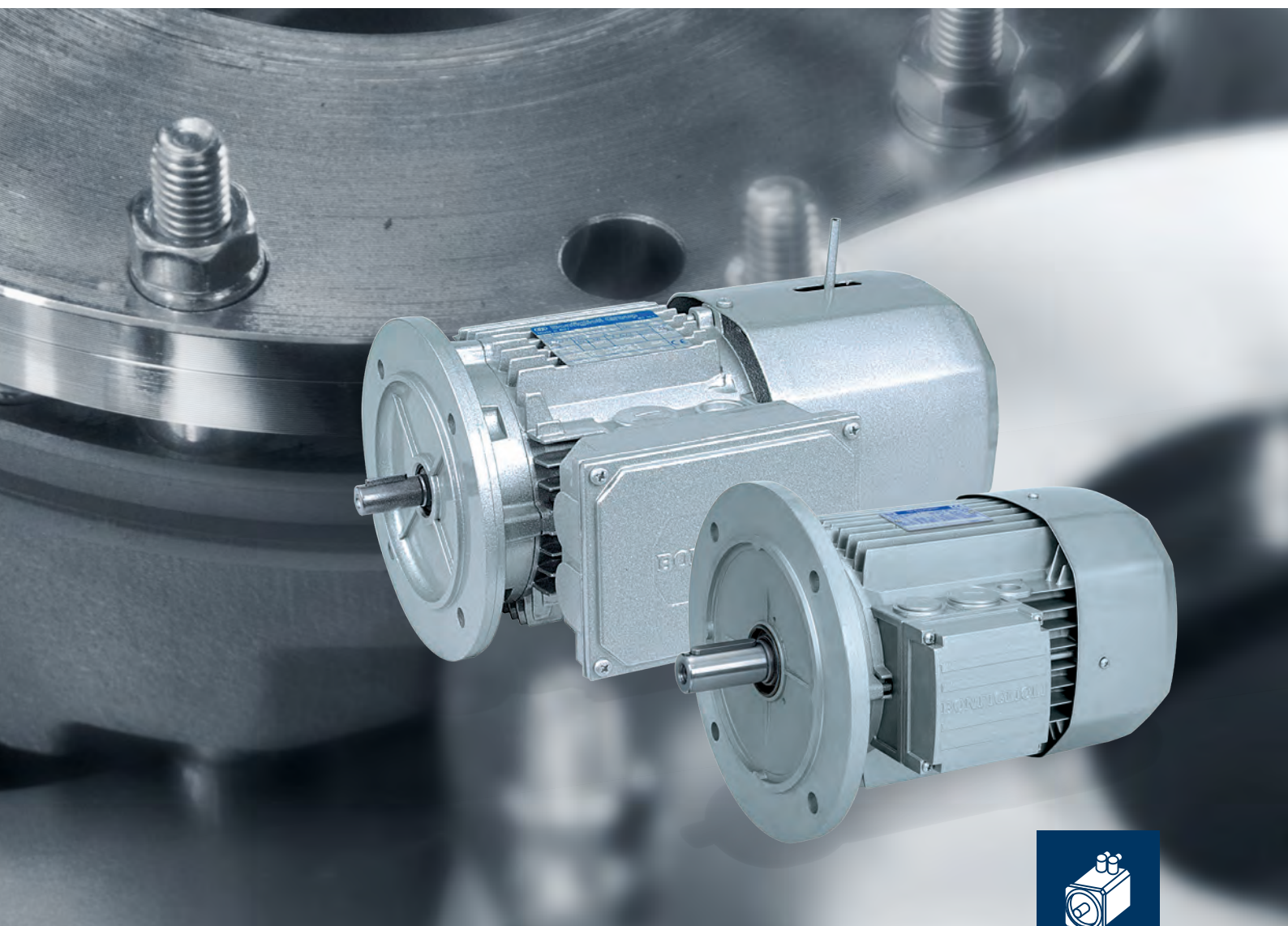


Bonfiglioli **Riduttori**

BN-BE-BX series

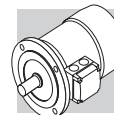
Three-phase asynchronous motors

IE1-IE2-IE3



PRODUCT

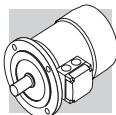
 **Bonfiglioli**
Forever Forward



Chapter	Description	Page	Chapter	Description	Page
1	Symbols and units of measurement	2	9	AC brake motors type FA	31
2	Introduction	3	9.1	Degree of protection	31
3	General characteristics	5	9.2	FA brake power supply FA	32
3.1	Production range	5	9.3	Technical specifications of FA brakes	32
3.2	Standards	5	9.4	FA brake connections	33
3.3	Directives 2006/95/EC (LVD) and 2004/108/EC (EMC)	6	10	Brake release systems	34
3.4	Tolerances	6	10.1	Release lever orientation	35
4...4.2	Motor designation	7	10.2	Separate brake supply	35
4.3	Variants	10	11	Options	36
4.4	Options	10	11.1	Soft-start / stop	36
4.5	Brake-related options	11	11.2	Capacitive filter	36
4.6	Example of identification plate	11	11.3	Thermal protective devices	36
5	Mechanical features	12	11.4	Thermistors	36
5.1	Versions	12	11.5	Bimetallic thermostates	37
5.2	Degree of protection	13	11.6	Plug connector	37
5.3	Cooling	14	11.7	Control of brake operation	40
5.4	Direction of rotation	15	11.8	Additional cable entry for brakemotors	40
5.5	Noise	15	11.9	Anti-condensation heaters	40
5.6	Vibrations and balancing	15	11.10	Tropicalization	41
5.7	Terminal box	15	11.11	Second shaft extension	41
5.8	Cable entry	16	11.12	Rotor balancing	41
5.9	Bearings	16	11.13	Ventilation	42
6	Electrical characteristics	17	11.14	Rain canopy	44
6.1	Voltage	17	11.15	Textile canopy	44
6.2	Frequency	18	11.16	Feedback units	44
6.3	Ambient temperature	19	11.17	Surface protection	46
6.4	50 HZ normalized power	19	11.18	Painting	46
6.5	Motors for USA and Canada	19	11.19	Certificates	47
6.6	China Compulsory Certification	21	12	Tables of motors correlation	47
6.7	Insulation class	21	12.1	50 Hz Motors	47
6.8	Type of duty	22	12.2	60 Hz Motors	49
6.9	Inverter-controlled motors	23	13	Motor rating charts BX	51
6.10	Permissible starts per hour, Z	24	14	Motors dimensions BX	53
7	Asynchronous brake motors	25	15	Motor rating charts BE	65
7.1	Operation	25	16	Motors dimensions BE	67
7.2	Most significant features	25	17	Motor rating charts BN	70
8	DC brake motors type FD	26	18	Motors dimensions BN	80
8.1	Degree of protection	27			
8.2	FD brake power supply	27			
8.3	FD brake technical specifications	29			
8.4	FD brake connections	29			

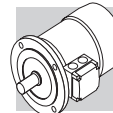
Revisions

Refer to page 90 for the catalogue revision index. Visit www.bonfiglioli.com to search for catalogues with up-to-date revisions.



1 SYMBOLS AND UNITS OF MEASUREMENT

Symbols	Units of Measure	Description	Symbols	Units of Measure	Description
$\cos\varphi$	–	Power factor	n	$[\text{min}^{-1}]$	Rated speed
η	–	Efficiency	P_B	[W]	Power drawn by the brake at 20°C
f_m	–	Power adjusting factor	P_n	[kW]	Motor rated power
I	–	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 ²]	Load moment of inertia	t_2	[ms]	Brake reaction time with a.c. disconnect
J_M	[Kgm ²]	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)

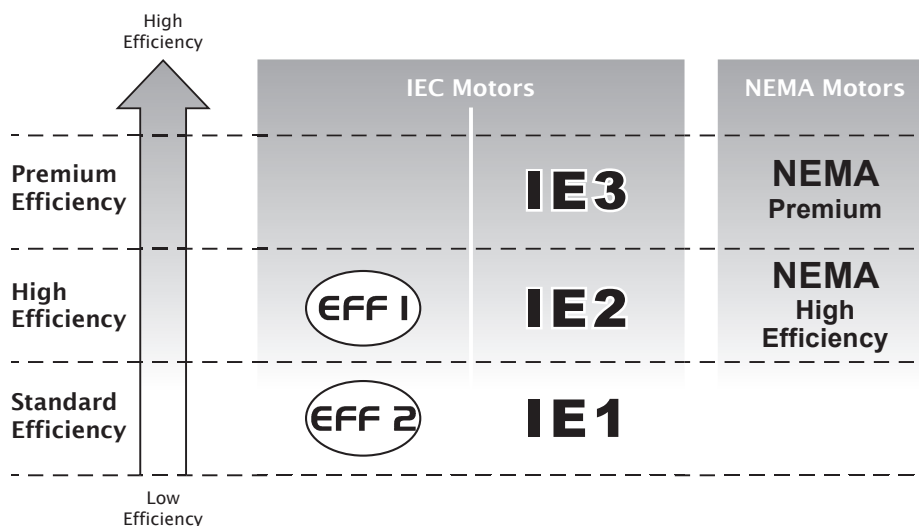
- IE2** (high efficiency)

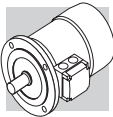
- IE3** (premium efficiency)

- 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:

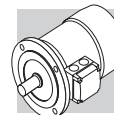
- **16/06/2011:** Electric motors must have a minimum efficiency level equivalent to class **IE2**
- **01/01/2015:** Electric motors with a rated power output between 7.5 kW and 375 kW must have a minimum efficiency level corresponding to **IE3**, or to **IE2** if controlled by an inverter.
- **01/01/2017:** 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 Δ/Y (400/690V Δ/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 Δ/Y (400/690V Δ/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.

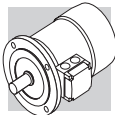
(F01)

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)

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

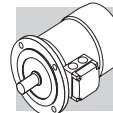
3.4 Tolerances

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

(F03)

-0.15 (1 - η) $P \leq 50\text{kW}$	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 $P_n < 1\text{ kW}$



4 PREMIUM EFFICIENCY MOTOR DESIGNATION

MOTOR

BRAKE

BX 132SB 4

230/400-50

IP55

CLF

B5

FD

7.5

R

SB

220SA

.....

OPTIONS

BRAKE SUPPLY

RECTIFIER TYPE
AC/DC
NB, SB, NBR, SBR

BRAKE HAND RELEASE
R, RM

BRAKE TORQUE

BRAKE TYPE
FD (d.c. brake)
FA (a.c. brake)

MOTOR MOUNTING
IM B3 - IM B6, IM B7, IM B8, IM V5, IM V6
IM B5 - IM V1, IM V3
IM B14 - IM V18, IM V19

INSULATION CLASS
CL F standard
CL H option

DEGREE OF PROTECTION
IP55 standard (IP56 - option)
IP54, IP55 brake motor

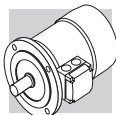
VOLTAGE - FREQUENCY

50Hz	60Hz
230/400 VΔ/Y - 50Hz (BX 80 ... 132)	230/460 VY/Y - 60Hz (BX 90 ... 132)
290/500 VΔ/Y - 50Hz (BX 80 ... 132)	230/460 VΔΔ/Δ - 60Hz (BX 160 ... 180)
400/690 VΔ/Y - 50Hz (BX 160 ... 180)	330/575 VΔ/Y - 60Hz (BX 90 ... 180)
290/500 VΔ/Y - 50Hz (BX 160 ... 180)	265/460 VΔ/Y - 60Hz (BX 90 ... 132)
	460/800 VΔ/Y - 60Hz (BX 160 ... 180)

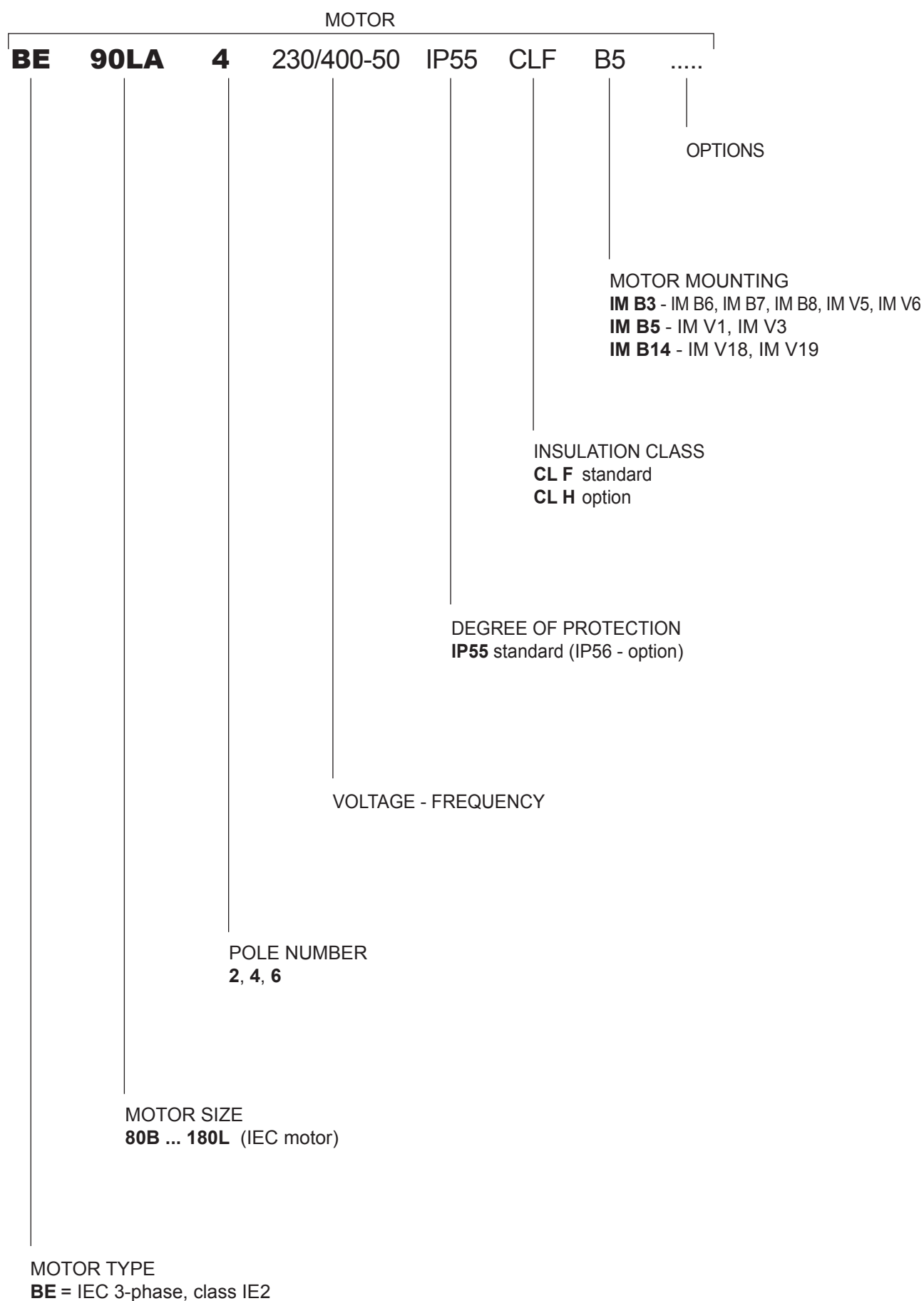
POLE NUMBER
4

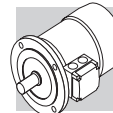
MOTOR SIZE
80B ... 180L (IEC motor)

MOTOR TYPE
BX = IEC 3-phase, class IE3

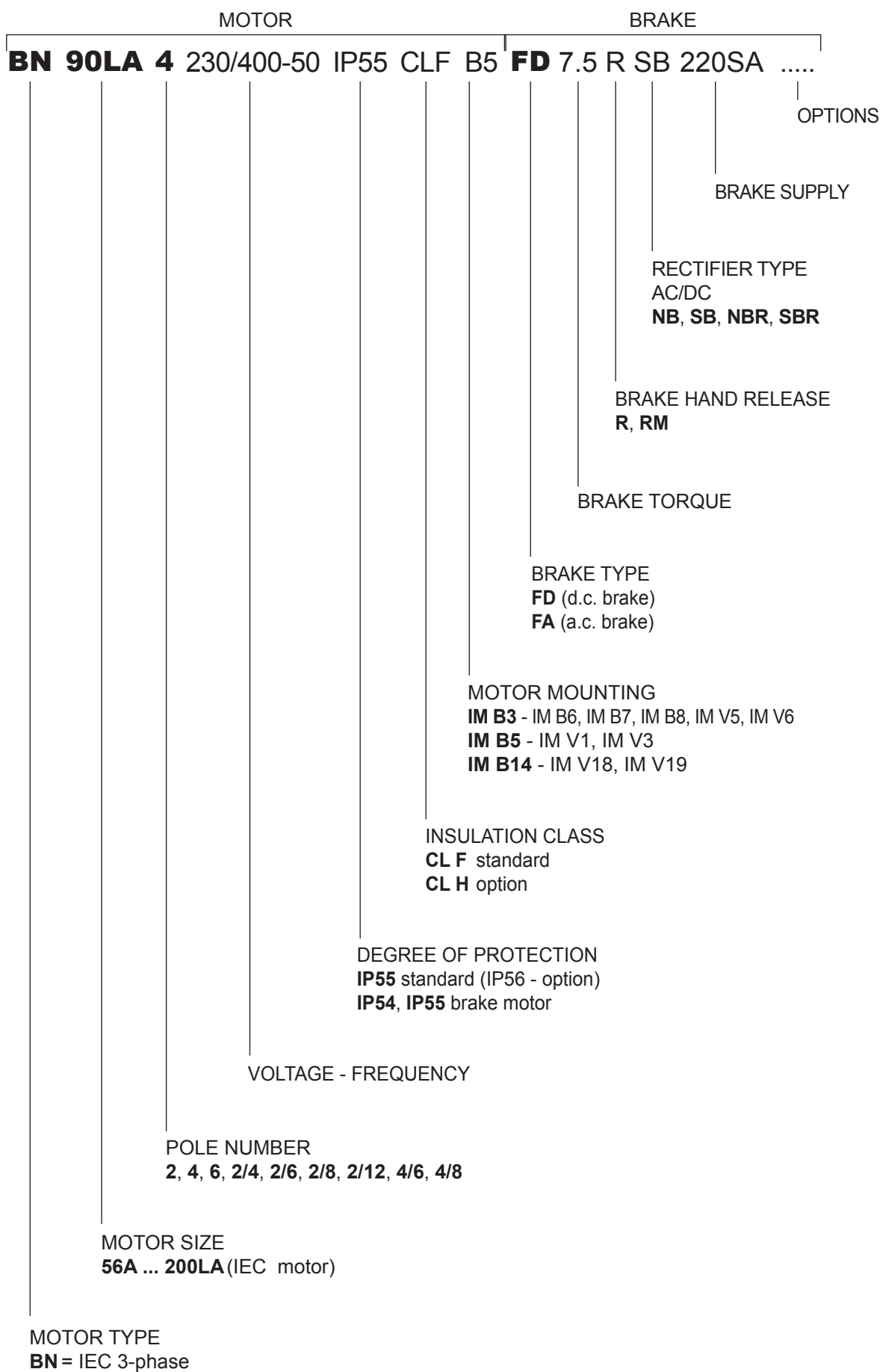


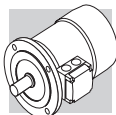
4.1 HIGH EFFICIENCY MOTOR DESIGNATION





4.2 STANDARD EFFICIENCY MOTOR DESIGNATION





4.3 Variants

(F04)

Description		Default	Option		Page
Voltage		230/400/50			17
Protection class	BX - BE - BN	IP 55	IP 56		13
	BX_FD - BX_FA - BN_FD - BN_FA	IP 54	IP 55		
Insulation class		CLF	CLH		21
Design version	BX - BE - BN	B5 B5 R	B14 B14 R	B3	12

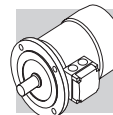
 Default values.

4.4 Options

(F05)

Description	Catalogue numbers						Availability	Page	
Thermal protective devices	D3	K1	E3				BX - BE - BN	36	37
50 Hz normalized power	PN						BN	19	
Feedback devices	EN1	EN2	EN3	EN4	EN5	EN6	BX - BE - BN	44	45
Anti-condensate heaters	H1	NH1					BX - BE - BN	40	
Tropicalized windings	TP						BX - BE - BN	41	
Double-extended shaft	PS						BX - BE - BN	41	
Rotor balancing grade B	RV						BX - BE - BN	41	
External mechanical protections	RC	TC					BX - BE - BN	44	
Forced ventilation	U1	U2*					BX - BE - BN	43	
Certification	CUS						BX - BE - BN	19	
China Compulsory Certification	CCC						BE - BN	21	
Plug connector	CON						BX - BE - BN	37	
Surface protection	C_						BX - BE - BN	46	
Painting	RAL						BX - BE - BN	46	
Certificates	ACM						BX - BE - BN	47	
Inspection certificate	CC						BX - BE - BN	47	
Type of duty	S2	S3	S9				BN	22	

* Only for motors BN



4.5 Brake-related options

(F06)

Description	Catalogue numbers				Availability	Page
Brake torque	Refer to the specific brake type					29 32
Manual release lever	R	RM			BX - BN	34
Release lever orientation	AB	AA	AC	AD	BX - BN	35
DC brake rectifier	NB	NBR	SB	SBR	BX - BN	27
Soft-start flywheel	F1				BN	36
Capacitive filter	CF				BX - BN	36
Brake separate power supply (*)	...SA	...SD			BX - BN	35
Brake functionality check	MSW				BX - BN	40
Additional cable entry for brake motors	IC				BX - BN	40

(*) Specify voltage.

 Default values.

4.6 Example of identification plate

1	IEC EN 60034	Bonfiglioli Riduttori	CE	4
	3~Mot BE 90LA 4	Cod. 8U09030001		
2	No 1003001 - 6954785	S 1	IM B 5 15,1 kg	5
	kW 1,5	CL F IP 55	Amb 40 °C	
	Hz	V ± 10%	A	min ⁻¹
	50 ○	230/400 Δ/Y	6,1/3,5	1430
3	60	265/460 Δ/Y	5,4/3,1	1730
	50Hz-IE2	83.5(100%) - 83.0(75%) - 80.0(50%)		○ 0.74
	60Hz-IE2	84.5(100%) - 83.9(75%) - 80.7(50%)		0.73

① BONFIGLIOLI
Motor type

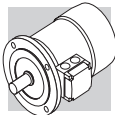
② Serial number

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

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

Mounting versions are:

IM B3 (basic)

IM B6, IM B7, IM B8, IM V5, IM V6 (derived)

IM B5 (basic)

IM V1, IM V3 (derived)

IM B14 (basic)

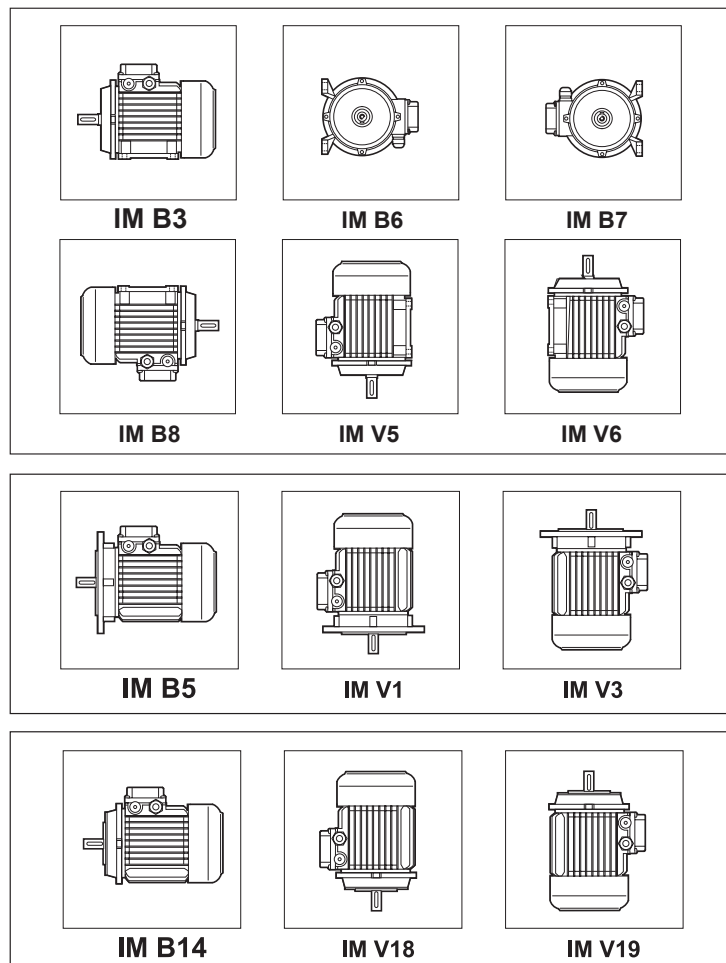
IM V18, IM V19 (derived)

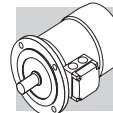
IM B3 design motors can be installed in positions IM B6, IM B7, IM B8, IM V5 and IM V6; IM B5 design motors can be installed in positions IM V1 and IM V3; IM B14 design motors can be installed in positions IM V18 and IM V19.

In such cases, the basic design IM B5 or IM B14 is indicated on the motor name plate.

In design versions with a vertically located motor and shaft downwards, it is recommended to request the drip cover (always necessary for brake motors). This facility, included in the option list should be specified when ordering as it does not come as a standard device

(F07)





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

(F08)

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

(1) flange with through holes

(2) flange with threaded holes

5.2 Degree of protection

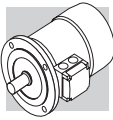
IP..

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
BX - BE - BN		standard	 at request
BX_FD BX_FA BN_FD BN_FA	standard	 at request	



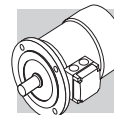
IP			5			5		
0		Not protected	0		Not protected	0		Not protected
1		Protected against extraneous solid bodies having $\varnothing \geq 50$ mm	1		Protected against vertical water drips	1		Protected against vertical water drips
2		Protected against extraneous solid bodies having $\varnothing \geq 12.5$ mm	2		Protected against vertical water drips inclined up to 15°	2		Protected against vertical water drips inclined up to 15°
3		Protected against extraneous solid bodies having $\varnothing \geq 2.5$ mm	3		Protected against rain	3		Protected against rain
4		Protected against extraneous solid bodies having $\varnothing \geq 1.0$ mm	4		Protected against water splashes	4		Protected against water splashes
5		Protected against dust	5		Protected against jets of water	5		Protected against jets of water
6		No dust ingress	6		Protected against powerful jets of water	6		Protected against powerful jets of water
			7		Protected against the effects of temporary immersion	7		Protected against the effects of temporary immersion
			8		Protected against the effects of continuous immersion	8		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

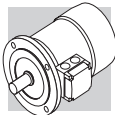
Rotor shafts are balanced with half key fitted and fall within the vibration class N, as per Standard CEI EN 60034-14.

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	Wiremax cross section area sq mm ²
BX 80, BX 90 BE 80, BE 90 BN 56 ... BN 90	6	M4	2.5
BX 100 ... BX 132 BE 100 ... BE 132 BN 100 ... BN 160MR	6	M5	6
BX 160 - BE 160 ... BE 180M BN 160M ... BN 180M	6	M6	16
BX 180 - BE 180L BN 180L ... BN 200L	6	M8	25
BX 80 ... BX 132 BE 80 ... BE 132 BN 63 ... BN 160MR	9	M4	6
BX 160 ... BX 180 BE 160 ... BE 180 BN 160M ... BN 200	9	M6	16



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]
BN 63	2 x M20 x 1.5	1 Hole on each side	13
BN 71	2 x M25 x 1.5		17
BX 80 - BX 90 BE 80 - BE 90 BN 80 - BN 90	2 x M25 x 1.5		17
BX 100 - BX 112 BE 100 - BE 112 BN 100 - BN 112	2 x M32 x 1.5	2 Holes on each side	21
	2 x M25 x 1.5		17
BX 132 - BE 132 BN 132...BN 160MR	4 x M32 x 1.5		21
BX 160 - BX 180 BE 160 - BE 180 BN 160M...BN 200L	2 x M40 x 1.5	Pivoting, 4 x 90°	28

5.9 Bearings

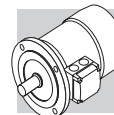
Life lubricated preloaded radial ball bearings are used, types are shown in the chart here under. Calculated endurance lifetime L_{10h} , as per ISO 281, in unloaded condition, exceeds 40000 hrs.

DE = drive end

NDE = non drive end

(F12)

	DE	NDE	
	BX, BE, BN	BX, BE, BN	BN_FD BN_FA
BN 56	6201 2Z C3	6201 2Z C3	—
BN 63	6201 2Z C3	6201 2Z C3	6201 2RS C3
BN 71	6202 2Z C3	6202 2Z C3	6202 2RS C3
BX 80 - BE 80 BN 80	6204 2Z C3	6204 2Z C3	6204 2RS C3
BX 90 - BE 90 BN 90	6205 2Z C3	6205 2Z C3	6305 2RS C3
BX 100 - BE 100 BN 100	6206 2Z C3	6206 2Z C3	6206 2RS C3
BX 112 - BE 112 BN 112	6306 2Z C3	6306 2Z C3	6306 2RS C3
BX 132 - BE 132 BN 132	6308 2Z C3	6308 2Z C3	6308 2RS C3
BN 160MR	6309 2Z C3	6308 2Z C3	6308 2RS C3
BX 160M/L BE 160M/L BN 160M/L	6309 2Z C3	6309 2Z C3	6309 2RS C3
BN 180M	6310 2Z C3	6309 2Z C3	6309 2RS C3
BX 180M/L BE 180M/L BN 180L	6310 2Z C3	6310 2Z C3	6310 2RS C3
BN 200L	6312 2Z C3	6310 2Z C3	6310 2RS C3



6 ELECTRICAL CHARACTERISTICS

6.1 Voltage

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

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.

(F13)

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

¹ 4 pole motor only

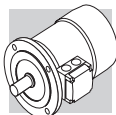
The only rated voltage for motors type at 50 Hz and all double speed motors is 400 V. Applicable tolerances as per CEI EN 60034-1.

The table below shows the wiring options available.

(F14)

Number of poles		Winding connection
2	BE 80 ... BE 160 - BN 63 ... BN 200	Δ / Y ⁽²⁾
4	BX 80 ... BX 180 BE 80 ... 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)

⁽²⁾ 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 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.

(F15)

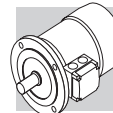
	P _n [kW]					P _n [kW]			
	2P	4P	6P	8P		2P	4P	6P	8P
BN 56A	–	0.07	–	–	BN 100L	3.5	–	–	–
BN 56B	–	0.10	–	–	BN 100LA	–	2.5	1.8	0.85
BN 63A	0.21	0.14	0.10	–	BN 100LB	4.7	3.5	2.2	1.3
BN 63B	0.30	0.21	0.14	–	BN 112M	4.7	4.7	2.5	1.8
BN 63C	0.45	0.30	–	–	BN 132S	–	6.5	3.5	2.5
BN 71A	0.45	0.30	0.21	0.10	BN 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.

(F16)

	50 Hz	60 Hz			
	V - 50 Hz	V - 60 Hz	P _n - 60 Hz	M _n , M _a /M _n - 60 Hz	n [min ⁻¹] - 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	1.15	1	1.2
		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.

(F17)

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 for USA and Canada

CUS

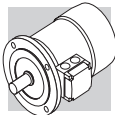
CUS option is available in NEMA Design C execution for BN and BE motors, and NEMA Design B for BX motors, with regards to the electrical features. Motors are certified in compliance with CSA (Canadian Standard) C22.2 N° 100 and UL (Underwriters Laboratory) UL 1004-1 standards, as stated on UL file E308649.

BN and BE motors nameplates show the below marks:



BX 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.





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



The CUS option does not apply to servo-ventilated motors.

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

(F18)

Frequency	Mains voltage	V _{mot}
60 Hz	208 V	200 V
	240 V	230 V
	480 V	460 V
	600 V	575 V

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

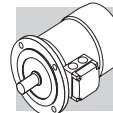
Motors with voltage in ratio 2 (e.g. 230/460-60; 220/440-60) feature, as standard, a 9-stud terminal board. For same executions, as well as for 575V-60Hz supply, the nominal rating is coincident with the correspondent 50Hz rating.

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:

(F19)

BX_FD - BN_FD	BX_FA - BN_FA		Power supply
Connected to terminal box 1~230V c.a.	Separate power supply	230V Δ	230SA
	Separate power supply	460V Y	460SA



6.6 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.

6.7 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.

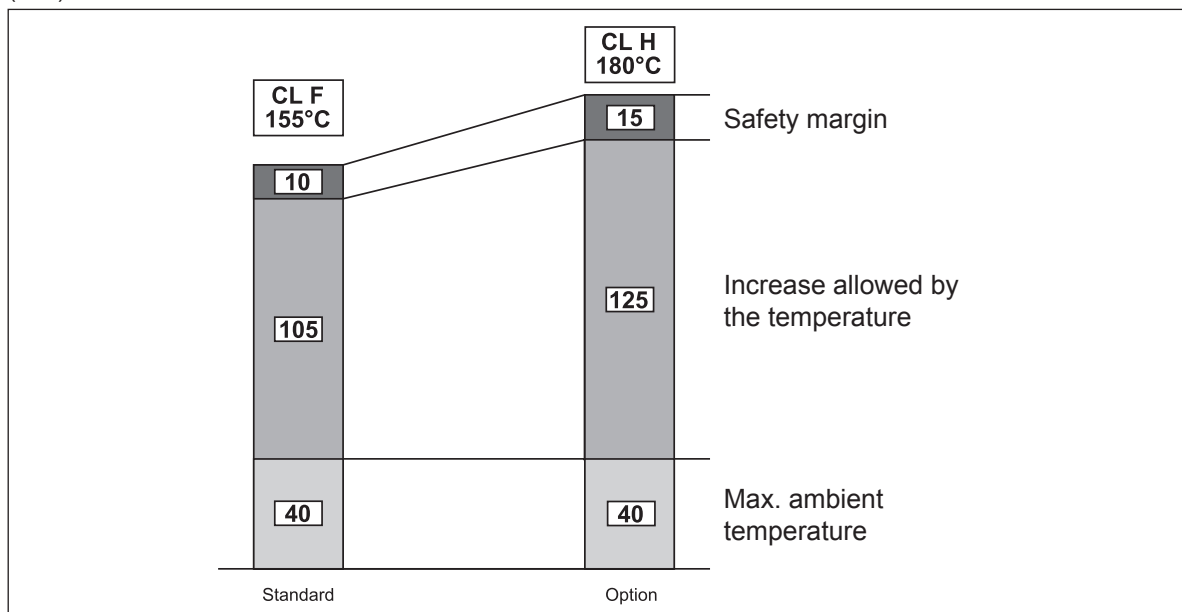
For applications involving the presence of aggressive chemicals or high humidity, contact Bonfiglioli Engineering for assistance with product selection.

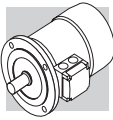
CL H

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

Not available for motors in compliance with CSA e UL standards (CUS option).

(F20)





6.8 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.

(F21)

	Type of duty						Contact us
	S2			S3 *			
	Duration (min)			Intermittence (I)			
	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).

6.8.1 Cyclic duration factor:

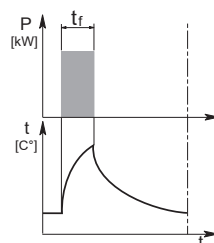
$$I = \frac{t_f}{t_f + t_r} \cdot 100 \quad (01)$$

t_f = work time under constant load

t_r = rest time

6.8.2 Limited duration duty S2

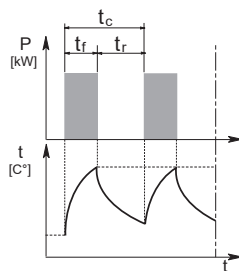
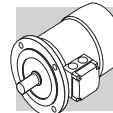
This type of duty is characterized by operation at constant load for a limited time, which is shorter than the time required to reach thermal equilibrium, followed by a rest period of sufficient duration to restore ambient temperature in the motor.



6.8.3 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.

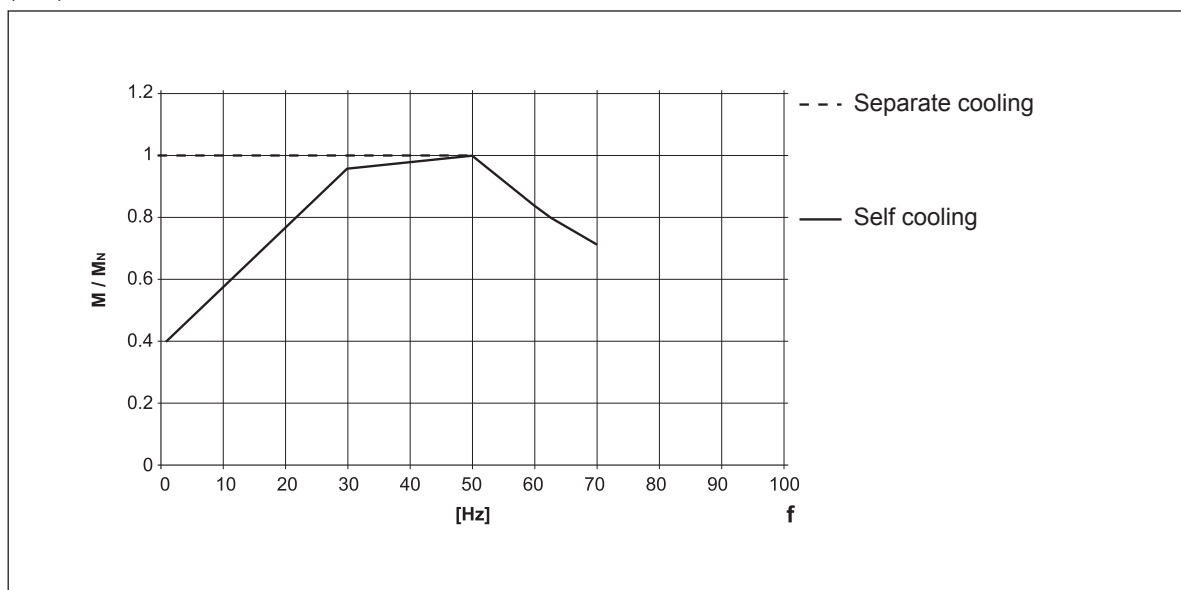


6.9 Inverter-controlled motors

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 is 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.

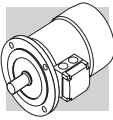
(F22)



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

(F23)

	n [min ⁻¹]		
	2p	4p	6p
≤ BE 112 - BN 112	5200	4000	3000
≥ BE 132 - BN 132	4500	4000	3000
BX 80 ... BX 180		4000	



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.

6.10 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:

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

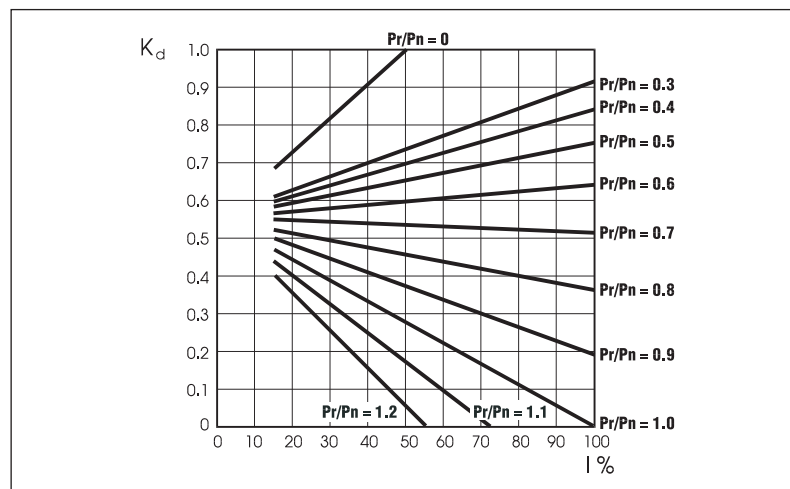
where:

$$K_J = \frac{J_m + J_c}{J_m} \quad \text{inertia factor}$$

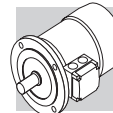
$$K_c = \frac{M_a - M_L}{M_a} \quad \text{torque factor}$$

$$K_d = \quad \text{load factor, see the following table}$$

(F24)



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 (F31), (F39) and dependent on the number of switches (c/h).

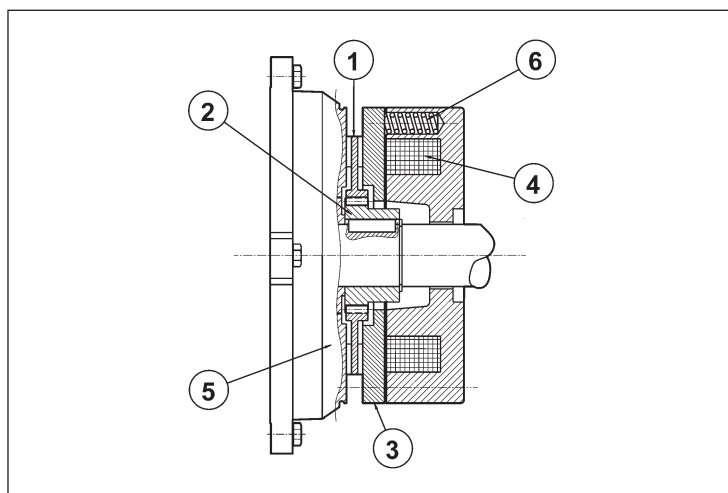


7 ASYNCHRONOUS BRAKE MOTORS

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.

(F25)



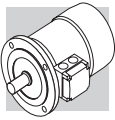
Key:

- 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.

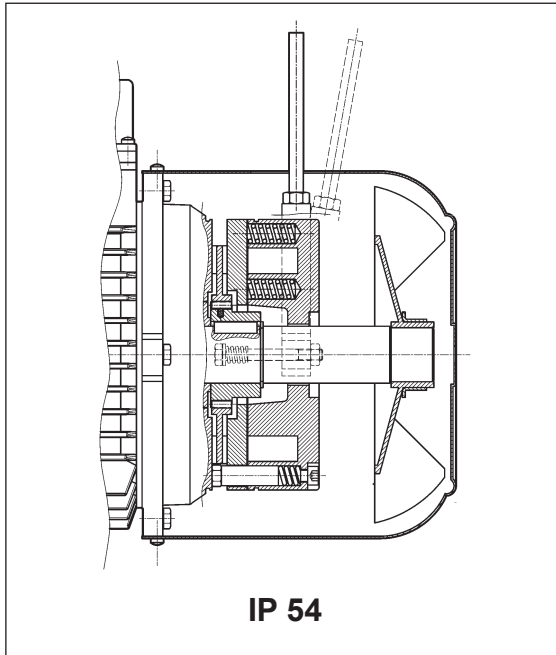


8 DC BRAKE MOTORS TYPE BX_FD - BN_FD

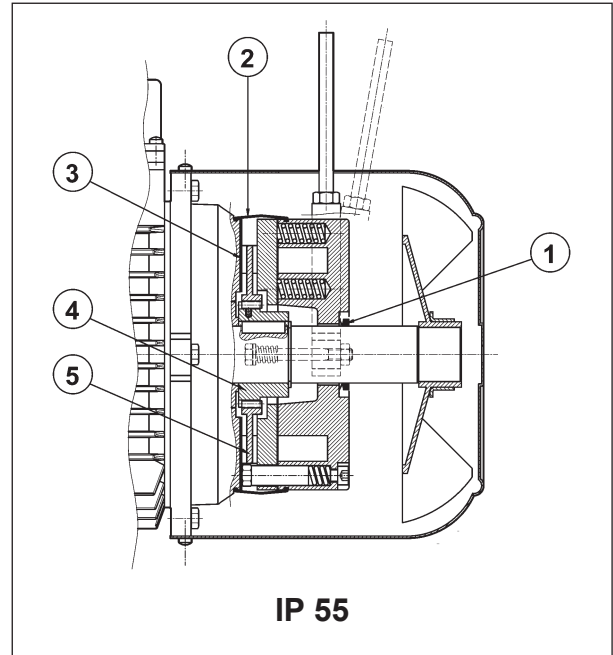
Frame sizes: BX 80 ... BX 180L - BN 63 ... BN 200L

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

(F26)



(F27)



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.

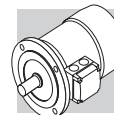
Brake torque factory setting is indicated in the corresponding motor rating charts. Braking torque may be modified by changing the type and/or number of springs.

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

Standard protection class is IP54.

Brake motor FD 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 stainless steel ring placed between motor shield and brake disc
- ④ stainless steel hub
- ⑤ stainless steel brake disc

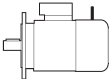
8.2 FD brake power supply

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.

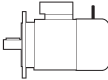
Rectifier standard power supply voltage V_B is as indicated in the following table, regardless of mains frequency:

(F28)

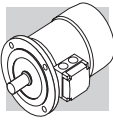
2, 4, 6 P			1 speed	
	BX_FD - BN_FD		brake connected to terminal board power supply	separate power supply
	V_{mot} $\pm 10\%$ 3 ~	V_B $\pm 10\%$ 1 ~		
	BX 80...BX 132 BN 63...BN 132	230/400 V – 50 Hz	230 V	standard
BX 160...BX 180 BN 160...BN 200		400/690 V – 50 Hz	400 V	standard
				specify V_B SA o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

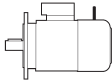
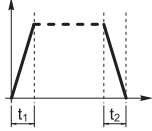
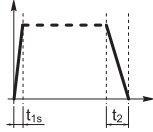
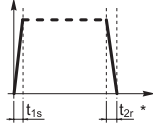
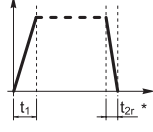
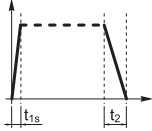
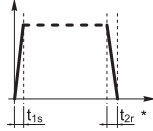
(F29)

2/4, 2/6, 2/8, 2/12, 4/6, 4/8 P			2 speed	
	BN_FD		brake connected to terminal board power supply	separate power supply
	V_{mot} $\pm 10\%$ 3 ~	V_B $\pm 10\%$ 1 ~		
	BN 63...BN 132	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:



(F30)

	brake		
		standard	at request
BN 63	FD 02	NB 	SB  SBR  NBR 
BN 71	FD 03 FD 53		
BX 80 - BN 80	FD 04		
BX 90S - BN 90S	FD 14		
BX 90L - BN 90L	FD 05		
BX 100 - BN 100	FD 15		
BX 112 - BN 112	FD 06S	SB 	SBR 
BX 132	FD 56		
BN 132 - BN 160MR	FD 06 FD 07		
BX 160 BN 160L - BN 180M	FD 08		
BX 180 BN 180L - BN 200M	FD 09		

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

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

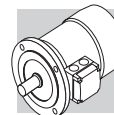
Rectifiers **NBR** or **SBR** are available for applications requiring quick brake intervention (braking condition reinstatement) response.

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 $\pm 10\%$, 400Vac $\pm 10\%$, 50/60 Hz (with power supply); 100Vdc $\pm 10\%$, 180Vdc $\pm 10\%$ (with SD option).



8.3 FD brake technical specifications

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

(F31)

Brake	Brake torque M_b [Nm] springs			Release		Braking		W_{max} per brake operation [J]			W	P
	6	4	2	t_1 [ms]	t_{1s} [ms]	t_2 [ms]	t_{2c} [ms]	10 s/h	100 s/h	1000 s/h	[MJ]	[W]
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

* 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 ($\pm 15\%$)

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 VB 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.

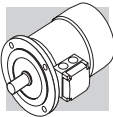


Table (F32) – Brake power supply from motor terminals and AC line interruption

Delayed stop time t_2 and function of motor time constants.

Mandatory when soft-start/stops are required.

Table (F33) – 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 (F31).

Table (F34) – Brake coil power supply from motor terminals and AC/DC line interruption.

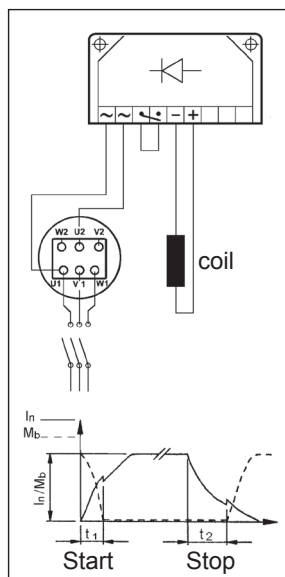
Quick stop with operation times t_{2c} as per table (F31).

Table (F35) – Brake coil with separate power supply and AC/DC line interruption.

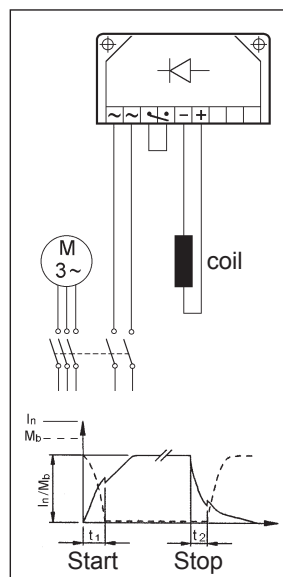
Stop time decreases by values t_{2c} indicated in the table (F31).

The brake may be voltage supplied directly from the motor terminal box (from tab. F32 to tab. F35) only if the nominal voltage of the brake is the same as the smaller voltage of the motor.

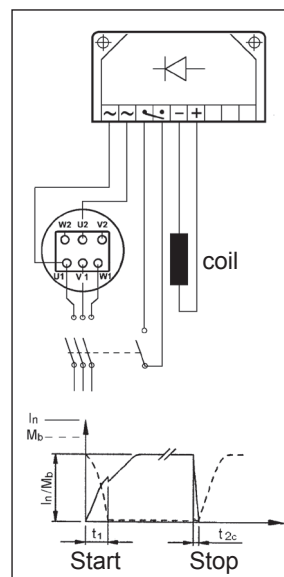
(F32)



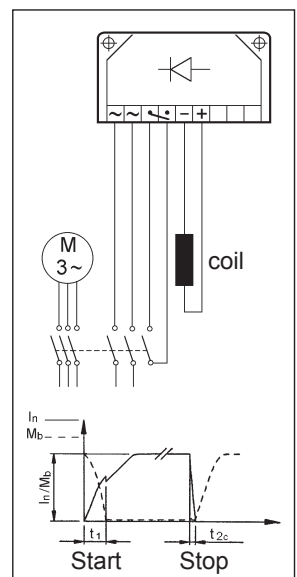
(F33)

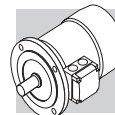


(F34)



(F35)

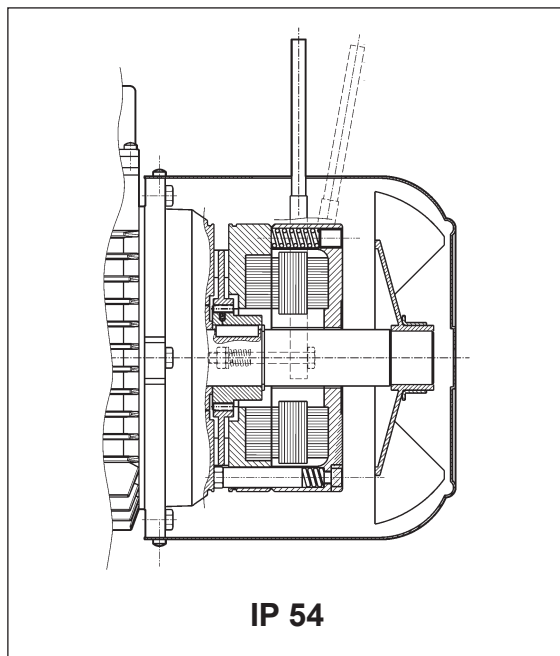




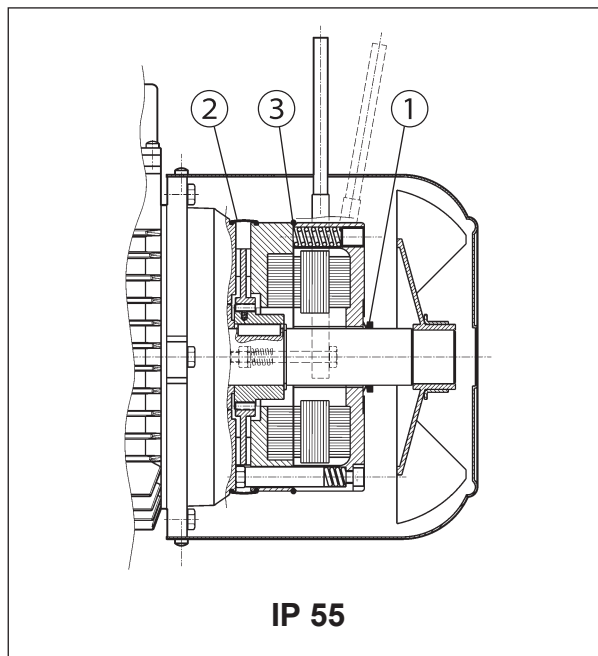
9 AC BRAKE MOTORS TYPE BX_FA - BN_FA

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

(F36)



(F37)



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. (F39).

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.

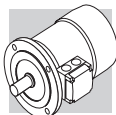
For applications involving lifting and/or high hourly energy dissipation, contact Bonfiglioli's Technical Service.

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:

(F38)

single-pole motor	BX 80...BX 132 BN 63...BN 132	BX160 BN 160...BN 180
	230Δ / 400Y V ±10% – 50 Hz	400Δ/ 690Y V ±10% – 50 Hz
	265Δ / 460Y ±10% - 60 Hz	460Y – 60 Hz
switch-pole motors (separate power supply line)	BN 63...BN 132	
	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.

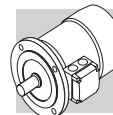
9.3 Technical specifications of FA brakes

(F39)

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.

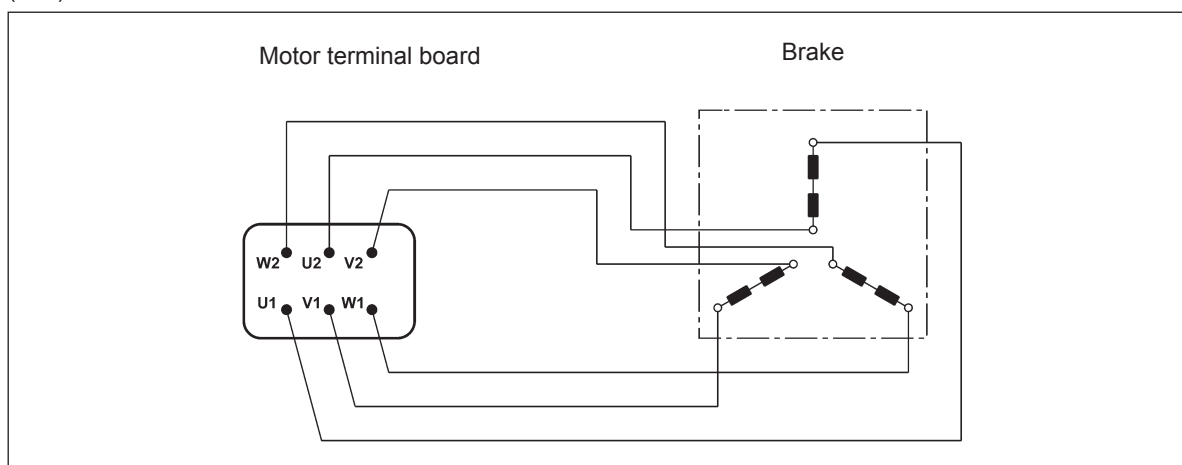


The brake pad wear depends on the operating/ambient conditions (temperature, humidity, angular speed, specific pressure); Therefore the declared wear rate must be considered as indicative.

9.4 FA brake connections

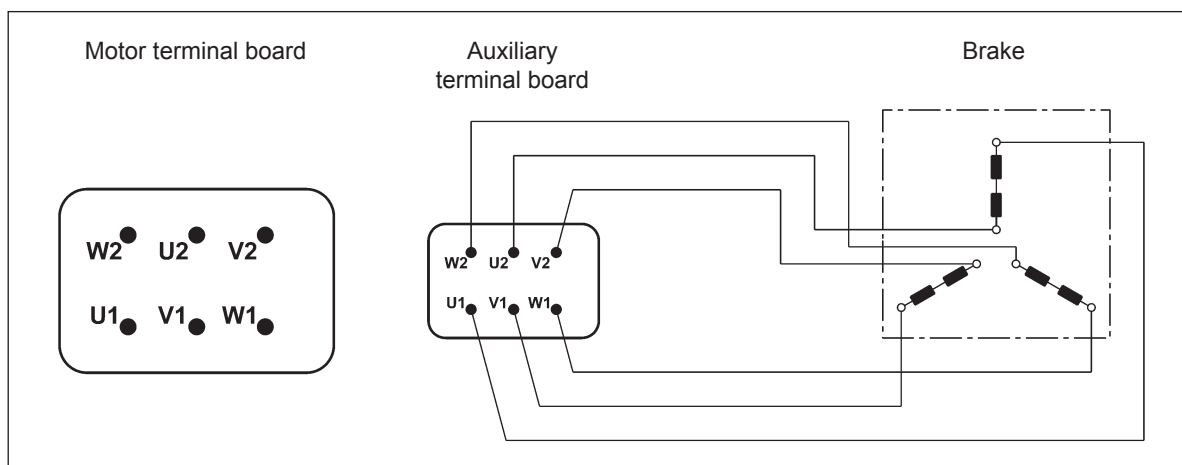
The diagram below shows the wiring when brake is connected directly to same power supply of the motor:

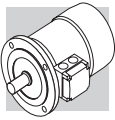
(F40)



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:

(F41)



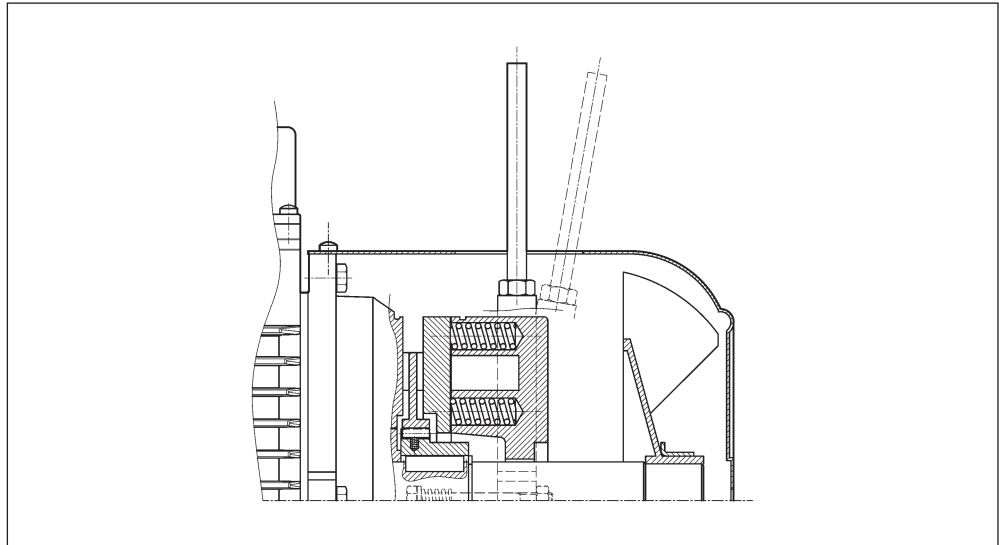


10 BRAKE RELEASE SYSTEMS

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

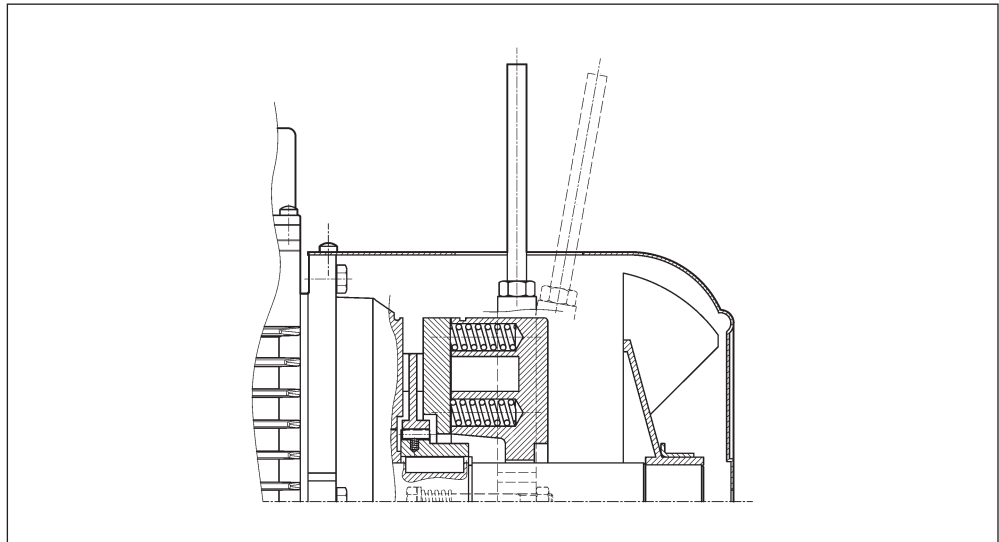
(F42)



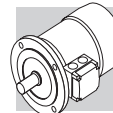
A return spring brings the release lever back in the original position.

RM

(F43)



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:



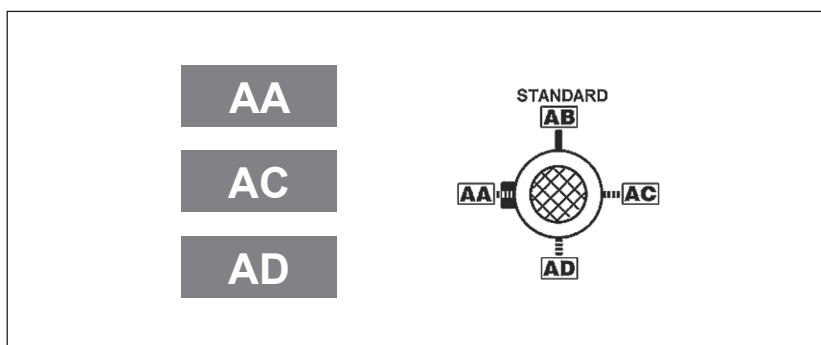
(F44)

	R	RM
BX_FD	BX 80...BX 180	BX 80...BX 132
BN_FD	BN 63...BN 200	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:

(F45)



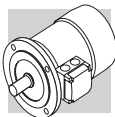
10.2 Separate brake supply

...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.

...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.



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:

(F46)

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

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.

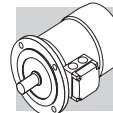
This additional protection should always be specified for servo-ventilated motors (IC416).

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.

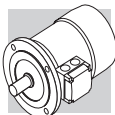
With CON option, the winding connection is always Y.

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.

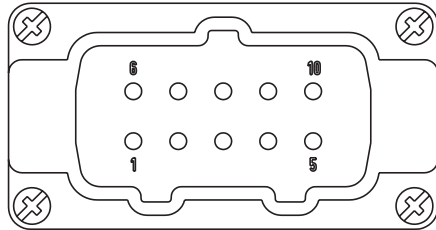
The CON option is not applicable to brakemotors equipped with AC brake type FA.

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

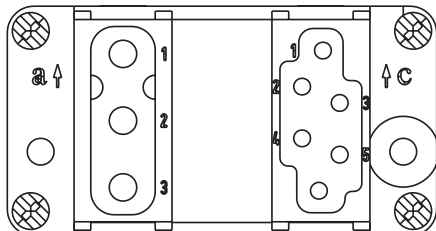


Specifications

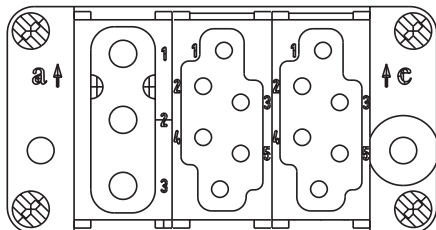
(F47)

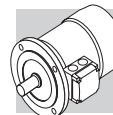
Option	CON 1
Motor size	BX 80 ... BX 112 / BE 80 ... BE 112 / BN 63 ... BN 112
Connector view	
Type of connector	Harting Han 10ES
Housing	Han EMC 10B with 2 levers
Numbers of pins - nominal current	10 x 16A
Voltage	500 Vac
Contact connection	Screw terminals

(F48)

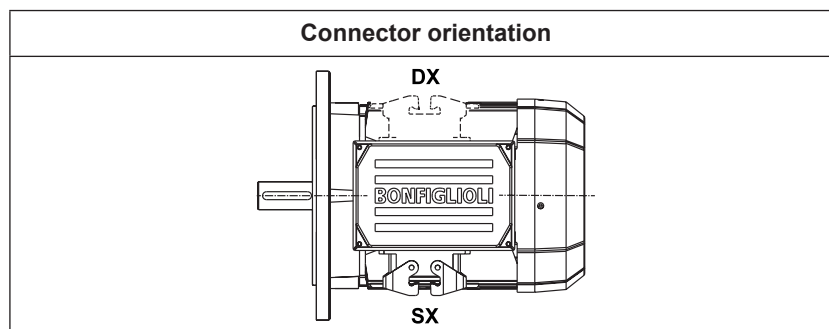
Option	CON 2
Motor size	BX 80 ... BX 132 / BE 80 ... BE 132M / BN 63 ... BN 160MR
Connector view	
Type of connector	Harting Han Modular
Housing	Han EMC 10B with 2 levers
Module type	Module C + Module E + Module E
Numbers of pins - nominal current	3 x 36A / 6 x 16A
Voltage	500 Vac
Contact connection	Crimping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

(F49)

Option	CON 3
Motor size	BX 80 ... BX 132M - BN 63 ... BN 160MR
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



(F50)

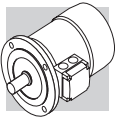


(F51)

Motors without brake dimensions					
	AD (mm)	AF (mm)	AH (mm)	LL (mm)	V (mm)
BN 63	136	110	45	165	4.5
BN 71	149	110	45	165	15.5
BX 80 - BE 80 - BN 80	160	110	45	165	16.5
BX 90 - BE 90 - BN 90	162	110	45	165	31.5
BX 100 - BE 100 - BN 100	171	110	45	165	37.5
BX 112 - BE 112 - BN 112	186	110	45	165	39
BX 132 - BE 132 - BN 132	210	140	45	188	45.5
BN 160MR	210	140	45	188	161

(F52)

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



11.7 Control of brake operation

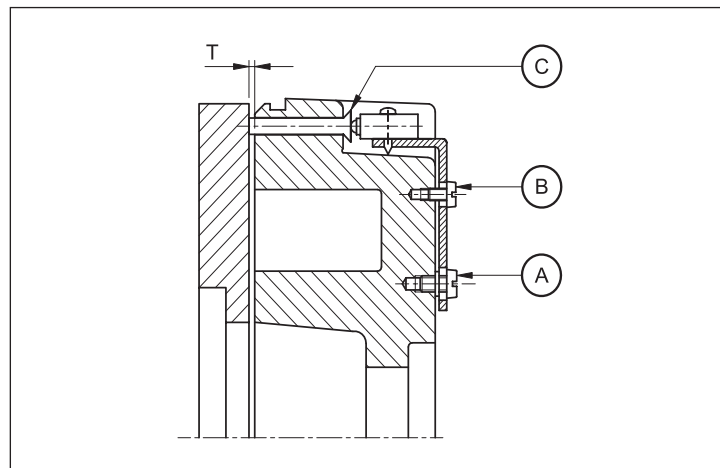
MSW

The microswitch can be 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 brakes FD03...FD09.

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

(F53)



- 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.

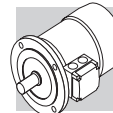
11.9 Anti-condensation heaters

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:



(F54)

	H1	NH1
	1~ 230V $\pm$ 10% P [W]	1~ 115V $\pm$ 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 180 BE 160, BE 180 BN 160, BN 200	50	50

Warning!

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

11.10 Tropicalization

TP

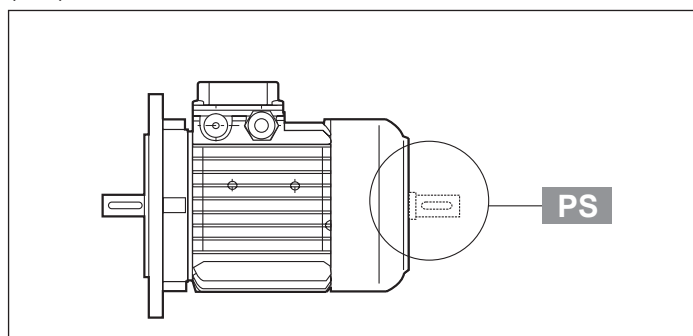
When option **TP** is specified, motor windings receive additional protection for operation in high humidity and temperature conditions.

11.11 Second shaft extension

PS

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

(F55)

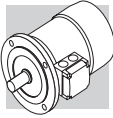


11.12 Rotor balancing

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.



(F56)

Vibration level	Angular velocity $n \text{ [min}^{-1}\text{]}$	Limits of the vibration velocity (mm/s) BX 80 ≤ H ≤ BX 180L BE 80 ≤ H ≤ BE 180L BN 56 ≤ H ≤ BN 200
A	$600 < n < 3600$	1.6
B	$600 < n < 3600$	0.70

Values are obtained from measurements on freely suspended motor during noload operation; tolerance $\pm 10\%$.

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.

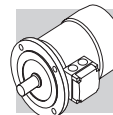
This variant has two different models, called **U1** and **U2**, having the same longitudinal size. Longer side of fan cover (**DL**) is specified for both models in the table below. Overall dimension can be reckoned from motor size table.

(F57)

Extra length for servoventilated motors		
	ΔL_1	ΔL_2
BN 71	93	32
BX 80 - BE 80 - BN 80	127	55
BX 90 - BE 90 - BN 90	131	48
BX 100 - BE 100 - BN 100	119	28
BX 112 - BE 112 - BN 112	130	31
BX 132 - BE 132 - BN 132	161	51
BX 160 - BE 160 - BE 180	184	—

ΔL_1 = extra length to LB value of corresponding standard motor.

ΔL_2 = extra length to LB value of corresponding brake motor.
Only for BN motors.



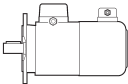
U1

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.

The option is not applicable to motors compliant with the CSA and UL norms (option CUS).

(58)

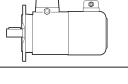
	V a.c. ±10%	Hz	P [W]	I [A]
BN 71	1 ~ 230	50 / 60	22	0.12
BX 80 - BE 80 BN 80			22	0.12
BX 90 - BE 90 BN 90			40	0.30
BX 100 - BE 100 BN 100			50	0.25
BX 112 - BE 112 BN 112	3 ~ 230Δ / 400Y	50	50	0.26 / 0.15
BX 132 - BE 132 BN 132 ... BN 160MR			110	0.38 / 0.22
BX 160 - BE 160 BN 160M ... BN 180M			180	1.25 / 0.72
BX 180 - BE 180 BN 180L ... BN 200L			250	1.51 / 0.87

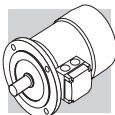
U2

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).

(59)

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



11.14 Rain canopy

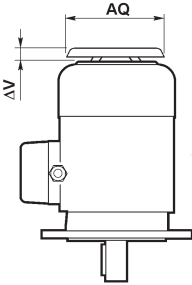
RC

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.

(60)

	AQ	ΔV	
BN 63	118	24	
BN 71	134	27	
BX 80 - BE 80 BN 80	152	25	
BX 90 - BE 90 BN 90	168	30	
BX 100 - BE 100 BN 100	190	28	
BX 112 - BE 112 BN 112	211	32	
BX 132 - BE 132 BN 132...BN 160MR	254	32	
BX 160 - BE 160 BN 160M...BN 180M	302	36	
BX 180 - BE 180 BN 180L...BN 200L	340	36	

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

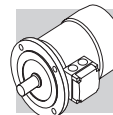
Incremental encoder, $V_{IN} = 5\text{ V}$, line-driver output RS 422.

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

EN5

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

EN6

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

(F61)

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

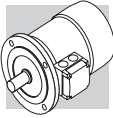
(F62)

EN_ + U1	
BX 160 - BE 160 - BN 160M...BN 180M	72
BX 160 - BE 180 - BN 180L...BN 200L	82
BX 160_FD - BN 160M_FD...BN 180M_FD	35
BX 180_FD - BN 180L_FD...BN 200L_FD	41

(F63)

EN1, EN2, EN3, EN4, EN5, EN6	
BX 80 ... BX 180L - BE 80 ... BE 180L	
BN 63 ... BN 200L	
BX 80_FD ... BX 180_FD - BN 63_FD ... BN 200L_FD	
BX 80_FA ... BX 160_FA - BN 63_FA ... BN 200L_FA	

If the encoder device (option EN_) is specified on motors BX 80 ... BX 132 - BE 80 ... 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 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.

(F64)

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

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.

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.

11.18 Painting

RAL

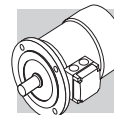
Gearboxes with optional protection to class C3 or C4 are available in the colours listed in the following table.

(F65)

PAINTING	Colour	RAL number
RAL7042*	Traffic Grey A	7042
RAL5010	Gentian Blue	5010
RAL9005	Jet Black	9005
RAL9006	White Aluminium	9006
RAL9010	Pure White	9010

* Gearboxes are supplied in this standard colour if no other colour is specified.

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



11.19 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.

CC

Inspection certificate

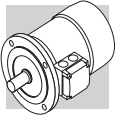
The document entails checking on order compliance, the visual inspection of external conditions and instrumental testing of the electrical characteristics in unloaded conditions. Units inspected are sampled within the shipping batch and marked individually.

12 TABLES OF MOTORS CORRELATION

12.1 50 Hz Motors

(F66)

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	BE 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 BN 160M 2	BE 160MA 2	
	15	BN 160MB 2	BE 160MB 2	
	18.5	BN 160L 2	BE 160L 2	
	22	BN 180M 2		
	30	BN 200LA 2		

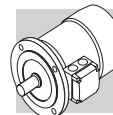


(F67)

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		

(F68)

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			



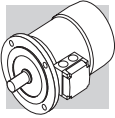
12.2 60 Hz Motors

(F69)

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		

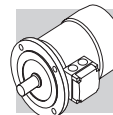
(F70)

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		



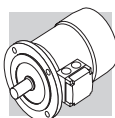
(F71)

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			

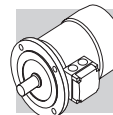


13 MOTOR RATING CHARTS BX

4 P		1500 min ⁻¹ - S1												50 Hz - IE3						
		d.c. brake												a.c. brake						
		FD												FA						
P _n		n	M _n	I _n 400V	η%	cos φ	I _s / I _n	M _s / M _n	M _a / M _n	KVA code	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	M _b	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	M _b	J _m x 10 ⁻⁴ kgm ²	IM B5 
0.75	BX 80B 4	1425	5.0	1.61	82.5 83.9 83.2	0.81	6.5	2.0	1.8	J	35	16	FD 04	15	37	19.9	FA 04	15	37	19.8
1.1	BX 90S 4	1425	7.4	2.44	84.1 84.1 82.0	0.77	6.9	3.4	2.2	J	27	16	FD 14	15	29	20.2	FA 14	15	29	20.1
1.5	BX 90LA 4	1420	10.1	3.3	85.3 86.2 84.9	0.78	6.3	3.1	1.9	J	31	17	FD 05	26	35	23	FA 05	26	35	23.7
2.2	BX 100LA 4	1445	14.5	5.1	86.7 86.2 84.0	0.72	7.2	3.6	2.4	K	58	24	FD 15	40	62	31	FA 15	40	62	31
3	BX 100LB 4	1445	19.8	6.7	87.7 87.7 86.0	0.74	7.6	3.9	2.6	K	73	29	FD 15	40	77	36	FA 15	40	77	36
4	BX 112M 4	1445	26	8.1	88.6 88.9 87.6	0.8	8.1	3.8	2.5	J	130	38	FD 06S	60	139	48	FA 06S	60	139	50
5.5	BX 132SB 4	1460	36	10.6	89.6 89.2 88.8	0.83	8.2	3.6	2.3	J	310	57	FD 56	75	320	70	FA 06	75	320	71
7.5	BX 132MA 4	1460	49	15.0	90.4 90.9 90.2	0.80	8.4	3.8	2.5	K	360	67	FD 06	100	370	80	FA 07	100	370	85
9.2	BX 160MA 4	1465	60	17.8	91.0 92.1 91.7	0.82	7.9	3.6	2.1	J	650	95	FD 08	170	725	125	FA 08	170	725	124
11	BX 160MB 4	1465	72	20.5	91.4 92.9 92.5	0.84	7.8	3.4	1.9	J	780	110	FD 08	170	855	140	FA 08	170	855	139
15	BX 160L 4	1465	98	28.1	92.1 93.2 92.6	0.82	9.0	4.1	2.3	K	890	121	FD 08	200	965	151	FA 08	200	965	150
18.5	BX 180M 4	1480	119	32.9	92.6 94.1 93.1	0.85	11.3	2.6	2.3	M	1560	155	FD 09	300	1760	195				
22	BX 180L 4	1475	142	38.2	93.0 93.6 92.8	0.88	10.2	2.5	2.0	L	1660	163	FD 09	300	1860	203				

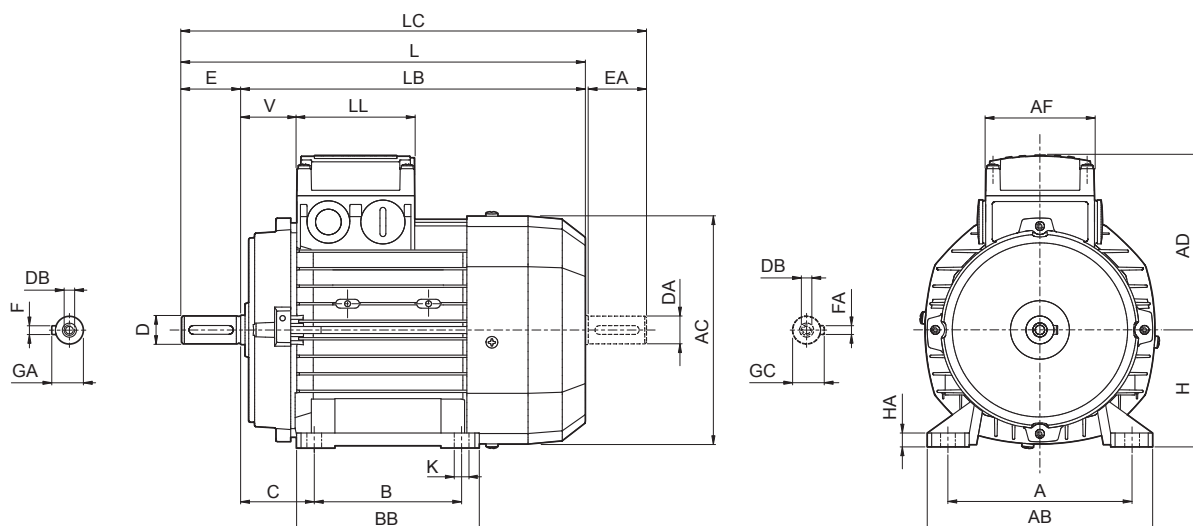


4 P		1800 min ⁻¹ - S1														60 Hz - IE3						
P _n		n	M _n	In 400V	η%			cos φ	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	KVA code	J _m x 10 ⁻⁴ kgm ²	IM B5 	d.c. brake				a.c. brake			
					100%	75%	50%								FD				FA			
															Mod	M _b	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	M _b	J _m x 10 ⁻⁴ kgm ²	IM B5 
0.75	BX 90SR 4	1755	4.1	1.48	85.5	86.4	83.9	0.73	8.0	3.7	2.5	L	27	16	FD 14	15	29	20.2	FA 14	15	29	20.1
1.1	BX 90S 4	1740	6.0	2.15	86.5	85.9	83.0	0.74	8.2	4.1	2.8	K	27	16	FD 14	15	29	20.2	FA 14	15	29	20.1
1.5	BX 90LA 4	1735	8.3	2.91	86.5	86.5	84.4	0.75	7.4	3.6	2.5	K	31	17	FD 05	26	35	23	FA 05	26	35	23.7
2.2	BX 100LA 4	1760	11.9	4.4	89.5	88.6	86.2	0.71	9.9	4.8	3.6	N	73	29	FD 15	40	77	36	FA 15	40	77	36
3	BX 100LB 4	1750	16.4	5.9	89.5	88.9	86.7	0.71	9.1	4.4	3.3	M	73	29	FD 15	40	77	36	FA 15	40	77	36
3.7	BX 112M 4	1760	20	6.7	89.5	89.5	89.1	0.77	10.4	4.7	3.4	M	130	38	FD 06S	60	139	48	FA 06S	60	139	50
5.5	BX 132SB 4	1770	30	9.9	91.7	92.0	90.2	0.76	10.7	5.1	4.6	N	410	77	FD 56	75	420	90	FA 06	75	420	91
7.5	BX 132MA 4	1770	41	13.4	91.7	91.3	89.7	0.76	11.0	4.9	4.4	N	410	77	FD 06	100	420	90	FA 07	100	420	95
9.2	BX 160MA 4	1770	50	15.6	92.4	92.5	91.6	0.8	9.1	4.1	2.6	L	650	95	FD 08	170	725	125	FA 08	170	725	124
11	BX 160MB 4	1770	59	18.2	92.4	92.9	92.0	0.82	9.3	4.0	2.4	L	780	110	FD 08	170	855	140	FA 08	170	855	139
15	BX 160L 4	1770	81	24.5	93.0	93.5	92.5	0.81	10.9	4.8	2.8	M	890	121	FD 08	200	965	151	FA 08	200	965	150
18.5	BX 180M 4	1780	99	28.6	93.6	94.5	93.2	0.85	13.0	2.9	2.7	N	1560	155	FD 09	300	1760	195				
22	BX 180L 4	1775	118	33.1	93.6	94.2	93.1	0.87	11.5	2.8	2.4	M	1660	163	FD 09	300	1860	203				



14 MOTORS DIMENSIONS BX

BX - IM B3

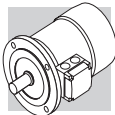


BX

	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
BX 80 B	19 14 ⁽¹⁾	40 30 ⁽¹⁾	M6 M5 ⁽¹⁾	21.5 16 ⁽¹⁾	6 5 ⁽¹⁾	100	125	8	124	153	10	50	80	156	320	280	351	119	74	80	38
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21,5 ⁽¹⁾	8 6 ⁽¹⁾		140		155	174		56	90	176	326	276	368 378	133	98	98	44
BX 90 LA						125															
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	140	160	10	175	192	12	63	100	195	410	350	462	142	98	98	50
BX 100 LB																					
BX 112 M							190			224		70	112	219	430	370	482	157			52
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	140	216	12	218	254	12	89	132	258	493	413	556	193	118	118	58
BX 132 MA						178									528	448	591				
BX 160 MA	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51
BX 160 MB																					
BX 160 L						254			304						640	530	724				
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾	241	279	26	291	359	14	121	180	348	708	598	823	261			52
BX 180 L						279			329												

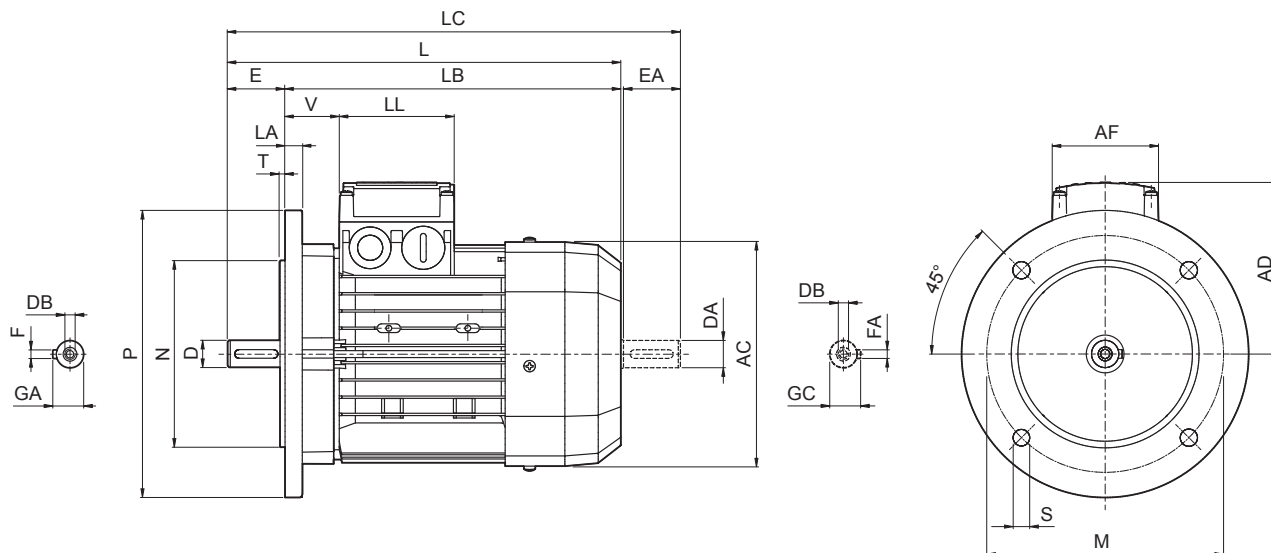
N.B.:

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



BX - IM B5

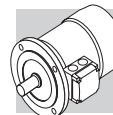
BX



	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
BX 80 B	19 14 ⁽¹⁾	40 30 ⁽¹⁾	M6 M5 ⁽¹⁾	21.5 16 ⁽¹⁾	6 5 ⁽¹⁾							156	320	280	351	119	74	80	38
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾	165	130	200	11.5	3.5	11.5	176	326	276	368	133			44
BX 90 LA																			
BX 100 LA																	98	98	
BX 100 LB	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	215	180	250			14	195	410	350	462	142			50
BX 112 M									14	4	15	219	430	370	482	157			52
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	265	230	300			20	258	493	413	556	193	118	118	58
BX 132 MA													528	448	591				
BX 160 MA													596	486	680				
BX 160 MB	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾						15	310	640	530	724	245			51
BX 160 L						300	250	350	18.5	5							187	187	
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾						18	348	708	598	823	261			52
BX 180 L																			

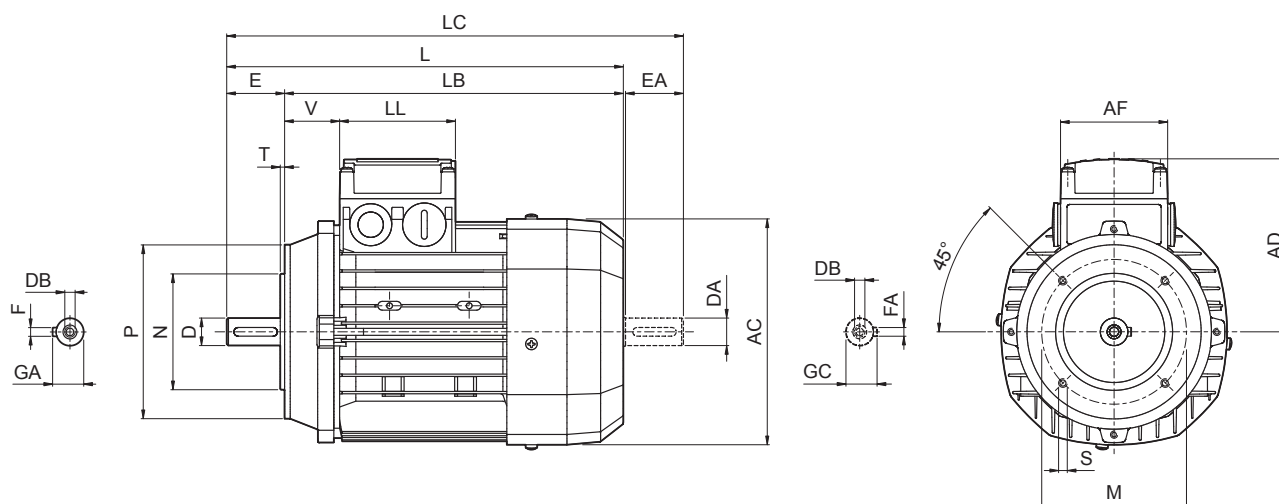
N.B.:

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



BX - IM B14

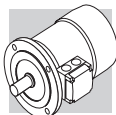
BX



	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			
BX 80 B	19 14 ⁽¹⁾	40 30 ⁽¹⁾	M6 M5 ⁽¹⁾	21.5 16 ⁽¹⁾	6 5 ⁽¹⁾	100	80	120	M6	3	156	320	280	351	119	74	80	38			
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾	115	95	140	M8		3.5	176	326	276	368	133	98	98	44		
BX 90 LA																					
BX 100 LA													195	410	350	462			142		
BX 100 LB	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	130	110	160			219	430	370	482	157			52			
BX 112 M																					
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	165	130	200	M10	4	258	493	413	556	193	118	118	58			
BX 132 MA												528	448	591							

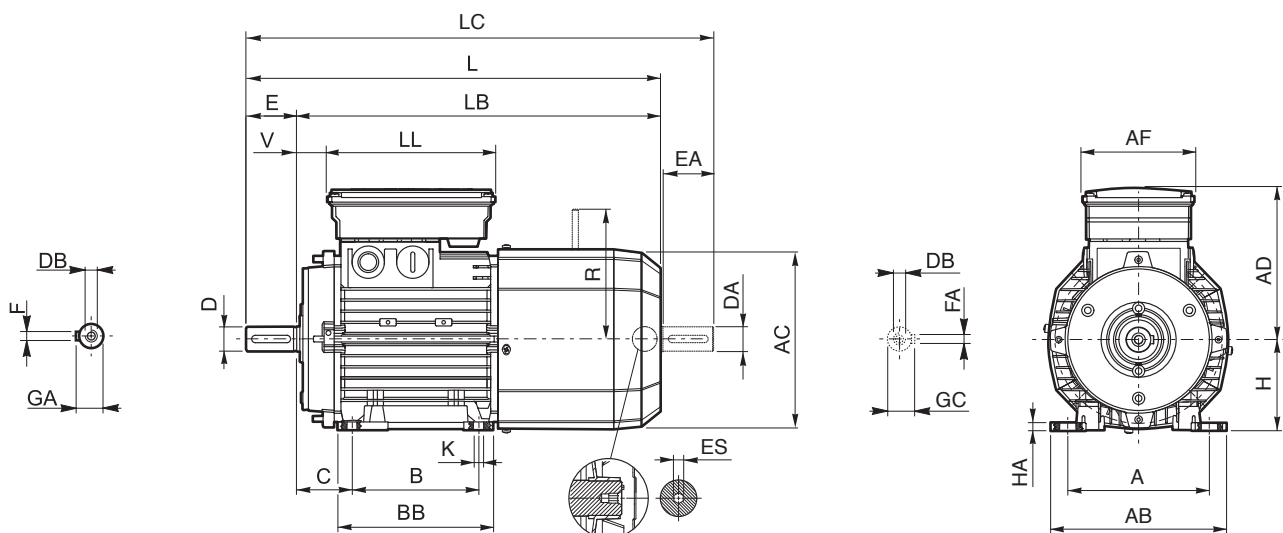
N.B.:

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



BX_FA/FD ; IM B3

BX

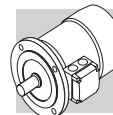


	Shaft					Housing						Motor																						
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R		ES (2)										
																						FD	FA											
BX 80 B	19 14 ⁽¹⁾	40 30 ⁽¹⁾	M6 M5 ⁽¹⁾	21.5 16 ⁽¹⁾	6 5 ⁽¹⁾	100	125	8	124	153	10	50	80	156	392	352	423	143	98	133	25	129	134	5										
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾		140		155	174		56	90	176	410	360	452	146	110	165	32	160	160	6										
BX 90 LA																									125	192	70	112	219	527	467	579	170	39
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	140	160	10	175	224	63	100	195	502	442	554	155	110	165	37	160	160												
BX 100 LB																							190		70	112	219	527	467	579	170	39	199	198
BX 112 M																							190		70	112	219	527	467	579	170	39	199	198
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	140	216	12	218	254	12	89	132	258	603	523	667	210	140	188	46	204	200											
BX 132 MA						178									627	547	690					204	226											
BX 160 MA	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51	266	247											
BX 160 MB						254			304						640	530	724																	
BX 160 L						254			304						640	530	724																	
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾	241	279	26	291	359	14	121	180	348	866	598	823	261	52	305	—													
BX 180 L						279			329																									

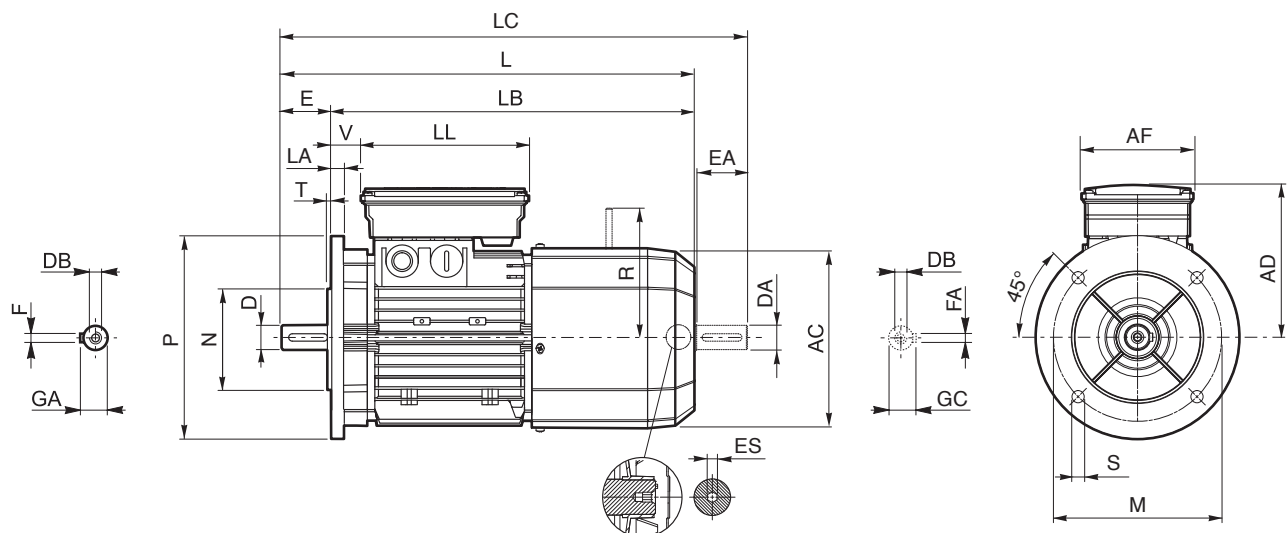
N.B.:

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

2) "ES" hexagon is not present with PS option



BX_FA/FD ; IM B5



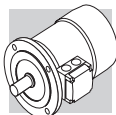
BX

	Shaft					Housing						Motor											ES (2)									
	D	E	DB	GA	F	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V	R												
	DA	EA		GC	FA															FD	FA											
BX 80 B	19 14 ⁽¹⁾	40 30 ⁽¹⁾	M6 M5 ⁽¹⁾	21.5 16 ⁽¹⁾	6 5 ⁽¹⁾	165	130	200	11.5	3.5	11.5	156	392	352	423	143	98	133	25	129	134	5										
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾							176	410	360	452	146	110	165	32	160	160											
BX 90 LA																			37													
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	215	180	250	14	195	502	442	554	155	39	199			198													
BX 100 LB																																
BX 112 M																																
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	265	230	300	14	4	15	219	527	467	579	170	210	140	188	46	204	200	226									
BX 132 MA																																
BX 160 MA	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾	300	250	350	18.5	5	15	310	736	626	820	245	187	187	51	266	247	—										
BX 160 MB																																
BX 160 L																																
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾						18	348	866	756	981	261				52	305	—										
BX 180 L																																

N.B.:

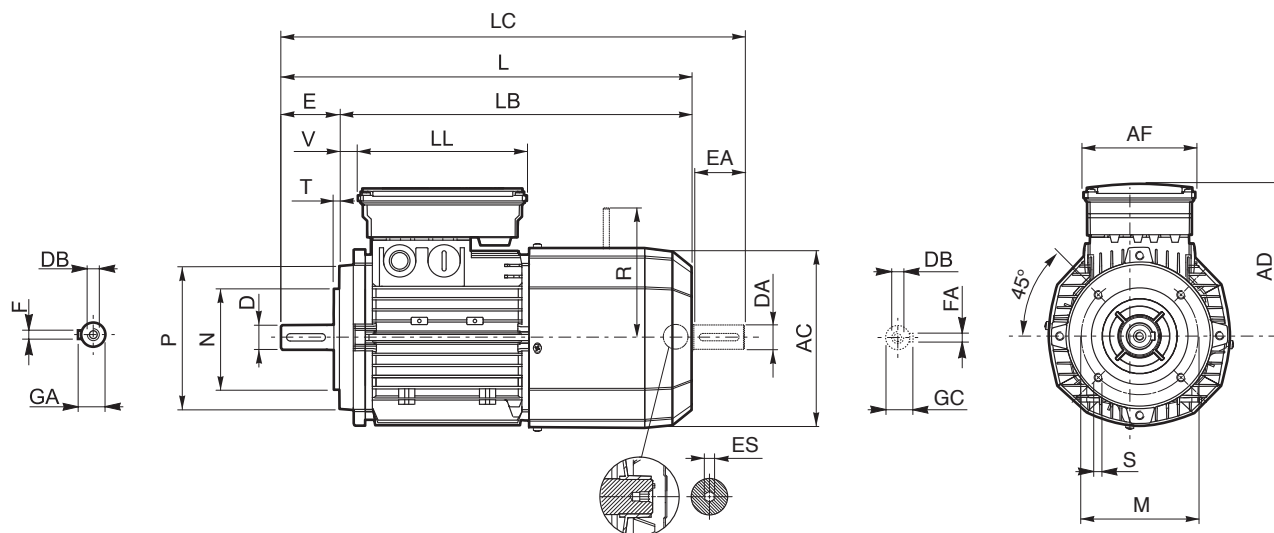
1) These values refer to the rear shaft end (PS).

2) "ES" hexagon is not present with PS option



BX_FA/FD ; IM B14

BX

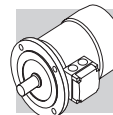


	Shaft					Housing					Motor										
	D	E	DB	GA	F	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	R		ES (2)
	DA	EA		GC	FA														FD	FA	
BX 80 B	19 14 ⁽¹⁾	40 30 ⁽¹⁾	M6 M5 ⁽¹⁾	21.5 16 ⁽¹⁾	6 5 ⁽¹⁾	100	80	120	M6	3	156	392	352	423	143	98	133	25	129	134	6
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾	115	95	140	M8		176	410	360	452	146	110	165	32			
BX 90 LA											195	502	442	554	155			37	160	160	
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	130	110	160		219	527	467	579	170	39			199	198		
BX 100 LB																					
BX 112 M																					
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	165	130	200	M10	4	258	603	523	667	210	140	188	46	204	200	
BX 132 MA												627	547	690					226		

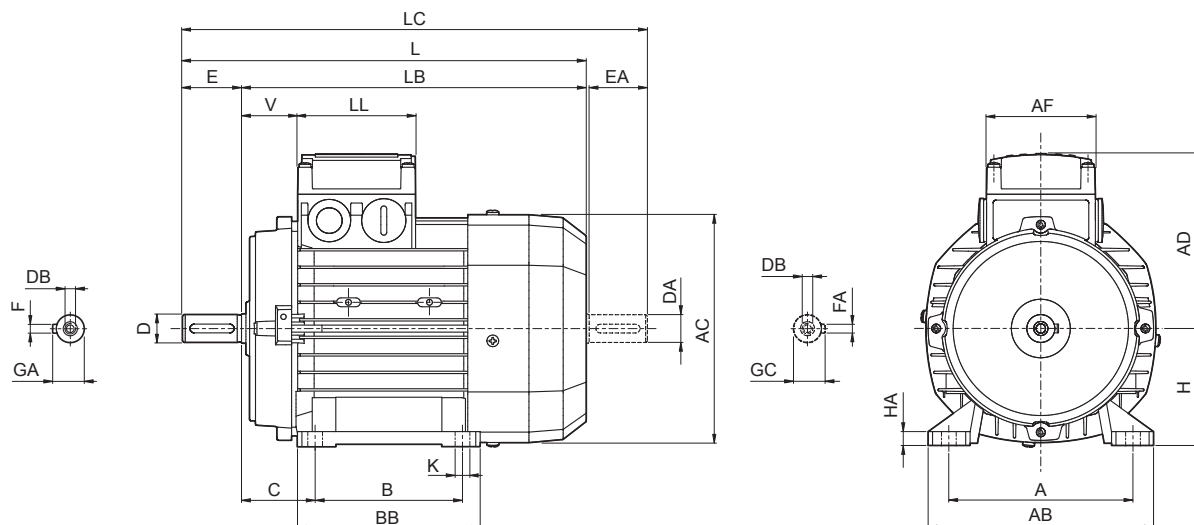
N.B.:

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

2) "ES" hexagon is not present with PS option



BX - CUS - IM B3

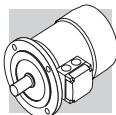


BX

	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		
BX 90 SR	19 19 ⁽¹⁾	40 40 ⁽¹⁾	M6 M6 ⁽¹⁾	21.5 21.5 ⁽¹⁾	6 6 ⁽¹⁾	100	140	8	155	174	10	56	90	176	316		358	133	98	98	44		
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾										276	368							
BX 90 LA															326	378							
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	140	160	10	175	192	12	63	100	195	410	350	462	142	98	98	50		
BX 100 LB							190			224		70	112	219	430	370	482	157					
BX 112 M																							
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	178	216	12	218	254	12	89	132	258	552	472	615	193	118	118	58		
BX 132 MA																							
BX 160 MA	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51		
BX 160 MB						254			304						640	530	724						
BX 160 L																							
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾	241	279	26	291	359	14	121	180	348	708	598	823	261			52		
BX 180 L						279			329														

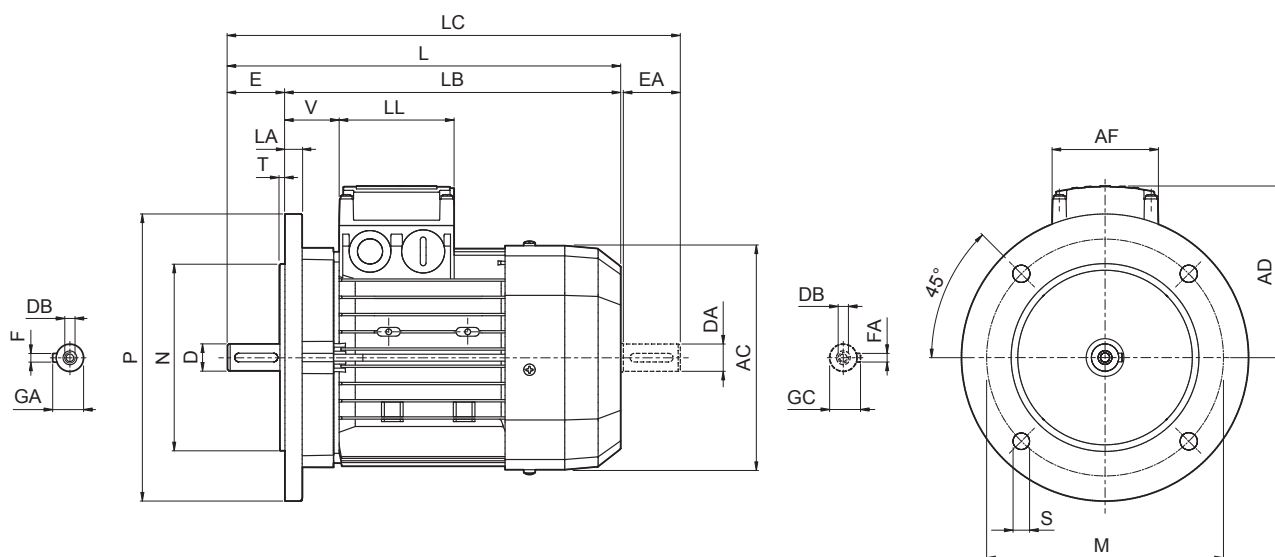
N.B.:

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



BX - CUS - IM B5

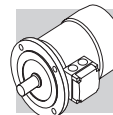
BX



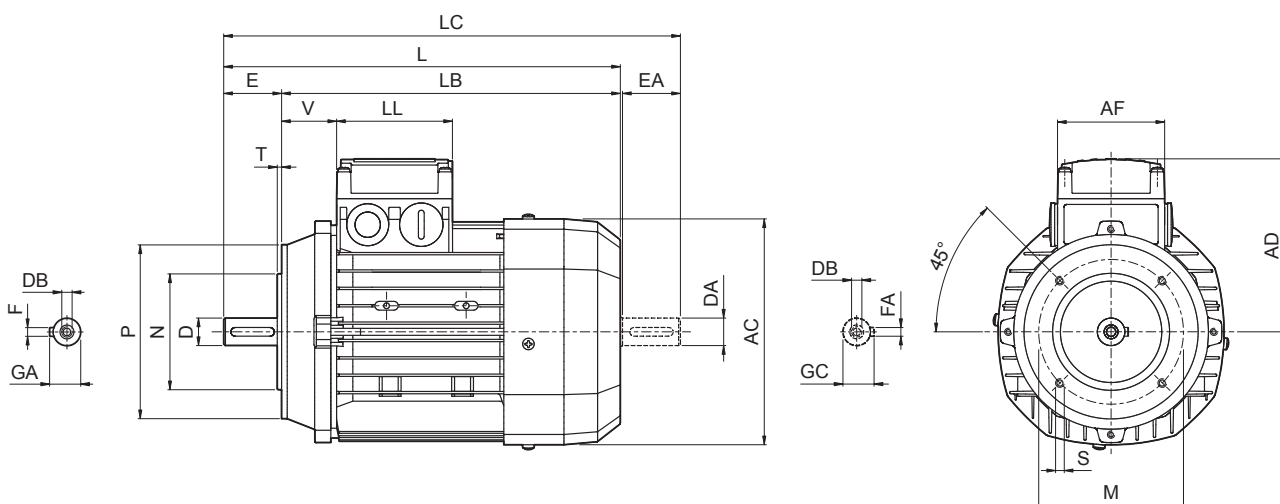
	Shaft					Housing						Motor							
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V
BX 90 SR	19 19 ⁽¹⁾	40 40 ⁽¹⁾	M6 M6 ⁽¹⁾	21.5 21.5 ⁽¹⁾	6 6 ⁽¹⁾								316		358				
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾	165	130	200	11.5	3.5	11.5	176	326	276	368	133			44
BX 90 LA																	98	98	
BX 100 LA																			
BX 100 LB	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	215	180	250			14	195	410	350	462	142			50
BX 112 M									14	4	15	219	430	370	482	157			52
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	265	230	300			20	258	552	472	615	193	118	118	58
BX 132 MA																			
BX 160 MA														596	486	680			
BX 160 MB	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾						15	310	640	530	724	245			51
BX 160 L						300	250	350	18.5	5							187	187	
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾						18	348	708	598	823	261			52
BX 180 L																			

N.B.:

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



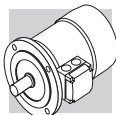
BX - CUS - IM B14



	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		
BX 90 SR	19 19 ⁽¹⁾	40 40 ⁽¹⁾	M6 M6 ⁽¹⁾	21.5 21.5 ⁽¹⁾	6 6 ⁽¹⁾	100	80	120	M6	3	176	316	276	358	133	98	98	44		
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾	115	95	140	M8			326		368						
BX 90 LA																				
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	130	110	160	M8	3.5	195	410	350	462	142	98	98	50		
BX 100 LB																				
BX 112 M																				
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	165	130	200	M10	4	258	552	472	615	193	118	118	58		
BX 132 MA																				

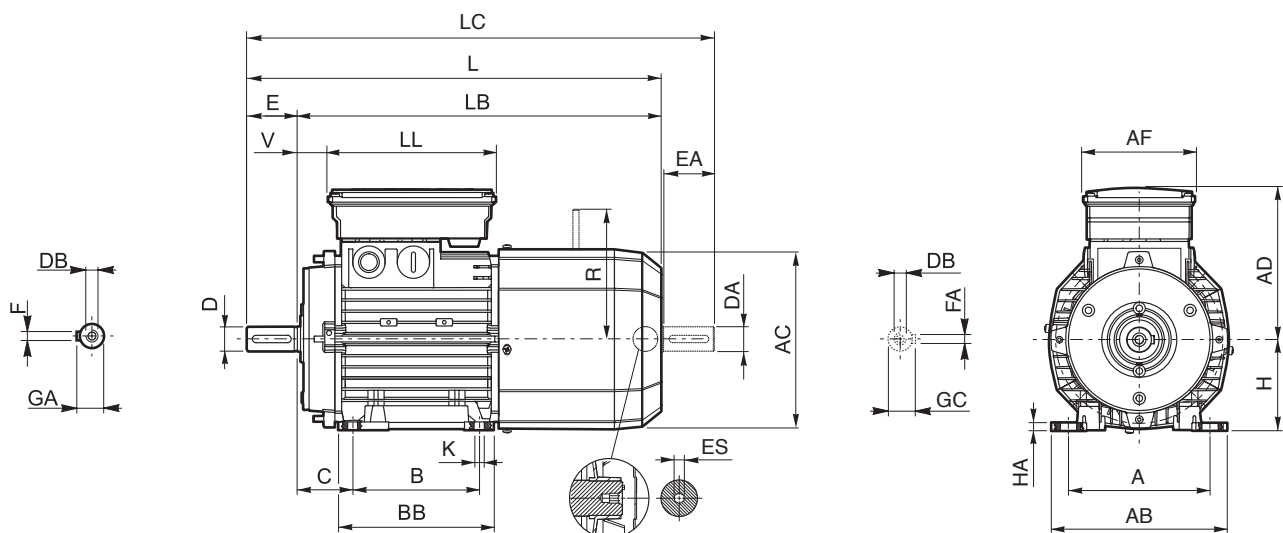
N.B.:

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



BX_FA/FD CUS ; IM B3

BX

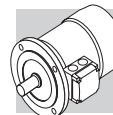


	Shaft					Housing						Motor																													
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R		ES (2)																	
																						FD	FA																		
BX 90 SR	19 19 ⁽¹⁾	40 40 ⁽¹⁾	M6 M6 ⁽¹⁾	21.5 21.5 ⁽¹⁾	6 6 ⁽¹⁾	100	140	8	155	174	10	56	90	176	400	360 410	442	146	110	165	32	129	134	6																	
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾										125		160					10	175		192	12	63	100	195	502	442	554	155	37	160	160					
BX 90 LA																																					140	190	224	70	112
BX 100 LA						216	12	218	254	12	89	132	258	661		581		724	210	140	188																				
BX 100 LB	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾										210		254					25	304		319	14.5	108	160	310	596 640	486 530	680 724	245	187	187	51					
BX 112 M																																					279	26	329	291 359	14
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	279	26	329	291 359	14	121	180	348	866		598		823	261	52	305			—																	
BX 132 MA															279		26					329	291 359		14	121	180	348	866	598	823	261	52	305	—						
BX 160 MA																																				279	26	329	291 359	14	121
BX 160 MB	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾	279	26	329	291 359	14	121	180	348	866		598		823	261	52	305			—																	
BX 160 L															279		26					329	291 359		14	121	180	348	866	598	823	261	52	305	—						
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾																															279	26	329	291 359	14	121
BX 180 L						279	26	329	291 359	14	121	180	348	866		598		823	261	52	305			—																	

N.B.:

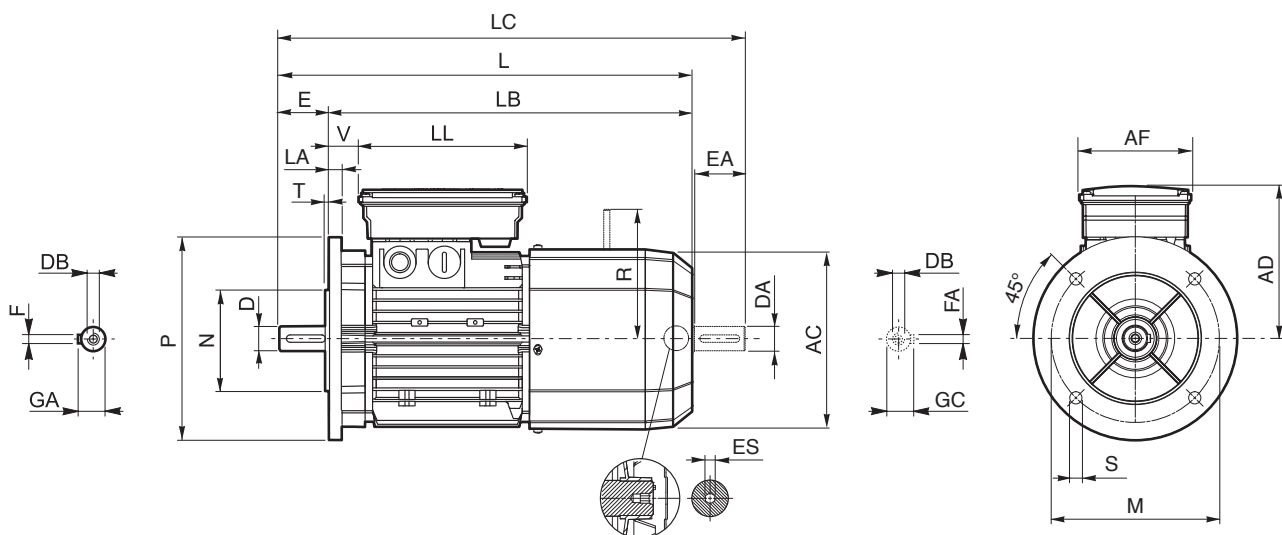
1) These values refer to the rear shaft end (PS).

2) "ES" hexagon is not present with PS option



BX_FA/FD CUS ; IM B5

BX

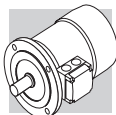


	Shaft					Housing						Motor											ES (2)			
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V	R						
																				FD	FA					
BX 90 SR	19 19 ⁽¹⁾	40 40 ⁽¹⁾	M6 M6 ⁽¹⁾	21.5 21.5 ⁽¹⁾	6 6 ⁽¹⁾	165	130	200	11.5	3.5	11.5	176	400	360	442	146			32	129	134	6				
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾								410		452					110	165		37	160	160	
BX 90 LA																										
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	215	180	250	14	4	14	195	502	442	554	155			39	199	198					
BX 100 LB																										
BX 112 M																										
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	265	230	300			16	258	661	581	724	210	140	188	46	204	200					
BX 132 MA																										
BX 160 MA	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾	300	250	350	18.5	5	15	310	736	626	820	245			51	266	247					
BX 160 MB																										
BX 160 L													780	670	864											
BX 180 M	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾						18	348	866	756	981	261			52	305	—					
BX 180 L																										

N.B.:

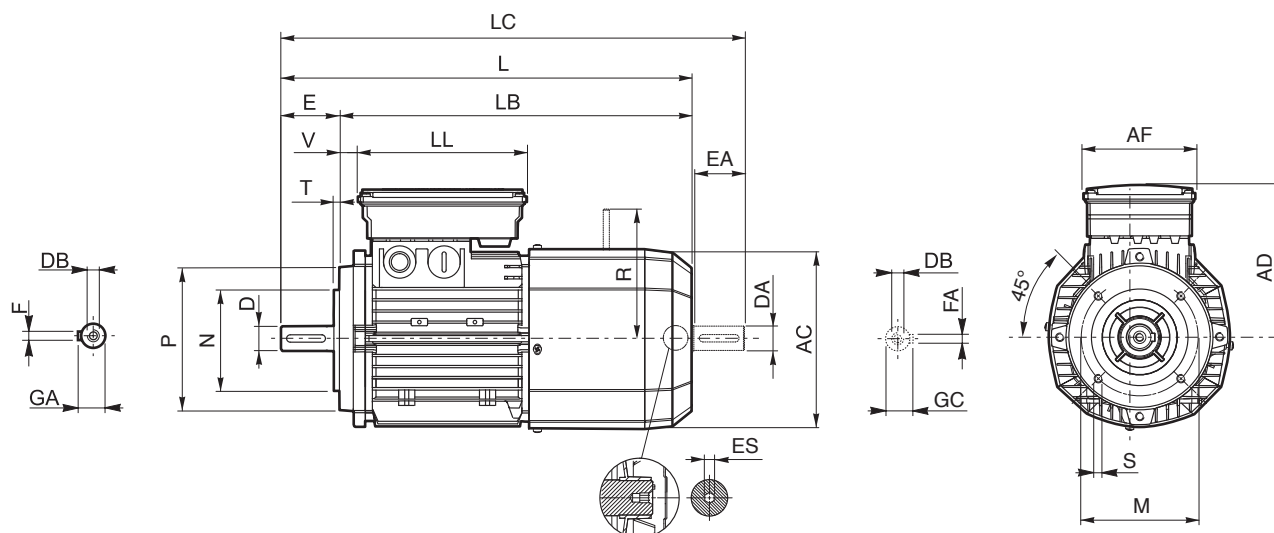
1) These values refer to the rear shaft end (PS).

2) "ES" hexagon is not present with PS option



BX_FA/FD CUS ; IM B14

BX

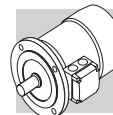


	Shaft					Housing					Motor																										
	D	E	DB	GA	F	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	R		ES (2)																
	DA	EA		GC	FA														FD	FA																	
BX 90 SR	19 19 ⁽¹⁾	40 40 ⁽¹⁾	M6 M6 ⁽¹⁾	21.5 21.5 ⁽¹⁾	6 6 ⁽¹⁾	100	80	120	M6	3	176	400	360	442	146	110	165	32	129	134	6																
BX 90 S	24 19 ⁽¹⁾	50 40 ⁽¹⁾	M8 M6 ⁽¹⁾	27 21.5 ⁽¹⁾	8 6 ⁽¹⁾	115	95	140	M8			3.5		195					410	452		155	37	160	160												
BX 90 LA																			219					527	467	579	170	39	199	198							
BX 100 LA	28 24 ⁽¹⁾	60 50 ⁽¹⁾	M10 M8 ⁽¹⁾	31 27 ⁽¹⁾	8 8 ⁽¹⁾	130	110	160		4	258		661		581	724	210	140											188	46	204	200					
BX 100 LB																																					
BX 112 M																																					
BX 132 SB	38 28 ⁽¹⁾	80 60 ⁽¹⁾	M12 M10 ⁽¹⁾	41 31 ⁽¹⁾	10 8 ⁽¹⁾	165	130	200	M10	4	258	661	581	724	210	140	188	46	204	200																	
BX 132 MA																																					

N.B.:

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

2) "ES" hexagon is not present with PS option



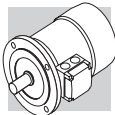
15 MOTOR RATING CHARTS BE

2 P	3000 min ⁻¹ - S1											50 Hz - IE2	
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P _n		n	M _n	In 400V	η%			cos φ	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	J _m x 10 ⁻⁴	IM B5	
kW		min ⁻¹	Nm	A	100%	75%	50%					kgm ²		
0.75	BE 80A	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	BE 80B	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	BE 90SA	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	BE 90L	2	2870	7.3	4.7	83.2	83.1	80.8	0.82	6.9	3.1	2.9	16.7	14
3	BE 100L	2	2880	9.9	6.2	84.6	84.6	83.7	0.83	7.3	3.5	3.1	39	23
4	BE 112M	2	2920	13.1	8.2	85.8	85.5	84.3	0.82	7.9	3.5	3.1	57	28
5.5	BE 132SA	2	2925	18.0	10.6	87.0	85.0	81.7	0.86	8.5	3.6	3.3	145	42
7.5	BE 132SB	2	2935	24	14.3	88.1	87.4	84.7	0.86	8.8	3.9	3.6	178	53
9.2	BE 132MB	2	2920	30	16.4	88.8	86.5	84.2	0.91	8.4	3.7	3.3	210	65
11	BE 160MA	2	2940	36	20.0	89.4	89.5	88.0	0.89	8.1	3.0	2.9	340	84
15	BE 160MB	2	2950	49	27.2	90.5	90.5	89.5	0.88	8.5	3.0	2.8	420	97
18.5	BE 160L	2	2945	60	32	90.9	90.5	89.8	0.91	7.7	2.9	2.7	490	109

4 P	1500 min ⁻¹ - S1											50 Hz - IE2	
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P _n		n	M _n	In 400V	η%			cos φ	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	J _m x 10 ⁻⁴	IM B5 	
kW		min ⁻¹	Nm	A	100%	75%	50%					kgm ²	Kg	
0.75	BE 80B	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	BE 90S	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	BE 90LA	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	BE 100LA	4	1430	14.7	4.9	85.4	85.0	84.0	0.76	5.8	3.0	2.8	54	22
3	BE 100LB	4	1420	20	6.6	85.5	86.0	85.5	0.77	5.9	2.8	2.6	61	24
4	BE 112M	4	1440	27	8.3	87.0	87.0	86.0	0.80	6.5	2.8	2.8	105	32
5.5	BE 132S	4	1460	36	11.1	88.5	88.5	87.5	0.81	7.3	2.9	2.9	270	53
7.5	BE 132MA	4	1460	49	14.8	89.0	89.0	88.5	0.82	6.9	2.9	2.8	319	59
9.2	BE 132MB	4	1460	60	18.1	89.5	89.5	88.5	0.82	6.9	2.9	3.0	360	70
11	BE 160M	4	1465	72	21.5	91.0	91.3	90.5	0.81	6.5	2.8	2.6	650	99
15	BE 160L	4	1465	98	28.7	90.8	91.0	90.5	0.83	6.5	2.6	2.3	790	115
18.5	BE 180M	4	1465	121	35	91.6	92.0	91.3	0.83	6.5	2.6	2.5	1250	135
22	BE 180L	4	1465	143	41	91.6	91.8	91.4	0.84	6.8	2.7	2.6	1650	157

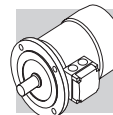


BE

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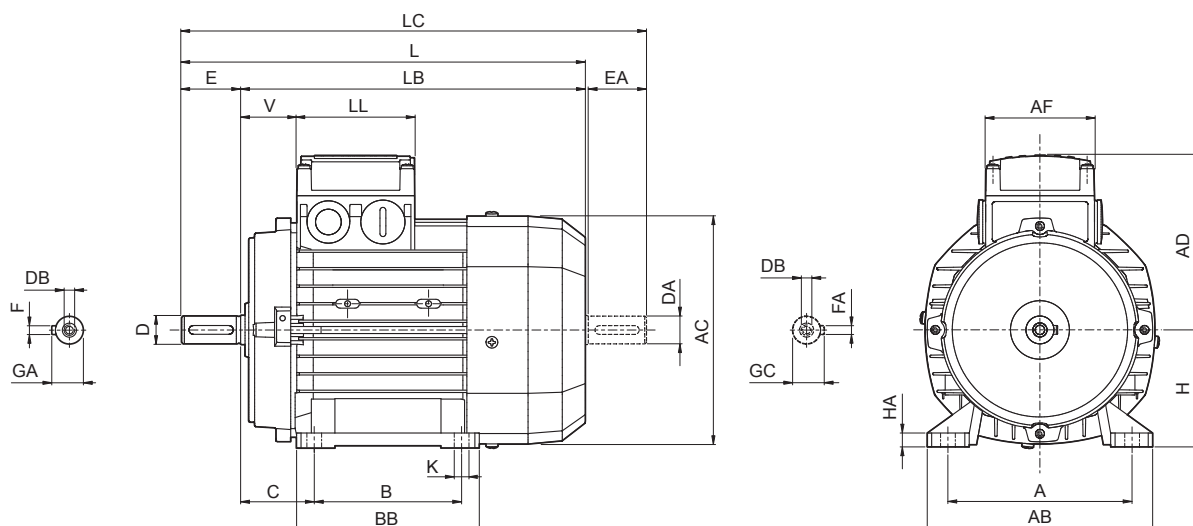
P_n			n	M_n	I_n	η%			cos φ	$\frac{I_s}{I_n}$	$\frac{M_s}{M_n}$	$\frac{M_a}{M_n}$	J_m	IM B5
kW			min ⁻¹	Nm	A	100%	75%	50%					x 10 ⁻⁴ kgm ²	 Kg
0.75	BE 90S	6	935	7.7	2.06	75.9	75.9	73.0	0.69	5.1	3.1	2.9	33	15
1.1	BE 100M	6 (*)	945	11.1	2.75	78.1	76.2	73.0	0.74	4.9	2.2	1.9	82	22
1.5	BE 100LA	6	945	15.2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



16 MOTORS DIMENSIONS BE

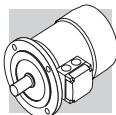
BE - IM B3



	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 80	19	40	M6	21.5	6	100	125	8	124	153	10	50	80	156	274	234	315	119	74	80	38
BE 90 S	24	50	M8	27	8		125	140	8	155		174	56	90	176	326	276	378	133	98	98
BE 90 L						28		60	M10	31	140	160	10	175	192	63	100	195	367		
BE 100	28	60	M10	31	140		190					10		175	224	70	112	219	385	325	448
BE 112						38	80	M12	41	10	178		216		12	218	254	89	132	258	493
BE 132 S	528	448	611																		
BE 132 MA																					
BE 132 MB	42 38 ⁽¹⁾	110 80 ⁽¹⁾	M16 M12 ⁽¹⁾	45 41 ⁽¹⁾	12 10 ⁽¹⁾	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51
BE 160 M						254			304						640	530	724				
BE 160 L	48 42 ⁽¹⁾	110 110 ⁽¹⁾	M16 M16 ⁽¹⁾	51.5 45 ⁽¹⁾	14 12 ⁽¹⁾	241	279	26	291	359	14	121	180	348	708	598	823	261	52		
BE 180 M						279			329												
BE 180 L																					

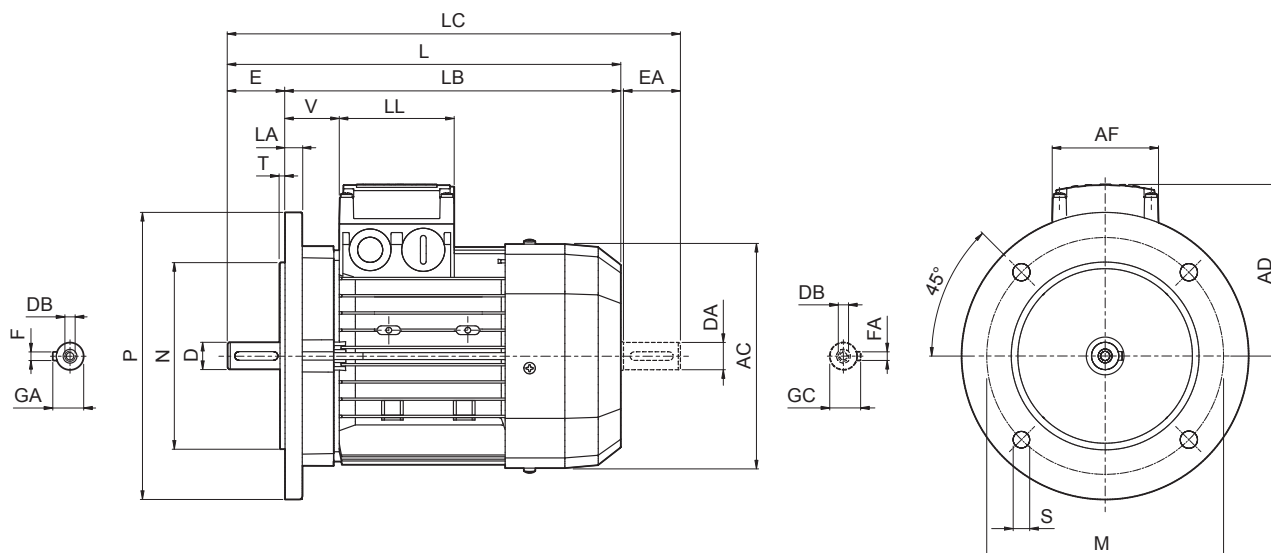
N.B.:

1) These values refer to the rear shaft end.



BE - IM B5

BE



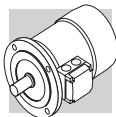
	Shaft					Flange						Motor									
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V		
BE 80	19	40	M6	21.5	6	165	130	200	11.5	3.5	11.5	156	274	234	315	119	74	80	38		
BE 90 S	24	50	M8	27	8							176	326	276	378	133	98	98	44		
BE 90 L																					
BE 100	28	60	M10	31		215	180	250	14	4	14	195	367	307	429	142			50		
BE 112											15	219	385	325	448	157				52	
BE 132 S	38	80	M12	41	10	265	230	300			14	4	20	258	493	413	576	193	118		118
BE 132 MA															528	448	611				
BE 132 MB																					
BE 160 M	42	110	M16	45	12	300	250	350	18.5	5	15	310	596	486	680	245	187	187	51		
BE 160 L	38 ⁽¹⁾	80 ⁽¹⁾	M12 ⁽¹⁾	41 ⁽¹⁾	10 ⁽¹⁾								640	530	724						
BE 180 M	48	110	M16	51.5	14						18	348	708	598	823	261			52		
BE 180 L	42 ⁽¹⁾	110 ⁽¹⁾	M16 ⁽¹⁾	45 ⁽¹⁾	12 ⁽¹⁾																

N.B.:

1) These values refer to the rear shaft end.



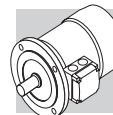
	Shaft					Flange					Motor							
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V
BE 80	19	40	M6	21.5	6	100	80	120	M6	3	156	274	234	315	119	74	80	38
BE 90 S	24	50	M8	27	8	115	95	140	M8		176	326	276	378	133	98	98	44
BE 90 L											195	367	307	429	142			
BE 100	28	60	M10	31		130	110	160		3.5	219	385	325	448	157			
BE 112											219	385	325	448	157			
BE 132 S	38	80	M12	41	10	165	130	200	M10		4	258	493	413	576	193	118	118
BE 132 MA										528			448	611				
BE 132 MB										528			448	611				



17 MOTOR RATING CHARTS BN

2P			3000 min ⁻¹ - S1										50 Hz											
													d.c. brake						a.c. brake					
													FD				FA							
P _n		n	M _n	IE1	η (100%)	η (75%)	η (50%)	cosφ	I _n 400V	I _s I _n	M _s M _n	M _a M _n	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	M _b	Z ₀ 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	M _b	Z ₀ 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 
kW		min ⁻¹	Nm		%	%	%		A				kgm ²			Nm	NB	SB			Nm	1/h	kgm ²	
0.18	BN 63A	2	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	5.2	FA 02	1.75	4800	2.6	5.0
0.25	BN 63B	2	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	5.6	FA 02	1.75	4800	3.0	5.4
0.37	BN 63C	2	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	6.8	FA 02	3.5	4500	3.9	6.6
0.37	BN 71A	2	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	8.1	FA 03	3.5	4200	4.6	7.8
0.55	BN 71B	2	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	8.9	FA 03	5	4200	5.3	8.6
0.75	BN 71C	2	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	10.0	FA 03	5	3600	6.1	9.7
0.75	BN 80A	2	2.6	●	76.2	75.5	68.3	0.81	1.75	4.8	2.6	2.2	7.8	8.6	FD 04	5	1700	3200	12.5	FA 04	5	3200	9.4	12.4
1.1	BN 80B	2	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	13.4	FA 04	10	3000	10.6	13.3
1.5	BN 80C	2	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	15.2	FA 04	15	2600	13.0	15.1
1.5	BN 90SA	2	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	16.5	FA 14	15	2200	14.1	16.4
1.85	BN 90SB	2	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	18.2	FA 14	15	2200	18.3	18.1
2.2	BN 90L	2	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	20	FA 05	26	2200	21	20.7
3	BN 100L	2	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	26	FA 15	26	1600	35	27
4	BN 100LB	2	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	29	FA 15	40	1000	43	30
4	BN 112M	2	13.2	●	85.5	84.5	83.0	0.82	8.2	6.9	3.0	2.9	57	28	FD 06S	40	—	950	39	FA 06S	40	950	66	40
5.5	BN 132SA	2	18.2	●	84.7	84.5	81.2	0.84	11.2	5.9	2.6	2.2	101	35	FD 06	50	—	600	48	FA 06	50	600	112	49
7.5	BN 132SB	2	25	●	86.5	86.3	84.4	0.85	14.7	6.4	2.6	2.2	145	42	FD 06	50	—	550	55	FA 06	50	550	154	56
9.2	BN 132M	2	30	●	87.0	86.5	83.6	0.86	17.7	6.7	2.8	2.3	178	53	FD 56	75	—	430	66	FA 06	75	430	189	67
11	BN 160MR	2	36	●	87.6	87.0	86.0	0.88	20.6	6.9	2.9	2.5	210	65										
15	BN 160MB	2	49	●	89.6	89.4	88.0	0.86	28.1	7.1	2.6	2.3	340	84										
18.5	BN 160L	2	60	●	90.4	90.1	89.0	0.86	34	7.6	2.7	2.3	420	97										
22	BN 180M	2	72	●	89.9	89.7	89.5	0.88	40	7.8	2.6	2.4	490	109										
30	BN 200LA	2	98	●	90.7	90.1	87.6	0.89	54	7.8	2.7	2.9	770	140										

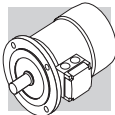
○ = n.a. ● = IE1



4P		1500 min ⁻¹ - S1		50 Hz	
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d.c. brake															a.c. brake													
P _n		n	M _n	IE1	η (100%)	η (75%)	η (50%)	cosφ	In 400V	Is In	Ms Mn	Ma Mn	J _m x 10 ⁻⁴ kgm ²	IM B5 	FD						FA							
															Mod	Mb Nm	Z ₀ 1/h	NB	SB	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb Nm	Z ₀ 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 		
0.06	BN 56A	4	0.43	○	46.8	44.2	41.3	0.65	0.28	2.6	2.3	2.0	1.5	3.1														
0.09	BN 56B	4	0.64	○	51.7	47.6	42.9	0.60	0.42	2.6	2.5	2.4	1.5	3.1														
0.12	BN 63A	4	0.85	○	59.8	56.2	47.0	0.62	0.47	2.6	1.9	1.8	2.0	3.5	FD 02	1.75	10000	13000	13000	2.6	5.2	FA 02	1.75	13000	2.6	5.0		
0.18	BN 63B	4	1.30	○	54.8	52.9	52.5	0.67	0.71	2.6	2.2	2.0	2.3	3.9	FD 02	3.5	10000	13000	13000	3.0	5.6	FA 02	3.5	13000	3.0	5.4		
0.25	BN 63C	4	1.78	○	65.3	65.0	57.9	0.69	0.80	2.7	2.1	1.9	3.3	5.1	FD 02	3.5	7800	10000	10000	3.9	6.8	FA 02	3.5	10000	3.9	6.6		
0.25	BN 71A	4	1.73	○	63.7	62.2	59.1	0.73	0.78	3.3	1.9	1.7	5.8	5.1	FD 03	3.5	7700	11000	11000	6.9	7.8	FA 03	3.5	11000	6.9	7.5		
0.37	BN 71B	4	2.6	○	66.8	66.7	63.0	0.76	1.05	3.7	2.0	1.9	6.9	5.9	FD 03	5	6000	9400	9400	8.0	8.6	FA 03	5.0	9400	8.0	8.3		
0.55	BN 71C	4	3.8	○	69.0	68.9	68.8	0.74	1.55	4.1	2.3	2.3	9.1	7.3	FD 53	7.5	4300	8700	8700	10.2	10.0	FA 03	7.5	8700	10.2	9.7		
0.55	BN 80A	4	3.8	○	72.0	71.3	69.7	0.77	1.43	4.1	2.3	2.0	15	8.2	FD 04	10	4100	8000	8000	16.6	12.1	FA 04	10	8000	16.6	12.0		
0.75	BN 80B	4	5.1	●	75.0	74.5	69.3	0.78	1.85	4.9	2.7	2.5	20	9.9	FD 04	15	4100	7800	7800	22	13.8	FA 04	15	7800	22	13.7		
1.1	BN 80C	4	7.5	●	75.5	76.2	70.4	0.78	2.7	5.1	2.8	2.5	25	11.3	FD 04	15	2600	5300	5300	27	15.2	FA 04	15	5300	27	15.1		
1.1	BN 90S	4	7.6	●	76.5	76.2	72.2	0.77	2.70	4.6	2.6	2.2	21	12.2	FD 14	15	4800	8000	8000	23	16.4	FA 14	15	8000	23	16.3		
1.5	BN 90LA	4	10.2	●	78.7	78.5	74.9	0.77	3.6	5.3	2.8	2.4	28	13.6	FD 05	26	3400	6000	6000	32	19.6	FA 05	26	6000	32	20.3		
1.85	BN 90LB	4	13.9	●	78.6	78.9	77.2	0.79	4.3	5.1	2.8	2.6	30	15.1	FD 05	26	3200	5900	5900	34	21.1	FA 05	26	5900	34	21.8		
2.2	BN 100LA	4	14.9	●	81.1	81.4	79.9	0.75	5.2	4.5	2.2	2.0	40	18	FD 15	40	2600	4700	4700	44	25	FA 15	40	4700	44	25		
3	BN 100LB	4	20	●	82.6	83.8	83.7	0.77	6.8	5.0	2.3	2.2	54	22	FD 15	40	2400	4400	4400	58	28	FA 15	40	4400	58	29		
4	BN 112M	4	27	●	84.4	84.2	81.6	0.81	8.4	5.6	2.7	2.5	98	30	FD 06S	60	—	1400	1400	107	40	FA 06S	60	2100	107	42		
5.5	BN 132S	4	36	●	84.7	84.8	82.5	0.81	11.6	5.5	2.3	2.2	213	44	FD 56	75	—	1050	1050	223	57	FA 06	75	1200	223	58		
7.5	BN 132MA	4	50	●	86.0	86.3	85.3	0.81	15.5	5.7	2.5	2.4	270	53	FD 06	100	—	950	950	280	66	FA 07	100	1000	280	71		
9.2	BN 132MB	4	61	●	88.4	88.6	87.5	0.81	18.8	5.9	2.7	2.5	319	59	FD 07	150	—	900	900	342	75	FA 07	150	900	342	77		
11	BN 160MR	4	73	●	87.6	87.8	86.0	0.81	22.4	6.0	2.7	2.5	360	70	FD 07	150	—	850	850	382	86	FA 07	150	850	382	88		
15	BN 160L	4	98	●	88.7	88.5	88.4	0.81	30	6.0	2.3	2.1	650	99	FD 08	200	—	750	750	725	129	FA 08	200	750	710	128		
18.5	BN 180M	4	121	●	89.3	89.5	89.2	0.81	37	6.2	2.6	2.5	790	115	FD 08	250	—	700	700	865	145	FA 08	250	700	850	144		
22	BN 180L	4	144	●	89.9	90.0	90.0	0.80	44	6.4	2.5	2.5	1250	135	FD 09	300	—	400	400	1450	175	FA 08	250	700	850	144		
30	BN 200L	4	196	●	91.4	91.7	91.0	0.80	59	7.1	2.7	2.8	1650	157	FD 09	400	—	300	300	1850	197	FA 08	250	700	850	144		

○ = n.a. ● = IE1

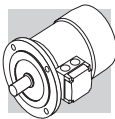


6P														1000 min ⁻¹ - S1												50 Hz											
														d.c. brake												a.c. brake											
														FD												FA											
														IM B5 	J _m x 10 ⁻⁴ kgm ²	M _a M _n	M _s M _n	η (100%)	η (75%)	η (50%)	cosφ	I _n 400V A	I _s I _n	Mod	Mb	Z ₀ 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb	Z ₀ 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 				
P _n		n	M _n	IE1	η (100%)	η (75%)	η (50%)	cosφ	I _n 400V A	I _s I _n	M _s M _n	M _a M _n	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb	Z ₀ 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb	Z ₀ 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 													
0.09	BN 63A	6	880	0.98	○	41.0	41.0	32.9	0.53	0.60	2.1	1.8	3.4	4.6	FD 02	3.5	9000	14000	4.0	6.3	FA 02	3.5	9000	14000	4.0	6.1											
0.12	BN 63B	6	870	1.32	○	45.0	44.0	41.8	0.60	0.64	2.1	1.7	3.7	4.9	FD 02	3.5	9000	14000	4.3	6.6	FA 02	3.5	9000	14000	4.3	6.4											
0.18	BN 71A	6	900	1.91	○	55.0	55.5	51.0	0.69	0.68	2.6	1.9	8.4	5.5	FD 03	5	8100	13500	9.5	8.2	FA 03	5.0	8100	13500	9.5	7.9											
0.25	BN 71B	6	900	2.70	○	62.0	58.5	51.4	0.71	0.82	2.6	1.9	10.9	6.7	FD 03	5	7800	13000	12	9.4	FA 03	5.0	7800	13000	12	9.1											
0.37	BN 71C	6	910	3.9	○	66.0	60.0	53.3	0.69	1.17	3.0	2.4	12.9	7.7	FD 53	7.5	5100	9500	14	10.4	FA 03	7.5	5100	9500	14	10.1											
0.37	BN 80A	6	910	3.9	○	68.0	67.4	63.3	0.68	1.15	3.2	2.2	21	9.9	FD 04	10	5200	8500	23	13.8	FA 04	10	5200	8500	23	13.7											
0.55	BN 80B	6	920	5.7	○	70.0	69.8	64.3	0.68	1.67	3.9	2.6	25	11.3	FD 04	15	4800	7200	27	15.2	FA 04	15	4800	7200	27	15.1											
0.75	BN 80C	6	920	7.8	●	70.0	70.0	64.4	0.65	2.38	3.8	2.5	28	12.2	FD 04	15	3400	6400	30	16.1	FA 04	15	3400	6400	30	16.0											
0.75	BN 90S	6	920	7.8	●	70.0	69.0	64.2	0.68	2.27	3.8	2.4	26	12.6	FD 14	15	3400	6500	28	16.8	FA 14	15	3400	6500	28	16.7											
1.1	BN 90L	6	920	11.4	●	72.9	72.6	69.1	0.69	3.2	3.9	2.3	33	15	FD 05	26	2700	5000	37	21	FA 05	26	2700	5000	37	22											
1.5	BN 100LA	6	940	15.2	●	75.2	74.2	70.3	0.72	4.0	4.1	2.1	82	22	FD 15	40	1900	4100	86	28	FA 15	40	1900	4100	86	29											
1.85	BN 100LB	6	930	19.0	●	76.6	72.8	62.6	0.73	4.8	4.6	2.1	95	24	FD 15	40	1700	3600	99	30	FA 15	40	1700	3600	99	31											
2.2	BN 112M	6	940	22	●	78.5	79.0	76.5	0.73	5.5	4.8	2.2	168	32	FD 06S	60	—	2100	177	42	FA 06S	60	—	2100	177	44											
3	BN 132S	6	940	30	●	79.7	77.0	75.1	0.76	7.1	5.1	1.9	216	36	FD 56	75	—	1400	226	49	FA 06	75	—	1400	226	50											
4	BN 132MA	6	950	40	●	81.4	81.5	79.5	0.77	9.2	5.5	2.0	295	45	FD 06	100	—	1200	305	58	FA 07	100	—	1200	305	63											
5.5	BN 132MB	6	945	56	●	83.1	80.9	79.1	0.78	12.2	6.1	2.1	383	56	FD 07	150	—	1050	406	72	FA 07	150	—	1050	406	74											
7.5	BN 160M	6	955	75	●	85.0	85.0	84.8	0.81	15.7	5.9	2.2	740	83	FD 08	170	—	900	815	112	FA 08	170	—	900	815	113											
11	BN 160L	6	960	109	●	86.4	86.5	85.9	0.81	22.7	6.6	2.5	970	103	FD 08	200	—	800	1045	133	FA 08	200	—	800	1045	133											
15	BN 180L	6	970	148	●	87.7	88.0	87.3	0.82	30	6.2	2.0	1550	130	FD 09	300	—	600	1750	170	—	—	—	600	1750	170	—										
18.5	BN 200LA	6	960	184	●	88.6	88.0	87.3	0.81	37	5.9	2.0	1700	145	FD 09	400	—	450	1900	185	—	—	—	450	1900	185	—										

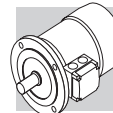
○ = n.a. ● = IE1



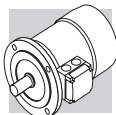
 **Bonfiglioli**
Riduttori



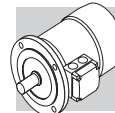
3000/1500 min ⁻¹ - S1																		50 Hz						
2/4P		d.c. brake																		a.c. brake				
		FD													FA									
		IM B5 	J _m x 10 ⁻⁴ kgm ²	M _a M _n	M _s M _n	I _s I _n	In 400V A	cosφ	η	M _n	n min ⁻¹		P _n kW	Mod	Mb Nm	Z _o 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb Nm	Z _o 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 	
0.20 0.15	BN 63B 4	2 4	2700 1350	0.71 1.06	55 49	0.82 0.67	0.64 0.66	3.5 2.6	2.1 1.8	1.9 1.7	2.9	4.4	FD 02	3.5	2200 4000	2600 5100	3.5	6.1	FA 02	3.5	2600 5100	3.5	5.9	
0.28 0.20	BN 71A 4	2 4	2700 1370	0.99 1.39	56 59	0.82 0.72	0.88 0.68	2.9 3.1	1.9 1.8	1.7 1.7	4.7	4.4	FD 03	3.5	2100 3800	2400 4800	5.8	7.1	FA 03	3.5	2400 4800	5.8	6.8	
0.37 0.25	BN 71B 4	2 4	2740 1390	1.29 1.72	56 60	0.82 0.73	1.16 0.82	3.5 3.3	1.8 2.0	1.8 1.9	5.8	5.1	FD 03	5.0	1400 2900	2100 4200	6.9	7.8	FA 03	5.0	2100 4200	6.9	7.5	
0.45 0.30	BN 71C 4	2 4	2780 1400	1.55 2.0	63 63	0.85 0.73	1.21 0.94	3.8 3.6	1.8 2.0	1.8 1.9	6.9	5.9	FD 03	5.0	1400 2900	2100 4200	8.0	8.6	FA 03	5.0	2100 4200	8.0	8.3	
0.55 0.37	BN 80A 4	2 4	2800 1400	1.9 2.5	63 67	0.85 0.79	1.48 1.01	3.9 4.1	1.7 1.8	1.7 1.9	15	8.2	FD 04	5.0	1600 3000	2300 4000	17	12.1	FA 04	5.0	2300 4000	16.6	12.0	
0.75 0.55	BN 80B 4	2 4	2780 1400	2.6 3.8	65 68	0.85 0.81	1.96 1.44	3.8 3.9	1.9 1.7	1.8 1.7	20	9.9	FD 04	10	1400 2700	1600 3600	22	13.8	FA 04	10	1600 3600	22	13.7	
1.1 0.75	BN 90S 4	2 4	2790 1390	3.8 5.2	71 66	0.82 0.79	2.73 2.08	4.7 4.6	2.3 2.4	2.0 2.2	21	12.2	FD 14	10	1500 2300	1600 2800	23	16.4	FA 14	10	1600 2800	23	16.3	
1.5 1.1	BN 90L 4	2 4	2780 1390	5.2 7.6	70 73	0.85 0.81	3.64 2.69	4.5 4.7	2.4 2.5	2.1 2.2	28	14.0	FD 05	26	1050 1600	1200 2000	32	20	FA 05	26	1200 2000	32	21	
2.2 1.5	BN 100LA 4	2 4	2800 1410	7.5 10.2	72 73	0.85 0.79	5.2 3.8	4.5 4.7	2.0 2.0	1.9 2.0	40	18.3	FD 15	26	600 1300	900 2300	44	25	FA 15	26	900 2300	44	25	
3.5 2.5	BN 100LB 4	2 4	2850 1420	11.7 16.8	80 82	0.84 0.80	7.5 5.5	5.4 5.2	2.2 2.2	2.1 2.2	61	25	FD 15	40	500 1000	900 2100	65	31	FA 15	40	900 2100	65	32	
4 3.3	BN 112M 4	2 4	2880 1420	13.3 22.2	79 80	0.83 0.80	8.8 7.4	6.1 5.1	2.4 2.1	2.0 2.0	98	30	FD 06S	60	— —	700 1200	107	40	FA 06S	60	700 1200	107	42	
5.5 4.4	BN 132S 4	2 4	2890 1440	18.2 29	80 82	0.87 0.84	11.4 9.2	5.9 5.3	2.4 2.2	2.0 2.0	213	44	FD 56	75	— —	350 900	223	57	FA 06	75	350 900	223	58	
7.5 6	BN 132MA 4	2 4	2900 1430	25 40	82 84	0.87 0.85	15.2 12.1	6.5 5.8	2.4 2.3	2.0 2.1	270	53	FD 06	100	— —	350 900	280	66	FA 07	100	350 900	293	71	
9.2 7.3	BN 132MB 4	2 4	2920 1440	30 48	83 85	0.86 0.85	18.6 14.6	6.0 5.5	2.6 2.3	2.2 2.1	319	59	FD 07	150	— —	300 800	342	75	FA 07	150	300 800	342	77	



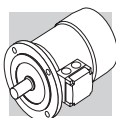
2/6P														3000/1000 min ⁻¹ - S3 60/40%														50 Hz													
														d.c. brake														a.c. brake													
														FD														FA													
P _n				n	M _n	η	cosφ	In	Is	Ms	Ma	J _m	IM B5	Mod	Mb	Z _o	J _m	IM B5	Mod	Mb	Z _o	J _m	IM B5	J _m	IM B5	J _m	IM B5														
kW				min ⁻¹	Nm	%		A				x 10 ⁻⁴ kgm ²			Nm	1/h	SB	x 10 ⁻⁴ kgm ²			Nm	1/h	x 10 ⁻⁴ kgm ²		x 10 ⁻⁴ kgm ²																
0.25	BN 71A	2	2850	0.84	60	0.82	0.73	4.3	1.9	1.8	6.9	5.9	FD 03	1.75	1500	1700	8.0	8.6	FA 03	2.5	1700	8.0	8.3				8.0	8.3													
0.08		6	910	0.84	43	0.70	0.38	2.1	1.4	1.5					10000																										
0.37	BN 71B	2	2880	1.23	62	0.80	1.08	4.4	1.9	1.8	9.1	7.3	FD 03	3.5	1000	1300	10.2	10.0	FA 03	3.5	1300	10.2	9.7				10.2	9.7													
0.12		6	900	1.27	44	0.73	0.54	2.4	1.4	1.5					9000																										
0.55	BN 80A	2	2800	1.88	63	0.86	1.47	4.5	1.9	1.7	20	9.9	FD 04	5.0	1500	1800	22	13.8	FA 04	5.0	1800	22	13.7				22	13.7													
0.18		6	930	1.85	52	0.65	0.77	3.3	2.0	1.9					4100	6300																									
0.75	BN 80B	2	2800	2.6	66	0.87	1.89	4.3	1.8	1.6	25	11.3	FD 04	5.0	1700	1900	27	15.2	FA 04	5.0	1900	27	15.1				27	15.1													
0.25		6	930	2.6	54	0.67	1.00	3.2	1.7	1.8					3800	6000																									
1.10	BN 90L	2	2860	3.7	67	0.84	2.82	4.7	2.1	1.9	28	14.0	FD 05	13	1400	1600	32	20	FA 05	13	1600	32	21				32	21													
0.37		6	920	3.8	59	0.71	1.27	3.3	1.6	1.6					3400	5200																									
1.5	BN 100LA	2	2880	5	73	0.84	3.53	5.1	1.9	2.0	40	18.3	FD 15	13	1000	1200	44	24	FA 15	13	1200	44	25				44	25													
0.55		6	940	5.6	64	0.67	1.85	3.5	1.7	1.8					2900	4000																									
2.2	BN 100LB	2	2900	7.2	77	0.85	4.9	5.9	2.0	2.0	61	25	FD 15	26	700	900	65	31	FA 15	26	900	65	32				65	32													
0.75		6	950	7.5	67	0.64	2.5	3.3	1.9	1.8					2100	3000																									
3	BN 112M	2	2900	9.9	78	0.87	6.4	6.3	2.0	2.1	98	30	FD 06S	40	—	1000	107	40	107	FA 06S	40	1000	107	32				107	32												
1.1		6	950	11.1	72	0.64	3.4	3.9	1.8	1.8					—	2600																									
4.5	BN 132S	2	2910	14.8	78	0.84	9.9	5.8	1.9	1.8	213	44	FD 56	37	—	500	223	57	223	FA 06	37	500	223	58				223	58												
1.5		6	960	14.9	74	0.67	4.4	4.2	1.9	2.0					—	2100																									
5.5	BN 132M	2	2920	18.0	78	0.87	11.7	6.2	2.1	1.9	270	53	FD 56	50	—	400	280	66	280	FA 06	50	400	280	67				280	67												
2.2		6	960	22	77	0.71	5.8	4.3	2.1	2.0					—	1900																									



2/8P		3000/750 min ⁻¹ - S3 60/40%										50 Hz											
d.c. brake													a.c. brake										
P _n		n	M _n	η	cosφ	I _n 400V	I _s I _n	M _s M _n	M _a M _n	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb	FD			FA						
														Nm	NB	SB	Z _o 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb	Z _o 1/h	J _m x 10 ⁻⁴ kgm ²
kW		min ⁻¹	Nm	%		A							Nm						Nm				
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	12	9.4	FA 03	2.5	1400	12	9.1	
0.06		8	680	0.84	31	0.61	2.0	1.8	1.9					10000	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	14	10.4	FA 03	3.5	1300	14	10.1	
0.09		8	670	1.28	34	0.75	1.8	1.4	1.5					9500	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	22	13.8	FA 04	5.0	1800	22	13.7	
0.13		8	690	1.80	41	0.64	2.3	1.6	1.7					5600	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	27	15.2	FA 04	10	1900	27	15.1	
0.18		8	690	2.5	43	0.66	2.3	1.6	1.7					4800	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	32	20	FA 05	13	1600	32	21	
0.28		8	690	3.9	48	0.63	1.34	2.4	1.8	1.9				3400	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	44	25	FA 15	13	1200	44	25	
0.37		8	690	5.1	46	0.63	1.84	2.1	1.6					3300	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	65	31	FA 15	26	700	65	32	
0.55		8	700	7.5	54	0.58	2.5	2.6	1.8					2000	3500				3500				
3	BN 112M	2	2900	9.9	76	0.87	6.5	2.1	1.9	98	30	FD 06S	40	—	900	107	40	FA 06S	40	900	107	42	
0.75		8	690	10.4	60	0.65	2.8	2.5	1.6					—	2900				2900				
4	BN 132S	2	2870	13.3	73	0.84	9.4	5.6	2.3	213	44	FD 66	37	—	500	223	57	FA 06	37	500	223	58	
1		8	690	13.8	66	0.62	3.5	2.9	1.9					—	3500				3500				
5.5	BN 132M	2	2870	18.3	75	0.84	12.6	6.1	2.4	270	53	FD 06	50	—	400	280	66	FA 06	50	400	280	67	
1.5		8	690	21	68	0.63	5.1	2.9	1.9					—	2400				2400				



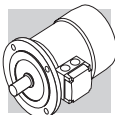
3000/500 min ⁻¹ - S3 60/40%												50 Hz											
2/12P		d.c. brake												a.c. brake									
P _n		n	M _n	η	cosφ	In	Is In	Ms Mn	Ma Mn	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb	Z _o 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 	Mod	Mb	Z _o 1/h	J _m x 10 ⁻⁴ kgm ²	IM B5 		
0.55 0.09	BN 80B 12	2820 430	1.86 2.0	64 30	0.89 0.63	1.39 0.69	4.2 1.8	1.6 1.9	1.7 1.8	25	11.3	FD 04	5.0	1000 8000	1300 12000	27	15.2	FA 04	5.0	1300 12000	27	15.1	
0.75 0.12	BN 90L 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	FD 05	13	1000 4600	1150 6300	30	18.6	FA 05	13	1150 6300	30	19.3	
1.10 0.18	BN 100LA 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	FD 15	13	700 4000	900 6000	44	25	FA 15	13	900 6000	44	25	
1.5 0.25	BN 100LB 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	FD 15	13	700 3800	900 5000	58	28	FA 15	13	900 5000	58	29	
2 0.3	BN 112M 12	2900 460	6.6 6.2	74 46	0.88 0.43	4.43 2.19	6.5 2.0	2.1 2.0	2.0 2.0	98	30	FD 06S	20	— —	800 3400	107	40	FA 06S	20	800 3400	107	42	
3 0.5	BN 132S 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	FD 56	37	— —	450 3000	223	57	FA 06	37	450 3000	223	58	
4 0.7	BN 132M 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	FD 56	37	— —	400 2800	280	66	FA 06	37	400 2800	280	67	



4/6P																	1500/1000 min ⁻¹ - S1																	50 Hz				
																	d.c. brake												a.c. brake									
																	FD												FA									
P _n		n	M _n	η	cosφ	I _n	I _s	M _s	M _a	J _m	IM B5	Mod	Mb	Z _o	J _m	IM B5	Mod	Mb	Z _o	J _m	IM B5																	
kW		min ⁻¹	Nm	%		A				kgm ²			Nm	1/h	kgm ²			Nm	1/h	kgm ²																		
0.22	BN 71B	4	1.5	64	0.74	0.67	3.9	1.8	1.9	9.1	7.3	FD 03	3.5	3500	10.2	10.0	FA 03	3.5	3500	10.2	9.7																	
0.13	6	6	920	43	0.67	0.65	2.3	1.6	1.7				5000	9000				9000																				
0.30	BN 80A	4	1410	61	0.82	0.87	3.5	1.3	1.5	15	8.2	FD 04	5.0	3100	16.6	12.1	FA 04	5.0	3100	16.6	12.0																	
0.20	6	6	930	54	0.66	0.81	3.2	1.9	2.0				4000	6000				6000																				
0.40	BN 80B	4	1430	63	0.75	1.22	3.9	1.8	1.8	20	9.9	FD 04	10	2300	22	13.8	FA 04	10	2300	22	13.7																	
0.26	6	6	930	55	0.70	0.97	2.7	1.5	1.6				3600	5500				5500																				
0.55	BN 90S	4	1420	70	0.78	1.45	4.5	2.0	1.9	21	12.2	FD 14	10	2100	23	16.1	FA 14	10	2100	23	16.3																	
0.33	6	6	930	62	0.70	1.10	3.7	2.3	2.0				2500	4100				4100																				
0.75	BN 90L	4	1420	74	0.78	1.88	4.3	1.9	1.8	28	14	FD 05	13	2000	32	20	FA 05	13	2000	32	21																	
0.45	6	6	920	66	0.71	1.39	3.3	2.0	1.9				2300	3600				3600																				
1.1	BN 100LA	4	1450	74	0.79	2.72	5.0	1.7	1.9	82	22	FD 15	26	2000	86	28	FA 15	26	2000	86	29																	
0.8	6	6	950	65	0.69	2.57	4.1	1.9	2.1				2100	3300				3300																				
1.5	BN 100LB	4	1450	75	0.79	3.65	5.1	1.7	1.9	95	25	FD 15	26	1800	99	31	FA 15	26	1800	99	32																	
1.1	6	6	950	72	0.68	3.24	4.3	2.0	2.1				2000	3000				3000																				
2.3	BN 112M	4	1450	75	0.78	5.7	5.2	1.8	1.9	168	32	FD 06S	40	—	177	42	FA 06S	40	1600	177	44																	
1.5	6	6	960	73	0.72	4.1	4.9	2.0	2.0				—	2400				2400																				
3.1	BN 132S	4	1460	83	0.83	6.5	5.9	2.1	2.0	213	44	FD 06	37	—	223	57	FA 06	37	1200	223	58																	
2	6	6	960	77	0.75	4.9	4.5	2.1	2.1				—	1900				1900																				
4.2	BN 132MA	4	1460	84	0.82	8.8	5.9	2.1	2.2	270	53	FD 06	50	—	280	66	FA 06	50	900	280	67																	
2.6	6	6	960	79	0.72	6.6	4.3	2.0	2.0				—	1500				1500																				

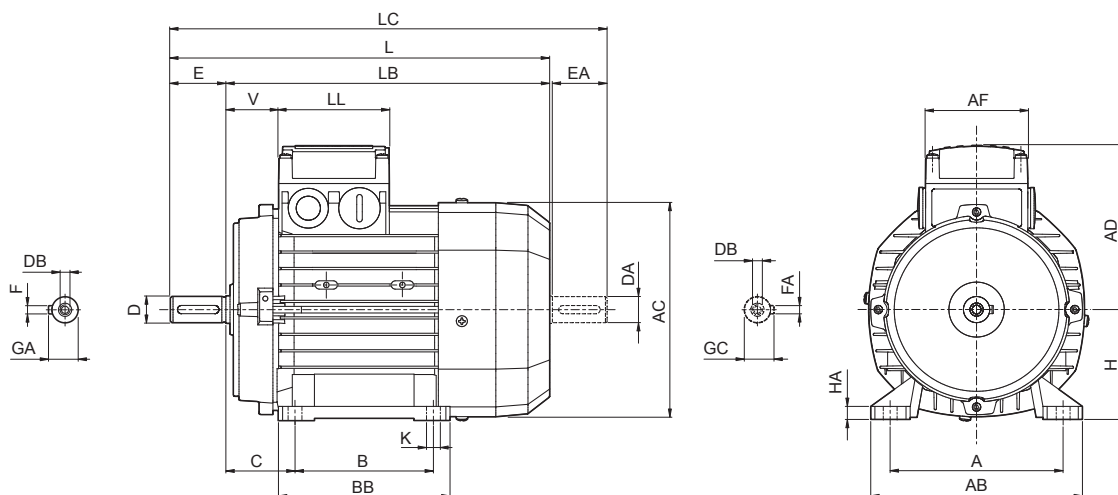


 **Bonfiglioli**
Riduttori



18 MOTORS DIMENSIONS BN

BN - IM B3

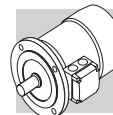


BN

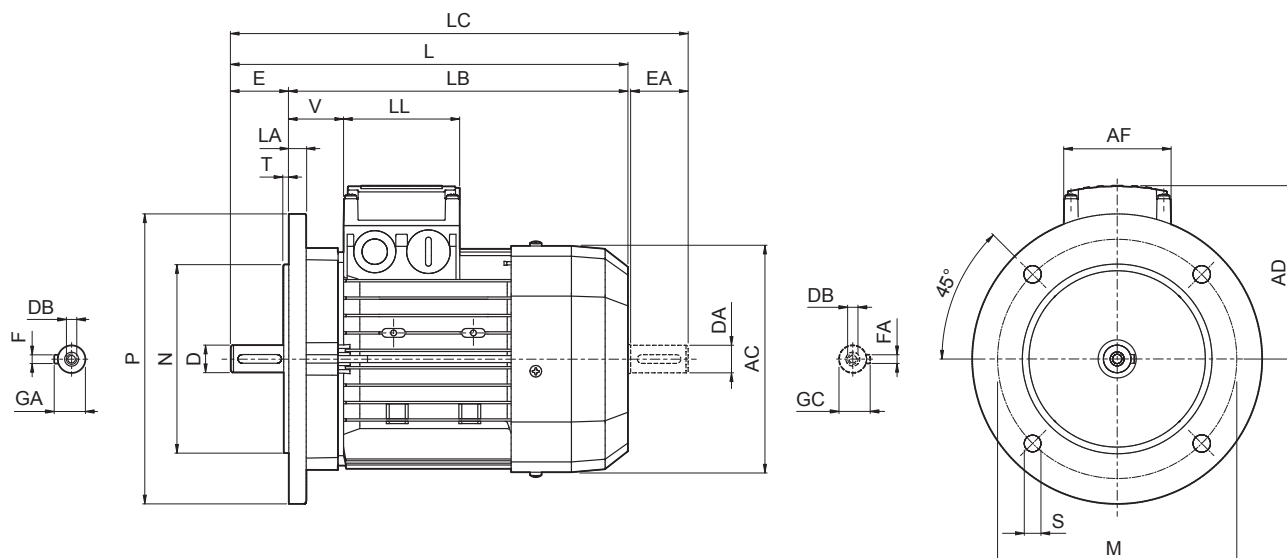
	Shaft					Housing						Motor											
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V		
BN 63	11	23	M4	12.5	4	80	100	8	96	120	7	40	63	121	207	184	232	95	74	80	30		
BN 71	14	30	M5	16	5	90	112	8	112	135		45	71	138	249	219	281	108			37		
BN 80	19	40	M6	21.5	6	100	125	8	124	153	10	50	80	156	273	233	315	119			38		
BN 90 S	24	50	M8	27	8		140	8	155	174		10	56	90	176	326	276	378	133	98	98	44	
BN 90 L						125					160		175	192	63	100	195	366	306			429	142
BN 100	28	60	M10	31	8	140	10	175	224	12	70	112	219	385	325	448	157	52					
BN 112											89	132	260	493	413	576	193	118	118			58	
BN 132 S	38	80	M12	41	10	178	216	12	218	254	12	89	132	260	493	413	576	193	118	118	58		
BN 132 M																							
BN 160 M	42	110	M16	45	12	210	254	25	264	319	14.5	108	160	310	596	486	680	245	187	187	51		
BN 160 L	38 (1)	80 (1)	M12 (1)	41 (1)	10 (1)	254			304						640	530	724					52	
BN 180 L	48	110	M16	51.5	14	279	279	26	329	359	14	121	180	348	708	598	823	261			187	187	52
BN 200 L	55		110 (1)	M20	59	16	305		318	355	398	18	133		200	722	612						837

NOTE:

1) These values refer to the rear shaft end.



BN - IM B5

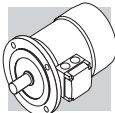


BN

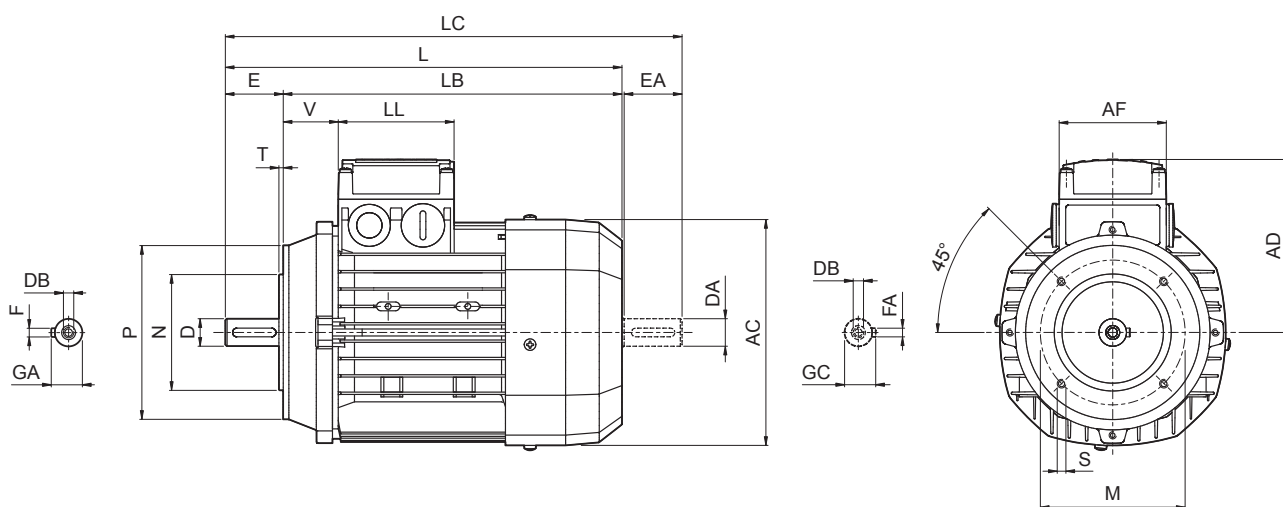
	Shaft					Flange						Motor								
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V	
BN 56	9	20	M3	10.2	3	100	80	120	7	3	8	110	185	165	207	91	74	80	34	
BN 63	11	23	M4	12.5	4	115	95	140	9.5		10	121	207	184	232	95			26	
BN 71	14	30	M5	16	5	130	110	160				138	249	219	281	108			37	
BN 80	19	40	M6	21.5	6	165	130	200	11.5	3.5	11.5	156	274	234	315	119	98	98	38	
BN 90	24	50	M8	27	8							215	180	250	14	4			176	326
BN 100	28	60	M10	31		265	230	300	14	5	14						195	367	307	429
BN 112					15						219	385	325	448	157	52				
BN 132	38	80	M12	41	10	265	230	300	18.5	5	20	258	493	413	576	193	187	187	58	
BN 160 MR	42 38 (1)	110 80 (1)	M16 M12 (1)	45 41 (1)	12 10 (1)	300	250	350			15		562	452	645				218	
BN 160 M												310	596	486	680	245	261	51		
BN 160 L											310								640	530
BN 180 M	48 38 (1)	110 110 (1)	M16 M12 (1)	51.5 41 (1)	14 10 (1)	350	300	400			18	348	708	598	823	261	66			
BN 180 L	48 42 (1)		M16 M16 (1)	51.5 45 (1)	14 12 (1)								722	612	837					
BN 200 L	55 42 (1)		M20 M16 (1)	59 45 (1)	16 12 (1)															

NOTE:

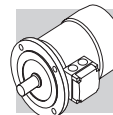
1) These values refer to the rear shaft end.



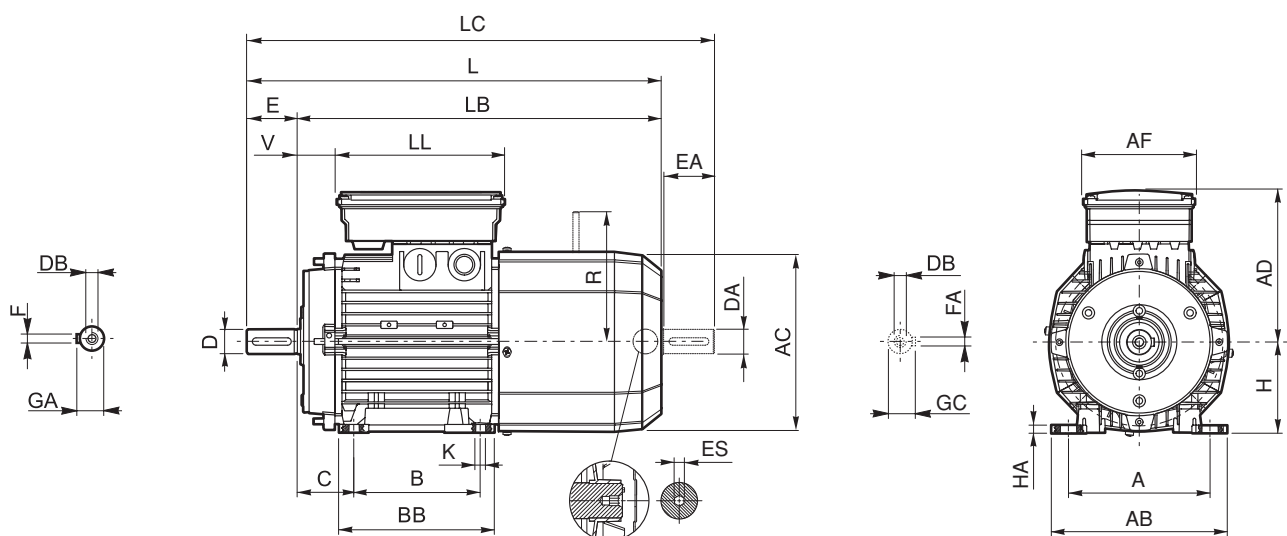
BN - IM B14



	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
BN 56	9	20	M3	10.2	3	65	50	80	M5	2.5	110	185	165	207	91	74	80	34
BN 63	11	23	M4	12.5	4	75	60	90			121	207	184	232	95			26
BN 71	14	30	M5	16	5	85	70	105	M6		138	249	219	281	108			37
BN 80	19	40	M6	21.5	6	100	80	120		3	156	274	234	315	119	38		
BN 90	24	50	M8	27	8	115	95	140	M8		176	326	276	378	133	98	98	44
BN 100	28	60	M10	31		130	110	160			3.5	195	367	307	429			142
BN 112									219	385		325	448	157	52			
BN 132	38	80	M12	41	10	165	130	200	M10	4	258	493	413	576	193	118	118	58



BN_FD ; IM B3



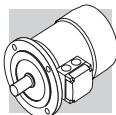
	Shaft					Housing						Motor													
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R	S		
BN 63	11	23	M4	12.5	4	80	100		96	120	7	40	63	121	272	249	297	122	98	133	14	96	5		
BN 71	14	30	M5	16	5	90	112		112	135		45	71	138	310	280	342	135			25	103			
BN 80	19	40	M6	21.5	6	100	125		8	124		153	50	80	156	346	306	388			146	41		129	
BN 90 S	24	50	M8	27	8			140		155	174	10	56	90	176	409	359	461	149	110	165	15	6		
BN 90 L						125																			
BN 100	28	60	M10	31			160	10	175	192	12	63	100	195	458	398	521	158	140			188		62	204 (2)
BN 112						140	190			224		70	112	219	484	424	547	173						73	
BN 132 S	38	80	M12	41	10		216	12	218	254		89	132	260	603	523	686	210	140	188	46				
BN 132 M						178																			
BN 160 M	42 38 (1)	110 80 (1)	M16 M12 (1)	45 41 (1)	12 10 (1)	210	254	25	264	319	14.5	108	160	310	736	626	820	245	187	187	51	266			
BN 160 L						304										780	670						864		
BN 180 L	48 42 (1)	110 (1)	M16 M16 (1)	51.5 45 (1)	14 12 (1)	279	279	26	329	359	14	121	180	348	866	756	981	261					52	305	
BN 200 L	55 42 (1)					M20 M16 (1)	59 45 (1)		16 12 (1)	305	318	355	398		18	133	200						878		768

NOTE:

1) These values refer to the rear shaft end.

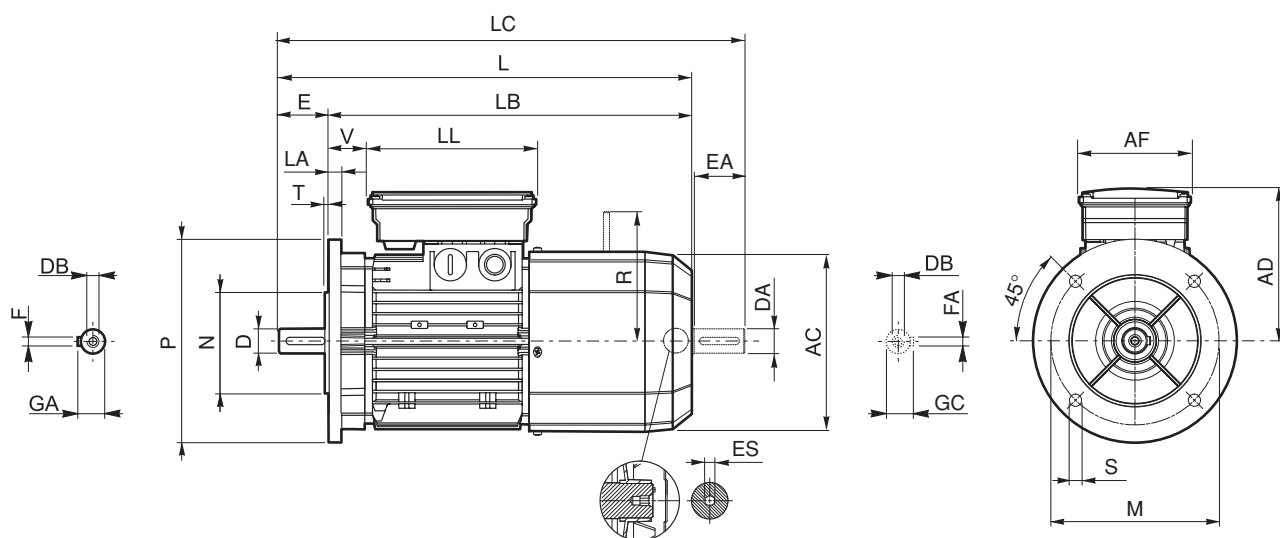
2) For FD07 brake value R=226.

ES hexagon is not supplied with PS option.



BN_FD ; IM B5

BN



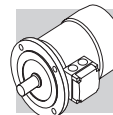
	Shaft					Flange						Motor									
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V	R	ES
BN 63	11	23	M4	12.5	4	115	95	140	9.5	3	10	121	272	249	297	122	98	133	14	96	5
BN 71	14	30	M5	16	5	130	110	160	9.5	3.5		138	310	280	342	135			25	103	
BN 80	19	40	M6	21.5	6	165	130	200	11.5		3.5	11.5	156	346	306	388	146	110	165	41	129
BN 90 S	24	50	M8	27	8					176			409	359	461	149	165			39	160
BN 90 L						146	165	73	199												
BN 100	28	60	M10	31	215	180				250	14	4	14	195	458	398	521	158	165	73	199
BN 112							15	219	484				424	547	173						
BN 132	38	80	M12	41	10	265	230	300	14	4	20	258	603	523	686	210	140	188	46	204 (2)	6
BN 160 MR	42	110	M16	45	12	300	250	350			18.5		5	15	672				562	755	
BN 160 M	38 (1)	80 (1)	M12 (1)	41 (1)	10 (1)				300	250		350			18.5	5	15	310	736	626	820
BN 160 L	42	80 (1)	M16	45	12	300	250	350			18.5		5	15					310	780	670
BN 180 M	48			110	M16				51.5	14		300			250	350	18.5	5		15	310
BN 180 L	48	110	M16			51.5	14	300	250	350	18.5		5	15					310		
BN 200 L	55			110 (1)	M20	59	16					350			300	400	18.5	5		18	348
	42 (1)	110 (1)	M16 (1)			45 (1)	12 (1)	350	300	400	18.5		5	18					348		878

NOTE:

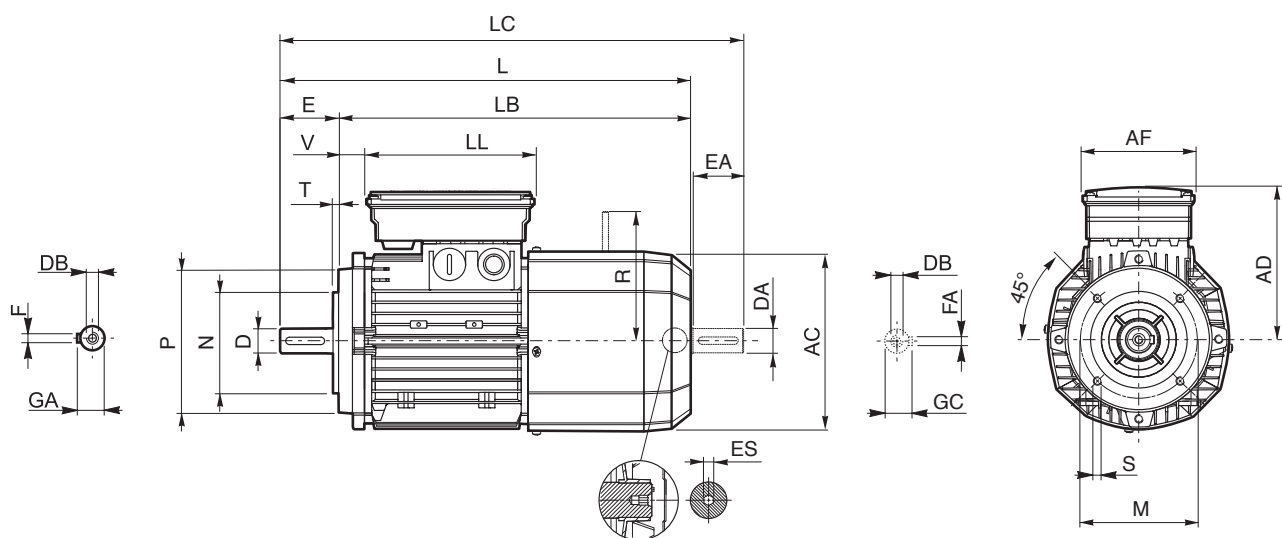
1) These values refer to the rear shaft end.

2) For FD07 brake value R=226.

ES hexagon is not supplied with PS option.



BN_FD ; IM B14



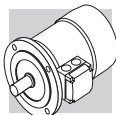
BN

	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
BN 63	11	23	M4	12.5	4	75	60	90	M5	2.5	121	272	249	297	122	98	133	14	96	5
BN 71	14	30	M5	16	5	85	70	105	M6		138	310	280	342	135			25	103	
BN 80	19	40	M6	21.5	6	100	80	120			156	346	306	388	146			41	129	
BN 90 S	24	50	M8	27	8	115	95	140	M8	3	176	409	359	461	149	110	165	39	129	6
BN 90 L															146				160	
BN 100	28	60	M10	31		130	110	160		3.5	195	458	398	521	158			62	199	
BN 112											219	484	424	547	173			73	199	
BN 132	38	80	M12	41	10	165	130	200	M10	4	258	603	523	686	210	140	188	46	204 (1)	

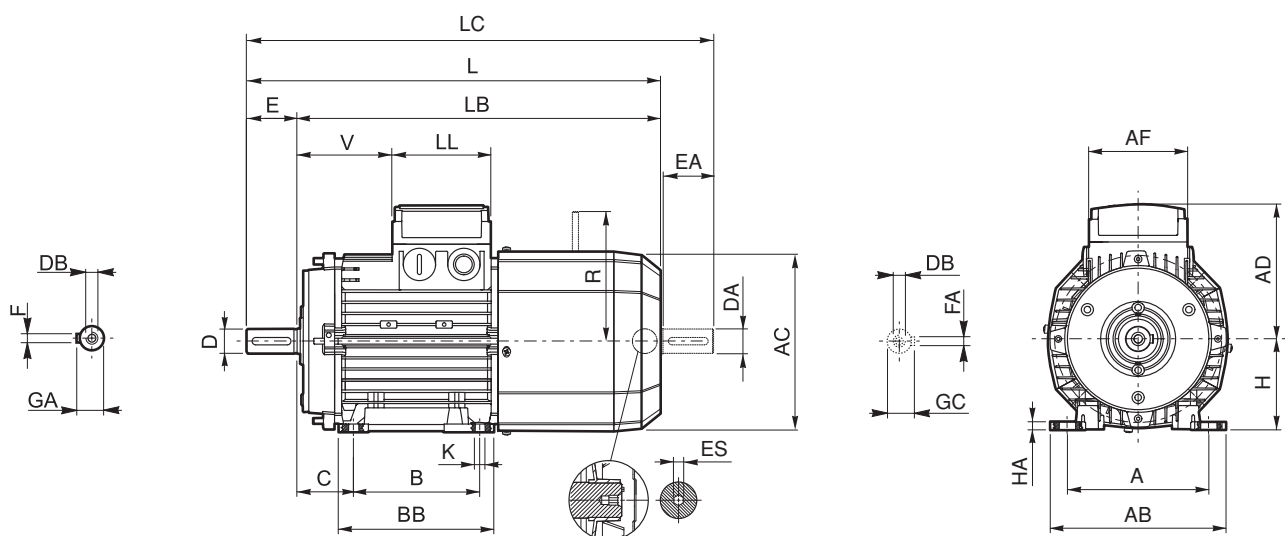
NOTE:

1) For FD07 brake value R=226.

ES hexagon is not supplied with PS option.



BN_FA - IM B3



BN

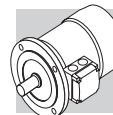
	Shaft					Housing						Motor														
	D DA	E EA	DB	GA GC	F FA	B	A	HA	BB	AB	K	C	H	AC	L	LB	LC	AD	AF	LL	V	R	S			
BN 63	11	23	M4	12.5	4	80	100		96	120	7	40	63	121	272	249	297	95			51	116				
BN 71	14	30	M5	16	5	90	112		112	135		45	71	138	310	280	342	108			74	80		68	124	5
BN 80	19	40	M6	21.5	6	100	125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

NOTE:

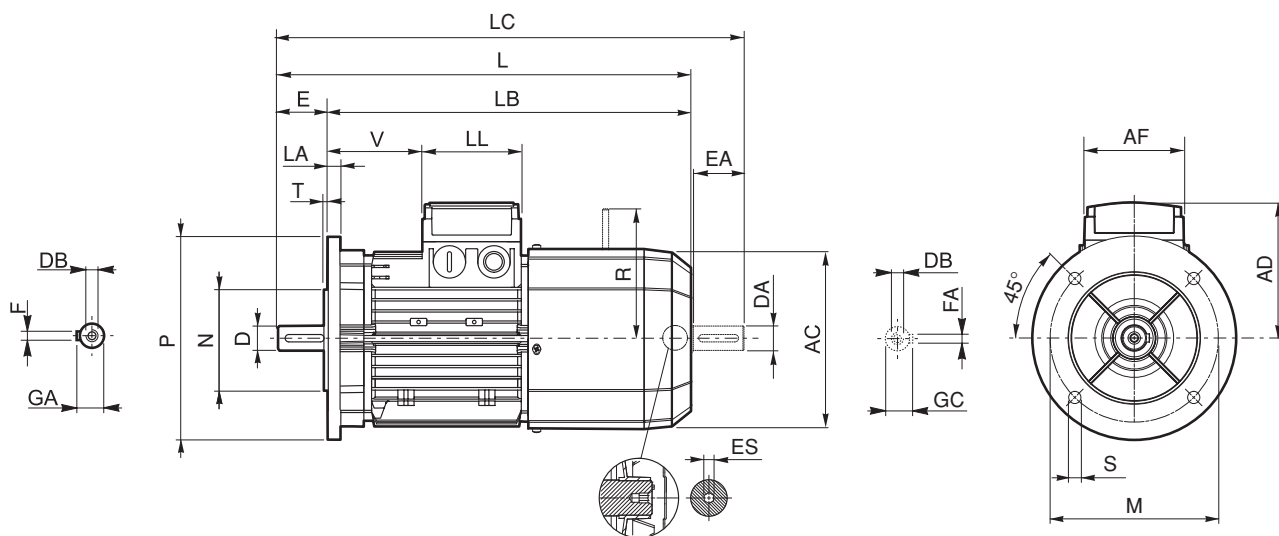
- 1) These values refer to the rear shaft end.
- 2) For FA07 brake value R=217.

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 B5



BN

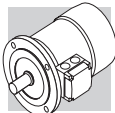
	Shaft					Flange						Motor										
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	LA	AC	L	LB	LC	AD	AF	LL	V	R	ES	
BN 63	11	23	M4	12.5	4	115	95	140	9.5	3	10	121	272	249	297	95	74	80	26	116	5	
BN 71	14	30	M5	16	5	130	110	160		138		310	280	342	108	68			124			
BN 80	19	40	M6	21.5	6	165	130	200		11.5		3.5	11.5	156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

NOTE:

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

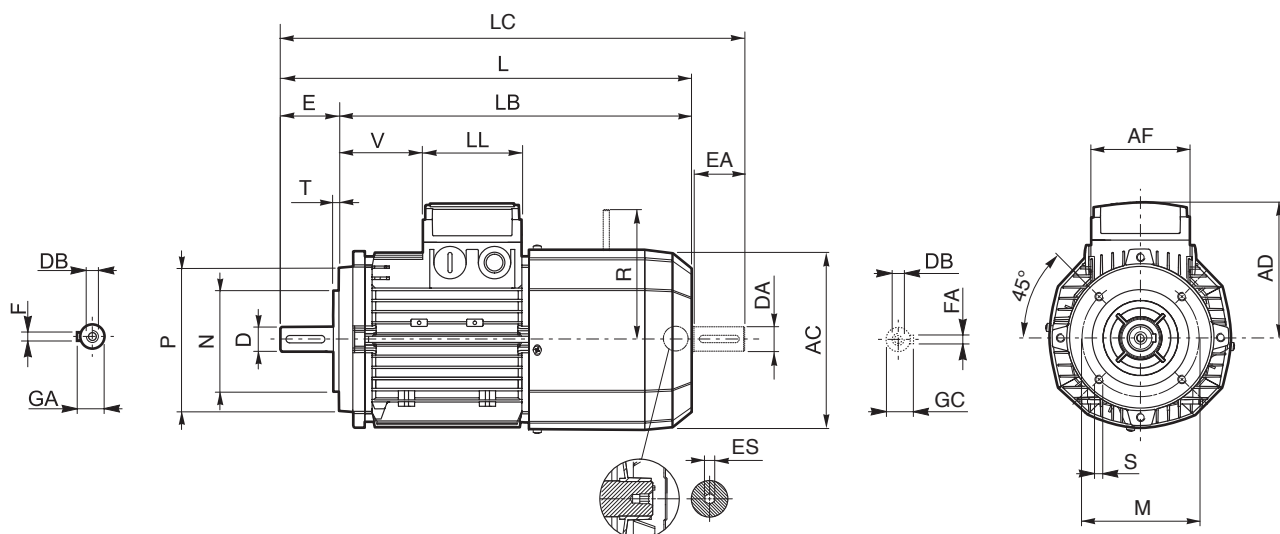
Dimensions AD, AF, LL and V, relevant to terminal box of motors BN...FA featuring the separate brake supply (option SA), are coincident with corresponding dimensions of same-size BN...FD motors

ES hexagon is not supplied with PS option.



BN_FA - IM B14

BN



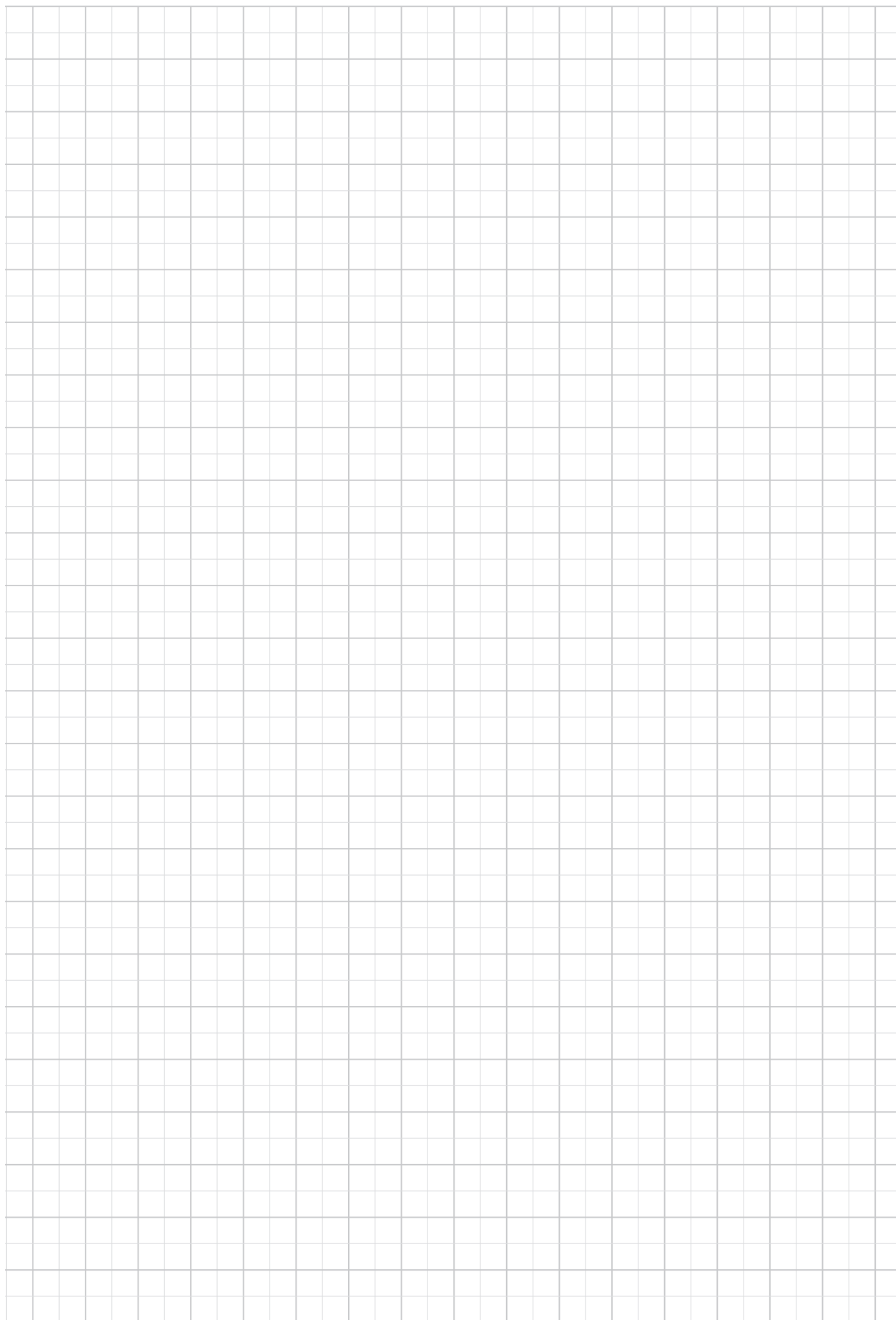
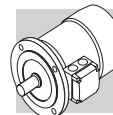
	Shaft					Flange					Motor									
	D DA	E EA	DB	GA GC	F FA	M	N	P	S	T	AC	L	LB	LC	AD	AF	LL	V	R	ES
BN 63	11	23	M4	12.5	4	75	60	90	M5	2.5	121	272	249	119	95	74	80	26	116	5
BN 71	14	30	M5	16	5	85	70	105	M6		138	310	280	342	108			68	124	
BN 80	19	40	M6	21.5	6	100	80	120		3	156	346	306	388	119			83	134	
BN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

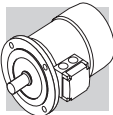
NOTE:

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_R03_1	
	Description
...	Added the availability of brakes and CUS execution for BX motors.

2017 09 30

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