3,2	3,20	1065	68
160	M3BP 315MLB 4	3GBP312420-••K	1490	96,5	96,7	96,4	0,87	278	7,9	1026	2,7	3,0	3,90	1220	68
200	M3BP 355SMA 4	3GBP352210-••K	1491	96,6	96,7	96,4	0,87	345	7,3	1282	2,1	2,7	5,90	1610	74
250	M3BP 355SMB 4	3GBP352220-••K	1491	96,6	96,8	96,5	0,87	433	7,8	1601	2,5	2,9	6,90	1780	74
315	M3BP 355SMC 4	3GBP352230-••K	1490	96,6	96,8	96,5	0,85	554	7,4	2017	2,8	2,9	7,20	1820	74
355	M3BP 355MLA 4	3GBP352410-••K	1491	96,6	96,9	96,5	0,87	616	7,9	2274	2,7	2,9	8,40	2140	78

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles				400 V 50 Hz				High-output design							
200	M3BP 315LKB 4	3GBP312820-••K	1490	96,6	96,8	96,7	0,87	346	7,6	1282	2,5	2,9	5,00	1520	74
250	M3BP 315LKC 4	3GBP312830-••K	1490	96,6	96,9	96,8	0,87	432	7,8	1601	2,3	3,0	5,50	1600	74

Technical data
IE3 Process performance cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles				400 V 50 Hz				CENELEC-design							
0.18	M3BP 71ME 6	3GBP073350-••L	887	63,9	64,2	59,7	0,74	0,57	3,2	1,9	1,9	2,2	0,00091	10	45
0.25	M3BP 80MB 6	3GBP083320-••L	942	68,6	67	61,7	0,61	0,82	4,8	2,5	2,7	2,9	0,0019	14	47
0.37	M3BP 80MC 6	3GBP083330-••L	936	73,5	73,9	71,1	0,67	1,06	5,1	3,8	2,6	2,9	0,0028	16	50
0.55	M3BP 80ME 6	3GBP083350-••L	933	77,2	77,9	75,9	0,68	1,52	5	5,6	2,7	2,9	0,0035	18	47
0.75	M3BP 90SLD 6	3GBP093040-••L	940	78,9	80,3	79,2	0,75	1,8	4,4	7,6	2,1	2,8	0,00560	29	44
1.1	M3BP 90LF 6	3GBP093560-••L	944	81,0	81,7	80,1	0,75	2,6	4,7	11,1	2,1	2,8	0,00680	33	44
1.5	M3BP 100MLB 6	3GBP103420-••L	960	82,5	82,5	80,1	0,68	3,8	5,4	14,9	2,7	3,4	0,0120	41	49
2.2	M3BP 112MJ 6	3GBP113390-••L	962	84,3	85,5	84,7	0,68	5,3	4,2	21,8	1,4	2,3	0,0196	53	66
3	M3BP 132SMB 6	3GBP133220-••L	973	85,6	85,1	82,9	0,62	8,0	6,6	29,2	2,7	3,8	0,0355	75	57
4	M3BP 132SMF 6	3GBP133260-••L	971	86,8	86,5	84,7	0,62	10,7	6,6	39,0	2,7	3,8	0,0416	82	57
5.5	M3BP 132SMJ 6	3GBP133290-••L	966	88,0	89,1	88,9	0,73	12,3	4,2	54,0	1,7	2,7	0,0408	81	57
7.5	M3BP 160MLA 6	3GBP163410-••L	975	89,1	90,0	90,0	0,77	15,7	5,7	73,2	1,4	3,0	0,0890	146	59
11	M3BP 160MLB 6	3GBP163420-••L	975	90,3	91,1	91,1	0,78	22,5	6,4	108	1,6	3,1	0,138	180	64
15	M3BP 180MLA 6	3GBP183410-••L	979	91,2	91,9	91,6	0,79	30,1	5,2	147	1,5	2,7	0,212	212	63
18.5	M3BP 200MLA 6	3GBP203410-••L	989	91,7	91,9	91,2	0,82	35,2	6,5	179	2,2	3,2	0,496	272	59
22	M3BP 200MLB 6	3GBP203420-••L	989	92,2	92,4	91,4	0,81	42,4	7,3	212	2,6	3,5	0,585	297	59
30	M3BP 225SMA 6	3GBP223210-••L	988	92,9	93,0	92,2	0,77	60,4	7,7	291	2,9	3,6	0,724	349	63
37	M3BP 250SMA 6	3GBP253210-••L	990	93,3	93,7	93,5	0,80	71,1	6,5	357	2,4	3,1	1,30	431	58
45	M3BP 280SMB 6	3GBP283220-••L	991	93,7	94,0	93,5	0,84	82,0	7,4	433	2,7	3,0	1,870	645	72
55	M3BP 280SMC 6	3GBP283230-••L	992	94,1	94,3	93,8	0,86	99,0	7,5	528	2,8	3,0	2,570	725	71
75	M3BP 315SMB 6	3GBP313220-••L	994	94,6	94,9	94,6	0,84	136	6,8	720	1,8	2,6	4,10	930	75
90	M3BP 315SMC 6	3GBP313230-••L	994	94,9	95,1	94,7	0,84	164	7,2	864	2,0	3,0	4,60	1000	76
110	M3BP 315SMD 6	3GBP313240-••L	994	95,1	95,3	95,0	0,83	200	7,3	1056	2,2	3,1	4,90	1040	75
132	M3BP 315MLB 6	3GBP313420-••L	995	95,4	95,5	95,1	0,82	242	7,3	1266	2,3	3,2	6,30	1200	72
160	M3BP 355SMA 6	3GBP353210-••L	993	95,6	95,8	95,6	0,82	292	6,7	1538	2,5	2,6	7,90	1520	75
200	M3BP 355SMB 6	3GBP353220-••L	993	95,8	96,2	96,1	0,82	365	6,7	1923	2,6	2,5	9,70	1680	75
250	M3BP 355SMC 6	3GBP353230-••L	993	95,8	96,1	95,8	0,81	465	7,7	2404	3,0	3,1	11,30	1820	75
315	M3BP 355MLB 6	3GBP353420-••L	993	95,8	96,1	96,0	0,83	571	6,8	3029	2,6	3,2	13,50	2180	76
355	M3BP 355LKA 6	3GBP353810-••L	993	95,8	96,0	95,9	0,81	653	7,5	3413	2,9	3,2	15,50	2500	76

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles				400 V 50 Hz				High-output design							
18.5	M3BP 180MLB 6	3GBP183420-••L	980	91,7	92,5	92,0	0,75	38,8	6,4	180	2,1	3,1	0,220	219	65
37	M3BP 225SMB 6	3GBP223220-••L	985	93,3	93,7	93,4	0,80	71,5	7,0	359	2,7	3,0	0,813	382	68
45	M3BP 250SMB 6	3GBP253220-••L	991	93,7	94,1	93,6	0,81	85,5	7,6	434	2,9	3,3	1,50	465	68
55	M3BP 250SMC 6	3GBP253230-••L	989	94,1	94,7	94,5	0,80	105	7,1	531	3,0	3,1	1,490	466	68
75	M3BP 280SMD 6	3GBP283240-••L	991	94,6	94,9	94,5	0,85	135	7,6	723	2,8	3,0	3,00	740	73
160	M3BP 315LKA 6	3GBP313810-••L	994	95,6	95,8	95,4	0,81	298	7,5	1535	2,2	3,1	7,30	1410	76
180	M3BP 315LKB 6	3GBP313820-••L	994	95,8	95,9	95,4	0,82	331	7,6	1729	2,3	3,1	8,30	1520	76
200	M3BP 315LKC 6	3GBP313830-••L	993	95,8	96,1	95,8	0,82	367	7,0	1923	2,2	2,8	9,20	1600	76

Technical data
IE3 Process performance cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles				400 V 50 Hz				CENELEC-design							
0.25	M3BP 80MA 6	3GBP083310-••K	937	73,3	72,2	67,6	0,64	0,76	2,6	2,52	1,4	2	0,0019	14	47
0.37	M3BP 80MD 6	3GBP083340-••K	930	77,9	78,6	76,7	0,72	0,95	3,3	3,75	1,5	2	0,0028	16	47
0.55	M3BP 80MLG 6	3GBP083470-••K	937	80,4	81	79,5	0,63	1,56	4,4	5,6	1,9	2,2	0,0044	21	47
0.75	M3BP 90LG 6	3GBP093570-••K	938	81,5	82,8	82,2	0,74	1,8	4,8	7,7	2,4	2,7	0,00720	34	44
1.1	M3BP 100LKG 6	3GBP103870-••K	969	84,4	84,5	82,8	0,68	2,6	4,1	10,9	1,6	2,2	0,00250	47	49
1.5	M3BP 112MH 6	3GBP113380-••K	972	85,8	85,6	83,6	0,64	3,8	4,5	14,7	1,3	2,5	0,0196	53	66
2.2	M3BP 132SMC 6	3GBP133230-••K	978	87,3	87,5	86,1	0,69	5,1	5,4	21,5	2,0	2,6	0,0416	81	57
3	M3BP 132SMD 6	3GBP133240-••K	977	88,5	88,8	87,5	0,69	6,9	5,9	29,0	1,4	2,8	0,0416	82	57
4	M3BP 132SMG 6	3GBP133270-••K	974	89,4	89,9	89,3	0,69	9,3	5,6	38,7	2,2	2,8	0,0416	82	57
5.5	M3BP 132SMH 6	3GBP133280-••K	966	89,6	90,4	90,2	0,73	12,1	5,0	54,1	1,8	2,7	0,0654	79	57
7.5	M3BP 160MLA 6	3GBP163410-••K	980	90,8	91,5	91,0	0,78	15,2	7,9	73,0	1,7	3,3	0,114	164	59
11	M3BP 160MLB 6	3GBP163420-••K	979	91,2	91,8	91,1	0,74	23,5	8,5	107,0	2,2	3,9	0,131	177	59
15	M3BP 180MLA 6	3GBP183410-••K	981	92,2	92,4	91,5	0,77	30,4	7,7	146,0	2,2	3,5	0,225	220	59
18.5	M3BP 200MLA 6	3GBP203410-••K	990	92,8	93,2	92,6	0,77	37,3	7,5	178,0	2,6	3,2	0,448	272	63
22	M3BP 200MLB 6	3GBP203420-••K	990	93,3	93,7	93,1	0,79	43,0	7,8	212,0	2,6	3,2	0,531	293	63
30	M3BP 225SMA 6	3GBP223210-••K	989	94,1	94,6	94,4	0,81	56,8	7,9	289,0	2,8	3,1	0,813	370	63
37	M3BP 250SMA 6	3GBP253210-••K	991	94,4	94,9	94,7	0,83	68,0	7,7	356,0	2,7	2,9	1,490	457	63
45	M3BP 280SMB 6	3GBP283220-••K	992	94,7	95,1	94,6	0,85	80,9	6,9	434,0	2,4	2,6	2,20	680	65
55	M3BP 280SMC 6	3GBP283230-••K	990	95,0	95,4	95,0	0,85	99,4	6,8	506,0	2,4	2,6	2,850	725	65
75	M3BP 315SMC 6	3GBP313230-••K	994	95,3	95,6	95,2	0,83	138	7,0	721,0	2,2	2,8	4,90	1000	67
90	M3BP 315SMD 6	3GBP313240-••K	994	95,5	95,8	95,4	0,81	170	7,2	864	2,4	2,9	4,90	1040	67
110	M3BP 315MLB 6	3GBP313420-••K	994	95,7	95,9	95,7	0,83	202	6,9	1058	2,3	2,7	6,30	1200	68
132	M3BP 315LKA 6	3GBP313810-••K	993	95,9	96,1	95,9	0,82	243	6,9	1269	2,4	2,7	7,30	1410	68
160	M3BP 355SMB 6	3GBP353220-••K	995	96,1	96,1	95,6	0,82	294	7,0	1536	2,1	2,7	9,70	1680	73
200	M3BP 355SMC 6	3GBP353230-••K	995	96,2	96,4	96,1	0,82	367	7,3	1920	2,3	2,8	11,30	1820	73
250	M3BP 355MLB 6	3GBP353420-••K	995	96,4	96,6	96,5	0,83	456	7,1	2399	2,3	2,7	13,50	2180	73
315	M3BP 355LKA 6	3GBP353810-••K	994	96,5	96,7	96,4	0,83	576	6,9	3026	2,3	2,6	15,50	2500	76
355	M3BP 355LKB 6	3GBP353820-••K	995	96,5	96,6	96,1	0,81	668	7,7	3407	2,7	2,9	16,50	2600	76

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles				400 V 50 Hz				High-output design							
160	M3BP 315LKC 6	3GBP313830-••K	994	96,1	96,3	96,2	0,82	297	7,4	1537	2,7	2,9	9,20	1600	68

Technical data

IE4 Process performance cast iron motors, 3000, 1500, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE4 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles					400 V 50 Hz				CENELEC-design							
75		M3BP 280SMB 2	3GBP281220-••M	2980	96,3	96,3	95,8	0,87	129	7,3	240	2,1	2,9	0,90	665	77
90		M3BP 280SMC 2	3GBP281230-••M	2981	96,5	96,4	95,9	0,88	153	8,0	288	2,5	3,1	1,150	725	77
110		M3BP 315SMB 2	3GBP311220-••M	2982	96,5	96,5	95,9	0,88	189	6,7	352	1,9	2,6	1,40	940	77
132		M3BP 315SMC 2	3GBP311230-••M	2986	96,9	97,0	96,7	0,88	226	7,9	422	2,4	3,0	1,70	1025	77
160		M3BP 315MLA 2	3GBP311410-••M	2983	97,1	97,3	97,1	0,90	268	7,3	512	2,2	2,7	2,10	1190	77
200		M3BP 315MLB 2	3GBP311420-••M	2983	97,1	97,4	97,3	0,90	333	6,8	640	1,9	2,6	2,20	1220	77
200	[1]	M3BP 355SMA 2	3GBP351210-••M	2985	97,0	96,8	96,1	0,90	336	7,6	640	2	3,1	3,00	1600	83
250		M3BP 315LKB 2	3GBP311820-••M	2982	96,9	97,2	97,2	0,91	413	7,9	800	2,5	2,7	2,90	1540	77
250	[1]	M3BP 355SMB 2	3GBP351220-••M	2983	97,3	97,4	97,1	0,90	415	7,6	800	2,2	3,0	3,40	1680	83
315	[1]	M3BP 355SMC 2	3GBP351230-••M	2984	96,8	96,8	96,3	0,89	533	7,8	1008	2,3	2,8	3,60	1750	83
355	[1]	M3BP 355MLA 2	3GBP351410-••M	2981	96,9	97,1	96,8	0,90	595	7,5	1137	2,3	2,6	4,10	2000	83

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles					400 V 50 Hz				CENELEC-design							
75		M3BP 280SMC 4	3GBP282230-••M	1487	96,2	96,6	96,3	0,86	130	7,8	481	2,8	2,9	1,85	725	72
90		M3BP 280MLA 4	3GBP282410-••M	1489	96,4	96,8	96,7	0,85	160	8,8	577	3,4	3,2	2,30	840	72
110		M3BP 315SMC 4	3GBP312230-••M	1491	96,8	97,0	96,7	0,85	194	7,8	704	2,4	3,1	2,90	1000	68
132		M3BP 315SMD 4	3GBP312240-••M	1490	96,9	97,1	96,8	0,85	234	7,9	846	2,6	3,2	3,20	1065	68
160		M3BP 315MLB 4	3GBP312420-••M	1490	96,7	96,9	96,6	0,87	278	7,9	1026	2,7	3,0	3,90	1220	68
200		M3BP 315LKB 4	3GBP312820-••M	1490	96,9	97,1	97,0	0,87	346	7,6	1282	2,5	2,9	5,0	1520	74
200		M3BP 355SMA 4	3GBP352210-••M	1491	97,0	97,1	96,8	0,87	345	7,3	1282	2,1	2,7	5,90	1610	74
250		M3BP 315LKC 4	3GBP312830-••M	1490	96,9	97,1	97,0	0,87	432	7,8	1601	2,3	3,0	5,50	1600	74
250		M3BP 355SMB 4	3GBP352220-••M	1491	97,1	97,2	97,0	0,87	433	7,8	1601	2,5	2,9	6,90	1780	74
315		M3BP 355SMC 4	3GBP352230-••M	1490	97,2	97,3	97,1	0,86	554	7,4	2017	2,8	2,9	7,20	1820	74
355		M3BP 355MLA 4	3GBP352410-••M	1491	96,9	97,1	96,8	0,87	616	7,9	2274	2,7	2,9	8,40	2140	78

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles					400 V 50 Hz				CENELEC-design							
45		M3BP 280SMB 6	3GBP283220-••M	992	95,4	95,7	95,3	0,85	80,9	6,9	434	2,4	2,6	2,20	680	65
55		M3BP 280SMC 6	3GBP283230-••M	990	95,4	95,7	95,4	0,85	99,4	6,8	506	2,4	2,6	2,85	725	65
75		M3BP 315SMC 6	3GBP313230-••M	994	96,3	96,5	96,2	0,83	138	7,0	721	2,2	2,8	4,90	1000	67
90		M3BP 315SMD 6	3GBP313240-••M	994	96,0	96,2	95,9	0,81	170	7,2	864	2,4	2,9	4,90	1040	67
110		M3BP 315MLB 6	3GBP313420-••M	994	96,4	96,6	96,4	0,83	202	6,9	1057	2,3	2,7	6,30	1200	68
132		M3BP 315LKA 6	3GBP313810-••M	993	96,4	96,6	96,4	0,82	243	6,9	1269	2,4	2,7	7,30	1410	68
160		M3BP 315LKC 6	3GBP313830-••M	994	96,7	96,9	96,8	0,82	297	7,4	1537	2,7	2,9	9,20	1600	68
160		M3BP 355SMB 6	3GBP353220-••M	995	96,5	96,5	96,1	0,82	294	7,0	1536	2,1	2,7	9,70	1680	73
200		M3BP 355SMC 6	3GBP353230-••M	995	96,5	96,7	96,4	0,82	367	7,3	1920	2,3	2,8	11,30	1820	73
250		M3BP 355MLB 6	3GBP353420-••M	995	96,6	96,8	96,7	0,83	456	7,1	2399	2,3	2,7	13,50	2180	73
315		M3BP 355LKA 6	3GBP353810-••M	994	96,6	96,7	96,5	0,83	576	6,9	3026	2,3	2,6	15,50	2500	76
355		M3BP 355LKB 6	3GBP353820-••M	995	96,7	96,7	96,3	0,81	668	7,7	3407	2,7	2,9	16,50	2600	76

[1] 3dB(A) sound pressure level reduction with unidirectional fan construction. Direction of rotation must be stated when ordering, see variant codes 044 and 045

Mechanical design
Motor frame and drain holes

Motor frame
The motor frame is made of cast iron, and the standard design includes cast iron feet, bearing housing, and terminal box. Integrated cast iron feet provide rigid mounting and minimize vibration.

Motors can be supplied for foot mounting, flange mounting,and combinations of these.

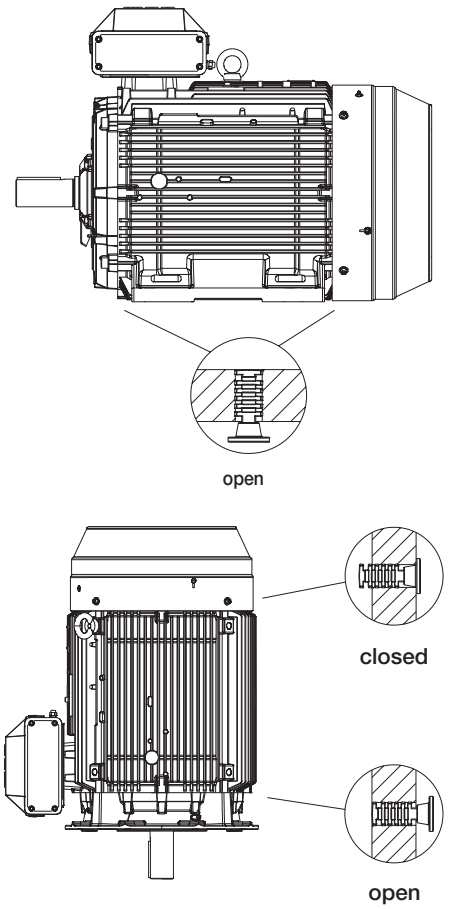
Drain holes
Motors that will be operated in very humid or wet environments, and especially under intermittent duty, should be provided with drain holes. The IM designation, such as IM 3031, determines the intended mounting arrangement for the motor.

Motor sizes 71 - 450 are fitted with drain holes and closable plugs. The plugs are open on delivery. When mounting the motors, ensure that the drain holes face downwards.

In the case of vertical mounting, the upper plug must be hammered home completely. In very dusty environments, both plugs should be hammered home.

When mounting arrangement differs from foot mounted IM B3, mention variant code 066 when ordering.

See variant codes 065 and 066 under the heading “Drain holes”.



As standard, motor sizes 71 - 450 are delivered with drain holes and closable plugs.

Heating elements

Heating elements are installed into windings to keep them free of corrosion in humid conditions. The required power of heating elements is shown in the table. You can order heating elements with variant code 450 or 451.

Motor size	71	80	90	100	112	132	160	180
Power (W)	8	8	25	25	25	25	25	50

Motor size	200	225	250	280	315	355	400	450
Power (W)	50	50	50	60	2x60	2x60	2x60	2x100

Bearings

Process performance motors are normally fitted with single-row deep-groove ball bearings, as shown in the table below.

If the bearing at the D-end is replaced with a roller bearing (NU- or NJ-), higher radial forces can be handled. Roller bearings are suitable for belt-drive applications and can be ordered with variant code 037.

When high axial forces are involved, angular-contact ball bearings should be used. When ordering a motor with an angular-contact ball bearing, specify also the method of mounting and the direction and magnitude of axial force. The variant codes for ordering angular-contact ball bearings are 058 and 059.

Standard and alternative designs

		Standard design		Alternative designs		
		Deep groove ball bearings		Roller bearings (037)	Ang. contact ball bearings (058, 059)	
Motor size	Number of poles	D-end	N-end	D-end	D-end	N-end
71	2 - 8	6203-2Z/C3	6202-2Z/C3	NU 203 ECP/C3	7203 B	7202 B
80	2 - 8	6204-2Z/C3	6203-2Z/C3	NU 204 ECP/C3	7204 B	7203 B
90	2 - 8	6205-2Z/C3	6204-2Z/C3	NU 205 ECP/C3	7205 B	7204 B
100	2 - 8	6206-2Z/C3	6205-2Z/C3	NU 206 ECP/C3	7206 B	7205 B
112	2 - 8	6206-2Z/C3	6205-2Z/C3	NU 206 ECP/C3	7206 B	7205 B
132	2 - 8	6208-2Z/C3	6208-2Z/C3	NU 208 ECP/C3	7208 B	7208 B
160	2 - 12	6309/C3	6209/C3	NU 309 ECP/C3	7309 B	7209 B
180	2 - 12	6310/C3	6209/C3	NU 310 ECP/C3	7310 B	7209 B
200	2 - 12	6312/C3	6210/C3	NU 312 ECP/C3	7312 B	7210 B
225	2 - 12	6313/C3	6212/C3	NU 313 ECP/C3	7313 B	7212 B
250	2 - 12	6315/C3	6213/C3	NU 315 ECP/C3	7315 B	7213 B
280	2	6316/C3	6316/C3	[1]	7316 B	7616 B
	4 - 12	6316/C3	6316/C3	NU 316 ECP/C3	7316 B	7316 B
315	2	6316/C3	6316/C3	[1]	7316 B	7316 B
	4 - 12	6319/C3	6316/C3	NU 319 ECP/C3	7319 B	7316 B
355	2	6316M/C3	6316M/C3	[1]	7316 B	7316 B
	4 - 12	6322/C3	6316/C3	NU 322 ECP/C3	7322 B	7316 B
400	2	6317M/C3	6317M/C3	[1]	7317 B	7317 B
	4 - 12	6324/C3	6319/C3	NU 324 ECP/C3	7324 B	7319 B
450	2	6317M/C3	6317M/C3	[1]	7317 B	7317 B
	4 - 12	6326M/C3	6322/C3	NU 326 ECP/C3	7326 B	7322 B

[1] On request

Axially-locked bearings

All motors are equipped as standard with an axially locked bearing at the D-end.

Transport locking

Motors with roller bearings or an angular-contact ball bearing are fitted with a transport lock before dispatch to prevent damage to bearings during transport. A warning sign is attached to motors larger than 250 when transport locking is used.

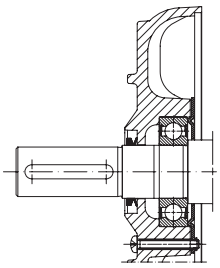
Locking may also be fitted in other cases if severe transport conditions are expected.

Bearing seals

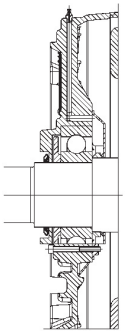
These tables present the standard and alternative sizes and types of bearing seals per motor size.

Bearing seals for motor sizes 71 – 250

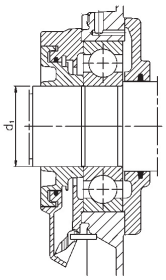
Motor size	Number of poles	Standard design		Alternative design
		Axial seal		Radial seal at D-end (DIN 3760)
		D-end	N-end	Variant code 072
71	2 - 12	VA16	Labyrinth seal	17x28x7
80	2 - 12	VA20	Labyrinth seal	20x40x7
90	2 - 12	VA25	Labyrinth seal	25x42x7
100	2 - 12	VA30	Labyrinth seal	30x47x7
112	2 - 12	VA30	Labyrinth seal	30x47x7
132	2 - 12	VA40	VA40	40x62x7
160	2 - 12	RB45	RB45	45x62x8
180	2 - 12	RB50	RB45	50x68x8
200	2 - 12	RB60	RB50	60x80x8
225	2 - 12	RB65	RB60	65x85x10
250	2 - 12	RB75	RB65	75x95x10



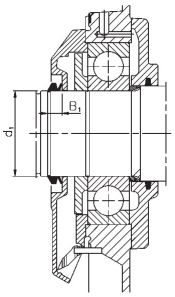
Motor sizes 71 - 132



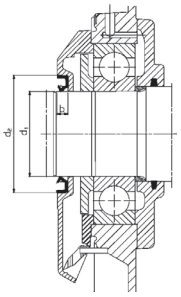
Motor sizes 160 - 250



Motor sizes 280 - 450
Labyrinth seal



V-ring



Radial seal

Bearing seals for motor sizes 280 - 450

Motor size	Number of poles	Standard design		Alternative design	
		D-end	N-end	D-end	N-end
		D-end	N-end	D-end	N-end
280	2	Labyrinth seal	VS80	-	Labyrinth seal
280	4 - 12	VS80	VS80	Labyrinth seal	Labyrinth seal
	4 - 12			Radial seal 80x110x10	Radial seal 80x110x10
315	2	Labyrinth seal	VS80	-	Labyrinth seal
315 SM, ML	4 - 12	VS95	VS80	Labyrinth seal	Labyrinth seal
	4 - 12			Radial seal 95x125x10	Radial seal 80x110x10
315 LK	4 - 12	Labyrinth seal	VS80	-	Labyrinth seal
	4 - 12			-	Radial seal 80x110x10
355	2	Labyrinth seal	VS80	-	Labyrinth seal
355	4 - 12	Labyrinth seal	VS80	-	Labyrinth seal
400	2	Labyrinth seal	Labyrinth seal	-	-
400	4 - 12	Labyrinth seal	VS95	-	Labyrinth seal
450	2	Labyrinth seal	Labyrinth seal	-	-
450	4 - 12	Labyrinth seal	Labyrinth seal	-	-

Table is valid for IE2 motors
Axial seal:
RB45...75 = Gamma-ring
VA16...65 = V-ring, type A
VS80...95 = V-ring, type S

Bearing life and lubrication

Bearing life

The nominal life L_{10h} of a bearing is defined according to ISO 281 as the number of operating hours achieved or exceeded by 90 % of identical bearings in a large test series under specified conditions. 50 % of bearings achieve at least five times this lifetime.
The calculated bearing life L_{10h} for power transmission by means of coupling is for horizontally mounted motors in sizes 280 to 315 ≥ 200,000 hours.

Lubrication

On delivery, motors in frame size 160 and above are prelubricated with high-quality grease. Before first start-up, see instructions for relubricaton and recommended grease in the Manual for low voltage motors delivered together with the motor, or see the lubrication plate on the motor.

Motors with bearings greased for life

Motors in frame sizes 71 - 132 are equipped with bearings greased for life, while this is available as an option for frame sizes 160 - 250. Bearings are lubricated with high-quality, high-temperature grease. Bearing types are stated on the rating plate.
The approximate lifetime of bearings in four-pole motors is about 40 0000 duty hours. Lifetime is subject to the load conditions of the application run by the motor.

Lubrication intervals

ABB follows the L_1 principle in defining lubrication intervals. This means that 99 % of motors will make the interval time.
The lubrication intervals can also be calculated according to the L_{10} principle, which usually gives twice as long interval times. L_{10} values are available from ABB at request.

Motors with relubrication nipples

In frame sizes 280 - 450, the bearing system allows the use of a valve disc to ease lubrication. Motors are lubricated while running. The grease outlet opening has closing valves at both ends. These should be opened before greasing and closed 1 - 2 hours after regreasing. This ensures that the construction is tight and bearings remain dust- and dirt-free.
A grease-collection method can be used optionally.
The following tables show lubrication intervals according to the L_1 principle for various nominal speeds in 25 °C ambient temperature. These values apply to horizontally mounted motors (B3) with 80 °C bearing temperature and high-quality grease containing lithium-complex soap and mineral or PAO-oil.

Lubrication intervals in duty hours for ball bearings

Frame size	Amount of grease g/bearing	Amount of grease g/N-end	Output kW	Speed 3600 r/min	Speed 3000 r/min	Output kW	Speed 1800 r/min	Speed 1500 r/min	Output kW	Speed 1000 r/min	Output kW	Speed 500-900 r/min
Ball bearings												
Lubrication intervals in duty hours												
160	13	13	≤ 18.5	9000	12 000	≤ 15	18 000	21 500	≤ 11	24 000	all	24 000
160	13	13	> 18.5	7500	10 000	> 15	15 000	18 000	> 11	22 500	all	24 000
180	15	15	≤ 22	7000	9000	≤ 22	15 500	18 500	≤ 15	24 000	all	24 000
180	15	15	> 22	6000	8500	> 22	14 000	17 000	> 15	21 000	all	24 000
200	20	15	≤ 37	5500	8000	≤ 30	14 500	17 500	≤ 22	23 000	all	24 000
200	20	15	> 37	3000	5500	> 30	10 000	12 000	> 22	16 000	all	20 000
225	23	20	≤ 45	4000	6500	≤ 45	13 000	16 500	≤ 30	22 000	all	24 000
250	23	20	> 45	1500	2500	> 45	5000	6000	> 30	8000	all	10 000
250	30	23	≤ 55	2500	4000	≤ 55	9000	11 500	≤ 37	15 000	all	18 000
250	30	23	> 55	1000	1500	> 55	3500	4500	> 37	6000	all	7000
280	35	35	all	1900	3200		-	-		-		-
280	40	40		-	-	all	7800	9600	all	13 900	all	15 000
315	35	35	all	1900	3200		-	-		-		-
315	55	40		-	-	all	5900	7600	all	11 800	all	12 900
355	35	35	all	1900	3200		-	-		-		-
355	70	40		-	-	all	4000	5600	all	9600	all	10 700
400	40	40	all	1500	2700		-			-	-	-
400	85	55		-	-	all	3200	4700	all	8600	all	9700
450	40	40	all	1500	2700		-	-		-		-
450	95	70		-	-	all	2500	3900	all	7700	all	8700

Lubrication intervals in duty hours for roller bearings

Frame size	Amount of grease g/bearing	Amount of grease g/N-end	Output kW	Speed 3600 r/min	Speed 3000 r/min	Output kW	Speed 1800 r/min	Speed 1500 r/min	Output kW	Speed 1000 r/min	Output kW	Speed 500-900 r/min
Roller bearings												
Lubrication intervals in duty hours												
160	13	13	≤ 18.5	4500	6000	≤ 15	9000	10 500	≤ 11	12 000	all	12 000
160	13	13	> 18.5	3500	5000	> 15	7500	9000	> 11	11 000	all	12 000
180	15	15	≤ 22	3500	4500	≤ 22	7500	9000	≤ 15	12 000	all	12 000
180	15	15	> 22	3000	4000	> 22	7000	8500	> 15	10500	all	12 000
200	20	15	≤ 37	2750	4000	≤ 30	7000	8500	≤ 22	11 500	all	12 000
200	20	15	> 37	1500	2500	> 30	5000	6000	> 22	8000	all	10 000
225	23	20	≤ 45	2000	3000	≤ 45	6500	8000	≤ 30	11 000	all	12 000
225	23	20	> 45	750	1250	> 45	2500	3000	> 30	4000	all	5000
250	30	23	≤ 55	1000	2000	≤ 55	4500	5500	≤ 37	7500	all	9000
250	30	23	> 55	500	750	> 55	1500	2000	> 37	3000	all	3500
280	35	35	all	900	1600		-	-		-		-
280	40	40		-	-	all	4000	5300	all	7000	all	8500
315	35	35	all	900	1600		-	-		-		-
315	55	40		-	-	all	2900	3800	all	5900	all	6500
355	35	35	all	900	1600		-	-		-		-
355	70	40		-	-	all	2000	2800	all	4800	all	5400
400	40	40	all	-	1300		-	-		-		-
400	85	55		-	-	all	1600	2400	all	4300	all	4800
450	40	40	all	-	1300		-	-		-		-
450	95	70		-	-	all	1300	2000	all	3800	all	4400

Radial forces

Permissible loading on the shaft

The following table shows permissible radial forces on the shaft in Newtons, assuming zero axial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life of 20 000 and 40 000 hours per motor size.

These calculated values further assume mounting position IM B3 (foot-mounted), with force directed sideways. In some cases, the strength of the shaft affects permissible forces.

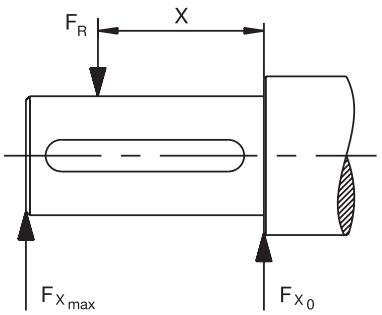
Permissible loads of simultaneous radial and axial forces can be supplied on request.

If the radial force is applied between points X0 and Xmax, the permissible force FR can be calculated with the following formula:

$$F_R = F_{X0} - \frac{X}{E}(F_{X0} - F_{Xmax})$$

Where:

E: length of the shaft extension in the standard version



Permissible radial forces, motor sizes 71 – 132

			Basic design with deep groove ball bearings				Roller bearings			
			Mounting arrangement IM B3				Mounting arrangement IM B3			
			20,000 h		40,000 h		20,000 h		40,000 h	
Motor size	No. of poles	Length of shaft extension E (mm)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)
71	2	30	540	460	420	360	1285	650	1040	650
	4	30	700	605	555	480	1615	650	1310	650
	6	30	780	665	620	530	1640	650	1450	650
	8	30	860	730	685	580	1640	600	1580	600
80	2	40	710	600	385	350	1910	865	1555	865
	4	40	940	810	725	625	2335	865	1945	865
	6	40	1060	895	840	710	2335	865	2160	865
	8	40	1185	1020	940	810	2335	865	2335	865
90	2	50	820	690	650	545	2205	1330	1790	1330
	4	50	1035	870	820	690	2715	1330	2205	1330
	6	50	1185	995	940	790	3065	1330	2490	1330
	8	50	1300	1095	1035	870	3340	1330	2715	1330
100	2	60	1130	925	900	735	2905	1900	2360	1900
	4	60	1425	1165	1135	925	3575	1900	2905	1900
	6	60	1635	1335	1295	1060	4040	1900	3280	1900
	8	60	1820	1520	1445	1205	4460	1900	3620	1900
112	2	60	1170	980	925	775	3000	1970	2435	1970
	4	60	1475	1235	1170	980	3695	1970	3000	1970
	6	60	1690	1310	1340	1120	4170	1970	3390	1970
	8	60	1860	1310	1475	1235	4550	1970	3695	1970
132	2	80	1840	1500	1460	1190	4255	3465	3455	2815
	4	80	2320	1890	1840	1500	5240	4265	4255	3465
	6	80	2660	2165	2110	1715	5915	3680	4805	3680
	8	80	2925	2380	2320	1890	6450	3680	5240	3680

Permissible radial forces, motor sizes 160 - 280

Motor size	Poles	Length of shaft extension E (mm)	Ball bearings				Roller bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{x0}(N)	F_{Xmax}(N)	F_{x0}(N)	F_{Xmax}(N)	F_{x0}(N)	F_{Xmax}(N)	F_{x0}(N)	F_{Xmax}(N)
160 MLA	2	110	3540	2740	2955	2285	7100	4300	6140	4300
	4	110	4000	3100	3325	2570	8000	4300	6870	4300
	6	110	4170	3200	3440	2655	8600	4300	7270	4300
	8	110	4600	3585	3855	2985	9300	4300	7955	4300
160 MLB	2	110	3540	2740	2955	2270	7085	4300	6070	4300
	4	110	4085	3300	3370	2725	8300	4300	7055	4300
	6	110	4100	3355	3400	2755	8600	4300	7300	4300
	8	110	4200	3270	3455	2670	9000	4300	7570	4300
160 MLC	2	110	3400	2600	2855	2200	6800	4300	5885	4300
	4	110	3700	3000	3070	2485	7800	4300	6640	4300
	6	110	3600	2900	2870	2325	8000	4300	6700	4300
	8	110	4170	3370	3370	2725	9000	4300	7585	4300
160 MLD	2	110	3585	2900	3000	2440	7100	4300	6140	4300
	4	110	3400	2755	2755	2240	7600	4300	6370	4300
160 MLE	2	110	3185	2570	2640	2140	6785	4300	5770	4300
180 MLA	2	110	4100	3385	3455	2825	8125	5500	7025	5500
	4	110	4270	3485	3525	2885	8600	5500	7300	5500
	6	110	4700	3800	3855	3155	9400	5500	7900	5500
	8	110	4785	3900	3870	3170	9800	5500	8255	5500
180 MLB	2	110	4170	3400	3470	2825	7900	5500	6770	5500
	4	110	4185	3400	3440	2810	8500	5500	7200	5500
	6	110	4370	3570	3525	2885	9000	5500	7600	5500
180 MLC	4	110	3700	3055	3010	2470	7900	5500	6655	5440
200 MLA	2	110	5600	4685	4700	3925	10900	9100	9470	7900
	4	110	6285	5200	5240	4370	12500	9550	10700	8900
	6	110	6800	5700	5700	4770	13600	9550	11670	9550
	8	110	6800	5700	5600	4685	14100	9550	12000	9550
200 MLB	2	110	5670	4700	4700	3925	11000	9200	9500	7900
	4	110	5700	4700	4700	3925	12000	9550	10185	8500
	6	110	6400	5370	5300	4425	13200	9550	11200	9385
200 MLC	2	110	5000	4185	4185	3500	10400	8700	8900	7455
	4	110	5400	4500	4425	3685	11600	9550	9800	8200
	6	110	5800	4885	4740	3955	12500	9550	10600	8800
200 MLD	2	110	4985	4170	4170	3485	10400	8700	8900	7400
225 SMA	2	110	6400	5400	5355	4500	13300	10700	11500	9700
	4	140	7300	5900	6155	4970	15400	10250	13200	10250
	6	140	7600	6200	6370	5140	16400	10250	14000	10250
	8	140	8500	6900	7100	5725	17900	10250	15300	10250
225 SMB	2	110	6100	5185	5155	4340	13000	10700	11200	9455
	4	140	7085	5700	5885	4755	15100	10250	12900	10250
	6	140	7100	5700	5840	4700	16000	10250	13500	10250
	8	140	8000	6485	6600	5340	17300	10250	14700	10250
225 SMC	2	110	5600	4700	4685	3940	12600	10600	10770	9070
	4	140	6400	5200	5300	4285	14500	10250	12385	10000
225 SMD	2	110	5500	4640	4600	3880	12420	10460	10640	8960
	4	140	5800	4700	4725	3800	13500	10250	11400	9270
250 SMA	2	140	7700	6285	6500	5285	17100	10900	14900	10900
	4	140	8700	7000	7300	5900	19800	13800	17000	13785
	6	140	9400	7600	7800	6355	21600	13800	18400	13800
	8	140	9600	7800	7900	6400	22700	13800	19300	13800
250 SMB	2	140	7100	5800	6000	4885	16700	10900	14400	10900
	4	140	7800	6300	6470	5240	18900	13800	16200	13100
	6	140	8900	7200	7355	5955	21200	13800	18000	13800
250 SMC	2	140	6800	5500	5670	4600	16300	10900	14000	10900
	4	140	7400	6000	6055	4900	18100	13800	15400	12485
	6	140	8200	6600	6670	5400	20300	13800	17200	13800
280 SM_	2	140	7300	6000	5800	4900	20400	6000	16500	6000
	4	140	9200	7800	7300	6200	25100	9200	20300	9200
	6	140	10600	8900	8400	7000	28300	9200	23000	9200
	8	140	11700	9200	9200	7800	30900	9200	25100	9200
280 ML_	2	140	7400	6200	5800	5000	20600	6200	16700	6200
	4	140	9200	7900	7300	6200	25000	9500	20300	9500
	6	140	10500	9000	8300	7100	28300	9400	22900	9400
	8	140	11600	9500	9200	7900	30800	9500	25000	9500

Permissible radial forces, motor sizes 315 - 450

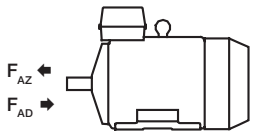
Motor size	Poles	Length of shaft extension E (mm)	Ball bearings				Roller bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)	F_{X0}(N)	F_{Xmax}(N)
315 SM_	2	140	7300	6000	5800	4950	20300	6000	16500	6000
	4	170	11400	9400	9000	7450	32500	9600	26600	9600
	6	170	13000	9600	10300	8500	37000	9600	30000	9600
	8	170	14400	9600	11400	9400	40300	9600	32700	9600
315 ML_	2	140	7400	6400	5850	5050	20600	5850	16700	5850
	4	170	11500	9700	9100	7650	32700	13600	26500	13600
	6	170	13200	11100	10400	8800	36900	13600	29900	13600
	8	170	14500	12200	11500	9700	40200	13600	32600	13600
315 LK_	2	140	7400	6550	5800	5150	20800	5550	16800	5550
	4	170	11500	10000	9100	7850	33100	13350	26800	13350
	6	170	13200	11400	10450	9050	37300	13350	30300	13350
	8	170	14600	12600	11550	10000	40800	13350	33100	13350
355 SM_	2	140	7350	6450	5750	5050	20600	7200	16700	7200
	4	210	15200	12600	12000	9950	45500	14000	36900	14000
	6	210	17500	14000	13800	11400	51400	14000	41700	14000
	8	210	19300	14000	15250	12600	56000	14000	45500	14000
355 ML_	2	140	7350	6550	5750	5100	20800	6750	16800	6750
	4	210	15300	12900	12000	10100	45900	13600	37200	13600
	6	210	17600	13600	13900	11600	51500	13600	42100	13600
	8	210	19400	13600	15300	12900	56000	13600	45900	13600
355 LK_	2	140	7350	6650	5650	5100	21000	6550	17000	6550
	4	210	15200	13000	11850	10200	46000	13000	37300	13000
	6	210	17500	13000	13700	11900	52000	13000	42000	13000
	8	210	19400	13000	15200	13000	56500	13000	46000	13000
400 L_	2	170	7650	6850	4400	3900	23900	9050	19350	9050
	4	210	15600	13550	12150	10550	52500	16000	43300	16000
	6	210	17800	15450	13850	12000	60000	16000	48800	16000
	8	210	19700	16000	15350	13350	65700	16000	53200	16000
400 LK_	2	170	7650	6850	4400	3900	23900	9050	19350	9050
	4	210	15600	11500	12150	10550	52500	11500	43300	11500
	6	210	17800	11500	13850	11500	60000	11500	48800	11500
	8	210	19700	11500	15350	11500	65700	11500	53200	11500
450 L_	2	170	7400	6700	3500	3300	24000	7500	19000	7500
	4	210	17000	15200	13000	11600	62000	25000	50000	25000
	6	210	19000	17000	14000	13000	70000	24000	56000	24000
	8	210	21300	19000	16500	14600	76000	23000	62000	23000

Axial forces

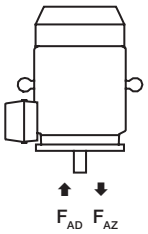
The following tables present permissible axial forces on the shaft in Newtons, assuming zero radial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life of 20,000 and 40,000 hours per motor size.

At 60 Hz, the values must be reduced by 10 percent, and for two-speed motors, the higher speed determines permissible axial force. Permissible loads of simultaneous radial and axial forces can be supplied on request.

For axial force F_{AD}, it is assumed that the D-bearing is locked with a locking ring.



Mounting arrangement IM B3



Mounting arrangement IM V1

Permissible axial forces, motor sizes 71 - 132

			Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
Motor size	Poles	Length of shaft extension E (mm)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
71	2	30	615	285	505	175	630	275	520	165
	4	30	760	430	615	285	790	410	645	265
	6	30	870	540	695	365	890	525	720	355
	8	30	960	630	765	435	985	615	785	415
80	2	40	880	300	735	155	915	280	770	135
	4	40	1075	495	880	300	1130	455	935	260
	6	40	1215	635	985	405	1270	600	1040	370
	8	40	1330	750	1070	490	1400	705	1140	450
90	2	50	780	500	620	340	840	455	680	300
	4	50	985	705	775	495	1070	650	860	440
	6	50	1140	860	890	610	1225	800	975	555
	8	50	1265	985	985	705	1355	925	1075	645
100	2	60	925	570	735	350	1285	510	1060	290
	4	60	1480	860	1190	570	1600	780	1305	490
	6	60	1690	1070	1350	730	1815	995	1470	650
	8	60	1865	1245	1480	860	1995	1160	1610	775
112	2	60	1155	595	935	375	1290	505	1070	280
	4	60	1445	885	1155	595	1595	785	1300	495
	6	60	1655	1095	1315	755	1810	995	1465	650
	8	60	1830	1270	1445	885	1985	1170	1600	780
132	2	80	1765	965	1420	620	1925	855	1580	510
	4	80	2210	1410	1755	955	2420	1270	1965	815
	6	80	2535	1735	2000	1200	2770	1580	2235	1045
	8	80	2800	2000	2205	1405	3055	1835	2455	1235

Permissible axial forces, motor sizes 160 - 280

Motor size	Poles	Length of shaft extension E (mm)	Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
160 MLA	2	110	2850	2850	2325	2325	3100	2578	2570	2048
	4	110	3450	3450	2775	2775	3820	3150	3120	2450
	6	110	3690	3690	2970	2970	4100	3410	3325	2635
	8	110	4155	4155	3315	3315	4440	3845	3640	3045
160 MLB	2	110	2850	2850	2325	2325	3120	2570	2580	2030
	4	110	3435	3435	2760	2760	3880	3085	3180	2385
	6	110	3600	3600	2880	2880	4120	3240	3360	2480
	8	110	3750	3750	2970	2970	4140	3450	3340	2650
160 MLC	2	110	2775	2775	2280	2280	3080	2500	2560	1980
	4	110	3150	3150	2535	2535	3620	2770	2985	2135
	6	110	3135	3135	2490	2490	3680	2700	3005	2025
	8	110	3675	3675	2910	2910	4240	3260	3445	2465
160 MLD	2	110	2865	2865	2330	2330	3220	2540	2665	1985
	4	110	2900	2900	2320	2320	3420	2470	2820	1870
160 MLE	2	110	2500	2500	2025	2025	2900	2150	2420	1670
180 MLA	2	110	3300	3300	2700	2700	3660	2940	3060	2340
	4	110	3600	3600	2920	2920	4160	3150	3460	2450
	6	110	4140	4140	3320	3320	4800	3675	3940	2815
	8	110	4220	4220	3360	3360	4960	3740	4040	2820
180 MLB	2	110	3340	3340	2725	2725	3760	2960	3125	2320
	4	110	3580	3580	2900	2900	4220	3095	3500	2375
	6	110	3800	3800	3040	3040	4500	3285	3700	2485
180 MLC	4	110	3220	3220	2560	2560	3880	2660	3220	2000
200 MLA	2	110	4460	4460	3640	3640	5000	3965	4200	3125
	4	110	5000	5260	4260	4260	5000	4680	5000	3640
	6	110	5000	5480	4720	4720	5000	5265	5000	4065
	8	110	5000	5880	4700	4700	5000	5195	5000	3955
200 MLB	2	110	4440	4440	3620	3620	5000	3905	4220	3085
	4	110	4720	4720	3840	3840	5000	4060	4700	3120
	6	110	5000	5480	4420	4420	5000	4800	5000	3660
200 MLC	2	110	3940	3940	3180	3180	4600	3385	3880	2665
	4	110	4480	4480	3620	3620	5000	3775	4520	2875
	6	110	4980	4980	3980	3980	5000	4165	5000	3105
200 MLD	2	110	3940	3940	3200	3200	4660	3370	3925	2635
225 SMA	2	110	4980	4980	4060	4060	5000	4375	4780	3455
	4	140	5000	6080	4920	4920	5000	5445	5000	4225
	6	140	5000	6520	5000	5260	5000	5735	5000	4395
	8	140	5000	7420	5000	5960	5000	6535	5000	5095
225 SMB	2	110	4860	4860	3960	3960	5000	4245	4780	3345
	4	140	5000	5880	4780	4780	5000	5175	5000	3995
	6	140	5000	6020	4840	4840	5000	5155	5000	3915
	8	140	5000	6940	5000	5560	5000	6055	5000	4635
225 SMC	2	110	4380	4380	3540	3540	5000	3670	4440	2900
	4	140	5000	5240	4260	4260	5000	4445	5000	3425
225 SMD	2	110	4320	4320	3480	3480	5000	3590	4400	2790
	4	140	4800	4800	3820	3820	5000	3895	5000	2935
250 SMA	2	140	6000	6080	4920	4920	6000	5345	5840	4225
	4	140	6000	7140	5820	5820	6000	6300	6000	4920
	6	140	6000	7880	6000	6380	6000	6950	6000	5350
	8	140	6000	8200	6000	6600	6000	7125	6000	5385
250 SMB	2	140	5620	5620	4540	4540	6000	4830	5640	3810
	4	140	6000	6320	5100	5100	6000	5325	6000	4085
	6	140	6000	7480	6000	6040	6000	6370	6000	4830
250 SMC	2	140	5260	5260	4220	4220	6000	4395	5400	3415
	4	140	5960	5960	4760	4760	6000	4900	6000	3700
	6	140	6000	6860	5520	5520	6000	5575	6000	4135
280 SM_	2	140	6200	4250	4900	2900	7550	3150	6200	1800
	4	140	8000	6000	6250	4250	9600	4550	7800	2750
	6	140	7250	9250	7150	5150	11150	5500	9000	3350
	8	140	10300	8300	7950	5950	12200	7000	9850	4700
280 ML_	2	140	6100	4100	4800	2800	8150	2750	6800	1400
	4	140	7800	5800	6000	4000	10450	4050	8650	2250
	6	140	8950	6950	6900	4900	12350	4750	10250	2600
	8	140	10000	8000	7700	5700	13450	5800	11050	3450

Permissible axial forces, motor sizes 315 - 450

Motor size	Poles	Length of shaft extension E (mm)	Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
315 SM_	2	140	6180	4200	4850	2850	7950	2600	6600	1300
	4	170	9400	7400	7250	5250	11750	5500	9550	3300
	6	170	10900	8900	8350	6350	13600	6300	11050	3750
	8	170	12000	10000	9200	7000	15350	7900	12450	5000
315 ML_	2	140	6050	4050	4750	2750	8650	2300	7300	[1]
	4	170	9250	7250	7100	5100	12500	5050	10300	2900
	6	170	10650	8650	8100	6100	14900	5800	12350	3250
	8	170	11500	9900	8900	6800	15400	6300	13600	3400
315 LK_	2	140	6000	3950	4650	2650	9100	1350	7750	[1]
	4	170	9100	7150	7000	5000	13100	3850	10900	1700
	6	170	10500	8500	7950	5950	15700	4100	13100	1550
	8	170	11750	9750	8900	6900	16900	6300	14100	3450
355 SM_	2	140	3050	6850	1750	5550	6350	4250	4950	2900
	4	210	8600	12400	5900	9700	13250	8600	10450	5850
	6	210	10550	14350	7300	11100	15650	9580	12350	6270
	8	210	12200	16000	8550	12350	17350	12500	13600	8900
355 ML_	2	140	2900	6700	1600	5400	7100	3700	5750	2350
	4	210	8360	12150	5650	9450	14600	7950	11850	5150
	6	210	10100	13900	6900	10700	18050	8600	14700	5300
	8	210	12000	15800	7300	11000	21100	11650	17000	7600
355 LK_	2	140	2650	6450	1350	5150	8250	2650	6900	1300
	4	210	8200	12000	5450	9250	15650	6600	12850	3800
	6	210	9900	13700	6700	10500	19100	7050	15800	3750
	8	210	11450	15250	7800	11600	21200	8700	17500	5000
400 L, LK_	2	170	2150	7150	[1]	5800	8650	2150	7220	[1]
	4	210	7100	13100	4300	10300	16050	6400	13150	3400
	6	210	8850	14850	5500	11500	18450	6750	15100	3400
	8	210	10450	16450	6750	12750	20100	8350	16450	4700
450 L_	2	170	1800	6800	[1]	5500	11500	[1]	10000	[1]
	4	210	7600	13500	4500	10500	20000	4400	17700	1200
	6	210	9000	15000	5600	11500	26000	3700	22200	[1]
	8	210	10800	16800	7000	12900	27800	5500	23700	1350

[1] On request.

Terminal box
Standard terminal box

Degree of protection and mounting options
The degree of protection for the standard terminal box is IP 55. By default, terminal boxes are mounted on top of the motor at D-end. In motor sizes 71 - 132, the terminal box is integrated in motor frame. On request, the terminal box can also be mounted on the left or right side regardless of motor size (see Mounting options).

Turnability
In frame sizes 71 to 132 the terminal box is integrated into the frame and can therefore not be turned. Please use the variant code 400 if there is a need to have 4*90° turnability.
The standard terminal boxes for motor sizes 160 to 355 can be turned 4*90°. On frame sizes 400-450 the terminal box can not be turned without turning the terminal board. In these frame sizes you need to specify the cable entry direction when ordering, by using the variant codes 022, 468 or 469.

Cable entries
The terminal box is provided with tapped holes for cable glands. No cable glands are included as standard, the entry holes are closed with blanking plugs made of plastic. Very large motors have angle adapters and cable sealing units as standard. Please refer to the table on the next page for further information about the amount and size of threaded holes, plugs and cable sealing units provided as standard.
Different types of cable glands are available as option. Please refer to the terminal box alternatives section for more details.

Cable type and terminations
If no cable type is specified in the order, it will be a PVC-insulated non-armored cable, and its termination parts are determined as shown in the following table.

Terminations are suitable for copper and aluminum cables (Al-cables on request for motor sizes 160 to 250). Cables are connected to terminals by cable lugs, which are not included in the delivery.

Ordering
To ensure the delivery of desired terminations for the motor, state the cable type, quantity, size, and outer diameter when ordering. Non-standard designs of terminal boxes, such as non-standard size or higher degree of protection, are available as options.

See section Variant codes for all options available.

Standard delivery

Standard delivery if no other information is provided. Note: For other network voltages and/or side-mounted motors, contact your ABB sales office.

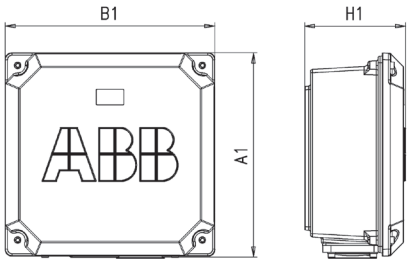
Motor size	Pole number	Terminal box type	Size of gland plate opening on terminal box	45° angle adapter	Amount and size of threaded plugged holes or cable end sealing unit	Cable outer diameter mm	Max. connectable core cross-section mm²/phase	Number and size of terminal bolts,
IE2 motors								
71	2-8	-	-	-	2xM16x1.5	2xØ4-12	1x2.5	6xM4
80	2-8	-	-	-	2xM25x1.5	2xØ10-18	1x4	6xM4
90	2-8	-	-	-	2xM25x1.5	2xØ10-18	1x6	6xM5
100 - 132	2-8	-	-	-	2xM32x1.5	2xØ14-24	1x10	6xM5
160 - 180	2-8	63	B	-	2xM40x1.5	2xØ22-32	1x35	6xM6
200 - 250	2-8	160	C	-	2xM63x1.5	2xØ35-45	1x70	6xM10
280 SM_	2-8	210	C	-	2xM63x1.5	2xØ35-45	2x150	6xM12
280 ML_	2-4	370	D	-	2xM63x1.5	2xØ35-45	2x240	6xM12
280 ML_	6-8	210	C	-	2xM63x1.5	2xØ35-45	2x150	6xM12
315 SM_, ML_	2-8	370	D	-	2xM63x1.5	2xØ35-45	2x240	6xM12
315 LKA, LKB	2-4	370	D	-	2xM63x1.5	2xØ35-45	2x240	6xM12
315 LKC	2-4	750	E	E-D	Medium	2xØ48-60	4x240	6xM12
315 LK_	6-8	370	D	-	2xM63x1.5	2xØ35-45	2x240	6xM12
355 SMA - SMC	2-4	750	E	E-D	Medium	2xØ48-60	4x240	6xM12
355 SMA, SMB	6-8	370	D	-	2xM63x1.5	2xØ35-45	2x240	6xM12
355 SMC	6	750	E	E-D	Medium	2xØ48-60	4x240	6xM12
355 SMC	8	370	D	-	2xM63x1.5	2xØ35-45	2x240	6xM12
355 MLA	2-4	750	E	E-D	Medium	2xØ48-60	4x240	6xM12
355 MLB, LK_	2-4	750	E	E-D	Large	2xØ60-80	4x240	6xM12
355 ML_, LK_	6-8	750	E	E-D	Medium	2xØ48-60	4x240	6xM12
400	2-6	750	E	E-D	Large	2xØ60-80	4x240	6xM12
400 LA, LB	8	750	E	E-D	Medium	2xØ48-60	4x240	6xM12
400 LC	8	750	E	E-D	Large	2xØ60-80	4x240	6xM12
450 LA	2	1200	E	E-2D	2 x Large	4xØ60-80	6x240	6xM12
450 LA	4	1200	E	E-D	Large	2xØ60-80	6x240	6xM12
450 LB, LC	2-4	1200	E	E-2D	2 x Large	4xØ60-80	6x240	6xM12
450 LA	6	750	E	E-D	Large	2xØ60-80	4x240	6xM12
450 LB, LC	6	1200	E	E-D	Large	2xØ60-80	6x240	6xM12
450	8	750	E	E-D	Large	2xØ60-80	4x240	6xM12
IE3 and IE4 motors								
280	2-6	210	C	-	2xM63x1.5	2xØ35-45	2x150	M12
315	2-6	370	D	-	2xM63x1.5	2xØ35-45	2x240	M12
355 SM_	2-4	750	E	E-D	Medium	2xØ48-60	4x240	M12
355 SM_	6	370	D	-	2xM63x1.5	2xØ35-45	2x240	M12
355 ML_, LK_	2-6	750	E	E-D	Medium	2xØ48-60	4x240	M12

Auxiliary cable entries								
160 - 180	2-8				2xM20x1.5	Ø4-12		
200 - 250	2-8				2xM20x1.5	Ø4-12		
280 - 450	2-8				2xM20x1.5	Ø4-12		

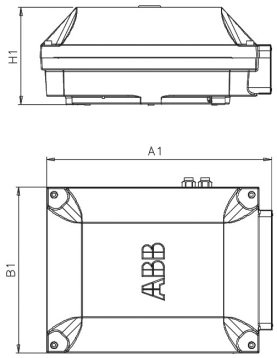
Motor size	Earthing on frame	Earthing in main terminal box
71 - 112	M4	M4
132	M5	M5
160 - 250	clamp	M6
280 - 400	M10	2xM10
450	M10	4xM12

Terminal box
Terminal box dimensions

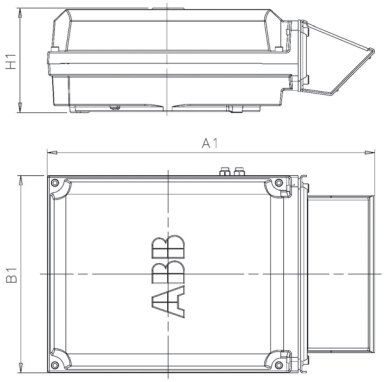
For motor sizes 71 to 132 the terminal box is integrated in motor frame and the dimensions for terminal boxes can be found in the motor dimension drawings in ABB Library.
To match the correct terminal box with motor sizes 160 - 450, find the motor type and correspondent terminal box type on the previous page. The box types and heir dimensions are presented on this page.



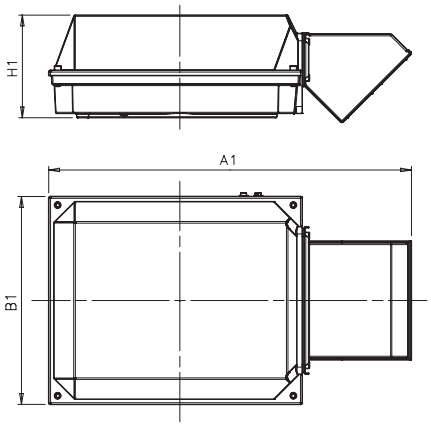
Terminal box type 63 and 160



Terminal box types 210 and 370



Terminal box type 750 + adapter

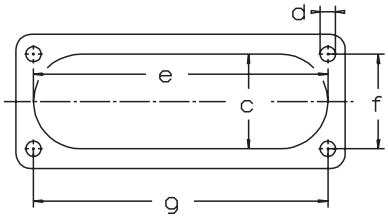


Terminal box type 1200 + adapter

Terminal box types acc. to current capacity	A1	B1	H1	Gland plate opening
63	248	248	109	B
160	291	302	154	C
210	416	306	177	C
370	451	347	200	D
750 with E-D adapter	686	413	219	D
750 without E-D adapter	523	413	219	E
1200 with E-2D adapter	1000	578	285	2xD
1200 without E-2D adapter	697	578	285	E
1200 with E-2E adapter	1195	578	285	2xE
1200 with E-3D adapter	1250	578	285	3xD

Dimensions for terminal box inlets

Corresponds to motor sizes 160 and above



Flange opening	c mm	e mm	f mm	g mm	d thread type
B	31	120	30	120	M6
C *)	71	194	62	193	M6
C **)	67	193	62	193	M8
D	100	300	80	292	M10
E	115	370	100	360	M12

Terminal box
Cable glands

The motors are delivered as standard with plugged cable entries or cable sealing units as described in the previous section. There is available a broad selection of different type of cable glands, which are suitable for different types of cable and outer diameter ranges.

Size of threaded opening for cable gland	Cable gland(s) nickel plated brass, variant code 230 or 731	EMC Cable gland(s) nickel plated brass, variant code 704	Cable gland(s) plastic, variant code 375 or 376
Metric (std)	Cable outer diameter, mm	Cable outer diameter, mm	Cable outer diameter, mm
M16 x 1.5	4-12	4-8	4-12
M20 x 1.5	4-12	4-12	4-12
M25 x 1.5	10-18	10-18	10-18
M32 x 1.5	14-24	14-24	14-24
M40 x 1.5	22-32	22-32	22-32
M50 x 1.5	26-35	26-35	26-35
M63 x 1.5 *)	35-45	35-45	35-45
M75 x 1.5	46-62	46-62	not available

Threaded openings for cable glands with NPT thread (variant code 730)

The standard delivery for the motors are provided with openings for cable glands with metric threads as listed in the section describing the standard terminal box. If NPT threads will be needed, the variant code 730 is to be ordered. If nothing else is stated on the order, the sizes in tables below will be delivered.

Motor frame size	Main cable entries	NPT plug
80-112	1 x ¾"	-
132	2 x ¾"	1 x ¾"
160-180	2 x 1 ¼"	1 x 1 ¼"
200-250	2 x 1 ½"	1 x 1 ½"
280	2 x 2"	1 x 2"
315-450	2 x 3"	1 x 3"

Motor frame size	Cable entries for auxiliaries	NPT plug
80-112	2 x ¾"	2 x ¾"
132	1 x ¾"	1 x ¾"
160-450	2 x ¾"	2 x ¾"

Gland plates with threaded openings for cable glands of nonstandard size

If the standard size of threaded openings for cable glands is not suitable then nonstandard size openings are also available, either by fitting the reducers to make the openings smaller or by increasing the amount or size of holes. The maximum possible size and amount for each gland plate size is listed below. Threaded openings of non-standard size can be ordered by using variant codes 554, 555 and 727.

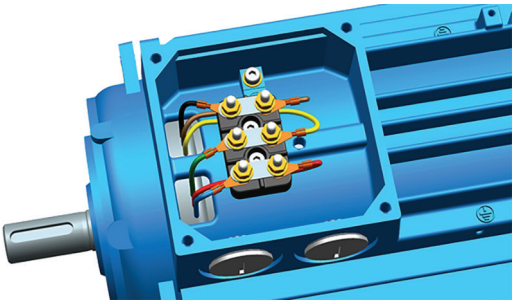
Gland plate size	Maximum amount and size of threaded holes
B	2 x M40
C	2 x M63
D	2 x M90 or 3 x M75
E	2 x M90 or 4 x M75

Terminal box
Terminal boxes and boards

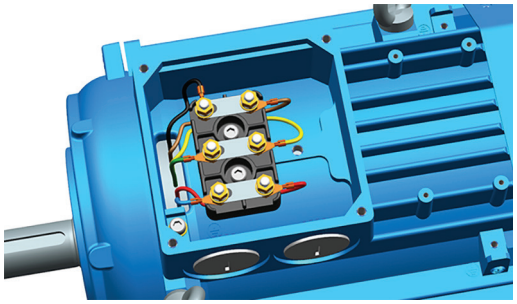
The pictures below show standard terminal boxes and the corresponding terminal boards for various motor sizes.

Motor sizes 71 - 132

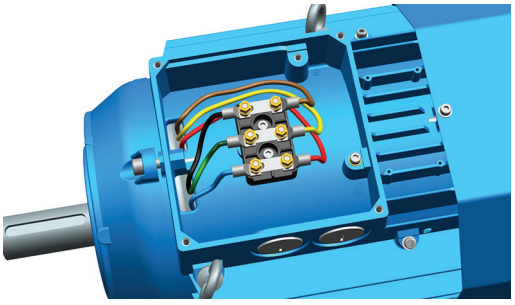
Integrated terminal box for motor sizes 71 - 132. Tapped holes for cable entries.



Terminal board for motor sizes 71 - 80.

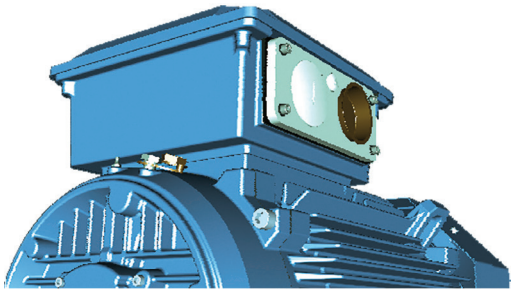


Terminal board for motor sizes 90 - 112, IE2, and 90 - 100, IE3.

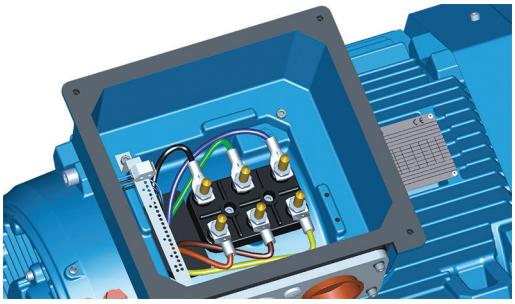


Terminal board for motor size 132, IE2, and motor sizes 112 - 132, IE3.

Motor sizes 160 - 250

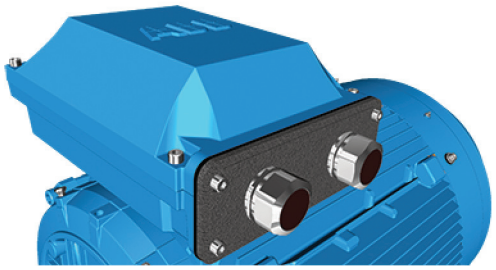


Terminal box for motor sizes 160 - 250. Connection flanges with tapped cable entries.

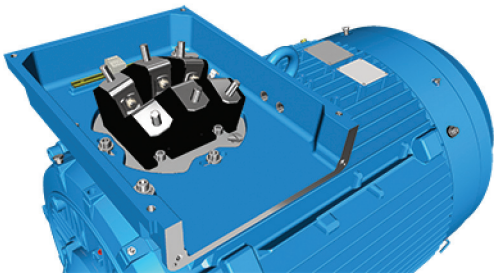


Terminal board for motor sizes 160 - 250.

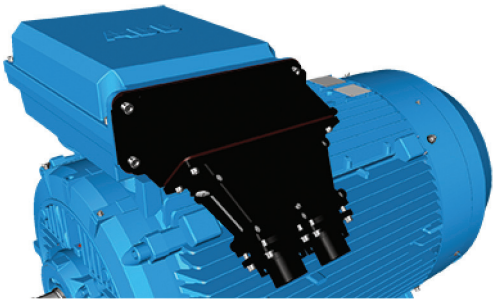
Motor sizes 280 - 315



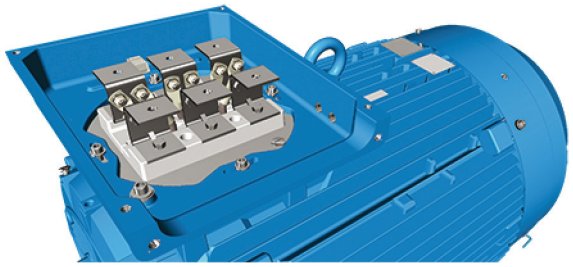
Terminal box for motor sizes 280 - 315, except LKC. Connection flange with tapped cable entries.



Terminal board for motor sizes 280 - 315, except LKC.

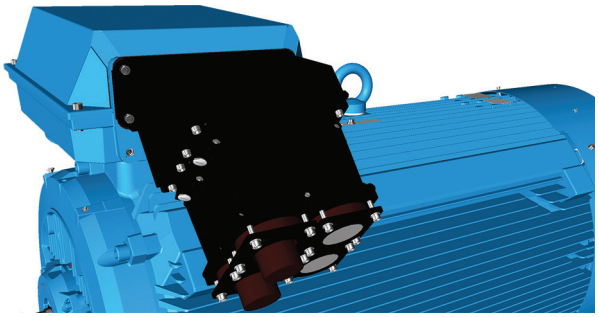


Terminal box for motor sizes 315 LKC and 355 - 400. Adapter and cable sealing end unit.

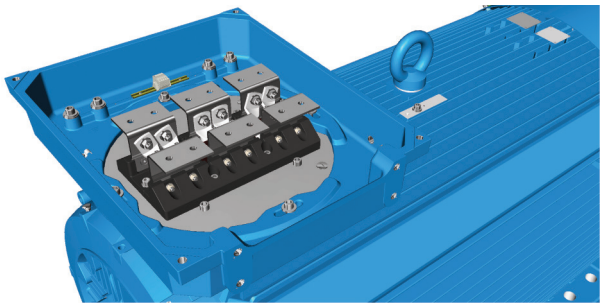


Terminal board for motor sizes 315 LKC and 355 - 400.

Motor size 450

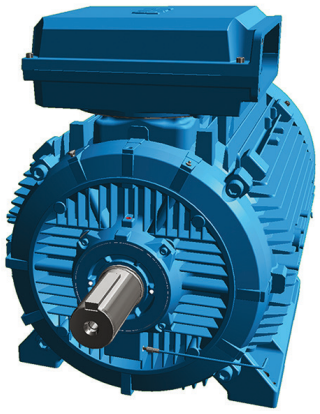


Terminal box for motor sizes 450, with adapter and cable sealing end unit.



Terminal board for motor size 450.

Terminal box
Terminal box alternatives



Main terminal box

Adapters, Flange with glands; cable sealing end units

Optional adapters
There is a broad selection of cable termination accessories available to allow termination of one or several cables. The most common ones are explained below.

How to order?
- Check first that the teminal box itself allows mounting of the desired cable and cores (refer to motor type and terminal box type cross reference on previous page)
- If very large cables are used it might be necessary to use a larger terminal box than standard. Select the right cable gland(s) or cable sealing end unit(s) that match outer diamater of the cable(s)
- Select appropriate adapter or flange
- Note that turning the terminal box to a non-standard position might limit the use of some adapters.

Ordering example

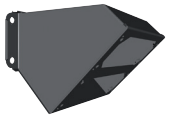
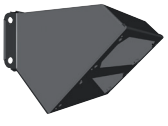
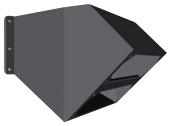
Motor Cables	200 kW, 4 pole, 400 V 50 Hz 2 pieces, outer diameter 58 mm, single core cross section 185 mm^2, clamping device needed, cables coming from below
Needed one terminal box for anticondensation heaters and another for temperature detectors, material must be cast iron.	
Motor	M3BP 315 MLA 4-pole, B3
Adapter	D-D - variant code 293
Cable sealing end unit	Variant code 278
Clamping	Variant code 231
Auxiliaries	Variant codes 380, 567, 568

Main terminal box and maximum single core cross-section
You can select one size larger than standard terminal box if a larger single cross-section is needed. The standard sizes of the main terminal box are listed in the following table. The terminal box is named according to its current-carrying capacity, from 120 to 1200. Check also the capacity of the cable entry to make sure that the cables fit. A larger terminal box can be ordered with variant code 019.

Standard terminal box	Large terminal box	Size of opening, large box	Max single cross-section mm^2 /phase
120	210	B	1 x 70
210	370	C	2 x 240
370	750	D	2 x 300
750	1200	E	4 x 500
1200	-	-	-

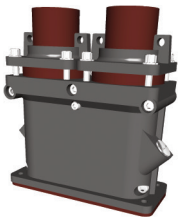
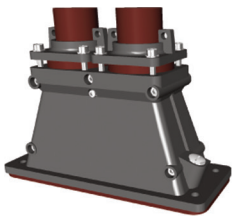
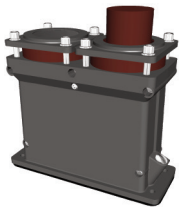
Optional adapters

To allow easy termination of cables entering the terminal box from above or below, an angle adapter is recommended.These are available for motor sizes 280 and above and can also be used to allow the mounting of several cable sealing end units or gland plates. For exact suitability on a certain motor size, refer to the ‘terminal box opening’ column in section Standard terminal box.

Adapter						
Variant code	292	293	294	295	296	444
Suited for motor sizes	280	315, 355	315 LKC IE2, 355 SM_ 2-4 poles, 400 - 450	315 LKC IE2, 355 SM_ 2-4 poles, 400 - 450	315 LKC IE2, 355 SM_ 2-4 poles, 400 - 450	315 LKC IE2, 355 SM_ 2-4 poles, 400 - 450
Opening to terminal box	C	D	E	E	E	E
Flange or opening for end unit	C	D	D	2 x D	3 x D	2 x E
Material	Steel	Steel	Steel	Steel	Steel	Steel
Notes			Included in type 750 terminal box when 750 is the standard size.	Included in type 1200 terminal box when 1200 is the standard size.	Only possible on type 1200 terminal box	Only possible on type 1200 terminal box

Cable sealing end units

As an alternative to flanges and cable glands, cable sealing end units can be used. These allow more space for spreading the cores for easy termination.
Cable sealing end units have rubber-sealed entries for one of two main cables. In addition, there are two plugged M20 holes for auxiliary cables.

	Small	Medium	Large
End unit			
Variant code	277	278	279
Suited for motor sizes	280	315, 355, except 315 LKC IE2, 355 SM_ 2-4 poles	315, 355, except 315 LKC IE2, 355 SM_ 2-4 poles
Opening to terminal box	C	D	D
Cable outer diameter	1 - 2 cables, 48 - 60 mm	1 - 2 cables, 48 - 60 mm	1 - 2 cables, 60 - 80 mm
Cable entry for auxiliary cable	2 x M20 plugged holes	2 x M20 plugged holes	2 x M20 plugged holes
Additional optional variants	EMC cable gland (704); Standard gland with clamping device (231)	EMC cable gland (704); Standard gland with clamping device (231)	EMC cable gland (704); Standard gland with clamping device (231)

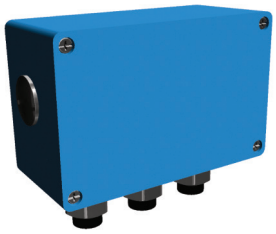
Auxiliary terminal box

You can equip motors from frame size 160 upward with one or several auxiliary terminal boxes for connection of auxiliaries like heaters or temperature detectors. The standard auxiliary terminal box material for motor sizes 280 - 450 is aluminum and for 160 - 250 cast iron. For 280 - 450, cast iron as box material is also available as an option.

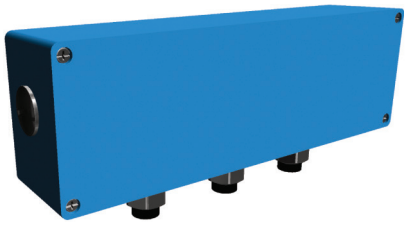
Connection terminals are of spring-loaded type for quick and easy connection. These are suitable for up to 2.5 mm^2 wires. Auxiliary terminal boxes for 280 - 450 are equipped with an earthing terminal. The first auxiliary terminal box is located on the right-hand side at D-end as standard.

The standard cable entry size is M20 for the aluminum box and M16 for the cast iron box, and the number of entries depends on the terminal box type and the number of selected auxiliaries

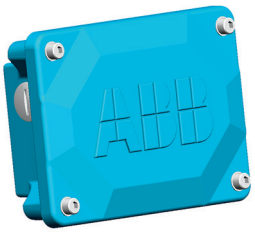
Related variant codes	
380	Separate terminal box for temperature detectors,standard material
418	Separate terminal box for auxiliaries, standard material
567	Separate terminal box material: cast iron
568	Separate terminal box for heating elements, standard material
569	Separate terminal box for brake



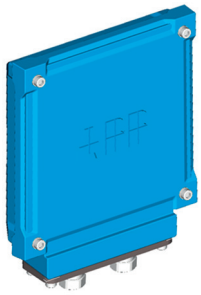
Small auxiliary aluminum terminal box for motor sizes 280 - 450
(variant codes 418, 568, 380, 569)
The size of terminal box ordered with these codes depends on the number of accessories ordered.
80 x 125 mm, max 12 strips. Earthing size M4



Large auxiliary aluminum terminal box for motor sizes 280 - 450.
The size of terminal box ordered with these codes depends on the number of accessories ordered.
80 x 250 mm, max 30 strips. Earthing size M4

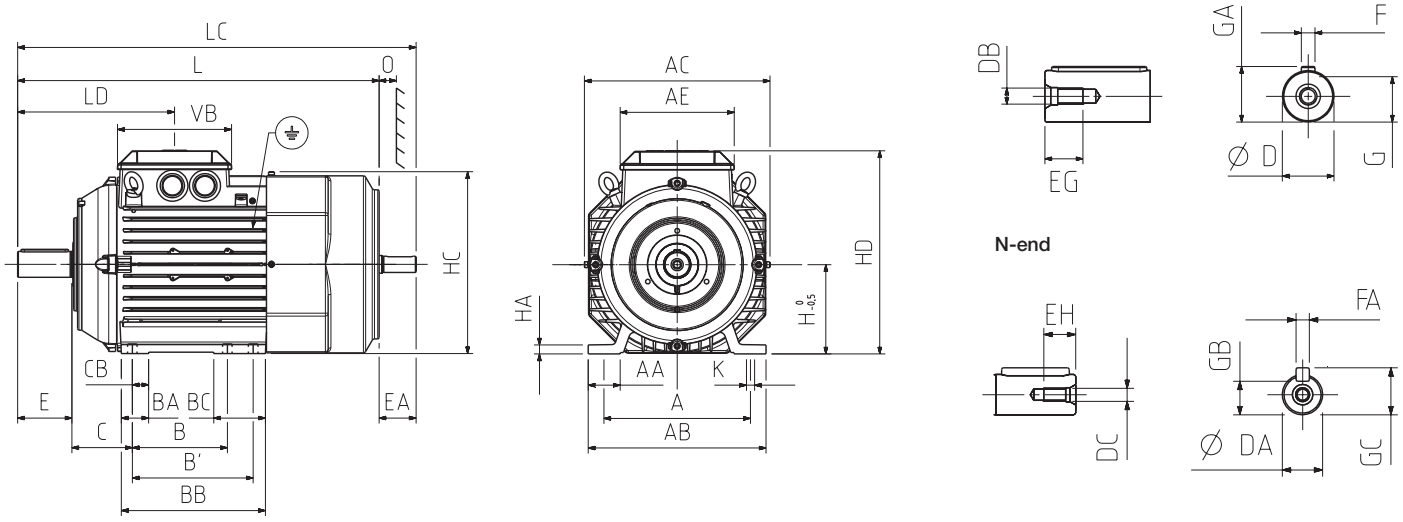


Auxiliary cast iron terminal box
Frame size for motor sizes 160 - 250
(variant code 418):
111 x 162 mm, max. 18 strips. No earthing.



Frame size for motor sizes 280 - 450
(variant code 567):
208 x 180 mm, max 30 strips. Earthing size M6

Dimension drawings
Foot-mounted cast iron motors, 71 - 132



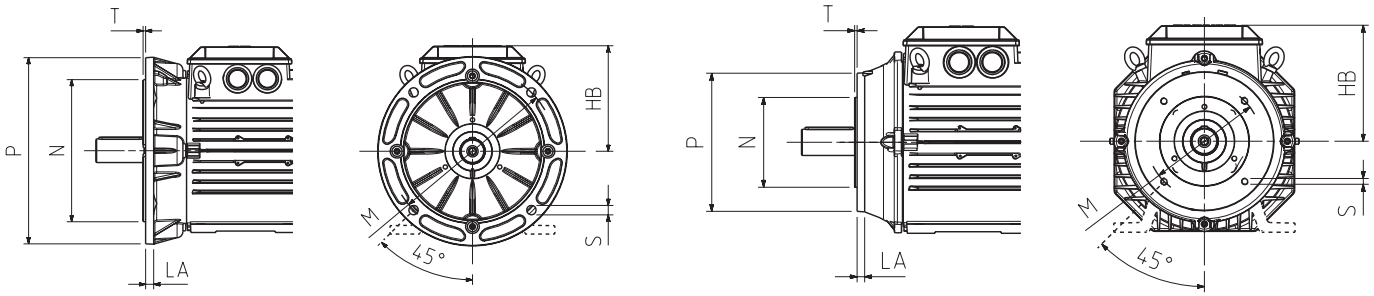
Mounting options IM B3 (IM 1001), IM B6 (IM 1051), IM B7 (IM 1061), IM B8 (IM 1071), IM V5 (IM 1011), IM V6 (IM 1031)

Motor size	A	AA	AB	AC	AE	B	B'	BA	BB	BC	C	CB	D-Tol.	DA	DB	DC	E
71 M_	112	24	136	139	105	90	-	24	110	24	45	10	14-j6	11	M5	M4	30
71 ML_	112	24	136	139	105	90	-	24	110	24	45	10	14-j6	11	M5	M4	30
80 M_	125	28	154	157	105	100	-	28	124	28	50	12	19-j6	14	M6	M5	40
80 ML_	125	28	154	157	105	100	112	28	136	40	50	12	19-j6	14	M6	M5	40
90 SL_	140	30	170	177	118	100	125	28	150	54	56	12	24-j6	14	M8	M5	50
90 L_	140	30	170	177	118	100	125	28	150	54	56	12	24-j6	14	M8	M5	50
100 L_	160	38	200	197	118	140	-	34	172	34	63	16	28-j6	19	M10	M6	60
100 ML_	160	38	200	197	118	140	-	34	172	34	63	16	28-j6	19	M10	M6	60
100 LK_	160	38	200	197	118	140	160	34	192	54	63	16	28-j6	19	M10	M6	60
IE2 112	190	41	230	197	110	140	-	34	172	34	70	16	28-j6	19	M10	M6	60
IE3 112	190	41	230	239	168	140	-	34	170	34	70	14	28-j6	19	M10	M6	60
132	216	47	262	273	168	140	178	40	212	76	89	16	38-k6	24	M12	M8	80

Motor size	EA	EG	EH	F	FA	G	GA	GB	GC	H	HA	HC	HD	K	L	LD	O	VB
71 M_	23	12.5	10	5	4	11	16	8.5	12.5	71	9	139	178	7	264	112	20	105
71 ML_	23	12.5	30	5	4	11	16	8.5	12.5	71	9	139	178	7	294	112	20	105
80 M_	30	16	12.5	6	5	15.5	21.5	11	16	80	10	157	194	10	331	126	20	105
80 ML_	30	16	12.5	6	5	15.5	21.5	11	16	80	10	157	194	10	363	126	20	105
90 SL_	30	19	12.5	8	5	20	27	11	16	90	10	178	218	10	356	151	20	118
90 L_	30	19	12.5	8	5	20	27	11	16	90	10	178	218	10	390	151	20	118
100 L_	40	22	16	8	6	24	31	15.5	21.5	100	12	198	247	12	381	164	25	118
100 ML_	40	22	16	8	6	24	31	15.5	21.5	100	12	198	247	12	403	164	25	118
100 LK_	40	22	16	8	6	24	31	15.5	21.5	100	12	198	247	12	435	164	25	118
IE2 112	40	22	16	8	6	24	31	16	22	112	12	197	259	12	403	164	25	168
IE3 112	40	22	16	8	6	24	31	16	22	112	12	223	258	12	442	200	25	168
132	50	28	19	10	8	33	41	20	27	132	13	268	300	12	532	231	30	168

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

Dimension drawings
Flange- and foot & flange mounted cast iron motors, 71 – 132



Mounting options IM B5 (IM 3001), V1 (IM 3011), V3 (IM 3031), IM B35 (IM 2001), IM V15 (IM 2011), IM V36 (IM 2031)

Large flange

Motor size	HB	LA	M	N	P	S	T
71	108	9	130	110	160	10	3.5
80	114	10	165	130	200	12	3.5
90	128	10	165	130	200	12	3.5
100	147	11	215	180	250	15	4
IE2 112	148	11	215	180	250	15	4
IE3 112	146	11	215	180	250	15	4
132	168	12.5	265	230	300	15	4

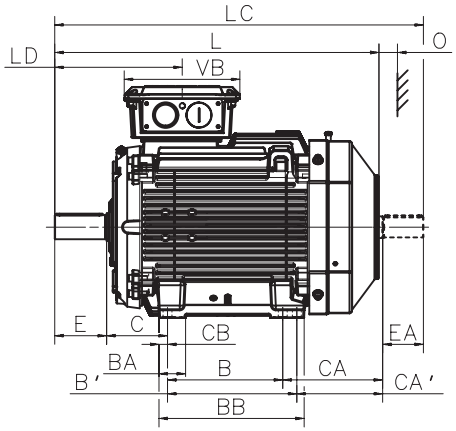
Tolerances	
A, B	± 0.8
D, DA	ISO j6
F, FA	ISO h9
H	+0 -0.5
N	ISO j6
C, CA	± 0.8

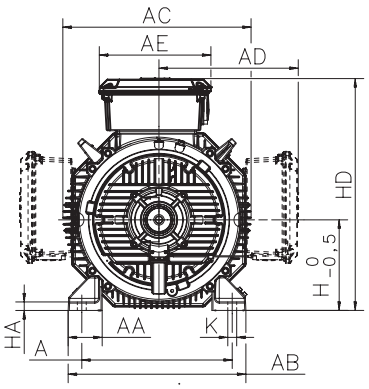
Mounting options IM B14 (IM 3601), V18 (IM 3611), V19 (IM 3631), IM B34 (IM 2101), V17 (IM 2111)

Small flange

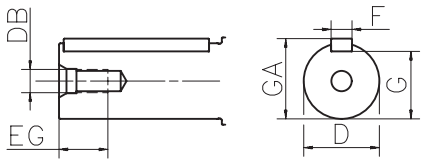
Motor size	HB	LA	M	N	P	S	T
71	108	8	85	70	105	M6	2.5
80	114	8	100	80	120	M6	3
90	128	10	115	95	140	M8	3
100	147	10	130	110	160	M8	3.5
IE2 112	148	10	130	110	160	M8	3.5
IE3 112	146	14	130	110	160	M8	3.5
132	168	12	165	130	200	M10	3.5

Dimension drawings
Foot-mounted cast iron motors, 160 - 250

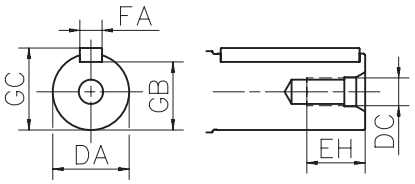




D-end



N-end



Mounting options IM B3 (IM 1001), IM B6 (IM 1051), IM B7 (IM 1061), IM B8 (IM 1071), IM V5 (IM 1011), IM V6 (IM 1031)

Motor size	Poles	A	AA	AB	AC	AD	AE	B	B'	BA	BB	C	CA	CA'	CB	D	DA	DB	DC	E
160 [1]	2-8	254	67	310	338	261	257	210	254	69	294	108	164	126	20	42	32	M16	M12	110
160 [2]	2-8	254	67	310	338	261	257	210	254	69	294	108	262	224	20	42	32	M16	M12	110
180	2-8	279	67	340	381	281	257	241	279	68	317	121	263	225	19	48	32	M16	M12	110
200	2-8	318	69	378	413	328	300	267	305	80	345	133	314	276	20	55	45	M20	M16	110
225	2	356	84	435	460	348	300	286	311	69	351	149	314	289	20	55	55	M20	M20	110
225	4-8	356	84	435	460	348	300	286	311	69	351	149	314	289	20	60	55	M20	M20	140
250	2	406	92	480	508	376	300	311	349	69	392	168	281	243	23	60	55	M20	M20	140
250	4-8	406	92	480	508	376	300	311	349	69	392	168	281	243	23	65	55	M20	M20	140

Motor size	Poles	EA	EG	EH	F	FA	G	GA	GB	GC	H	HA	HD	K	L	LC	LD	O	VB
160 [1]	2-8	80	36	28	12	10	37	45	27	35	160	23	421	14.5	584	671.5	287.5	45	257
160 [2]	2-8	80	36	28	12	10	37	45	27	35	160	23	421	14.5	681	768.5	287.5	45	257
180	2-8	80	36	28	14	10	42.5	51.5	27	35	180	23	461	14.5	726	815	300.5	50	257
200	2-8	110	42	36	16	14	49	59	39.5	48.5	200	23	528	18.5	821	934	320.5	70	311
225	2	110	42	42	16	16	49	59	49	59	225	23	573	18.5	849	971	313.5	80	311
225	4-8	110	42	42	18	16	53	64	49	59	225	23	573	18.5	879	1001	343.5	80	311
250	2	110	42	42	18	16	53	64	49	59	250	23	626	24.0	884	1010	343.5	90	311
250	4-8	110	42	42	18	16	58	69	49	59	250	23	626	24.0	884	1010	343.5	90	311

Tolerances	
A, B	ISO js14
C, CA	± 0.8
D, DA	ISO k6 < Ø 50 mm
	ISO m6 > Ø 50 mm
F, FA	ISO h9
H	+0 -0.5

Footnotes

Generation code: G:

[1] MLA, MLB 2 and 8

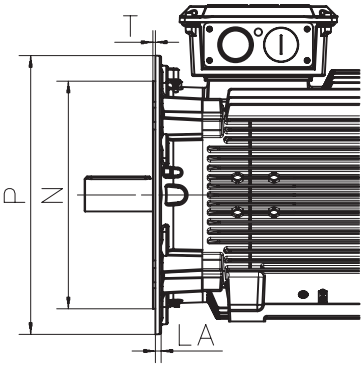
[2] MLB 4-6, MLC 2-8, MLD, MLE

Generation codes K and L:

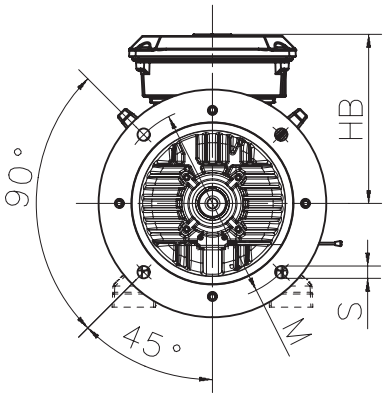
[1] MLA 2 only

[2] All others

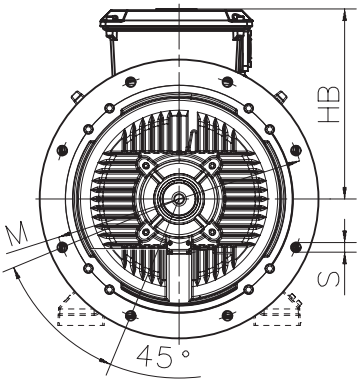
Dimension drawings
Flange- and foot & flange mounted cast iron motors, 160 - 250



160 to 200



225 to 250



Mounting options IM B5 (IM 3001), V1 (IM 3011), V3 (IM 3031), IM B35 (IM 2001), IM V15 (IM 2011), IM V36 (IM 2031)

Motor size	Poles	HB	LA	M	N	P	S	T
160 [1]	2-8	261	20	300	250	350	19	5
160 [2]	2-8	261	20	300	250	350	19	5
180	2-8	281	15	300	250	350	19	5
200	2-8	328	20	350	300	400	19	5
225	2	348	20	400	350	450	19	5
225	4-8	325	20	400	350	450	19	5
250	2	376	24	500	450	550	19	5
250	4-8	376	24	500	450	550	19	5

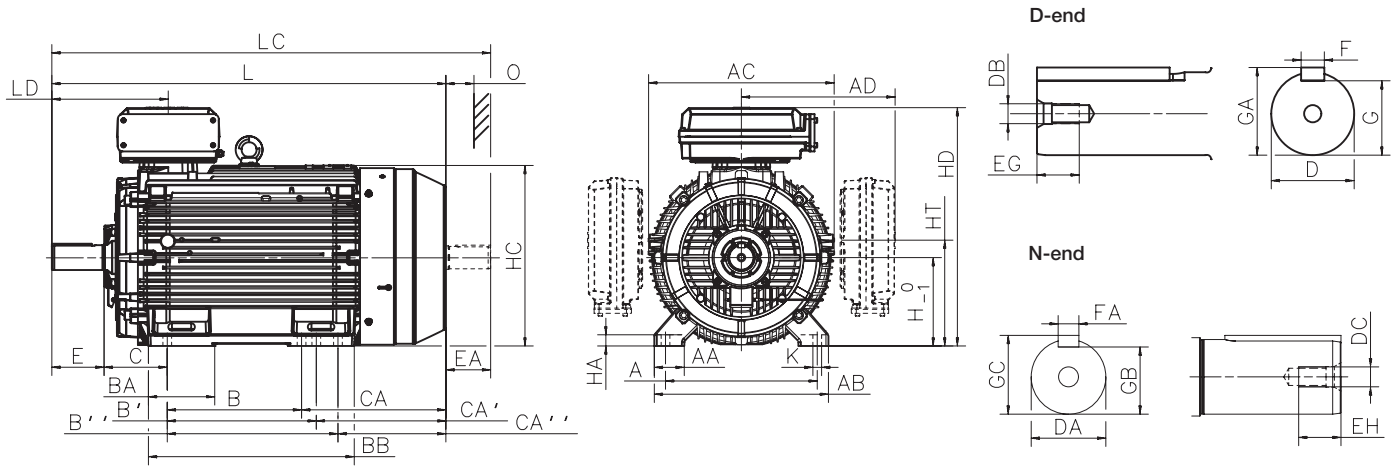
Tolerances	
A, B	ISO js14
C, CA	± 0.8
D, DA	ISO k6 < Ø 50 mm
	ISO m6 > Ø 50 mm
F, FA	ISO h9
H	+0 -0.5
N	ISO j6

Footnotes

Generation code G:
[1] MLA, MLB 2 and 8
[2] MLB 4-6, MLC 2-8, MLD, MLE

Generation codes K and L:
[1] MLA 2 only
[2] All others

Dimension drawings
Foot-mounted cast iron motors, 280 - 315



Mounting options IM B3 (IM 1001), IM B6 (IM 1051), IM B7 (IM 1061), IM B8 (IM 1071), IM V5 (IM 1011), IM V6 (IM 1031)

Motor size	Poles	A	AA	AB	AC	AD [1]	AD [2]	B	B'	B"	BA	BB	C	CA	CA'	CA"	D	DA	DB	DC	E
280 SM_	2	457	84	530	577	481	-	368	419	-	147	506	190	400	349	-	65	60	M20	M20	140
	4-12	457	84	530	577	481	-	368	419	-	147	506	190	400	349	-	75	65	M20	M20	140
280 ML_	2	457	84	530	577	-	504	419	457	-	193	608	190	400	349	-	65	60	M20	M20	140
	4-12	457	84	530	577	481	504	419	457	-	193	608	190	400	349	-	75	65	M20	M20	140
315 SM_	2	508	100	590	654	545	-	406	457	-	180	558	216	420	369	-	65	60	M20	M20	140
	4-12	508	100	590	654	545	-	406	457	-	180	558	216	420	369	-	80	75	M20	M20	170
315 ML_	2	508	100	590	654	545	-	457	508	-	212	669	216	480	429	-	65	60	M20	M20	140
	4-12	508	100	590	654	545	-	457	508	-	212	669	216	480	429	-	90	75	M24	M20	170
315 LK_	2	508	100	590	654	562	576	508	560	710	336	851	216	635	583	433	65	60	M20	M20	140
	4-12	508	100	590	654	562	576	508	560	710	336	851	216	635	583	433	90	75	M24	M20	170

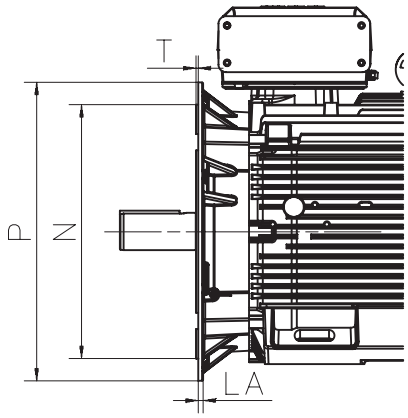
Motor size	Poles	EA	EG	EH	F	FA	G	GA	GB	GC	H	HA	HC	HD [1] top-m.	HD [2] top-m.	HT	K	L	LC	LD top-m.	LD side-m.	O
280 SM_	2	140	40	40	18	18	58	69	53	64	280	31	564	762	-	337.5	24	1088	1238	336	539	100
	4-12	140	40	40	20	18	67.5	79.5	58	69	280	31	564	762	-	337.5	24	1088	1238	336	539	100
280 ML_	2	140	40	40	18	18	58	69	53	64	280	31	564	-	785	337.5	24	1189	1340	336	590	100
	4-12	140	40	40	20	18	67.5	79.5	58	69	280	31	564	762	785	337.5	24	1189	1340	336	590	100
315 SM_	2	140	40	40	18	18	58	69	53	64	315	40	638	852	-	375	28	1174	1322	356	585	115
	4-12	140	40	40	22	20	71	85	67.5	79.5	315	40	638	852	-	375	28	1204	1352	386	615	115
315 ML_	2	140	40	40	18	18	58	69	53	64	315	40	638	852	-	375	28	1285	1433	356	640	115
	4-12	140	48	40	25	20	81	95	67.5	79.5	315	40	638	852	-	375	28	1315	1463	386	670	115
315 LK_	2	140	40	40	18	18	58	69	53	64	315	40	638	852	880	359	28	1491	1639	356	721	115
	4-12	140	48	40	25	20	81	95	67.5	79.5	315	40	638	852	880	359	28	1521	1669	386	751	115

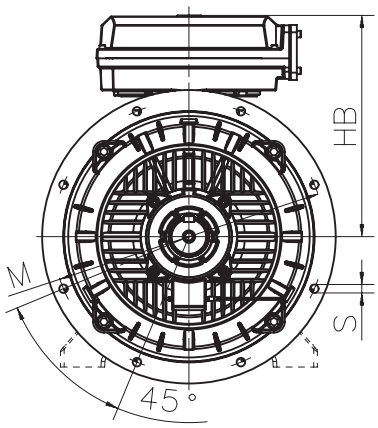
Tolerances	
A, B	± 0.8
C, CA	± 0.8
D	ISO k6 < Ø 50 mm
	ISO m6 > Ø 50 mm
F	ISO h9
H	+ 0 -0.5
N	ISO j6

Footnotes

[1] Terminal box 370
[2] Terminal box 750

Dimension drawings
Flange- and foot & flange mounted cast iron motors, 280 - 315





Mounting options IM B5 (IM 3001)V1, (IM 3011), V3 (IM 3031), IM B35 (IM 2001), IM V15 (IM 2011), IM V36 (IM 2031)

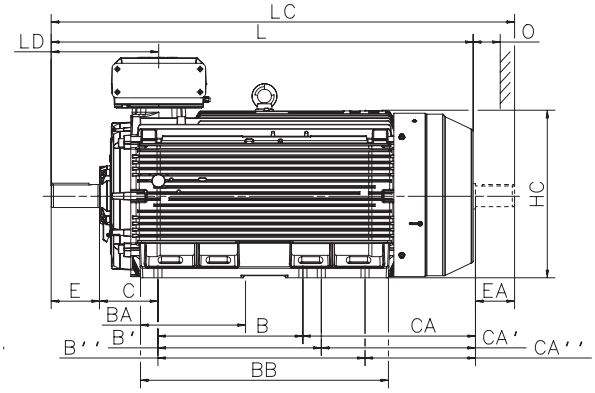
Motor size	Poles	HB [1]	HB [2]	LA	M	N	P	S	T
280 SM_	2	482	-	23	500	450	550	18	5
	4-12	482	-	23	500	450	550	18	5
280 ML_	2	-	505	23	500	450	550	18	5
	4-12	482	505	23	500	450	550	15	5
315 SM_	2	537	-	25	600	550	660	23	6
	4-12	537	-	25	600	550	660	23	6
315 ML_	2	537	-	25	600	550	660	23	6
	4-12	537	-	25	600	550	660	23	6
315 LK_	2	537	565	25	600	550	660	23	6
	4-12	537	565	25	600	550	660	23	6

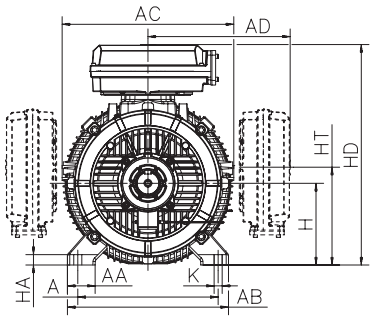
Tolerances	
A, B	± 0.8
D	ISO j6
F	ISO h9
H	+0 - 0.1
N	ISO j6 (280 SM_)
	ISO js6 (315_)
C	± 0.8

Footnotes

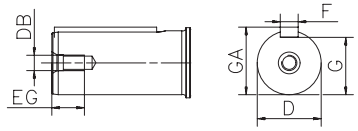
[1] Terminal box 370
[2] Terminal box 750

Dimension drawings
Foot-mounted cast iron motors, 355 - 450

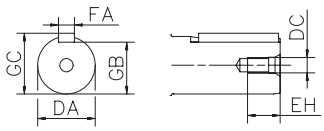




D-end



N-end



Mounting options IM B3 (IM 1001), IM B6 (IM 1051), IM B7 (IM 1061), IM B8 (IM 1071), IM V5 (IM 1011), IM V6 (IM 1031)

Motor size	Poles	A	AA	AB	AC	AD [1]	AD [2]	B	B'	B''	BA	BB	C	CA	CA'	CA''	D	DA	DB	DC	E	EA	EG	EH
355 SM_	2	610	120	700	746	604	618	500	560	-	221	722	254	525	465	-	70	70	M20	M20	140	140	42	40
	4-12	610	120	700	746	604	618	500	560	-	221	722	254	525	465	-	100	90	M24	M24	210	170	51	48
355 ML_	2	610	120	700	746	604	618	560	630	-	267	827	254	500	570	-	70	70	M20	M20	140	140	42	40
	4-12	610	120	700	746	604	618	560	630	-	267	827	254	500	570	-	100	90	M24	M24	210	170	51	48
355 LK_	2	610	120	700	746	604	618	630	710	900	447	1077	254	750	670	480	70	70	M20	M20	140	140	42	40
	4-12	610	120	700	746	604	618	630	710	900	447	1077	254	750	670	480	100	90	M24	M24	210	170	51	48
400 L_	2	710	150	840	834	-	660	900	1000	-	410	1156	224	567	467	-	80	70	M20	M20	170	140	42	40
	4-12	710	150	840	834	-	660	900	1000	-	410	1156	224	567	467	-	110	90	M24	M24	210	170	50	50
400 LK_ [5]	2	686	150	840	834	-	660	710	800	900	410	1156	280	701	611	511	80	70	M20	M20	170	140	42	40
	4-12	686	150	840	834	-	660	710	800	900	410	1156	280	701	611	511	100	90	M24	M24	210	170	50	50
450	2	800	160	950	966	-	-	1000	1120	1250	450	1420	250	-	-	-	80	-	M20	-	170	-	-	-
	4-12	800	160	950	966	-	-	1000	1120	1250	450	1420	250	737	617	487	120	100	M24	M24	210	210	50	50

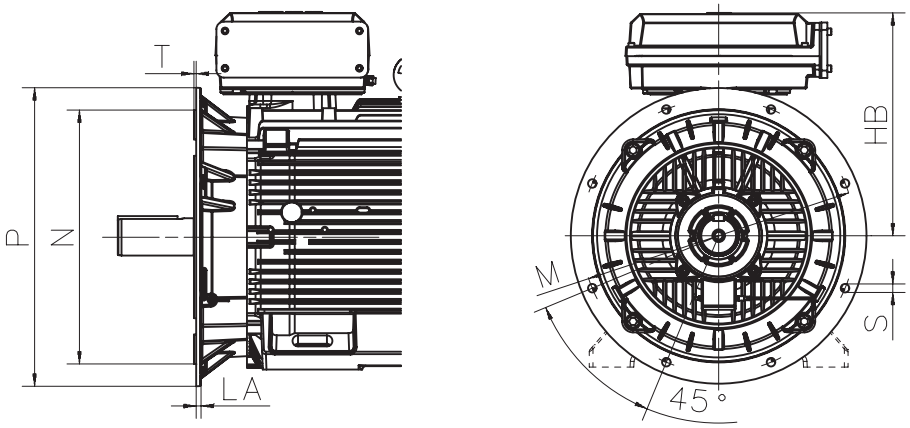
Motor size	Poles	F	FA	G	GA	GB	GC	H	HA	HC	HD [1] top-	HD [2] top-	HD [3] top-	HD [4] side-m.	HT	K	L	LC	LD [1] top-	LD [2] top-	LD [3] top-	LD side-m.	O
355 SM_	2	20	20	62.5	74.5	62.5	74.5	355	45	725	944	958	-	843	425	35	1409	1559	397	397	-	679	130
	4-12	28	25	90	106	81	95	355	45	725	944	958	-	843	425	35	1479	1659	467	467	-	750	130
355 ML_	2	20	20	62.5	74.5	62.5	74.5	355	45	725	944	958	-	843	425	35	1514	1664	397	397	-	732	130
	4-12	28	25	90	106	81	95	355	45	725	944	958	-	843	425	35	1584	1764	467	467	-	802	130
355 LK_	2	20	20	62.5	74.5	62.5	74.5	355	45	725	944	958	-	843	425	35	1764	1914	397	397	-	857	130
	4-12	28	25	90	106	81	95	355	45	725	944	958	-	843	425	35	1834	2014	467	467	-	927	130
400 L_	2	22	20	71	85	67.5	79.5	400	45	814	-	1045	-	943	477	35	1851	2001	458	458	-	909	150
	4-12	28	25	100	116	81	95	400	45	814	-	1045	-	943	477	35	1891	2071	498	498	-	949	150
400 LK_ [5]	2	22	20	71	85	67.5	79.5	400	45	814	-	1045	-	943	477	35	1851	2001	458	458	-	909	150
	4-12	28	25	90	106	81	95	400	45	814	-	1045	-	943	477	35	1891	2071	498	498	-	949	150
450	2	22	-	71	85	-	-	450	46	933	-	1169	1293	-	-	42	2147	-	-	485	520	-	180
	4-12	32	28	109	127	100	116	450	46	933	-	1169	1293	-	-	42	2187	2407	-	525	560	-	180

Tolerances	
A, B	± 0.8
D, DA	ISO m6
F, FA	ISO h9
H	+0 -0.1
N	ISO j6
C, CA	± 0.8

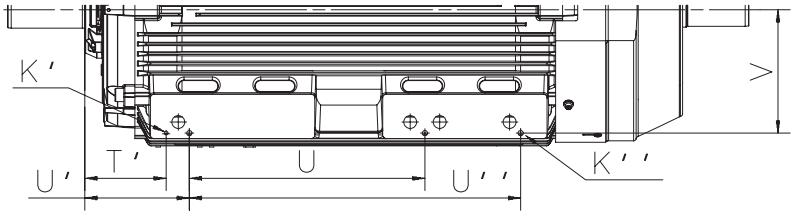
Footnotes

[1] Terminal box 370
[2] Terminal box 750
[3] Terminal box 1200
[4] Lifting lugs included
[5] Same electrical values as with 400 L_, alternative dimensions.

Dimension drawings
Flange- and foot & flange mounted cast iron motors, 355 - 450



Bottom view



Mounting options IM B5 (IM 3001), V1 (IM 3011), V3 (IM 3031), IM B35 (IM 2001), IM V15 (IM 2011), IM V36 (IM 2031)

Flange

Motor size	Poles	HB [1]	HB [2]	HB [3]	LA	M	N	P	S	T
355 SM_	2	589	603	-	25	740	680	800	23	6
	4-12	589	603	-	25	740	680	800	23	6
355 ML_	2	589	603	-	25	740	680	800	23	6
	4-12	589	603	-	25	740	680	800	23	6
355 LK_	2	589	603	-	25	740	680	800	23	6
	4-12	589	603	-	25	740	680	800	23	6
400 L_	2	-	645	-	26	940	880	1000	28	6
	4-12	-	645	-	26	940	880	1000	28	6
400 LK_ [4]	2	-	645	-	26	740	680	800	24	6
	4-12	-	645	-	26	740	680	800	24	6
450	2	-	719	843	33	1080	1000	1150	28	6
	4-12	-	719	843	33	1080	1000	1150	28	6

Bottom

Motor size	Poles	K'	K''	T'	U	U'	U''	V
355 SM_	2	10	M16	120	280	560	-	670
	4-12	10	M16	120	282	560	-	670
355 ML_	2	10	M16	120	282	630	-	670
	4-12	10	M16	120	282	630	-	670
355 LK_	2	10	M16	120	282	630	890	670
	4-12	10	M16	120	282	630	890	670
400 L_	2	10	M16	248	287	887	-	802
	4-12	10	M16	248	287	887	-	802
400 LK_ [4]	2	10	M16	248	287	748	916	802
	4-12	10	M16	248	287	748	916	802
450	2	10	M16	274	290	861	-	912
	4-12	10	M16	274	323	841	-	912

Tolerances	
A, B	± 0.8
D, DA	ISO m6
F, FA	ISO h9
H	+0 -1.0
N	ISO js6
C, CA	± 0.8

Footnotes

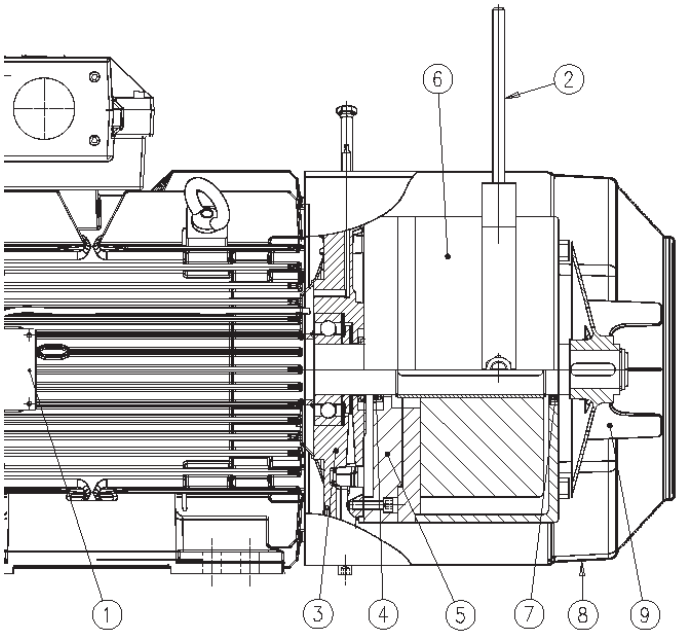
[1] Terminal box 370
[2] Terminal box 750
[3] Terminal box 1200
[4] Same electrical values as with 400 L_, alternative dimensions.

Accessories
Built-in brake (variant code 412)

Brake design
Electromagnetic disc brakes are applied by the action of a set of springs and are released when voltage is applied to the brake coil.

This means that the motor will brake automatically in case of any voltage failure, as significant safety feature. The brake is always functional, irrespective of the mounting position of the brake motor.

Detailed view



1 Connection box, (with rectifier, optional)
2 Manual release (optional)
3 Modified N-end shield
4 V-ring seal
5 Adapter flange for brake
6 Brake
7 V-ring seal
8 Fan cover
9 Fan

Brake disc
The brake linings are made of asbestos-free material. The linings are highly resistant to wear and have excellent thermal conductivity, providing consistent performance also in high temperatures.

The brake disc withstands a large number of braking instances and is insensitive to dust and moisture.

Note that changing from a used to a new disc will result in a different braking torque.

Replacing the brake disc
The brake disc must be replaced when the minimum permissible lining thickness has been reached. For minimum lining thickness, refer to the brake manufacturer's catalog.

Rectifier
Rectifier is a devise for DC brake applications. It is highly resistant to temperature changes as well as to voltage peaks and has additional protection for the auxiliary contact of the contactor. Thanks to its compact design, it can be placed inside the motor's terminal box. Rectifier is an optional element.

Torque adjustment
Reducing the torque of the brake is possible with most brake types. Refer to the brake manufacturer's catalog or contact ABB for more information.

Manual release
Manual release bolts are provided as standard. A manual release handle is an optional element. Manual release overrides the action of brake springs as long as it is applied.

Though the manual release handle is optionally available for all motor sizes, it cannot be used in combination with the Pintsch Bamag brake type SFB.

Brake rating plates
The brake comes with two rating plates, one attached to the brake itself and another delivered loose, together with the motor. Variant code 412 is marked on the motor's rating plate (if it is listed among the five first codes on the motor order).

Available brake types

Motors can be fitted with recommended brakes from either Pintsch Bamag or Stromag, as seen in the tables below. Other brakes can be provided on request.

Brake type	Brake torque Nm	For motor size
KFB 10	100	160
KFB 16	160	160 - 180
KFB 25	250	180 - 225
KFB 40	400	200 - 250
KFB 63	630	225 - 280
KFB 1000	1000	280 - 315
KFB 1600	1600	315 - 355
On request		355 - 450

Pintsch & Bamag, type KFB, IP 67, 110 V DC Electromagnetic Double-Disc Spring-Applied Brake

Brake type	Brake torque Nm	For motor size
SFB 16	160	200 - 225
SFB 25	250	200 - 225
SFB 40	400	225 - 250
SFB 63	630	250
SFB 100	1000	280 - 315
SFB 160	1600	315 - 355
SFB 250	2500	355 - 400
SFB 400	4000	400
On request		450

Pintsch & Bamag,type SFB, IP 67, 110 V DC Electromagnetic Double-Disc Spring-Applied Brake

Brake type	Brake torque Nm	For motor size
NFF 10	100	160
NFF 16	160	160 - 180
NFF 25	250	180 - 225
NFF 40	400	200 - 250
NFF 63	630	225 - 250
For sizes 280-450 on request		

Stromag, type NFF, 110 V DC, IP66

Options for the brake

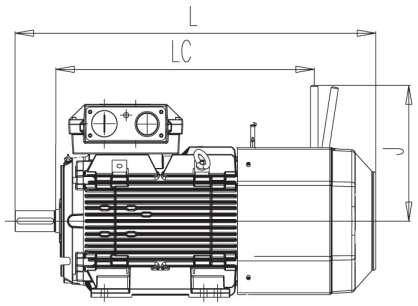
On new manufacture only

- Hand release (not possible for Pintsch Bamag brake type SFB)
- Rectifier
- Micro switch
- Proximity switch (not possible for Stromag brake)
- Standstill heater

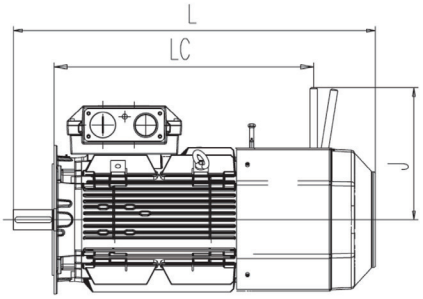
On request

- Special brake voltage
- Raised brake torque
- Combination with brake, separate cooling fan and/or tacho
- For other variants, please contact ABB

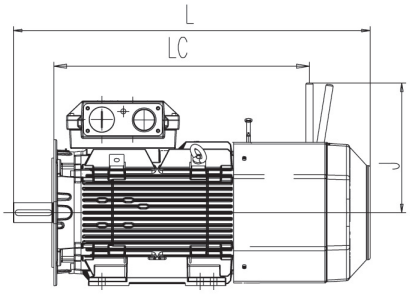
Dimensions of brake motor



Foot-mounted: IM B3 (IM1001), IM B6 (IM 1051), IM B7 (IM1061),IM B8 (IM 1071), IM V5 (IM 1011), IM V6 (IM 1031)



Flange-mounted: IM B5 (IM 3001), IM V1 (IM 3011), IM V3 (IM 3031), IM B14 (IM 3601), IM V18 (IM 3611), IM V19 (IM 3631)



Foot- and flange-mounted: IM B35 (IM 2001), IM V15 (IM 2011),IM V36 (IM 2031)

		Foot-mounted			Flange-mounted			Foot- and flange-mounted		
Motor size	Poles	L	LC	J	L	LC	J	L	LC	J
160 [1]	2-8	773	511	372	773	511	372	773	511	372
160 [2]	2-8	871	608	372	871	608	372	871	608	372
180	2-8	935	687	372	935	687	372	935	687	372
200	2-8	1011	695	460	1011	695	460	1011	695	460
225	2	1085	729	460	1085	729	460	1085	729	460
225	4-8	1115	729	460	1105	729	460	1115	729	460
250	2-8	1119	755	460	1119	755	460	1119	755	460

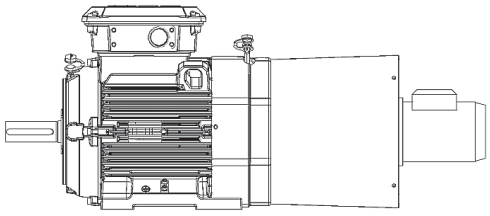
[1]MLA-2, MLB-2, MLC-2, MLA-4, MLA-6, MLA-8 and MLB-8 -poles
[2]MLD-2, MLE-2, MLB-4, MLC-4, MLD-4, MLB-6, MLC-6 and MLC-8 -poles
Motor sizes 280 to 450 on request. Other dimensions same as Process performance cast iron motors sizes 180 to 250

Accessories
Separate cooling

Axial fan, N-end

Fan motors with an axial fan are available for motor sizes 71-450 and can be ordered can be ordered with variant code 183.

The values here are given for 400 V, but technical data for other voltages can be found in MotSize.



Axial fan, N-end, for motor sizes 71 - 132

Main motor	Fan motor type	Voltage range at 50 Hz, V	Voltage range at 60 Hz, V	Power W	Current A
M3BP 71	Wistro 132	380 - 500	380 - 575	29	0,06
		220 - 290	220 - 332	28	0,1
M3BP 80	Wistro 156	380 - 500	380 - 575	34	0,06
		220 - 290	220 - 332	34	0,1
M3BP 90	Wistro 169	380 - 500	380 - 575	75	0,19
		220 - 290	220 - 332	78	0,33
M3BP 100	Wistro 187	380 - 500	380 - 575	94	0,17
		220 - 290	220 - 332	87	0,31
M3BP 112	Wistro 210	380 - 500	380 - 575	99	0,17
		220 - 290	220 - 332	103	0,31
M3BP 132	Wistro 250	380 - 500	380 - 575	148	0,25
		220 - 290	220 - 332	146	0,45

Axial fan, N-end, for motor sizes 160 - 450, IE2

Main motor	Fan motor type (at 50 Hz)	Voltage V at 50 Hz	Power kW	Current A
M3BP 160 - 250	M3BP 71MA 4 B14	400	0.25	0.64
M3BP 280 - 315 ML	M3BP 80MD 4 B14	400	0.75	1.83
M3BP 315 LK - 355 SM	M3BP 90SLD 4 B14	400	1.5	3.0
M3BP 355 ML - 450 L	M3BP 100LD 4 B14	400	3.0	6.3

Axial fan, N-end, for motor sizes 160 - 450, IE3

Main motor	Fan motor type (at 50 Hz)	Voltage V at 50 Hz	Power kW	Current A
M3BP 160 - 250	M3BP 71MA 4 B14	400	0.25	0.64
M3BP 280 - 315 ML	M3BP 80MLE 4 B14	400	0.75	1.7
M3BP 315 LK - 355 SM	M3BP 90LB 4 B14	400	1.5	3.3
M3BP 355 ML, LK	M3BP 100MLB 4 B14	400	3.0	6.1

Fan on top, N-end

The non-axial fan available for motor sizes 280 and above is a Ziehl-Abbegg fan with an integrated motor. This cooling option is suited for 400 V, 50 Hz networks and can be ordered with variant code 422.

MV at 50 Hzain motor	Fan motor type	Voltage V	Freq. Hz	Power kW	Current A
M3BP 280	Ziehl-Abegg RH35	400 VY	50	0.35	0.83
		460 VY	60	0.5	0.9
M3BP 315	Ziehl-Abegg RH40	400 VY	50	0.50	1.0
		460 VY	60	0.8	1.4
M3BP 355	Ziehl-Abegg RH45	400 VY	50	0.90	1.8
		460 VY	60	1.4	2.2
M3BP 400	Ziehl-Abegg RH50	400 VY	50	1.55	3.3
		460 VY	60	2.5	4.3
M3BP 450	Ziehl-Abegg RH56	400 VY	50	2.30	4.5
		460 VY	60	2.5	4.3

Special motor and fan on top, N-end

A special ABB fan motor type is available for motor sizes 280 and above. It is suited for environments where IP 65 is the required IP class or where the input voltage must be other than 360 – 420 V (50 Hz).

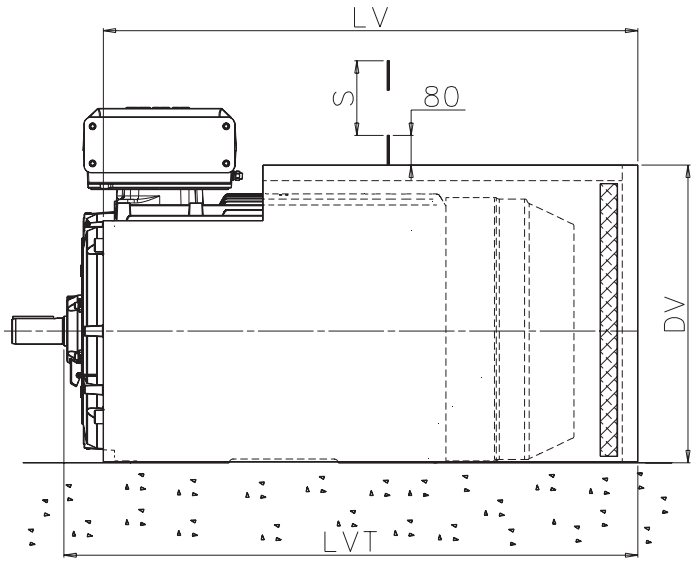
The values here are given for 400 V, but technical data for other voltages can be found in MotSize.

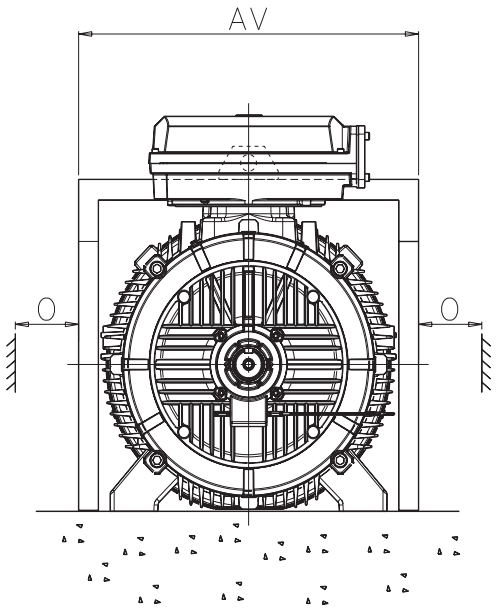
The centrifugal impeller used in the fan is a Ziehl-Abegg impeller. This type of cooling can be ordered with variant code 514.

Special motor and fan on top, N-end, for motor sizes 280 - 450

Main motor	Fan motor type	Voltage V at 50 Hz	Power kW	Current A
M3BP 280 - 315	M3BP 80 MD 4 B34	400	0.75	1.83
M3BP 355	M3BP 90 SLD 4 B34	400	1.5	3.0
M3BP 400	M3BP 100 LD 4 B34	400	3.0	6.3
M3BP 450	M3BP 112 MB 4 B34	400	4.0	8.2

Accessories
Silencer for motor sizes 280 - 450





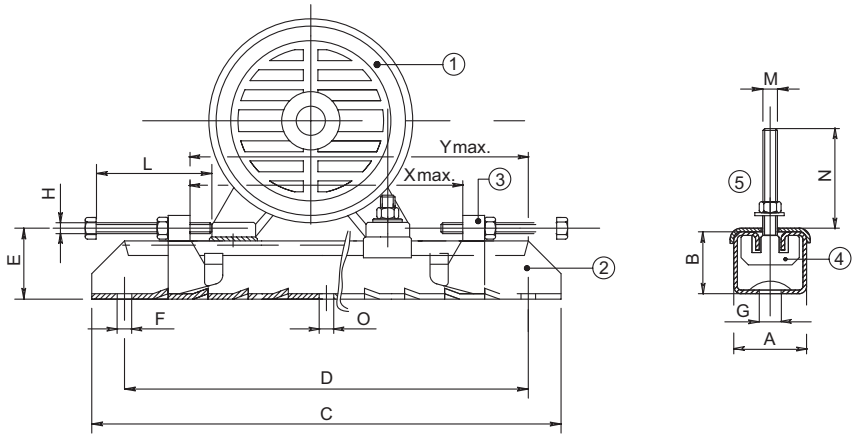
Both foot-mounted and flange-mounted motors can be fitted with a silencer to reduce noise level by about 5 - 6 dB(A). The silencer is painted blue and made of 2 mm steel sheet. The sound absorbing material is 40 mm thick polyurethane foam. On the rim there is a rubber strip for sealing on the floor. The silencer fits loosely over the motor.

The variant code for ordering a silencer is 055.

Motor size	AV	LV	LVT	DV	O[1]	S[2]	Weight kg
280 SM_	681	1010	1090	616	50	762	38
315 SM_	760	1094	1191	697	60	852	47
315 ML_	760	1205	1302	697	60	852	51
315 LK_	760	1411	1508	697	60	852	58
355 SM_	850	1335	1441	777	65	958	62
355 ML_	850	1440	1546	777	65	958	67
355 LK_	850	1690	1796	777	65	958	77
400 L_	938	1750	1873	866	75	1045	88
400 LK_	938	1750	1873	866	75	1045	88
450 L_	1050	2110	2230	990	80	1045	120

[1] Clearance for motor cooling.
[2] Clearance for removal of silencer.
Note: The dimensions are only valid for standard foot-mounted motors.

Accessories
Slide rails for motor sizes 160 - 250

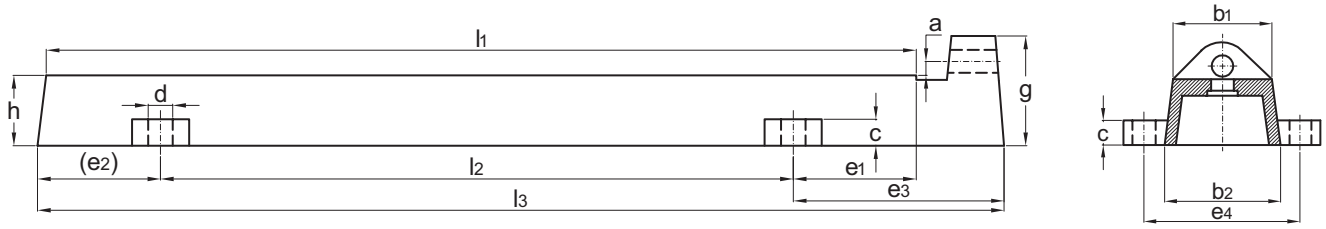


1 Motor | 2 Rail | 3 Movable adjusting bolt | 4 Fixing bolt, motor | 5 Plate

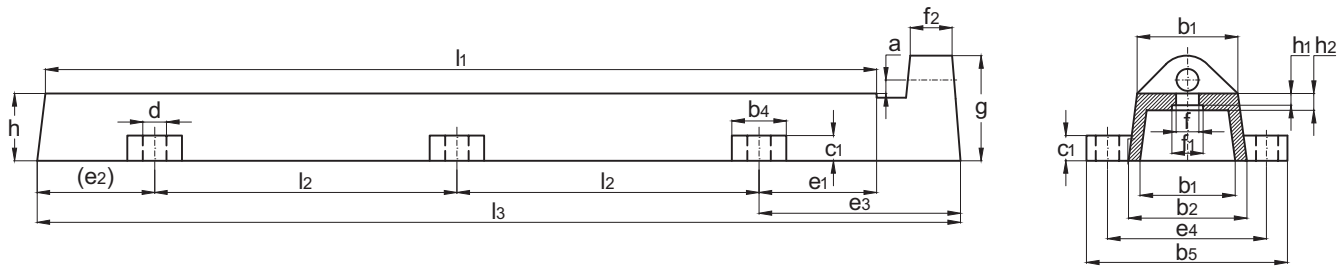
A set of slide rails includes two complete rails with screws for mounting the motor on the rails. Screws for mounting the rails on the foundation are not included.Slide rails have unmachined lower surfaces and should, before tightening down, be supported in a suitable manner.
Slide rails can be ordered with article numbers shown in the table.

		Article no.															Weight/
Motor size	Type	3GZV103001-	A	B	C	D	E	F	G	H	L	M	N	O	Xmax	Ymax	rail kg
Frame sizes 71 to 132 on request																	
160 - 180	TT180/12	-14	75	42	700	630	57	17	26	M12	120	M12	50	-	520	580	12.0
200 - 225	TT225/16	-15	82	50	864	800	68	17	27	M16	140	M16	65	17	670	740	20.4
250	TT280/20	-16	116	70	1072	1000	90	20	27	M18	150	M20	80	20	870	940	43.0

Accessories
Slide rails for motor sizes 280 - 400



Slide rails for motor sizes 280 - 315.



Slide rails for motor sizes 355 - 400.

Note: Slide rails that do not fulfill the DIN standard are available for motor size 450 on request.

A set of slide rails includes two complete rails with screws for mounting the motor on the rails. Screws for mounting the rails on the foundation are not included. Slide rails have unmachined lower surfaces and should be supported in a suitable manner before tightening down.
Slide rails can be ordered with article numbers shown in the table.

Motor															Bolts	Horizontal	Weight
size	Article no.	l1	l2	l3	a	h	b1	b2	c	d	e1	e2	e3	e4	to feet	bolts	kg/2 pc
280	3GZF334730-55	800	600	900	16	75	100	120	35	28	100	100	200	165	M20x90	M24x300	50
315	3GZF334730-56	1000	720	1100	16	80	120	140	40	28	140	140	240	190	M24x100	M24x300	80
355 - 400	3GZF334730-57	1250	485	1350	16	80	120	140	35	28	140	140	240	190	M24x100	M24x300	90

Motors in brief
Cast iron motors, sizes 71 - 132

Motor size		71	80	90	100	112	132
Stator and end shields	Material	Cast iron					
	Paint color shade	Munsell blue 8B 4.5/3.25					
	Corrosion class	C3 (medium)					
Feet		Integrated cast iron feet					
Bearings	D-end	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3	6206-2Z/C	6208-2Z/C3
	N-end	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6205-2Z/C3 *)	6208-2Z/C3
Axially locked bearings		Locked at D-end					
Bearing seals	D-end	V-ring					
	N-end	Labyrinth seal in IE2, V-ring in IE3					
Lubrication		Permanently lubricated shielded bearings					
Measuring nipples for condition monitoring of the bearings		Not included					
Rating plate	Material	Stainless steel					
Terminal box	Frame and cover	Cast iron					
	Corrosion class	C3 (medium)					
	Cover screws	Zinc-electroplated steel					
Connections	Threaded openings	2xM16	2xM25	2xM32			
	Terminals	6 terminals for connection with cable lugs (not included)					
	Cable glands	Cable flange included, glands as option					
Fan	Material	Glass-fiber reinforced polypropylene					
Fan cover	Material	Steel					
	Paint color shade	Munsell blue 8B 4.5/3.25					
	Corrosion class	C3 (medium)					
Stator winding	Material	Copper					
	Insulation	Insulation class F. Temperature rise class B unless otherwise stated.					
	Winding protection	3 PTC thermistors, 150 °C					
Rotor winding	Material	Pressure die-cast aluminum					
Balancing method		Half-key balancing as standard					
Keyway		Closed keyway					
Drain holes		Drain holes with closable plastic plugs, open on delivery					
Enclosure		IP 55					
Cooling method		IC 411					

*) 6206-2Z/C3 in IE3

Motors in brief
Cast iron motors, sizes 160 - 250

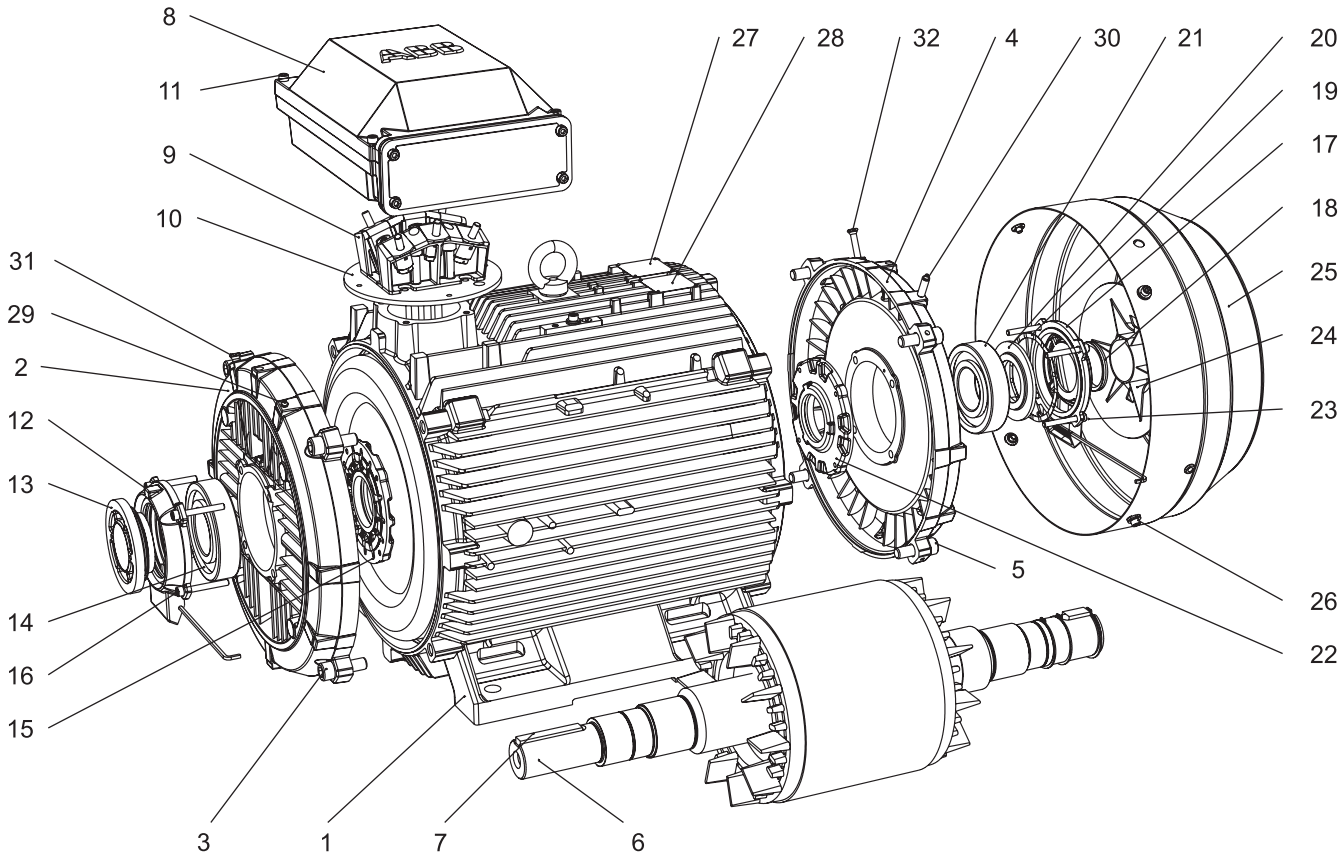
Motor size		160	180	200	225	250
Stator and end shields	Material	Cast iron				
	Paint color shade	Munsell blue 8B 4.5/3.25				
	Corrosion class	C3 (medium)				
Feet	Material	Integrated cast iron feet, bolted feet when terminal box on LHS/RHS				
Bearings	D-end	6309/C3	6310/C3	6312/C3	6313/C3	6315/C3
	N-end	6209/C3	6209/C3	6210/C3	6212/C3	6213/C3
Axially locked bearings		Locked at D-end				
Bearing seals	D-end	Gamma-ring				
	N-end	Gamma-ring				
Lubrication		Regreasable bearings, regreasing nipples M6x1				
Measuring nipples for condition monitoring of the bearings		Included				
Rating plate	Material	Stainless steel				
Terminal box	Frame and cover	Cast iron				
	Corrosion class	C3 (medium)				
	Cover screws	Zinc-electroplated steel				
Connections	Cable entries	2xM40, 2xM20		2xM63, 2xM20		
	Terminals	6 terminals for connection with cable lugs (not included)				
	Cable glands	Cable flange included, glands as option				
Fan	Material	Glass-fiber reinforced polypropylene				
Fan cover	Material	Steel				
	Paint color shade	Munsell blue 8B 4.5/3.25				
	Corrosion class	C3 (medium)				
Stator winding	Material	Copper				
	Insulation	Insulation class F. Temperature rise class B unless otherwise stated.				
	Winding protection	3 PTC thermistors, 150 °C				
Rotor winding	Material	Pressure die-cast aluminum				
Balancing method		Half-key balancing as standard				
Keyway		Closed keyway				
Drain holes		Drain holes with closable plastic plugs, open on delivery				
Enclosure		IP 55				
Cooling method		IC 411				

Motors in brief
Cast iron motors, sizes 280 - 450

Motor size			280	315	355	400	450
Stator and end shields	Material		Cast iron				
	Paint color shade		Munsell blue 8B 4.5/3.25				
	Corrosion class		C3 (medium)				
Feet	Material		Integrated cast iron feet				
Bearings	D-end	2-pole	6316/C3	6316/C3	6316M/C3	6317M/C3	6317M/C3
		4-12-pole	6316/C3	6319/C3	6322/C3	6324/C3	6326M/C3
	N-end	2-pole	6316/C3	6316/C3	6316M/C3	6317M/C3	6317M/C3
		4-12-pole	6316/C3	6316/C3	6316/C3	6319/C3	6322/C3
Axially locked bearings			Locked at D-end				
Bearing seals	D-end		V-ring or labyrinth seal				
	N-end		V-ring or labyrinth seal				
Lubrication			Regreasable bearings, regreasing nipples M10x1				
Measuring nipples for condition monitoring of the bearings			Included				
Rating plate	Material		Stainless steel				
Terminal box	Frame and cover		Cast iron				Cover steel
	Corrosion class		C3 (medium)				Steel
	Cover screws		Zinc-electroplated steel				
Connections	Cable-entries	2-4-pole	2xM63+2xM20	2xM63, 2xØ48-60+2xM20	2xØ48-60, 60-80, 2xM20	2xØ60-80 (2-6-pole), 2xM2+0	2xØ60-80, 2xM20
		6-8-pole			2xØ32-49, 48-60, 2M20	2xØ48-60 (8-pole), 2xM20	
				See section Standard terminal box for detailed information.			
	Terminals		6 terminals for connection with cable lugs (not included)				
	Cable glands		Cable flange, glands as option				
Fan	Material		Glass-fiber reinforced polypropylene				
Fan cover	Material		Steel				
	Paint color shade		Munsell blue 8B 4.5/3.25				
	Corrosion class		C3 (medium)				
Stator winding	Material		Copper				
	Insulation		Insulation class F. Temperature rise class B unless otherwise stated.				
	Winding protection		3 PTC thermistors, 155 °C				
Rotor winding	Material		Pressure die-cast aluminum				
Balancing method			Half-key balancing				
Keyway			Open keyway				
Drain holes			Drain holes with closable plastic plugs, open on delivery				
Enclosure			IP 55				
Cooling method			IC 411				

Motor construction

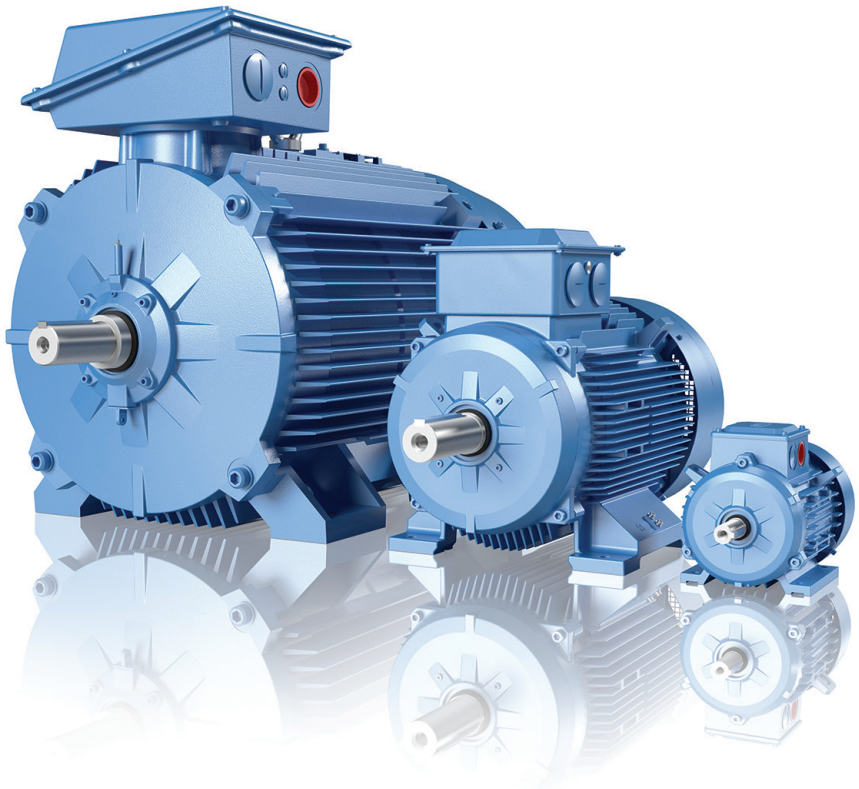
Exploded view, frame size 315



1 Stator frame
2 End shield, D-end
3 Screws for end shield, D-end
4 End shield, N-end
5 Screws for end shield, N-end
6 Rotor with shaft
7 Key, D-end
8 Terminal box
9 Terminal board
10 Intermediate flange
11 Screws for terminal box cover
12 Outer bearing cover, D-end
13 Valve disc with labyrinth seal, D-end; standard in 2-pole motors, V-ring in 4-8 pole motors
14 Bearing, D-end
15 Inner bearing cover, D-end
16 Screws for bearing cover
17 Outer bearing cover, N-end
18 Seal, N-end
19 Wave spring
20 Valve disc, N-end
21 Bearing, N-end
22 Inner bearing cover, N-end
23 Screws for bearing cover
24 Fan
25 Fan cover
26 Screws for fan cover
27 Rating plate
28 Lubrication plate
29 Grease nipple, D-end
30 Grease nipple, N-end
31 SPM nipple, D-end
32 SPM nipple, N-end

General performance cast iron motors
Sizes 71 to 355, 0.18 to 355 kW

General performance motors



Developed from the outset for maximum convenience and easy handling, ABB General performance motors can be used in a wide range of industrial applications. Most General performance motors are stocked both centrally and locally for global off-the-shelf availability and fast delivery worldwide. Documentation is provided online to guarantee quick and easy access.

With their straightforward, robust design, these high quality motors offer extensive potential for modification. They are available with standard variants, ensuring they can be used in all the main industrial applications. Modular construction makes them highly flexible, and a selection of accessories ensures they meet application requirements and customer needs.

These motors are especially suitable for OEMs to build into pumps and fans, as well as for gearboxes, conveyors, general machinery and other applications. Some standard designs are available from stock, while customer and application specific solutions are manufactured to order and can be tailored to meet specific needs.

General performance motors are available in both aluminum frames (IE2) and cast iron (IE2 and IE3).

- 0.06 – 355 kW
- IE2 & IE3
- 2, 4, & 6 poles
- Pumps, fans, compressors, and other industrial applications

If you are interested in aluminum motors, please contact ABB.

Ordering information

Explanation of the product code

Motor type	Motor size	Product code	Mounting arrangement code, Voltage and frequency code, Generation code	Variant codes
M2BAX	112MA	3GBA 112 310 - ADD		002, etc.
		1 2 3 4 5 6 7 8 9 10 11 12 13 14		

When placing an order, specify motor type, size and product code according to the following example.

Example	
Motor type	M2BAX 112 MA
Pole number	4
Mounting arrangement (IM-code)	IM B3 (IM 1001)
Rated output	4 kW
Product code	3GBA 112 310-ADD
Variant codes if needed	

Positions 1 to 4

3GBA:	Totally enclosed fan cooled squirrel cage motor with cast iron frame

Positions 5 and 6

IEC size	
07:	71
08:	80
09:	90
10:	100
11:	112
13:	132
16:	160
18:	180
20:	200
22:	225
25:	250
28:	280
31:	315
35:	355

Position 7

Speed (Pole pairs)	
1:	2 poles
2:	4 poles
3:	6 poles

Positions 8 to 10

Running number

Position 11

-(dash)

Position 12 (marked with black dot in data tables)

Mounting arrangement	
A:	Foot-mounted, top-mounted terminal box
B:	Flange-mounted, large flange

Position 13 (marked with black dot in data tables)

Voltage and frequency	
Single-speed motors	
D:	400 VΔ, 690 VY, 380 VΔ, 660 VY, 50 Hz 440 VΔ, 460 VΔ, 60 Hz
S:	230 VΔ, 400 VY, 220 VΔ, 380 VY, 50 Hz 440 VY, 460 VΔ 60 Hz*

*) M2AA 200 is not available for voltages less than 380 VD

Position 14

A, B, C...= Generation code followed by variant codes

Efficiency values are given according to IEC 60034-2-1; 2014

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

Technical data
IE3 General performance cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW		Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_l/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles					400 V 50 Hz				CENELEC-design							
0.37		M2BAX 71 MC	3GBA071330-••D	2819	76,5	76,0	73,4	0,80	0,86	6,6	1,3	2,7	3,2	0,000350	9	50
0.55		M2BAX 71 MB	3GBA071320-••D	2816	78,4	78,1	75,9	0,80	1,27	6,1	1,9	2,7	3,2	0,00040	10	49
0.75		M2BAX 80 MC	3GBA081330-••D	2891	80,7	81,0	78,9	0,80	1,66	7,5	2,5	2,9	3,7	0,000810	15	58
1.1		M2BAX 80 MD	3GBA081340-••D	2860	82,7	83,3	82,6	0,84	2,29	7,6	3,7	3,2	3,6	0,00102	17	60
1.5		M2BAX 90 SB	3GBA091120-••D	2912	84,2	84,0	82,5	0,83	3,04	8,0	5,0	2,8	3,9	0,00234	22	54
2.2		M2BAX 90 SLA	3GBA091010-••D	2908	85,9	85,6	83,9	0,81	4,54	8,2	7,3	3,2	3,9	0,00300	25	67
3		M2BAX 100 LKA	3GBA101810-••D	2910	87,1	88,0	88,0	0,91	5,38	8,3	9,8	3,0	3,8	0,00691	47	60
4		M2BAX 112 MB	3GBA111320-••D	2904	88,1	89,0	89,2	0,90	7,23	8,5	13,2	2,8	3,7	0,00711	46	64
5.5		M2BAX 132SMA 2	3GBA131210-••D	2934	89,2	89,8	89	0,82	10,6	8,9	17,9	2,4	4,1	0,0136	66	65
7.5		M2BAX 132SME 2	3GBA131250-••D	2901	90,1	91,1	91,2	0,91	13,1	7,3	24,7	2,2	3,7	0,0200	83	71
11		M2BAX 160MLA 2	3GBA161410-••D	2943	91,2	92,0	91,6	0,91	19,1	7,2	35,6	2,6	3,6	0,0570	118	69
15		M2BAX 160MLB 2	3GBA161420-••D	2947	91,9	92,2	91,8	0,88	26,5	8,2	48,5	3,2	4,2	0,0630	126	69
18.5		M2BAX 160MLC 2	3GBA161430-••D	2949	92,4	93,0	92,6	0,90	32,0	9,0	59,8	3,3	3,9	0,0760	144	73
22		M2BAX 180MLA 2	3GBA181410-••D	2956	92,7	93,1	92,7	0,90	37,7	7,8	71,0	3,4	3,8	0,110	181	73
30		M2BAX 200MLA 2	3GBA201410-••D	2957	93,3	93,8	93,6	0,88	52,4	7,5	96,9	2,5	3,1	0,182	230	73
37		M2BAX 200MLB 2	3GBA201420-••D	2960	93,7	94,2	94,1	0,89	64,2	8,2	119,5	3,1	3,4	0,222	257	73
45		M2BAX 225SMA 2	3GBA221210-••D	2968	94,0	94,0	93,0	0,87	79,6	7,3	144,8	3,2	3,1	0,296	287	76
55		M2BAX 250SMA 2	3GBA251210-••D	2968	94,3	93,7	93,6	0,89	94,8	6,8	177,0	2,4	3,0	0,426	344	76
75		M2BAX 280SMB 2	3GBA281220-••M	2978	94,7	94,6	93,6	0,88	130	7,0	240,0	2,3	3,0	0,900	596	74
90		M2BAX 280SMC 2	3GBA281230-••M	2975	95,0	95,0	94,2	0,88	156	6,4	289,0	2,1	2,8	0,990	618	74
110		M2BAX 315SMB 2	3GBA311220-••M	2982	95,2	94,9	93,9	0,87	192	7,0	352,0	1,8	2,7	1,30	801	78
132		M2BAX 315SMC 2	3GBA311230-••M	2982	95,4	95,4	94,6	0,87	229	6,8	422,0	2,0	2,8	1,50	852	78
160		M2BAX 315SMD 2	3GBA311240-••M	2983	95,6	95,6	94,9	0,87	275	7,4	512,0	2,2	2,8	1,70	909	78
200	1)	M2BAX 315MLA 2	3GBA311410-••M	2983	95,8	96,0	95,5	0,88	342	7,5	640,0	2,3	3,1	2,10	1051	81
250		M2BAX 355SMA 2	3GBA351210-••M	2985	95,8	95,6	94,6	0,89	423	7,7	800,0	2,1	3,3	3,00	1412	83
315		M2BAX 355SMB 2	3GBA351220-••M	2980	95,8	95,7	95,0	0,89	529	7,0	1009,0	2,1	3,0	3,40	1495	83
355		M2BAX 355SMC 2	3GBA351230-••M	2984	95,8	95,8	95,0	0,88	605	7,2	1136,0	2,2	3,0	3,60	1565	83

[1] Temperature rise class F

Technical data
IE3 General performance cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD^2kgm^2	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles				400 V 50 Hz				CENELEC-design							
0.25	M2BAX 71 MB	3GBA072320-••D	1440	73,5	70,1	63,8	0,64	0,78	6,1	1,67	2,7	3,5	0,000750	11	41
0.37	M2BAX 71 MLA	3GBA072410-••D	1441	77,3	74,9	69,8	0,66	1,06	6,8	2,47	2,7	3,8	0,000980	13	50
0.55	M2BAX 80 MC	3GBA082330-••D	1446	80,8	80,7	78,0	0,74	1,32	8,0	3,64	2,7	3,9	0,00228	15	48
0.75	M2BAX 80 MLA	3GBA082410-••D	1445	82,5	81,2	77,6	0,70	1,84	7,8	4,88	3,8	4,6	0,00295	24	49
1.1	M2BAX 90 SB	3GBA092120-••D	1438	84,1	83,4	80,9	0,73	2,59	7,9	7,28	3,6	4,2	0,00394	22	48
1.5	M2BAX 90 SLA	3GBA092010-••D	1439	85,3	84,4	82,1	0,73	3,52	7,8	9,95	3,9	4,5	0,00485	24	44
2.2	M2BAX 100 LB	3GBA102520-••D	1450	86,7	86,1	84,1	0,78	4,74	8,4	14,5	3,4	4,4	0,00863	35	50
3	M2BAX 100 LKA	3GBA102810-••D	1448	87,7	87,7	86,5	0,79	6,25	8,6	19,9	3,6	4,5	0,0115	43	57
4	M2BAX 112 MLA	3GBA112410-••D	1443	88,6	88,9	88,1	0,81	8,11	8,5	26,5	3,6	4,4	0,0152	53	57
5.5	M2BAX 132SMA 4	3GBA132210-••D	1463	89,6	90,4	90,2	0,77	11,5	7,9	35,89	2,6	3,3	0,0297	68	68
7.5	M2BAX 132SME 4	3GBA132250-••D	1465	90,4	90,7	90,3	0,78	15,5	7,4	49,0	2,5	4,0	0,0370	77	60
11	M2BAX 160MLA 4	3GBA162410-••D	1477	91,4	91,8	91,1	0,82	21,1	7,6	71,3	2,6	3,3	0,110	134	61
15	M2BAX 160MLB 4	3GBA162420-••D	1477	92,1	92,4	91,6	0,82	28,5	8,2	97,0	3,0	3,7	0,135	159	61
18.5	M2BAX 180MLA 4	3GBA182410-••D	1481	92,6	93,2	92,9	0,83	34,9	7,2	119,3	2,8	3,0	0,219	192	60
22	M2BAX 180MLB 4	3GBA182420-••D	1481	93,0	93,5	93,3	0,82	41,4	6,5	142,0	3,0	3,2	0,243	205	60
30	M2BAX 200MLA 4	3GBA202410-••D	1483	93,6	93,8	93,4	0,84	54,8	7,5	193,2	2,7	3,2	0,385	259	63
37	M2BAX 225SMA 4	3GBA222210-••D	1482	93,9	94,1	93,8	0,83	68,9	7,2	238,6	3,1	3,1	0,427	274	67
45	M2BAX 225SMB 4	3GBA222220-••D	1482	94,2	94,4	94,0	0,84	82,3	8,0	290,0	3,2	3,5	0,525	307	66
55	M2BAX 250SMA 4	3GBA252210-••D	1482	94,6	94,7	94,0	0,84	100,0	7,1	354,2	2,9	3,4	0,694	358	68
75	M2BAX 280SMB 4	3GBA282220-••M	1485	95,0	95,2	94,8	0,86	133,0	6,4	483,0	2,3	2,8	1,380	573	75
90	M2BAX 280SMC 4	3GBA282230-••M	1485	95,2	95,3	94,8	0,86	159,0	7,1	588,0	2,5	2,9	1,730	636	75
110	M2BAX 315SMB 4	3GBA312220-••M	1489	95,4	95,4	94,8	0,85	196,0	7,0	705,0	2,1	3,0	2,430	823	71
132	M2BAX 315SMC 4	3GBA312230-••M	1488	95,6	95,8	95,3	0,86	231,0	6,7	847,0	2,2	2,9	2,90	892	71
160	M2BAX 315SMD 4	3GBA312240-••M	1488	95,8	96,0	95,8	0,85	282,0	6,9	1026,0	2,2	3,0	3,20	933	71
200	M2BAX 315MLB 4	3GBA312420-••M	1487	96,0	96,4	96,4	0,86	351,0	6,8	1284,0	2,4	3,0	3,90	1091	74
250	M2BAX 355SMA 4	3GBA352210-••M	1491	96,0	96,0	95,6	0,86	435,0	6,4	1601,0	2,1	2,9	5,90	1445	78
315	M2BAX 355SMB 4	3GBA352220-••M	1491	96,0	96,0	95,6	0,86	545,0	6,7	2018,0	2,3	3,0	6,90	1595	78
355	M2BAX 355SMC 4	3GBA352230-••M	1490	96,0	96,2	95,8	0,86	616,0	6,3	2273,0	2,3	2,8	7,20	1635	78

[1] Temperature rise class F

Technical data
IE3 General performance cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE3 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles				400 V 50 Hz				CENELEC-design							
0.18	M2BAX 71 MB	3GBA073320-••D	931	63,9	60,0	53,2	0,69	0,60	3,8	1,87	2,1	2,6	0,00103	10	39
0.25	M2BAX 71 MLA	3GBA073410-••D	926	68,6	66,3	60,9	0,67	0,80	4,3	2,58	2,6	2,9	0,00140	13	46
0.37	M2BAX 80 MC	3GBA083330-••D	939	73,5	71,5	66,7	0,66	1,09	5,6	3,80	2,8	3,2	0,00240	15	42
0.55	M2BAX 80 MLA	3GBA083410-••D	943	77,2	75,9	71,9	0,68	1,54	6,3	5,60	3,4	3,5	0,00353	20	48
0.75	M2BAX 90 SLA	3GBA093010-••D	952	78,9	78,0	73,9	0,59	2,35	5,3	7,52	3,1	3,6	0,00440	22	50
1.1	M2BAX 90 LB	3GBA093520-••D	954	81,0	80,3	75,5	0,62	3,20	6,1	11,1	3,3	3,9	0,00643	30	53
1.5	M2BAX 100 LKA	3GBA103810-••D	953	82,5	83,4	82,0	0,88	3,0	5,9	15,0	2,4	3,0	0,00975	38	59
2.2	M2BAX 112 MLA	3GBA113410-••D	957	84,3	83,8	81,5	0,64	5,94	6,5	22,0	2,9	3,7	0,0130	47	50
3	M2BAX 132 SMA	3GBA133210-••D	968	85,6	86,1	84,9	0,68	7,40	6,7	29,6	2,1	3,2	0,0291	66	48
4	M2BAX 132 SMB	3GBA133220-••D	972	86,8	86,8	84,9	0,65	10,1	7,0	39,3	2,7	3,6	0,0343	73	52
5.5	M2BAX 132 MLA	3GBA133410-••D	974	88,0	87,4	86,0	0,67	13,5	7,3	54,2	2,9	3,5	0,0510	103	65
7.5	M2BAX 160MLA 6	3GBA163410-••D	975	89,1	90,0	90,0	0,77	15,7	5,7	73,2	1,4	3,0	0,0890	119	59
11	M2BAX 160MLB 6	3GBA163420-••D	975	90,3	91,1	91,1	0,78	22,5	6,4	107,5	1,6	3,1	0,138	160	64
15	M2BAX 180MLA 6	3GBA183410-••D	979	91,2	91,9	91,6	0,79	30,1	5,2	146,9	1,5	2,7	0,212	190	63
18.5	M2BAX 200MLA 6	3GBA203410-••D	989	91,7	91,9	91,2	0,82	35,2	6,5	178,8	2,2	3,2	0,496	238	59
22	M2BAX 200MLB 6	3GBA203420-••D	989	92,2	92,4	91,4	0,81	42,4	7,3	212,4	2,6	3,5	0,585	263	59
30	M2BAX 225SMA 6	3GBA223210-••D	988	92,9	93,0	92,2	0,77	60,4	7,7	290,6	2,9	3,6	0,724	298	63
37	M2BAX 250SMA 6	3GBA253210-••D	990	93,3	93,7	93,5	0,80	71,1	6,5	357,0	2,4	3,1	1,30	379	58
45	M2BAX 280SMB 6	3GBA283220-••M	991	93,7	94,0	93,5	0,84	81,9	7,4	433,0	2,7	3,0	1,870	562	72
55	M2BAX 280SMC 6	3GBA283230-••M	993	94,1	94,3	93,8	0,86	98,2	7,5	530,0	2,8	3,0	2,570	615	71
75	M2BAX 315SMB 6	3GBA313220-••M	994	94,6	94,9	94,6	0,84	136,0	6,8	720,0	1,8	2,6	4,10	791	75
90	M2BAX 315SMC 6	3GBA313230-••M	994	94,9	95,1	94,7	0,84	164,0	7,2	864,0	2,0	3,0	4,60	859	76
110	M2BAX 315SMD 6	3GBA313240-••M	994	95,1	95,3	95,0	0,83	200,0	7,3	1056,0	2,2	3,1	4,90	912	75
132	M2BAX 315MLB 6	3GBA313420-••M	995	95,4	95,5	95,1	0,82	242,0	7,3	1266,0	2,3	3,2	6,30	1068	72
160	M2BAX 355SMA 6	3GBA353210-••M	993	95,6	95,9	95,6	0,82	292,0	6,7	1538,0	2,5	2,6	7,90	1348	75
200	M2BAX 355SMB 6	3GBA353220-••M	993	95,8	96,2	96,1	0,82	365,0	6,7	1923,0	2,6	2,5	9,70	1512	75
250	M2BAX 355SMC 6	3GBA353230-••M	993	95,8	96,1	95,8	0,81	464,0	7,7	2404,0	3,0	3,1	11,30	1656	75

Technical data
IE2 General performance cast iron motors, 3000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
3000 r/min = 2 poles				400 V 50 Hz				CENELEC-design							
0.37	M2BAX 71MA 2	3GBA071310-••C	2807	73,5	72,8	68,7	0,80	0,9	5,1	1,3	2,6	3,5	0,000330	9	56
0.55	M2BAX 71MB 2	3GBA071320-••C	2820	75,5	75,5	72,2	0,79	1,3	5,2	1,9	2,7	3,5	0,000410	10	58
0.75	M2BAX 80MA 2	3GBA081310-••C	2830	77,4	77,8	75,3	0,83	1,7	5,4	2,5	2,9	4,3	0,000670	13	63
1.1	M2BAX 80MB 2	3GBA081320-••C	2849	79,6	80,4	78,7	0,84	2,4	5,4	3,7	2,9	4,1	0,000880	14	62
1.5	M2BAX 90SA 2	3GBA091110-••C	2890	81,3	81,0	78,2	0,80	3,3	6,5	4,9	2,5	3,8	0,00208	20	66
2.2	M2BAX 90LA 2	3GBA091510-••C	2897	83,2	83,6	81,7	0,85	4,5	7,5	7,3	2,5	3,8	0,00274	23	67
3	M2BAX 100LA 2	3GBA101510-••C	2919	84,6	84,0	81,3	0,85	6,0	8,5	9,8	3,4	5,0	0,00475	32	74
4	M2BAX 112MA 2	3GBA111310-••C	2916	85,8	85,3	83,1	0,87	7,7	9,1	13,1	4,1	4,7	0,00561	36	75
5.5	M2BAX 132SA 2	3GBA131110-••C	2921	87,0	85,9	83,6	0,86	10,6	8,3	18,0	2,6	4,3	0,0117	54	74
7.5	M2BAX 132SB 2	3GBA131120-••C	2916	88,1	87,5	85,8	0,85	14,5	8,7	24,6	3,1	4,5	0,0132	58	73
11	M2BAX 160MLA 2	3GBA161410-••C	2931	89,4	89,4	88,4	0,86	20,7	6,6	35,9	2,5	3,5	0,0413	102	72
15	M2BAX 160MLB 2	3GBA161420-••C	2938	90,3	90,6	89,8	0,89	26,9	7,6	48,9	3,0	3,5	0,0538	115	72
18.5	M2BAX 160MLC 2	3GBA161430-••C	2939	90,9	91,0	90,3	0,88	33,4	7,9	60,1	3,1	3,8	0,060	123	73
22	M2BAX 180MLA 2	3GBA181410-••C	2943	91,3	91,4	90,7	0,88	39,5	8,4	71,4	3,8	3,9	0,0735	150	72
30	M2BAX 200MLA 2	3GBA201410-••C	2957	92,0	91,5	90,1	0,85	55,4	8,6	97,1	4,0	4,2	0,110	198	81
37	M2BAX 200MLB 2	3GBA201420-••C	2951	92,5	92,5	92,1	0,90	64,2	8,4	120	3,6	3,7	0,141	229	80
45	M2BAX 225SMA 2	3GBA221210-••C	2962	92,9	92,8	92,1	0,87	80,4	8,8	145	3,8	3,8	0,226	273	82
55	M2BAX 250SMA 2	3GBA251210-••C	2965	93,2	93,2	92,6	0,88	96,8	7,4	177	3,4	3,0	0,344	334	78
75	M2BAX 280SA 2	3GBA281110-••C	2977	94,0	93,7	92,3	0,88	130	7,6	240	2,1	3,0	0,80	530	78
90	M2BAX 280SMB 2	3GBA281220-••C	2976	94,3	94,2	93,1	0,90	153	7,4	288	2,1	2,9	0,90	570	78
110	M2BAX 315SMA 2	3GBA311210-••C	2982	94,6	94,1	92,7	0,86	195	7,6	352	2,0	3,0	1,20	750	78
132	M2BAX 315SMB 2	3GBA311220-••C	2982	94,9	94,6	93,4	0,88	228	7,4	422	2,2	3,0	1,40	810	78
160	M2BAX 315SMC 2	3GBA311230-••C	2981	95,2	95,0	94,1	0,89	272	7,5	512	2,3	3,0	1,70	900	78
200	M2BAX 315MLA 2	3GBA311410-••C	2980	95,3	95,2	94,4	0,90	336	7,7	640	2,6	3,0	2,10	1020	83
250	M2BAX 355SMA 2	3GBA351210-••C	2983	95,4	95,2	94,3	0,89	424	6,8	800	1,5	2,8	2,70	1310	83
315	M2BAX 355SMB 2	3GBA351220-••C	2980	95,4	95,4	94,7	0,89	535	7,2	1009	1,9	2,8	3,40	1450	83
355	M2BAX 355SMC 2	3GBA351230-••C	2983	95,5	95,5	94,9	0,88	609	7,4	1136	2,1	2,7	3,60	1520	83

Note! Please check the availability for sizes 280-355 with ABB

Technical data
IE2 General performance cast iron motors, 1500 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_I/T_N	T_b/T_N	Moment of inertia J = 1/4 GD²kgm²	Weight kg	Sound pressure Level L_{PA} dB
1500 r/min = 4 poles				400 V 50 Hz				CENELEC-design							
0.25	M2BAX 71MA 4	3GBA072310-••C	1415	67,0	63,1	56,6	0,73	0,74	4,4	1,68	2,1	2,8	0,000590	9	49
0.37	M2BAX 71MB 4	3GBA072320-••C	1407	69,5	69,0	64,4	0,77	1,0	4,2	2,5	1,9	2,7	0,000590	10	49
0.55	M2BAX 80MA 4	3GBA082310-••C	1413	73,5	73,2	69,2	0,76	1,4	4,7	3,7	2,0	2,9	0,00156	13	54
0.75	M2BAX 80MB 4	3GBA082320-••C	1462	79,6	78,5	74,4	0,71	1,9	6,2	5,0	3,1	3,9	0,00247	17	53
1.1	M2BAX 90SA 4	3GBA092110-••C	1447	81,4	80,7	77,2	0,73	2,7	6,3	7,4	3,2	4,3	0,00372	21	51
1.5	M2BAX 90LA 4	3GBA092510-••C	1441	82,8	82,6	79,8	0,74	3,5	6,6	10,0	3,1	4,2	0,00462	23	55
2.2	M2BAX 100LA 4	3GBA102510-••C	1445	84,3	84,2	81,9	0,78	4,8	6,7	14,5	2,6	3,8	0,00759	31	55
3	M2BAX 100LB 4	3GBA102520-••C	1443	85,5	85,4	83,3	0,79	6,4	7,4	19,8	2,8	4,2	0,00939	35	58
4	M2BAX 112MA 4	3GBA112310-••C	1442	86,6	86,2	84,6	0,79	8,4	7,5	26,5	4,0	4,3	0,0120	41	57
5.5	M2BAX 132SA 4	3GBA132110-••C	1457	87,7	87,5	86,2	0,78	11,6	6,9	36,0	2,5	3,4	0,0257	57	66
7.5	M2BAX 132MA 4	3GBA132310-••C	1457	88,7	88,6	87,5	0,78	15,6	7,2	49,1	2,6	3,6	0,0320	68	67
11	M2BAX 160MLA 4	3GBA162410-••C	1466	89,8	89,9	89,2	0,79	22,4	7,0	71,5	3,2	3,2	0,0784	110	67
15	M2BAX 160MLB 4	3GBA162420-••C	1468	90,6	91,1	90,5	0,82	29,1	8,0	97,7	3,2	3,7	0,10	125	66
18.5	M2BAX 180MLA 4	3GBA182410-••C	1470	91,2	91,5	90,6	0,80	36,6	8,5	120	3,7	4,2	0,120	155	65
22	M2BAX 180MLB 4	3GBA182420-••C	1472	91,6	91,3	90,2	0,78	44,4	9,2	143	4,1	4,6	0,139	168	66
30	M2BAX 200MLA 4	3GBA202410-••C	1476	92,3	92,4	92,0	0,81	57,9	6,8	194	3,0	3,2	0,236	222	68
37	M2BAX 225SMA 4	3GBA222210-••C	1479	92,7	92,7	92,2	0,82	70,3	7,4	239	3,1	3,3	0,350	263	69
45	M2BAX 225SMB 4	3GBA222220-••C	1481	93,1	93,0	92,3	0,81	86,1	7,9	290	3,5	3,5	0,416	290	69
55	M2BAX 250SMA 4	3GBA252210-••C	1480	93,5	93,4	92,7	0,83	102	7,6	355	3,3	3,3	0,533	339	77
75	M2BAX 280SA 4	3GBA282110-••C	1484	94,2	94,2	93,5	0,85	135	6,9	482	2,5	2,8	1,250	515	71
90	M2BAX 280SMB 4	3GBA282220-••C	1483	94,4	94,6	94,1	0,86	160	7,2	579	2,5	2,7	1,50	575	71
110	M2BAX 315SMA 4	3GBA312210-••C	1487	94,7	94,6	93,8	0,86	194	7,2	706	2,0	2,5	2,30	775	78
132	M2BAX 315SMB 4	3GBA312220-••C	1487	95,0	95,0	94,3	0,86	233	7,1	847	2,3	2,7	2,60	830	78
160	M2BAX 315SMC 4	3GBA312230-••C	1487	95,2	95,3	94,6	0,85	285	7,2	1027	2,4	2,9	2,90	870	78
200	M2BAX 315MLA 4	3GBA312410-••C	1486	95,3	95,4	94,9	0,86	352	7,0	1285	2,3	2,8	3,50	995	78
250	M2BAX 355SMA 4	3GBA352210-••C	1488	95,2	95,2	94,4	0,85	445	6,7	1604	2,0	2,6	5,40	1400	82
315	M2BAX 355SMB 4	3GBA352220-••C	1488	95,5	95,5	94,8	0,85	560	7,3	2021	2,2	2,7	6,90	1570	82
355	M2BAX 355SMC 4	3GBA352230-••C	1487	95,5	95,7	95,2	0,86	623	6,8	2279	2,4	2,7	7,20	1650	82

Note! Please check the availability for sizes 280-355 with ABB

Technical data
IE2 General performance cast iron motors, 1000 r/min

IP 55 - IC 411 - Insulation class F, temperature rise class B
IE2 efficiency class according to IEC 60034-30-1; 2014

Output kW	Motor type	Product code	Speed r/min	Efficiency IEC 60034-30-1; 2014 Full load 100%	3/4 load 75%	1/2 load 50%	Power factor Cosφ	Current I_N A	I_S/I_N	Torque T_N Nm	T_r/T_N	T_b/T_N	Moment of inertia J = 1/4 GD^2kgm^2	Weight kg	Sound pressure Level L_{PA} dB
1000 r/min = 6 poles				400 V 50 Hz				CENELEC-design							
0.18	M2BAX 71MA 6	3GBA073310-••C	910	59,0	54,7	47,5	0,72	0,61	3,3	1,87	2,0	2,4	0,000820	9	40
0.25	M2BAX 71MB 6	3GBA073320-••C	913	63,0	59,9	53,8	0,71	0,81	3,6	2,64	2,4	2,8	0,00105	10	46
0.37	M2BAX 80MA 6	3GBA083310-••C	919	68,0	66,6	60,8	0,74	1,1	3,9	3,8	2,4	2,9	0,00173	13	49
0.55	M2BAX 80MB 6	3GBA083320-••C	921	71,0	69,8	64,7	0,73	1,5	4,2	5,7	2,6	3,0	0,00234	14	47
0.75	M2BAX 90SA 6	3GBA093110-••C	949	75,9	74,3	69,2	0,62	2,3	4,5	7,6	3,2	3,7	0,00438	21	50
1.1	M2BAX 90LA 6	3GBA093510-••C	936	78,1	78,0	74,7	0,67	3,0	4,5	11,1	2,5	3,3	0,00507	24	48
1.5	M2BAX 100LA 6	3GBA103510-••C	953	79,8	79,4	76,0	0,67	4,1	4,9	15,0	2,1	3,1	0,00795	31	56
2.2	M2BAX 112MA 6	3GBA113310-••C	956	81,8	81,4	78,4	0,68	5,7	5,3	21,9	2,3	3,5	0,0116	40	54
3	M2BAX 132SA 6	3GBA133110-••C	967	83,3	82,8	79,8	0,65	8,0	5,0	29,5	1,7	3,0	0,0251	55	60
4	M2BAX 132MA 6	3GBA133310-••C	965	84,6	84,2	82,4	0,70	9,8	5,7	40,0	2,6	3,3	0,0294	63	58
5.5	M2BAX 132MB 6	3GBA133320-••C	964	86,0	85,9	84,7	0,68	13,6	5,8	54,2	2,2	2,9	0,0397	77	62
7.5	M2BAX 160MLA 6	3GBA163410-••C	974	87,2	87,5	86,9	0,76	16,3	6,6	73,7	2,0	3,2	0,0811	113	65
11	M2BAX 160MLB 6	3GBA163420-••C	971	88,7	89,4	89,8	0,79	22,7	6,6	108	1,6	2,8	0,102	133	57
15	M2BAX 180MLA 6	3GBA183410-••C	971	89,7	90,0	89,6	0,77	31,3	7,4	147	2,4	3,9	0,136	168	62
18.5	M2BAX 200MLA 6	3GBA203410-••C	978	90,4	90,7	90,0	0,77	38,4	6,1	181	2,0	2,9	0,204	205	61
22	M2BAX 200MLB 6	3GBA203420-••C	978	90,9	91,1	90,5	0,78	44,8	6,2	215	1,8	2,9	0,227	219	62
30	M2BAX 225SMA 6	3GBA223210-••C	987	91,7	91,5	90,5	0,79	59,8	7,0	290	2,7	3,2	0,579	282	64
37	M2BAX 250SMA 6	3GBA253210-••C	986	92,2	92,5	91,9	0,81	71,5	6,9	359	2,6	2,9	0,783	336	66
45	M2BAX 280SA 6	3GBA283110-••C	990	92,8	93,0	92,1	0,84	83,3	7,0	434	2,5	2,5	1,850	500	71
55	M2BAX 280SB 6	3GBA283120-••C	990	93,3	93,5	92,9	0,84	101	7,0	530	2,7	2,6	2,20	540	71
75	M2BAX 315SMA 6	3GBA313210-••C	992	94,0	94,0	93,0	0,81	142	7,0	721	2,1	2,7	3,20	705	75
90	M2BAX 315SMB 6	3GBA313220-••C	992	94,3	94,4	93,6	0,83	165	7,2	866	2,1	2,7	4,10	800	75
110	M2BAX 315SMC 6	3GBA313230-••C	992	94,7	94,8	94,2	0,83	201	7,0	1058	2,2	2,7	4,90	870	75
132	M2BAX 315MLA 6	3GBA313410-••C	992	94,9	95,0	94,4	0,83	241	7,2	1270	2,4	2,7	5,80	980	75
160	M2BAX 355SMA 6	3GBA353210-••C	992	94,9	95,0	94,4	0,83	293	6,2	1540	2,1	2,3	7,30	1290	77
200	M2BAX 355SMB 6	3GBA353220-••C	992	95,2	95,4	94,9	0,84	360	6,5	1925	2,1	2,3	9,70	1440	77
250	M2BAX 355SMC 6	3GBA353230-••C	991	95,3	95,5	95,2	0,84	450	6,7	2409	2,3	2,3	11,30	1590	77

Note! Please check the availability for sizes 280-355 with ABB

Mechanical design
Bearings

General performance motors are normally fitted with single-row deep-groove ball bearings, as shown in the table below.

If the bearing at the D-end is replaced with a roller bearing (NU- or NJ-), higher radial forces can be handled. Roller bearings are suitable for belt-drive applications and can be ordered with variant code 037.

Standard and alternative designs

		Standard design		Alternative design
		Deep groove ball bearings		Deep groove ball bearings
				Roller bearings (VC037)
Motor size	Poles	D-end	N-end	D-end
71	2 - 6	6203-2Z/C3	6202-2Z/C3	
80	2 - 6	6204-2Z/C3	6203-2Z/C3	
90	2 - 6	6205-2Z/C3	6204-2Z/C3	
100	2 - 6	6206-2Z/C3	6205-2Z/C3	
112	2 - 6	6206-2Z/C3	6205-2Z/C3	
132	2 - 4	6208-2Z/C3	6208-2Z/C3	NU 208 ECP/C3
160	2 - 6	6209-2Z/C3	6209-2Z/C3	NU 209 ECP/C3
180	2 - 6	6210-2Z/C3	6209-2Z/C3	NU 210 ECP/C3
200	2 - 6	6212-2Z/C3	6209-2Z/C3	NU 212 ECP/C3
225	2 - 6	6213-2Z/C3	6210-2Z/C3	NU 213 ECP/C3
250	2 - 6	6215-2Z/C3	6212-2Z/C3	NU 215 ECP/C3
280	2 - 6	6217/C3	6217/C3	NU 217 ECP/C3
315	2	6217/C3	6217/C3	NU 217 ECP/C3
315	4 - 6	6219/C3	6217/C3	NU 219 ECP/C3
355	2	6219/C3	6219/C3	NU 219 ECP/C3
355	4 - 6	6222/C3	6219/C3	NU 222 ECP/C3

Axially-locked bearings

All motors are equipped as standard with an axially locked bearing at the D-end.

Mechanical design
Radial forces

Permissible loading on the shaft

The following table shows permissible radial forces on the shaft in Newtons, assuming zero axial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life of 20 000 and 40 000 hours per motor size.

These calculated values further assume mounting position IM B3 (foot-mounted), with force directed sideways. In some cases, the strength of the shaft affects permissible forces.

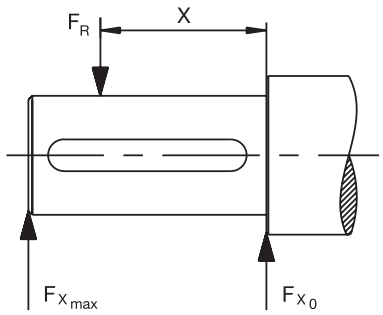
Permissible loads of simultaneous radial and axial forces can be supplied on request.

If the radial force is applied between points X0 and Xmax, the permissible force F_R can be calculated with the following formula:

$$F_R = F_{X0} - \frac{X}{E}(F_{X0} - F_{Xmax})$$

Where:

E: length of the shaft extension in the standard version



Permissible radial forces, M2BAX motor sizes 71-355, IE3 and IE2

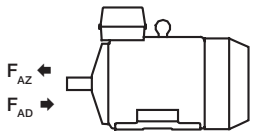
Motor size	Poles	Lenght of shaft extension E (mm)	Basic design with deep groove ball bearings				Basic design with deep groove roller bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{x0}(N)	F_{Xmax}(N)	F_{x0}(N)	F_{Xmax}(N)	F_{x0}(N)	F_{Xmax}(N)	F_{x0}(N)	F_{Xmax}(N)
71	2	30	545	465	430	370				
	4	30	685	585	545	465				
	6	30	785	660	620	530				
80	2	40	740	620	585	490				
	4	40	925	775	730	615				
	6	40	1065	890	840	705				
90S	2	50	795	645	625	510				
	4	50	1000	815	790	645				
	6	50	1145	935	905	740				
90L	2	50	795	660	630	520				
	4	50	1005	830	790	655				
	6	50	1150	950	910	750				
100	2	60	1110	895	875	705				
	4	60	1395	1120	1100	885				
	6	60	1605	1290	1265	1020				
112	2	60	1120	925	885	730				
	4	60	1405	1160	1105	915				
	6	60	1615	1335	1275	1050				
132S	2	80	1630	1270	1285	1000				
	4	80	2055	1600	1620	1260				
	6	80	2360	1840	1860	1450				
132M	4	80	2075	1665	1630	1310				
	6	80	2375	1905	1865	1495				
160	2	110	1945	1510	1545	1195				
	4	110	2455	1905	1945	1510				
	6	110	2835	2250	2245	1780				
180	2	110	2095	1705	1660	1350				
	4	110	2640	2145	2090	1700				
	6	110	3025	2460	2395	1950				
200	2	110	2800	2350	2200	1830				
	4	110	3550	2910	2810	2305				
	6	110	4065	3335	3220	2640				
225	2	110	3335	2795	2640	2215				
	4	140	4200	3370	3325	2670				
	6	140	4810	3860	2805	3055				
250	2	140	3965	3220	3140	2550				
	4	140	4995	4060	3995	3215				
	6	140	5715	4645	4525	3675				
280	2	140	4900	4050	3850	3200	14750	6850	12000	6850
	4	140	6150	5100	4850	4050	18200	11200	14750	11200
	6	140	7050	5850	5550	4600	20550	11200	16650	11200
315	2	140	4900	4150	3850	3250	14900	6650	12100	6650
	4	170	8000	6650	6350	5250	21200	10350	17200	10350
	6	170	9150	7550	7200	5950	23900	10250	19400	10250
355	2	140	6250	5500	4900	4300	17200	7850	13950	7850
	4	210	10500	8700	8250	6800	28050	16250	22750	16250
	6	210	12000	9900	9400	7750	31650	16200	25700	16200

Mechanical design
Axial forces

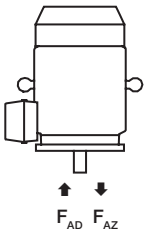
The following tables present permissible axial forces on the shaft in Newtons, assuming zero radial force, a 25 °C ambient temperature, and normal conditions. The values are given for a calculated bearing life of 20,000 and 40,000 hours per motor size.

At 60 Hz, the values must be reduced by 10 percent, and for two-speed motors, the higher speed determines permissible axial force. Permissible loads of simultaneous radial and axial forces can be supplied on request.

For axial force F_{AD}, it is assumed that the D-bearing is locked with a locking ring.



Mounting arrangement IM B3



Mounting arrangement IM V1

Permissible axial forces, motor sizes 71-112, IE3 and IE2

			Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
Motor size	Poles	Length of shaft extension E (mm)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
71	2	30	580	300	465	185				
	4	30	725	445	580	300				
	6	30	810	530	670	390				
80	2	40	750	430	595	275				
	4	40	940	620	750	430				
	6	40	1055	735	870	550				
90	2	50	845	445	675	275				
	4	50	1050	650	840	440				
	6	50	1175	775	935	535				
100	2	60	1175	615	940	380				
	4	60	1465	905	1175	615				
	6	60	1640	1080	1305	745				
112	2	60	1175	615	935	375				
	4	60	1460	900	1170	610				
	6	60	1635	1075	1300	740				

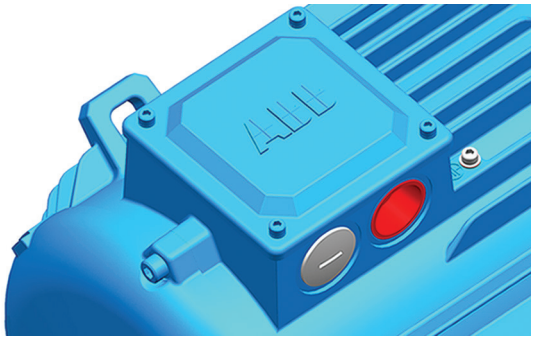
Permissible axial forces, motor sizes 132-355, IE3 and IE2

Motor size	Poles	Length of shaft extension E (mm)	Mounting arrangement IM B3				Mounting arrangement IM V1			
			Deep groove ball bearings				Deep groove ball bearings			
			20,000 h		40,000 h		20,000 h		40,000 h	
			F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)	F_{AD}(N)	F_{AZ}(N)
132	2	80	1750	950	1400	600	1900	850	1550	500
	4	80	2200	1400	1750	950	2400	1250	1950	800
160	2	110	1750	1050	1400	700	2050	800	1700	400
	4	110	2200	1500	1700	1050	2650	1150	2200	650
	6	110	2550	1850	2000	1300	2950	1500	2400	950
180	2	110	1800	1100	1450	750	2300	800	1900	400
	4	110	2300	1600	1750	1100	2950	1100	2450	600
	6	110	2650	2000	2050	1400	3300	1550	2700	950
200	2	110	2300	1600	1800	1100	2950	1150	2400	650
	4	110	2950	2300	2300	1600	3850	1650	3200	1000
	6	110	3450	2750	2600	1950	4450	2000	3600	1200
225	2	110	2500	2100	1900	1500	3250	1600	2650	1000
	4	140	3250	2850	2450	2050	4150	2150	3350	1350
	6	140	3800	3400	2850	2500	5000	2650	4050	1700
250	2	140	2950	2450	2250	1750	3950	1800	3200	1100
	4	140	3850	3350	2950	2400	5100	2550	4150	1600
	6	140	4500	3950	3400	2850	6100	2900	5000	1750
280	2	140	4350	2350	3450	1450	5750	1350	4850	450
	4	140	5400	3400	4250	2250	7400	2100	6200	900
	6	140	6200	4200	4850	2850	8300	2650	6900	1250
315	2	140	4150	2150	3300	1300	6100	450	-	-
	4	170	6600	4600	5100	3100	9250	2300	7700	750
	6	170	7550	5550	5800	3800	10850	2600	9050	750
355	2	140	4900	3200	3800	2100	8300	600	-	-
	4	210	8050	6300	6100	4350	12750	2700	10750	700
	6	210	9250	7500	6950	5200	14650	2950	12300	600

Terminal box
Standard terminal box

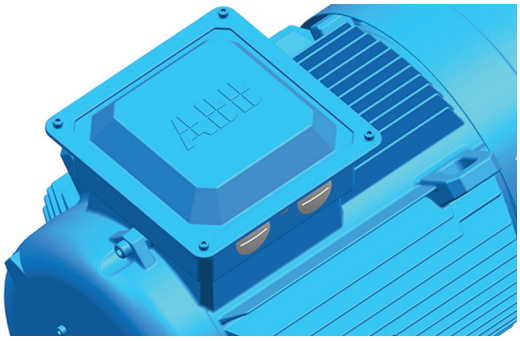
Terminal boxes

The pictures below show standard terminal boxes.

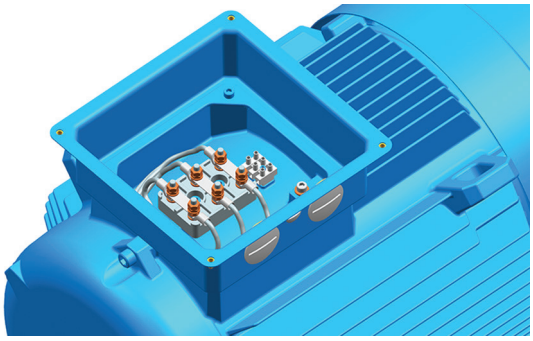


Terminal box for Motor sizes 71 to 132.

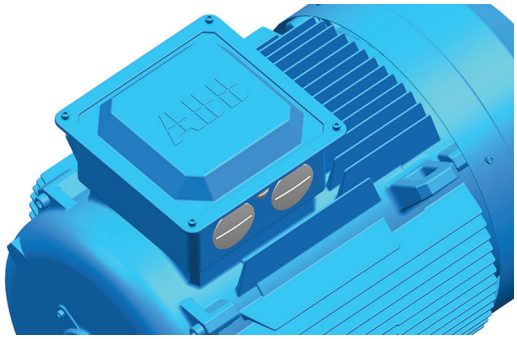
Terminal board for Motor sizes 71 to 132.



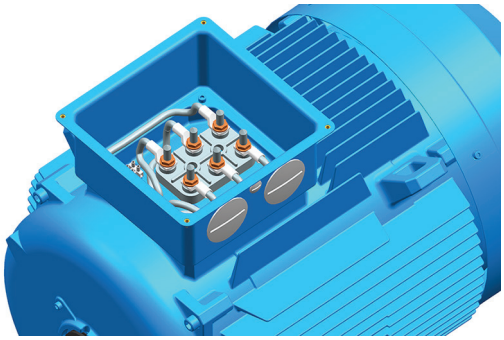
Terminal box for Motor sizes 160 to 180.



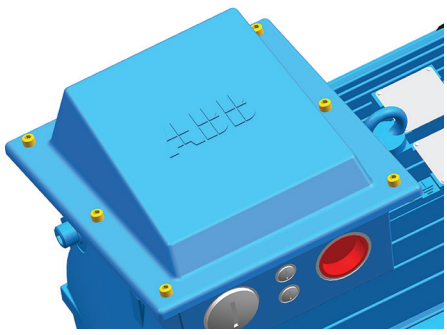
Terminal board for Motor size 160 to 180.



Terminal box for motor size 200 to 250.



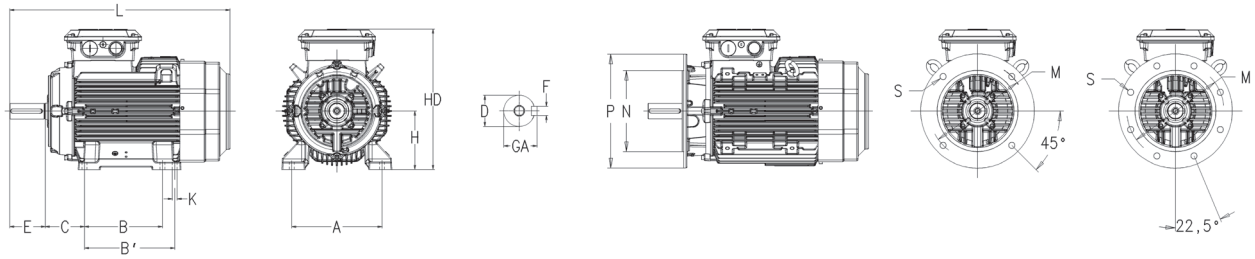
Terminal board for motor size 200 to 250.



Terminal box for motors size 280 to 355.

Terminal board for motor size 280 to 355.

Dimension drawings
IE3 and IE2 General performance cast iron motors



Foot- mounted motor IM1001, B3 and Flange-mounted motor IM 3001, B5

General performance cast iron motors M2BAX

Motor size	D poles 2	4-6	GA poles 2	4-6	F poles 2	4-6	E poles 2	4-6	L max poles 2	4-6	A	B	B'	C	HD	K	M	N	P	S
71M	14	14	16	16	5	5	30	30	257	257	112	90	-	45	175	7	130	110	160	10
71ML	14	14	16	16	5	5	30	30	282	282	112	90	-	45	175	7	130	110	160	10
80M	19	19	21.5	21.5	6	6	40	40	309	309	125	100	-	50	192	10	165	130	200	12
80ML	19	19	21.5	21.5	6	6	40	40	334	334	125	100	112	50	192	10	165	130	200	12
90S	24	24	27	27	8	8	50	50	335	335	140	100	-	56	217	10	165	130	200	12
90SL	24	24	27	27	8	8	50	50	351	351	140	100	125	56	217	10	165	130	200	12
90L[1)]	24	24	27	27	8	8	50	50	351	351	140	125	-	56	217	10	165	130	200	12
90L[2)]	24	24	27	27	8	8	50	50	386	386	140	125	-	56	217	10	165	130	200	12
100L	28	28	31	31	8	8	60	60	376	376	160	140	-	63	240	12	215	180	250	14.5
100LK	28	28	31	31	8	8	60	60	411	411	160	140	160	63	240	12	215	180	250	14.5
112M	28	28	31	31	8	8	60	60	411	411	190	140	-	70	252	12	215	180	250	14.5
112ML	28	28	31	31	8	8	60	60	456	456	190	140	159	70	252	12	215	180	250	14.5
132S	38	38	41	41	10	10	80	80	479	479	216	140	-	89	302	12	265	230	300	14.5
132SM	38	38	41	41	10	10	80	80	521	521	216	140	178	89	302	12	265	230	300	14.5
132M	38	38	41	41	10	10	80	80	521	521	216	178	-	89	302	12	265	230	300	14.5
132ML	38	38	41	41	10	10	80	80	586	586	216	178	203	89	302	12	265	230	300	14.5
160 MLA 2 160 MLB 2 160 MLA 4 160 MLA 6	42	42	45	45	12	12	110	110	639	639	254	210	254	108	414	14.5	300	250	350	19
160 MLC 2 160 MLB 4 160 MLB 6	42	42	45	45	12	12	110	110	696	696	254	210	254	108	414	14.5	300	250	350	19
180	48	48	51.5	51.5	14	14	110	110	728	728	279	241	279	121	454	14.5	300	250	350	19
200	55	55	59	59	16	16	110	110	809	809	318	267	305	133	515	18.5	350	300	400	19
225	55	60	59	64	16	18	110	140	812	842	356	286	311	149	560	18.5	400	350	450	19
250	60	65	64	69	18	18	140	140	853	853	406	311	349	168	613	24	500	450	550	19
280	65	75	69	79.5	18	20	140	140	1052	1056	457	368	419	190	771	24	500	450	550	18.5
315 SM_	65	80	69	85	18	22	140	170	1220	1250	508	406	457	216	845	28	600	550	660	24
315 ML_	65	90	69	95	18	25	140	170	1326	1356	508	457	508	216	845	28	600	550	660	24
355	70	100	74.5	106	20	28	140	210	1403	1473	610	500	560	254	929	35	740	680	800	24

Tolerances		Footnotes
A, B	±0,4	[1)]M2BAX IE2
D	ISO k6 < Ø 50 mm	[2)]M2BAX IE3
	ISO m6 > Ø 50 mm	
F	ISO h9	
H	-0,5	
N	ISO j6	
C	±0,8	

Motors in brief
Cast iron motors, sizes 71 - 112

Motor size	M2BAX	71	80	90	100	112
Stator and end shields	Material	Cast iron				
	Paint color shade	Munsell blue 8B 4.5/3.25				
	Corrosion class	C3 medium				
Feet	Material	Integrated cast iron				
Bearings	D-end	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6206-2Z/C3	6206-2Z/C3
	N-end	6202-2Z/C3	6203-2Z/C3	6204-2Z/C3	6205-2Z/C3	6205-2Z/C3
Axially locked bearings		Locked at D-end with retaining ring				
Bearing seals	D-end	V-ring				
	N-end	V-ring				
Lubrication		Permanently lubricated shielded bearings				
Measuring nipples for condition monitoring of the bearings		Not Included				
Rating plate	Material	Stainless steel				
Terminal box	Material	Steel				
	Corrosion class	C3 medium				
	Cover screws	Zinc-electroplated steel				
Connections	Threaded openings	2xM16, 1xM16	2xM25, 1xM16		2xM32, 1xM16	
	Max Cu-area mm	4	6		10	
	Terminals	6 terminals for connection with cable lugs (not included)				
	Cable glands	Glands as option				
Fan	Material	Glass-fiber reinforced polypropylene				
Fan cover	Material	Steel				
	Paint color shade	Munsell blue 8B 4.5/3.25				
	Corrosion class	C3 medium				
Stator winding	Material	Copper				
	Insulation	Insulation class F. Temperature rise class B unless otherwise stated.				
	Winding protection	3 PTC thermistors, 150°C				
Rotor winding	Material	Pressure die-cast aluminum				
Balancing method		Half key balancing as standard				
Key ways		Open key way				
Drain holes		Drain holes with closable plastic plugs, open on delivery				
Enclosure		IP 55 Higher protection on request				
Cooling method		IC 411				
Lifting lugs		Integrated cast iron lifting lugs				

Motors in brief
Cast iron motors, sizes 132 - 250

Motor size	M2BAX	132	160	180	200	225	250
Stator and end shields	Material	Cast iron					
	Paint color shade	Munsell blue 8B 4.5/3.25					
	Corrosion class	C3 (medium)					
Feet	Material	Integrated cast iron feet					
Bearings	D-end	6208-2Z/C3	6209-2Z/C3	6210-2Z/C3	6212/C3	6213-2Z/C3	6215-2Z/C3
	N-end	6208-2Z/C3	6209-2Z/C3	6209-2Z/C3	6209-2Z/C3	6210-2Z/C3	6212-2Z/C3
Axially locked bearings		Locked at D-end with retaining ring	Locked at D-end with inner bearing cover				
Bearing seals	D-end	V-ring					
	N-end	V-ring					
Lubrication		Permanently lubricated shielded bearings					
Measuring nipples for condition monitoring of the bearings		Not Included					
Rating plate	Material	Stainless steel					
Terminal box	Material	Steel					
	Corrosion class	C3 (medium)					
	Cover screws	Zinc-electroplated steel					
Connections	Threaded openings	2xM32	2xM40, 1xM16		2xM63, 1xM16		
	Terminals	6 terminals for connection with cable lugs (not included)					
	Cable glands	Glands as option	Cable flange included, glands as option				
Fan	Material	Glass-fiber reinforced polypropylene					
Fan cover	Material	Steel					
	Paint color shade	Munsell blue 8B 4.5/3.25					
	Corrosion class	C3 (medium)					
Stator winding	Material	Copper					
	Insulation	Insulation class F. Temperature rise class B unless otherwise stated.					
	Winding protection	3 PTC thermistors, 150 °C					
Rotor winding	Material	Pressure die-cast aluminum					
Balancing method		Half-key balancing as standard					
Key ways		Open key way					
Drain holes		Drain holes with closable plastic plugs, open on delivery					
Enclosure		IP 55 Higher protection on request					
Cooling method		IC 411					
Lifting lugs		Integrated cast iron lifting lug					

Motors in brief
Cast iron motors, sizes 280 - 355

Motor size	M2BAX	280	315	355
Stator and end shields	Material	Cast iron		
	Paint color shade	Munsell blue 8B 4.5/3.25		
	Corrosion class	C3 medium		
Feet		Integrated cast iron		
Bearings	D-end 2-pole	6217/C3	6217/C3	6219/C3
	D-end 4-6 -pole	6217/C3	6219/C3	6222/C3
	N-end 2-pole	6217/C3	6217/C3	6219/C3
	N-end 4-6 -pole	6217/C3	6217/C3	6219/C3
Axially locked bearings		Locked at D-end with inner bearing cover		
Bearing seals	D-end	V-ring		
	N-end	V-ring		
Lubrication		Regreasable bearings, regreasing nipples M6x1		
Measuring nipples for condition monitoring of the bearings		Not included		
Rating plate	Material	Stainless steel		
Terminal box	Material frame	Cast iron		
	Cover	Cast iron terminal box cover		
	Corrosion class	C3 medium		
	Screws	Zinc-electroplated steel		
Connections	Threaded openings	2xM63, 2 x M20	2xM63, 2 x M20	2xM75, 2 x M20
	Terminals	6 terminals for connection with cable lugs (not included)		
	Cable glands	Cable glands as option		
Fan	Material	Glass-fiber reinforced polpypropylene / 2-pole metal.		
Fan cover	Material	Steel fan cover		
	Paint color shade	Black / Munsell blue 8B 4.5/3.25		
	Corrosion class	C3 medium		
Stator winding	Material	Copper		
	Insulation	Insulation class F. Temperature rise class B unless otherwise stated.		
	Winding protection	3 PTC thermistors, 150 °C		
Rotor winding	Material	Pressure diecast aluminum		
Balancing method		Half key balancing as standard		
Keyway		Open key way		
Heating elements	On request	60 W	2x60 W	2x60 W
Enclosure		IP 55 Higher protection on request		
Cooling method		IC 411		
Drain holes		Drain holes with closable plastic plugs, open on delivery		
Lifting lugs		Bolted lifting lugs		

Total product offering

Motors, generators and mechanical power transmission products with a complete portfolio of services

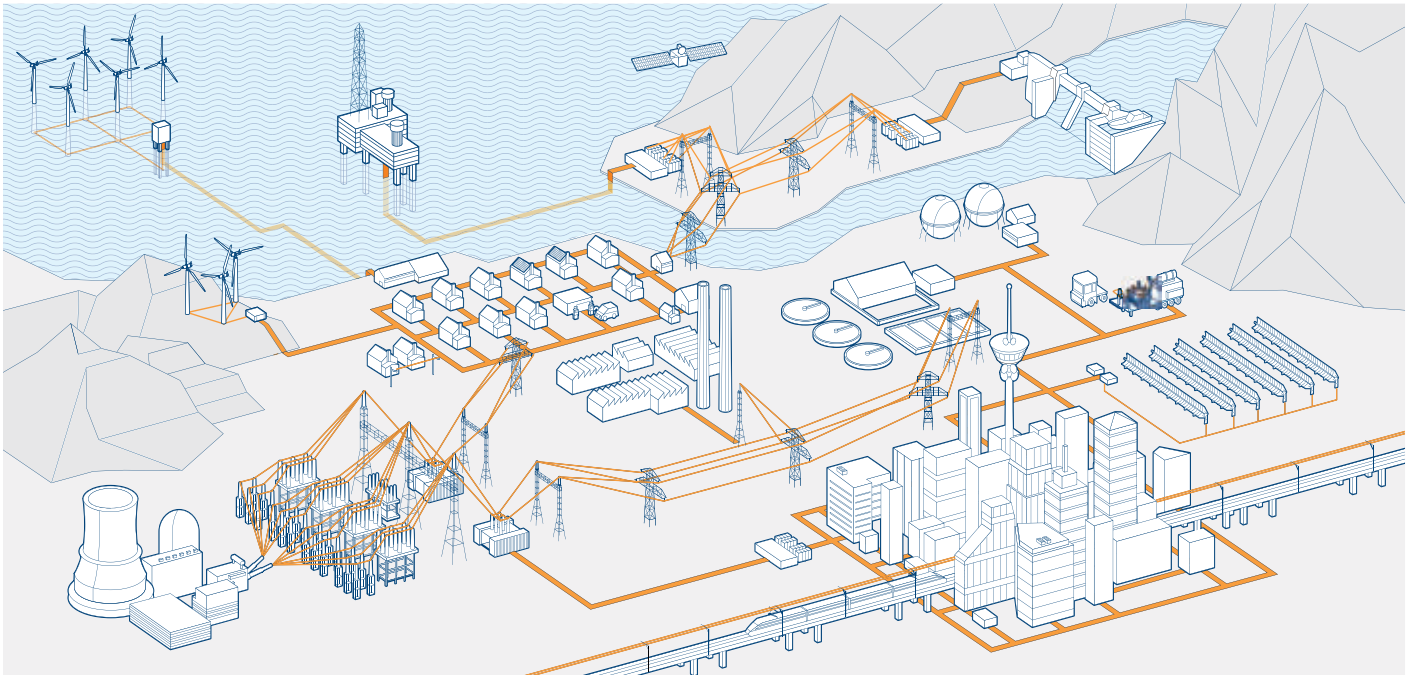


ABB is the leading manufacturer of low, medium and high voltage motors and generators, and mechanical power transmission products. ABB products are backed by a complete portfolio of services. Our in-depth knowledge of virtually every type of industrial process ensures we always specify the best solution for your needs.

Low and high voltage IEC induction motors

- Process performance motors
- General performance motors
- High voltage cast iron motors
- Induction modular motors
- Slip-ring modular motors

Low and medium voltage NEMA motors

- Steel frame open drip proof (ODP) motors
- Weather protected, water cooled,fan ventilated
- Cast iron frame (TEFC)
- Air to air cooled (TEAAC) motors

Motors and generators forexplosive atmospheres

- IEC and NEMA motors andgenerators, for all protection types

Synchronous motors

Synchronous generators

- Synchronous generators fordiesel and gas engines
- Synchronous generators forsteam and gas turbines

Wind power generators

Generators for small hydro

Other motors and generators

- Brake motors
- DC motors and generators
- Gear motors
- Marine motors and generators
- Single phase motors
- Motors for high ambient temperatures
- Synchronous reluctance motors
- Permanent magnet motors and generators
- High speed motors
- Smoke extraction motors
- Wash down motors
- Water cooled motors
- Generator sets
- Roller table motors
- Low inertia motors
- Traction motors and generators

Life cycle services

Mechanical power transmissioncomponents, bearings, gearings

Life cycle services and support
From pre-purchase to migration and upgrades

ABB offers a complete portfolio of services to ensure trouble-free operation and long product lifetimes. These services cover the entire life cycle. Local support is provided through a global network of ABB service centers and certified partners.

Pre-purchase
ABB's front-end sales organization can help customers to quickly and efficiently select, configure and optimize the right motor or generator for their application.

Installation and commissioning
Professional installation and commissioning by ABB's certified engineers represent an investment in availability and reliability over the entire life cycle.

Engineering and consulting
ABB's experts provide energy efficiency and reliability appraisals, advanced condition and performance assessments and technical studies.

Condition monitoring and diagnosis
Unique services collect and analyze data to provide early warnings of problems before failures can occur. All critical areas of the equipment are covered.

Maintenance and field services
ABB offers life cycle management plans and preventive maintenance products. The recommended four-level maintenance program covers the entire product lifetime.

Spare parts
Spare parts and support are offered throughout the life cycle of ABB products. In addition to individual spares, tailored spare part packages are also available.

Repair and refurbishment
Support for all ABB motors and generators and other brands is provided by ABB's global service organization. Specialist teams can also deliver emergency support.

Migration and upgrades
Life cycle audits determine the optimum upgrades and migration paths. Upgrades range from individual components to direct replacement motors and generators.

Training
Product and service training courses take a practical approach. The training ranges from standard courses to specially tailored programs to suit customer requirements.

Specialized support
Specialized support is offered through ABB's global service organization. Local units provide major and minor repairs as well as overhauls and reconditioning.

Service contracts
Service contracts are tailored to the customer's needs. The contracts combine ABB's entire service portfolio and 120 years of experience to deploy the optimal service practices.

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