

## **BN-BE-BX Series**

IE1-IE2-IE3

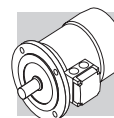


Three-phase asynchronous motors



PRODUCTS &  
SOLUTIONS

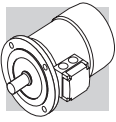




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## Revisions

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## 1 SYMBOLS AND UNITS OF MEASUREMENT

Symbols	Units of Measure	Description	Symbols	Units of Measure	Description
$\cos\varphi$	–	Power factor	$n$	[min <sup>-1</sup> ]	Rated speed
$\eta$	–	Efficiency	$P_B$	[W]	Power drawn by the brake at 20°C
$f_m$	–	Power adjusting factor	$P_n$	[kW]	Motor rated power
$l$	–	Cyclic duration factor	$P_r$	[kW]	Required power
$I_N$	[A]	Rated current	$t_1$	[ms]	Brake response time with one-way rectifier
$I_s$	[A]	Locked rotor current	$t_{1s}$	[ms]	Brake response time with electronic-controlled rectifier
$J_c$	[Kgm <sup>2</sup> ]	Load moment of inertia	$t_2$	[ms]	Brake reaction time with a.c. disconnect
$J_M$	[Kgm <sup>2</sup> ]	Moment of inertia	$t_{2c}$	[ms]	Brake reaction time with a.c. and d.c. disconnect
$K_c$	–	Torque factor	$t_a$	[°C]	Ambient temperature
$K_d$	–	Load factor	$t_f$	[min]	Work time at constant load
$K_J$	–	Inertia factor	$t_r$	[min]	Rest time
$M_A$	[Nm]	Mean breakaway torque	$W$	[J]	Braking work between service interval
$M_B$	[Nm]	Brake torque	$W_{max}$	[J]	Maximum brake work for each braking
$M_N$	[Nm]	Rated torque	$Z$	[1/h]	Permissible starting frequency, loaded
$M_L$	[Nm]	Counter-torque during acceleration	$Z_0$	[1/h]	Max. permissible unloaded starting frequency (I = 50%)
$M_S$	[Nm]	Starting torque			



## 2 INTRODUCTION

### Efficiency classes and test methods

Efficiency classes characterise the efficiency with which an electric motor converts electrical energy into mechanical energy. In Europe, the energy efficiency of low voltage electric motors used to be classified using the voluntary Eff1/Eff2/Eff3 system. Outside Europe, other countries used to apply their own national systems, often very different to the European system. This uncertainty in standards led manufacturers to develop a harmonised international standard, and push for the issue of IEC (International Electrotechnical Commission) standard IEC 60034-30-1 “Efficiency classes of single-speed, three-phase, cage-induction motors (IE code)”.

This new standard:

- defines new classes of efficiency

**IE1** (standard efficiency)

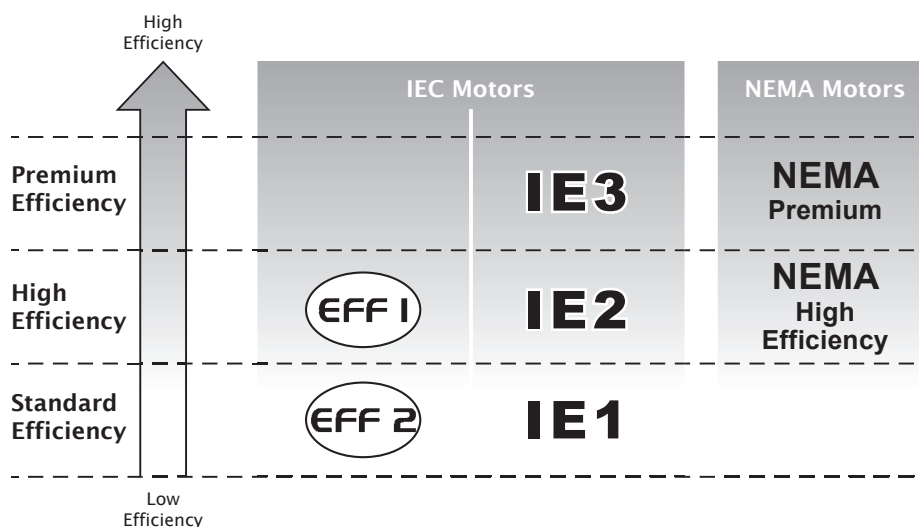
**IE2** (high efficiency)

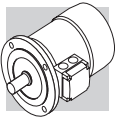
**IE3** (premium efficiency)

- provides a common, international reference system for the classification of electric motors and for national legislation

- introduces a new efficiency measurement method in conformity with standard IEC 60034-1-2:2007

The following table shows the correspondence among the main classes.





### European Commission regulation 640/2009

IEC standard 60034-30-1 establishes technical guidelines for efficiency classification but does not impose any legal requirements for the adoption of any particular efficiency class. These are laid down by European Directives and national laws.

The EC Regulation applying Directive 2005/32/EC was adopted on the 22nd July 2009. This establishes the legal requirements and eco-compatible design criteria for electric motors, and imposes minimum efficiency limits according to the following schedule:

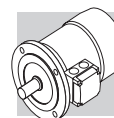
- **16/06/2011:** Electric motors must have a minimum efficiency level equivalent to class **IE2**
- **01/01/2015:** Electric motors with a rated power output between 7.5 kW and 375 kW must have a minimum efficiency level corresponding to **IE3**, or to **IE2** if controlled by an inverter.
- **01/01/2017:** Electric motors with a rated power output between 0.75 kW and 375 kW must have a minimum efficiency level corresponding to **IE3**, or to **IE2** if controlled by an inverter.

### Scope and exclusions

EC Regulation 640/2009 applies to 2, 4, and 6 pole, single-speed, three-phase, 50 Hz or 60 Hz, cage-induction motors with rated outputs of 0.75 kW to 375 kW, and rated voltage up to 1000 V, designed for continuous duty (S1).

The regulation does not apply to:

- brakemotors
- motors designed to function immersed in liquid
- motors that are fully integrated in a product (like a gearbox, pump, fan), so that it is not possible to test the performance of the motor independently of that of the product.
- motors expressly designed to function:
  - at altitudes above 4000 metres a.s.l.;
  - in ambient temperatures above 60 °C;
  - at maximum operating temperatures above 400 °C;
  - in ambient temperatures below -30 °C (all motors) or below 0 °C (water-cooled motors);
  - with incoming liquid coolants at temperatures below 0 °C or above 32 °C;
  - in potentially explosive atmospheres as defined by Directive 2014/34/EU.



### 3 GENERAL CHARACTERISTICS

#### 3.1 Production range

The asynchronous three-phase electric motors BX, BE, BN of BONFIGLIOLI RIDUTTORI's production, are available in basic designs IMB3, IMB5 and IMB14 and derived versions.

Motors are the enclosed type with outer fan and cage-type rotor for use in industrial environments.

Standard versions of BX/BE motors are 230/400V  $\Delta/Y$  (400/690V  $\Delta/Y$  in sizes BX/BE 160 and BX/BE 180), 50 Hz motors, with a tolerance of  $\pm 10\%$ . Standard BN motors are designed to operate from a rated voltage 230/400V  $\Delta/Y$  (400/690V  $\Delta/Y$  for frame sizes BN 160 through BN 200) 50 Hz, with  $\pm 10\%$  tolerance.

#### 3.2 Standards

The motors described in this catalogue are manufactured to the applicable standards shown in the following table.

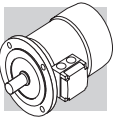
(F01)

Title	CEI	IEC
General requirements for rotating electrical machines	CEI EN 60034-1	IEC 60034-1
Terminal markings and direction of rotation of rotating machines	CEI 2-8	IEC 60034-8
Methods of cooling for electrical machines	CEI EN 60034-6	IEC 60034-6
Dimensions and output ratings for rotating electrical machines	EN 50347	IEC 60072
Classification of degree of protection provided by enclosures for rotating machines	CEI EN 60034-5	IEC 60034-5
Noise limits	CEI EN 60034-9	IEC 60034-9
Classification of type of construction and mounting arrangements	CEI EN 60034-7	IEC 60034-7
Rated voltage for low voltage mains power	CEI 8-6	IEC 60038
Vibration level of electric machines	CEI EN 60034-14	IEC 60034-14
Efficiency classes of single-speed, three-phase, cage-induction motors (IE code)	CEI EN 60034-30-1	IEC 60034-30-1
Standard method for determining losses and efficiency from tests	CEI EN 60034-2-1	IEC 60034-2-1

The motors also comply with foreign standards adapted to IEC 60034-1 as shown here below.

(F02)

<b>DIN VDE 0530</b>	Germany
<b>BS5000 / BS4999</b>	Great Britain
<b>AS 1359</b>	Australia
<b>NBNC 51 - 101</b>	Belgium
<b>NEK - IEC 34</b>	Norway
<b>NF C 51</b>	France
<b>OEVE M 10</b>	Austria
<b>SEV 3009</b>	Switzerland
<b>NEN 3173</b>	Netherlands
<b>SS 426 01 01</b>	Sweden



### 3.3 Directives 2006/95/EC (LVD) and 2004/108/EC (EMC)

BX, BE, BN motors meet the requirements of Directives 2006/95/EC (Low Voltage Directive) and 2004/108/EC (Electromagnetic Compatibility Directive) and their name plates bear the CE mark. As for the EMC Directive, construction is in accordance with standards CEI EN 60034-1, EN 61000-6-2, EN 61000-6-4.

Motors with FD brakes, when fitted with the suitable capacitive filter at rectifier input (option **CF**), meet the emission limits required by Standard EN 61000-6-3:2007 "Electromagnetic compatibility - Generic Emission Standard - Part 6-3 Residential, commercial and light industrial environment". Motors also meet the requirements of standard CEI EN 60204-1 "Electrical equipment of machines". The responsibility for final product safety and compliance with applicable directives rests with the manufacturer or the assembler who incorporate the motors as component parts.

### 3.4 EU Directive 2012/19/EU - Information on disposal



This product should not be mixed with general household waste. Disposal has to be carried out in conformity with EU Directive 2012/19/EU where established, and in accordance to national regulations.

Fulfill disposal in accordance with any other legislation in force throughout the country.

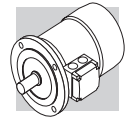
### 3.5 Tolerances

As per the Norms CEI EN 60034-1, applicable the tolerances here below apply to the following quantities.

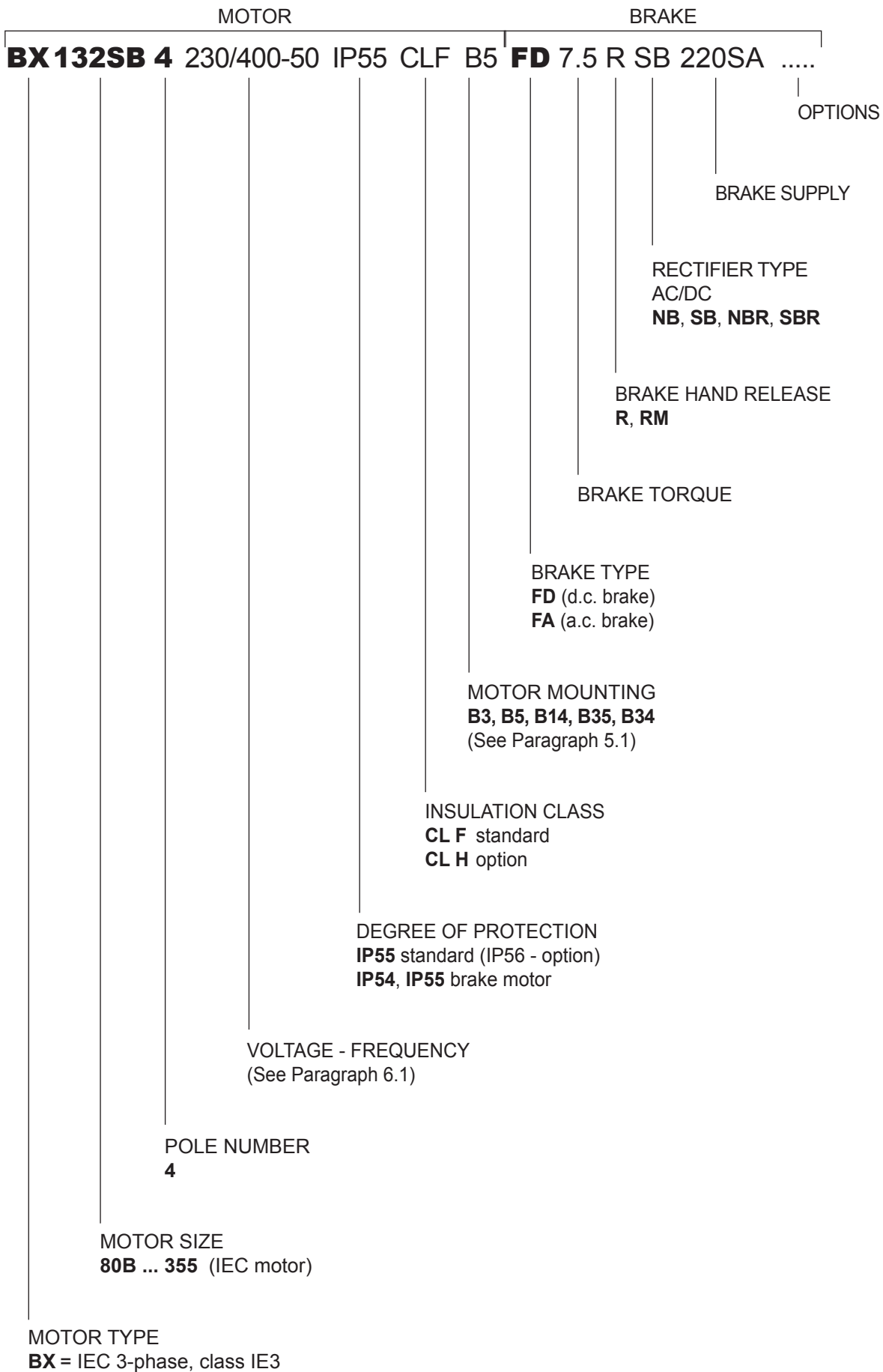
(F03)	-0.15 (1 - $\eta$ ) P $\leq$ 50kW	Efficiency
	-(1 - cos $\phi$ )/6 min 0.02 max 0.07	Power factor
	$\pm$ 20% *	Slip
	+20%	Locked rotor current
	-15% +25%	Locked rotor torque
	-10%	Max. torque

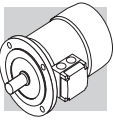
(\*)  $\pm$  30% for motors with Pn < 1 kW



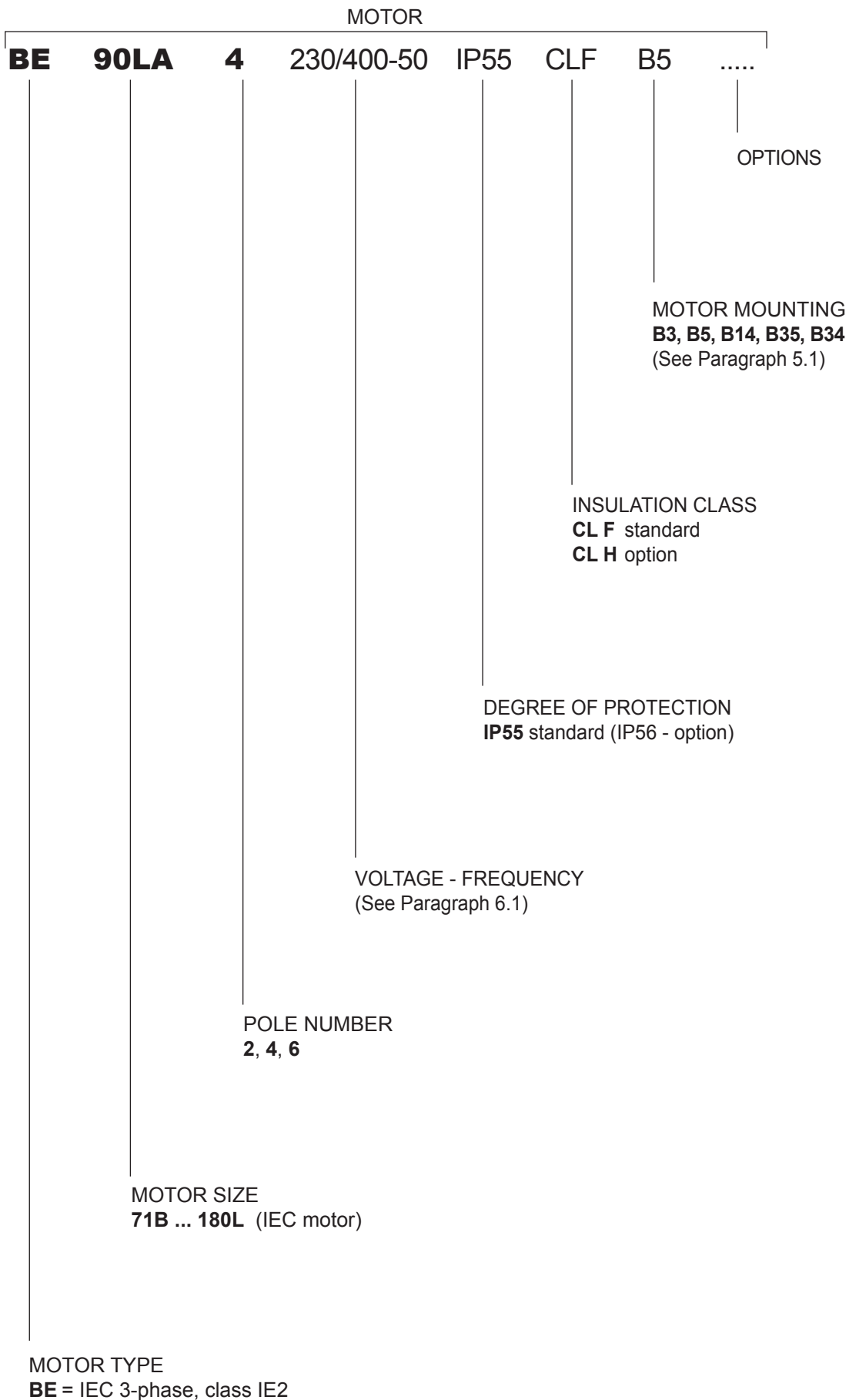


4 PREMIUM EFFICIENCY MOTOR DESIGNATION



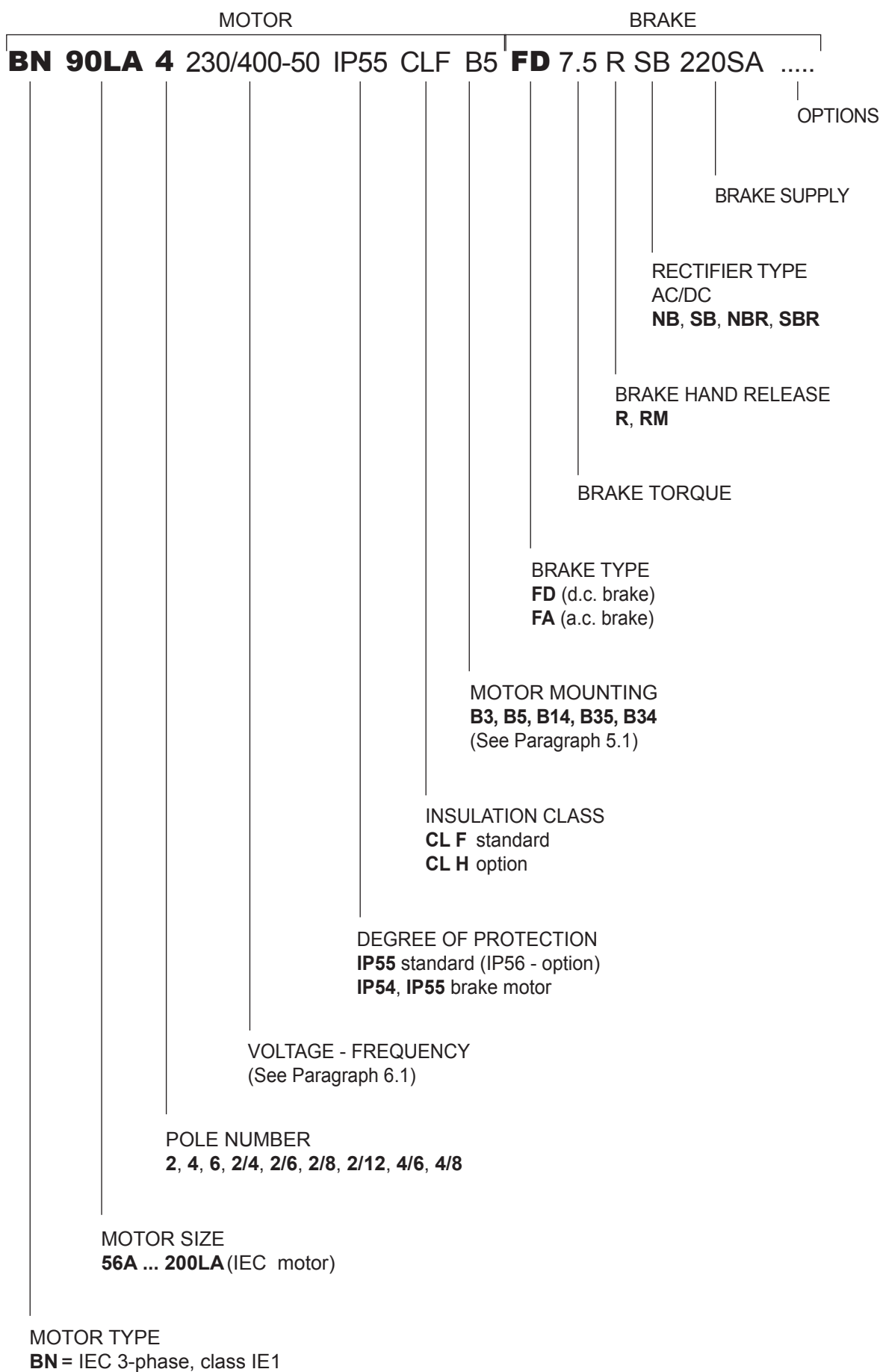


## 4.1 HIGH EFFICIENCY MOTOR DESIGNATION





## 4.2 STANDARD EFFICIENCY MOTOR DESIGNATION





### 4.3 Variants

(F04)	Description	Default	Option	Page	
	Voltage (BN - BE - BX) ≤ 132	230/400/50		17	
	Voltage (BN - BE - BX) ≥ 160	400/690/50			
Protection class	BX - BE - BN	IP 55	IP 56	13	
	BX_FD - BX_FA - BN_FD - BN_FA	IP 54	IP 55		
	BX_FD ≥ 200	IP 55			
	BX...K - BX... K_FDK	IP 55	IP 56		
Insulation class		CLF	CLH	23	
Design version	BX - BE - BN	<b>B5</b> <b>B5 R</b>	<b>B14</b> <b>B14 R</b>	<b>B3</b>	12

Default values.

### 4.4 Options

(F05)	Description	Catalogue numbers								Availability	Page
	Thermal protective devices	<b>D3</b>	<b>K1</b>	<b>E3</b>						BX - BE - BN	40
	50 Hz normalized power	<b>PN</b>								BN	19
	Feedback devices	<b>EN1</b>	<b>EN2</b>	<b>EN3</b>	<b>EN4</b>	<b>EN5</b>	<b>EN6</b>	<b>EN7</b>	<b>EN8*</b>	BX - BE - BN	47
	Anti-condensate heaters	<b>H1</b>	<b>NH1</b>							BX - BE - BN	43
	Tropicalized windings	<b>TP</b>								BX - BE - BN	44
	Double-extended shaft	<b>PS</b>								BX - BE - BN	44
	Rotor balancing grade B	<b>RV</b>								BX - BE - BN	44
	External mechanical protections	<b>RC</b>	<b>TC</b>							BX - BE - BN	47
	Forced ventilation	<b>U1</b>	<b>U2**</b>							BX - BE - BN	46
	Insulated Bearings	<b>IB*</b>								BX	49
	Certification CSA/UL	<b>CUS</b>								BX - BE - BN	20
	Bureau of Indian Standard Certification	<b>BIS</b>								BE	21
	China Compulsory Certification	<b>CCC</b>								BX - BE - BN	22
	China Energy Label	<b>CEL</b>								BX	22
	NBR Certification	<b>NBR</b>								BX	23
	EECA Certification	<b>EECA</b>								BX	23
	Plug connector	<b>CON</b>								BX - BE - BN	40
	Surface protection	<b>C_</b>								BX - BE - BN	49
	Painting	<b>RAL</b>								BX - BE - BN	50
	Certificates	<b>ACM</b>								BX - BE - BN	51
	Inspection certificate	<b>CC</b>								BX - BE - BN	51
	Vertical Mounting	<b>VM*</b>								BX	49
	Type of duty	<b>S2</b>	<b>S3</b>	<b>S9</b>						BN	24

\*Only for BX ≥ 200 and BX ≥ 200K

\*\* Only for motors BN



## 4.5 Brake-related options

(F06)

Description	Catalogue numbers				Availability	Page
Brake torque	Refer to the specific brake type					32  35
Manual release lever	<b>R</b>	<b>RM</b>			BX - BN	37
Release lever orientation	<b>AB</b>	<b>AA</b>	<b>AC</b>	<b>AD</b>	BX - BN	38
DC brake rectifier	<b>NB</b>	<b>NBR</b>	<b>SB</b>	<b>SBR</b>	BX - BN	31
Soft-start flywheel	<b>F1</b>				BN	39
Capacitive filter	<b>CF</b>				BX - BN	39
Brake separate power supply (*)	<b>...SA</b>	<b>...SD</b>			BX - BN	38
Brake functionality check	<b>MSW</b>				BX - BN	43
Additional cable entry for brake motors	<b>IC</b>				BX - BN	43

(\*) Specify voltage.

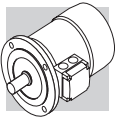
Default values.

## 4.6 Example of identification plate

<b>1</b>	IEC EN 60034	<b>Bonfiglioli</b> Riduttori		<b>4</b>
	3~Mot BE 90LA 4		Cod. 8U09030001	
<b>2</b>	No 1003001 - 6954785	S 1	IM B 5 15,1 kg	<b>5</b>
	kW 1,5	CL F IP 55	Amb 40 °C	
	Hz	V ± 10%	A min <sup>-1</sup> cos φ	
<b>3</b>	50 ○	230/400 Δ/Y	6,1/3,5 1430 ○ 0,74	
	60	265/460 Δ/Y	5,4/3,1 1730 0,73	
	50Hz-IE2	83.5(100%) - 83.0(75%) - 80.0(50%)		<b>6</b>
	60Hz-IE2	84.5(100%) - 83.9(75%) - 80.7(50%)		

- ① BONFIGLIOLI  
Motor type
- ② Serial number
- ③ Rated voltage

- ④ Motor code
- ⑤ Type of duty: S1  
Continuous duty
- ⑥ IE Class, Efficiency at:  
4/4 - 3/4 - 2/4 load

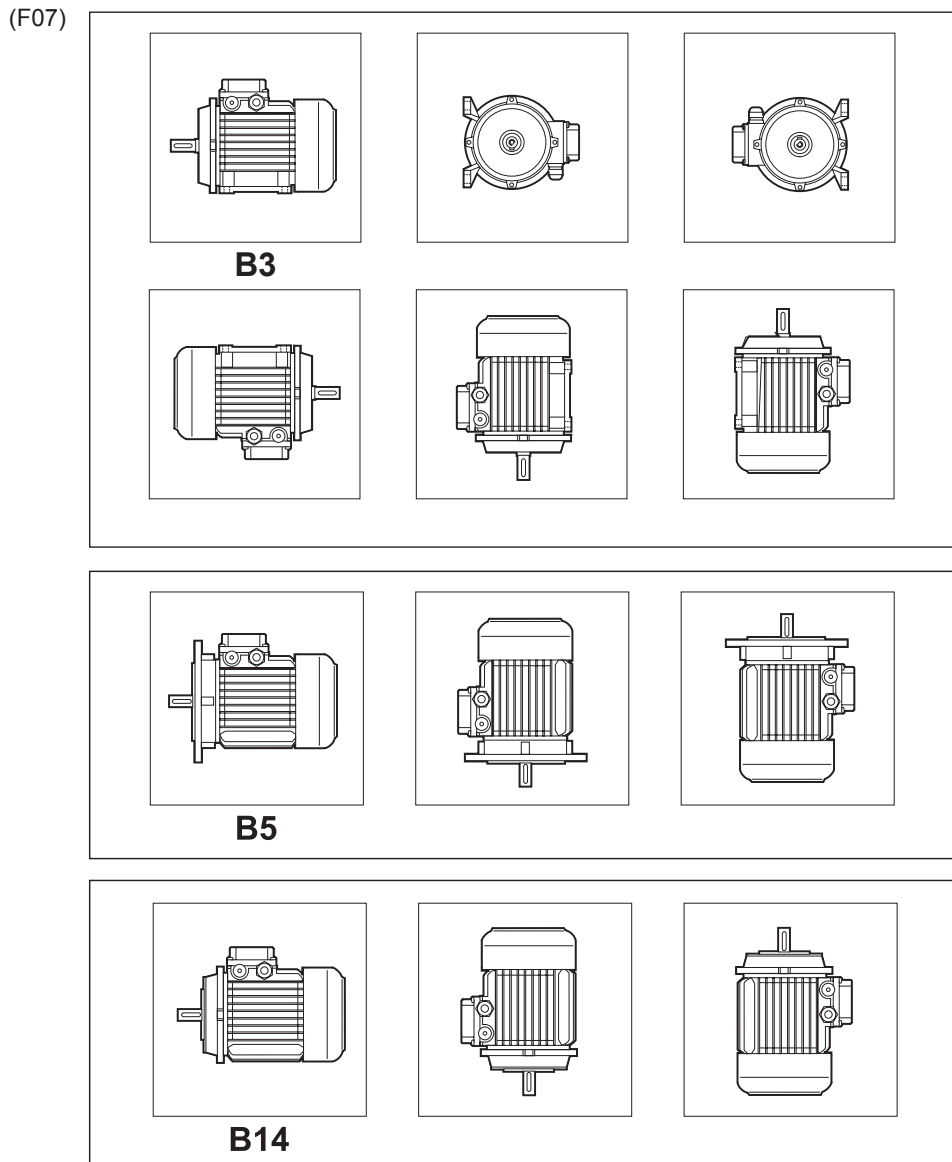


## 5 MECHANICAL FEATURES

### 5.1 Versions

BX, BE and BN motors are available in the design versions as indicated in the table below as per Standards EN 60034-7 (BX/BE), CEI EN 60034-14 (BN).

Motor reporting on nameplate the standard mounting position can be mounted in the position illustrated in the following table:



B3 mounting can be combined with B5 or B14 thus becoming B35 in the first case and B34 in the second one.

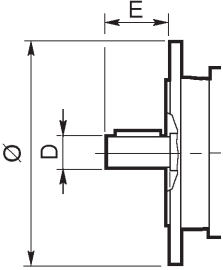
**For Motor BX $\geq$ 200 and BX $\geq$ 200K** it is necessary to select VM options when vertically mounted.

If the motor will be mounted with DE facing downwards, selection of RC option is recommended. This has to be specified during the ordering phase because not present in standard motor version.



Flange output motors are also available with reduced coupling dimensions, as indicated in the table below - executions **B5R**, **B14R**.

(F08)

						
	<b>BN/BE</b> 71	<b>BX/BE/BN</b> 80	<b>BX/BE/BN</b> 90	<b>BX/BE/BN</b> 100	<b>BX/BE/BN</b> 112	<b>BX/BE/BN</b> 132
	DxE - Ø					
<b>B5R</b> <sup>(1)</sup>	11x23 - 140	14x30 - 160	19x40 - 200	24x50 - 200	24x50 - 200	28x60 - 250
<b>B14R</b> <sup>(2)</sup>	11x23 - 90	14x30 - 105	19x40 - 120	24x50 - 140	—	—

(1) flange with through holes

(2) flange with threaded holes





## 5.2 Degree of protection

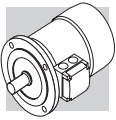
**IP..**

The following chart provides an overview of the degrees of protection available.

In addition to the degree of protection specified when ordering, motors to be installed outdoors require protection against direct sunlight and also – when they are to be installed vertically down – a drip cover to prevent the ingress of water and solid particles (option **RC**).

(F09)

	IP 54	IP 55	IP 56
<b>BX - BE - BN</b>	⊘	standard	 on request
<b>BX ≤ 180_FD</b> <b>BX_FA</b> <b>BN_FD</b> <b>BN_FA</b>	standard	 on request	⊘
<b>BX ≥ 200_FD</b> <b>BX ≥ 200K_FD</b>	⊘	standard	⊘
<b>BX ≥ 280K_FD</b>	⊘	standard	 on request



IP			5			5		
<b>0</b>		Not protected	<b>0</b>		Not protected			
<b>1</b>	$\varnothing 50 \text{ mm}$	Protected against extraneous solid bodies having $\varnothing \geq 50 \text{ mm}$	<b>1</b>		Protected against vertical water drips			
<b>2</b>	$\varnothing 12 \text{ mm}$	Protected against extraneous solid bodies having $\varnothing \geq 12.5 \text{ mm}$	<b>2</b>		Protected against vertical water drips inclined up to $15^\circ$			
<b>3</b>	$\varnothing 2,5 \text{ mm}$	Protected against extraneous solid bodies having $\varnothing \geq 2.5 \text{ mm}$	<b>3</b>		Protected against rain			
<b>4</b>	$\varnothing 1 \text{ mm}$	Protected against extraneous solid bodies having $\varnothing \geq 1.0 \text{ mm}$	<b>4</b>		Protected against water splashes			
<b>5</b>		Protected against dust	<b>5</b>		Protected against jets of water			
<b>6</b>		No dust ingress	<b>6</b>		Protected against powerful jets of water			
			<b>7</b>		Protected against the effects of temporary immersion			
			<b>8</b>		Protected against the effects of continuous immersion			

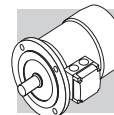
### 5.3 Cooling

The motors are externally ventilated (IC 411 to CEI EN 60034-6) and are equipped with a plastic fan working in both directions.

The motors must be installed allowing sufficient space between fan cowl and the nearest wall to ensure free air intake and allow access for maintenance purposes on motor and brake, if supplied. Independent, forced air ventilation (IC 416) can be supplied on request (option **U1**).

This solution enables to increase the motor duty factor when driven by an inverter and operating at reduced speed.





## 5.4 Direction of rotation

Rotation is possible in both directions. If terminals U1, V1, and W1 are connected to line phases L1, L2 and L3, clockwise rotation (looking from drive end) is obtained. For counterclockwise rotation, switch two phases.

## 5.5 Noise

Noise levels, measured using the method prescribed by ISO 1680 Standards, are within the maximum levels specified by Standards CEI EN 60034-9.


## 5.6 Vibrations and balancing

Rotor shafts are balanced with half key fitted and fall within the vibration class N, as per Standard CEI EN 60034-14.

## 5.7 Terminal box

Terminal board features 6 studs for eyelet terminal connection (9 studs execution for US voltage "Dual Voltage"). A ground terminal is also supplied for earthing of the equipment. Terminals number and type are shown in the following table. For brake power supply, please read par. 8 (brake FD), 9 (brake FA). In motor design IM B3, the terminal box is at the top (side opposite to feet). Brakemotors house the a.c./d.c. rectifier (factory pre-wired) inside the terminal box. Wiring instructions are provided either in the box or in the user manual.

(F10)


	No. of terminals	Terminal threads
<b>BX 80, BX 90</b> <b>BE 80, BE 90</b> <b>BN 56 ... BN 90</b>	6	M4
<b>BX 100 ... BX 132</b> <b>BE 100 ... BE 132</b> <b>BN 100 ... BN 160MR</b>	6	M5
<b>BX 160 - BE 160 ... BE 180M</b> <b>BN 160M ... BN 180M</b>	6	M6
<b>BX 180 - BE 180L</b> <b>BN 180L ... BN 200L</b>	6	M8
<b>BX 200 ... BX 250</b> <b>BX 200K ... BX 250K</b>	6	M10
<b>BX 280 ... BX 355</b> <b>BX 280K ... BX 355K</b>	6	M12
<b>BX 80 ... BX 132</b> <b>BE 80 ... BE 132</b> <b>BN 63 ... BN 160MR</b>	9	M4
<b>BX 160 ... BX 180</b> <b>BE 160 ... BE 180</b> <b>BN 160M ... BN 200</b>	9	M6



## 5.8 Cable entry

The holes used to bring cables to terminal boxes use metric threads in accordance with standard EN 50262 as indicated in the table here after.

(F11)

	Cable gland and dimensions		Maximum cable diameter allowed [mm]
<b>BN 63</b>	2 x M20 x 1.5	1 Hole on each side	13
<b>BN 71 - BE 71</b>	2 x M25 x 1.5		17
<b>BX 80 - BX 90</b> <b>BE 80 - BE 90</b> <b>BN 80 - BN 90</b>	2 x M25 x 1.5		17
<b>BX 100 - BX 112</b> <b>BE 100 - BE 112</b> <b>BN 100 - BN 112</b>	2 x M32 x 1.5	2 Holes on each side	21
	2 x M25 x 1.5		17
<b>BX 132 - BE 132</b> <b>BN 132 ... BN 160MR</b>	4 x M32 x 1.5		
<b>BX 160 - BX 180</b> <b>BE 160 - BE 180</b> <b>BN 160M ... BN 200L</b>	2 x M40 x 1.5	Pivoting, 4 x 90°	28
<b>BX 200 ... BX 355</b> <b>BX 200K ... BX 355K</b>	2 x M63 x 1.5	Pivoting, 4 x 90°	45


## 5.9 Bearings

Life lubricated preloaded radial ball bearings are used, types are shown in the chart here under. Calculated endurance lifetime  $L_{10h}$ , as per ISO 281, in unloaded condition, exceeds 40000 hrs.

**DE** = drive end


**NDE** = non drive end

(F12)

	<b>DE</b>		<b>NDE</b>
	<b>BX, BE, BN</b>	<b>BX, BE, BN</b>	<b>BN_FD BN_FA</b>
<b>BN 56</b>	6201 2Z C3	6201 2Z C3	–
<b>BN 63</b>	6201 2Z C3	6201 2Z C3	6201 2RS C3
<b>BN 71 - BE 71</b>	6202 2Z C3	6202 2Z C3	6202 2RS C3
<b>BX 80 - BE 80</b> <b>BN 80</b>	6204 2Z C3	6204 2Z C3	6204 2RS C3
<b>BX 90 - BE 90</b> <b>BN 90</b>	6205 2Z C3	6205 2Z C3	6305 2RS C3
<b>BX 100 - BE 100</b> <b>BN 100</b>	6206 2Z C3	6206 2Z C3	6206 2RS C3
<b>BX 112 - BE 112</b> <b>BN 112</b>	6306 2Z C3	6306 2Z C3	6306 2RS C3
<b>BX 132 - BE 132</b> <b>BN 132</b>	6308 2Z C3	6308 2Z C3	6308 2RS C3
<b>BN 160MR</b>	6309 2Z C3	6308 2Z C3	6308 2RS C3
<b>BX 160M/L</b> <b>BE 160M/L</b> <b>BN 160M/L</b>	6309 2Z C3	6309 2Z C3	6309 2RS C3
<b>BN 180M</b>	6310 2Z C3	6309 2Z C3	6309 2RS C3
<b>BX 180M/L</b> <b>BE 180M/L</b> <b>BN 180L</b>	6310 2Z C3	6310 2Z C3	6310 2RS C3



(F13)

	DE	NDE	
	BX, BE, BN	BX, BE, BN	BN_FD BN_FA
BN 200L BX 200 BX 200K	6312 2Z C3 6312/C3	6310 2Z C3 6210/C3*	6310 2RS C3
BX 225 BX 225K	6313/C3*	6212/C3*	-
BX 250 BX 250K	6315/C3*	6213/C3*	-
BX 280 BX 280K	6316/C3*	6316/C3*	-
BX 315 BX 315K	6319/C3**	6316/C3**	-
BX 355 BX 355K	6322/C3**	6316/C3**	-

\*Note: Regreasable bearings with M6x1 Greasing Device

\*\*Note: Regreasable bearings with M10x1 Greasing Device

## 6 ELECTRICAL CHARACTERISTICS

### 6.1 Voltage

Single speed motors are provided in standard execution either for nominal voltage 230 / 400 V  $\Delta/Y$ , 50 Hz, or 400 / 690 V  $\Delta/Y$ , 50 Hz, with a voltage tolerance of  $\pm 10\%$ , according to what is specified on the below table.


Note: Motor nominal voltage/frequency also depends on the selection of options related to energy certifications for specific markets. Table below, then, has to be intended only as a guideline, for more details on the available Voltages/Frequencies as a function of the selected certification, please refer to paragraph 6.5 - 6.10.

On all the motors BN, for which the voltage / frequency configuration is not included on the below table, the voltage tolerance is reduced down to  $\pm 5\%$ .

For the operation out of the tolerance boundaries, the temperature may exceed by 10 K the limit provided by the adopted insulation class.

The motors are suitable for operation on distribution European grid with voltage complying with the publication IEC 60038.

(F14)

Efficiency class		$V_{mot}$ $\pm 10\%$ 3 ~	Configuration
IE3	BX 80 ... 132	230 / 400 V - $\Delta/Y$ - 50 Hz	standard
	BX 160, BX 355	400 / 690 V - $\Delta/Y$ - 50 Hz	standard
	BX 200LAK ... BX 355MCK	460 / 800 V $\Delta/Y$ - 60 Hz	standard
IE2	BE 71 ... 132	230 / 400 V - $\Delta/Y$ - 50 Hz	standard
		460 V Y - 60 Hz <sup>1</sup>	standard
		400 / 690 V - $\Delta/Y$ - 50 Hz	At request, carries no extra charge
	BE 160, BE 180	400 / 690 V - $\Delta/Y$ - 50 Hz	standard
		460 V $\Delta$ - 60 Hz <sup>1</sup>	standard
IE1	BN 56 ... BN 132	230 / 400 V - $\Delta/Y$ - 50 Hz	standard
		400 / 690 V - $\Delta/Y$ - 50 Hz	At request, carries no extra charge
	BN 160 ... 200	460 V Y - 60 Hz	standard
		400 / 690 V - $\Delta/Y$ - 50 Hz	standard
		460 V $\Delta$ - 60 Hz	standard


<sup>1</sup> 4 pole motor only



The only rated voltage for motors type at 50 Hz and all double speed motors is 400 V.  
Applicable tolerances as per CEI EN 60034-1.

The table below shows the wiring options available.

(F15)



Number of poles		Winding connection
2	BE 80 ... BE 160 - BN 63 ... BN 200	Δ / Y <sup>(2)</sup>
4	BX 80 ... BX 355 BX 200LAK ... BX 355MCK BE 71 ... BE 180 - BN 56 ... BN 200	
6	BE 90 ... BE 160 - BN 63 ... BN 200	
8	BN 71 ... BN 132	
2/4	BN 63 ... BN 132	Δ / YY (Dahlander)
2/6	BN 71 ... BN 132	Y / Y (Two windings)
2/8	BN 71 ... BN 132	
2/12	BN 80 ... BN 132	
4/6	BN 71 ... BN 132	
4/8	BN 80 ... BN 132	Δ / YY (Dahlander)

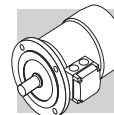
<sup>(2)</sup> Motors with voltage in ratio 2 (ex. 230/460 - 60) will be equipped with a 9 pin terminal box with winding connection either Δ Δ/ Δ or YY / Y (except 6 pole BN 63 Δ / Y)

## 6.2 Frequency

Rated output power BN for 60 Hz operation is shown in the following diagram.

(F16)

	P <sub>n</sub> [kW]					P <sub>n</sub> [kW]			
	2P	4P	6P	8P		2P	4P	6P	8P
BN 56A	–	0.07	–	–	BN 100L	3.5	–	–	–
BN 56B	–	0.10	–	–	BN 100LA	–	2.5	1.8	0.85
BN 63A	0.21	0.14	0.10	–	BN 100LB	4.7	3.5	2.2	1.3
BN 63B	0.30	0.21	0.14	–	BN 112M	4.7	4.7	2.5	1.8
BN 63C	0.45	0.30	–	–	BN 132S	–	6.5	3.5	2.5
BN 71A	0.45	0.30	0.21	0.10	BN 132SA	6.5	–	–	–
BN 71B	0.65	0.45	0.30	0.14	BN 132SB	8.7	–	–	–
BN 71C	0.90	0.65	0.45	–	BN 132M	11	–	–	3.5
BN 80A	0.90	0.65	0.45	0.21	BN 132MA	–	8.7	4.6	–
BN 80B	1.30	0.90	0.65	0.30	BN 132MB	–	11	6.5	–
BN 80C	1.80	1.3	0.90	–	BN 160MR	12.5	12.5	–	–
BN 90S	–	1.3	0.90	0.45	BN 160MB	17.5	–	–	–
BN 90SA	1.8	–	–	–	BN 160M	–	–	8.6	–
BN 90SB	2.2	–	–	–	BN 160L	21.5	17.5	12.6	–
BN 90L	2.5	–	1.3	0.65	BN 180M	24.5	21.5	–	–
BN 90LA	–	1.8	–	–	BN 180L	–	25.3	17.5	–
BN 90LB	–	2.2	–	–	BN 200L	–	34	–	–
					BN 200LA	34	–	22	–



BX and BE motors are available at 60 Hz on a 4 pole configuration only, and their power rating is the same as their 50 Hz counterpart. Double speed BN motors supplied at 60 Hz will have an increase of nominal power, referred to 50 Hz, equal to 15%, whereas double speed BX / BE motors are not available. If a nominal power rating, equal to the normalised nominal power rating at 50 Hz, was requested to be on a nameplate of a motor meant to be voltage supplied at 60 Hz, the PN option shall be specified on the motor designation. Motors normally designed for a 50 Hz frequency may be used on a 60 Hz operating grid, but the related data shall be updated according to the following table.

Motors designated for 50 Hz operation show on the nameplate also the values for 60 Hz operation (excluding motors in CUS execution and brake motors). See the following table.

(F17)

	50 Hz	60 Hz			
	V - 50 Hz	V - 60 Hz	P <sub>n</sub> - 60 Hz	M <sub>n</sub> , M <sub>a</sub> /M <sub>n</sub> - 60 Hz	n [min <sup>-1</sup> ] - 60 Hz
BX/BE	230/400 Δ/Y	265 - 460 Δ Y	1	0.83	1.2
	400/690 Δ/Y	460 Δ			
BN	230/400 Δ/Y	220 - 240 Δ			
		380 - 415 Y			
	400/690 Δ/Y	380 - 415 Δ			
BN	230/400 Δ/Y	265 - 280 Δ			
		440 - 480 Y			
	400/690 Δ/Y	440 - 480 Δ			

### 6.3 Ambient temperature

Catalogue rating values are calculated for 50 Hz operation and for standard ambient conditions (temperature 40 °C; elevation ≤ 1000 m a.s.l.) as per the CEI EN 60034-1 Standards.

The motors can be used within the 40 - 60 °C temperature range with rated power output adjusted by factors given in the table below.

(F18)

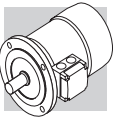
Ambient temperature (°C)	40°	45°	50°	55°	60°
Permitted power as a % of rated power	100%	95%	90%	85%	80%

Should a derating factor higher than 15% apply please consult factory.

### 6.4 50 HZ normalized power

**PN**

With this option, motor name plate includes 50 Hz normalized power information even when motor is designated for operation with 60 Hz power mains. For 60 Hz supplies along with voltages 230/460V and 575V the PN option is applied by default.



## 6.5 Motors certified for USA and Canada

### CUS

CUS option is available in NEMA Design C execution for BN and BE motors, and NEMA Design B for BX motors, with regards to the electrical features. Motors are certified in compliance with CSA (Canadian Standard) C22.2 N° 100 and UL (Underwriters Laboratory) UL 1004-1 standards, as stated on UL file E308649.

BN and BE motors nameplates show the below marks:



BX $\leq$ 180 motors nameplates show the below marks and are certified in compliance with the energy efficiency standards in effect in the USA and Canada, respectively provided by DOE (10 CFR Part 431) and NRCAN (Energy Efficiency Regulations), tested according to CSA C390 standard.



BX 100 motors are available for the USA only and not for Canada, and the related marks reported on the nameplates are the following:



BX $\geq$ 200K motors shows on nameplate the logo reported below and are compliant to energy efficiency regulations of USA and Canada, respectively established from DOE (10 CFR Part 431) and from NRCAN (Energy Efficiency Regulations), and tested in accordance to CSA C390.



#### NOTES:

Starting from **June, 1st 2016**, CUS motors whose efficiency is below IE3 (i.e. “Premium Efficiency”) cannot be any longer sold in the USA and Canada, unless one or more of the following conditions apply:

- Double speed motors;
- Motors plated for a non - continuous duty (<80%);
- Motors intended to be operated through variable frequency drive only (properly equipped with “Inverter Duty Only” label, or similar).

CUS option is selectable in combination to U1 or U2 only for BX $\geq$ 200K.

US power mains voltages and the corresponding rated voltages to be specified for the motor are indicated in the following table:




(F19)

Frequency	Mains voltage	$V_{mot}$
60 Hz	208 V	<b>200 V</b>
	240 V	<b>230 V</b>
	480 V	<b>460 V</b>
	600 V	<b>575 V</b>

BX motor with CUS option are available with the following nominal Voltage/Frequency combinations:

(F20)

	$V_{mot}$
BX $\leq$ 132	265/460 - 60 Hz
BX $\leq$ 180	230/460 - 60 Hz 330/575 - 60 Hz
BX $\geq$ 160 BX $\geq$ 200K	460/800 - 60 Hz

CUS option is applicable onto 50 Hz operating motors as well (motors BX excluded).

Motors with voltage in ratio 2 (e.g. 230/460-60; 220/440-60) feature, as standard, a 9-stud terminal board. For some executions, as well as for 575V-60Hz supply, the nominal rating is coincident with the correspondent 50Hz rating.

For DC brake motors type FD, the rectifier is connected to a single-phase 230 VAC supply voltage in the motor terminal box.

Brake power supply for brake motors is as follows:

## 6.6 Motors certified for India

**BIS**


Low voltage motors  $\geq 0.37$  kW manufactured or imported in India must be certified from Bureau of Indian Standard and provided with a mark certifying motor compliance to IS 12615 standard.

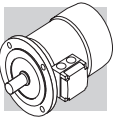
BE motors with power from 0.37 to 3.7 kW included are available with the above mentioned certification and, when BIS option is selected, are provided with the nameplate reporting the following logo:



BE motor with BIS option are available with the following nominal Voltage/Frequency combinations:

(F21)

	$V_{mot}$
71 $\leq$ BE $\leq$ 112	230/400 - 50 Hz



## 6.7 China Compulsory Certification

**CCC**

Electric motors destined for sale in the People's Republic of China have to be certified under the CCC (China Compulsory Certification) system. BN motors of up to 7 Nm in rated torque are available with CCC certification and a special nameplate bearing the mark shown below:



CCC option is not currently available for IE3 motors.

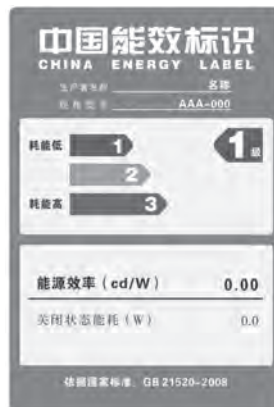
CCC option is not currently available for servo - ventilated motors.

## 6.8 Motor certified for China (China Energy Label)


**CEL**

Low voltage motors  $\geq 0.75\text{kW}$  manufactured or imported in China must be certified and registered by the label office and provided with an energy label certifying they meet the energy efficiency levels as defined in GB18613-2012.

BX motors with power from 30 to 355kW included are available with the above mentioned certification and, when CEL option is selected, are provided with the following sticker applied to the motor:



BX motors with CEL option are available with the following nominal Voltage/Frequency combinations:

(F22)		$V_{mot}$
	BX $\geq 200$	380/660 - 50 Hz





## 6.9 Motors certified for Brazil


### NBR

Brazilian laws regulate the manufacturing and importation of electric motor in the country. These have to be approved by NBR through a declaration of the motor efficiency level at INMETRO. Motor compliant to NBR must report the declared efficiency value and have to be provided with a specific NBR nameplate and the additional mark shown in picture below:  
NBR option is available for BX ... K motors with power from 30 to 355kW included



BX motors with NBR option are available with the following nominal Voltage/Frequency combinations:

(F23)

	$V_{mot}$
BX $\geq$ 200K	440/760 - 60 Hz


## 6.10 Motors certified for Australia

### EECA

Electric motor covered by Australian/New Zealand's energy regulation must be listed in the national database Energyratig. Motor with EECA option are registered in the previously mentioned database and can be sold in Australia and New Zealand.  
EECA option is available for BX ... K motor with power from 30 to 355kW included.

BX motors with EECA option are available with the following nominal Voltage/Frequency combinations:

(F24)

	$V_{mot}$
BX $\geq$ 200K	400/690 - 50 Hz

## 6.11 Insulation class

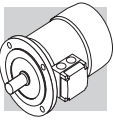
### CL F

Bonfiglioli motors use class **F** insulating materials (enamelled wire, insulators, impregnation resins) as compare to the standard motor.

In standard motors, stator windings over temperature normally stays below the 80 K limit corresponding to class B over temperature.

A careful selection of insulating components makes the motors compatible with tropical climates and normal vibration.

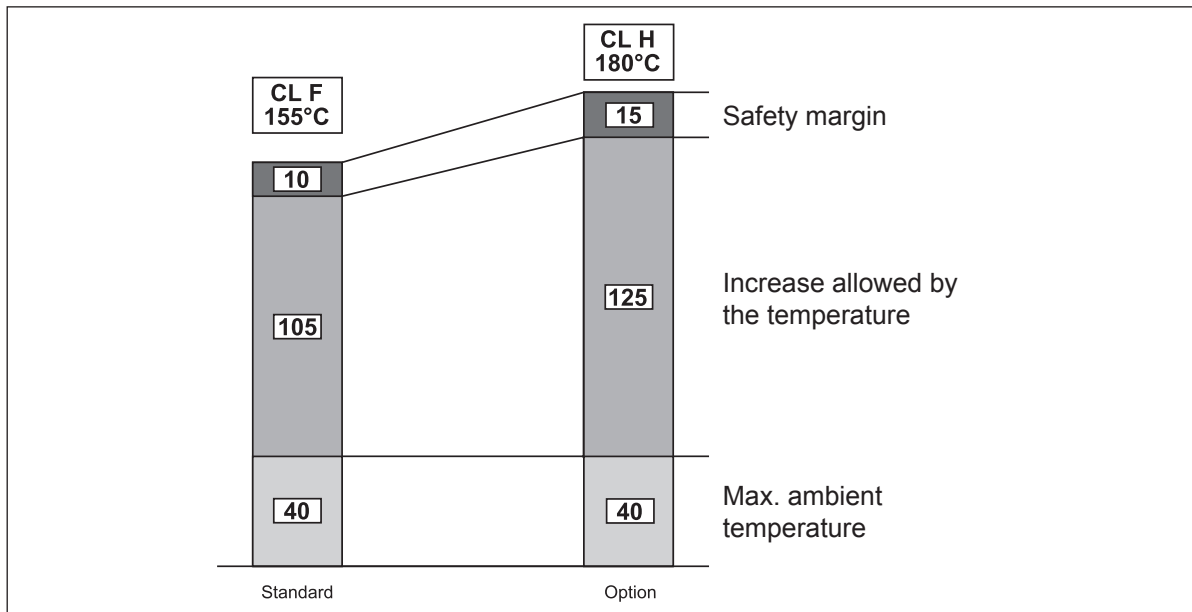
For applications involving the presence of aggressive chemicals or high humidity, contact Bonfiglioli Engineering for assistance with product selection.



# CL H

Motors manufactured in insulation class **H** are available at request.

This option can be selected for motors compliant with CSA and UL standards (CUS option), only for BX≥200 and BX≥200K.



## 6.12 Type of duty

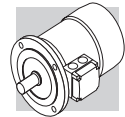
Unless otherwise specified, catalogue motor power refers to continuous duty S1. Any operating conditions other than S1 duty must be identified in accordance with duty cycle definitions laid down in standards CEI EN 60034-1. For duty cycles S2 and S3, the power increase co-efficient reported in the following table may be used. Please note that the table provided below applies to single-speed motors. As an alternative to S1 continuous duty, one of the following values can be specified at the product configuration stage (single speed motors only): S2, S3 or S9. The motor nameplate will be marked with an increased power rating to suit the type of duty, and with specific electrical data and a duty type of S2-30 min, S3-70% or S9 respectively. For further details, contact Bonfiglioli's Technical Service. Please contact Bonfiglioli Engineering for the power increase coefficients applicable to switch-pole motors.

(F25)

	Type of duty						
	S2			S3 *			S4 - S9
	Duration (min)			Intermittence (I)			Contact us
	10	30 (*)	60	25%	40%	70% (*)	
$f_m$	1.35	1.15	1.05	1.25	1.15	1.1	

\* Cycle duration must, in any event, be equal to or less than 10 minutes; if this time is exceeded, please contact our Technical Service.

(\*) Default values from options (tab. F05).



### 6.12.1 Cyclic duration factor:

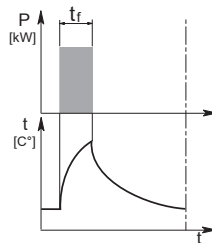
$$I = \frac{t_f}{t_f + t_r} \cdot 100 \quad (01)$$

$t_f$  = work time under constant load

$t_r$  = rest time

### 6.12.2 Limited duration duty S2

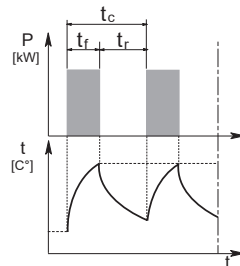
This type of duty is characterized by operation at constant load for a limited time, which is shorter than the time required to reach thermal equilibrium, followed by a rest period of sufficient duration to restore ambient temperature in the motor.



### 6.12.3 Periodical intermittent duty S3:

This type of duty is characterized by a sequence of identical operation cycles, each including a constant load operation period and a rest period.

For this type of duty, the starting current does not significantly influence overtemperature.



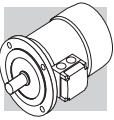
## 6.13 Inverter-controlled motors

The electric motors Bonfiglioli may be used in combination with PWM inverters with rated voltage at transformer input up to 500 V. Standard motors use a phase insulating system with separators, class 2 enamelled wire and class H impregnation resins (1600V peak-to-peak voltage pulse capacity and rise edge  $t_s > 0.1\mu s$  at motor terminals). Typical torque/speed curves referred to S1 duty for motors with base frequency  $f_b = 50$  Hz are reported in the table below.

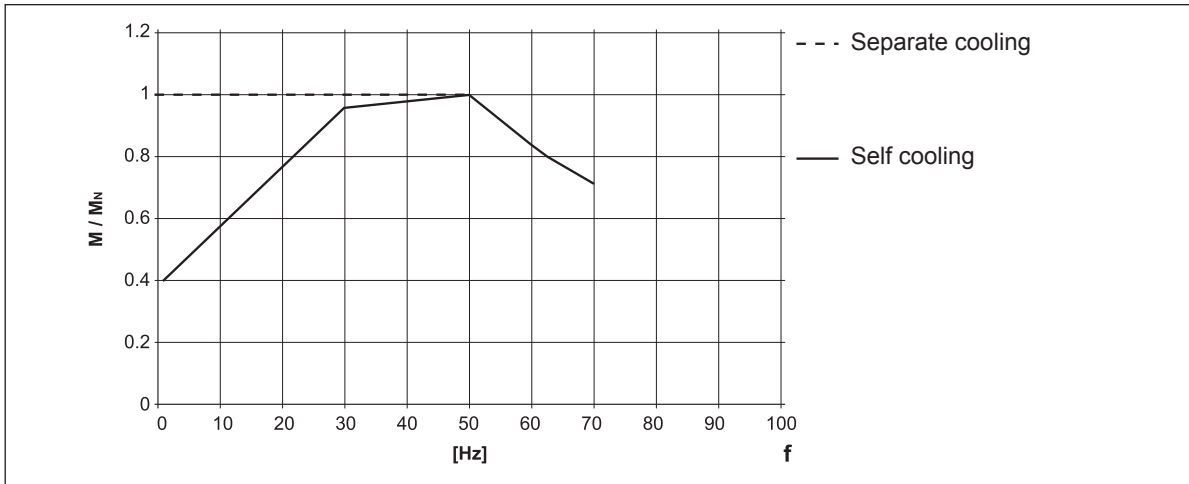
Because ventilation is somewhat impaired in operation at lower frequencies (about 30 Hz), standard motors with incorporated fan (IC411) require adequate torque derating or - alternately - the addition of a separate supply fan cooling.

Above base frequency, upon reaching the maximum output voltage of the inverter, the motor enters a steady-power field of operation, and shaft torque drops with ratio  $(f/f_b)$ .

As motor maximum torque decreases with  $(f/f_b)^2$ , the allowed overloading must be reduced progressively.




(F26)



The following table reports the mechanical speed limit for motors operating above rated frequency:

(F27)

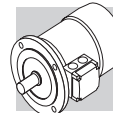
	n [min <sup>-1</sup> ]		
	2p	4p	6p
≤ BE 112 - BN 112	5200	4000	3000
≥ BE 132 - BN 132	4500	4000	3000
BX 80 ... BX 180		4000	
BX 200		4500	
BX 225 ... BX 250		3600	
BX 280		2000	
BX 315 ... BX 355		2200	

Above rated speed, motors generate increased mechanical vibration and fan noise. Class B rotor balancing is highly recommended in these applications. Installing a separate supply fan cooling may also be advisable.

Remote-controlled fan and brake (if fitted) must always be connected direct to mains power supply.

#### 6.14 Permissible starts per hour, Z

The rating charts of brakemotors lend the permitted number of starts  $Z_0$ , based on 50% intermittence and for unloaded operation. The catalogue value represents the maximum number of starts per hour for the motor without exceeding the rated temperature for the insulation class F. To give a practical example for an application characterized by inertia  $J_C$ , drawing power  $P_r$  and requiring mean torque at start-up  $M_L$  the actual number of starts per hour for the motor can be calculated approximately through the following equation:

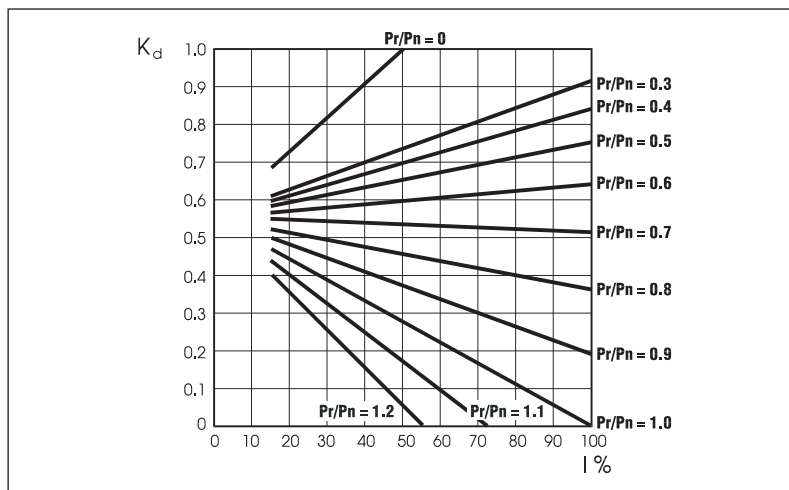


$$Z = \frac{Z_0 \cdot K_c \cdot K_d}{K_J} \quad (02)$$

where:

$K_J = \frac{J_m + J_c}{J_m}$	inertia factor
$K_c = \frac{M_a - M_L}{M_a}$	torque factor
$K_d =$	load factor, see the following table

(F28)



If actual starts per hour is within permitted value ( $Z$ ) it may be worth checking that braking work is compatible with brake (thermal) capacity  $W_{max}$  also given in the tables (F35), (F43) and dependent on the number of switches (c/h).

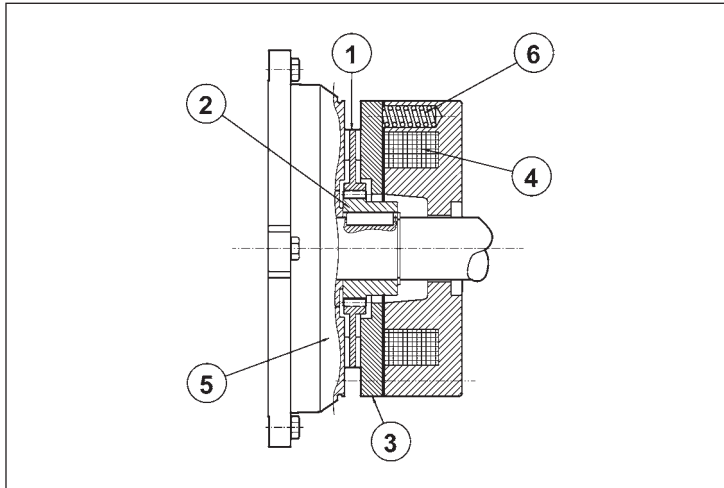


## 7 ASYNCHRONOUS BRAKE MOTORS

### 7.1 Operation

Versions with incorporated brake use spring-applied DC (FD option) or AC (FA options) brakes. All brakes are designed to provide fail-safe operation, meaning that they are applied by spring-action in the event of power failure.

(F29)



Key:

- ① brake disc
- ② disc carrier
- ③ pressure plate
- ④ brake coil
- ⑤ motor rear shield
- ⑥ brake springs

When voltage is interrupted, pressure springs push the armature plate against the brake disc. The disc becomes trapped between the armature plate and motor shield and stops the shaft from rotation. When the coil is energized, a magnetic field strong enough to overcome spring action attracts the armature plate, so that the brake disc – which is integral with the motor shaft – is released.

### 7.2 Most significant features

- High braking torques (normally  $M_b \approx 2 M_n$ ), braking torque adjustment.
- Steel brake disc with double friction lining (low-wear, asbestos-free lining).
- Hexagonal seat on motor shaft fan end (N.D.E.) for manual rotation (not compatible with options PS, RC, TC, U1, U2, EN1, EN2, EN3, EN4, EN5, EN6).
- Manual release lever (options **R** and **RM** for FD; option **R** for FA).
- Corrosion-proof treatment on all brake surfaces.
- Insulation class F.

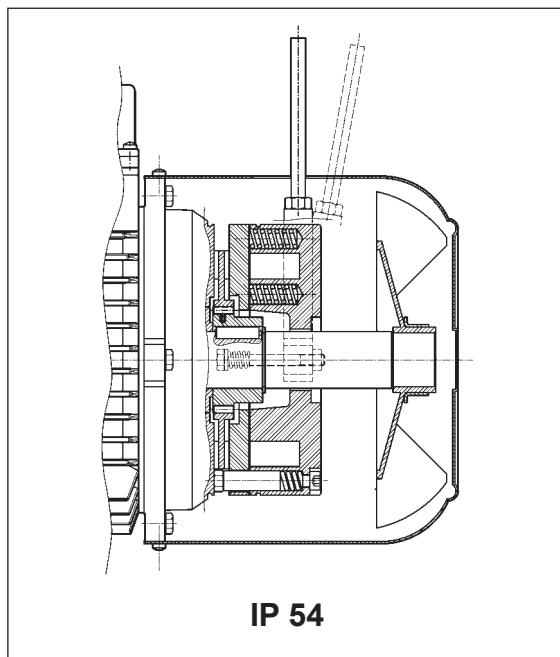


## 8 DC BRAKE MOTORS TYPE BX\_FD - BN\_FD

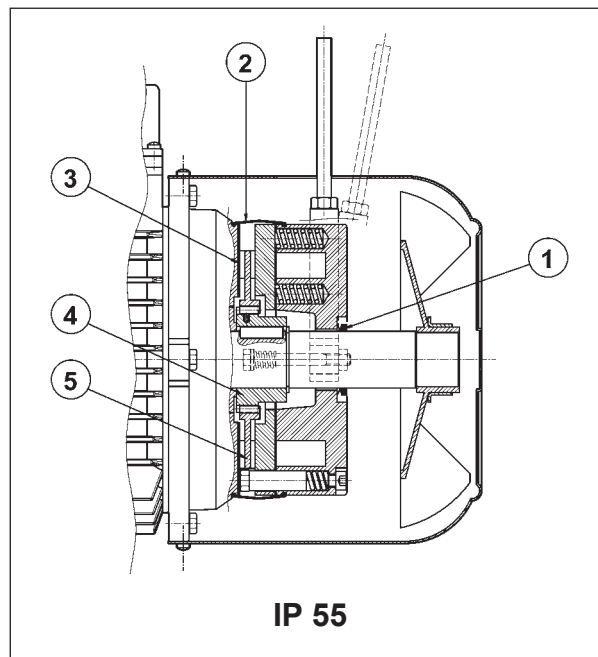
**Frame sizes:** BX 80 ... BX 355M, BX200LAK ... BX355MCK - BN 63 ... BN 200L

BE motors may be available equipped with the FD brake, for further information please contact our Technical Department.

(F30)



(F31)



**Direct current** toroidal-coil electromagnetic brake bolted onto motor shield. Preloading springs provide axial positioning of magnet body.

Brake disc slides axially on steel hub shrunk onto motor shaft with anti-vibration device.

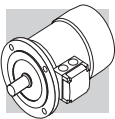
Brake torque factory setting is indicated in the corresponding motor rating charts. Braking torque may be modified by changing the type and/or number of springs.

At request, motors may be equipped with manual release lever with automatic return (**R**) or system for holding brake in the released position (**RM**).

See variant at paragraph "BRAKE RELEASE SYSTEMS" for available release lever locations.

FD brakes ensure excellent dynamic performance with low noise. DC brake operating characteristics may be optimized to meet application requirements by choosing from the various rectifier/power supply and wiring connection options available.

**For applications involving lifting and/or high hourly energy dissipation, contact Bonfiglioli's Technical Service.**



## 8.1 Degree of protection

The standard protection degree for BN and BX $\leq$ 180 is IP54, while for BX $\geq$ 200 and BX BX $\geq$ 200K standard protection degree is IP55.

BN and BX $\leq$ 180 brakemotor with a standard protection degree IP54 can be requested with a protection degree IP55. If **IP55** is selected the following construction variants will be applied:

- ① V-ring at N.D.E. of motor shaft
- ② dust and water-proof rubber boot
- ③ stainless steel ring placed between motor shield and brake disc
- ④ stainless steel hub
- ⑤ stainless steel brake disc

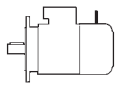
## 8.2 FD brake power supply

A rectifier accommodated inside the terminal box feeds the DC brake coil. Wiring connection across rectifier and brake coil is performed at the factory.

On all single-pole motors, rectifier is connected to the motor terminal board.

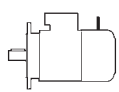

Rectifier standard power supply voltage  $V_B$  is as indicated in the following table, regardless of mains frequency:

(F32)

2, 4, 6 P			1 speed	
	<b>BX_FD - BN_FD</b> $V_{mot}$ $\pm 10\%$ 3 ~	$V_B$ $\pm 10\%$ 1 ~	brake connected to terminal board power supply	separate power supply
<b>BX 80...BX 132</b> <b>BN 63...BN 132</b>	230/400 V – 50 Hz	230 V	standard	specify $V_B$ SA o $V_B$ SD
<b>BX 160...BX 180</b> <b>BN 160...BN 200</b>	400/690 V – 50 Hz	400 V	standard	specify $V_B$ SA o $V_B$ SD

Switch-pole motors feature a separate power supply line for the brake with rectifier input voltage  $V_B$  as indicated in the table below:

(F33)

2/4, 2/6, 2/8, 2/12, 4/6, 4/8 P			2 speed	
	<b>BN_FD</b> $V_{mot}$ $\pm 10\%$ 3 ~	$V_B$ $\pm 10\%$ 1 ~	brake connected to terminal board power supply	separate power supply
<b>BN 63...BN 132</b>	400 V – 50 Hz	230 V		specify $V_B$ SA o $V_B$ SD

The diode half-wave rectifier ( $V_{DC} \approx 0,45 \times V_{AC}$ ) is available in versions **NB**, **SB**, **NBR** e **SBR**, as detailed in the table below:





(F34)

	brake				
		standard	at request		
<b>BN 63</b>	<b>FD 02</b>				
<b>BN 71</b>	<b>FD 03</b> <b>FD 53</b>				
<b>BX 80 - BN 80</b>	<b>FD 04</b>				
<b>BX 90S - BN 90S</b>	<b>FD 14</b>				
<b>BX 90L - BN 90L</b>	<b>FD 05</b>				
<b>BX 100 - BN 100</b>	<b>FD 15</b>				
<b>BX 112 - BN 112</b>	<b>FD 06S</b>				
<b>BX 132 - BN 132 - BN 160MR</b>	<b>FD 56</b> <b>FD 06</b> <b>FD 07</b>				
<b>BX 160 - BN 160L - BN 180M</b>	<b>FD 08</b>				
<b>BX 180 - BN 180L - BN 200M</b>	<b>FD 09</b>				
<b>BX 200LA</b>	<b>FD 20</b>				
<b>BX225SA</b>	<b>FD 25</b>				
<b>BX250M - BX315SA</b>	<b>FD 30</b>				
<b>BX315SB - BX315SC</b>	<b>FD 160</b>				
<b>B315MA - BX355MA</b>	<b>FD 250</b>				
<b>BX355MB - BX355MC</b>	<b>FD 400</b>				
<b>BX200LAK</b>	<b>FD 8</b>				
<b>BX225SAK - BX225SBK</b>	<b>FD 9</b>				
<b>BX250MAK</b>	<b>FD 10</b>				
<b>BX280SAK - BX315SAK</b>	<b>FD 1000</b>				
<b>BX315SBK - BX315SCK</b>	<b>FD 1600</b>				
<b>BX355SAK - BX355MCK</b>	<b>FD 2500</b>				
				⊖	⊖

(\*)  $t_{2c} < t_{2r} < t_2$

Rectifier **SB** with electronic energizing control over-energizes the electromagnet upon power-up to cut brake release response time and then switches to normal half-wave operation once the brake has been released.

Use of the **SB** rectifier is mandatory in the event of:

- high number of operations per hour
- reduced brake release response time
- brake is exposed to extreme thermal stress



Rectifiers **NBR** or **SBR** are available for applications requiring quick brake intervention (braking condition reinstatement) response.

These rectifiers complement the **NB** and **SB** types as their electronic circuit incorporates a static switch that de-energizes the brake quickly in the event voltage is missing. This arrangement ensures short brake release response time with no need for additional external wiring and contacts.

Optimum performance of rectifiers **NBR** and **SBR** is achieved with separate brake power supply.

**Versions available: 230Vac ±10%, 400Vac ± 10%, 50/60 Hz (with power supply); 100Vdc ±10%, 180Vdc ± 10% (with SD option).**

### 8.3 FD brake technical specifications

The table below reports the technical specifications of DC brakes FD.

(F35)

Brake	Brake torque $M_b$ [Nm] springs			Release		Braking		$W_{max}$ per brake operation [ J ]			W [MJ]	P [W]
	6	4	2	$t_1$	$t_{1s}$	$t_2$	$t_{2c}$	10 s/h	100 s/h	1000 s/h		
				[ms]	[ms]	[ms]	[ms]					
FD02	–	3.5	1.75	30	15	80	9	4500	1400	180	15	17
FD03	5	3.5	1.75	50	20	100	12	7000	1900	230	25	24
FD53	7.5	5	2.5	60	30	100	12					
FD04	15	10	5	80	35	140	15	10000	3100	350	30	33
FD14												
FD05	40	26	13	130	65	170	20	18000	4500	500	50	45
FD15	40	26	13	130	65	170	20					
FD06S	60	40	20	–	80	220	25	20000	4800	550	70	55
FD56	–	75	37	–	90	250	20	29000	7400	800	80	65
FD06		100	50		100	250	20					
FD07	150	100	50	–	120	200	25	40000	9300	1000	130	65
FD08*	250	200	170	–	140	350	30	60000	14000	1500	230	100
FD09**	400	300	200	–	200	450	40	70000	15000	1700	230	120
FD20	260			100	170	340	–	80000	1700	1800	–	100
FD25	400			120	195	390	–	120000	19000	2000	–	110
FD30	1000			180	210	420	–	200000	28000	2900	–	200
FD160	1600			360	245	490	–	240000	36000	2600	–	336
FD250	2500			420	343	685	–	280000	47000	3700	–	400
FD400	4000			530	455	910	–	325000	51000	4500	–	420
FD8	400			176	78	236	–	65000	7000	650	–	85
FD9	600			324	138	176	–	120000	12000	1200	–	100
FD10	800			480	194	172	–	100000	16000	2000	–	150
FD1000	1000			252	–	375	–	220000	27000	2700	–	300
FD1600	1600			366	–	498	–	230000	35000	3500	–	340
FD2500	2500			660	–	880	–	590000	61000	6100	–	530

\* brake torque values obtained with 9, 7 and 6 springs, respectively

\*\* brake torque values obtained with 12, 9 and 6 springs, respectively

$t_1$  = brake release time with half-wave rectifier

$t_{1s}$  = brake release time with over-energizing rectifier

$t_2$  = brake engagement time with AC line interruption and separate power supply

$t_{2c}$  = brake engagement time with AC and DC line interruption – Values for  $t_1$ ,  $t_{1s}$ ,  $t_2$ ,  $t_{2c}$  indicated in the tab. (F30) are referred to brake set at maximum torque, medium air gap and rated voltage

$W_{max}$  = max energy per brake operation

W = braking energy between two successive air gap adjustments

$P_b$  = brake power absorption at 20 °C

$M_b$  = static braking torque (±15%)

s/h = starts per hour



The brake pad wear depends on the operating/ambient conditions (temperature, humidity, angular speed, specific pressure); Therefore the declared wear rate must be considered as indicative.

#### 8.4 FD brake connections

On standard single-pole motors, the rectifier is connected to the motor terminal board at the factory. For switch-pole motors and where a separate brake power supply is required, connection to rectifier must comply with brake voltage  $V_B$  stated in motor name plate.

**Because the load is of the inductive type, brake control and DC line interruption must use contacts from the usage class AC-3 to IEC 60947-4-1.**

Table (F36) – Brake power supply from motor terminals and AC line interruption

Delayed stop time  $t_2$  and function of motor time constants.

Mandatory when soft-start/stops are required.

Table (F37) – Brake coil with separate power supply and AC line interruption

Normal stop time independent of motor.

Achieved stop times  $t_2$  are indicated in the table (F35).

Table (F38) – Brake coil power supply from motor terminals and AC/DC line interruption.

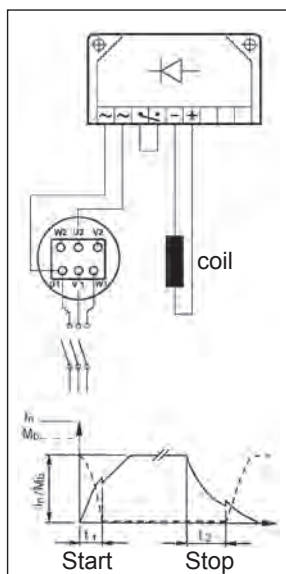
Quick stop with operation times  $t_{2c}$  as per table (F35).

Table (F39) – Brake coil with separate power supply and AC/DC line interruption.

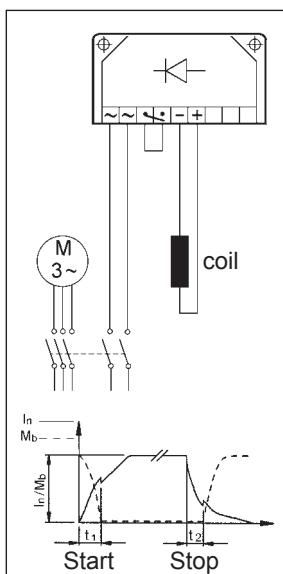
Stop time decreases by values  $t_{2c}$  indicated in the table (F35).

The brake may be voltage supplied directly from the motor terminal box (from tab. F36 to tab. F35) only if the nominal voltage of the brake is the same as the smaller voltage of the motor.

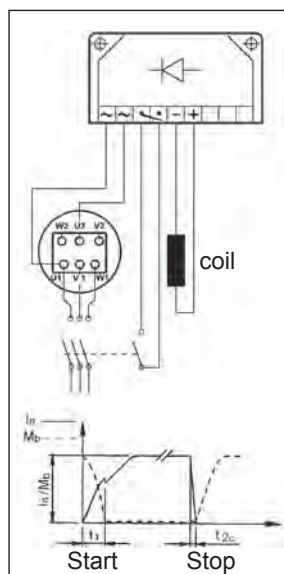
(F36)



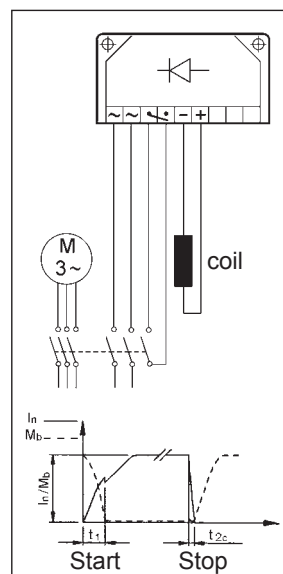
(F37)



(F38)



(F39)

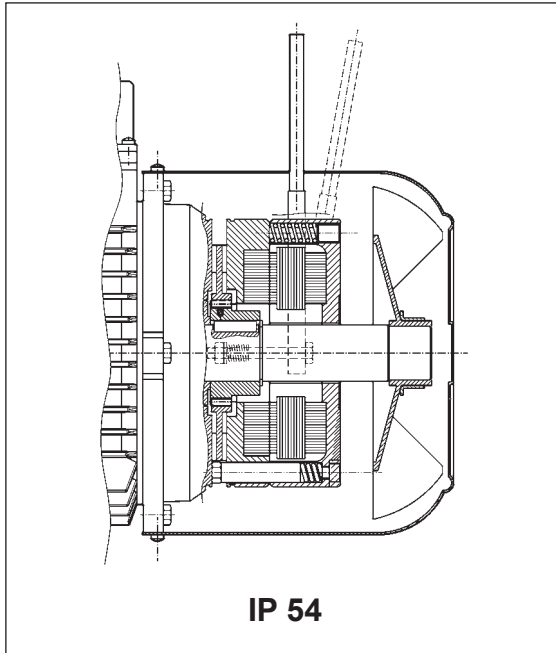




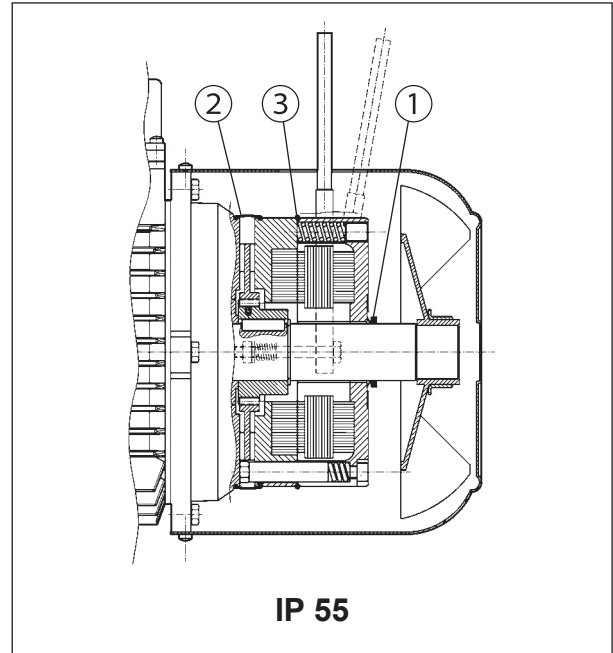
## 9 AC BRAKE MOTORS TYPE BX\_FA - BN\_FA

Frame sizes: BX 80 ... BX 160L - BN 63 ... BN 180M

(F40)



(F41)



Electromagnetic brake operates from three-phase alternated current power supply and is bolted onto conveyor shield. Preloading springs provide axial positioning of magnet body.

Steel brake disc slides axially on steel hub shrunk onto motor shaft with anti-vibration device.

Brake torque factory setting is indicated in the corresponding motor rating charts.

Spring preloading screws provide stepless braking torque adjustment.

Torque adjustment range is  $30\% M_{bMAX} < M_b < M_{bMAX}$  (where  $M_{bMAX}$  is maximum braking torque as shown in tab. (F43).

Thanks to their high dynamic characteristics, FA brakes are ideal for heavy-duty applications as well as applications requiring frequent stop/starts and very fast response time.

Motors may be equipped with manual release lever with automatic return (R) at request. See variant at paragraph "BRAKE RELEASE SYSTEMS" for available release lever locations.

**For applications involving lifting and/or high hourly energy dissipation, contact Bonfiglioli's Technical Service.**

### 9.1 Degree of protection

Standard protection class is IP54.

Brake motor FA is also available in protection class **IP55**, which mandates the following variants:

- ① V-ring at N.D.E. of motor shaft
- ② dust and water-proof rubber boot
- ③ O-ring



## 9.2 FA brake power supply

In single speed motors, power supply is brought to the brake coil direct from the motor terminal box. As a result, brake voltage and motor voltage are the same. In this case, brake voltage indication may be omitted in the designation.

Switch-pole motors and motors with separate brake power supply feature an auxiliary terminal board with 6 terminals for connection to brake line. In both cases, brake voltage indication in the designation is mandatory. The following table reports standard AC brake power supply ratings for single- and switch-pole motors:

(F42)

<b>single-pole motor</b>	<b>BX 80...BX 132 BN 63...BN 132</b>	<b>BX 160 BN 160...BN 180</b>
	230Δ / 400Y V ±10% – 50 Hz	400Δ/ 690Y V ±10% – 50 Hz
	265Δ / 460Y ±10% - 60 Hz	460Y – 60 Hz
<b>switch-pole motors</b> (separate power supply line)	<b>BN 63...BN 132</b>	
	230Δ / 400Y V ±10% – 50 Hz	
	460Y - 60 Hz	

Unless otherwise specified, standard brake power supply is 230Δ /400Y V - 50 Hz.

Special voltages in the 24...690 V, 50-60 Hz range are available at request.

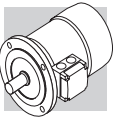
## 9.3 Technical specifications of FA brakes

(F43)

Brake	Brake torque $M_b$ [Nm]	Release $t_1$ [ms]	Braking $t_2$ [ms]	$W_{max}$ [ J ]			W [MJ]	P [VA]
				10 s/h	100 s/h	1000 s/h		
FA 02	3.5	4	20	4500	1400	180	15	60
FA 03	7.5	4	40	7000	1900	230	25	80
FA 04	15	6	60	10000	3100	350	30	110
FA 14								
FA 05	40	8	90	18000	4500	500	50	250
FA 15								
FA 06S	60	16	120	20000	4800	550	70	470
FA 06	75	16	140	29000	7400	800	80	550
FA 07	150	16	180	40000	9300	1000	130	600
FA 08	250	20	200	60000	14000	1500	230	1200

- $M_b$  = max static braking torque (±15%)  
 $t_1$  = brake release time  
 $t_2$  = brake engagement time  
 $W_{max}$  = max energy per brake operation (brake thermal capacity)  
W = braking energy between two successive air gap adjustments  
 $P_b$  = power drawn by brake at 20° (50 Hz)  
s/h = starts per hour

NOTE  
Values  $t_1$  and  $t_2$  in the table refer to a brake set at rated torque, medium air gap and rated voltage.

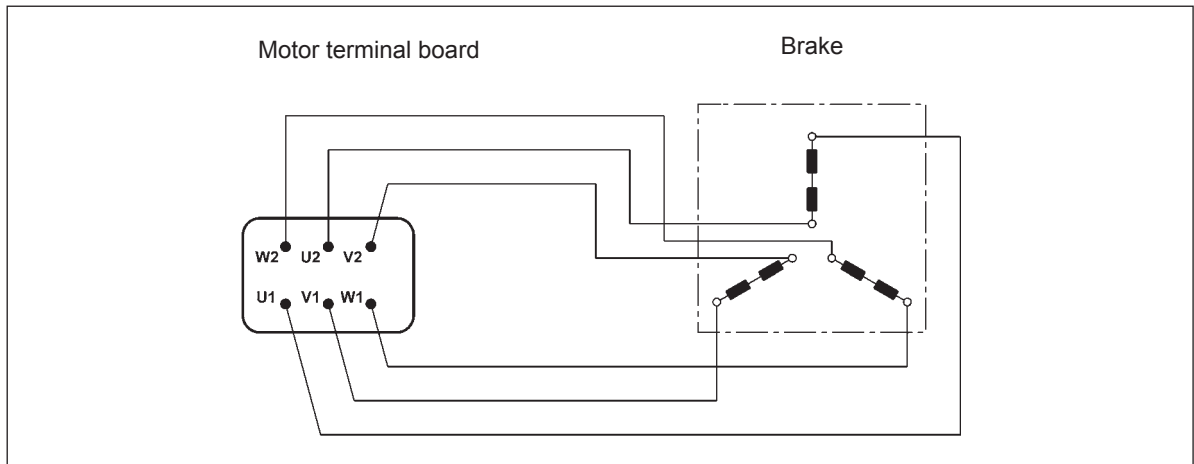


The brake pad wear depends on the operating/ambient conditions (temperature, humidity, angular speed, specific pressure); Therefore the declared wear rate must be considered as indicative.

#### 9.4 FA brake connections

The diagram below shows the wiring when brake is connected directly to same power supply of the motor:

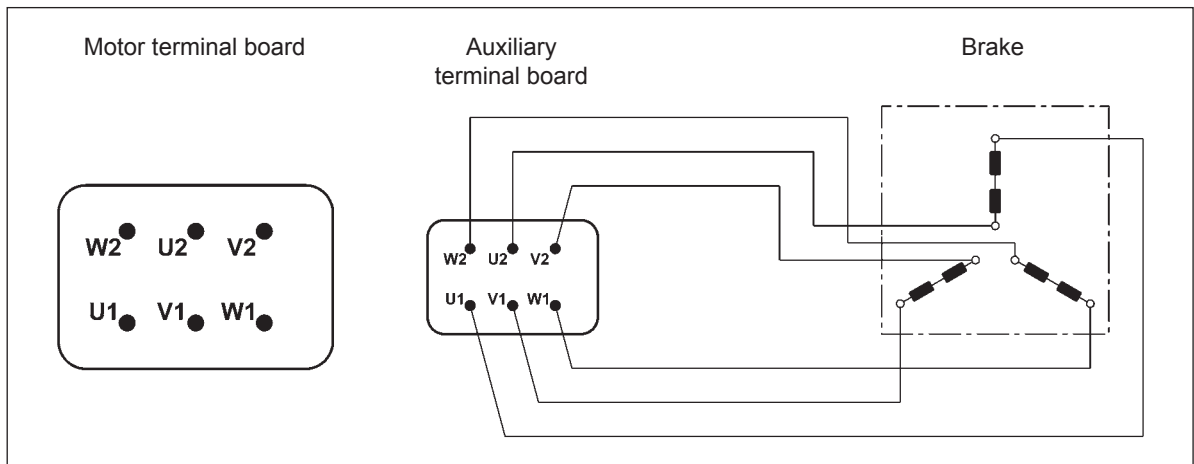
(F44)



Switch-pole motors and, at request, single-pole motors with separate power supply are equipped with an auxiliary terminal board with 6 terminals for brake connection.

In this version, motors feature a larger terminal box. See diagram below:

(F45)



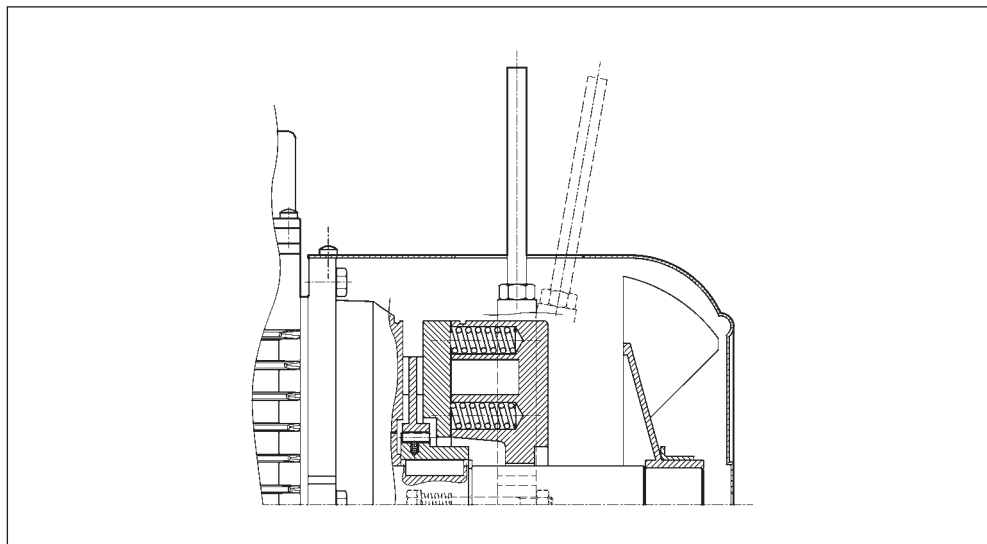


## 10 BRAKE RELEASE SYSTEMS

Spring-applied brakes type FD and FA may be equipped with optional manual release devices. These are typically used for manually releasing the brake before servicing any machine or plant parts operated by the motor.

**R**

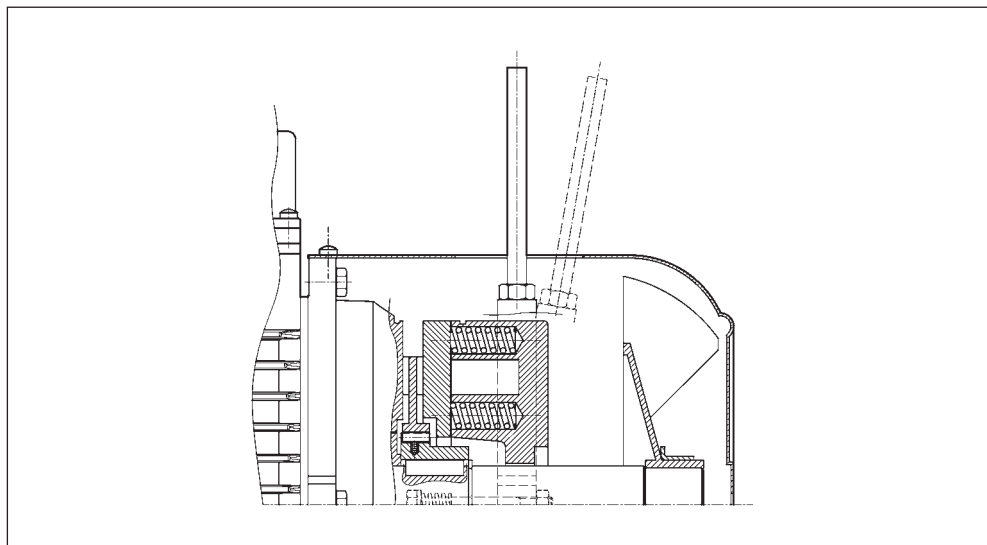
(F46)



A return spring brings the release lever back in the original position.

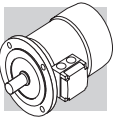
**RM**

(F47)



On brake motors type FD, if the option RM is specified, the release device may be locked in the "release" position by tightening the lever until its end becomes engaged with a brake housing projection.

The availability for the various disengagement devices is charted here below:



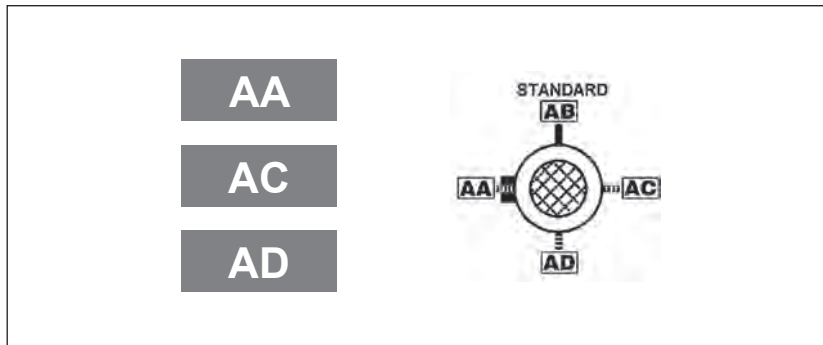
(F48)

	R	RM
BX_FD BN_FD	BX 80...BX 180 BX 200K...BX 315K BN 63...BN 200	BX 80...BX 132 BN 63 ... BN 132 FD07
BX_FA	BX 80...BX 160	-
BN_FA	BN 63...BN 180M	

### 10.1 Release lever orientation

Unless otherwise specified, the release lever is located 90° away from the terminal box – identified by letters [AB] in the diagram below – in a clockwise direction on both options R and RM. Alternative lever positions [AA], [AC] and [AD] are also possible when the corresponding option is specified:

(F49)



Note: for BX≥200 and BX≥200K AC is not available.

### 10.2 Separate brake supply

**...SA**

The brake coil is directly fed through an independent line, separately from the motor. In this case the rated voltage for the coil must be specified, e.g.230SA. The option is applicable to all motors with brake type FD and FA.

Note: for BX≥200 and BX≥200K it is not possible to directly feed the brake from the motor terminal box, it is then necessary to select option SA or SD.

**...SD**

The brake coil is directly fed with DC current and the rectifier is out of the scope for supply. The rated voltage for the coil must be specified, e.g. 24SD.

Note: for BX≥200 and BX≥200K it is not possible to directly feed the brake from the motor terminal box, it is then necessary to select option SA or SD.






## 11 OPTIONS

### 11.1 Soft-start / stop

#### F1

An optional flywheel - option F1 - is available for applications requiring soft starting or stopping. The flywheel's added inertia uses up kinetic energy during starting and returns it back during braking, thus catering for more progressive and gradual shock loads. The optional flywheel is available for brake motors type BN\_FD with specific characteristics as detailed in the table below:

(F50)

Main data for flywheel of motore type: BN_FD		
	Fly-wheel weight [Kg]	Fly-wheel inertia [Kgm <sup>2</sup> ]
<b>BN 63</b>	0.69	0.00063
<b>BN 71</b>	1.13	0.00135
<b>BN 80</b>	1.67	0.00270
<b>BN 90S - BN 90L</b>	2.51	0.00530
<b>BN 100</b>	3.48	0.00840
<b>BN 112</b>	4.82	0.01483
<b>BN 132S - BN 132M</b>	6.19	0.02580

### 11.2 Capacitive filter

#### CF

An optional capacitive filter is available for brake motors type FD only. When the suitable capacitive filter is installed upstream of the rectifier (option CF), motors comply with the emission limits required by standard EN61000-6-3:2007 "Electromagnetic Compatibility – Generic Emission Standard – Part 6-3: Residential, commercial and light industrial environment".

BX $\geq$ 200LA and BX $\geq$ 200LAK motors comply with the emission limits required by standard EN 61000-6-3:2007 "Electromagnetic Compatibility - Generic Emission Standard - Part 6-3: residential, commercial and light industrial environment."

### 11.3 Thermal protective devices

In addition to the standard protection provided by the magneto-thermal device, motors can be supplied with built-in thermal probes to protect the winding against overheating caused, by insufficient ventilation or by an intermittent duty.

This additional protection should always be specified for servo-ventilated motors (IC416).



## 11.4 Thermistors

### E3

These are semi-conductors having rapid resistance variation when they are close to the rated switch off temperature (150 °C). Variations of the  $R = f(T)$  characteristic are specified under DIN 44081, IEC 34-11 Standards. Positive temperature coefficient thermistors are normally used (also known as PTC “cold conductor resistors”).

Thermistors cannot control relays directly and must be connected to a suitable disconnect device. Thus protected, three PTCs connected in series are installed in the winding, the terminals of which are located on the auxiliary terminal-board.

### K1

The design characteristics of this sub-group of PTC thermistors allow them to be used as positive temperature coefficient sensors with variable resistance.

Functioning temperature range: 0°C ... +260°C.

Thermistors cannot control relays directly and must be connected to a suitable disconnect device. Terminals (polarised) for 1 x KTY 84-130 are provided on an auxiliary terminal strip.

## 11.5 Bimetallic thermostates

### D3

These types of protective devices house a bimetal disk. When the rated switch off temperature (150 °C) is reached, the disk switches the contacts from their initial rest position.

As temperature falls, the disk and the contacts automatically return to rest position.

Three bimetallic thermostates connected in series are usually employed, with normally closed contacts. The terminals are located on an auxiliary terminal-board.

## 11.6 Plug connector

### CON

Three types of connectors (CON 1, CON 2, CON 3) are provided; they can be mounted in two different positions: right side of terminal box cover (C1D, C2D, C3D); left side of terminal box cover (C1S, C2S, C3S).

The option CON is applicable to single speed BN motors (2, 4, 6, 8 poles), and BX / BE motors on the sizes specified on the following table. All double speed motors are excluded.

The connectors CON 1 / CON 2 are available for BX, BE and BN motors without brake and for brakemotors equipped with DC brake type FD, for the motor sizes listed below.

**The male connector (with pins) is mounted on the motor, the female connector is not provided.**

**With CON option, the winding connection is always Y.**

With option U1 “forced ventilation”, the fan unit supply is available inside the separate terminal box fixed to fan cover.

With options EN1...EN6, the encoder connection is made by a cable not connected to the motor plug connector.

The CON option is not applicable to brakemotors equipped with AC brake type FA.

The CON option is not available when at least one of the next options are selected: the U2, CUS, IC.



## Specifications

(F51)

Option	<b>CON 1</b>
Motor size	<b>BX 80 ... BX 112 / BE 71 ... BE 112 / BN 63 ... BN 112</b>
Connector view	
Type of connector	Harting Han 10ES
Housing	Han EMC 10B with 2 levers
Numbers of pins - nominal current	10 x 16A
Voltage	500 Vac
Contact connection	Screw terminals

(F52)

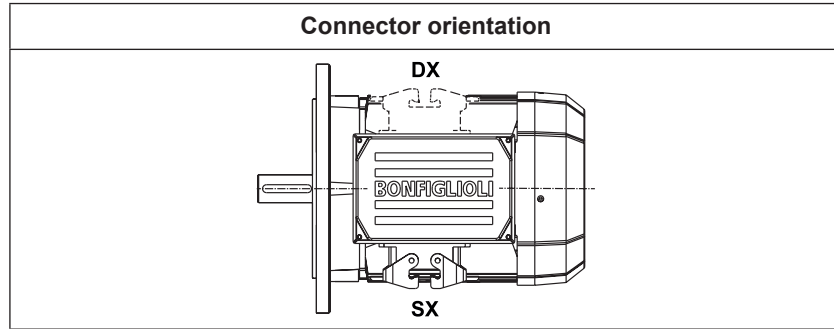
Option	<b>CON 2</b>
Motor size	<b>BX 80 ... BX 132 / BE 71 ... BE 132M / BN 63 ... BN 160MR</b>
Connector view	
Type of connector	Harting Han Modular
Housing	Han EMC 10B with 2 levers
Module type	Module C + Module E + Module E
Numbers of pins - nominal current	3 x 36A / 6 x 16A
Voltage	500 Vac
Contact connection	Crimping contacts

(F53)

Option	<b>CON 3</b>
Motor size	<b>BX 80 ... BX 132M - BN 63 ... BN 160MR</b>
Connector view	
Type of connector	Harting Han Modular
Housing	Han EMC 10B with 2 levers
Module type	Module C + Module E + Module E
Numbers of pins - nominal current	3 x 36A / 6 + 6 x 16A
Voltage	500 Vac
Contact connection	Crimping contacts




(F54)




(F55)

**Motors without brake dimensions**

	AD (mm)	AF (mm)	AH (mm)	LL (mm)	V (mm)
<b>BN 63</b>	136	110	45	165	4.5
<b>BN 71 - BE 71</b>	149	110	45	165	15.5
<b>BX 80 - BE 80 - BN 80</b>	160	110	45	165	16.5
<b>BX 90 - BE 90 - BN 90</b>	162	110	45	165	31.5
<b>BX 100 - BE 100 - BN 100</b>	171	110	45	165	37.5
<b>BX 112 - BE 112 - BN 112</b>	186	110	45	165	39
<b>BX 132 - BE 132 - BN 132</b>	210	140	45	188	45.5
<b>BN 160MR</b>	210	140	45	188	161

(F56)

**Motors with FD brake dimensions**

	AD (mm)	AF (mm)	AH (mm)	LL (mm)	V (mm)
<b>BN 63</b>	136	110	45	165	4.5
<b>BN 71</b>	149	110	45	165	1.5
<b>BX 80 - BN 80</b>	160	110	45	165	18.5
<b>BX 90 - BN 90</b>	162	110	45	165	39.5
<b>BX 100 - BN 100</b>	171	110	45	165	63.5
<b>BX 112 - BN 112</b>	186	110	45	165	75
<b>BX 132 - BN 132</b>	210	140	45	188	122
<b>BN 160MR</b>	210	140	45	188	161



## 11.7 Control of brake operation

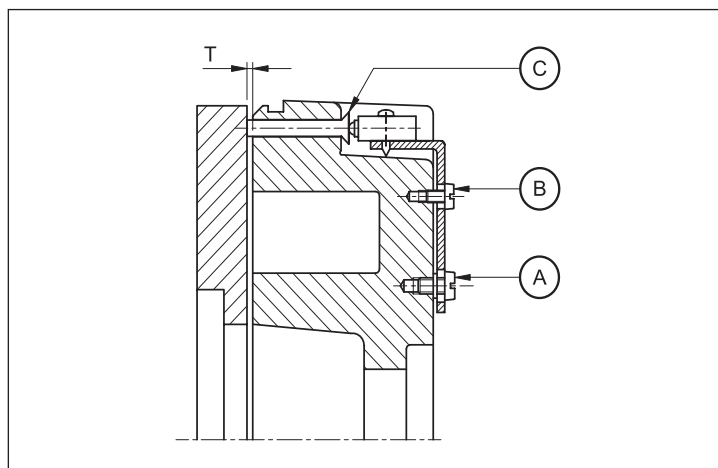
### MSW

The microswitch is set in order to obtain from it a signal related to the attraction/release of anchor plate, or it can be set in order to give feedback when the air gap reaches the maximum value.

**MSW option is available for all FD brakes.**

The microswitch is provided with three lead wires (NC, NO, COM). The next figure shown the main components of the brake equipped with microswitch.

(F57)



- A: Plate fixing screws
- B: Setting screws
- C: Actuator control pin

## 11.8 Additional cable entry for brakemotors

### IC

The terminal box cover of brakemotors BN 63 ... BN 160MR - BX 80 ... BX 132 is provided with two additional cable entry M16 x 1.5 (one cable entry per side).

The terminal box cover of brakemotors BN 160 ... BN 200 - BX 160 ... BX 180 is provided with an additional cable entry M16 x 1.5 next to the cable entry used for the brake.

## 11.9 Anti-condensation heaters

### H1

### NH1

Where an application involves high humidity or extreme temperature fluctuation, motors may be equipped with an anti-condensate heater.

A single-phase power supply is available in the auxiliary terminal board inside the main terminal box. Values for the absorbed power are listed here below:



(F58)

	H1	NH1
	1~ 230V ± 10% P [W]	1~ 115V ± 10% P [W]
BX 80 BE 80 BN 56 ... BN 80	10	10
BX 90 ... BX 132 BE 90 ... BE 132MB BN 90 ... BN 160MR	25	25
BX 160...BX 250 BX 160 ... BX 250K BX 160, BX 180 BE 160, BE 180 BN 160, BN 200	50	50
BX 280 BX 280K	60	60
BX 315 ... BX 355 BX 315K ... BX 355K	120	120

**Warning! Always remove power supply to the anti-condensante heater before operating the motor.**

### 11.10 Tropicalization

**TP**

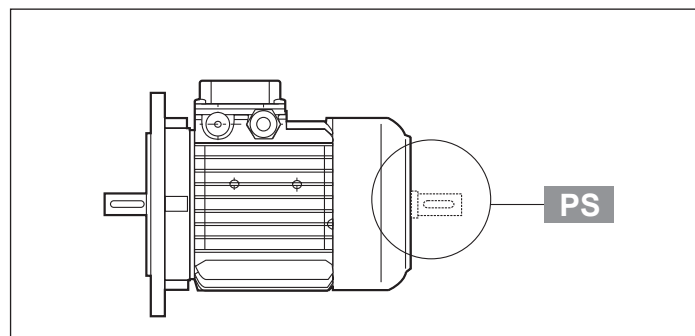
When option **TP** is specified, motor windings receive additional protection for operation in high humidity and temperature conditions.

### 11.11 Second shaft extension

**PS**

This option is not compatible with variants RC, TC, U1, U2, EN1, EN2, EN3, EN4, EN5, EN6, EN7, EN8. For shaft dimensions please see motor dimensions tables.

(F59)



### 11.12 Rotor balancing

**RV**

Where low noise is a priority requirement, the option RV ensures reduced vibration in accordance with vibration class B.

The table below reports effective velocity of vibration for normal (A) and B grade balancing.



(F60)

Vibration level	Angular velocity  n [min <sup>-1</sup> ]	Limits of the vibration velocity  (mm/s) <b>BX 80 ≤ H ≤ BX 335M</b> <b>≤ BX 355MK</b> <b>BE 80 ≤ H ≤ BE 180L</b> <b>BN 56 ≤ H ≤ BN 200</b>
<b>A</b>	600 < n < 3600	1.6
<b>B</b>	600 < n < 3600	0.70

Values are obtained from measurements on freely suspended motor during no-load operation; tolerance ±10%.

### 11.13 Ventilation

Motors are cooled through outer air blow (IC 411 according to CEI EN 60034-6) and are equipped with a plastic radial fan, which operates in both directions.

Ensure that fan cover is installed at a suitable distance from the closest wall so to allow air circulation and servicing of motor and brake, if fitted.

On request, motors can be supplied with independently power-supplied forced ventilation system starting from BN 71, BE 80 and BX 80 size.


Motor is cooled by an axial fan with independent power supply and fitted on the fan cover (IC 416 cooling system).

This version is used in case of motor driven by inverter so that steady torque operation is possible even at low speed or when high starting frequencies are needed.

Brake motors of motors with rear shaft projection (PS option) are excluded.

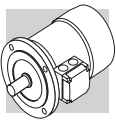
This variant has two different models, called **U1** and **U2**, having the same longitudinal size. Longer side of fan cover (**DL**) is specified for both models in the table below. Overall dimension can be reckoned from motor size table.

(F61)

Extra length for servoventilated motors		
	$\Delta L_1$	$\Delta L_2$
<b>BN 71</b>	93	32
<b>BX 80 - BE 80 - BN 80</b>	127	55
<b>BX 90 - BE 90 - BN 90</b>	131	48
<b>BX 100 - BE 100 - BN 100</b>	119	28
<b>BX 112 - BE 112 - BN 112</b>	130	31
<b>BX 132 - BE 132 - BN 132</b>	161	51
<b>BX 160...BX 180</b> <b>BE 160...BE 180</b> <b>BN 160...BN200L</b>	184	184
<b>BX 200</b>	260	260
<b>BX 225 - BX 250</b>	320	320
<b>BX 280 - BX 315</b>	430	430
<b>BX 355</b>	640	640

$\Delta L_1$  = extra length to LB value of corresponding standard motor.

$\Delta L_2$  = extra length to LB value of corresponding brake motor.



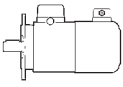
## U1

Fan wiring terminals are housed in a separate terminal box.

In brake motors of size BX 132 ... BX 160 - BE 80 ... BE 160 - BN 71 ... BN 160MR, with **U1** model, the release lever cannot be positioned to AA.

This option can be selected for motors compliant with CSA and UL standards (CUS option), only for BX  $\geq 200$  and BX  $\geq 200K$ .

(F62)

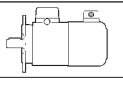
	V a.c. $\pm 10\%$	Hz	P [W]	I [A]
<b>BN 71</b>	1 ~ 230	50 / 60	22	0.12
<b>BX 80 - BE 80</b> <b>BN 80</b>			22	0.12
<b>BX 90 - BE 90</b> <b>BN 90</b>			40	0.30
<b>BX 100 - BE 100</b> <b>BN 100</b>			50	0.25
<b>BX 112 - BE 112</b> <b>BN 112</b>			50	0.26 / 0.15
<b>BX 132 - BE 132</b> <b>BN 132 ... BN 160MR</b>	3 ~ 230 $\Delta$ / 400Y	50	110	0.38 / 0.22
<b>BX 160 - BE 160</b> <b>BN 160M ... BN 180M</b>			180	1.25 / 0.72
<b>BX 180 - BE 180</b> <b>BN 180L ... BN 200L</b>			250	1.51 / 0.87
<b>BX 200 ... BX 250</b> <b>BX 200K ... BX 250K</b>	3 ~ 400 $\Delta$ / 690Y	50	250	0.64
<b>BX 280 ... BX 315M</b> <b>BX 280K ... BX 315MK</b>	3 ~ 400 $\Delta$ / 690Y		750	1.7
<b>BX 315L ... BX 355S</b> <b>BX 315LK ... BX 355SK</b>	3 ~ 400 $\Delta$ / 690Y		1500	3.3
<b>BX 355M</b> <b>BX 355MK</b>	3 ~ 400 $\Delta$ / 690Y		3000	6.1

## U2

Fan terminals are wired in the motor terminal box.

The **U2** option does not apply to motors BX/BE and to motors with option CUS (compliant to norms CSA and UL).

(F63)

	V a.c. $\pm 10\%$	Hz	P [W]	I [A]
<b>BN 71</b>	1 ~ 230	50 / 60	22	0.12
<b>BN 80</b>			22	0.12
<b>BN 90</b>			40	0.30
<b>BN 100</b>			40	0.26 / 0.09
<b>BN 112</b>			50	0.26 / 0.15
<b>BN 132 ... BN 160MR</b>	3 ~ 230 $\Delta$ / 400Y		110	0.38 / 0.22





## 11.14 Rain canopy


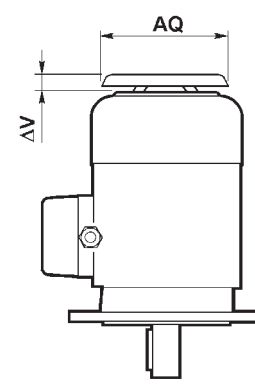
### RC

The rain canopy protects the motor from dripping and avoids the ingress of solid bodies. It is recommended when motor is installed in a vertical position with the shaft downwards.

Relevant dimensions are indicated in the table below.

The drip cover is not compatible with variants PS, EN1, EN2, EN3, EN4, EN5, EN6.

(F64)

	AQ	$\Delta V$	
<b>BN 63</b>	118	24	
<b>BN 71 - BE 71</b>	134	27	
<b>BX 80 - BE 80</b> <b>BN 80</b>	152	25	
<b>BX 90 - BE 90</b> <b>BN 90</b>	168	30	
<b>BX 100 - BE 100</b> <b>BN 100</b>	190	28	
<b>BX 112 - BE 112</b> <b>BN 112</b>	211	32	
<b>BX 132 - BE 132</b> <b>BN 132...BN 160MR</b>	254	32	
<b>BX 160 - BE 160</b> <b>BN 160M...BN 180M</b>	302	36	
<b>BX 180 - BE 180</b> <b>BN 180L...BN 200L</b>	340	36	
<b>BX 200</b>	423	55	
<b>BX 225</b>	465	55	
<b>BX 250</b>	514	55	
<b>BX 280</b>	567	100	
<b>BX 315</b>	645	100	
<b>BX 355</b>	740	120	

## 11.15 Textile canopy

### TC

Option TC is a cover variant for textile industry environments, where lint may obstruct the fan grid and prevent a regular flow of cooling air.

This option is not compatible with variants EN1, EN2, EN3, EN4, EN5, EN.

Overall dimensions are the same as drip cover type RC.

TC option is not available for BX motors.

## 11.16 Feedback units

Motors may be combined with six different types of encoders to achieve feedback circuits.

Configurations with double-extended shaft (PS) and rain canopy (RC, TC) are not compatible with encoder installation.

### EN1

Incremental encoder,  $V_{IN} = 5 V$ , line-driver output RS 422.



## EN2

Incremental encoder,  $V_{IN} = 10\text{-}30\text{ V}$ , line-driver output RS 422.

## EN3

Incremental encoder,  $V_{IN} = 12\text{-}30\text{ V}$ , push-pull output 12-30 V

## EN4

Encoder sin/cos,  $V_{IN} = 4.5\text{-}5.5\text{ V}$ , output Sinus  $0.5V_{PP}$ .

## EN5

Absolute encoder singleturn, HIPERFACE® interface,  $V_{IN} = 7\text{-}12\text{ V}$ .

## EN6

Absolute encoder multiturn, HIPERFACE® interface,  $V_{IN} = 7\text{-}12\text{ V}$ .

## EN7

Incremental encoder Heavy Duty,  $V_{IN} = 12\text{-}30\text{ V}$ , push-pull output 12-30 V.

## EN8

Incremental encoder Heavy Duty,  $V_{IN} = 12\text{-}30\text{ V}$ , push-pull output 9-30 V.

Note: EN7 and EN8 available only for  $BX \geq 200$

(F65)

	EN1	EN2	EN3	EN4	EN5	EN6	EN7	EN8	
Interface	TTL/RS 422	TTL/RS 422	HTL push-pull	Sinus 0.5 VPP	HIPERFACE®	HIPERFACE®	HTL push-pull	HTL push-pull	
Power supply voltage [V]	4...6	10...30	12...30	4.4...5.5	7...12	7...12	9...30		
Output voltage [V]	5	5	12...30	—	—	—	9...30		
No-load operating current [mA]	120	100	100	40	80	80	80		
No. of pulses per revolution	1024							2048	
Steps per revolution	—	—	—	—	15 bit	15 bit	-	-	
Revolutions	—	—	—	—	—	12 bit	-	-	
No. of signals	6 (A, B, Z + inverted signals)			6 (cos <sup>-</sup> , cos <sup>+</sup> , sin <sup>-</sup> , sin <sup>+</sup> , Z, $\bar{Z}$ )	—	—	6	6	
Max. output frequency [kHz]	600			200			200		
Max. speed [min <sup>-1</sup> ]	6000 (9000 min <sup>-1</sup> for 10 s )							6000	
Temperature range [°C]	-30 ... +100							-20 ... +85	
Protection class	IP 65							IP67	



(F66)

EN_ + U1	
	<b>L3</b>
<b>BX 160 - BE 160 - BN 160M...BN 180M</b>	72
<b>BX 160 - BE 180 - BN 180L...BN 200L</b>	82
<b>BX 160_FD - BN 160M_FD...BN 180M_FD</b>	35
<b>BX 180_FD - BN 180L_FD...BN 200L_FD</b>	41
<b>BX 200 - BX 225 - BX 250</b>	100
<b>BX 280 - BX 315 - BX 355</b>	150

(F67)

EN1, EN2, EN3, EN4, EN5, EN6, EN7, EN8	
	<b>L4</b>
<b>BN 63 ... BN 200</b>	65
<b>BE 71... BE180</b>	65
<b>BX 80 ... BX 180</b>	65
<b>BX 200 ... BX 280</b>	100
<b>BX 315 ... BX 355</b>	100

If the encoder device (option EN\_) is specified on motors BX 80 ... BX 132 - BE 71 ... BE 132 - BN 71 ... BN 160MR, along with the independent fan cooling (options U1, U2), the extra length of motor is coincident with that of the correspondent U1 and U2 execution.

### 11.17 Insulated Bearings

#### IB

NOTE: This option is available for BX and BX K $\geq$ 280, and it is mandatory when the motor is operated through a variable speed drive.

When IB option is selected the motor is equipped with insulated bearings at drive end. This prevent early bearings failures due to high frequency circulation currents.

### 11.18 Vertical Mounting

#### VM

NOTE: This option is mandatory for BX  $\geq$  200 and BX  $\geq$  200K, when vertically mounted.

When VM is selected the motor is delivered with specific arrangements.

Furthermore, the vertical mounting position will also be reported on motor nameplate.







### 11.19 Surface protection

#### C\_

When no specific protection class is requested, the painted (ferrous) surfaces of motors are protected to at least corrosivity class C2 (UNI EN ISO 12944-2). For improved resistance to atmospheric corrosion, motors can be delivered with C3 and C4 surface protection.



(F68)

	C2	C3	C4	C5M
<b>BN</b> <b>BE</b> <b>BX ≤ 180</b>	standard	 on request	 on request	 Contact us
<b>BX ≥ 200</b> <b>BX ≥ 200K</b>		standard	 on request	 on request

(F70)

SURFACE PROTECTION	Typical environments	Maximum surface temperature	Corrosivity class according to UNI EN ISO 12944-2
<b>C3</b>	Urban and industrial environments with up to 100% relative humidity (medium air pollution)	120°C	C3
<b>C4</b>	Industrial areas, coastal areas, chemical plant, with up to 100% relative humidity (high air pollution)	120°C	C4
<b>C5M</b>	Coast and offshore areas with high salt content.	120°C	C5M

Motors with optional protection to class C3 or C4 are available in a choice of colours. If no specific colour is requested (see the “PAINTING” option) motors are finished in RAL 7042 for BN, BE and BX≤180 and in Munsell blue 8B 4.5/3.25 for BX≥200.

Motors can also be supplied with surface protection for corrosivity class C5 according to UNI EN ISO 12944-2. Contact our Technical Service for further details.

## 11.20 Painting

### RAL

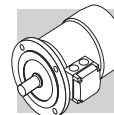
Motors with optional protection to class C3 or C4 are available in the colours listed in the following table.

(F69)

PAINTING	Colour	RAL number
<b>RAL7042</b>	Traffic Grey A	7042
<b>RAL5010</b>	Gentian Blue	5010
<b>RAL9005</b>	Jet Black	9005
<b>RAL9006</b>	White Aluminium	9006
<b>RAL9010</b>	Pure White	9010
<b>Munsell blue 8B* 4.5/3.25</b>	Blue	MUNSELL 8B 4.5/3.25

\* BX ≥ 200 and BX ≥ 200K Motors are standardly supplied in this colour with C3 protection unless specified differently.

NOTE – “PAINTING” options can only be specified in conjunction with “SURFACE PROTECTION” options.



## 11.21 Certificates

### ACM

#### Certificate of compliance of motors

The document certifies the compliance of the product with the purchase order and the construction in conformity with the applicable procedures of the Bonfiglioli Quality System.

Note: Not available for BX $\geq$ 200 and BX $\geq$ 200K

### CC

#### Inspection certificate

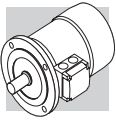
The document entails checking on order compliance, the visual inspection of external conditions and instrumental testing of the electrical characteristics in unloaded conditions. Units inspected are sampled within the shipping batch and marked individually.

## 12 TABLES OF MOTORS CORRELATION

### 12.1 50 Hz Motors

(F71)

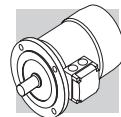
pole	2			
	IE1	IE2	IE3	
Pn [kW]	0.06			
	0.09			
	0.12			
	0.18	BN 63A 2		
	0.25	BN 63B 2		
	0.37	BN 71A 2		
	0.55	BN 71B 2		
	0.75	BN 71C 2	BE 80A 2	
		BN 80A 2		
	1.1	BN 80B 2	BE 80B 2	
	1.5	BN 90SA 2	BE 90SA 2	
	1.85	BN 90SB 2		
	2.2	BN 90L 2	BE 90L 2	
	3	BN 100L 2	BE 100L 2	
	4	BN 112M 2	BE 112M 2	
	5.5	BN 132SA 2	BE 132SA 2	
	7.5	BN 132SB 2	BE 132SB 2	
	9.2	BN 132M 2	BE 132MB 2	
	11	BN 160MR 2	BE 160MA 2	
		BN 160M 2		
15	BN 160MB 2	BE 160MB 2		
18.5	BN 160L 2	BE 160L 2		
22	BN 180M 2			
30	BN 200LA 2			



(F72)

pole	4			
	Efficiency class	IE1	IE2	IE3
Pn [kW]	0.06	BN 56A 4		
	0.09	BN 56B 4		
	0.12	BN 63A 4		
	0.18	BN 63B 4		
	0.25	BN 63C 4		
		BN 71A 4		
	0.37	BN 71B 4		
	0.55	BN 71C 4		
		BN 80A 4		
	0.75	BN 80B 4	BE 80B 4	BX 80B 4
	1.1	BN 80C 4	BE 90S 4	BX 90S 4
		BN 90S 4		
	1.5	BN 90LA 4	BE 90LA 4	BX 90LA 4
	1.85	BN 90LB 4		
	2.2	BN 100LA 4	BE 100LA 4	BX 100LA 4
	3	BN 100LB 4	BE 100LB 4	BX 100LB 4
	4	BN 112M 4	BE 112M 4	BX 112M 4
	5.5	BN 132S 4	BE 132S 4	BX 132SB 4
	7.5	BN 132MA 4	BE 132MA 4	BX 132MA 4
	9.2	BN 132MB 4	BE 132MB 4	BX 160MA 4
	11	BN 160MR 4	BE 160M 4	BX 160MB 4
		BN 160M 4		
	15	BN 160L 4	BE 160L 4	BX 160L 4
	18.5	BN 180M 4	BE 180M 4	BX 180M 4
	22	BN 180L 4	BE 180L 4	BX 180L 4
	30	BN 200L 4		BX 200LA 4*
	37			BX 225SA 4*
	45			BX 225SB 4*
	55			BX 250MA 4*
	75			BX 280SA 4*
	90			BX 280SB 4*
	110			BX 315SA 4*
	132			BX 315SB 4*
	160			BX 315SC 4*
	200			BX 315MA 4*
250			BX 355MA 4*	
315			BX 355MB 4*	
355			BX 355MC 4*	

Note: For the Australian market these motor has to be selected in the BX ... K 4 Version



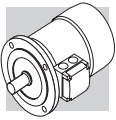
(F73)

pole		6		
Efficiency class		IE1	IE2	IE3
Pn [kW]	0.06			
	0.09	BN 63A 6		
	0.12	BN 63B 6		
	0.18	BN 71A 6		
	0.25	BN 71B 6		
		BN 71C 6		
	0.37	BN 80A 6		
	0.55	BN 80B 6		
	0.75	BN 80C 6	BE 90S 6	
		BN 90S 6		
	1.1	BN 90L 6	BE 100M 6	
	1.5	BN 100LA 6	BE 100LA 6	
	1.85	BN 100LB 6		
	2.2	BN 112M 6	BE 112M 6	
	3	BN 132S 6	BE 132S 6	
	4	BN 132MA 6	BE 132MA 6	
	5.5	BN 132MB 6	BE 160MA 6	
	7.5	BN 160M 6	BE 160MB 6	
	9.2			
	11	BN 160L 6		
15	BN 180L 6			
18.5	BN 200LA 6			
22				
30				

## 12.2 60 Hz Motors

(F74)

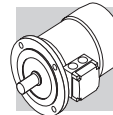
pole		2		
Efficiency class		IE1	IE2	IE3
Pn [kW]	0.06			
	0.09			
	0.12			
	0.18	BN 63A 2		
	0.25	BN 63B 2		
	0.37	BN 71A 2		
	0.55	BN 71B 2		
	0.75	BN 71C 2		
		BN 80A 2		
	1.1	BN 80B 2		
	1.5	BN 90SA 2		
	1.85	BN 90SB 2		
	2.2	BN 90L 2		
	3	BN 100L 2		
	3.7	BN 112M 2		
	5.5	BN 132SA 2		
	7.5	BN 132SB 2		
	9.2	BN 132M 2		
	11	BN 160MR 2		
		BN 160M 2		
15	BN 160MB 2			
18.5	BN 160L 2			
22	BN 180M 2			
30	BN 200LA 2			



(F75)

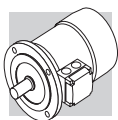
pole	4			
	Efficiency class	IE1	IE2	IE3
Pn [kW]	0.06	BN 56A 4		
	0.09	BN 56B 4		
	0.12	BN 63A 4		
	0.18	BN 63B 4		
	0.25	BN 63C 4		
		BN 71A 4		
	0.37	BN 71B 4		
	0.55	BN 71C 4		
		BN 80A 4		
	0.75	BN 80B 4	BE 80B 4	BX 90SR 4
	1.1	BN 80C 4	BE 90S 4	BX 90S 4
		BN 90S 4		
	1.5	BN 90LA 4	BE 90LA 4	BX 90LA 4
	1.85	BN 90LB 4		
	2.2	BN 100LA 4	BE 100LA 4	BX 100LA 4
	3	BN 100LB 4	BE 100LB 4	BX 100LB 4
	3.7	BN 112M 4	BE 112M 4	BX 112M 4
	5.5	BN 132S 4	BE 132S 4	BX 132SB 4
	7.5	BN 132MA 4	BE 132MA 4	BX 132MA 4
	9.2	BN 132MB 4	BE 132MB 4	BX 160MA 4
	11	BN 160MR 4	BE 160M 4	BX 160MB 4
		BN 160M 4		
	15	BN 160L 4	BE 160L 4	BX 160L 4
	18.5	BN 180M 4	BE 180M 4	BX 180M 4
	22	BN 180L 4	BE 180L 4	BX 180L 4
	30	BN 200L 4		BX 200LAK 4
	37			BX 225SAK 4
	45			BX 225SBK 4
	55			BX 280SAK 4
	75			BX 280SBK 4
90			BX 315SAK 4	
110			BX 315SBK 4	
132			BX 315SCK 4	
160			BX 355SAK 4	
200			BX 355SBK 4	
250			BX 355SCK 4	
315			BX 355MBK 4	
355			BX 355MCK 4	





(F76)

pole		6		
Efficiency class		IE1	IE2	IE3
Pn [kW]	0.06			
	0.09	BN 63A 6		
	0.12	BN 63B 6		
	0.18	BN 71A 6		
	0.25	BN 71B 6		
		BN 71C 6		
	0.37	BN 80A 6		
	0.55	BN 80B 6		
	0.75	BN 80C 6		
		BN 90S 6		
	1.1	BN 90L 6		
	1.5	BN 100LA 6		
	1.85	BN 100LB 6		
	2.2	BN 112M 6		
	3	BN 132S 6		
	3.7	BN 132MA 6		
	5.5	BN 132MB 6		
	7.5	BN 160M 6		
	9.2			
	11	BN 160L 6		
15	BN 180L 6			
18.5	BN 200LA 6			
22				
30				



**13 MOTOR RATING CHARTS BX**

<b>4 P</b>		<b>1500 min<sup>-1</sup> - S1</b>												<b>50 Hz - IE3</b>								
<b>P<sub>n</sub></b> kW		<b>n</b> min <sup>-1</sup>	<b>M<sub>n</sub></b> Nm	<b>I<sub>n</sub> 400V</b> A	<b>η%</b>			<b>cos φ</b>	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_s}{M_n}$	<b>KVA code</b>	<b>J<sub>m</sub> x 10<sup>-4</sup></b> kgm <sup>2</sup>	<b>IM B5</b> 	<b>d.c. brake</b>			<b>a.c. brake</b>				
					100%	75%	50%								<b>FD</b>			<b>FA</b>				
					<b>M<sub>b</sub></b> Nm	<b>J<sub>m</sub> x 10<sup>-4</sup></b> kgm <sup>2</sup>	<b>IM B5</b> 								<b>Mod</b>	<b>M<sub>b</sub></b> Nm	<b>J<sub>m</sub> x 10<sup>-4</sup></b> kgm <sup>2</sup>	<b>IM B5</b> 	<b>Mod</b>	<b>M<sub>b</sub></b> Nm	<b>J<sub>m</sub> x 10<sup>-4</sup></b> kgm <sup>2</sup>	<b>IM B5</b> 
0.75	<b>BX 80B</b>	4	1425	5.0	1.61	82.5	83.9	83.2	0.81	6.5	2.0	1.8	J	35	16	19.9	15	37	19.8	15	37	19.8
1.1	<b>BX 90S</b>	4	1425	7.4	2.44	84.1	84.1	82.0	0.77	6.9	3.4	2.2	J	27	16	20.2	15	29	20.1	15	29	20.1
1.5	<b>BX 90LA</b>	4	1420	10.1	3.3	85.3	86.2	84.9	0.78	6.3	3.1	1.9	J	31	17	23	26	35	23.7	26	35	23.7
2.2	<b>BX 100LA</b>	4	1445	14.5	5.1	86.7	86.2	84.0	0.72	7.2	3.6	2.4	K	58	24	31	40	62	31	40	62	31
3	<b>BX 100LB</b>	4	1445	19.8	6.7	87.7	87.7	86.0	0.74	7.6	3.9	2.6	K	73	29	36	40	77	36	40	77	36
4	<b>BX 112M</b>	4	1445	26	8.1	88.6	88.9	87.6	0.8	8.1	3.8	2.5	J	130	38	48	60	139	50	60	139	50
5.5	<b>BX 132SB</b>	4	1460	36	10.6	89.6	89.2	88.8	0.83	8.2	3.6	2.3	J	310	57	70	75	320	71	75	320	71
7.5	<b>BX 132MA</b>	4	1460	49	15.0	90.4	90.9	90.2	0.80	8.4	3.8	2.5	K	360	67	80	100	370	85	100	370	85
9.2	<b>BX 160MA</b>	4	1465	60	17.8	91.0	92.1	91.7	0.82	7.9	3.6	2.1	J	650	95	125	170	725	124	170	725	124
11	<b>BX 160MB</b>	4	1465	72	20.5	91.4	92.9	92.5	0.84	7.8	3.4	1.9	J	780	110	140	170	855	139	170	855	139
15	<b>BX 160L</b>	4	1465	98	28.1	92.1	93.2	92.6	0.82	9.0	4.1	2.3	K	890	121	151	200	965	150	200	965	150
18.5	<b>BX 180M</b>	4	1480	119	32.9	92.6	94.1	93.1	0.85	11.3	2.6	2.3	M	1560	155	195	300	1760	195	300	1760	195
22	<b>BX 180L</b>	4	1475	142	38.2	93.0	93.6	92.8	0.88	10.2	2.5	2.0	L	1660	163	203	300	1860	203	300	1860	203



Note: for more details on the available energy certifications look at the catalog's dedicated section.

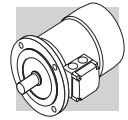
<b>4 P</b>	<b>1500 min<sup>-1</sup> - S1</b>	<b>50 Hz - IE3</b>
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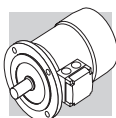


P <sub>n</sub> kW	n min <sup>-1</sup>	M <sub>n</sub> Nm	I <sub>n</sub> 400V A	η%		cos φ	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	KVA code	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	d.c. brake			a.c. brake				
				100%	75%								Mod	M <sub>b</sub> Nm	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	M <sub>b</sub> Nm	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 
				FD																
30	<b>BX 200LA 4</b>	193.2	54.8	93.6	93.9	0.84	7.5	2.7	3.2	N/A	3850	292	FD20	260	3910	317				
37	<b>BX 225SA 4</b>	238.6	68.9	93.9	94.1	0.83	7.2	3.1	3.1	N/A	4270	322	FD25	400	4450	356				
45	<b>BX 225SB 4</b>	290	82.3	94.2	94.4	0.84	8	3.2	3.5	N/A	5250	357	FD25	400	5430	391				
55	<b>BX 250MA 4</b>	354.2	100	94.6	94.7	0.84	7.1	2.9	3.4	N/A	6940	406	FD30	1000	7540	452				
75	<b>BX 280SA 4</b>	483	133	95	95.2	0.86	6.4	2.3	2.8	N/A	13800	645	FD30	1000	14400	691				
90	<b>BX 280SB 4</b>	578	158	95.2	95.5	0.86	7.1	2.5	2.9	N/A	17300	700	FD30	1000	17900	746				
110	<b>BX 315SA 4</b>	705	198	95.4	95.5	0.84	7	2.1	3	N/A	24300	930	FD30	1000	24900	976				
132	<b>BX 315SB 4</b>	847	231	95.6	95.9	0.86	6.7	2.2	2.9	N/A	29000	1000	FD160	1600	30500	1121				
160	<b>BX 315SC 4</b>	1026	282	95.8	96	0.85	6.9	2.2	3	N/A	32000	1065	FD160	1600	33500	1186				
200	<b>BX 315MA 4</b>	1284	351	96	96.4	0.86	6.8	2.4	3	N/A	39000	1220	FD250	2500	41400	1390				
250	<b>BX 355MA 4</b>	1601	435	96	96	0.86	6.4	2.1	2.9	N/A	59000	1610	FD250	2500	61400	1780				
315	<b>BX 355MB 4</b>	2018	550	96	96.1	0.85	7.3	2.4	3.3	N/A	69000	1780	FD400	4000	73300	2000				
355	<b>BX 355MC 4</b>	2273	616	96	96.2	0.86	6.3	2.3	2.8	N/A	72000	1820	FD400	4000	76300	2040				



Note: for more details on the available energy certifications look at the catalog's dedicated section.









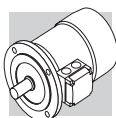
4 P		1500 min <sup>-1</sup> - S1												50 Hz - IE3						
P <sub>n</sub> kW	n min <sup>-1</sup>	M <sub>n</sub> Nm	I <sub>n</sub> 400V A	η%	cos φ	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	KVA code	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	d.c. brake			a.c. brake					
												FD			FA					
				100%	75%	50%					IM B5 Kg	Mod	M <sub>b</sub> Nm	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	Mod	M <sub>b</sub> Nm	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	
30	<b>BX 200LAK 4</b>	193	55.7	94.7	95.1	95	8.3	3	3.3	3660	319	FD 8	400	3940	337					
37	<b>BX 225SAK 4</b>	238	65.9	95.1	95.5	95.4	7.7	2.8	3.1	5360	398	FD 9	600	5720	426					
45	<b>BX 225SBK 4</b>	290	80.4	95.2	95.6	95.6	7.9	2.8	3.2	5360	398	FD 9	600	5720	426					
55	<b>BX 250MAK 4</b>	354	98.9	95.6	95.8	95.5	7.9	3	3.3	9330	476	FD 10	800	10080	521					
75	<b>BX 280SAK 4</b>	482	134	95.9	96.2	96.1	7.3	2.5	2.8	15000	665	FD 1000	1000	15360	771					
90	<b>BX 280SBK 4</b>	578	161	96.2	96.4	96.1	7.9	2.9	3	18500	725	FD 1000	1000	18860	831					
110	<b>BX 315SAK 4</b>	704	194	96.8	97	96.7	8.3	2.4	3.1	29000	1000	FD 1000	1000	29360	1106					
132	<b>BX 315SBK 4</b>	846	234	96.9	97.1	96.8	8.1	2.6	3.2	32000	1065	FD 1600	1600	32500	1233					
160	<b>BX 315SCK 4</b>	1025	279	96.7	96.9	96.6	8.2	2.7	3	39000	1220	FD 1600	1600	39500	1388					
200	<b>BX 355SAK 4</b>	1281	345	96.6	96.7	96.4	7.3	2.1	2.7	59000	1610	FD 2500	2500	59500	1778					
250	<b>BX 355MAK 4</b>	1601	435	96	96	95.6	6.4	2.1	2.9	69000	1780	FD 2500	2500	69500	1948					
315	<b>BX 355MBK 4</b>	2017	550	96	96.1	95.7	7.3	2.4	3.3	72000	1820	FD 2500	2500	72500	1988					
355	<b>BX 355MCK 4</b>	2275	616	96	96.2	95.8	6.3	2.3	2.8	84000	2140	FD 2500	2500	84500	2308					

Note: for more details on the available energy certifications look at the catalog's dedicated section.



4 P		1800 min <sup>-1</sup> - S1												60 Hz - Nema Premium							
P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	I <sub>n</sub> 460V A	η%		cos φ	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	KVA code	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	d.c. brake				a.c. brake			
					100%	75%								FD				FA			
					Mod	M <sub>b</sub> Nm								J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	M <sub>b</sub> Nm	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	M <sub>b</sub> Nm
0.75	<b>BX 90SR</b> 4	1755	4.1	1.48	100%	86.4	83.9	0.73	8.0	2.5	L	27	16	<b>FD 14</b>	15	29	20.2	<b>FA 14</b>	15	29	20.1
1.1	<b>BX 90S</b> 4	1740	6.0	2.15	86.5	85.9	83.0	0.74	8.2	2.8	K	27	16	<b>FD 14</b>	15	29	20.2	<b>FA 14</b>	15	29	20.1
1.5	<b>BX 90LA</b> 4	1735	8.3	2.91	86.5	86.5	84.4	0.75	7.4	2.5	K	31	17	<b>FD 05</b>	26	35	23	<b>FA 05</b>	26	35	23.7
2.2	<b>BX 100LA</b> 4	1760	11.9	4.4	89.5	88.6	86.2	0.71	9.9	3.6	N	73	29	<b>FD 15</b>	40	77	36	<b>FA 15</b>	40	77	36
3	<b>BX 100LB</b> 4	1750	16.4	5.9	89.5	88.9	86.7	0.71	9.1	3.3	M	73	29	<b>FD 15</b>	40	77	36	<b>FA 15</b>	40	77	36
3.7	<b>BX 112M</b> 4	1760	20	6.7	89.5	89.5	89.1	0.77	10.4	3.4	M	130	38	<b>FD 06S</b>	60	139	48	<b>FA 06S</b>	60	139	50
5.5	<b>BX 132SB</b> 4	1770	30	9.9	91.7	92.0	90.2	0.76	10.7	4.6	N	410	77	<b>FD 56</b>	75	420	90	<b>FA 06</b>	75	420	91
7.5	<b>BX 132MA</b> 4	1770	41	13.4	91.7	91.3	89.7	0.76	11.0	4.4	N	410	77	<b>FD 06</b>	100	420	90	<b>FA 07</b>	100	420	95
9.2	<b>BX 160MA</b> 4	1770	50	15.6	92.4	92.5	91.6	0.8	9.1	2.6	L	650	95	<b>FD 08</b>	170	725	125	<b>FA 08</b>	170	725	124
11	<b>BX 160MB</b> 4	1770	59	18.2	92.4	92.9	92.0	0.82	9.3	2.4	L	780	110	<b>FD 08</b>	170	855	140	<b>FA 08</b>	170	855	139
15	<b>BX 160L</b> 4	1770	81	24.5	93.0	93.5	92.5	0.81	10.9	2.8	M	890	121	<b>FD 08</b>	200	965	151	<b>FA 08</b>	200	965	150
18.5	<b>BX 180M</b> 4	1780	99	28.6	93.6	94.5	93.2	0.85	13.0	2.7	N	1560	155	<b>FD 09</b>	300	1760	195				
22	<b>BX 180L</b> 4	1775	118	33.1	93.6	94.2	93.1	0.87	11.5	2.4	M	1660	163	<b>FD 09</b>	300	1860	203				

Note: for more details on the available energy certifications look at the catalog's dedicated section.



4 P		1800 min <sup>-1</sup> - S1												60 Hz - Nema Premium								
P <sub>n</sub> kW	n min <sup>-1</sup>	M <sub>n</sub> Nm	In 460V A	η%				cos φ	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	KVA code	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	d.c. brake			a.c. brake				
				100%	75%	50%	Mod								M <sub>b</sub> Nm	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	Mod	M <sub>b</sub> Nm	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	
				FA																		
30	<b>BX 200LAK 4</b>	1786	160	47.9	94.7	94.8	94.1	0.83	9.4	3.3	3.7	3660	319	FD 8	400	3940	337					
37	<b>BX 225SAK 4</b>	1784	198	57.3	95.3	95.5	94.9	0.85	8.8	2.9	3.4	5360	398	FD 9	600	5720	426					
45	<b>BX 225SBK 4</b>	1785	240	70.5	95.3	95.4	94.8	0.84	8.9	3	3.6	5360	398	FD 9	600	5720	426					
55	<b>BX 250MAK 4</b>	1787	293	85.8	95.7	95.8	95.2	0.84	9.1	3.3	3.7	9330	476	FD 10	800	10080	521					
75	<b>BX 280SAK 4</b>	1788	401	117	95.9	95.7	94.7	0.84	8.4	2.7	3.1	15000	665	FD 1000	1000	15360	771					
90	<b>BX 280SBK 4</b>	1788	481	140	96.1	95.9	95	0.84	9	3.1	3.3	18500	725	FD 1000	1000	18860	831					
110	<b>BX 315SAK 4</b>	1792	586	172	96.1	96	95.3	0.84	8.8	2.6	3.4	29000	1000	FD 1000	1000	29360	1106					
132	<b>BX 315SBK 4</b>	1791	704	206	96.4	96.3	95.6	0.84	9	2.8	3.6	32000	1065	FD 1600	1600	32500	1233					
160	<b>BX 315SCK 4</b>	1791	853	241	96.4	96.4	95.9	0.86	9	2.9	3.3	39000	1220	FD 1600	1600	39500	1388					
200	<b>BX 355SAK 4</b>	1792	1065	301	96.4	96.2	95.4	0.87	8.3	2.2	3	59000	1610	FD 2500	2500	59500	1778					
250	<b>BX 355MAK 4</b>	1792	1332	381	96.7	96.6	96	0.86	8.8	2.7	3.2	69000	1780	FD 2500	2500	69500	1948					
315	<b>BX 355MBK 4</b>	1791	1679	479	96.7	96.6	96.1	0.85	8.5	3.1	3.2	72000	1820	FD 2500	2500	72500	1988					
355	<b>BX 355MCK 4</b>	1792	1893	541	96.7	96.5	96.9	0.86	7.2	2.4	3.1	84000	2140	FD 2500	2500	84500	2308					

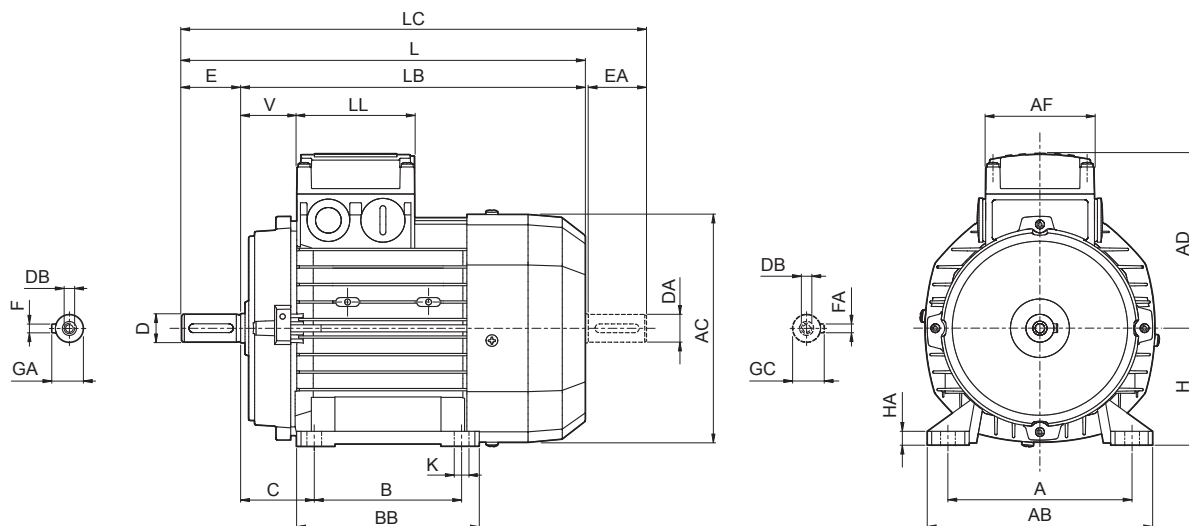
Note: for more details on the available energy certifications look at the catalog's dedicated section.



14 MOTORS DIMENSIONS BX

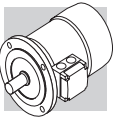
**BX - IM B3 - CE/CCC**

**BX**



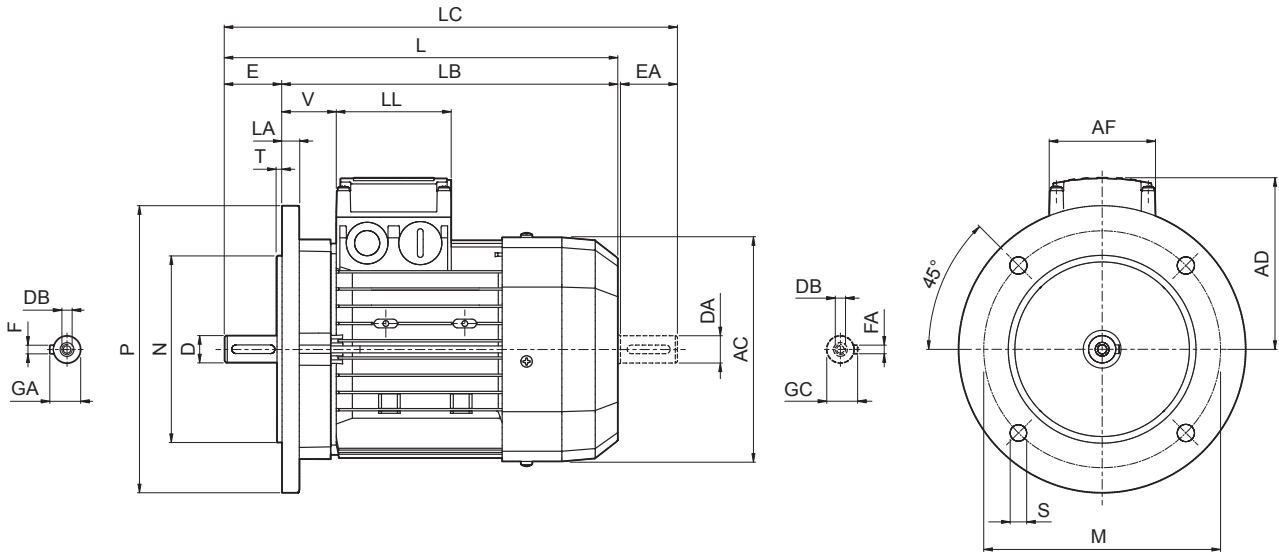
	Shaft					Housing						Motor																			
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V										
<b>BX 80 B</b>	19 14 <sup>(1)</sup>	40 30 <sup>(1)</sup>	M6 M5 <sup>(1)</sup>	21.5 16 <sup>(1)</sup>	6 5 <sup>(1)</sup>	100	125	8	124	153	10	50	80	156	320	280	351	119	74	80	38										
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21,5 <sup>(1)</sup>	8 6 <sup>(1)</sup>		140		155	174		174	174	56	90	176	326	276	368 378	133	98	98	44								
<b>BX 90 LA</b>						125																									
<b>BX 100 LA</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	140	160	10	175	192	12	63	100	195	410	350	462	142	98	98	50										
<b>BX 100 LB</b>							190			224		70	112	219	430	370	482	157			52										
<b>BX 112 M</b>																															
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	140	216	12	218	254	12	89	132	258	493 528	413 448	556 591	193	118	118	58										
<b>BX 132 MA</b>						178																									
<b>BX 160 MA</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51										
<b>BX 160 MB</b>						304			304						640	530	724				187										
<b>BX 160 L</b>																															
<b>BX 180 M</b>	48 42 <sup>(1)</sup>	110 110 <sup>(1)</sup>	M16 M16 <sup>(1)</sup>	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>	241	279	26	291	359	14	121	180	348	708	598	823	261			52										
<b>BX 180 L</b>	279					329			329						329	329	329	329			329	329	329	329	329	329	329	329	329	329	329
<b>BX 200LA</b>	55 45 <sup>(1)</sup>	140 110 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	59 48,5 <sup>(1)</sup>	16 14 <sup>(1)</sup>	267	318	23	345	378	18,5	133	200	417	821	711	934	328	300	311	55										
<b>BX 225SA</b>	60 55 <sup>(1)</sup>			64 59 <sup>(1)</sup>	18 16 <sup>(1)</sup>	286	356		351	435		149	225	460	879	739	1001	348			300	311	48								
<b>BX 225SB</b>																															
<b>BX 250MA</b>	65 55 <sup>(1)</sup>			69 59 <sup>(1)</sup>	18 16 <sup>(1)</sup>	311	406		392	480		168	250	510	884	744	1010	376													
<b>BX 280SA</b>	75 65 <sup>(1)</sup>			79.5 69 <sup>(1)</sup>	20 18 <sup>(1)</sup>	368	457		31	506		530	190	280	564	1088	948	1238			482	434	306	43							
<b>BX 280SB</b>																															
<b>BX 315SA</b>	80 75 <sup>(1)</sup>	170 140 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	85 79,5 <sup>(1)</sup>	22 20 <sup>(1)</sup>	406	508	40	558	590	28	216	315	639	1204	1034	1352	537	473	347	42										
<b>BX 315SB</b>																															
<b>BX 315SC</b>																															
<b>BX 315MA</b>	90 75 <sup>(1)</sup>			95 79,5 <sup>(1)</sup>	25 20 <sup>(1)</sup>	457			669						1315	1145	1463														
<b>BX 355MA</b>	100 75 <sup>(1)</sup>	210 170 <sup>(1)</sup>	M24 M20 <sup>(1)</sup>	106 79,5 <sup>(1)</sup>	28 20 <sup>(1)</sup>	500	610	45	722	700	35	254	355	725	1479	1269	1659	603	694	413	50										
<b>BX 355MB</b>																															
<b>BX 355MC</b>																															

N.B.: 1) These values refer to the rear shaft end (PS).



# BX - IM B5 - CE/CCC

**BX**



	Shaft					Flange						Motor																		
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V											
<b>BX 80 B</b>	19 14 <sup>(1)</sup>	40 30 <sup>(1)</sup>	M6 M5 <sup>(1)</sup>	21.5 16 <sup>(1)</sup>	6 5 <sup>(1)</sup>	165	130	200	11.5	3.5	11.5	156	320	280	351	119	74	80	38											
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>							176	326	276	368	133	98	98	44											
<b>BX 90 LA</b>																														
<b>BX 100 LA</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	215	180	250	14	4	14	195	410	350	462	142	98	98	50											
<b>BX 100 LB</b>											15	219	430	370	482	157			52											
<b>BX 112 M</b>											15	219	430	370	482	157														
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	265	230	300	14	4	20	258	493	413	556	193	118	118	58											
<b>BX 132 MA</b>													528	448	591				58											
<b>BX 160 MA</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	300	250	350	18.5	5	15	310	596	486	680	245	187	187	51											
<b>BX 160 MB</b>													640	530	724				51											
<b>BX 160 L</b>													640	530	724															
<b>BX 180 M</b>	48 42 <sup>(1)</sup>	110 110 <sup>(1)</sup>	M16 M16 <sup>(1)</sup>	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>	350	300	400	19	5	18	348	708	598	823	261			52											
<b>BX 180 L</b>																														
<b>BX 200LA</b>	55 45 <sup>(1)</sup>	140 110 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	59 48.5 <sup>(1)</sup>	16 14 <sup>(1)</sup>	500	450	550	18	6	23	567	1088	948	1238	482	434	306	43											
<b>BX 225SA</b>	60 55 <sup>(1)</sup>			64 59 <sup>(1)</sup>	18 16 <sup>(1)</sup>								400	350	450	19	20	423	821	711	934	328	300	311	48					
<b>BX 225SB</b>																														
<b>BX 250MA</b>	65 55 <sup>(1)</sup>			69 59 <sup>(1)</sup>														24	514	884	744	1010	376							
<b>BX 280SA</b>	75 65 <sup>(1)</sup>	140 140 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	79.5 69 <sup>(1)</sup>	20 18 <sup>(1)</sup>	600	550	660	23	6	25	645	1204	1034	1352	537	473	347	42											
<b>BX 280SB</b>																														
<b>BX 315SA</b>	80 75 <sup>(1)</sup>	170 140 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	85 79.5 <sup>(1)</sup>	22 20 <sup>(1)</sup>	740	680	800	23	6	25	740	1315	1145	1463															
<b>BX 315SB</b>																														
<b>BX 315SC</b>																														
<b>BX 315MA</b>	90 75 <sup>(1)</sup>			95 79.5 <sup>(1)</sup>	25 20 <sup>(1)</sup>																									
<b>BX 355MA</b>	100 75 <sup>(1)</sup>	210 170 <sup>(1)</sup>	M24 M20 <sup>(1)</sup>	106 79.5 <sup>(1)</sup>	28 20 <sup>(1)</sup>	740	680	800	23	6	25	740	1479	1269	1659	603	694	413	50											
<b>BX 355MB</b>																														
<b>BX 355MC</b>																														

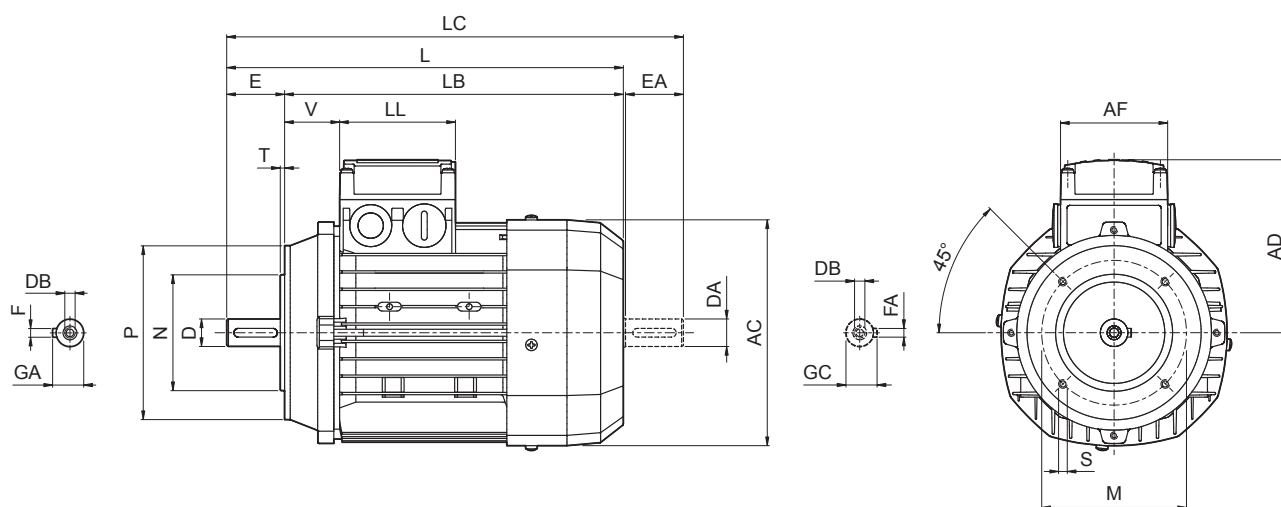
N.B.: 1) These values refer to the rear shaft end (PS).





**BX**

**BX - IM B14 - CE/CCC**



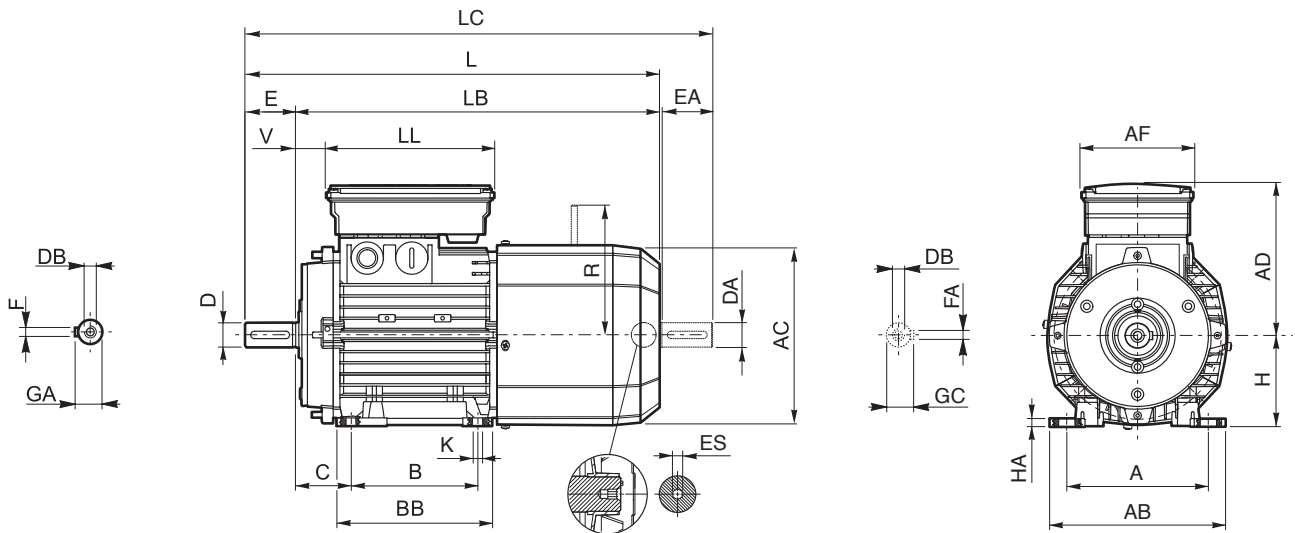
	Shaft					Housing					Motor								
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	
<b>BX 80 B</b>	19 14 <sup>(1)</sup>	4 30 <sup>(1)</sup>	M6 M5 <sup>(1)</sup>	21.5 16 <sup>(1)</sup>	6 5 <sup>(1)</sup>	100	80	120	M6		156	320	280	351	119	74	80	38	
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>	115	95	140	M8	3	176	326	276	368	133	98	98	44	
<b>BX 90 LA</b>																			
<b>BX 100 LA</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	130	110	160	M8	3.5	195	410	350	462	142	98	98	50	
<b>BX 100 LB</b>																			
<b>BX 112 M</b>																			
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	165	130	200	M10	4	258	493	413	556	193	118	118	58	

N.B.: 1) These values refer to the rear shaft end (PS).



# BX - IM B3 - FD/FA - CE/CCC

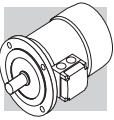
**BX**



	Shaft					Housing						Motor												
	D	E	DB	GA	F	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R		ES
	DA	EA	M	GC	FA																	FD	FA	(2)
<b>BX 80 B</b>	19 14 <sup>(1)</sup>	40 30 <sup>(1)</sup>	M6 M5 <sup>(1)</sup>	21.5 16 <sup>(1)</sup>	6 5 <sup>(1)</sup>	100	125		124	153		50	80	156	392	352	423	143	98	133	25	129	134	5
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>	125	140	8	155	174	10	56	90	176	410	360	452	146			32			
<b>BX 90 LA</b>						125																		
<b>BX 100 LA</b>							160					63	100	195	502	442	554	155	110	165	37	160	160	6
<b>BX 100 LB</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	140		10	175		12													
<b>BX 112 M</b>							190					70	112	219	527	467	579	170			39	199	198	
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	140	216	12	218	254	12	89	132	258	603	523	667	210	140	188	46	204	200	
<b>BX 132 MA</b>						178									627	547	690							226
<b>BX 160 MA</b>						210			264						736	626	820							
<b>BX 160 MB</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	254	254	25	304	319	14.5	108	160	310	780	670	864	245			51	266	247	
<b>BX 160 L</b>																			187	187				
<b>BX 180 M</b>	48 42 <sup>(1)</sup>		M16 M16 <sup>(1)</sup>	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>	241	279	26	291	359	14	121	180	348	866	756	981	261			52	305		
<b>BX 180 L</b>		110 110 <sup>(1)</sup>				279			329															
<b>BX 200LA</b>	55 45 <sup>(1)</sup>			59 48.5 <sup>(1)</sup>	16 14 <sup>(1)</sup>	267	318		345	378		133	200	423	982	872	1095	328			55	320		
<b>BX 225SA</b>	60 55 <sup>(1)</sup>			64 59 <sup>(1)</sup>	18 16 <sup>(1)</sup>	286	356	23	351	435	18.5	149	225	465	1058	918	1180	348	300	311	48	445		
<b>BX 225SB</b>		140 110 <sup>(1)</sup>																						
<b>BX 250MA</b>	65 55 <sup>(1)</sup>			69 59 <sup>(1)</sup>		311	406		392	480	24	168	250	514	1099	959	1225	376						
<b>BX 280SA</b>	75 65 <sup>(1)</sup>	140 140 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	79.5 69 <sup>(1)</sup>	20 18 <sup>(1)</sup>	368	457	31	506	530	24	190	280	567	1340	1200	1490	482	434	306	43	832		
<b>BX 280SB</b>																								
<b>BX 315SA</b>															1452	1282	1600							
<b>BX 315SB</b>	80 75 <sup>(1)</sup>			85 79.5 <sup>(1)</sup>	22 20 <sup>(1)</sup>	406	508	40	558	590	28	216	315	645	1497	1327	1645	537	473	347	42			
<b>BX 315SC</b>		170 140 <sup>(1)</sup>																						
<b>BX 315MA</b>	90 75 <sup>(1)</sup>			95 79.5 <sup>(1)</sup>	25 20 <sup>(1)</sup>	457			669						1607	1437	1755							
<b>BX 355MA</b>															1790	1580	1970							
<b>BX 355MB</b>	100 75 <sup>(1)</sup>	210 170 <sup>(1)</sup>	M24 M20 <sup>(1)</sup>	106 79.5 <sup>(1)</sup>	28 20 <sup>(1)</sup>	500	610	45	722	700	35	254	355	740	1825	1615	2005	603	694	413	50			
<b>BX 355MC</b>																								

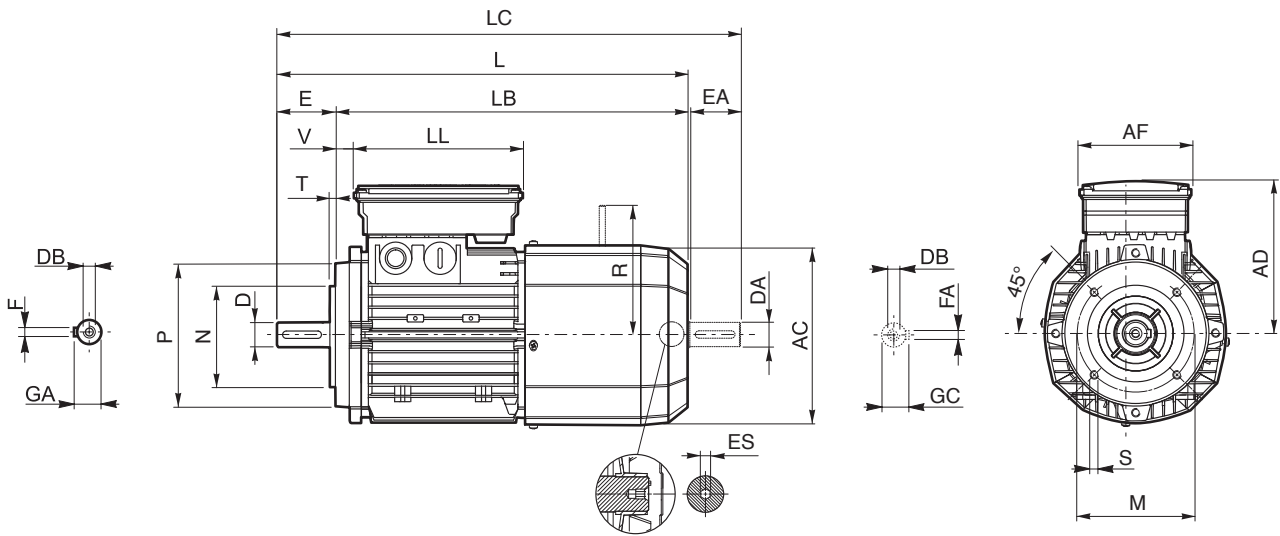
N.B.: 1) These values refer to the rear shaft end (PS). 2) "ES" hexagon is not present with PS option





# BX - IM B14 - FD/FA - CE/CCC

**BX**



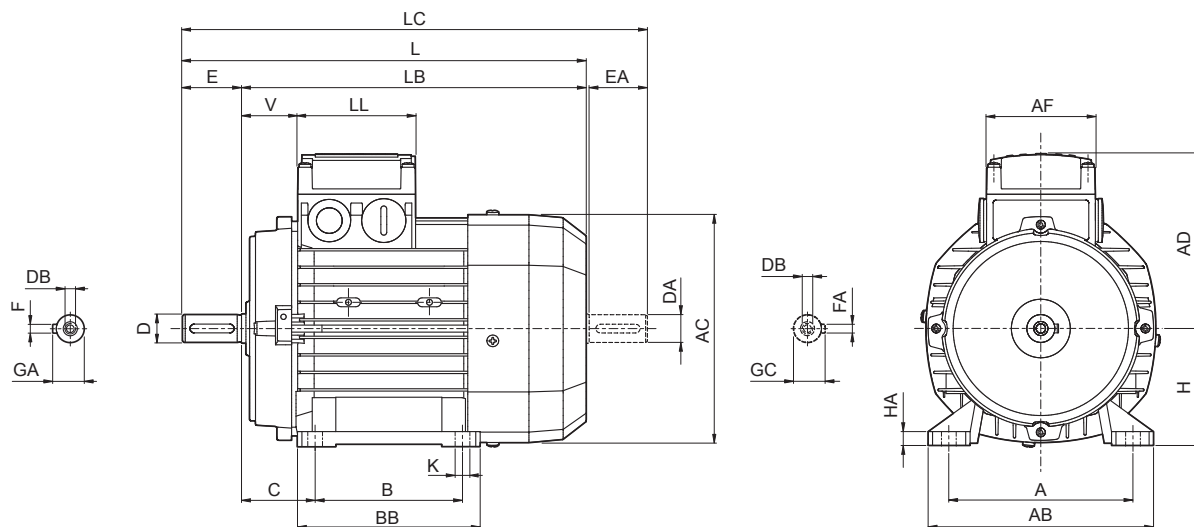
	Shaft					Housing					Motor											
	D	E	DB	GA	F	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	R		ES <sup>(2)</sup>	
	DA	EA	M	GC	FA														FD	FA		
<b>BX 80 B</b>	19 14 <sup>(1)</sup>	40 30 <sup>(1)</sup>	M6 M5 <sup>(1)</sup>	21.5 16 <sup>(1)</sup>	6 5 <sup>(1)</sup>	100	80	120	M6		156	392	352	423	143	98	133	25				5
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>	115	95	140		3	176	410	360	452	146			32	129	134		6
<b>BX 90 LA</b>																						
<b>BX 100 LA</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	130	110	160	M8	3.5	195	502	442	554	155	110	165	37	160	160		6
<b>BX 100 LB</b>																						
<b>BX 112 M</b>																						
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	165	130	200	M10	4	258	603	523	667	210	140	188	46	200			6
<b>BX 132 MA</b>												627	547	690					204	226		

N.B.: 1) These values refer to the rear shaft end (PS). 2) "ES" hexagon is not present with PS option



**BX**

**BX - IM B3 - CUS/NBR/EECA**



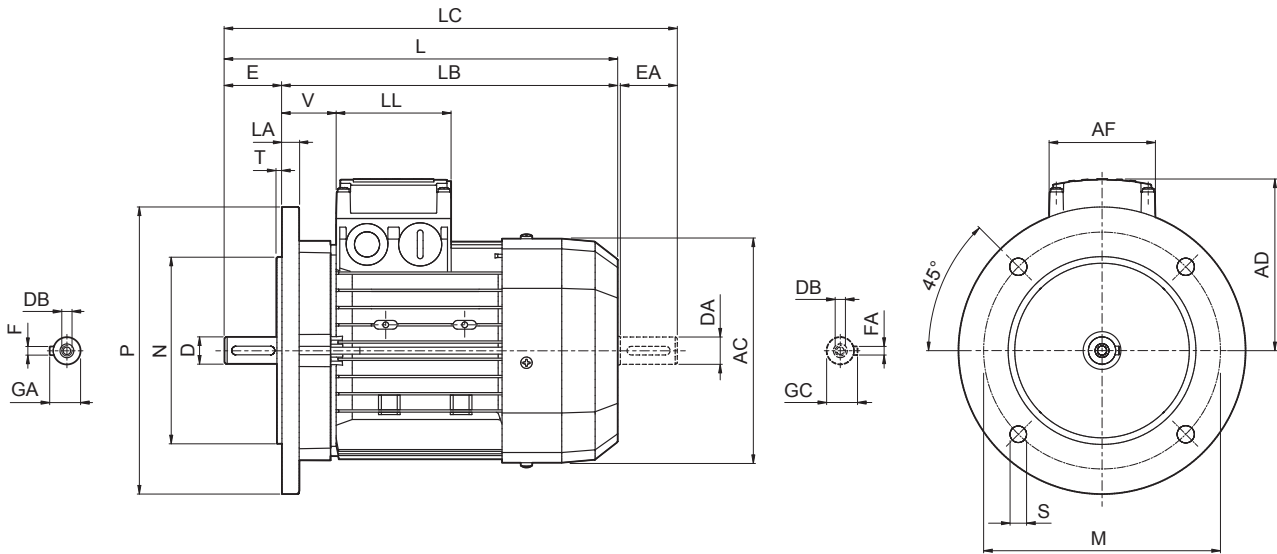
	Shaft					Housing						Motor																			
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V										
<b>BX 90 SR</b>	19 19 <sup>(1)</sup>	40 40 <sup>(1)</sup>	M6 M6 <sup>(1)</sup>	21.5 21.5 <sup>(1)</sup>	6 6 <sup>(1)</sup>	100	140	8	155	174	10	56	90	176	316	358	133	98	98	44											
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6(1)	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>										326	276					368										
<b>BX 90 LA</b>															378																
<b>BX 100 LA</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	140	160	10	175	192	12	63	100	195	410	350	462	142	50												
<b>BX 100 LB</b>							190			224					430	370	482			157											
<b>BX 112 M</b>							216			254					552	472	615			193	118	118	58								
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	178	216	12	218	254	12	89	132	258	552	472	615	193	118	118	58										
<b>BX 132 MA</b>																															
<b>BX 160 MA</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51										
<b>BX 160 MB</b>						254			304						640	530	724														
<b>BX 160 L</b>						291			359						708	598	823					261									
<b>BX 180 M</b>	48 42 <sup>(1)</sup>	110 110 <sup>(1)</sup>	M16 M16 <sup>(1)</sup>	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>	241	279	26	291	359	14	121	180	348	708	598	823	261	187	187	52										
<b>BX 180 L</b>	279					329			708						598	823	261														
<b>BX 200LAK</b>	55 45 <sup>(1)</sup>					M20 M16 <sup>(1)</sup>			59 48.5 <sup>(1)</sup>						16 14 <sup>(1)</sup>	267	318					345	378	18.5	133	200	417	821	711	934	328
<b>BX 225SAK</b>	60 55 <sup>(1)</sup>	140 110 <sup>(1)</sup>	64 59 <sup>(1)</sup>	18 16 <sup>(1)</sup>	286		356	351		435	149	225	460	879		739	1001	348	300	311											
<b>BX 225SBK</b>	311				406		392	480		168	250	510	884	744		1010	376														
<b>BX 250MAK</b>	65 55 <sup>(1)</sup>				M20 M20 <sup>(1)</sup>	79.5 69 <sup>(1)</sup>	20 18 <sup>(1)</sup>	368	457	31	506	530	24	190	280	564	1088	948	1238	482	434	306	43								
<b>BX 280SAK</b>	75 65 <sup>(1)</sup>	140 140 <sup>(1)</sup>	85 79.5 <sup>(1)</sup>	22 20 <sup>(1)</sup>				406	508	40	558	590		28	216	315	639	1204	1034	1352	537	473	347	42							
<b>BX 280SBK</b>	311							406	392	480	168	250		510	884	744	1010	376													
<b>BX 315SAK</b>	80 75 <sup>(1)</sup>				170 140 <sup>(1)</sup>	1315	1145	1453	603	694	413	50																			
<b>BX 315SBK</b>	311	406	392	480									168	250	510	884	744	1010	376												
<b>BX 315SCK</b>	311	406	392	480									168	250	510	884	744	1010	376												
<b>BX 355SAK</b>	100 75 <sup>(1)</sup>	210 170 <sup>(1)</sup>	M24 M20 <sup>(1)</sup>	106 79.5 <sup>(1)</sup>	28 20 <sup>(1)</sup>	500	610	45	722	700	35	254	355	740	1479	1269	1659	603	694	413	50										
<b>BX 355MAK</b>															1584	1374	1765														
<b>BX 355MBK</b>															1584	1374	1765														
<b>BX 355MCK</b>															1584	1374	1765														

N.B.: 1) These values refer to the rear shaft end (PS).



# BX - IM B5 - CUS/NBR/EECA

**BX**



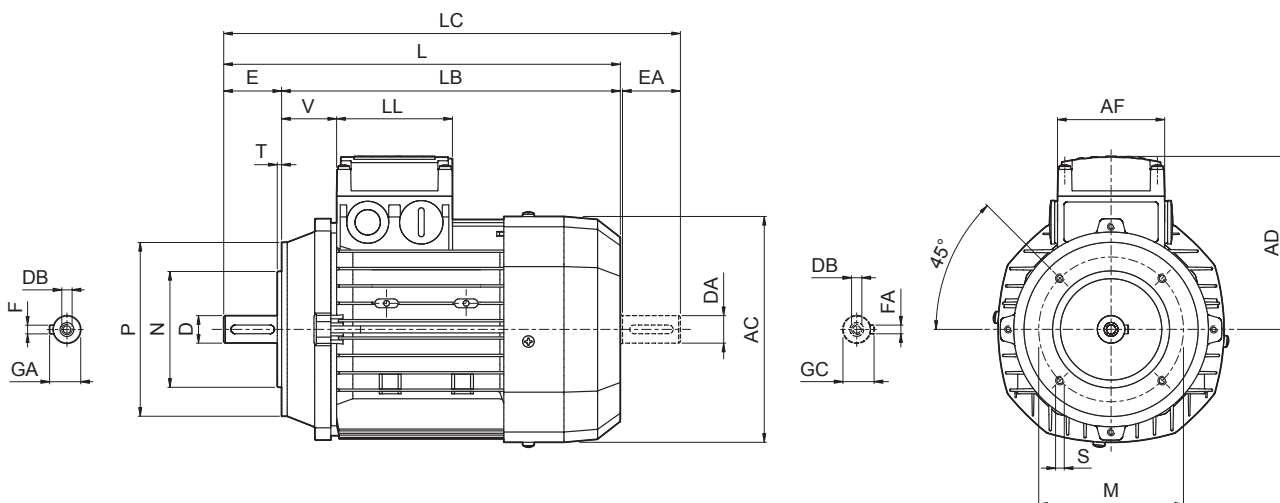
	Shaft					Flange					Motor								
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V
<b>BX 90SR</b>	19	40	M6	21.5	6	165	130	200	11.5	3.5	11.5	176	316	276	358	133	98	98	44
<b>BX 90LA</b>	19 <sup>(1)</sup>	40 <sup>(1)</sup>	M6 <sup>(1)</sup>	21.5 <sup>(1)</sup>	6 <sup>(1)</sup>														
<b>BX 100LA</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	215	180	250	14	4	14	195	410	350	462	142	98	98	50
<b>BX 100LB</b>																			
<b>BX 112M</b>											15	219	430	370	482	157			52
<b>BX 132SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	265	230	300	14	4	20	258	552	472	615	193	118	118	58
<b>BX 132MA</b>																			
<b>BX 160MA</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	300	250	350	18.5	5	15	310	596	486	680	245	187	187	51
<b>BX 160MB</b>																			
<b>BX 160L</b>													640	530	724				
<b>BX 180M</b>	48 42 <sup>(1)</sup>	110 110 <sup>(1)</sup>	M16 M16 <sup>(1)</sup>	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>	350	300	400	19	5	18	348	708	598	823	261	187	187	52
<b>BX 180L</b>																			
<b>BX 200LAK</b>	55 45 <sup>(1)</sup>		M20 M16 <sup>(1)</sup>	59 48.5 <sup>(1)</sup>	16 14 <sup>(1)</sup>	350	300	400	19	5	20	423	821	711	934	328			55
<b>BX 225SAK</b>	60 55 <sup>(1)</sup>	140 110 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	64 59 <sup>(1)</sup>	18 16 <sup>(1)</sup>	400	350	450	19	5	20	465	879	739	1001	348	300	311	48
<b>BX 225SBK</b>																			
<b>BX 250MAK</b>																			
<b>BX 280SAK</b>	75 65 <sup>(1)</sup>	140 140 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	79.5 69 <sup>(1)</sup>	20 18 <sup>(1)</sup>	500	450	550	18	5	23	567	1088	948	1238	482	434	306	43
<b>BX 280SBK</b>																			
<b>BX 315SAK</b>	80 75 <sup>(1)</sup>	170 140 <sup>(1)</sup>	M24 M20 <sup>(1)</sup>	85 79.5 <sup>(1)</sup>	22 20 <sup>(1)</sup>	600	550	660	23	6	25	645	1204	1034	1352	537	473	347	42
<b>BX 315SBK</b>																			
<b>BX 315SCK</b>													1315	1145	1453				
<b>BX 355SAK</b>	100 75 <sup>(1)</sup>	210 170 <sup>(1)</sup>	M24 M20 <sup>(1)</sup>	106 79.5 <sup>(1)</sup>	28 20 <sup>(1)</sup>	740	680	800	23	6	25	740	1479	1269	1659	603	694	413	50
<b>BX 355MAK</b>																			
<b>BX 355MBK</b>																			
<b>BX 355MCK</b>													1584	1374	1764				

N.B.: 1) These values refer to the rear shaft end (PS).



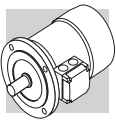
**BX**

**BX - IM B14 - CUS**



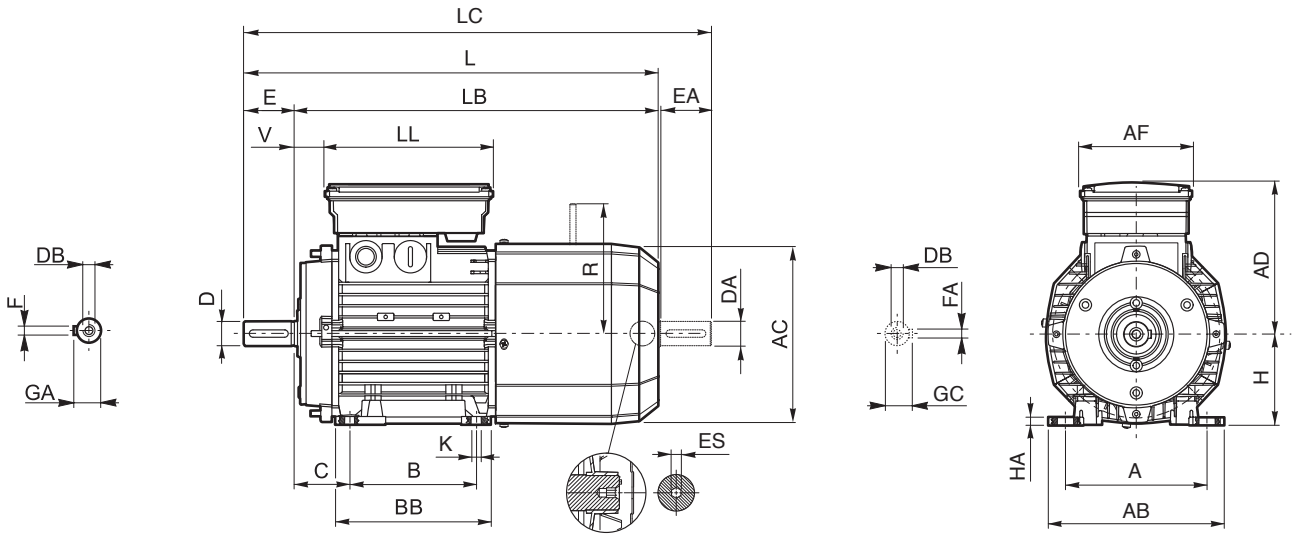
	Shaft					Housing					Motor												
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V					
<b>BX 90 SR</b>	19 19 <sup>(1)</sup>	40 40 <sup>(1)</sup>	M6 M6 <sup>(1)</sup>	21.5 21.5 <sup>(1)</sup>	6 6 <sup>(1)</sup>	100	80	120	M6	3	176	316	276	358	133	98	98	44					
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>	115	95	140	M8			3.5		195					326	368	142	157	50
<b>BX 90 LA</b>											219		430						370				
<b>BX 100 LA</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	130	110	160	M10	4	258	552	472	615	193	118	118	58					
<b>BX 100 LB</b>																			219	430	370	482	157
<b>BX 112 M</b>																							
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	165	130	200	M10	4	258	552	472	615	193	118	118	58					
<b>BX 132 MA</b>																							

N.B.: 1) These values refer to the rear shaft end (PS).



# BX - IM B3 - FD/FA - CUS/NBR/EECA

**BX**



	Shaft					Housing						Motor												
	D	E	DB	GA	F	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R		ES
	DA	EA	M	GC	FA																	FD	FA	(2)
<b>BX 90 SR</b>	19	40	M6	21.5	6	100	140	8	155	174	10	56	90	176	400	360	442	146	110	165	32	129	134	6
<b>BX 90 S</b>	19 <sup>(1)</sup>	40 <sup>(1)</sup>	M6 <sup>(1)</sup>	21.5 <sup>(1)</sup>	6 <sup>(1)</sup>																	129	134	
<b>BX 90 LA</b>	24	50	M8	27	8	125																		
<b>BX 100 LA</b>	28	60	M10	31	8	140	160	10	175	192	12	63	100	195	502	442	554	155	110	165	37	160	160	6
<b>BX 100 LB</b>							190														224	39	199	
<b>BX 112 M</b>												70	112	219	527	467	579	170						
<b>BX 132 SB</b>	38	80	M12	41	10	140	216	12	218	254	12	89	132	258	661	581	724	210	140	188	46	204	200	6
<b>BX 132 MA</b>	28 <sup>(1)</sup>	60 <sup>(1)</sup>	M10 <sup>(1)</sup>	27 <sup>(1)</sup>	8 <sup>(1)</sup>	178																224		
<b>BX 160 MA</b>	42	110	M16	45	12	210	254	25	304	319	14.5	108	160	310	736	626	820	245	187	187	51	266	247	6
<b>BX 160 MB</b>						254									319	780	670					864	266	
<b>BX 160 L</b>																								
<b>BX 180 M</b>	48	110	M16	51.5	14	241	279	26	291	359	14	121	180	348	866	756	981	261	187	187	52	305	6	
<b>BX 180 L</b>	42 <sup>(1)</sup>					14																12 <sup>(1)</sup>		329
<b>BX 200LAK</b>	55		M20	59	16	267	318		345	378	18.5	133	200	417	967	857	1082	328	300	311	55	323	6	
<b>BX 225SAK</b>	55 <sup>(1)</sup>	16	14 <sup>(1)</sup>	378	378	18.5	323																	
<b>BX 225SBK</b>	60	140	M20	64	18	286	356	23	351	435	24	149	225	460	1065	925	1180	348	300	311	48	308	6	
<b>BX 250MAK</b>	55 <sup>(1)</sup>	110 <sup>(1)</sup>		59	16 <sup>(1)</sup>	311	406	392	480	435												480		168
<b>BX 280SAK</b>	75	140	M20	79.5	20	368	457	31	506	530	24	190	280	564	1284	1144	1379	482	434	306	43	500	6	
<b>BX 280SBK</b>	65 <sup>(1)</sup>	140 <sup>(1)</sup>		48.5 <sup>(1)</sup>	14 <sup>(1)</sup>	530	530	530	530	530												530		530
<b>BX 315SAK</b>	80	170	M20	85	22	406	508	40	558	590	28	216	315	639	1493	1323	1643	537	473	347	42	678	6	
<b>BX 315SBK</b>															1530	1360	1680							
<b>BX 315SCK</b>															1604	1434	1791							
<b>BX 355SAK</b>	100	210	M24	106	28	500	610	45	722	700	35	254	355	725	1722	1512	1902	603	694	413	50	—	6	
<b>BX 355MAK</b>															1827	1617	2082							
<b>BX 355MBK</b>																								
<b>BX 355MCK</b>																								

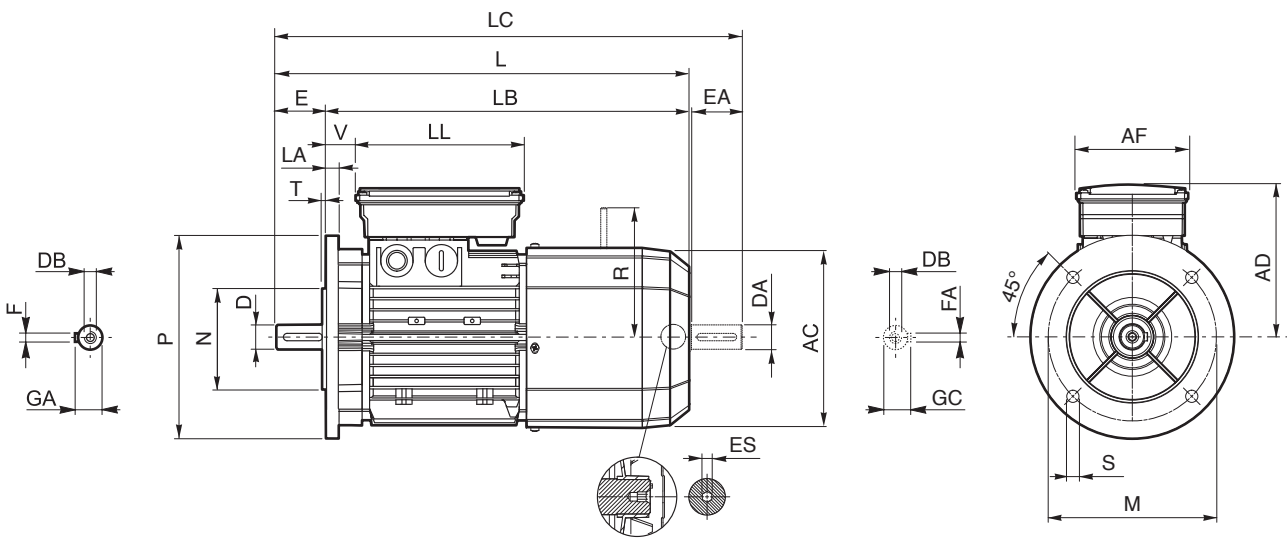
N.B.: 1) These values refer to the rear shaft end (PS). 2) "ES" hexagon is not present with PS option





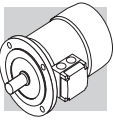
**BX**

**BX - IM B5 - FD/FA - CUS/NBR/EECA**



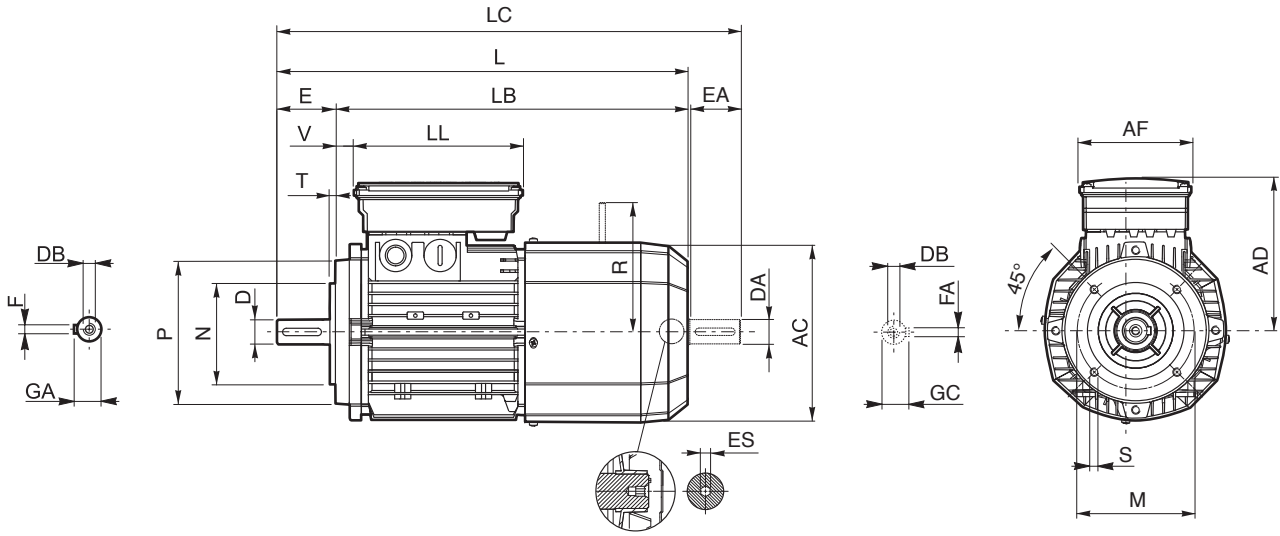
	Shaft					Flange					Motor												
	D	E	DB	GA	F	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V	R		ES	
	DA	EA	M	GC	FA															FD	FA	(2)	
<b>BX 90 SR</b>	19 19 <sup>(1)</sup>	40 40 <sup>(1)</sup>	M6 M6 <sup>(1)</sup>	21.5 21.5 <sup>(1)</sup>	6 6 <sup>(1)</sup>								400		442						129	134	6
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>	165	130	200	11.5	3.5	11.5	176	410	360	452	146		110	165	32			
<b>BX 90 LA</b>																					160	160	
<b>BX 100 LA</b>																							
<b>BX 100 LB</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	215	180	250			14	195	502	442	554	155				37			
<b>BX 112 M</b>									14	4	15	219	527	467	579	170				39	199	198	
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	265	230	300			16	258	661	581	724	210	140	188	46	204	200	226	
<b>BX 132 MA</b>																							
<b>BX 160 MA</b>													736	626	820								—
<b>BX 160 MB</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>						15	310	780	670	864	245				51	266	247	
<b>BX 160 L</b>						300	250	350	18.5	5							187	187					
<b>BX 180 M</b>	48 42 <sup>(1)</sup>		M16	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>						18	348	866	756	981	261				52	305		
<b>BX 180 L</b>		110 110 <sup>(1)</sup>	M16																				
<b>BX 200LAK</b>	55 45 <sup>(1)</sup>		M20 M16 <sup>(1)</sup>	59 48.5 <sup>(1)</sup>	16 14 <sup>(1)</sup>	350	300	400					417	967	857	1082	328			55	323		
<b>BX 225SAK</b>	60 55 <sup>(1)</sup>	140 110 <sup>(1)</sup>		64 59 <sup>(1)</sup>	18 16 <sup>(1)</sup>	400	350	450	19		20		460	1065	925	1180	348	300	311	48	308		
<b>BX 225SBK</b>																							
<b>BX 250MAK</b>	65 55 <sup>(1)</sup>			69 59 <sup>(1)</sup>							24		510	1070	930	1240	376				363		
<b>BX 280SAK</b>	75 65 <sup>(1)</sup>	140 140 <sup>(1)</sup>	M20 M20 <sup>(1)</sup>	79.5 69 <sup>(1)</sup>	20 18 <sup>(1)</sup>	500	450	550	18		23		564	1284	1144	1379	482	434	306	43	500	—	
<b>BX 280SBK</b>																							
<b>BX 315SAK</b>													1493	1323	1643								
<b>BX 315SBK</b>	80 75 <sup>(1)</sup>	170 140 <sup>(1)</sup>		85 79.5 <sup>(1)</sup>	22 20 <sup>(1)</sup>	600	550	660				639	1530	1360	1680	537	473	347	42		678		
<b>BX 315SCK</b>													1604	1434	1791								
<b>BX 355SAK</b>									23	6	25												
<b>BX 355MAK</b>	100 75 <sup>(1)</sup>	210 170 <sup>(1)</sup>	M24 M20 <sup>(1)</sup>	106 79.5 <sup>(1)</sup>	28 20 <sup>(1)</sup>	740	680	800				725	1722	1512	1902	603	694	413	50	—			
<b>BX 355MBK</b>																							
<b>BX 355MCK</b>													1827	1617	2082								

N.B.: 1) These values refer to the rear shaft end (PS). 2) "ES" hexagon is not present with PS option



# BX - IM B14 - FD/FA - CUS

**BX**




	Shaft					Housing					Motor												
	D	E	DB	GA	F	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	R		ES <sup>(2)</sup>		
	DA	EA	M	GC	FA														FD	FA			
<b>BX 90 SR</b>	19 19 <sup>(1)</sup>	40 40 <sup>(1)</sup>	M6 M6 <sup>(1)</sup>	21.5 21.5 <sup>(1)</sup>	6 6 <sup>(1)</sup>	100	80	120	M6			400		442									
<b>BX 90 S</b>	24 19 <sup>(1)</sup>	50 40 <sup>(1)</sup>	M8 M6 <sup>(1)</sup>	27 21.5 <sup>(1)</sup>	8 6 <sup>(1)</sup>	115	95	140		3	176		360		146			32		129	134		
<b>BX 90 LA</b>												410		452			110	165					
<b>BX 100 LA</b>									M8											160	160		
<b>BX 100 LB</b>	28 24 <sup>(1)</sup>	60 50 <sup>(1)</sup>	M10 M8 <sup>(1)</sup>	31 27 <sup>(1)</sup>	8 8 <sup>(1)</sup>	130	110	160		3.5	195	502	442	554	155			37				6	
<b>BX 112 M</b>											219	527	467	579	170			39		199	198		
<b>BX 132 SB</b>	38 28 <sup>(1)</sup>	80 60 <sup>(1)</sup>	M12 M10 <sup>(1)</sup>	41 31 <sup>(1)</sup>	10 8 <sup>(1)</sup>	165	130	200	M10	4	258	661	581	724	210	140	188	46			200		
<b>BX 132 MA</b>																					226		

N.B.: 1) These values refer to the rear shaft end (PS). 2) "ES" hexagon is not present with PS option




## 15 MOTOR RATING CHARTS BE

<b>2 P</b>	<b>3000 min<sup>-1</sup> - S1</b>	<b>50 Hz - IE2</b>
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P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	I <sub>n</sub> 400V A	η%			cos φ	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	
					100%	75%	50%							
0.75	<b>BE 80A</b>	2	2860	2.5	1.65	80.0	79.6	76.4	0.83	6.8	3.8	3.5	9.0	9.5
1.1	<b>BE 80B</b>	2	2845	3.7	2.35	81.5	82.2	79.9	0.83	6.9	3.8	3.1	11.4	11.3
1.5	<b>BE 90SA</b>	2	2865	5.0	3.2	81.3	80.7	78.1	0.82	6.8	3.6	2.8	12.5	12.3
2.2	<b>BE 90L</b>	2	2870	7.3	4.7	83.2	83.1	80.8	0.82	6.9	3.1	2.9	16.7	14
3	<b>BE 100L</b>	2	2880	9.9	6.2	84.6	84.6	83.7	0.83	7.3	3.5	3.1	39	23
4	<b>BE 112M</b>	2	2920	13.1	8.2	85.8	85.5	84.3	0.82	7.9	3.5	3.1	57	28
5.5	<b>BE 132SA</b>	2	2925	18.0	10.6	87.0	85.0	81.7	0.86	8.5	3.6	3.3	145	42
7.5	<b>BE 132SB</b>	2	2935	24	14.3	88.1	87.4	84.7	0.86	8.8	3.9	3.6	178	53
9.2	<b>BE 132MB</b>	2	2920	30	16.4	88.8	86.5	84.2	0.91	8.4	3.7	3.3	210	65
11	<b>BE 160MA</b>	2	2940	36	20.0	89.4	89.5	88.0	0.89	8.1	3.0	2.9	340	84
15	<b>BE 160MB</b>	2	2950	49	27.2	90.5	90.5	89.5	0.88	8.5	3.0	2.8	420	97
18.5	<b>BE 160L</b>	2	2945	60	32	90.9	90.5	89.8	0.91	7.7	2.9	2.7	490	109



<b>4 P</b>	<b>1500 min<sup>-1</sup> - S1</b>	<b>50 Hz - IE2</b>
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P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	I <sub>n</sub> 400V A	η%			cos φ	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 Kg	
					100%	75%	50%							
0.37	<b>BE 71B</b>	4	1385	2.55	1.05	70.1	69.3	64.2	0.75	4.0	2.3	2.2	6.9	5.9
0.55	<b>BE 80A</b>	4	1405	3.7	1.41	75.1	74.9	71.2	0.76	4.3	2.2	1.9	15	8.2
0.75	<b>BE 80B</b>	4	1430	5.0	1.65	81.0	80.5	78.0	0.81	6.1	3.2	3.0	28	12.2
1.1	<b>BE 90S</b>	4	1430	7.4	2.53	82.5	82.0	79.5	0.76	6.3	2.9	2.8	28	13.6
1.5	<b>BE 90LA</b>	4	1430	10.0	3.5	83.5	83.0	80.0	0.74	5.9	3.1	3.0	34	15.1
2.2	<b>BE 100LA</b>	4	1430	14.7	4.9	85.4	85.0	84.0	0.76	5.8	3.0	2.8	54	22
3	<b>BE 100LB</b>	4	1420	20	6.6	85.5	86.0	85.5	0.77	5.9	2.8	2.6	61	24
4	<b>BE 112M</b>	4	1440	27	8.3	87.0	87.0	86.0	0.80	6.5	2.8	2.8	105	32
5.5	<b>BE 132S</b>	4	1460	36	11.1	88.5	88.5	87.5	0.81	7.3	2.9	2.9	270	53
7.5	<b>BE 132MA</b>	4	1460	49	14.8	89.0	89.0	88.5	0.82	6.9	2.9	2.8	319	59
9.2	<b>BE 132MB</b>	4	1460	60	18.1	89.5	89.5	88.5	0.82	6.9	2.9	3.0	360	70
11	<b>BE 160M</b>	4	1465	72	21.5	91.0	91.3	90.5	0.81	6.5	2.8	2.6	650	99
15	<b>BE 160L</b>	4	1465	98	28.7	90.8	91.0	90.5	0.83	6.5	2.6	2.3	790	115
18.5	<b>BE 180M</b>	4	1465	121	35	91.6	92.0	91.3	0.83	6.5	2.6	2.5	1250	135
22	<b>BE 180L</b>	4	1465	143	41	91.6	91.8	91.4	0.84	6.8	2.7	2.6	1650	157



**BE**

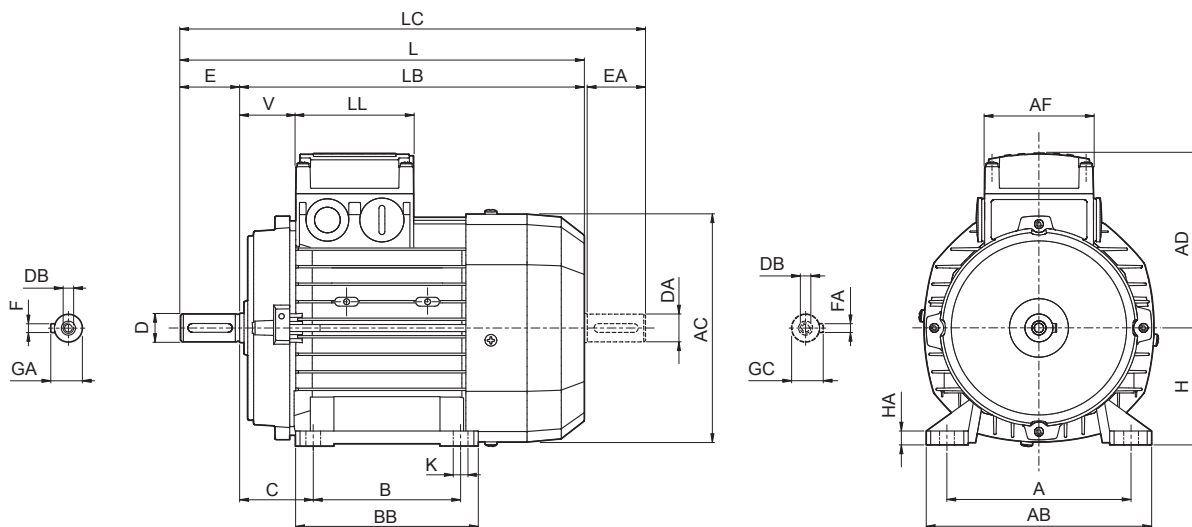
<b>6 P</b>	<b>1000 min<sup>-1</sup> - S1</b>	<b>50 Hz - IE2</b>
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P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	I <sub>n</sub> 400V A	η%			cos φ	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5  Kg
					100%	75%	50%						
0.75	<b>BE 90S 6</b>	935	7.7	2.06	75.9	75.9	73.0	0.69	5.1	3.1	2.9	33	15
1.1	<b>BE 100M 6 (*)</b>	945	11.1	2.75	78.1	76.2	73.0	0.74	4.9	2.2	1.9	82	22
1.5	<b>BE 100LA 6</b>	945	15.2	3.9	79.8	77.5	74.0	0.72	5.6	2.5	2.3	95	24
2.2	<b>BE 112M 6</b>	950	22	5.2	81.8	81.8	79.3	0.74	5.2	2.6	2.3	168	32
3	<b>BE 132S 6</b>	955	30	6.6	83.3	83.3	82.4	0.79	6.1	2.1	1.9	295	44
4	<b>BE 132MA 6</b>	965	40	8.7	84.6	85.0	83.1	0.79	6.9	2.2	2.0	383	56
5.5	<b>BE 160MA 6 (*)</b>	965	54	11.6	87.0	87.0	86.4	0.79	6.6	2.5	2.3	740	83
7.5	<b>BE 160MB 6 (*)</b>	965	74	15.0	88.0	88.0	87.2	0.82	6.6	2.3	2.1	970	103

(\*) Power /size relation not standardized



**BE - IM B3**



	Shaft					Housing						Motor									
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V
BE 71	14	30	M5	16	5	90	112	8	112	135	7	45	71	138	249	219	281	108	74	80	37
BE 80	19	40	M6	21.5	6	100	125		124	153	10	50	80	156	274	234	315	119			
BE 90 S	24	50	M8	27	8	125	140		155	174		63	90	176	326	276	378	133	142	157	50
BE 90 L						140	190	224	70	112	219	385	325	448	157	52					
BE 100	28	60	M10	31	8	140	160	10	175	192	224	63	100	195	367	307	429	142	98	98	50
BE 112																					
BE 132 S	38	80	M12	41	10	178	216	12	218	254	12	89	132	258	493	413	576	193	118	118	58
BE 132 MA															528	448	611				
BE 132 MB															528	448	611				
BE 160 M	42	110	M16	45	12	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51
BE 160 L	38 <sup>(1)</sup>	80 <sup>(1)</sup>	M12 <sup>(1)</sup>	41 <sup>(1)</sup>	10 <sup>(1)</sup>	254			304						640	530	724				
BE 180 M	48	110	M16	51.5	14	241	279	26	291	359	14	121	180	348	708	598	823	261	187	187	52
BE 180 L						42 <sup>(1)</sup>			110 <sup>(1)</sup>												

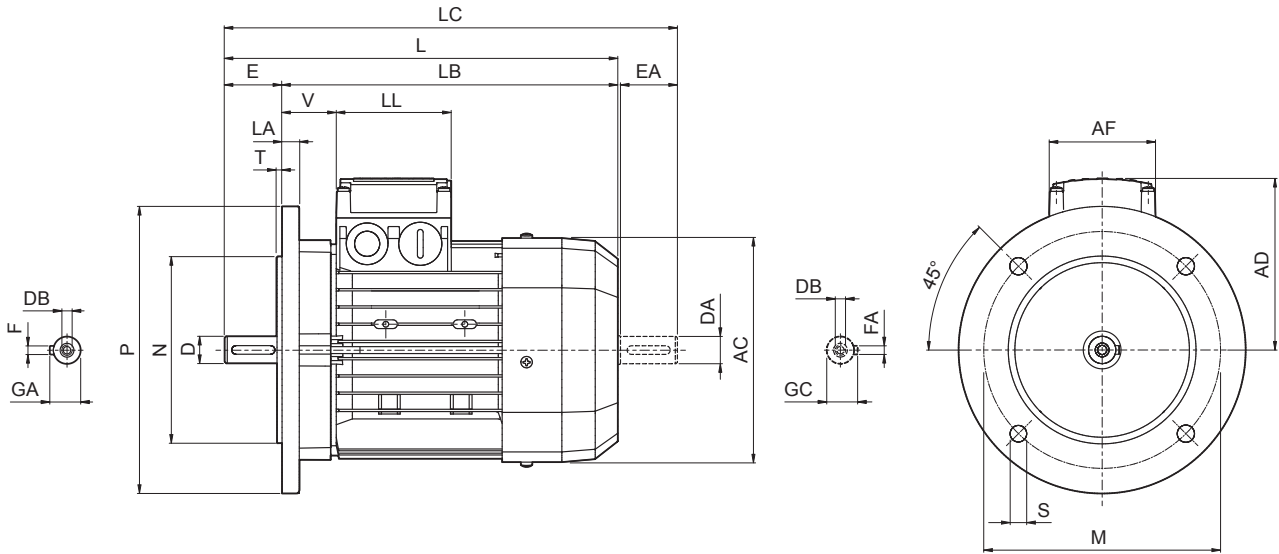
N.B.:

1) These values refer to the rear shaft end.



# BE - IM B5

BE



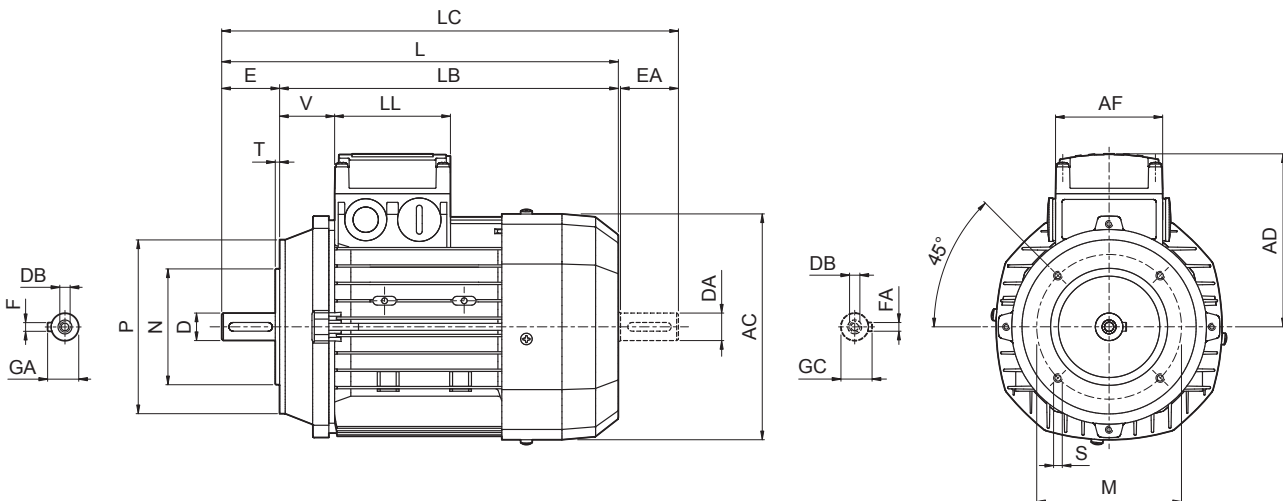
	Shaft					Flange					Motor										
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V		
BE 71	14	30	M5	16	5	130	110	160	9.5	3.5	10	138	249	219	281	108	74	80	37		
BE 80	19	40	M6	21.5	6	165	130	200	11.5		11.5	156	274	234	315	119			98	98	38
BE 90 S	24	50	M8	27	8						215	180	250	14	4	176	326	276			378
BE 90 L						20	258	493	413	576						528	448	611			58
BE 100	28	60	M10	31	10	265	230	300	14	4	14	195	367	307	429	142	193	118	118	50	
BE 112											15	219	385	325	448	157				58	
BE 132 S	38	80	M12	41	10	265	230	300	14	4	20	258	493	413	576	193	118	118	58		
BE 132 MA																					
BE 132 MB																					
BE 160 M	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	300	250	350	18.5	5	15	310	596	486	680	245	187	187	51		
BE 160 L													640	530	724						
BE 180 M	48 42 <sup>(1)</sup>	110 110 <sup>(1)</sup>	M16 M16 <sup>(1)</sup>	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>	300	250	350	18.5	5	18	348	708	598	823	261	187	187	52		
BE 180 L																					

N.B.:

1) These values refer to the rear shaft end.

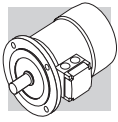


# BE - IM B14



**BE**

	Shaft					Flange					Motor							
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V
BE 71	14	30	M5	16	5	85	70	105	M6	2.5	138	249	219	281	108	74	80	37
BE 80	19	40	M6	21.5	6	100	80	120										
BE 90 S	24	50	M8	27	8	115	95	140	M8	3	176	326	276	378	133	98	98	44
BE 90 L																		
BE 100	28	60	M10	31	8	130	110	160	M8	3.5	195	367	307	429	142	98	98	50
BE 112																		
BE 132 S	38	80	M12	41	10	165	130	200	M10	4	258	493	413	576	193	118	118	58
BE 132 MA																		
BE 132 MB												528	448	611				



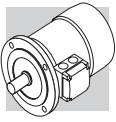
17 MOTOR RATING CHARTS BN




2P		3000 min <sup>-1</sup> - S1														50 Hz												
P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	IE1	η (100%) %	η (75%) %	η (50%) %	cosφ	I <sub>n</sub> 400V A	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	d.c. brake						a.c. brake							
															Mod	M <sub>b</sub> Nm	Z <sub>0</sub> 1/h	NB	SB	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	M <sub>b</sub> Nm	Z <sub>0</sub> 1/h	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	FA	
																											FA	IM B5 
0.18	BN 63A	2	2730	0.63	○	59.9	56.9	51.9	0.77	0.56	3.0	2.1	2.0	2.0	3.5	FD 02	1.75	3900	4800	2.6	5.2	FA 02	1.75	4800	2.6	5.0		
0.25	BN 63B	2	2740	0.87	○	66.0	64.8	64.8	0.76	0.72	3.3	2.3	2.3	2.3	3.9	FD 02	1.75	3900	4800	3.0	5.6	FA 02	1.75	4800	3.0	5.4		
0.37	BN 63C	2	2800	1.26	○	69.1	66.8	66.8	0.78	0.99	3.9	2.6	2.6	3.3	5.1	FD 02	3.5	3600	4500	3.9	6.8	FA 02	3.5	4500	3.9	6.6		
0.37	BN 71A	2	2820	1.25	○	73.8	73.0	70.6	0.76	0.95	4.8	2.8	2.6	3.5	5.4	FD 03	3.5	3000	4100	4.6	8.1	FA 03	3.5	4200	4.6	7.8		
0.55	BN 71B	2	2820	1.86	○	76.0	75.8	74.8	0.76	1.37	5.0	2.9	2.8	4.1	6.2	FD 03	5	2900	4200	5.3	8.9	FA 03	5	4200	5.3	8.6		
0.75	BN 71C	2	2810	2.6	○	76.6	76.2	76.2	0.76	1.86	5.1	3.1	2.8	5.0	7.3	FD 03	5	1900	3300	6.1	10.0	FA 03	5	3600	6.1	9.7		
0.75	BN 80A	2	2810	2.6	●	76.2	75.5	66.3	0.81	1.75	4.8	2.6	2.2	7.8	8.6	FD 04	5	1700	3200	9.4	12.5	FA 04	5	3200	9.4	12.4		
1.1	BN 80B	2	2800	3.8	●	76.4	76.2	75.0	0.81	2.57	4.8	2.8	2.4	9.0	9.5	FD 04	10	1500	3000	10.6	13.4	FA 04	10	3000	10.6	13.3		
1.5	BN 80C	2	2800	5.1	●	79.1	79.5	77.2	0.81	3.4	4.9	2.7	2.4	11.4	11.3	FD 04	15	1300	2600	13.0	15.2	FA 04	15	2600	13.0	15.1		
1.5	BN 90SA	2	2870	5.0	●	82.0	81.5	78.1	0.80	3.4	5.9	2.7	2.6	12.5	12.3	FD 14	15	900	2200	14.1	16.5	FA 14	15	2200	14.1	16.4		
1.85	BN 90SB	2	2880	6.1	●	82.5	82.0	75.4	0.80	4.0	6.2	2.9	2.6	16.7	14	FD 14	15	900	2200	18.3	18.2	FA 14	15	2200	18.3	18.1		
2.2	BN 90L	2	2880	7.3	●	82.7	82.1	80.8	0.80	4.8	6.3	2.9	2.7	16.7	14	FD 05	26	900	2200	21	20	FA 05	26	2200	21	20.7		
3	BN 100L	2	2860	10.0	●	81.5	81.3	77.4	0.79	6.7	5.6	2.6	2.2	31	20	FD 15	26	700	1600	35	26	FA 15	26	1600	35	27		
4	BN 100LB	2	2870	13.3	●	83.1	83.0	77.8	0.80	8.7	5.8	2.7	2.5	39	23	FD 15	40	450	900	43	29	FA 15	40	1000	43	30		
4	BN 112M	2	2900	13.2	●	85.5	84.5	83.0	0.82	8.2	6.9	3.0	2.9	57	28	FD 06S	40	—	950	66	39	FA 06S	40	950	66	40		
5.5	BN 132SA	2	2890	18.2	●	84.7	84.5	81.2	0.84	11.2	5.9	2.6	2.2	101	35	FD 06	50	—	600	112	48	FA 06	50	600	112	49		
7.5	BN 132SB	2	2900	25	●	86.5	86.3	84.4	0.85	14.7	6.4	2.6	2.2	145	42	FD 06	50	—	550	154	55	FA 06	50	550	154	56		
9.2	BN 132M	2	2930	30	●	87.0	86.5	83.6	0.86	17.7	6.7	2.8	2.3	178	53	FD 56	75	—	430	189	66	FA 06	75	430	189	67		
11	BN 160MR	2	2920	36	●	87.6	87.0	86.0	0.88	20.6	6.9	2.9	2.5	210	65													
15	BN 160MB	2	2930	49	●	89.6	89.4	88.0	0.86	28.1	7.1	2.6	2.3	340	84													
18.5	BN 160L	2	2930	60	●	90.4	90.1	89.0	0.86	34	7.6	2.7	2.3	420	97													
22	BN 180M	2	2930	72	●	89.9	89.7	89.5	0.88	40	7.8	2.6	2.4	490	109													
30	BN 200LA	2	2930	98	●	90.7	90.1	87.6	0.89	54	7.8	2.7	2.9	770	140													

○ = n.a. ● = IE1



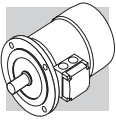





6P		1000 min <sup>-1</sup> - S1														50 Hz									
		d.c. brake														a.c. brake									
		P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	IE1	η (100%) %	η (75%) %	η (50%) %	cosφ	In 400V A	Is In %	Ms Mn %	Ma Mn %	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h	SB	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h
NB	FA																								
0.09	BN 63A	6	0.98	○	41.0	41.0	32.9	0.53	0.60	2.1	2.1	1.8	3.4	4.6	FD 02	3.5	9000	14000	4.0	6.3	FA 02	3.5	14000	4.0	6.1
0.12	BN 63B	6	1.32	○	45.0	44.0	41.8	0.60	0.64	2.1	1.9	1.7	3.7	4.9	FD 02	3.5	9000	14000	4.3	6.6	FA 02	3.5	14000	4.3	6.4
0.18	BN 71A	6	1.91	○	55.0	55.5	51.0	0.69	0.68	2.6	1.9	1.7	8.4	5.5	FD 03	5	8100	13500	9.5	8.2	FA 03	5.0	13500	9.5	7.9
0.25	BN 71B	6	2.70	○	62.0	58.5	51.4	0.71	0.82	2.6	1.9	1.7	10.9	6.7	FD 03	5	7800	13000	12	9.4	FA 03	5.0	13000	12	9.1
0.37	BN 71C	6	3.9	○	66.0	60.0	53.3	0.69	1.17	3.0	2.4	2.0	12.9	7.7	FD 53	7.5	5100	9500	14	10.4	FA 03	7.5	9500	14	10.1
0.37	BN 80A	6	3.9	○	68.0	67.4	63.3	0.68	1.15	3.2	2.2	2.0	21	9.9	FD 04	10	5200	8500	23	13.8	FA 04	10	8500	23	13.7
0.55	BN 80B	6	5.7	○	70.0	69.8	64.3	0.68	1.67	3.9	2.6	2.2	25	11.3	FD 04	15	4800	7200	27	15.2	FA 04	15	7200	27	15.1
0.75	BN 80C	6	7.8	●	70.0	70.0	64.4	0.65	2.38	3.8	2.5	2.2	28	12.2	FD 04	15	3400	6400	30	16.1	FA 04	15	6400	30	16.0
0.75	BN 90S	6	7.8	●	70.0	69.0	64.2	0.68	2.27	3.8	2.4	2.2	26	12.6	FD 14	15	3400	6500	28	16.8	FA 14	15	6500	28	16.7
1.1	BN 90L	6	11.4	●	72.9	72.6	69.1	0.69	3.2	3.9	2.3	2.0	33	15	FD 05	26	2700	5000	37	21	FA 05	26	5000	37	22
1.5	BN 100LA	6	15.2	●	75.2	74.2	70.3	0.72	4.0	4.1	2.1	2.0	82	22	FD 15	40	1900	4100	86	28	FA 15	40	4100	86	29
1.85	BN 100LB	6	19.0	●	76.6	72.8	62.6	0.73	4.8	4.6	2.1	2.0	95	24	FD 15	40	1700	3600	99	30	FA 15	40	3600	99	31
2.2	BN 112M	6	22	●	78.5	79.0	76.5	0.73	5.5	4.8	2.2	2.0	168	32	FD 06S	60	—	2100	177	42	FA 06S	60	2100	177	44
3	BN 132S	6	30	●	79.7	77.0	75.1	0.76	7.1	5.1	1.9	1.8	216	36	FD 56	75	—	1400	226	49	FA 06	75	1400	226	50
4	BN 132MA	6	40	●	81.4	81.5	79.5	0.77	9.2	5.5	2.0	1.8	295	45	FD 06	100	—	1200	305	58	FA 07	100	1200	318	63
5.5	BN 132MB	6	56	●	83.1	80.9	79.1	0.78	12.2	6.1	2.1	1.9	383	56	FD 07	150	—	1050	406	72	FA 07	150	1050	406	74
7.5	BN 160M	6	75	●	85.0	85.0	84.8	0.81	15.7	5.9	2.2	2.0	740	83	FD 08	170	—	900	815	112	FA 08	170	900	815	113
11	BN 160L	6	109	●	86.4	86.5	85.9	0.81	22.7	6.6	2.5	2.3	970	103	FD 08	200	—	800	1045	133	FA 08	200	800	1045	133
15	BN 180L	6	148	●	87.7	88.0	87.3	0.82	30	6.2	2.0	2.4	1550	130	FD 09	300	—	600	1750	170	FA 09	300	600	1750	170
18.5	BN 200LA	6	184	●	88.6	88.0	87.3	0.81	37	5.9	2.0	2.3	1700	145	FD 09	400	—	450	1900	185	FA 09	400	450	1900	185

○ = n.a.    ● = IE1







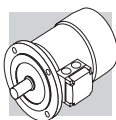



2/4P		3000/1500 min <sup>-1</sup> - S1														50 Hz													
		d.c. brake														a.c. brake													
		FD							FA							FD							FA						
P <sub>n</sub>		n	M <sub>n</sub>	η	cos φ	I <sub>n</sub>	I <sub>s</sub>	M <sub>s</sub>	M <sub>a</sub>	J <sub>m</sub>	IM B5	Mod	Mb	Z <sub>o</sub>	J <sub>m</sub>	IM B5	Mod	Mb	Z <sub>o</sub>	J <sub>m</sub>	IM B5								
kW		min <sup>-1</sup>	Nm	%		A	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	$\frac{J_m}{kgm^2}$	$\frac{kg}{kg}$		Nm	1/h	$\frac{kgm^2}{x 10^{-4}}$	$\frac{kg}{kg}$		Nm	1/h	$\frac{kgm^2}{x 10^{-4}}$	$\frac{kg}{kg}$								
0.20	BN 63B	2	0.71	55	0.82	0.64	3.5	2.1	1.9	2.9	4.4	FD 02	3.5	2200	2600	3.5	6.1	FA 02	3.5	2600	3.5	5.9							
0.15		4	1.350	49	0.67	0.66	2.6	1.8	1.7					4000	5100					5100									
0.28	BN 71A	2	0.99	56	0.82	0.88	2.9	1.9	1.7	4.7	4.4	FD 03	3.5	2100	2400	5.8	7.1	FA 03	3.5	2400	5.8	6.8							
0.20		4	1.370	59	0.72	0.68	3.1	1.8	1.7					3800	4800					4800									
0.37	BN 71B	2	1.29	56	0.82	1.16	3.5	1.8	1.8	5.8	5.1	FD 03	5.0	1400	2100	6.9	7.8	FA 03	5.0	2100	6.9	7.5							
0.25		4	1.390	60	0.73	0.82	3.3	2.0	1.9					2900	4200					4200									
0.45	BN 71C	2	1.55	63	0.85	1.21	3.8	1.8	1.8	6.9	5.9	FD 03	5.0	1400	2100	8.0	8.6	FA 03	5.0	2100	8.0	8.3							
0.30		4	1.400	63	0.73	0.94	3.6	2.0	1.9					2800	4200					4200									
0.55	BN 80A	2	1.9	63	0.85	1.48	3.9	1.7	1.7	15	8.2	FD 04	5.0	1600	2300	17	12.1	FA 04	5.0	2300	17	12.0							
0.37		4	1.400	67	0.79	1.01	4.1	1.8	1.9					3000	4000					4000									
0.75	BN 80B	2	2.6	65	0.85	1.96	3.8	1.9	1.8	20	9.9	FD 04	10	1400	1600	22	13.8	FA 04	10	1600	22	13.7							
0.55		4	1.400	68	0.81	1.44	3.9	1.7	1.7					2700	3600					3600									
1.1	BN 90S	2	3.8	71	0.82	2.73	4.7	2.3	2.0	21	12.2	FD 14	10	1500	1600	23	16.4	FA 14	10	1600	23	16.3							
0.75		4	1.390	66	0.79	2.08	4.6	2.4	2.2					2300	2800					2800									
1.5	BN 90L	2	5.2	70	0.85	3.64	4.5	2.4	2.1	28	14.0	FD 05	26	1050	1200	32	20	FA 05	26	1200	32	21							
1.1		4	1.390	73	0.81	2.69	4.7	2.5	2.2					1600	2000					2000									
2.2	BN 100LA	2	7.5	72	0.85	5.2	4.5	2.0	1.9	40	18.3	FD 15	26	600	900	44	25	FA 15	26	900	44	25							
1.5		4	1.410	73	0.79	3.8	4.7	2.0	2.0					1300	2300					2300									
3.5	BN 100LB	2	11.7	80	0.84	7.5	5.4	2.2	2.1	61	25	FD 15	40	500	900	65	31	FA 15	40	900	65	32							
2.5		4	1.420	82	0.80	5.5	5.2	2.2	2.2					1000	2100					2100									
4	BN 112M	2	13.3	79	0.83	8.8	6.1	2.4	2.0	98	30	FD 06S	60	—	700	107	40	FA 06S	60	700	107	42							
3.3		4	1.420	80	0.80	7.4	5.1	2.1	2.0					—	1200					1200									
5.5	BN 132S	2	18.2	80	0.87	11.4	5.9	2.4	2.0	213	44	FD 56	75	—	350	223	57	FA 06	75	350	223	58							
4.4		4	1.440	82	0.84	9.2	5.3	2.2	2.0					—	900					900									
7.5	BN 132MA	2	25	82	0.87	15.2	6.5	2.4	2.0	270	53	FD 06	100	—	350	280	66	FA 07	100	350	280	71							
6		4	1.430	84	0.85	12.1	5.8	2.3	2.1					—	900					900									
9.2	BN 132MB	2	30	83	0.86	18.6	6.0	2.6	2.2	319	59	FD 07	150	—	300	342	75	FA 07	150	300	342	77							
7.3		4	1.440	85	0.85	14.6	5.5	2.3	2.1					—	800					800									



**2/6P**      **3000/1000 min<sup>-1</sup> - S3 60/40%**      **50 Hz**




P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	η %	cosφ	I <sub>n</sub> 400V A	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	d.c. brake						a.c. brake					
												FD			FA			FD			FA		
												Mb Nm	Z <sub>0</sub> 1/h	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h
0.25	<b>BN 71A</b>	2	0.84	60	0.82	0.73	4.3	1.9	1.8	6.9	5.9	<b>FD 03</b>	1.75	1500	1700	8.0	<b>FA 03</b>	2.5	1700	8.0	8.3		
0.08		6	0.84	43	0.70	0.38	2.1	1.4	1.5					10000	13000								
0.37	<b>BN 71B</b>	2	1.23	62	0.80	1.08	4.4	1.9	1.8	9.1	7.3	<b>FD 03</b>	3.5	1000	1300	10.2	<b>FA 03</b>	3.5	1300	10.2	9.7		
0.12		6	1.27	44	0.73	0.54	2.4	1.4	1.5					9000	11000								
0.55	<b>BN 80A</b>	2	1.88	63	0.86	1.47	4.5	1.9	1.7	20	9.9	<b>FD 04</b>	5.0	1500	1800	22	<b>FA 04</b>	5.0	1800	22	13.7		
0.18		6	1.85	52	0.65	0.77	3.3	2.0	1.9					4100	6300								
0.75	<b>BN 80B</b>	2	2.6	66	0.87	1.89	4.3	1.8	1.6	25	11.3	<b>FD 04</b>	5.0	1700	1900	27	<b>FA 04</b>	5.0	1900	27	15.1		
0.25		6	2.6	54	0.67	1.00	3.2	1.7	1.8					3800	6000								
1.10	<b>BN 90L</b>	2	3.7	67	0.84	2.82	4.7	2.1	1.9	28	14.0	<b>FD 05</b>	13	1400	1600	32	<b>FA 05</b>	13	1600	32	21		
0.37		6	3.8	59	0.71	1.27	3.3	1.6	1.6					3400	5200								
1.5	<b>BN 100LA</b>	2	5	73	0.84	3.53	5.1	1.9	2.0	40	18.3	<b>FD 15</b>	13	1000	1200	44	<b>FA 15</b>	13	1200	44	25		
0.55		6	5.6	64	0.67	1.85	3.5	1.7	1.8					2900	4000								
2.2	<b>BN 100LB</b>	2	7.2	77	0.85	4.9	5.9	2.0	2.0	61	25	<b>FD 15</b>	26	700	900	65	<b>FA 15</b>	26	900	65	32		
0.75		6	7.5	67	0.64	2.5	3.3	1.9	1.8					2100	3000								
3	<b>BN 112M</b>	2	9.9	78	0.87	6.4	6.3	2.0	2.1	98	30	<b>FD 06S</b>	40	—	1000	107	<b>FA 06S</b>	40	1000	107	32		
1.1		6	11.1	72	0.64	3.4	3.9	1.8	1.8					—	2600								
4.5	<b>BN 132S</b>	2	14.8	78	0.84	9.9	5.8	1.9	1.8	213	44	<b>FD 66</b>	37	—	500	223	<b>FA 06</b>	37	500	223	58		
1.5		6	14.9	74	0.67	4.4	4.2	1.9	2.0					—	2100								
5.5	<b>BN 132M</b>	2	18.0	78	0.87	11.7	6.2	2.1	1.9	270	53	<b>FD 66</b>	50	—	400	280	<b>FA 06</b>	50	400	280	67		
2.2		6	22	77	0.71	5.8	4.3	2.1	2.0					—	1900								

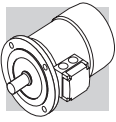






2/8P		3000/750 min <sup>-1</sup> - S3 60/40%														50 HZ										
		d.c. brake														a.c. brake										
		FD							FA							FA		FA								
P <sub>n</sub>	kW		n	M <sub>n</sub>	η	cos φ	I <sub>n</sub>	I <sub>s</sub>	M <sub>s</sub>	M <sub>a</sub>	J <sub>m</sub>	IM B5	Mod	Mb	Z <sub>o</sub>	1/h	SB	NB	J <sub>m</sub>	IM B5	Mod	Mb	Z <sub>o</sub>	1/h	J <sub>m</sub>	IM B5
400V																										
0.25		BN 71A	2	2790	0.86	61	0.87	3.9	1.8	1.9	10.9	6.7	FD 03	1.75	1300	1400	1400	1300	12	9.4	FA 03	2.5	1400	1400	12	9.1
0.06			8	680	0.84	31	0.61	2.0	1.8	1.9					10000	13000	13000						13000	13000		
0.37		BN 71B	2	2800	1.26	63	0.86	3.9	1.8	1.9	12.9	7.7	FD 03	3.5	1200	1300	1300	1200	14	10.4	FA 03	3.5	1300	1300	14	10.1
0.09			8	670	1.28	34	0.75	1.8	1.4	1.5					9500	13000	13000						13000	13000		
0.55		BN 80A	2	2830	1.86	66	0.86	4.4	2.1	2.0	20	9.9	FD 04	5.0	1500	1800	1800	1500	22	13.8	FA 04	5.0	1800	1800	22	13.7
0.13			8	690	1.80	41	0.64	2.3	1.6	1.7					5600	8000	8000						8000	8000		
0.75		BN 80B	2	2800	2.6	68	0.88	4.6	2.1	2.0	25	11.3	FD 04	10	1700	1900	1900	1700	27	15.2	FA 04	10	1900	1900	27	15.1
0.18			8	690	2.5	43	0.66	2.3	1.6	1.7					4800	7300	7300						7300	7300		
1.10		BN 90L	2	2830	3.7	63	0.84	4.5	2.1	1.9	28	14.0	FD 05	13	1400	1600	1600	1400	32	20	FA 05	13	1600	1600	32	21
0.28			8	690	3.9	48	0.63	2.4	1.8	1.9					3400	5100	5100						5100	5100		
1.5		BN 100LA	2	2880	5.0	69	0.85	4.7	1.9	1.8	40	18.3	FD 15	13	1000	1200	1200	1000	44	25	FA 15	13	1200	1200	44	25
0.37			8	690	5.1	46	0.63	2.1	1.6	1.6					3300	5000	5000						5000	5000		
2.4		BN 100LB	2	2900	7.9	75	0.82	5.6	2.1	2.0	61	25	FD 15	26	550	700	700	550	65	31	FA 15	26	700	700	65	32
0.55			8	700	7.5	54	0.58	2.5	1.8	1.8					2000	3500	3500						3500	3500		
3		BN 112M	2	2900	9.9	76	0.87	6.3	2.1	1.9	98	30	FD 06S	40	—	900	900	—	107	40	FA 06S	40	900	900	107	42
0.75			8	690	10.4	60	0.65	2.8	1.6	1.6					—	2900	2900						2900	2900		
4		BN 132S	2	2870	13.3	73	0.84	5.6	2.3	2.4	213	44	FD 66	37	—	500	500	—	223	57	FA 06	37	500	500	223	58
1			8	690	13.8	66	0.62	3.5	1.9	1.8					—	3500	3500						3500	3500		
5.5		BN 132M	2	2870	18.3	75	0.84	12.6	2.4	2.5	270	53	FD 06	50	—	400	400	—	280	66	FA 06	50	400	400	280	67
1.5			8	690	21	68	0.63	5.1	1.9	1.9					—	2400	2400						2400	2400		



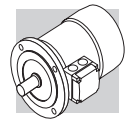
**2/12P**      **3000/500 min-1 - S3 60/40%**      **50 Hz**

P <sub>n</sub> kW			n min <sup>-1</sup>	M <sub>n</sub> Nm	η %	cos φ	I <sub>n</sub> 400V A	I <sub>s</sub> I <sub>n</sub>	M <sub>s</sub> M <sub>n</sub>	M <sub>a</sub> M <sub>n</sub>	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	d.c. brake						a.c. brake					
													FD			FA			FD			FA		
													Mod	Mb Nm	Z <sub>0</sub> 1/h	NB	SB	IM B5 	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	Z <sub>0</sub> 1/h	Mod	Mb Nm	Z <sub>0</sub> 1/h	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>
0.55 0.09	<b>BN 80B</b>	2 12	2820 430	1.86 2.0	64 30	0.89 0.63	1.39 0.69	4.2 1.8	1.6 1.9	1.7 1.8	25	11.3	<b>FD 04</b>	5.0	1000 8000	1300 12000	27	15.2	<b>FA 04</b>	5.0	1300 12000	27	15.1	
0.75 0.12	<b>BN 90L</b>	2 12	2790 430	2.6 2.7	56 26	0.89 0.63	2.17 1.06	4.2 1.7	1.8 1.4	1.7 1.6	26	12.6	<b>FD 05</b>	13	1000 4600	1150 6300	30	18.6	<b>FA 05</b>	13	1150 6300	30	19.3	
1.10 0.18	<b>BN 100LA</b>	2 12	2850 430	3.7 4.0	65 26	0.85 0.54	2.87 1.85	4.5 1.5	1.6 1.3	1.8 1.5	40	18.3	<b>FD 15</b>	13	700 4000	900 6000	44	25	<b>FA 15</b>	13	900 6000	44	25	
1.5 0.25	<b>BN 100LB</b>	2 12	2900 440	4.9 5.4	67 36	0.86 0.46	3.76 2.18	5.6 1.8	1.9 1.7	1.9 1.8	54	22	<b>FD 15</b>	13	700 3800	900 5000	58	28	<b>FA 15</b>	13	900 5000	58	29	
2 0.3	<b>BN 112M</b>	2 12	2900 460	6.6 6.2	74 46	0.88 0.43	4.43 2.19	6.5 2.0	2.1 2.1	2.0 2.0	98	30	<b>FD 06S</b>	20	— —	800 3400	— —	107	40	<b>FA 06S</b>	20	800 3400	107	42
3 0.5	<b>BN 132S</b>	2 12	2920 470	9.8 10.2	74 51	0.87 0.43	6.7 3.3	6.8 2.0	2.3 1.7	1.9 1.6	213	44	<b>FD 56</b>	37	— —	450 3000	— —	223	57	<b>FA 06</b>	37	450 3000	223	58
4 0.7	<b>BN 132M</b>	2 12	2920 460	13.1 14.5	75 53	0.89 0.44	8.6 4.3	5.9 1.9	2.4 1.7	2.3 1.6	270	53	<b>FD 56</b>	37	— —	400 2800	— —	280	66	<b>FA 06</b>	37	400 2800	280	67







4/6P		1500/1000 min <sup>-1</sup> - S1														50 Hz						
		d.c. brake														a.c. brake						
		FD							FA													
P <sub>n</sub> kW		n min <sup>-1</sup>	M <sub>n</sub> Nm	η %	cos φ	I <sub>n</sub> 400V A	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 	
0.22	BN 71B	4	1410	1.5	64	0.74	3.9	1.8	1.9	9.1	7.3	FD 03	3.5	2500	10.2	10.0	FA 03	3.5	3500	10.2	9.7	
0.13		6	920	1.4	43	0.67	2.3	1.6	1.7					5000	9000				9000			
0.30	BN 80A	4	1410	2.0	61	0.82	3.5	1.3	1.5	15	8.2	FD 04	5.0	2500	16.6	12.1	FA 04	5.0	3100	16.6	12.0	
0.20		6	930	2.1	54	0.66	3.2	1.9	2.0					4000	6000				6000			
0.40	BN 80B	4	1430	2.7	63	0.75	3.9	1.8	1.8	20	9.9	FD 04	10	1800	22	13.8	FA 04	10	2300	22	13.7	
0.26		6	930	2.7	55	0.70	2.7	1.5	1.6					3600	5500				5500			
0.55	BN 90S	4	1420	3.7	70	0.78	4.5	2.0	1.9	21	12.2	FD 14	10	1500	23	16.1	FA 14	10	2100	23	16.3	
0.33		6	930	3.4	62	0.70	3.7	2.3	2.0					2500	4100				4100			
0.75	BN 90L	4	1420	5.0	74	0.78	4.3	1.9	1.8	28	14	FD 05	13	1400	32	20	FA 05	13	2000	32	21	
0.45		6	920	4.7	66	0.71	3.3	2.0	1.9					2300	3600				3600			
1.1	BN 100LA	4	1450	7.2	74	0.79	5.0	1.7	1.9	82	22	FD 15	26	1400	86	28	FA 15	26	2000	86	29	
0.8		6	950	8.0	65	0.69	4.1	1.9	2.1					2100	3300				3300			
1.5	BN 100LB	4	1450	9.9	75	0.79	5.1	1.7	1.9	95	25	FD 15	26	1300	99	31	FA 15	26	1800	99	32	
1.1		6	950	11.1	72	0.68	4.3	2.0	2.1					2000	3000				3000			
2.3	BN 112M	4	1450	15.2	75	0.78	5.2	1.8	1.9	168	32	FD 06S	40	—	177	42	FA 06S	40	1600	177	44	
1.5		6	960	14.9	73	0.72	4.1	2.0	2.0					—	2400				2400			
3.1	BN 132S	4	1460	20	83	0.83	5.9	2.1	2.0	213	44	FD 66	37	—	223	57	FA 06	37	1200	223	58	
2		6	960	20	77	0.75	4.9	2.1	2.1					—	1900				1900			
4.2	BN 132MA	4	1460	27	84	0.82	8.8	2.1	2.2	270	53	FD 06	50	—	280	66	FA 06	50	900	280	67	
2.6		6	960	26	79	0.72	6.6	2.0	2.0					—	1500				1500			





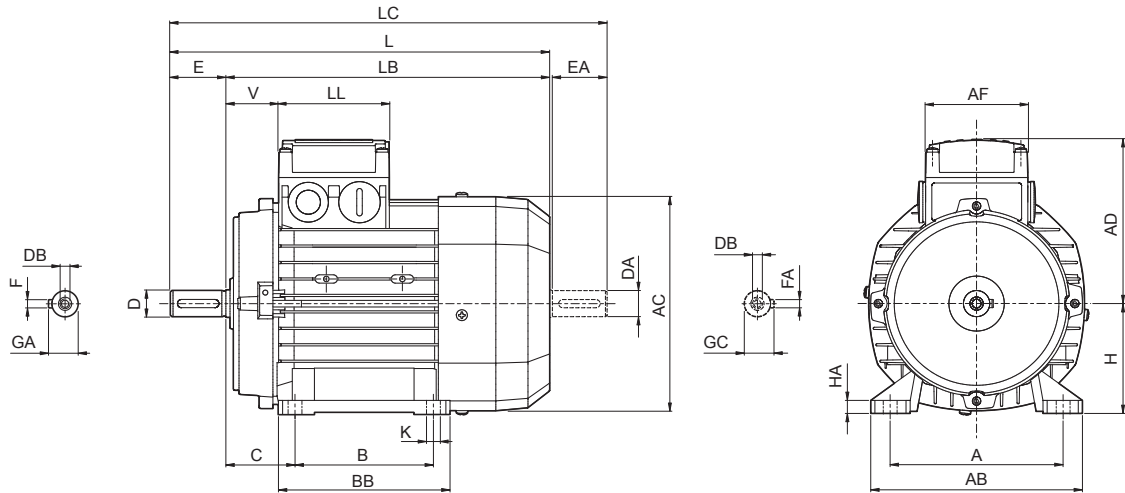
**4/8P** **1500/750 min<sup>-1</sup> - S1** **50 Hz**

P <sub>n</sub> kW			n min <sup>-1</sup>	M <sub>n</sub> Nm	η %	cos φ	I <sub>n</sub> 400V A	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	d.c. brake					a.c. brake													
												FD					FA													
												Mod	Mb Nm	Z <sub>0</sub> 1/h	NB	SB	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h	NB	SB	IM B5 	Mod	Mb Nm	Z <sub>0</sub> 1/h	J <sub>m</sub> x 10 <sup>-4</sup> kgm <sup>2</sup>	IM B5 		
0.37	0.18	BN 80A	4 8	1400 690	2.5 2.5	63 44	0.82 0.60	3.3 2.2	1.4 1.5	1.4 1.6	15	FD 04	10	2300 4500	3500 7000	—	—	8.2	FD 04	10	2300 4500	3500 7000	—	—	12.1	FA 04	10	3500 7000	16.6	12.0
0.55	0.30	BN 80B	4 8	1390 670	3.8 4.3	65 49	0.86 0.65	3.8 2.3	1.7 1.7	1.6 1.8	20	FD 04	10	2200 4200	2900 6500	—	—	9.9	FD 04	10	2200 4200	2900 6500	—	—	13.8	FA 04	10	2900 6500	22	13.7
0.65	0.35	BN 90S	4 8	1390 690	4.5 4.8	73 49	0.85 0.57	4.0 2.5	1.9 2.1	1.9 2.2	28	FD 14	15	2300 3500	2800 6000	—	—	13.6	FD 14	15	2300 3500	2800 6000	—	—	17.8	FA 14	15	2800 6000	30	17.7
0.9	0.5	BN 90L	4 8	1370 670	6.3 7.1	73 57	0.87 0.62	3.8 2.4	1.8 2.1	1.8 2.0	30	FD 05	26	1700 2500	2100 4200	—	—	15.1	FD 05	26	1700 2500	2100 4200	—	—	21	FA 05	26	2100 4200	34	22
1.30	0.70	BN 100LA	4 8	1420 700	8.7 9.6	72 58	0.83 0.64	4.3 2.8	1.7 1.8	1.8 1.8	82	FD 15	40	1300 2000	1700 3400	—	—	22	FD 15	40	1300 2000	1700 3400	—	—	28	FA 15	40	1700 3400	86	29
1.8	0.9	BN 100LB	4 8	1420 700	12.1 12.3	69 62	0.87 0.63	4.2 3.2	1.6 1.7	1.7 1.8	95	FD 15	40	1200 1600	1700 2600	—	—	25	FD 15	40	1200 1600	1700 2600	—	—	31	FA 15	40	1700 2600	99	32
2.2	1.2	BN 112M	4 8	1440 710	14.6 16.1	77 70	0.85 0.63	4.9 3.3	1.8 1.9	1.8 1.8	168	FD 06S	60	—	—	—	—	32	FD 06S	60	—	—	—	—	42	FA 06S	60	1200 2000	177	43
3.6	1.8	BN 132S	4 8	1440 720	24 24	80 72	0.82 0.55	6.5 4.6	2.1 1.9	1.9 2.0	295	FD 56	75	—	—	—	—	45	FD 56	75	—	—	—	—	58	FA 06	75	1000 1400	305	59
4.6	2.3	BN 132M	4 8	1450 720	30 31	81 73	0.83 0.54	6.5 4.4	2.2 2.3	1.9 2.0	383	FD 06	100	—	—	—	—	56	FD 06	100	—	—	—	—	69	FA 07	100	1000 1300	406	74



## 18 MOTORS DIMENSIONS BN

### BN - IM B3



**BN**

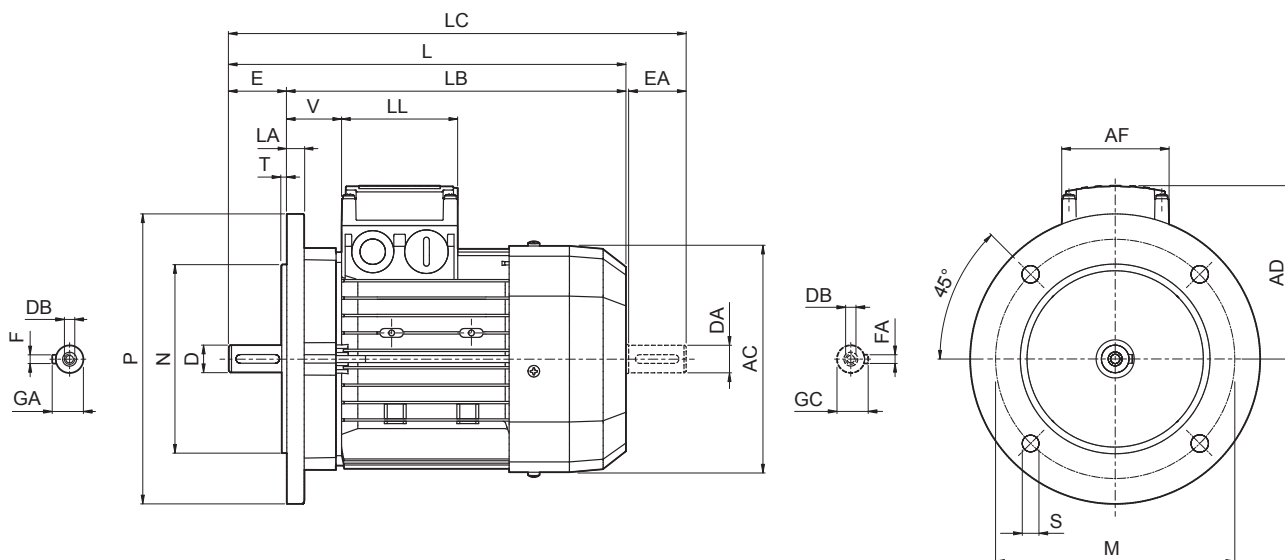
	Shaft					Housing						Motor									
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V
<b>BN 63</b>	11	23	M4	12.5	4	80	100	8	96	120	7	40	63	121	207	184	232	95	74	80	30
<b>BN 71</b>	14	30	M5	16	5	90	112	8	112	135		45	71	138	249	219	281	108			
<b>BN 80</b>	19	40	M6	21.5	6	100	125	8	124	153		50	80	156	273	233	315	119			
<b>BN 90 S</b>	24	50	M8	27	8	125	140	8	155	174	10	56	90	176	326	276	378	133	98	98	44
<b>BN 90 L</b>							192					63									
<b>BN 100</b>	28	60	M10	31	8	140	160	10	175	224	12	63	112	219	385	325	448	157	118	118	58
<b>BN 112</b>							190					70									
<b>BN 132 S</b>	38	80	M12	41	10	178	216	12	218	254	12	89	132	260	493	413	576	193	187	187	52
<b>BN 132 M</b>							254					108									
<b>BN 160 M</b>	42	110	M16	45	12	210	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51	
<b>BN 160 L</b>	38 <sup>(1)</sup>					80 <sup>(1)</sup>															M12 <sup>(1)</sup>
<b>BN 180 L</b>	48	110	M16	51.5	14	279	279	329	359	14	121	180	348	708	598	823	261	187	187	52	
<b>BN 200 L</b>	42 <sup>(1)</sup>																				110 <sup>(1)</sup>
	42 <sup>(1)</sup>		M16 <sup>(1)</sup>	45 <sup>(1)</sup>	12 <sup>(1)</sup>																64

NOTE:

1) These values refer to the rear shaft end.



# BN - IM B5



**BN**

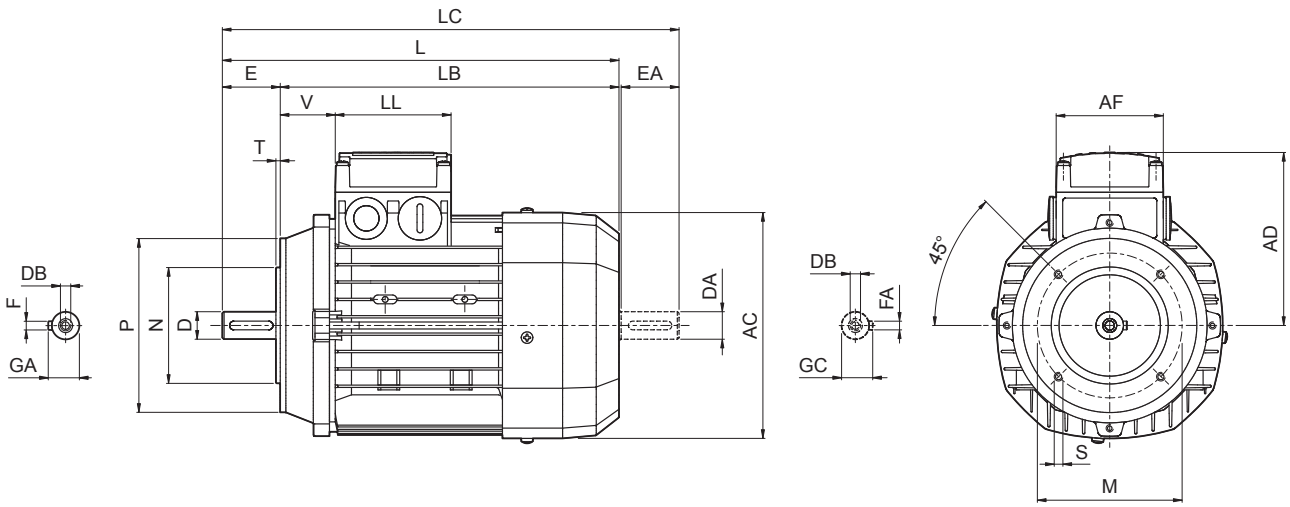
	Shaft					Flange					Motor								
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V
<b>BN 56</b>	9	20	M3	10.2	3	100	80	120	7	3	8	110	185	165	207	91	74	80	34
<b>BN 63</b>	11	23	M4	12.5	4	115	95	140	9.5		10	121	207	184	232	95			26
<b>BN 71</b>	14	30	M5	16	5	130	110	160			11.5	11.5	138	249	219	281			108
<b>BN 80</b>	19	40	M6	21.5	6	165	130	200	11.5	3.5	11.5	156	274	234	315	119	98	98	38
<b>BN 90</b>	24	50	M8	27	8							176	326	276	378	133			44
<b>BN 100</b>	28	60	M10	31	8	215	180	250	14	4	14	195	367	307	429	142	98	98	50
<b>BN 112</b>											15	219	385	325	448	157			52
<b>BN 132</b>											20	258	493	413	576	193			118
<b>BN 160 MR</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	300	250	350	18.5	5	15	310	562	452	645	245	187	187	218
<b>BN 160 M</b>												310	596	486	680	51			
<b>BN 160 L</b>												310	640	530	724	51			
<b>BN 180 M</b>	48 38 <sup>(1)</sup>	110 110 <sup>(1)</sup>	M16 M16 <sup>(1)</sup>	51.5 41 <sup>(1)</sup>	14 10 <sup>(1)</sup>	350	300	400	18.5	5	18	348	708	598	823	261	187	187	52
<b>BN 180 L</b>	48 42 <sup>(1)</sup>			722	612							837	66						
<b>BN 200 L</b>	55 42 <sup>(1)</sup>			M20 M16 <sup>(1)</sup>	59 45 <sup>(1)</sup>							16 12 <sup>(1)</sup>	66						

NOTE:

1) These values refer to the rear shaft end.



# BN - IM B14

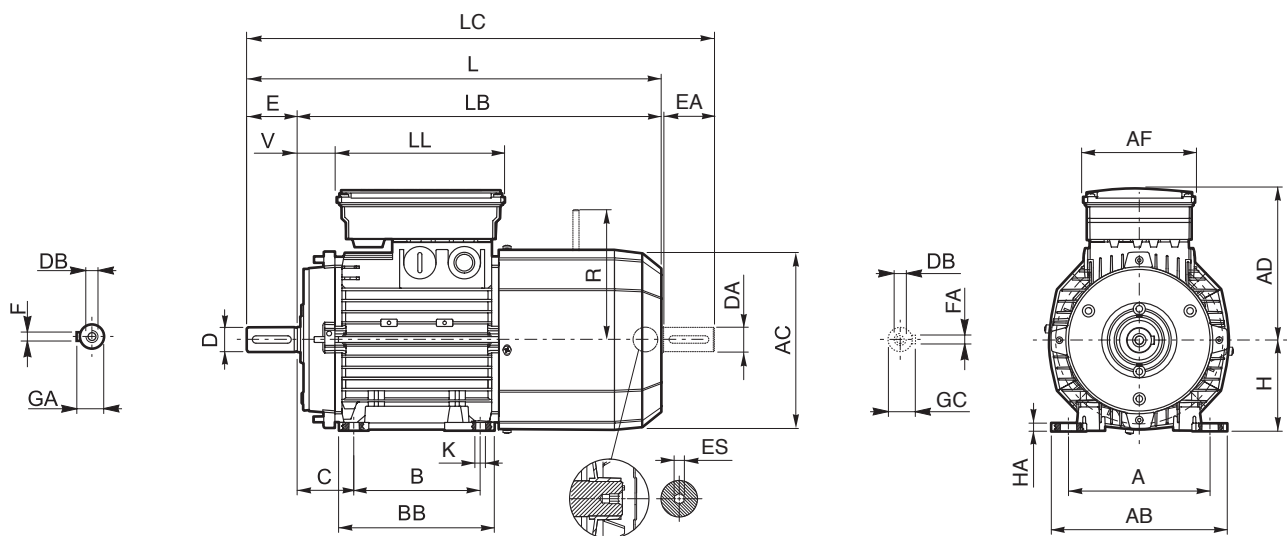


**BN**

	Shaft					Flange					Motor								
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	
<b>BN 56</b>	9	20	M3	10.2	3	65	50	80	M5	2.5	110	185	165	207	91	74	80	34	
<b>BN 63</b>	11	23	M4	12.5	4	75	60	90			121	207	184	232	95			26	
<b>BN 71</b>	14	30	M5	16	5	85	70	105	M6		138	249	219	281	108			37	
<b>BN 80</b>	19	40	M6	21.5	6	100	80	120		156	274	234	315	119	38				
<b>BN 90</b>	24	50	M8	27	8	115	95	140	M8	3	176	326	276	378	133	98	98	44	
<b>BN 100</b>	28	60	M10	31		130	110	160			M8	3.5	195	367	307			429	142
<b>BN 112</b>						219	385	325	448				157	52					
<b>BN 132</b>	38	80	M12	41	10	165	130	200	M10	4	258		493	413	576	193	118	118	58



# BN\_FD ; IM B3



**BN**

	Shaft					Housing						Motor											
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R	S
<b>BN 63</b>	11	23	M4	12.5	4	80	100		96	120	7	40	63	121	272	249	297	122			14	96	
<b>BN 71</b>	14	30	M5	16	5	90	112		112	135	7	45	71	138	310	280	342	135	98	133	25	103	5
<b>BN 80</b>	19	40	M6	21.5	6		125	8	124	153		50	80	156	346	306	388	146			41		129
<b>BN 90 S</b>	24	50	M8	27	8	100			155	174	10	56	90	176	409	359	461	149			15		
<b>BN 90 L</b>						125																	
<b>BN 100</b>	28	60	M10	31	8		160		192			63	100	195	458	398	521	158			62		
<b>BN 112</b>						140	190	10	175		70	112	219	484	424	547	173						
<b>BN 132 S</b>	38	80	M12	41	10		216	12	218	254	12	89	132	260	603	523	686	210			204		
<b>BN 132 M</b>						178																	
<b>BN 160 M</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	210			264						736	626	820						
<b>BN 160 L</b>						254	254	25	319	14.5	108	160	310						780	670	864	245	
<b>BN 180 L</b>	48 42 <sup>(1)</sup>	110 110 <sup>(1)</sup>	M16 M16 <sup>(1)</sup>	51.5 45 <sup>(1)</sup>	14 12 <sup>(1)</sup>	279	279		329	359	14	121	180		866	756	981		187	187	52		
<b>BN 200 L</b>						305	318	26	355	398	18	133	200						878	768	993	261	

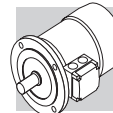
NOTE:

1) These values refer to the rear shaft end.

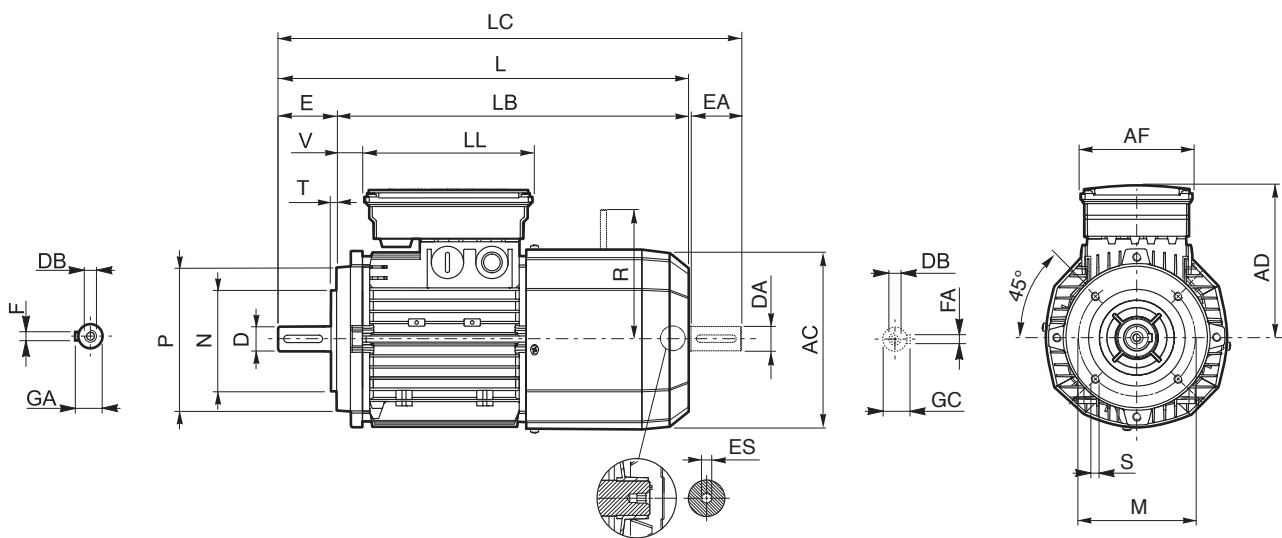
2) For FD07 brake value R=226.

ES hexagon is not supplied with PS option.





**BN\_FD ; IM B14**



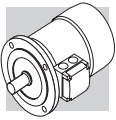
**BN**

	Shaft					Flange					Motor									
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	R	ES
<b>BN 63</b>	11	23	M4	12.5	4	75	60	90	M5	2.5	121	272	249	297	122	98	133	14	96	5
<b>BN 71</b>	14	30	M5	16	5	85	70	105	M6		138	310	280	342	135			25	103	
<b>BN 80</b>	19	40	M6	21.5	6	100	80	120			156	346	306	388	146			41	129	
<b>BN 90 S</b>	24	50	M8	27	8	115	95	140	M8	3	176	409	359	461	110	165	39	129	6	
<b>BN 90 L</b>																				146
<b>BN 100</b>	28	60	M10	31		130	110	160		3.5	195	458	398	521			158	62		199
<b>BN 112</b>											219	484	424	547			173	73		199
<b>BN 132</b>	38	80	M12	41	10	165	130	200	M10	4	258	603	523	686	210	140	188	46	204 <sup>(1)</sup>	

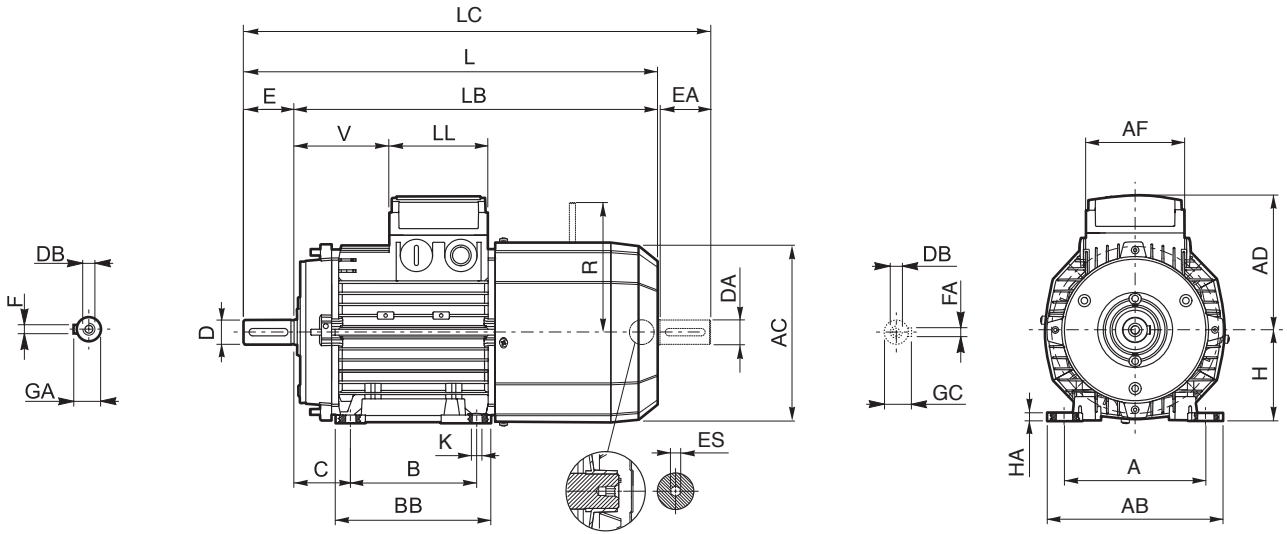
NOTE:

1) For FD07 brake value R=226.

ES hexagon is not supplied with PS option.



# BN\_FA - IM B3



**BN**

	Shaft					Housing						Motor											
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R	S
<b>BN 63</b>	11	23	M4	12.5	4	80	100	7	96	120	7	40	63	121	272	249	297	95	74	80	51	116	5
<b>BN 71</b>	14	30	M5	16	5	90	112		112	135		45	71	138	310	280	342	108			68	124	
<b>BN 80</b>	19	40	M6	21.5	6	100	125		8	124		153	50	80	156	346	306	388			119	83	
<b>BN 90 S</b>	24	50	M8	27	8	140	140	10	155	174	10	56	90	176	409	359	461	133	98	98	71	160	6
<b>BN 90 L</b>						125			192	63		100	195	458	398	521	142	95					
<b>BN 100</b>	28	60	M10	31	8	160	160	10	175	224	10	70	112	219	484	424	547	157	119	128	119	198	
<b>BN 112</b>						190			192	70		112	219	484	424	547	157						
<b>BN 132 S</b>	38	80	M12	41	10	178	178	12	218	254	12	89	132	260	603	523	686	210	140	188	46	200 <sup>(2)</sup>	
<b>BN 132 M</b>						216			254	89		132	260	603	523	686	210	46					
<b>BN 160 M</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	210	254	25	264	319	14.5	108	160	310	736	626	820	245	187	187	51	247	—
<b>BN 160 L</b>						254			304						780	670	864				51		

NOTE:

- 1) These values refer to the rear shaft end.
- 2) For FA07 brake value R=217.

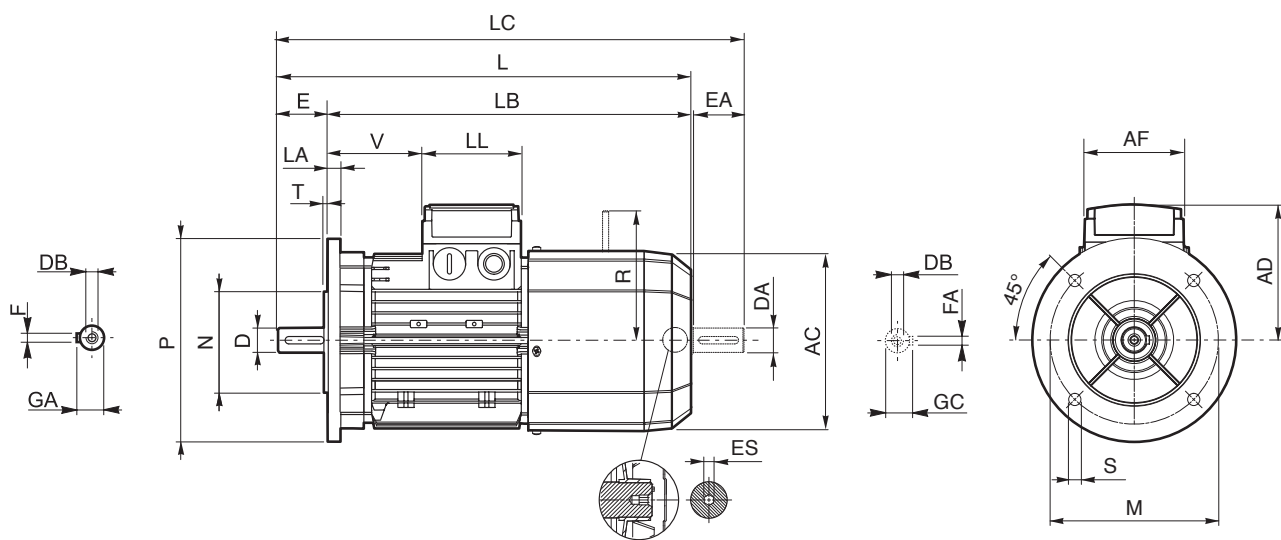
Dimensions AD, AF, LL and V, relevant to terminal box of motors BN...FA featuring the separate brake supply (option SA), are coincident with corresponding dimensions of same-size BN...FD motors

ES hexagon is not supplied with PS option.





# BN\_FA - IM B5



**BN**

	Shaft					Flange						Motor									
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V	R	ES
<b>BN 63</b>	11	23	M4	12.5	4	115	95	140	9.5	3	10	121	272	249	297	95	74	80	26	116	5
<b>BN 71</b>	14	30	M5	16	5	130	110	160				138	310	280	342	108			68	124	
<b>BN 80</b>	19	40	M6	21.5	6	165	130	200	11.5	3.5	11.5	156	346	306	388	119	98	98	83	134	6
<b>BN 90</b>	24	50	M8	27	8							176	409	359	461	133			95	160	
<b>BN 100</b>	28	60	M10	31	8	215	180	250	14	4	14	195	458	398	521	142	119	128	198	200 <sup>(2)</sup>	
<b>BN 112</b>						20	603	523				686	210	140	188	46					
<b>BN 132</b>	38	80	M12	41	10	265	230	300	18.5	5	15	258	672	562	755	193	118	118	218	217	
<b>BN 160 MR</b>	42 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	45 41 <sup>(1)</sup>	12 10 <sup>(1)</sup>	300	250	350				18.5	5	15	310	736	626	820	245	187	187
<b>BN 160 M</b>									780	670	864				—						
<b>BN 160 L</b>	48 38 <sup>(1)</sup>	110 80 <sup>(1)</sup>	M16 M12 <sup>(1)</sup>	51.5 41 <sup>(1)</sup>	14 10 <sup>(1)</sup>	300	250	350	18.5	5	15	310	736	626	820	245	187	187	51	247	
<b>BN 180 M</b>												780	670	864	—						

NOTE:

- 1) These values refer to the rear shaft end.
- 2) For FA07 brake value R=217.

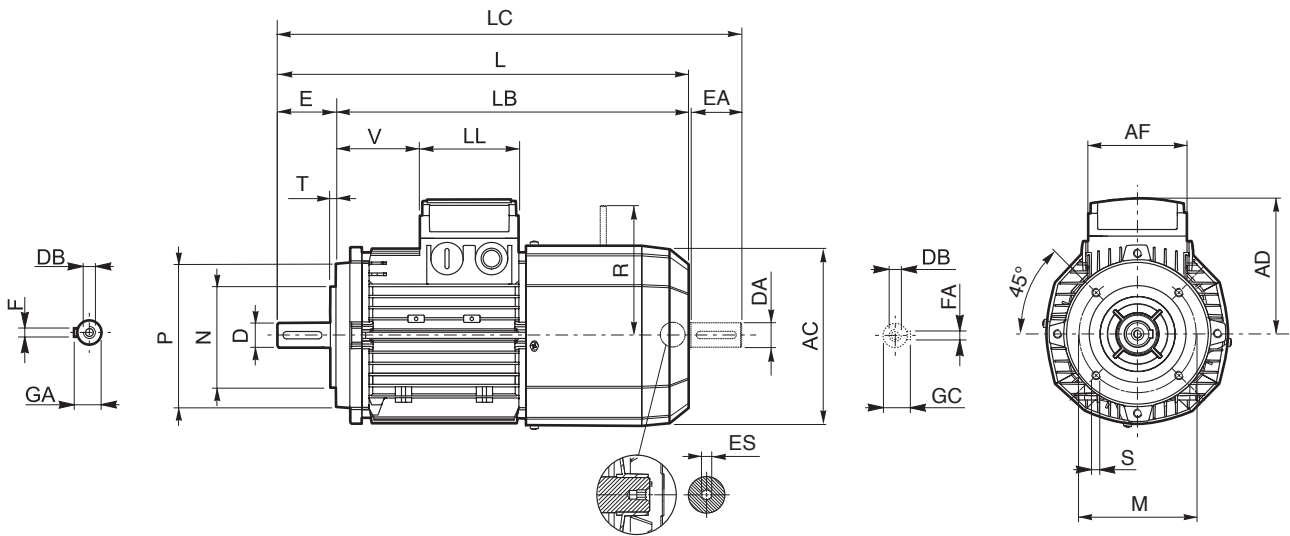
Dimensions AD, AF, LL and V, relevant to terminal box of motors BN...FA featuring the separate brake supply (option SA), are coincident with corresponding dimensions of same-size BN...FD motors

ES hexagon is not supplied with PS option.



# BN\_FA - IM B14

**BN**



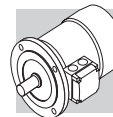
	Shaft					Flange					Motor									
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	R	ES
<b>BN 63</b>	11	23	M4	12.5	4	75	60	90	M5	2.5	121	272	249	119	95	74	80	26	116	5
<b>BN 71</b>	14	30	M5	16	5	85	70	105	M6		138	310	280	342	108			68	124	
<b>BN 80</b>	19	40	M6	21.5	6	100	80	120	M6	156	346	306	388	119	83			134		
<b>BN 90</b>	24	50	M8	27	8	115	95	140	M8	3	176	409	359	461	133	98	98	95	160	6
<b>BN 100</b>	28	60	M10	31		130	110	160		3.5	195	458	398	521	142			119	198	
<b>BN 112</b>	28	60	M10	31		130	110	160		3.5	219	484	424	547	157			128	198	
<b>BN 132</b>	38	80	M12	41	10	165	130	200	M10	4	258	603	523	686	210	140	188	46	200 <sup>(1)</sup>	

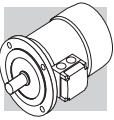
NOTE:

1) For FA07 brake value R=217.


Dimensions AD, AF, LL and V, relevant to terminal box of motors BN...FA featuring the separate brake supply (option SA), are coincident with corresponding dimensions of same-size BN...FD motors

ES hexagon is not supplied with PS option.





## INDEX OF REVISIONS

BR_CAT_BNEX_STD_ENG_R04_1	
	Description
...	Added the availability of new BX 200LA ... BX 355MCK motors.

2019 03 15

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