

RUBIX

eVOX PLATFORM

Product Catalogue

 **Bonfiglioli**

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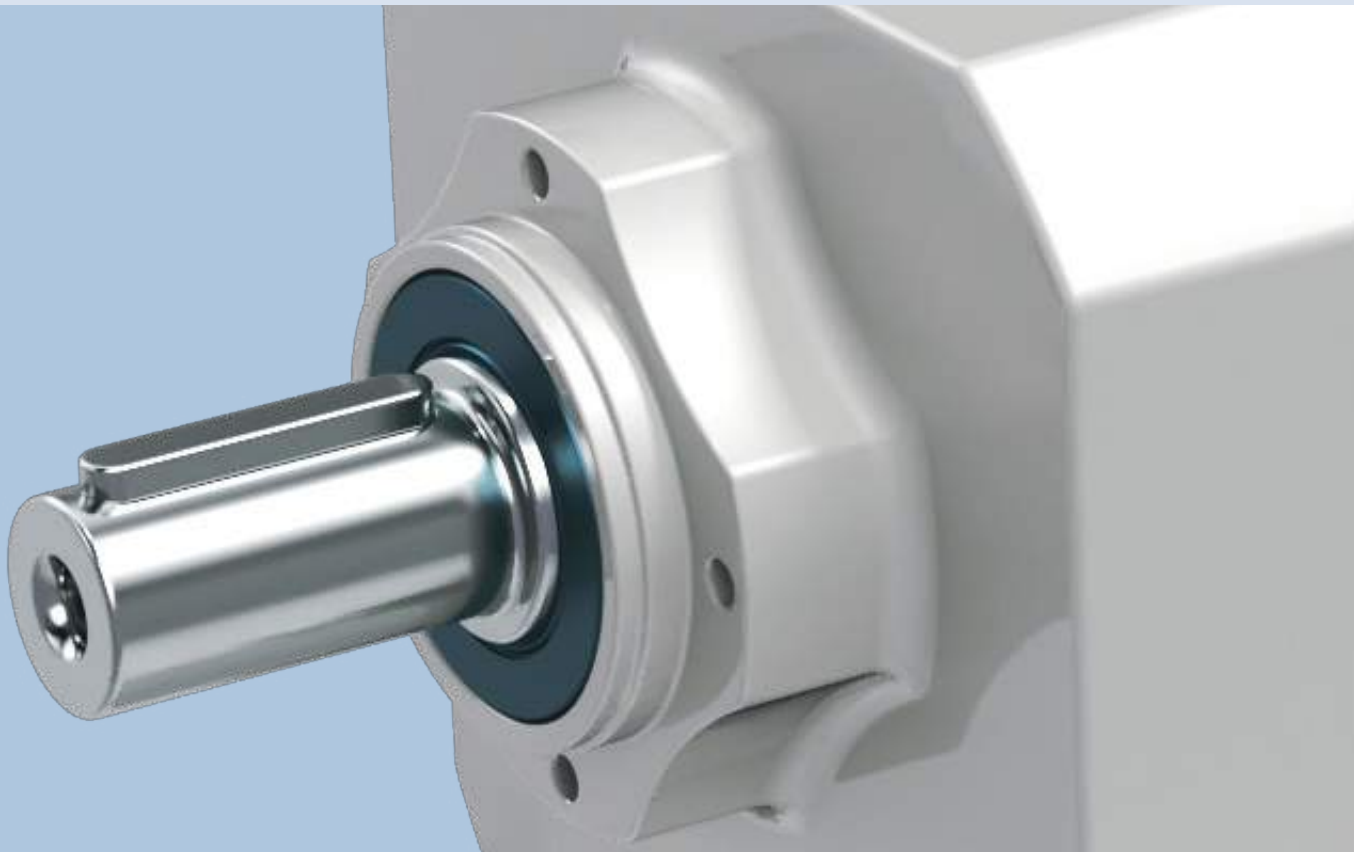
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CONFIGURATION GUIDELINES



ENVIRONMENTAL CONDITIONS

Ambient temperature

The ambient temperature influences the gear unit and motor performance.

Please take into account the following guidelines for a correct product configuration:

- **Oil Seals:** please refer to the oil seal options in the catalogue section relating to gear unit options and select the correct alternative according to product operating conditions.
- **Lubricant:** if the operating temperature is outside the indicated range for the standard lubricant, please select SO to order the gear unit without oil and then refer to the [Lubricant table](#) to select the correct oil for the application operating temperature range.
- **Gear unit housing and component resistance:** if the operating temperature is below -25°C, or above 50°C, please [contact Bonfiglioli's Technical Service](#). From -25°C to -10°C, please start the gearmotor with partial loads.
- **Motor:** in case of special humidity and ambient temperature resistance requirements, please see the motor tropicalisation option.

To allow a proper heat dissipation, make sure the product is installed with adequate air circulation, away from temperature-sensitive components.

For altitude < 3000m and ambient temperature <50°C, these Gear Units thermal power is not a possible cause of fault. Should the product be operated under different conditions, please [contact Bonfiglioli's Technical Service](#).

Rating values are calculated for standard environmental conditions (40°C; altitude<1000m a.s.l.) as specified in CEI EN 60034-1.

Motors can be used within the temperature range of -25°C and +50°C as standard. For temperature higher than 40°C the rated power output should be adjusted by factors given in the table below.

Ambient temperature (°C)	-25≤T<40	40	45	50
k _{ft} coefficient		100%	95%	90%

Permitted power = $P_{n1} \cdot k_{ft} \cdot f_m$

For f_m refer to the [Duty Cycle](#) options

Altitude

The installation altitude influences the gear unit and motor performance. For motor temperature derating data, see the [e-motor Configuration Guidelines & Setup](#) Catalogue Section.

If the application altitude is above 1500 m and the gear unit is factory filled with oil, place the product with the oil drain plug at the top and open it to balance out the internal pressure and the external atmosphere, then close the oil plug. Make sure that no object or substance falls into the gear unit, as it could damage its internal components during its operating lifetime.

If, during its lifetime, the gear unit operates with a difference of altitude higher than 1000 m, [contact Bonfiglioli's Technical Service](#) to find the correct solution, based on the required performance, the seals equipped and the mounting position needed.

ENVIRONMENTAL CONDITIONS

Noise Level

Gear unit noise levels have been tested according to UNI ISO 3746. The noise of the gear unit is always lower than the motor's, which is compliant with the CEI EN 60034-9 standard.

Corrosion Protection

The gear unit and motors can be configured with several devices to enhance their protection against corrosion, see EVOX Painting Options against corrosion protection and FO option to add stainless steel components to your product.

Storage

See the Product Storage Guidelines on the EVOX user manual at www.bonfiglioli.com for a thorough description of every environment and treatment conditions (for less and more than 6 storage months). Observe the following instructions to correctly store the products:

- a) Do not store outdoors, in areas exposed to the weather or with excessive humidity.
- b) always place wooden boards or other materials between the products and the floor.

The gear units should have no direct contact with the floor.

- c) In case of long-term storage, all machined surfaces such as flanges, shafts and couplings must be coated with a suitable rust inhibiting product (Mobilarma 248 or equivalent).

In addition, the gear units must be placed with the filler plug at the top and filled up with oil.

Before putting the units into operation, top-up with the appropriate quantity and type of oil (refer to the User's manual available at www.bonfiglioli.com).

Gear Unit Efficiency

For Helical In-Line gear units, consider as a general order of magnitude $0,98^{Nst}$ [Nst = stage number], for an efficient calculation.

LUBRICANT TABLE

Life lubricated gear units do not require any periodical oil changes.

Refer to the User's Manual available at www.bonfiglioli.com for indications regarding oil checks and replacement.

Do not mix synthetic and mineral oils and/or different brands.

In any case, check the oil level at regular intervals and top it up as required.

Check it monthly, if the unit operates under intermittent duty, or more frequently if duty is continuous.

As standard, factory-filled gear units are lubricated with Shell Omala S4 WE320 (PAG).

Do not let the oil temperature drop below the pour point -39°C or rise above 100°C also in storage conditions.

The gear unit can be filled with different oils, according to the application needs. You can choose the gear unit SO option and fill the EVOX with one of the oils listed in the following table.

		Operating ambient temperature [C°]																				
		-40	-35	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50		
		Seals conditions check				Standard seals provided in the catalogue																
Splash lubrication	Mineral oil	VG 150						*														
		VG 220	⊘						*													⌚
		VG 320	⊘							*												
		VG 460									*											
Synthetic oil (PAG)	VG 150				*																⌚	
	VG 220	⊘					*															
	VG 320	⊘					*															
(PAO)	VG 32	*																				
	VG 68			*																	⌚	
	VG 150	⊘				*																
	VG 220	⊘					*															
	VG 320							*														

□ Recommended operating limits.

⊘ Forbidden operating limits.

⋯ Allowed operating limits ⌚.

*= For temperatures that are too low, the density of the oil is high enough that there is a risk of damaging the gearbox and the motor. Therefore, it is highly recommended to provide an adequate starting ramp

⌚ If needed, and in the event of impulse loads, [contact Bonfiglioli's Technical Service](#).

ATTENTION

Bonfiglioli's factory filled gear units should not be operated outside the temperature range indicated in this catalogue.

Bonfiglioli shall not be liable for use of lubricants outside the suggested temperature range or mix of different lubricant types or manufacturers.

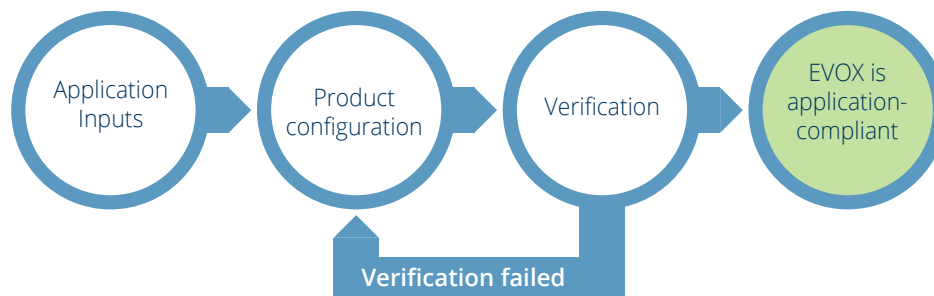
Oils with the same viscosity and different brands may have different characteristics in terms of operating temperature ranges. The table above is a general guideline; however, you should always check the oil specifications before filling and using EVOX gear units.

The oil quantity for each gear unit size is:

Size	Volume (L)
0.7	0.35
17	0.7
37	1.1
47	1.8

PRODUCT SELECTION GUIDELINES

In order to correctly choose the product that fits your needs, please refer to the Application Input parameters listed below. Choose the configuration in the performance table, then verify your EVOX with the [Verification parameters](#).



APPLICATION INPUTS

Some fundamental data are necessary to assist the correct selection of a gear unit or gearmotor. The table below briefly sums up this information.

To simplify selection, fill in the table and send a copy to [Bonfiglioli Technical Service](#), which will select the most suitable gear unit for your application.

Type of application		A_{c2} Axial load on output shaft (+/-) (***)	.....N
P_{r2} Output power at n ₂	.....kW	A_{c1} Axial load on input shaft (+/-) (***)	.....N
M_{r2} Output torque at n ₂	.....Nm	J_c Moment of inertia of the load	.....Kgm ²
n₂ Output speed	.....rpm	t_a Ambient temperature	.....C°
n₁ Input speed	.....rpm	Altitude above sea level	.....m
R_{c2} Radial load on output shaft	.....N	Duty type to IEC norms	S...../.....%
x₂ Load application distance (*)	.....mm	Z_r Startup frequency	.....1/h
Load orientation at input		Motor voltage	.....V
Output shaft rotation direction (CW-CCW) (**)	.....	Brake voltage	.....V
R_{c1} Radial load on input shaft	.....N	Frequency	.....Hz
x₁ Load application distance (*)	.....mm	M_b Brake torque	.....Nm
Load orientation at input		Motor protection degree	IP.....
Input shaft rotation direction (CW-CCW) (**)	.....	Insulation class	.....

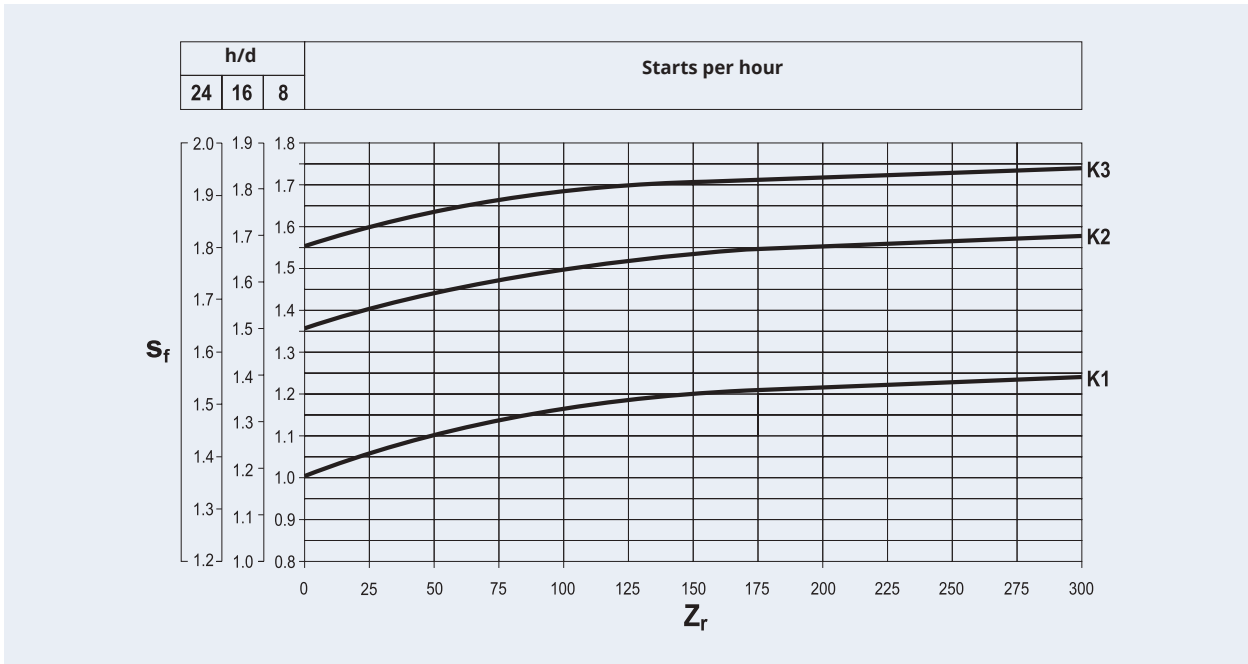
(*) Distance x1-2 refers to the distance between the point of force application and the shaft shoulder (if not indicated, the force acting at half the shaft extension will be considered).

(**) CW = clockwise; CCW = counter-clockwise

(***) + = push; - = pull

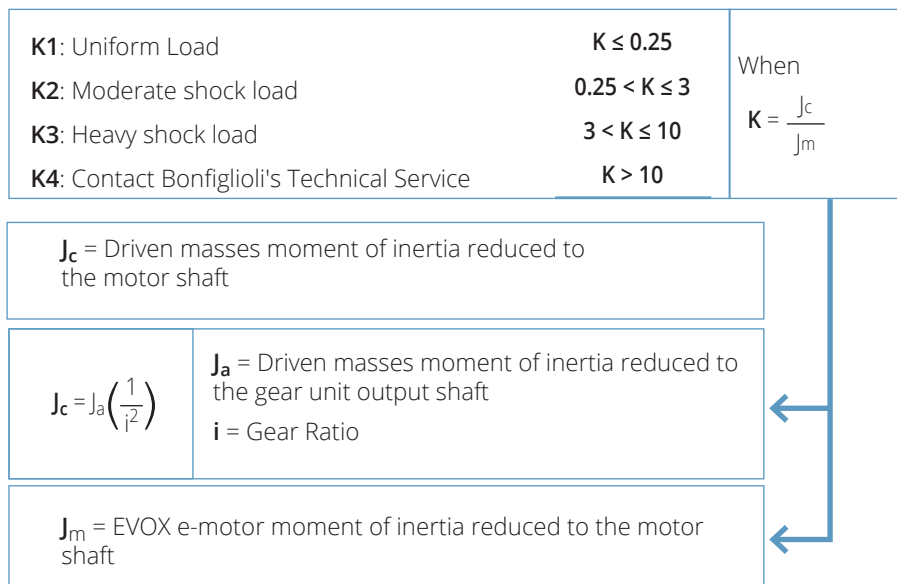
Application Service Factor

The Suggested Service Factor [S_f] is the ratio between the Nominal Table Torque [M_{r2}] and the Calculated Torque [M_{c2}] needed by your Application.



The [S_f] calculation depends on 3 factors in the previous diagram:

- **Start-up frequency [Z_r]**: this parameter **describes the gear unit start-ups per hour**
- **Daily work hours**: this parameter selects the y axis where you can check your Suggested Service Factor [S_f]
- **Mass acceleration factor [$k..$]**: this parameter describes the shock loads of your application on the Gear Unit and drives the fs curve selection



PRODUCT SELECTION GUIDELINES

GEAR UNIT SELECTION

Gear Unit Configuration

a) Determine Suggested Service Factor [S_f] according to type of duty (factor K), number of starts per hour [Z_r] and hours of operation.

b) From values of torque [M_{r2}], speed [n_2] and dynamic efficiency [η_d] the required input power can be calculated from the equation:

$$P_{r1} = \frac{M_{r2} \cdot n_2}{9550 \cdot \eta_d} \text{ [kW]}$$

Value of [η_d] for the captioned gear unit can be sorted out from [Gear Unit Efficiency](#) paragraph.

c) Consult the gearmotor selection tables and refer to the appropriate rated power [P_n]:

$$P_n \geq P_{r1}$$

At the end consider a Gear Unit configuration within a Service Factor S that match or exceeds the Suggested Service Factor [S_f].

$$S = \frac{M_{n2}}{M_2} = \frac{P_{n1}}{P_1}$$

Unless otherwise specified, power [P_n] of motors indicated in the catalogue refers to continuous duty S1. For motors used in conditions other than S1, the type of duty required by reference to CEI 2-3/IEC 34-1 Standards must be mentioned.

For duties from S2 to S8 in particular and for motor size 132 or smaller, extra power output can be obtained with respect to continuous duty, see the "[e-motor Configuration Guidelines & Setup](#)" catalogue section.

Accordingly the following condition must be satisfied:

$$P_n \geq \frac{P_{r1}}{f_m}$$

The adjusting factor [f_m] can be obtained from table below.

Intermittence ratio

$$I = \frac{t_f}{t_f + t_r} \cdot 100$$

t_f = operating time under constant load

t_r = rest time

	Duration						S4 - S8
	S2			S3*			
	of the duty cycle [min]			Cycle duration factor [I]			Please contact us
	10	30	60	25%	40%	60%	
f_m	1.35	1.15	1.05	1.25	1.15	1.1	

* Cycle duration, in any event, must be 10 minutes or less. If it is longer, please [contact Bonfiglioli's Technical Service](#)

Next, refer to the appropriate [P_n] section within the gearmotor selection charts and locate the unit that features the desired output speed [n_2], or closest to, along with a Service Factor **S** that meets or exceeds the Suggested Service Factor [S_f].

The Service Factor is so defined:

$$S = \frac{M_{n2}}{M_2} = \frac{P_{n1}}{P_1}$$

Selection of speed reducer and gear unit with IEC motor adapter

a) Determine Suggested Service Factor [S_f].

b) Assuming the required output torque for the application [M_{r2}] is known, the calculation torque can be then defined as:

$$M_{c2} = M_{r2} \cdot S_f$$

c) The gear ratio is calculated according to requested output speed [n_2] and drive speed [n_1]:

$$i = \frac{n_1}{n_2}$$

Once values for [M_{c2}] and [i] are known consult the rating charts under the appropriate input speed [n_1] and locate the gear unit that features the gear ratio closest to [i] and at same time offers a rated torque value [M_{n2}] so that:

$$M_{n2} \geq M_{c2}$$

If a IEC motor must be fitted on the gear unit, check the geometrical compatibility with the gear unit in [Gear units performance tables](#).

PRODUCT SELECTION GUIDELINES

VERIFICATION

After the selection of the speed reducer, or gearmotor, is complete it is recommended that the following verifications are conducted:

Thermal capacity

For altitude < 3000m and ambient temperature < 50°C, these Gear Units thermal power is not a possible cause of fault. Should the product be operated under different conditions, please [contact Bonfiglioli's Technical Service](#).

To allow a proper heat dissipation, make sure the product is installed with adequate air circulation, away from temperature-sensitive components.

Load Conditions on Gear Unit Shafts

Please shown in the [Catalog Performances Table](#).

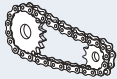
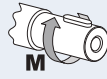

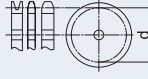
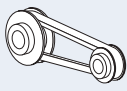
External Load Calculation on Gear Unit Shafts

External transmission could generate loads on the Gear Unit shafts.

The guidelines below are used to calculate the radial load.

This is a very simplified method to get the order of magnitude of the radial loads on the Gear Unit shafts. We recommend you follow more detailed considerations on your application to select the correct EVOX Gear Unit.

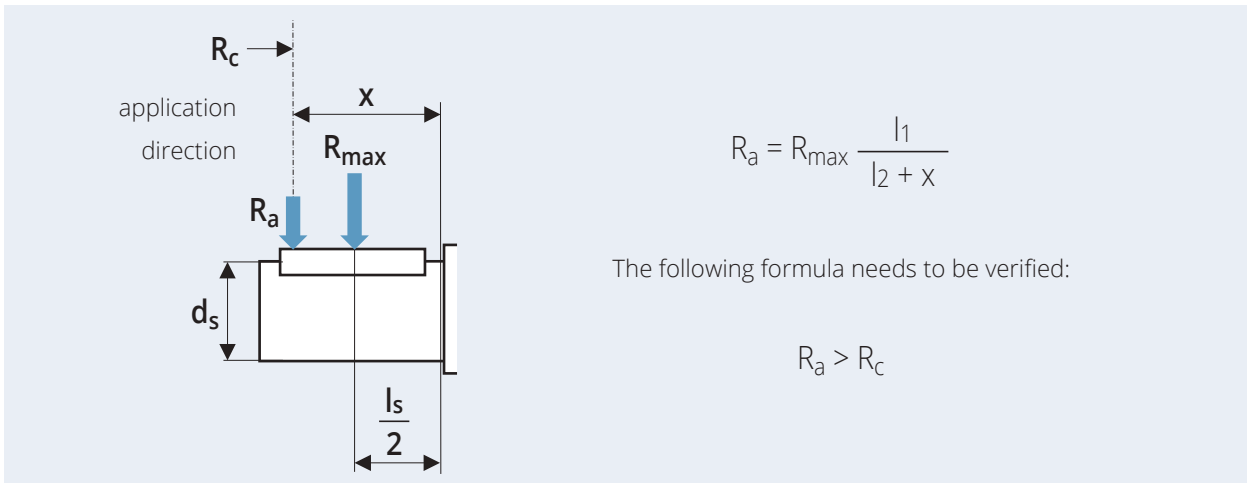
$$R_c = \frac{2000 \cdot M_a \cdot K_r}{d}$$

$K_r = 1$		M_a [Nm]	
$K_r = 1.25$		d [mm]	
$K_r = 1.5 - 2.0$			

Position of the radial component on the gear unit shafts

Radial loads in performance tables are considered as applied in the middle of the shaft.

To compare the radial component of the force applied on the output shaft [R_c] with the value [R_{max}] specified in the performance tables, shift the line of action of [R_c] using the following formula so as to keep the stress on bearings unchanged.



Check values [l_1] and [l_2] in the following tables:

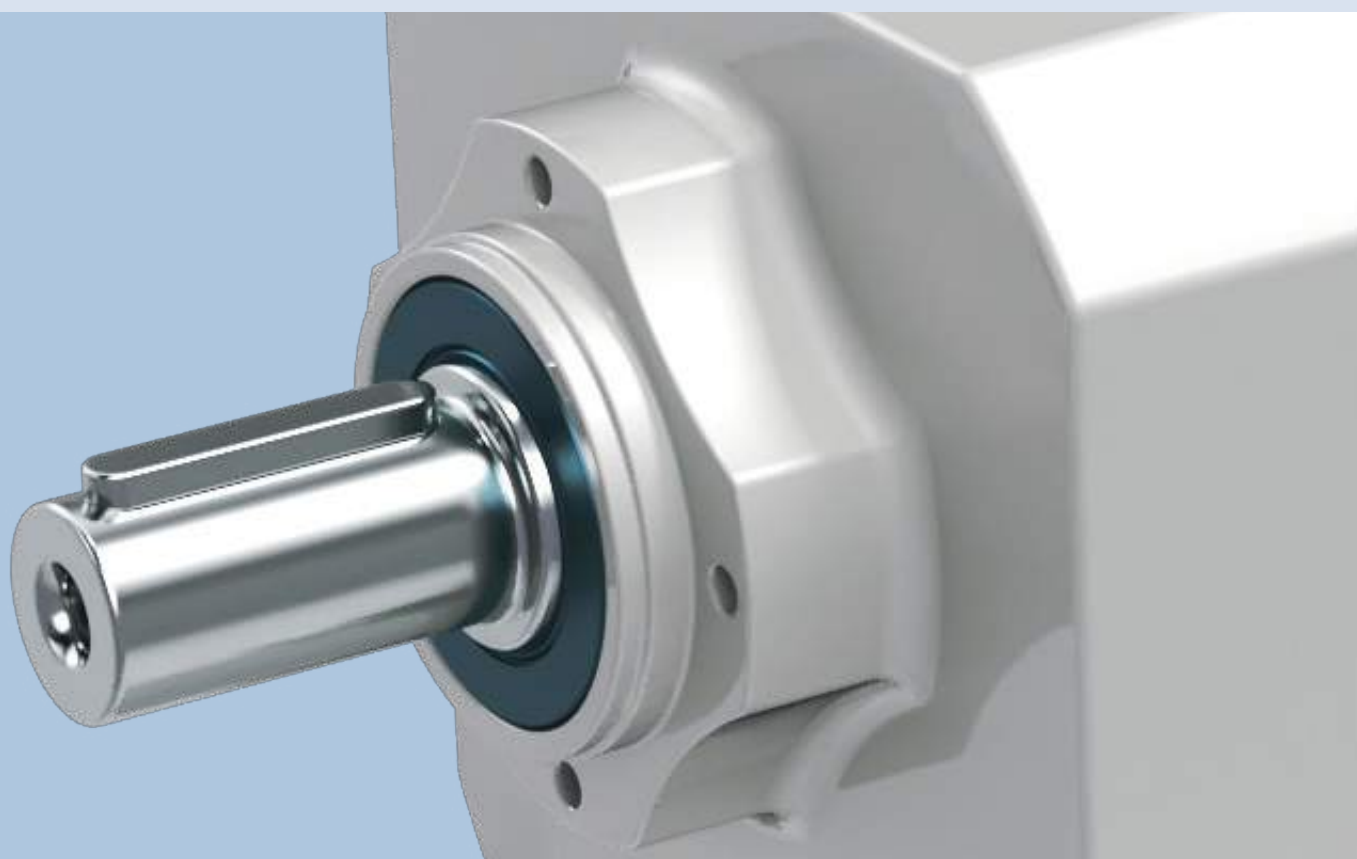
Coaxial Gear Unit Output Shaft									
Size	l_1	l_2	d_s	l_s	l_1	l_2	d_s	l_s	
	[mm]				[in]				
07	87	67	20	40	3.425	2.638	3/4	1-9/16	
17	97.75	77.75	20	40	3.848	3.061	3/4	1-9/16	
37	118	93	25	50	4.646	3.661	1	2	
47	130.2	100.2	30	60	5.126	3.945	1-1/4	2-3/8	

Solid input shaft					
Size	l_1	l_2	d_s	l_s	
	[mm]				
HS1	97	77	16	40	
HS2	81	61	19	40	
HS3	117.5	92.5	24	50	
	[in]				
NHS1	3.819	3.032	5/8	1-9/16	
NHS2	3.189	2.402	3/4	1-9/16	
NHS3	4.626	3.642	7/8	2	

Axial Load on Shafts

If the force on the output shaft has both radial and axial components, [contact Bonfiglioli's Technical Service](#) and check if your solution is suitable.

COAXIAL GEARMOTOR & GEAR UNIT EVOX



PRODUCT OVERVIEW

EVOX is Bonfiglioli's new gearmotor platform; the EVOX family starts with the new **CP**.

EVOX CP is a Helical In-Line product designed with a smooth housing and a performance/value focus.

The interface, aligned with the market standards, allows adapting EVOX CP to most existing industrial machines without the need for specific machining. Thanks to the wide range of versions/options and motors available in **Bonfiglioli's portfolio**, this new product can meet a wide range of application needs.



Features	Benefits
Overall dimensions in line with market standards	Fully interchangeable with market standards
Smooth surface	Easy-clean shape
Every mounting position available with the standard Product	Lower codes in stock
High torque density for in-line technology	High roughness and performances
Reinforced radial/axial bearing option	Product ready for decentralized transmission
Feet & flange output & long speed ratios	Product ready for pumps & compressors

EVOX CP sizes	Nominal torque	Gear ratio range	Max radial loads	Maximum compact gearmotor power	
	[Nm]		[N] ¹	[kW]	[hp]
07	55	2.8-81.2	1600	0.37	0.5
17	100	2.4-85.9	1770	0.75	1
37	200	2.3-133	4500	1.5	2
47	335	2.4-172	5000	3	4
57	500				
67	650				

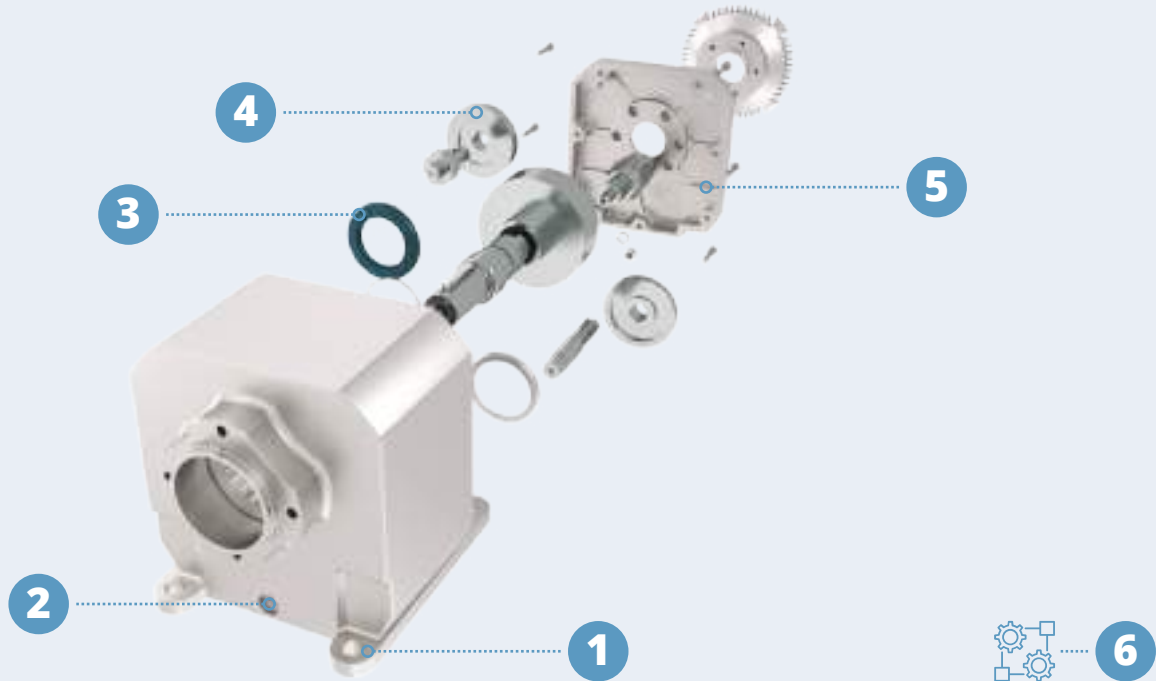
(1) Max performances @ 1400 rpm in input, Nominal output torque and radial load, applied in the middle of the o. shaft.

This value could change with the gear ratio

PRODUCT OVERVIEW

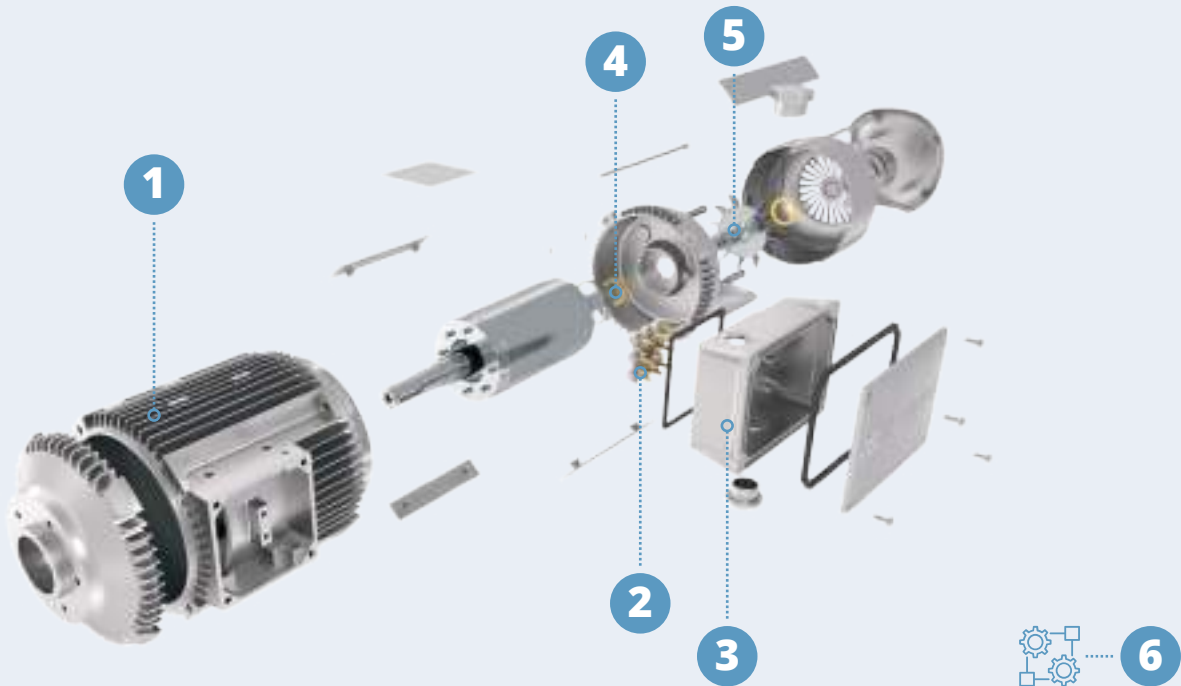
TECHNICAL FEATURES

Gear Unit – Coaxial CP



- 1 Overall dimensions in line with market standards**
- 2 Every mounting position possible with one product**
With its unique oil level, this gear unit can be fitted on any position.
- 3 Reliability focus for every standard component**
Using more reliable components improves the reliability of the whole product.
- 4 Efficiency and low noise gears set**
These highly effective gears reduce oil heating, preventing its leakage through the seals.
- 5 Product flexibility/modularity**
Easy assembly with simple equipment.
- 6 Great set of versions and options**

Electric Motor – MXN/MNN



1 Uncompromised IE3/NEMA Premium Efficiency

This motor is compliant with the most severe regulations in the world in terms of efficiency.

2 One motor for EU, USA, India & Australia

With its particular 9-PIN terminal box, you could get the right voltage for most markets.

3 Reliability focus for every standard component

Using more reliable components improves the reliability of the whole product.

4 Rotating terminal box

With this feature, you could rotate the terminal box in every position you need.

5 Modular brakes, encoders

6 Wide range of versions and options

PRODUCT OVERVIEW

TARGET APPLICATIONS

- **Product fully interchangeable with market standard**
- **IE3/NEMA Premium uncompromised efficiency** making it technically ready for premium efficiency applications worldwide.



Options for high radial and axial loads making this product suitable for screw conveyors and/or decentralized transmissions.



Compact design making it compatible even with severe application constraints.



Market Best-in-Class in terms of Torque making the product with the highest torque density of its category.





**AUTOMATIC GATES &
BARRIERS**



RECYCLING



TEXTILE



FOOD & BEVERAGE



PACKAGING



**HEATING, VENTILATION &
AIR CONDITIONING**



MATERIAL HANDLING



MATERIAL HANDLING

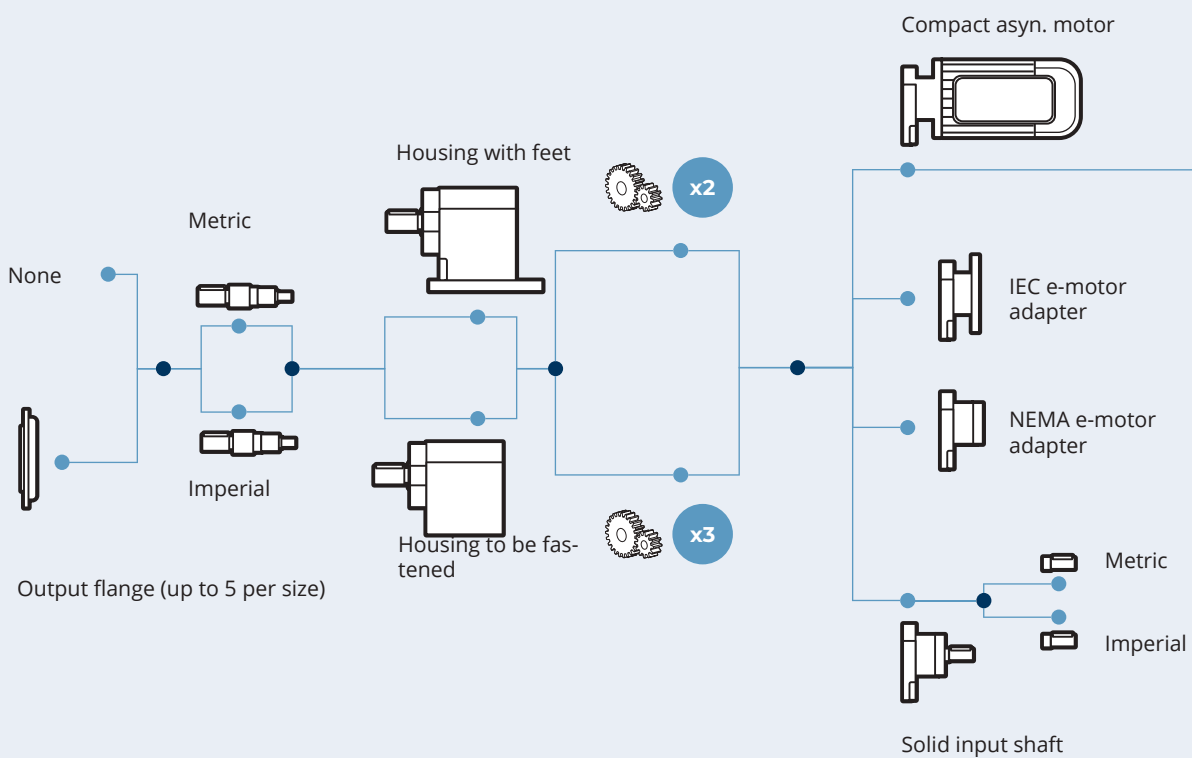
PRODUCT OVERVIEW

MODULARITY

Gear Unit – Coaxial CP



These gear unit solutions can meet **all** basic **MKT needs**.
Soon to be followed by several other products.



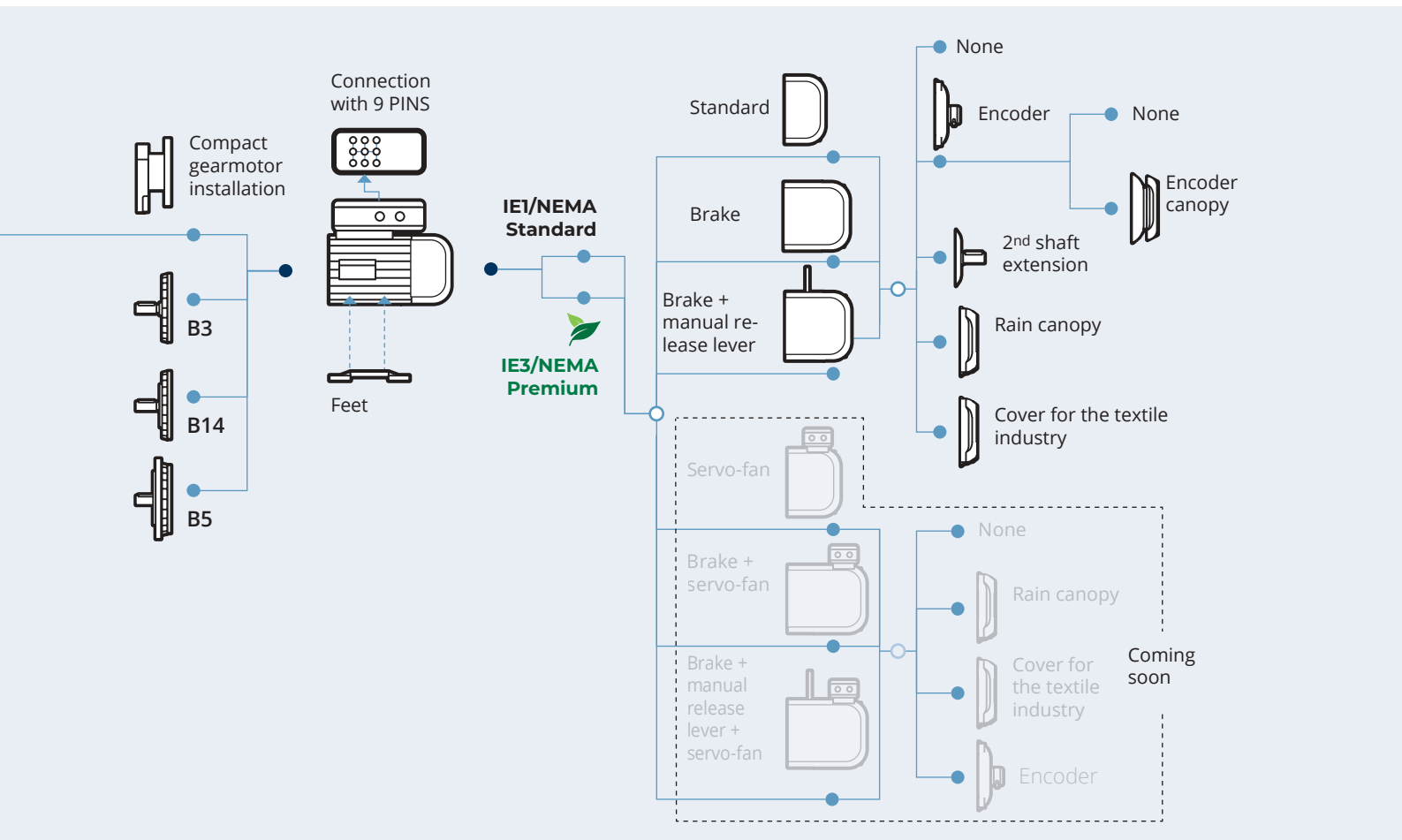
Feet and Flange config available



Electric Motor – MXN/MNN



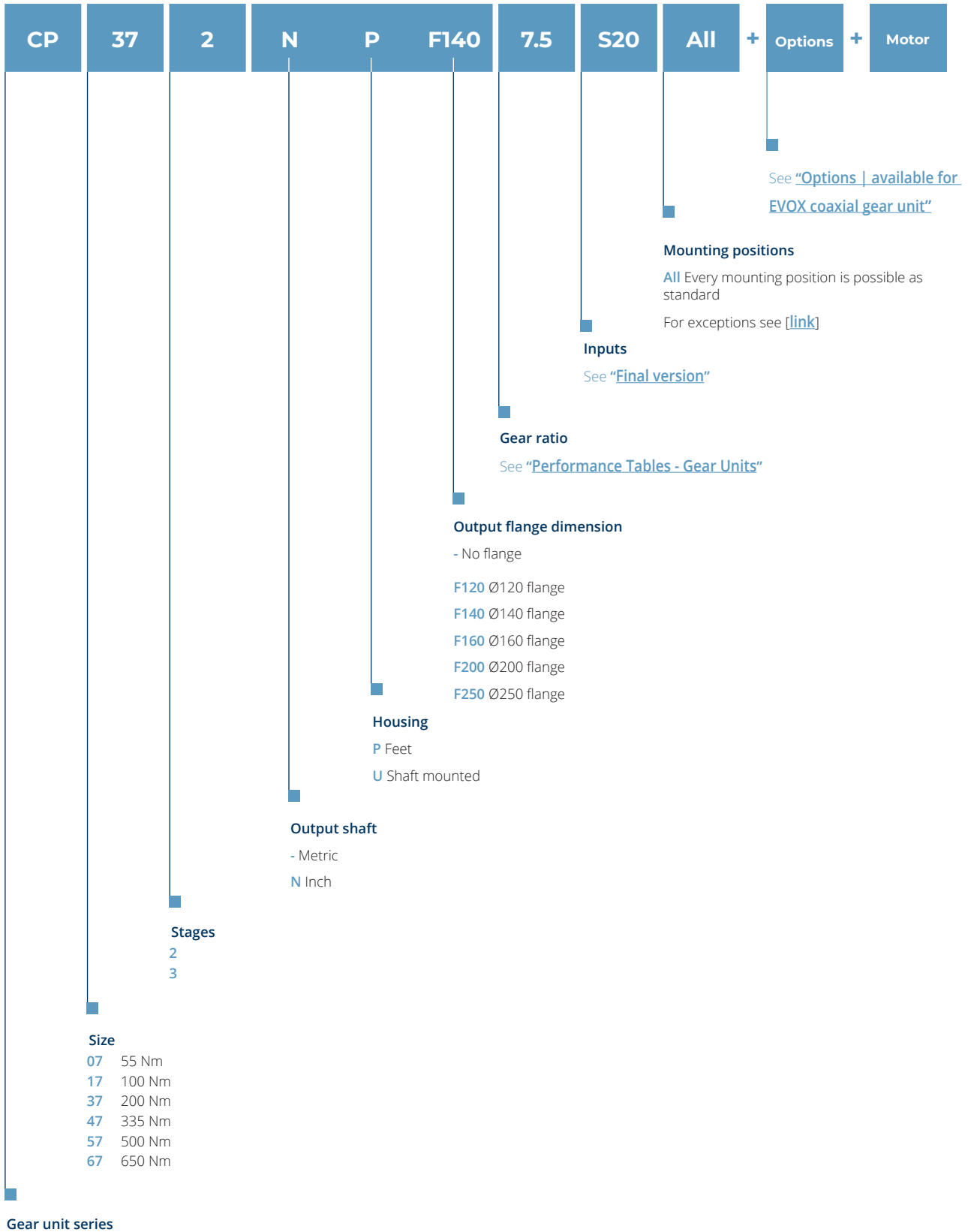
Lots of e-motor versions available to perfectly **match** your application needs.



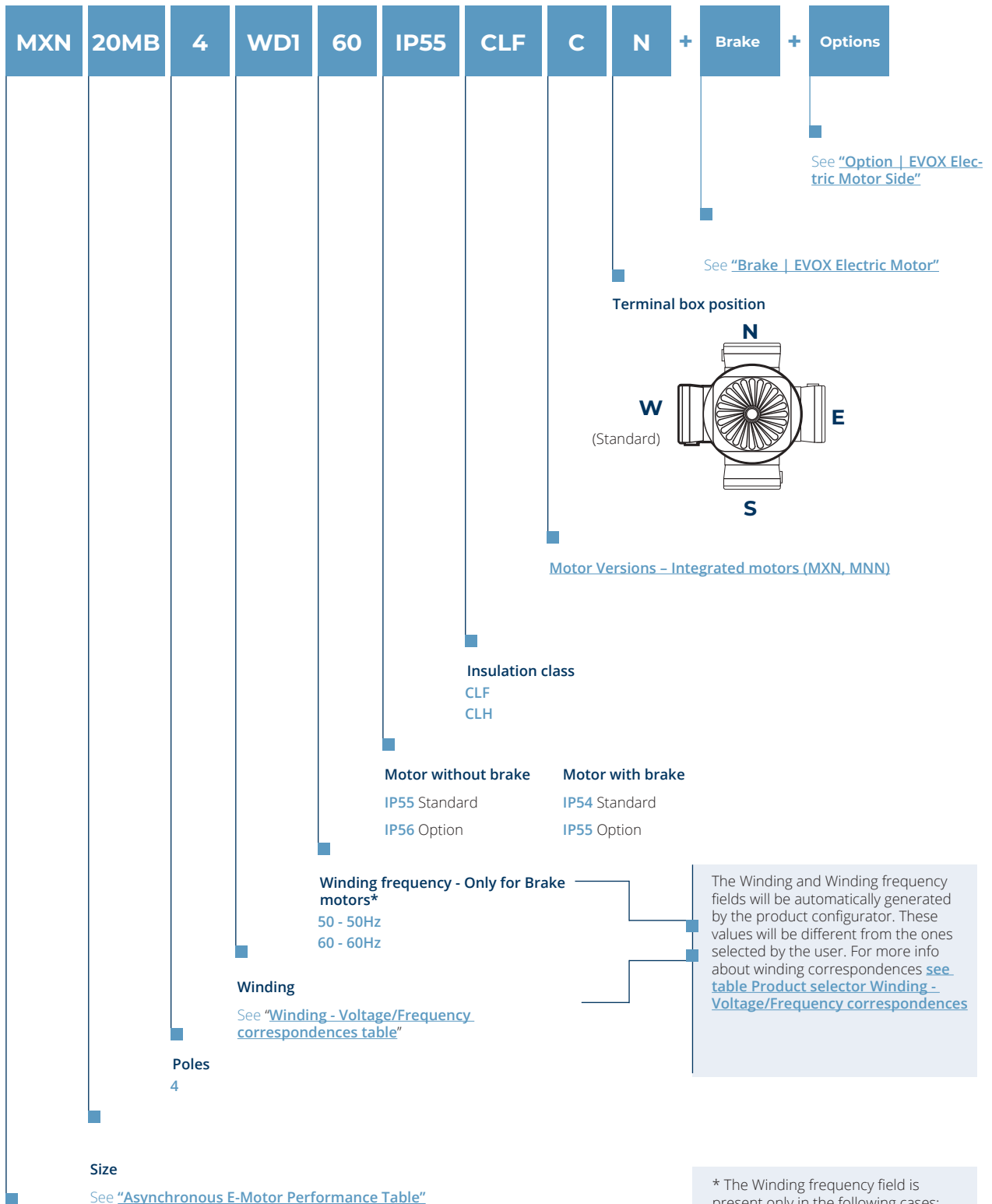
AC and DC brake are available.

DESIGNATION

Gear Unit – Coaxial CP



Electric Motor – MXN/MNN



Asynchronous Compact E-motor series

- MXN IE3/NEMA Premium
- MNN IE1/NEMA Standard

The Winding and Winding frequency fields will be automatically generated by the product configurator. These values will be different from the ones selected by the user. For more info about winding correspondences see [table Product selector Winding - Voltage/Frequency correspondences](#)

* The Winding frequency field is present only in the following cases:

- FD brake with direct power supply (DIR)
- FA brake, with separate power supply (SA)



DESIGNATION

VERSIONS

Gear Unit – Coaxial CP

Input table

Input type	Sizes								
	P56	P63	P71	P80	P90	P100	P112	P132	
IEC motor adapter	P56	P63	P71	P80	P90	P100	P112	P132	
Compact motor adapters	-	S05	S10	S20	S25	S30	Coming soon		
Solid Shaft	HS1			HS2		HS3			
NEMA motor adapter			N56	N143	N145	N182	N184	N213	N215
CP07									
CP17		X							
CP37		X		X					
CP47				X		X			
CP57	Coming soon								
CP67	Coming soon								

■ IEC and NEMA input coupling available

■ X Solid input shaft coupling available

Output flange table

	Sizes				
	F120	F140	F160	F200	F250
CP07	X				
CP17	X	X	X		
CP37	X	X	X	X	X
CP47		X	X	X	X
CP57	Coming soon				
CP67	Coming soon				

■ Output flange compatible

■ X PF feet and flange version availability



MOUNTING POSITIONS

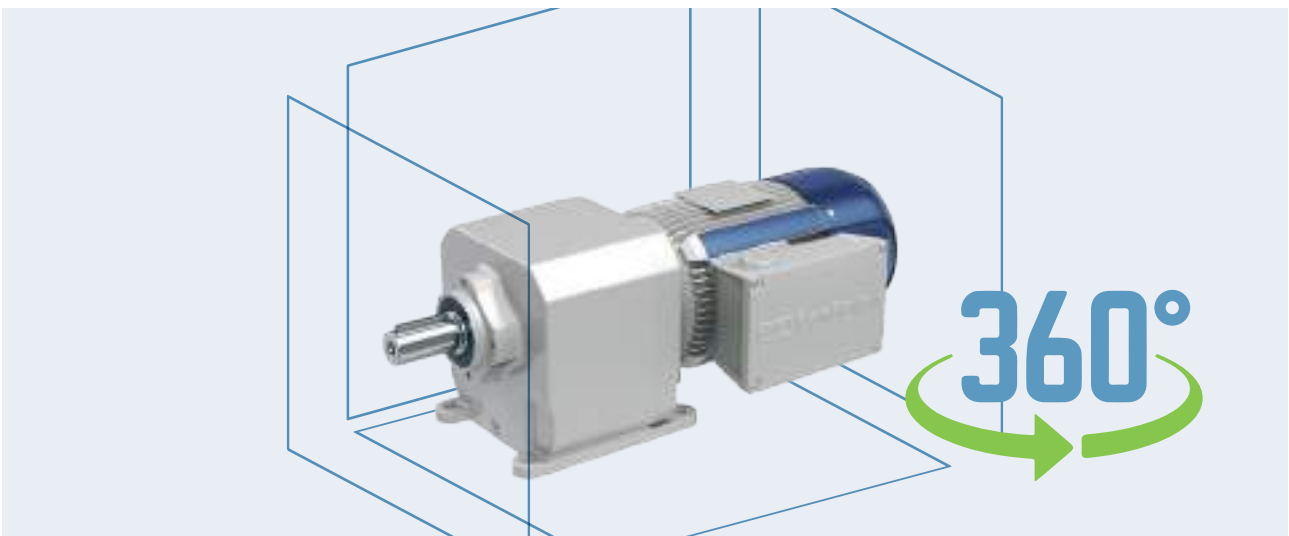
Gear Unit – Coaxial CP

Every mounting position possible with one code

Thanks to the enhanced performances and the reliability of components, this gear unit can be mounted in every possible position as standard.

EVOX CP is supplied with a long-life oil fill and a single level for every possible mounting position. By selecting the SO option, the gear unit is shipped by Bonfiglioli without oil and can be filled by the customer, using a special plug.

This feature can increase the flexibility of your design and allow you to install this product in any possible position.



Mounting position limitations

Reinforced output bearings option [OHA - OHR]

If you need EVOX CP with both:

- OHR or OHA
- vertical position with the output shaft up, or a position within 60° of it, facing any direction, [contact Bonfiglioli's Technical Service](#) and check whether the standard oil level is correct for your application or if a customised solution is required.

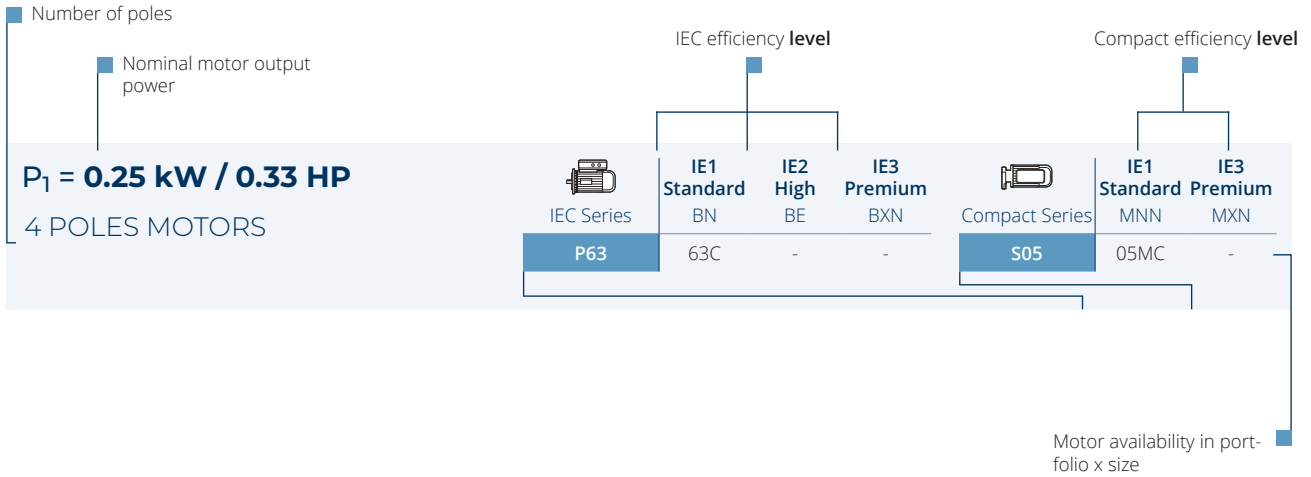




PERFORMANCE

EVOX COAXIAL GEARMOTOR

Tables introduction



Power		50 Hz				60 Hz				i	Size	Stages	IEC Input	Compact EVOX Input
kW	HP	n ₂ rpm	M ₂		S	n ₂ rpm	M ₂		S					
			Nm	lb-in			Nm	lb-in						
0.25	0.33	126.1	19	168	2.9					CP 07	2	P63	S05	
		117.0	21	186	2.7									
		99.9	24	212	2.3	126.4	19	168	2.9					13.4

Annotations:

- Gear Unit data calculated @ indicated rpm in input and **50Hz** motor frequency
- Gear Unit data calculated @ indicated rpm in input and **60Hz** motor frequency
- Gear ratio
- Gear unit size
- Gear unit stages
- Service factor: $S = M_{n2}/M_2$
You can see Mn2 in the Gear Unit Performance Table
- Output torque calculated with the indicated compact IE3/NEMA Premium motor
- Output speed calculated with the indicated compact IE3/NEMA Premium motor
- IEC Motor size
- Compact Motor size

Performance data are calculated at a temperature of 25°C, and altitude < 1000m.

Refer to the [Configuration Guidelines & Setup](#) section, before configuring the motor, to select the correct power.



PERFORMANCE

EVOX COAXIAL GEARMOTOR

Performance Table

P₁ = 0.06 kW / 0.08 HP
4 POLES MOTORS

		IEC Series			Compact Series									
		P56			S0									
		IE1 Standard BN			IE2 High BE			IE3 Premium BXN						
		MNN			MXN									
Power	50 Hz				60 Hz				i	Size	Stages	IEC Input	Compact EVOX Input	
	n ₂	M ₂		S	n ₂	M ₂		S						
kW	HP	rpm	Nm	lb-in										
0.06	0.09	30.4	19	168	2.9				46.1	CP07	3	P56	S0	
		28.2	20	177	2.7				49.6					
		26.2	22	195	2.5				53.5					
		22.4	26	230	2.1	27.2	21	186	2.6					62.6
		18.9	30	265	1.8	22.9	25	221	2.2					74.2
		17.2	33	292	1.7	20.9	27	239	2.0					81.2

P₁ = 0.09 kW / 0.12 HP
4 POLES MOTORS

		IEC Series			Compact Series									
		P56			S0									
		IE1 Standard BN			IE2 High BE			IE3 Premium BXN						
		MNN			MXN									
Power	50 Hz				60 Hz				i	Size	Stages	IEC Input	Compact EVOX Input	
	n ₂	M ₂		S	n ₂	M ₂		S						
kW	HP	rpm	Nm	lb-in										
0.09	0.12	42.6	20	177	2.7				32.9	CP07	3	P56	S0	
		36.0	24	212	2.3	43.7	20	177	2.8					38.9
		32.7	26	230	2.1	39.7	22	195	2.5					42.9
		30.4	28	248	1.9	36.9	23	203	2.4					46.1
		28.2	30	265	1.8	34.3	25	221	2.2					49.6
		26.2	33	292	1.7	31.8	27	239	2.0					53.5
		22.4	38	336	1.4	27.2	32	283	1.7					62.6
		18.9	46	407	1.2	22.9	37	327	1.5					74.2
		17.2	50	442	1.1	20.9	41	363	1.3					81.2



P₁ = 0.12 kW / 0.16 HP
4 POLES MOTORS



IE1
Standard
BN

IE2
High
BE

IE3
Premium
BXN



IE1
Standard
MNN

IE3
Premium
MXN

IEC Series
P63

63 A

63 A

63 MA

Compact Series
S05

05 MA

05 MA

Power		50 Hz				60 Hz				i	Size	Stages	IEC Input	Compact EVOX Input		
kW	HP	n ₂	M ₂		S	n ₂	M ₂		S							
		rpm	Nm	lb-in		rpm	Nm	lb-in								
0.12	0.16	62.5	18	159	3.0					22.5	CP07	3	P63	S05		
		54.1	21	186	2.6				26.0							
		50.1	23	203	2.4	61.4	19	168	2.9	28.1						
		42.8	27	239	2.1	52.5	22	195	2.5	32.9						
		36.1	32	283	1.7	44.3	26	230	2.1	38.9						
		32.8	35	309	1.6	40.2	28	248	1.9	42.9						
		30.5	38	336	1.5	37.4	31	274	1.8	46.1						
		28.4	40	354	1.4	34.8	33	292	1.7	49.6						
		26.3	44	389	1.3	32.3	36	318	1.5	53.5						
		22.5	51	451	1.1	27.5	42	371	1.3	62.6						
		19.0	60	531	0.9	23.2	49	433	1.1	74.2						
							21.2	54	477	1.0	81.2					
				33.7	34	301	2.9				41.8	CP17	3	P63	S05	
				28.9	40	354	2.5				48.7					
				26.8	43	380	2.3	32.9	35	309	2.9					52.4
				24.9	46	407	2.2	30.5	38	336	2.7					56.6
				21.3	54	477	1.9	26.0	44	389	2.3					66.2
				17.9	64	566	1.6	22.0	52	460	1.9					78.5
				16.4	70	619	1.4	20.1	57	504	1.8					85.9
				16.8	68	601	2.9				83.6	CP37	3	P63	S05	
		15.7	73	645	2.7				89.7							
		13.5	85	752	2.4	16.6	69	610	2.9	104.0						
		11.5	99	875	2.0	14.1	81	716	2.5	122.1						
		10.6	108	955	1.8	12.9	89	787	2.3	133.2						
		8.9	129	1141	2.6				158.0	CP47	3					P63	S05
		8.2	140	1238	2.4	10.0	114	1008	2.9			171.9				

PERFORMANCE

EVOX COAXIAL GEARMOTOR

Performance Table

Power		50 Hz				60 Hz				i	Size	Stages	IEC Input		Compact EVOX Input			
		n ₂	M ₂		S	n ₂	M ₂		S				IEC	Compact				
kW	HP	rpm	Nm	lb-in		rpm	Nm	lb-in										
0.18	0.25	86.4	20	177	2.8					15.9	CP07	2	P63	S05				
		78.9	22	195	2.5					17.4								
		65.5	26	230	2.1	82.0	21	186	2.6	21.0	CP07	3	P63	S05				
		61.0	28	248	2.0	76.4	23	203	2.4	22.5								
		52.8	33	292	1.7	66.1	26	230	2.1	26.0								
		48.9	35	309	1.6	61.3	28	248	2.0	28.1								
		41.8	41	363	1.3	52.3	33	292	1.7	32.9								
		35.3	49	433	1.1	44.2	39	345	1.4	38.9								
		32.0	54	477	1.0	40.1	43	380	1.3	42.9								
		29.8	58	513	1.0	37.3	46	407	1.2	46.1								
						34.7	50	442	1.1	49.6								
						32.2	53	469	1.0	53.5								
										27.2					CP17	3	P63	S05
		50.4	34	301	2.9					31.3								
		43.9	39	345	2.6					36.0								
		38.1	45	398	2.2	47.7	36	318	2.8	38.8								
		35.4	49	433	2.1	44.3	39	345	2.6	41.8								
		32.8	52	460	1.9	41.1	42	371	2.4	48.7								
		28.2	61	539	1.6	35.3	49	433	2.1	52.4								
		26.2	66	584	1.5	32.8	52	460	1.9	56.6								
		24.3	71	628	1.4	30.4	57	504	1.8	66.2								
		20.7	83	734	1.2	26.0	66	584	1.5	78.5								
		17.5	98	867	1.0	21.9	78	690	1.3	85.9								
		16.0	108	955	0.9	20.0	86	760	1.2		CP37	3	P63	S05				
		25.6	67	592	3.0					53.6								
		23.6	73	645	2.7					58.2								
		22.7	76	672	2.6					60.4								
		20.1	86	760	2.3	25.1	68	601	2.9	68.5								
		18.8	91	805	2.2	23.5	73	645	2.7	73.1								
		16.4	105	928	1.9	20.6	84	743	2.4	83.6								
		15.3	112	990	1.8	19.2	90	796	2.2	89.7								
		13.2	130	1149	1.5	16.5	104	920	1.9	104.0								
		11.2	153	1353	1.3	14.1	122	1079	1.6	122.1								
		10.3	167	1477	1.2	12.9	133	1176	1.5	133.2								



P₁ = 0.18 kW / 0.25 HP
4 POLES MOTORS

		IEC Series			Compact Series				
		IE1 Standard	IE2 High	IE3 Premium	IE1 Standard	IE3 Premium			
		BN	BE	BXN	MNN	MXN			
		P63	63B	63B	S05	05MB	05MB		

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input	
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S						
		rpm	Nm	lb-in	rpm	Nm	lb-in						
0.18	0.25	15.2	113	999	3.0				CP47	3	P63	S05	
		14.3	120	1061	2.8								
		12.6	137	1211	2.4								
		11.7	147	1300	2.3	14.7	117	1035					2.9
		10.2	169	1494	2.0	12.7	135	1194					2.5
		8.7	198	1751	1.7	10.9	158	1397					2.1
		8.0	215	1901	1.6	10.0	172	1521					1.9
								96.1					
								109.4					
								117.1					
								135.1					
								158.0					
								171.9					

P₁ = 0.25 kW / 0.33 HP
4 POLES MOTORS

		IEC Series			Compact Series				
		IE1 Standard	IE2 High	IE3 Premium	IE1 Standard	IE3 Premium			
		BN	BE	BXN	MNN	MXN			
		P63	63C	-	S05	05MC	-		
		P71	71 A	71 A	S10	10 MA	10 MA		

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input	
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S						
		rpm	Nm	lb-in	rpm	Nm	lb-in						
0.25	0.33	126.1	19	168	2.9				CP07	2	P63	S05	
		117.0	21	186	2.7								
		99.9	24	212	2.3	126.4	19	168					2.9
		84.3	29	256	1.9	106.7	22	195					2.5
		77.0	31	274	1.8	97.4	24	212					2.3
		63.9	38	336	1.5	80.8	29	256					1.9
		59.5	41	363	1.4	75.3	32	283					1.7
		51.5	47	416	1.2	65.1	36	318					1.5
		47.7	51	451	1.1	60.4	39	345		1.4			
		40.8	59	522	0.9	51.6	46	407		1.2			
						43.5	55	486		1.0			
						39.5	60	531		0.9			
											21.0		
											22.5		
											26.0		
											28.1		
								32.9					
								38.9					
								42.9					
								19.7					
								23.2					
								25.2					
								27.2					
								31.3					
								36.0					
								38.8					
								41.8					
								48.7					
								52.4					
								56.6					
								66.2					
								78.5					



PERFORMANCE

EVOX COAXIAL GEARMOTOR

Performance Table

Power		50 Hz				60 Hz				i	Size	Stages	IEC Series		Compact Series								
		n ₂	M ₂		S	n ₂	M ₂		S				IEC Series		Compact Series								
			rpm	Nm			lb-in	rpm					Nm	lb-in	IE1 Standard	IE2 High	IE3 Premium	IE1 Standard	IE3 Premium				
0.25	0.33	35.0	69	610	2.9				38.3	CP37	3	P63	P63	IE1 Standard	IE2 High	IE3 Premium	S05	IE1 Standard	IE3 Premium				
		32.8	74	654	2.7				40.9							P71	63C	-	-	S10	MNN	MXN	
		28.6	84	743	2.4				46.8								71 A	71 A	71 MA		05MC	-	
		26.7	90	796	2.2	33.8	70	619	2.8												10 MA	10 MA	
		25.0	96	849	2.1	31.6	75	663	2.7														
		23.0	105	928	1.9	29.1	82	725	2.5														
		22.2	109	964	1.8	28.0	85	752	2.4														
		19.6	123	1088	1.6	24.8	96	849	2.1														
		18.3	131	1158	1.5	23.2	102	902	2.0														
		16.0	150	1326	1.3	20.3	117	1035	1.7														
		14.9	161	1424	1.2	18.9	126	1114	1.6														
		12.9	187	1653	1.1	16.3	146	1291	1.4														
		11.0	220	1945	0.9	13.9	171	1512	1.2														
						12.7	186	1645	1.1														
		18.7	129	1141	2.6				71.6	CP47	3	P63	S05										
		16.7	144	1273	2.3	21.1	112	990	3.0														
		14.8	163	1441	2.1	18.8	127	1123	2.6														
		13.9	173	1530	1.9	17.6	135	1194	2.5														
		12.3	197	1742	1.7	15.5	153	1353	2.2														
		11.4	211	1866	1.6	14.5	164	1450	2.0														
		9.9	243	2149	1.4	12.5	189	1671	1.8														
		8.5	284	2511	1.2	10.7	221	1954	1.5														
		7.8	309	2732	1.1	9.9	241	2131	1.4														
		121.2	20	177	2.8				11.5					CP07	2	P71	S10						
		103.5	23	203	2.4	127.2	19	168	2.9														
		87.3	27	239	2.0	107.4	22	195	2.5														
		79.8	30	265	1.8	98.1	24	212	2.3														
		66.2	36	318	1.5	81.3	29	256	1.9														
		61.7	39	345	1.4	75.8	31	274	1.7														
		53.3	45	398	1.2	65.6	36	318	1.5														
		49.5	48	424	1.1	60.8	39	345	1.4														
		42.2	57	504	1.0	51.9	46	407	1.2														
						43.8	54	477	1.0														
						39.8	60	531	0.9														
		70.4	34	301	2.9				19.7	CP17	2	P71	S10										
		60.0	40	354	2.5				23.2														
		55.0	43	380	2.3	67.6	35	309	2.8														



P₁ = 0.25 kW / 0.33 HP
4 POLES MOTORS

IEC Series	IE1 Standard	IE2 High	IE3 Premium	Compact Series	IE1 Standard	IE3 Premium
	BN	BE	BXN		MNN	MXN
	P63	63C	-		-	S05	05MC	-
P71	71 A	71 A	71 MA	S10	10 MA	10 MA

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input				
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S									
		rpm	Nm lb-in		rpm	Nm lb-in										
0.25	0.33	51.0	47 416	2.1	62.6	38 336	2.6	27.2	CP17	3	P71	S10				
		44.4	54 477	1.9	54.6	44 389	2.3	31.3								
		38.5	62 548	1.6	47.3	50 442	2.0	36.0								
		35.8	67 592	1.5	44.0	54 477	1.8	38.8								
		33.2	72 637	1.4	40.8	59 522	1.7	41.8								
		28.5	84 743	1.2	35.0	68 601	1.5	48.7								
		26.5	90 796	1.1	32.5	73 645	1.4	52.4								
		24.5	97 858	1.0	30.2	79 699	1.3	56.6								
					25.8	93 822	1.1	66.2								
					21.7	110 973	0.9	78.5								
		33.9	70 619	2.8				40.9					CP37	3	P71	S10
		29.7	80 707	2.5				46.8								
		27.6	86 760	2.3	34.0	70 619	2.8	50.2								
		25.9	92 813	2.2	31.8	75 663	2.7	53.6								
		23.8	100 884	2.0	29.3	81 716	2.5	58.2								
		23.0	104 920	1.9	28.2	85 752	2.4	60.4								
		20.3	118 1043	1.7	24.9	96 849	2.1	68.5								
		19.0	126 1114	1.6	23.4	102 902	2.0	73.1								
16.6	144 1273	1.4	20.4	117 1035	1.7	83.6										
15.5	154 1362	1.3	19.0	125 1105	1.6	89.7										
13.3	179 1583	1.1	16.4	146 1291	1.4	104.0										
11.4	210 1857	1.0	14.0	171 1512	1.2	122.1										
			12.8	186 1645	1.1	133.2										
19.4	123 1088	2.7				71.6	CP47	3	P71	S10						
17.3	138 1220	2.4	21.3	112 990	3.0	80.2										
15.4	155 1371	2.2	18.9	126 1114	2.6	90.4										
14.4	165 1459	2.0	17.7	135 1194	2.5	96.1										
12.7	188 1662	1.8	15.6	153 1353	2.2	109.4										
11.9	201 1777	1.7	14.6	164 1450	2.0	117.1										
10.3	232 2051	1.4	12.6	189 1671	1.8	135.1										
8.8	272 2405	1.2	10.8	221 1954	1.5	158.0										
8.1	296 2617	1.1	9.9	241 2131	1.4	171.9										



PERFORMANCE

EVOX COAXIAL GEARMOTOR



Performance Table

P ₁ = 0.37 kW / 0.50 HP					IEC Series			IE1 Standard	IE2 High	IE3 Premium	Compact Series		IE1 Standard	IE3 Premium	
4 POLES MOTORS					P71			71B	71B	71MB	S10		10MB	10MB	
Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input			
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S						IE1 Standard	IE2 High	IE3 Premium
		rpm	Nm	lb-in	rpm	Nm	lb-in								
0.37	0.50	206.7	17	150	2.9				6.9	CP07	2	P71	S10		
		188.9	19	168	2.7				7.5						
		177.6	20	177	2.8				8.0						
		154.5	23	203	2.4	188.4	19	168	2.9					9.2	
		143.8	25	221	2.2	175.4	20	177	2.7					9.9	
		133.6	26	230	2.1	163.0	22	195	2.5					10.6	
		123.9	29	256	1.9	151.1	23	203	2.4					11.5	
		105.8	33	292	1.6	129.1	27	239	2.0					13.4	
		89.3	40	354	1.4	108.9	32	283	1.7					15.9	
		81.6	43	380	1.3	99.5	36	318	1.5					17.4	
		67.7	52	460	1.1	82.5	43	380	1.3	21.0	CP07	3	P71	S10	
		63.1	56	495	1	76.9	46	407	1.2	22.5					
						66.5	53	469	1.0	26.0					
						61.7	57	504	1.0	28.1					
		102.5	34	301	2.9					13.8	CP17	2	P71	S10	
		89.6	39	345	2.5					15.8					
		83.5	42	371	2.4	101.9	35	309	2.9	17.0					
		72	49	433	2	87.8	40	354	2.5	19.7					
		61.3	58	513	1.7	74.8	47	416	2.1	23.2					
		56.2	63	557	1.6	68.6	51	451	1.9	25.2					
		52.1	68	601	1.5	63.5	56	495	1.8	27.2	CP17	3	P71	S10	
		45.4	78	690	1.3	55.4	64	566	1.6	31.3					
		39.4	90	796	1.1	48.0	74	654	1.4	36.0					
		36.6	97	858	1	44.6	79	699	1.3	38.8					
		33.9	104	920	1	41.4	85	752	1.2	41.8					
						35.5	99	875	1.0	48.7					
						33.0	107	946	0.9	52.4					
		47.3	75	663	2.7					30.0	CP37	3	P71	S10	
		41.9	84	743	2.4	51.2	69	610	2.9	33.8					
		37	95	840	2.1	45.1	78	690	2.6	38.3					
34.7	102	902	2	42.3	84	743	2.4	40.9							
30.3	117	1035	1.7	37.0	96	849	2.1	46.8							
28.3	125	1105	1.6	34.5	102	902	2.0	50.2							
26.5	133	1176	1.5	32.3	109	964	1.8	53.6							
24.4	145	1282	1.4	29.7	119	1052	1.7	58.2							
23.5	150	1326	1.3	28.6	123	1088	1.6	60.4							
20.7	170	1503	1.2	25.3	140	1238	1.4	68.5							
19.4	182	1609	1.1	23.7	149	1317	1.3	73.1							
17	208	1839	1	20.7	171	1512	1.2	83.6							
				19.3	183	1618	1.1	89.7							
				16.6	212	1875	0.9	104.0							



P₁ = 0.37 kW / 0.50 HP



4 POLES MOTORS

	IE1 Standard	IE2 High	IE3 Premium		IE1 Standard	IE3 Premium
IEC Series	BN	BE	BXN	Compact Series	MNN	MXN
P71	71B	71B	71MB	S10	10MB	10MB

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input	
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S						
		rpm	Nm lb-in		rpm	Nm lb-in							
0.37	0.50	33.7	105 928	3				42.1	CP47	3	P71	S10	
		29.6	119 1052	2.8				47.9					
		27.7	128 1132	2.6				51.3					
		25.6	138 1220	2.2	31.2	113 999	2.7	55.4					
		23.4	151 1335	2.2	28.5	124 1096	2.7	60.8					
		19.8	178 1574	1.9	24.2	146 1291	2.3	71.6					
		17.7	200 1768	1.7	21.6	164 1450	2.0	80.2					
		15.7	225 1989	1.5	19.2	184 1627	1.8	90.4					
		14.8	239 2113	1.4	18.0	196 1733	1.7	96.1					
		13	272 2405	1.2	15.8	223 1972	1.5	109.4					
		12.1	291 2573	1.1	14.8	239 2113	1.4	117.1					
		10.5	336 2971	1	12.8	276 2440	1.2	135.1					
													158.0
													171.9

P₁ = 0.55 kW / 0.75 HP

4 POLES MOTORS

	IE1 Standard	IE2 High	IE3 Premium		IE1 Standard	IE3 Premium
IEC Series	BN	BE	BXN	Compact Series	MNN	MXN
P71	71C	-	-	S10	10MC	-
P80	80 A	80 A	80 MA	S20	20 MA	20 MA

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S					
		rpm	Nm lb-in		rpm	Nm lb-in						
0.55	0.75	347.8	15 133	2.7				4.0	CP07	2	P71	S10
		300.8	17 150	2.6				4.6				
		278.9	19 168	2.4	343.6	15 133	2.9	5.0				
		238.2	22 195	2.3	293.5	18 159	2.8	5.8				
		201.1	26 230	1.9	247.7	21 186	2.3	6.9				
		183.7	29 256	1.8	226.3	23 203	2.2	7.5				
		172.7	30 265	1.8	212.8	25 221	2.2	8.0				
		150.2	35 309	1.6	185.1	28 248	1.9	9.2				
		139.8	38 336	1.5	172.2	31 274	1.8	9.9				
		129.9	40 354	1.4	160.0	33 292	1.7	10.6				
		120.5	44 389	1.3	148.4	36 318	1.5	11.5				
		102.9	51 451	1.1	126.8	42 371	1.3	13.4				
		86.8	60 531	0.9	107.0	49 433	1.1	15.9				



PERFORMANCE

EVOX COAXIAL GEARMOTOR

Performance Table

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input			
		n ₂	M ₂	S	n ₂	M ₂	S								
kW	HP	rpm	Nm	lb-in	rpm	Nm	lb-in								
0.55	0.75	196.0	27	239	3.0				CP17	2	P71	S10			
		182.8	29	256	2.8										
		161.8	32	283	2.8										
		136.0	39	345	2.5										
		120.5	44	389	2.3	148.5	35	309					2.8		
		106.3	49	433	2.0	131.0	40	354					2.5		
		99.7	53	469	1.9	122.8	43	380					2.3		
		87.1	60	531	1.7	107.3	49	433					2.0		
		81.2	65	575	1.5	100.1	53	469					1.9		
		70.0	75	663	1.3	86.3	61	539					1.6		
		59.6	88	778	1.1	73.4	72	637	1.4						
		54.7	96	849	1.0	67.4	78	690	1.3						
		50.7	104	920	1.0	62.4	84	743	1.2	CP17	3	P71	S10		
						54.4	97	858	1.0						
				176.2	30	265	2.9			CP37	2	P71	S10		
				152.8	34	301	2.6	188.3	28					248	3.0
				130.7	40	354	2.3	161.0	33					292	2.6
				76.7	68	601	2.9								
				71.7	73	645	2.7								
				62.1	85	752	2.4	76.4	69					610	2.9
		53.1	99	875	2.0	65.4	81	716	2.5						
		46.0	114	1008	1.8	56.7	93	822	2.2						
		40.8	129	1141	1.6	50.2	105	928	1.9						
		36.0	146	1291	1.4	44.3	119	1052	1.7						
		33.7	155	1371	1.3	41.6	127	1123	1.6						
		29.5	178	1574	1.1	36.3	145	1282	1.4						
		27.5	191	1689	1.0	33.9	156	1379	1.3						
		25.8	204	1804	1.0	31.7	166	1468	1.2						
		23.7	221	1954	0.9	29.2	181	1600	1.1						
						28.1	187	1653	1.1						
						24.8	212	1875	0.9						
		60.8	86	760	2.9				CP47	2	P71	S10			
		52.9	99	875	2.6	65.1	81	716					3.0		
		45.4	115	1017	2.3	56.0	94	831					2.6		
		41.8	125	1105	2.1	51.5	102	902					2.5		



P₁ = 0.55 kW / 0.75 HP

4 POLES MOTORS

IEC Series	IE1 Standard	IE2 High	IE3 Premium	Compact Series	IE1 Standard	IE3 Premium
	BN	BE	BXN		MNN	MXN
	P71	71C	-		-	S10	10MC	-
P80	80 A	80 A	80 MA	S20	20 MA	20 MA

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S					
		rpm	Nm lb-in		rpm	Nm lb-in						
0.55	0.75	51.8	101 893	2.9				26.6	CP47	3	P71	S10
		44.0	119 1052	2.6	54.2	97 858	3.0	31.4				
		39.2	134 1185	2.3	48.4	109 964	2.7	35.2				
		34.8	150 1326	2.1	42.9	123 1088	2.5	39.6				
		32.8	160 1415	1.9	40.4	131 1158	2.4	42.1				
		28.8	182 1609	1.8	35.5	149 1317	2.2	47.9				
		26.9	195 1724	1.7	33.1	159 1406	2.1	51.3				
		24.9	211 1866	1.5	30.7	172 1521	1.8	55.4				
		22.7	231 2043	1.5	28.0	188 1662	1.8	60.8				
		19.3	272 2405	1.2	23.8	222 1963	1.5	71.6				
		17.2	305 2697	1.1	21.2	249 2202	1.3	80.2				
		15.3	343 3033	1.0	18.8	280 2476	1.2	90.4				
		14.4	365 3227	0.9	17.7	298 2635	1.1	96.1				
					15.5	339 2997	1.0	109.4				
					14.5	363 3210	0.9	117.1				
		191.7	27 239	2.9				7.6	CP17	2	P80	S20
		169.6	31 274	2.9				8.5				
		142.6	37 327	2.6				10.2				
		126.4	42 371	2.4	153.3	34 301	2.9	11.5				
		111.5	47 416	2.1	135.2	39 345	2.6	13.0				
		104.6	50 442	2.0	126.8	41 363	2.4	13.8				
		91.4	57 504	1.7	110.8	47 416	2.1	15.8				
		85.2	62 548	1.6	103.3	51 451	2.0	17.0				
		75.1	70 619	2.9				19.3	CP37	2	P80	S20
		48.2	109 964	1.8	58.5	90 796	2.2	30.0	CP37	3	P80	S20
		42.8	123 1088	1.6	51.9	101 893	2.0	33.8				
		37.7	139 1229	1.4	45.8	115 1017	1.7	38.3				
		35.4	148 1309	1.3	42.9	122 1079	1.6	40.9				
		30.9	170 1503	1.2	37.5	140 1238	1.4	46.8				
		28.8	182 1609	1.1	35.0	150 1326	1.3	50.2				
		27.0	194 1715	1.0	32.8	160 1415	1.2	53.6				
		23.9	219 1936	0.9	29.0	181 1600	1.1	60.4				
					25.6	205 1813	1.0	68.5				
					24.0	219 1936	0.9	73.1				



PERFORMANCE

EVOX COAXIAL GEARMOTOR

Performance Table

P₁ = 0.55 kW / 0.75 HP																			
4 POLES MOTORS																			
		IEC Series			IE1 Standard BN			IE2 High BE			IE3 Premium BXN			Compact Series		IE1 Standard MNN		IE3 Premium MXN	
		P71			71C			-			-			S10		10MC		-	
		P80			80 A			80 A			80 MA			S20		20 MA		20 MA	
Power		50 Hz			60 Hz			i		Size		Stages	IEC Input	Compact EVOX Input					
kW	HP	n ₂	M ₂		S	n ₂	M ₂		S										
rpm	Nm	lb-in			rpm	Nm	lb-in												
0.55	0.75	54.3	97	858	3.0					26.6	CP47	3	P80		S20				
		46.1	114	1008	2.7				31.4										
		41.2	128	1132	2.4	49.9	105	928	2.8	35.2									
		36.5	144	1273	2.2	44.3	119	1052	2.6	39.6									
		34.3	153	1353	2.0	41.7	126	1114	2.5	42.1									
		30.2	174	1539	1.9	36.6	143	1264	2.3	47.9									
		28.2	186	1645	1.8	34.2	154	1362	2.2	51.3									
		26.1	201	1777	1.5	31.7	166	1468	1.9	55.4									
		23.8	221	1954	1.5	28.9	182	1609	1.8	60.8									
		20.2	260	2299	1.3	24.5	214	1892	1.6	71.6									
		18.0	291	2573	1.2	21.9	240	2122	1.4	80.2									
		16.0	328	2900	1.0	19.4	270	2387	1.2	90.4									
		15.1	349	3086	1.0	18.3	288	2547	1.2	96.1									
							16.0	327	2891	1.0						109.4			
							15.0	350	3095	1.0						117.1			

P₁ = 0.75 kW / 1.00 HP																			
4 POLES MOTORS																			
		IEC Series			IE1 Standard BN			IE2 High BE			IE3 Premium BXN			Compact Series		IE1 Standard MNN		IE3 Premium MXN	
		P80			80B			80B			80MB			S20		20MB		20MB	
Power		50 Hz			60 Hz			i		Size		Stages	IEC Input	Compact EVOX Input					
kW	HP	n ₂	M ₂		S	n ₂	M ₂		S										
rpm	Nm	lb-in			rpm	Nm	lb-in												
0.75	1.00	321.7	22	195	2.9					4.5	CP17	2	P80		S20				
		285.1	25	221	2.8				5.1										
		251.9	28	248	2.6				5.8										
		235.9	30	265	2.5	285.7	25	221	3	6.2									
		206.1	35	309	2.3	249.6	29	256	2.8	7.0									
		192.2	37	327	2.1	232.7	31	274	2.6	7.6									
		170.1	42	371	2.1	206	35	309	2.6	8.5									
		143	50	442	1.9	173.1	41	363	2.3	10.2									
		126.7	57	504	1.8	153.4	47	416	2.1	11.5									
		111.8	64	566	1.6	135.4	53	469	1.9	13.0									
		104.8	68	601	1.5	127	56	495	1.8	13.8									
		91.6	78	690	1.3	110.9	65	575	1.5	15.8									
		85.4	84	743	1.2	103.4	69	610	1.4	17.0									



P₁ = 0.75 kW / 1.00 HP

4 POLES MOTORS



IEC Series

IE1
Standard
BN

IE2
High
BE

IE3
Premium
BXN



Compact Series

IE1
Standard
MNN

IE3
Premium
MXN

P80

80B

80B

80MB

S20

20MB

20MB

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input			
kW	HP	n ₂	M ₂		S	n ₂	M ₂						S		
		rpm	Nm	lb-in		rpm	Nm	lb-in							
0.75	1.00	123.2	58	513	3.0										
		109.9	65	575	2.8										
		91.7	78	690	2.5	111.1	64	566	3	11.8	CP37	2	P80	S20	
		80.6	89	787	2.3	97.6	73	645	2.7	13.2					
		75.3	95	840	2.1	91.2	79	699	2.5	15.8					
		48.4	148	1309	1.4	58.6	122	1079	1.6	18.0					
		42.9	167	1477	1.2	51.9	138	1220	1.4	19.3					
		37.8	189	1671	1.1	45.8	156	1379	1.3	30.0	CP37	3	P80	S20	
		35.5	202	1786	1	42.9	167	1477	1.2	33.8					
							37.5	191	1689	1	38.3				
							35	205	1813	1	40.9				
							32.8	218	1928	0.9	46.8				
											50.2				
											53.6				
											21.3	CP47	2	P80	S20
											22.7				
											24.3	CP47	3	P80	S20
											26.6				
											24.3				
											26.6				
											31.4				
											35.2				
											39.6				
											42.1				
											47.9				
											51.3				
											55.4				
											60.8				
											71.6				
											80.2				
									90.4						

PERFORMANCE

EVOX COAXIAL GEARMOTOR



Performance Table

Power		50 Hz				60 Hz				i	Size	Stages	IEC Input		Compact EVOX Input	
		n ₂	M ₂		S	n ₂	M ₂		S				IEC	Compact		
kW	HP	rpm	Nm	lb-in		rpm	Nm	lb-in								
1.1	1.50	339.1	31	274	2.8					4.3	CP37	2	P90	S25		
		225.2	47	416	2.8					6.4						
		184.9	57	504	2.4	224.0	47	416	2.7	7.8						
		144.8	73	645	2.2	175.4	60	531	2.7	10.0						
		122.9	85	752	2.0	148.9	71	628	2.5	11.8						
		109.7	96	849	1.9	132.9	79	699	2.3	13.2						
		91.5	115	1017	1.7	110.9	95	840	2.0	15.8						
		80.4	131	1158	1.5	97.4	108	955	1.9	18.0						
		75.2	140	1238	1.4	91.1	115	1017	1.7	19.3						
		48.3	218	1928	0.9	58.5	180	1592	1.1	30.0					CP37	3	P90	S25
						51.8	203	1795	1.0	33.8						
				181.9	58	513	2.9					CP47	2	P90	S25	
				119.2	88	778	2.8									8.0
				102.1	103	911	2.6									12.2
				91.6	115	1017	2.4	111.0	95	840	2.9					14.2
				81.8	128	1132	2.3	99.1	106	937	2.7					15.8
				77.1	136	1203	2.2	93.4	112	990	2.6					17.7
				68.1	154	1362	2.0	82.5	127	1123	2.4					18.8
				63.8	165	1459	1.9	77.2	136	1203	2.3					21.3
				59.6	176	1556	1.6	72.2	145	1282	1.8					22.7
				54.4	193	1707	1.5	65.9	159	1406	1.7					24.3	CP47	3	P90	S25
				46.2	228	2016	1.4	55.9	188	1662	1.5	26.6				
				41.2	255	2255	1.2	49.9	211	1866	1.4	31.4				
				36.6	287	2538	1.1	44.3	237	2096	1.3	35.2				
				34.4	306	2706	1.0	41.6	252	2228	1.2	39.6				
				30.2	348	3077	0.9	36.6	287	2538	1.1	42.1				
				28.2	372	3289	0.9	34.2	307	2715	1.1	47.9				
								31.6	332	2936	0.9	51.3				
						28.9	364	3219	0.9	55.4						
										60.8						



P₁ = 1.5 kW / 2.00 HP

4 POLES MOTORS

	IE1 Standard	IE2 High	IE3 Premium		IE1 Standard	IE3 Premium
IEC Series	BN	BE	BXN	Compact Series	MNN	MXN
P90	90LA	90LA	90L	S25	-	25L

Power		50 Hz			60 Hz			i	Size	Stages	IEC Input	Compact EVOX Input						
kW	HP	n ₂	M ₂	S	n ₂	M ₂	S											
		rpm	Nm lb-in		rpm	Nm lb-in												
1.5	2.00	640.4	22 195	3				2.3	CP37	2	P90	S25						
		533.7	27 239	2.7				2.7										
		453.1	32 283	2.5	550.3	26 230	2.8	3.2										
		423.8	34 301	3				3.4										
		354.9	40 354	2.7				4.1										
		337.5	42 371	2	409.8	35 309	2.3	4.3										
		301.5	48 424	2.5	366.1	39 345	2.8	4.8										
		268.8	53 469	2.3	326.5	44 389	2.6	5.4										
		224.1	64 566	2	272.2	53 469	2.3	6.4										
		184	78 690	1.7	223.5	64 566	2	7.8										
		144.1	99 875	1.6	175	82 725	2	10.0										
		122.3	117 1035	1.5	148.6	96 849	1.8	11.8										
		109.2	131 1158	1.4	132.6	108 955	1.7	13.2										
		91.1	157 1388	1.2	110.6	129 1141	1.5	15.8										
		80.1	179 1583	1.1	97.2	147 1300	1.4	18.0										
		74.8	191 1689	1	90.9	158 1397	1.3	19.3										
		1.5	2.00	480.3	30 265	2.8								3.0	CP47	2	P90	S25
				432.7	33 292	2.7								3.3				
292.9	49 433			2.8				4.9										
263.4	54 477			2.7				5.5										
225.9	63 557			2.5	274.3	52 460	2.8	6.4										
202.7	71 628			2.3	246.1	58 513	2.6	7.1										
181	79 699			2.1	219.8	65 575	2.4	8.0										
167.8	85 752			2.5				8.6										
148.9	96 849			2.3	180.8	79 699	2.8	9.7										
131.7	109 964			2.3	160	90 796	2.7	10.9										
118.6	121 1070			2.1	144	99 875	2.5	12.2										
101.6	141 1247			1.9	123.4	116 1026	2.3	14.2										
91.2	157 1388			1.8	110.8	129 1141	2.1	15.8										
81.4	176 1556			1.6	98.9	145 1282	2	17.7										
76.7	187 1653			1.6	93.2	154 1362	1.9	18.8										
67.7	211 1866			1.5	82.3	174 1539	1.8	21.3										
63.5	226 1998			1.4	77.1	186 1645	1.7	22.7										
1.5	2.00			59.3	241 2131	1.2	72.0	199 1760	1.3	24.3	CP47	3	P90	S25				
		54.1	265 2343	1.1	65.7	218 1928	1.2	26.6										
		45.9	312 2759	1	55.8	257 2272	1.1	31.4										
					49.8	288 2547	1	35.2										
					44.2	324 2865	1	39.6										



PERFORMANCE

EVOX COAXIAL GEARMOTOR

Performance Table

Power		50 Hz				60 Hz				i	Size	Stages	IEC Input		Compact EVOX Input				
		n ₂	M ₂		S	n ₂	M ₂		S				IEC	Compact					
kW	HP	rpm	Nm	lb-in		rpm	Nm	lb-in											
2.2	3.0	617.8	34	301	2.9					2.4	CP47	2	P100	S30					
		486	43	380	2.7					3.0									
		437.8	48	424	2.8					3.3									
		377.7	56	495	2.7					3.9									
		335.2	63	557	2.6					4.4									
		296.3	71	628	2.4	358.7	59	522	2.9	4.9									
		266.5	79	699	2.3	322.7	65	575	2.8	5.5									
		228.5	92	813	2.1	276.6	76	672	2.5	6.4									
		205.1	102	902	2	248.2	85	752	2.4	7.1									
		183.2	115	1017	1.8	221.7	95	840	2.2	8.0									
		169.7	124	1096	1.7	205.5	102	902	2.1	8.6									
		150.6	139	1229	1.6	182.3	115	1017	2	9.7									
		133.3	158	1397	1.6	161.3	130	1149	1.9	10.9									
		120	175	1547	1.4	145.3	145	1282	1.7	12.2									
		102.8	204	1804	1.3	124.5	169	1494	1.6	14.2									
		92.3	228	2016	1.2	111.7	188	1662	1.5	15.8									
		82.4	255	2255	1.1	99.7	211	1866	1.4	17.7									
							72.7	289	2555	0.9					24.3	CP47	3		



P₁ = 3.0 kW / 4.00 HP

4 POLES MOTORS



IEC Series

IE1
Standard
BN

IE2
High
BE

IE3
Premium
BXN



Compact Series

IE1
Standard
MNN

IE3
Premium
MXN

P100

100LB

100LB

100LB

S30

-

30LB

Power		50 Hz				60 Hz				i	Size	Stages	IEC Input	Compact EVOX Input	
kW	HP	n ₂	M ₂		S	n ₂	M ₂		S						
		rpm	Nm	lb-in		rpm	Nm	lb-in							
3.0	4.0	615.3	47	416	2.1	746.2	38	336	2.4	CP47	2	P100	S30		
		484	59	522	1.9	587	49	433	2.3					3.0	
		436	66	584	2.1	528.8	54	477	2.3					3.3	
		376.2	76	672	2	456.2	63	557	2.4					3.9	
		333.8	86	760	1.9	404.8	71	628	2.3					4.4	
		295.1	97	858	1.8	357.9	80	707	2.1					4.9	
		265.4	108	955	1.7	321.9	89	787	2					5.5	
		227.6	126	1114	1.5	276	104	920	1.8					6.4	
		204.2	140	1238	1.4	247.7	116	1026	1.7					7.1	
		182.4	157	1388	1.3	221.2	129	1141	1.6					8.0	
		169	169	1494	1.3	205	140	1238	1.5					8.6	
		150	191	1689	1.2	181.9	157	1388	1.4					9.7	
		132.7	216	1910	1.1	161	178	1574	1.4					10.9	
		119.5	240	2122	1	144.9	198	1751	1.3					12.2	
		102.4	280	2476	0.9	124.2	231	2043	1.1					14.2	
							111.5	257	2272					1.1	15.8
							99.5	288	2547					1	17.7

From 4.0 to 7.5 kW coming soon



PERFORMANCE

EVOX COAXIAL GEAR UNIT

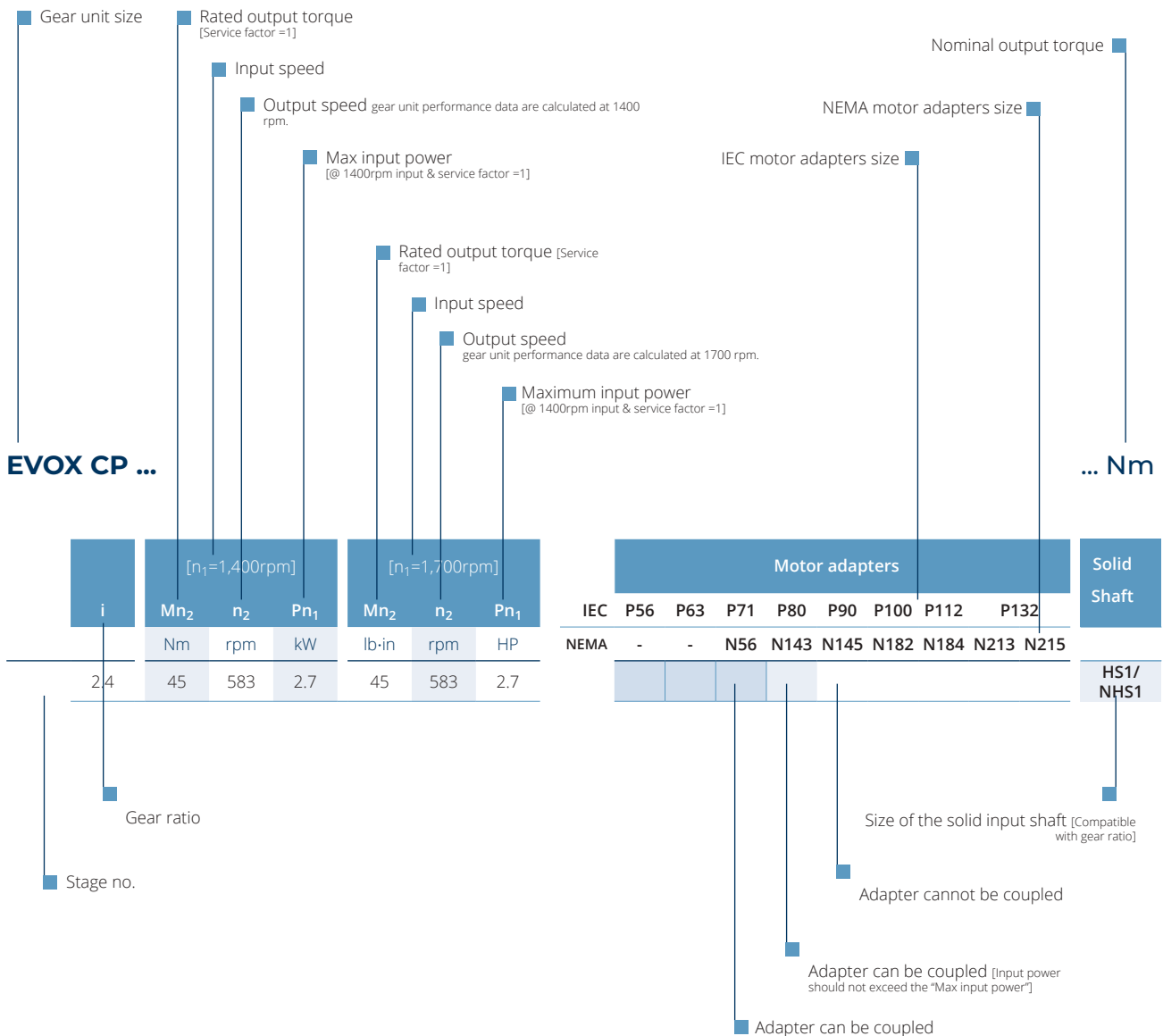
Tables introduction

The following tables show geometrically possible combinations between gear ratios and inputs for each gear unit size.

For each of these combinations, a possible service factor has been calculated using the maximum motor power that can be coupled in Bonfiglioli's asynchronous electric motors portfolio (considering different poles and efficiency levels).

In the table, combinations with a service factor below 0.9 are highlighted with a lighter colour. Here you should pay attention to the power of the electric motor coupled with the gear unit, because it shouldn't exceed the "Maximum input power" shown.

The left table section shows the inputs that are geometrically compatible with each gear ratio by IEC, NEMA and solid input shaft. For further information on the input interface, see the Dimension section of this document.



EVOX CP07

i	[n ₁ =1,400rpm]			[n ₁ =1,700rpm]			Motor adapters								Solid Shaft		
	Mn ₂	n ₂	Pn ₁	Mn ₂	n ₂	Pn ₁	IEC	P56	P63	P71	P80	P90	P100	P112		P132	
	Nm	rpm	kW	lb-in	rpm	HP	NEMA	-	-	N56C	N143TC	N145TC	N182TC	N184TC		N213TC	N215TC
2 stag- es	2.8	35	497	1.8	290	603	2.8										
	3.2	37	434	1.7	307	527	2.6										
	3.5	40	406	1.7	332	493	2.6										
	4.0	40	353	1.5	332	428	2.3										
	4.6	45	305	1.4	373	371	2.2										
	4.9	45	283	1.3	373	344	2.0										
	5.8	50	242	1.3	415	293	1.9										
	6.9	50	204	1.1	415	248	1.6										
	7.5	51	186	1.0	423	226	1.5										
	8.0	55	175	1.0	487	213	1.6										
	9.2	55	152	0.9	487	185	1.4										
	9.9	55	142	0.8	487	172	1.3										
	10.6	55	132	0.8	487	160	1.2										
	11.5	55	122	0.7	487	148	1.1										
	13.4	55	104	0.6	487	127	1.0										
15.9	55	88	0.5	487	107	0.8											
17.4	55	80	0.5	487	98	0.8											
3 stag- es	21.0	55	67	0.4	487	81	0.6										
	22.5	55	62	0.4	487	76	0.6										
	26.0	55	54	0.3	487	65	0.5										
	28.1	55	50	0.3	487	61	0.5										
	32.9	55	43	0.2	487	52	0.4										
	38.9	55	36	0.2	487	44	0.3										
	42.9	55	33	0.2	487	40	0.3										
	46.1	55	30	0.2	487	37	0.3										
	49.6	55	28	0.2	487	34	0.3										
	53.5	55	26	0.2	487	32	0.2										
	62.6	55	22	0.1	487	27	0.2										
	74.2	55	19	0.1	487	23	0.2										
	81.2	55	17	0.1	487	21	0.2										

Maximum Guaranteed Radial Loads: if table value is CST or required values exceed the one indicated on the table, [contact Bonfiglioli's Technical Service](#)

Maximum Guaranteed Axial Loads: for more information about Standards values or OHA options, [contact Bonfiglioli's Technical Service](#)

Input power should not exceed the "Maximum Input power" value

Please, configure N140TC, to have the N143TC or N145TC input flange; or configure N180TC, if you want the N182TC or N184TC; or select N210TC, to have the N213TC or N215TC



PERFORMANCE

EVOX COAXIAL GEAR UNIT

Performance Table

EVOX CP17

100 Nm

	i	[n ₁ =1,400rpm]			[n ₁ =1,700rpm]			Motor adapters								Solid Shaft							
		Mn ₂	n ₂	Pn ₁	Mn ₂	n ₂	Pn ₁	IEC	P56	P63	P71	P80	P90	P100	P112		P132						
		Nm	rpm	kW	lb-in	rpm	HP	NEMA	-	-	N56C	N143TC	N145TC	N182TC	N184TC		N213TC	N215TC					
2 stages	2.4	45	583	2.7	373	708	4.2													HS1/ NH51			
	2.9	50	483	2.5	415	586	3.9																
	3.3	55	428	2.5	456	520	3.8																
	3.8	60	369	2.3	498	449	3.5																
	4.5	65	310	2.1	539	377	3.2																
	5.1	70	275	2.0	581	334	3.1																
	5.8	75	243	1.9	622	295	2.9																
	6.2	75	228	1.8	622	276	2.7																
	7.0	80	199	1.7	664	241	2.5																
	7.6	80	185	1.6	664	225	2.4																
	8.5	90	164	1.5	747	199	2.4																
	10.2	95	138	1.4	788	167	2.1																
	11.5	100	122	1.3	885	148	2.1																
	13.0	100	108	1.1	885	131	1.8																
	13.8	100	101	1.1	885	123	1.7																
	15.8	100	88	0.9	885	107	1.5																
	17.0	100	82	0.9	885	100	1.4																
	19.7	100	71	0.7	885	86	1.2																
	23.2	100	60	0.6	885	73	1.0																
	25.2	100	55	0.6	885	67	0.9																
3 stages	27.2	100	51	0.5	885	62	0.9																
	31.3	100	45	0.5	885	54	0.8																
	36.0	100	39	0.4	885	47	0.7																
	38.8	100	36	0.4	885	44	0.6																
	41.8	100	33	0.4	885	41	0.6																
	48.7	100	29	0.3	885	35	0.5																
	52.4	100	27	0.3	885	32	0.5																
	56.6	100	25	0.3	885	30	0.4																
	66.2	100	21	0.2	885	26	0.4																
	78.5	100	18	0.2	885	22	0.3																
85.9	100	16	0.2	885	20	0.3																	

Maximum Guaranteed Radial Loads: if table value is CST or required values exceed the one indicated, [contact Bonfiglioli's Technical Service](#)

Maximum Guaranteed Axial Loads: for more information about Standards values or OHA options, [contact Bonfiglioli's Technical Service](#)

■ Input power should not exceed the "Maximum Input power" value

• Motor Adapters available only in NEMA version. Input power should not exceed the "Max Input power"

Please, configure N140TC, to have the N143TC or N145TC input flange; or configure N180TC, if you want the N182TC or N184TC; or select N210TC, to have the N213TC or N215TC



EVOX CP37

200 Nm

	i	[n ₁ =1,400rpm]			[n ₁ =1,700rpm]			Motor adapters							Solid Shaft						
		Mn ₂	n ₂	Pn ₁	Mn ₂	n ₂	Pn ₁	IEC	P56	P63	P71	P80	P90	P100		P112	P132				
		Nm	rpm	kW	lb-in	rpm	HP	NEMA	-	-	N56C	N143TC	N145TC	N182TC		N184TC	N213TC	N215TC			
2 stages	2.3	73	622	4.8	606	756	7.3													HS2/ NHS2	
	2.7	84	519	4.6	697	630	7.0														
	3.2	94	440	4.3	780	535	6.6														
	3.4	103	412	4.4	854	500	6.8														
	4.1	113	345	4.1	937	419	6.2														
	4.3	110	328	3.8	913	398	5.8														
	4.8	121	293	3.7	1004	356	5.7														
	5.4	127	261	3.5	1054	317	5.3														
	6.4	137	218	3.1	1137	264	4.8														
	7.8	148	179	2.8	1228	217	4.2														
	9.0	156	155	2.5	1294	188	3.9														
	10.0	163	140	2.4	1352	170	3.6														
	10.6	166	133	2.3	1377	161	3.5														
	11.8	174	119	2.2	1444	144	3.3														
	13.2	181	106	2.0	1502	129	3.1														
	15.8	194	88	1.8	1609	107	2.7														
	18.0	200	78	1.6	1770	94	2.7														
	19.3	200	73	1.5	1770	88	2.5														
	22.2	200	63	1.3	1770	76	2.1														
	26.0	200	54	1.1	1770	65	1.8														
3 stages	30.0	200	47	1.0	1770	57	1.6													HS1/ NHS1	
	33.8	200	41	0.9	1770	50	1.4														
	38.3	200	37	0.8	1770	44	1.2														
	40.9	200	34	0.7	1770	42	1.2														
	46.8	200	30	0.6	1770	36	1.0														
	50.2	200	28	0.6	1770	34	1.0														
	53.6	200	26	0.5	1770	32	0.9														
	58.2	200	24	0.5	1770	29	0.8														
	60.4	200	23	0.5	1770	28	0.8														
	68.5	200	20	0.4	1770	25	0.7														
	73.1	200	19	0.4	1770	23	0.7														
	83.6	200	17	0.4	1770	20	0.6														
	89.7	200	16	0.3	1770	19	0.5														
	104.0	200	13	0.3	1770	16	0.5														
	122.1	200	11	0.2	1770	14	0.4														
	133.2	200	11	0.2	1770	13	0.4														

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Maximum Guaranteed Axial Loads: for more information about Standards values or OHA options, [contact Bonfiglioli's Technical Service](#)

 Input power should not exceed the "Maximum Input power" value

• Motor Adapters available only in NEMA version. Input power should not exceed the "Max Input power"

Please, configure N140TC, to have the N143TC or N145TC input flange; or configure N180TC, if you want the N182TC or N184TC; or select N210TC, to have the N213TC or N215TC



PERFORMANCE

EVOX COAXIAL GEAR UNIT

Performance Table

EVOX CP47

335 Nm

	i	[n ₁ =1,400rpm]			[n ₁ =1,700rpm]			Motor adapters										Solid Shaft
		Mn ₂	n ₂	Pn ₁	Mn ₂	n ₂	Pn ₁	IEC	P56	P63	P71	P80	P90	P100	P112	P132		
		Nm	rpm	kW	lb-in	rpm	HP	NEMA	-	-	N56C	N143TC	N145TC	N182TC	N184TC	N213TC	N215TC	
2 stages	2.4	100	593	6.2	830	720	9.5											HS3/ NHS3
	3.0	115	467	5.6	954	567	8.6											
	3.3	145	420	6.4	1203	511	9.7											
	3.9	152	363	5.8	1261	440	8.8											
	4.4	160	322	5.4	1327	391	8.2											
	4.9	170	285	5.1	1410	346	7.7											
	5.5	180	256	4.8	1493	311	7.4											
	6.4	190	219	4.4	1576	266	6.7											
	7.1	200	197	4.1	1659	239	6.3											
	8.0	210	176	3.9	1742	214	5.9											
	8.6	215	163	3.7	1784	198	5.6											
	9.7	225	145	3.4	1867	176	5.2											
	10.9	245	128	3.3	2033	155	5.0											
	12.2	250	115	3.0	2074	140	4.6											
	14.2	265	99	2.7	2198	120	4.2											
	15.8	278	89	2.6	2306	108	3.9											
	17.7	290	79	2.4	2406	96	3.7											
	18.8	297	75	2.3	2464	91	3.5											
	21.3	310	66	2.1	2744	80	3.5											
	22.7	315	62	2.0	2788	75	3.3											
26.1	335	54	1.9	2965	65	3.1												
30.4	335	46	1.6	2965	56	2.6												
33.0	335	42	1.5	2965	52	2.4												
3 stages	24.3	280	58	1.7	2323	70	2.6											HS2/ NHS2
	26.6	290	53	1.6	2406	64	2.4											
	31.4	310	45	1.4	2572	54	2.2											
	35.2	310	40	1.3	2572	48	2.0											
	39.6	310	35	1.1	2572	43	1.8											
	42.1	310	33	1.1	2572	40	1.6											
	47.9	330	29	1.0	2921	35	1.6											
	51.3	335	27	1.0	2965	33	1.6											
	55.4	310	25	0.8	2744	31	1.3											
	60.8	335	23	0.8	2965	28	1.3											
	71.6	335	20	0.7	2965	24	1.1											
	80.2	335	17	0.6	2965	21	1.0											
	90.4	335	15	0.5	2965	19	0.9											
	96.1	335	15	0.5	2965	18	0.8											
	109.4	335	13	0.4	2965	16	0.7											
	117.1	335	12	0.4	2965	15	0.7											
	135.1	335	10	0.4	2965	13	0.6											
	158.0	335	9	0.3	2965	11	0.5											
	171.9	335	8	0.3	2965	10	0.5											

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Maximum Guaranteed Axial Loads: for more information about Standards values or OHA options, [contact Bonfiglioli's Technical Service](#)

Input power should not exceed the "Maximum Input power" value

Please, configure N140TC, to have the N143TC or N145TC input flange; or configure N180TC, if you want the N182TC or N184TC; or select N210TC, to have the N213TC or N215TC



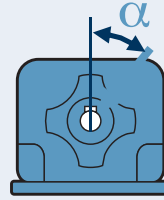
PERFORMANCE

EVOX COAXIAL OUTPUT RADIAL AND AXIAL LOADS

Tables introduction

Max radial loads are calculated with:

- M_{n2} torque applied on output shaft
- most unfavourable gear unit rotating direction [CW or CCW]
- the applied radial force with the most unfavourable α angle, among all gear ratios
- radial load applied in the middle of the output shaft



The permitted radial loads can increase considerably when the parameters listed above vary. [contact Bonfiglioli's Technical Service](#) if your application requires radial loads greater than the values indicated in the tables, because they could be available with a standard gear unit or with a simple option

Axial load values are not dependent on the service factor or output speed, but are referred to pure axial forces applied with inward direction in the gear unit direction. If the force on the output shaft has both radial and axial components or the direction of the force is outgoing from the gear unit, [contact Bonfiglioli's Technical Service](#).

[contact Bonfiglioli's Technical Service](#)

S Service Factor [M_{n2}/M_2]

M_{n2} Nominal Output Torque

M_2 Gear Unit Output Torque

N_2 Gear Unit Output Speed

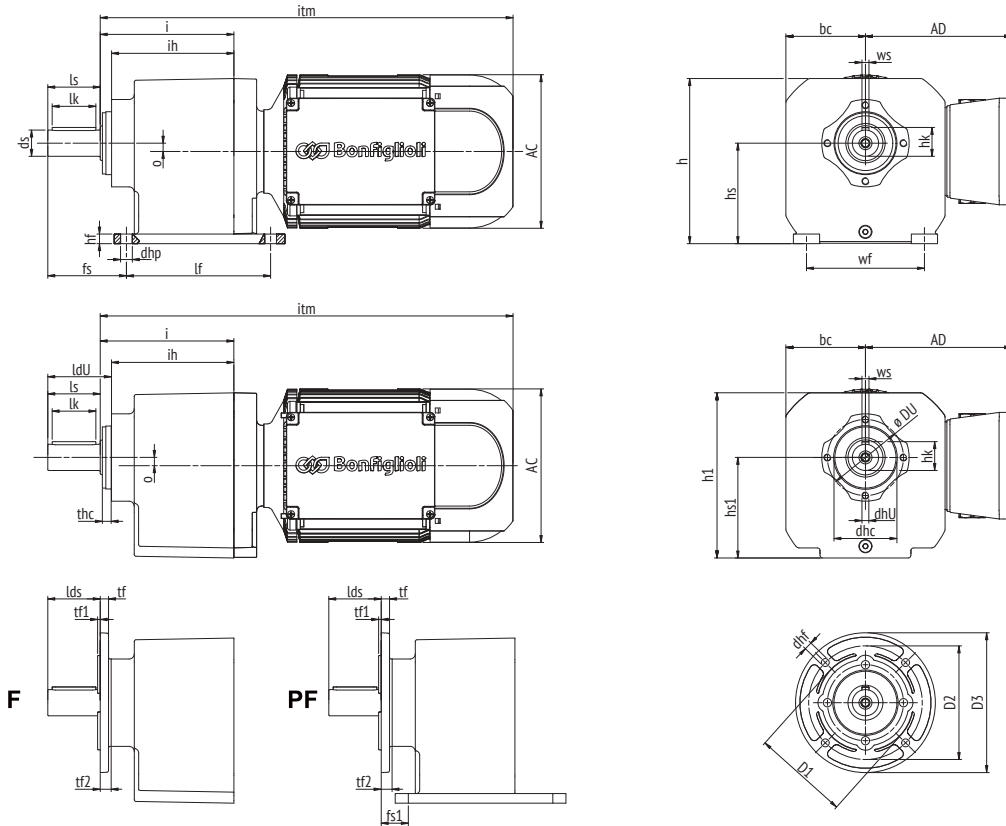
Max Load on Standard Output Bearings

Max Load on Reinforced Output Bearings Options

n_2	Radial				Axial	Radial [OHR]				Axial [OHA]	
	$0.9 \leq S < 1.25$	$1.25 \leq S < 1.4$	$1.4 \leq S < 2$	$2 \leq S < 3$		$0.9 \leq S < 1.25$	$1.25 \leq S < 1.4$	$1.4 \leq S < 2$	$2 \leq S < 3$		
[rpm]	N				N	N				N	
CP07	$n_2 < 50$	1,470	1,570	1,840	2,030						
	$50 \leq n_2 < 150$	1,350	1,460	1,600	1,700						
	$150 \leq n_2 < 300$	•	870	1,130	1,310	2370	840	970	1,260	1,700	
	$300 \leq n_2 < 500$	•	•	660	1,000		•	450	740	1,190	
	$n_2 \geq 500$	•	•	•	840		•	•	•	940	
CP17	$n_2 < 50$	2,460	2,660	3,100	3,470						
	$50 \leq n_2 < 150$	1,850	2,050	2,470	2,870						
	$150 \leq n_2 < 300$	940	1,140	1,580	2,220	3,270	2,340	2,380	2,470	2,610	
	$300 \leq n_2 < 500$	•	•	860	1,540		1,750	1,790	1,880	2,020	
	$n_2 \geq 500$	•	•	•	1,190		1,460	1,500	1,590	1,730	
CP37	$n_2 < 50$	4,110	4,440	5,130	5,430						
	$50 \leq n_2 < 150$	3,110	3,460	4,080	4,330						
	$150 \leq n_2 < 300$	1,530	1,880	2,670	3,340	5,600	3,440	3,510	3,670	3,930	15,000
	$300 \leq n_2 < 500$	•	•	1,410	2,560		2,530	2,610	2,770	3,020	
	$n_2 \geq 500$	•	•	•	2,040		2,090	2,160	2,330	2,580	
CP47	$n_2 < 50$	5,240	5,570	6,300	7,450						
	$50 \leq n_2 < 150$	3,460	3,820	4,630	5,830						
	$150 \leq n_2 < 300$	1,780	2,140	2,950	4,210	7,650	4,800	4,880	5,050	5,310	2,000
	$300 \leq n_2 < 500$	•	•	1,610	2,890		3,610	3,680	3,850	4,110	
	$n_2 \geq 500$	•	•	•	2,230		3,030	3,100	3,270	3,530	

SIZES

EVOX COAXIAL GEARMOTOR



	lf	wf	dhp	hf	hs	h	ih	i	o	bc	h1	hs1	DU	dhU	dhc	lds	thc	tf	tf1	tf2
CP07	95	85	6.5	6	65	107	79	84.5	0	51.5	106.5	64.5	60	M6	50	40	4 _{f7}	4.5	4.0	5
CP17	110	110	9	11	75	134	99	109	0	70	133.5	74.5	87	M8	70	40	5.5 _{f7}	9.5	3.5	10.5
CP37	130	110	9	11	90	145	117.5	130	6.4	75	144.5	89.5	87	M8	70	50	6 _{f7}	9.5	3.5	13.5
CP47	165	135	13.5	11	115	189	140	153	9.5	91	188.5	114.5	87	M8	72	60	6.5 _{f7}	9.5	3.5	13.5
CP57	Coming soon																			
CP67	Coming soon																			

MXN - [Compact IE3/NEMA Premium] & MNN - [Compact IE1/NEMA Standard]

Motor size (kW)	05MA (0.12)	10MA (0.25)	20MA (0.55)	25S (1.1)	30LA (2.2)	35M (4)	40S (5.5)
AC	122	138	158	177	192	Coming soon	
AD	136	138	148	170	179	Coming soon	
itm							
CP07	377	381	-	-	-	-	-
CP17	389	393	438	-	-	-	-
CP37	407	411	456	461	-	-	-
CP47	430	434	479	484	588	-	-
CP57	Coming soon						
CP67	Coming soon						

	D1	D2	D3	dhf
F120	80 _{f7}	100	120	6.5
F140	95 _{f7}	115	140	6.5
F160	110 _{f7}	130	160	6.5
F200	130 _{f7}	165	200	11
F250	180 _{f7}	215	250	13.5

Metric [Standard output shaft version]

	ds	ls	lk	ldU	hk	ws	fs	fs1
CP07	20 _{h6}	40	32	45	22.5	6 _{h9}	48	8
CP17	20 _{h6}	40	32	50.5	22.5	6 _{h9}	58	18
CP37	25 _{h6}	50	40	63.5	33	8 _{h9}	75	25
CP47	30 _{h6}	60	50	73.5	33	8 _{h9}	90	30
CP57	Coming soon							
CP67	Coming soon							

Imperial [N-output shaft version] - Dimensions expressed in inches

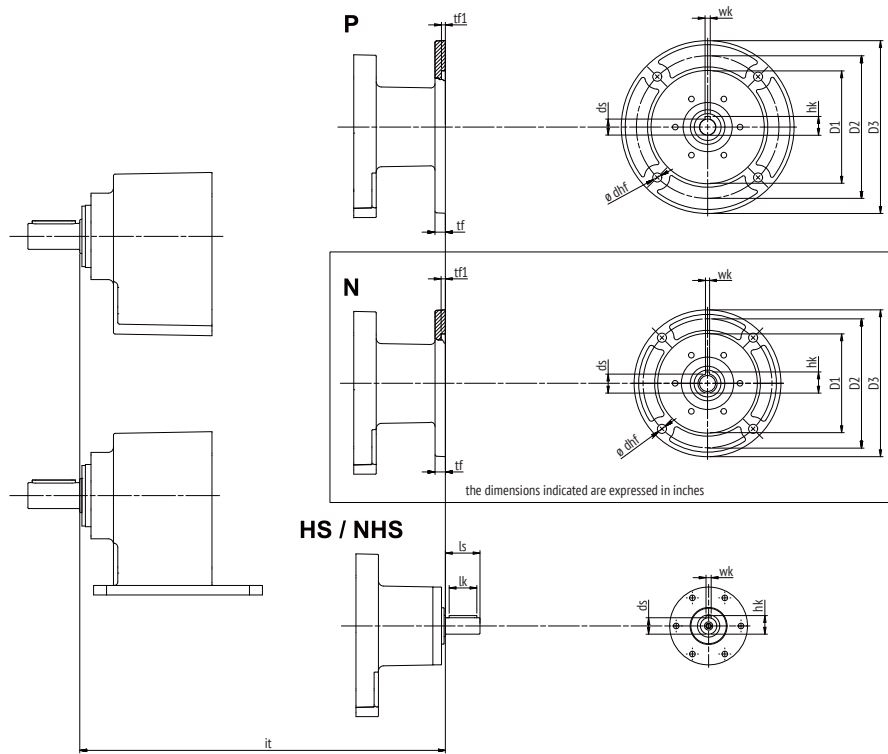
	ds	ls	lk	ldU	hk	ws	fs	fs1
CP07	3/4 ^{+0.0000} _{-0.0005}	1-9/16	-	1-25/32	27/32	3/16 ^{+0.000} _{-0.001}	1.890	0.315
CP17	3/4 ^{+0.0000} _{-0.0005}	1-9/16	-	1-31/32	27/32	3/16 ^{+0.000} _{-0.001}	2.283	0.709
CP37	1 ^{+0.0000} _{-0.0005}	2	-	2-1/2	1-3/32	1/4 ^{+0.000} _{-0.001}	2.953	0.984
CP47	1-1/4 ^{+0.0000} _{-0.0005}	2-3/8	-	2-29/32	1-3/8	1/4 ^{+0.000} _{-0.001}	3.543	1.181
CP57	Coming soon							
CP67	Coming soon							

If not otherwise specified, dimensions are expressed in mm

For motor brake and options dimension see [EVOX Electric Motor and Brake Dimension](#)



EVOX COAXIAL GEAR UNIT



IEC Standard Flanges

	D3	D2	tf	dhf	D1	tf1	ds	hk	wk
Metric dimensions									
P56	Coming soon								
P63	140	115	10	9	95 f7	4	11 E7	12.8	4 H9
P71	160	130	10	9	110 f7	4	14 E7	16.3	5 H9
P80	200	165	12	10.5	130 f7	4.5	19 E7	21.8	6 H9
P90	200	165	12	10.5	130 f7	4.5	24 E7	27.3	8 H9
P100	250	215	15	13	180 f7	4.5	28 E7	31.3	8 H9
P112	250	215	15	13	180 f7	4.5	28 E7	31.3	8 H9
P132	Coming soon								

it	CP07	CP17	CP37	CP47	CP57	CP67
	186	198	215	239		
	186	198	215	239		
	-	218	235	259		
	-	-	235	259		Coming soon
	-	-	-	284		
	-	-	-	284		
	Coming soon					

NEMA Standard Flanges - Dimensions expressed in inches

	D3	D2	tf	dhf	D1	tf1	ds	hk	wk
Inch dimensions									
N56	6-1/2	5-7/8	0.472	0.413	4-1/2	0.197	5/8	0.710	3/16
N143	6-1/2	5-7/8	0.472	0.413	4-1/2	0.197	7/8	0.964	3/16
N145	6-1/2	5-7/8	0.472	0.413	4-1/2	0.197	7/8	0.964	3/16
N182	9	7-1/4	0.827	0.551	8-1/2	0.197	1-1/8	1.241	1/4
N184	9	7-1/4	0.827	0.551	8-1/2	0.197	1-1/8	1.241	1/4
N213	Coming soon								
N215	Coming soon								

it	CP07	CP17	CP37	CP47	CP57	CP67
	7.362	7.835	8.504	9.449		
	-	7.874	8.543	9.488		
	-	-	8.543	9.488		
	-	-	10.787	11.220		Coming soon
	-	-	10.787	11.220		
	Coming soon					

Solid input shaft

	ds	ls	hk	wk	lk
Metric dimensions					
HS1	16 h6	40	18	5 h9	32
HS2	19 h6	40	21.5	6 h9	32
HS3	24 h6	50	27	8 h9	40
Inch dimensions					
NHS1	5/8	1.575	23/32	3/16	1.26
NHS2	3/4	1.575	27/32	3/16	1.26
NHS3	7/8	2	31/32	3/16	1.575


it	CP07	CP17	CP37	CP47	CP57	CP67
	-	196	215	-		
	-	-	235	260		
	-	-	-	284		
						Coming soon
	-	7.717	8.445	-		
	-	-	9.154	10.236		
	-	-	-	11.181		

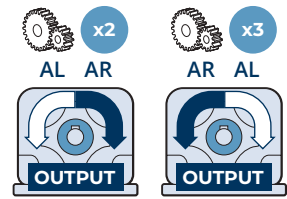
If not otherwise specified, dimensions are expressed in mm



OPTIONS | AVAILABLE FOR EVOX COAXIAL GEAR UNIT

OPTION LIST

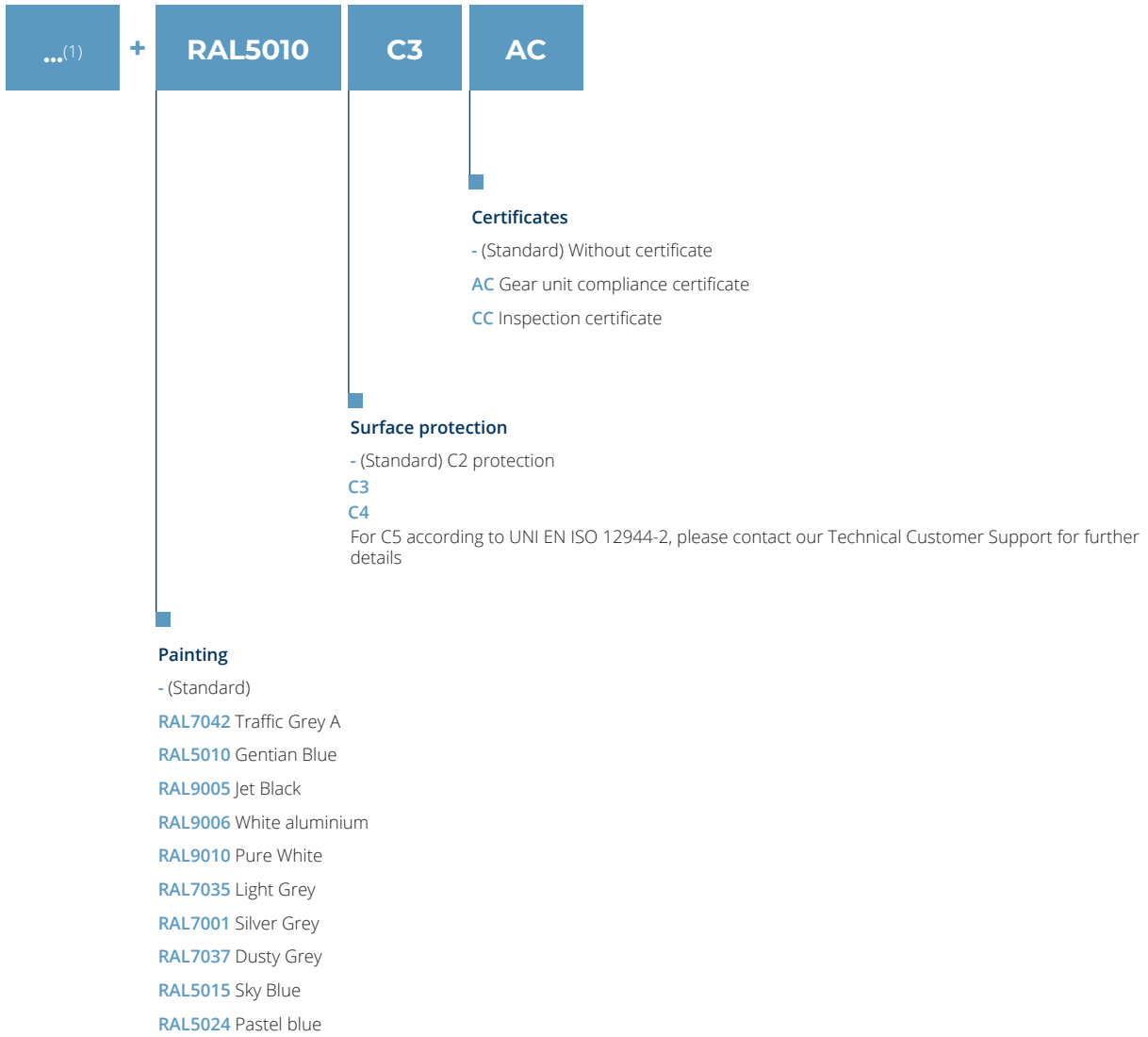
CP gear unit	+	SO	PV	DL	AR	EX	OHR	IHB	RB	FO
										<p>Food ready gear unit- (Standard) FO Stainless Steel Components+Food grade oil</p> <p>Reduced backlash - (Standard backlash) RB² Reduced backlash</p> <p>Input reinforced bearings – Only for HS../NHS.. inputs - (Standard bearing) IHB Input reinforced bearings</p> <p>Output reinforced bearings - (Standard bearing) OHR¹ Enhanced radial load capacity OHA¹ Enhanced axial load capacity</p> <p>Ex - explosion-proof gear unit - (Standard) No ATEX EX ATEX 2014/34 EU - 2D/2G T4 (135 °C)  EN80079-36 and EN80079-37</p> <p>Gear unit backstop – Only for HS../NHS.. inputs (for gearmotor backstops see the Motor option list | Async. motor)</p> <p>- (Standard) No backstop AR Right-free rotation backstop AL Left-free-rotation backstop</p> <p>Output lip seals - (Standard) single lip seal DL Double lip seal (PV DL & PN DL options available)</p> <p>Oil seals - (Standard) NBR output and Viton input seals PV Viton input & output seals PN NBR output & input seals</p> <p>Lubricant - (Standard) long life oil fill SO Without oil fill</p>



(1) Indicated performances may vary in different gear unit sizes and gear ratios.

(2) This value is strongly dependent on the gear size and ratio

To find the best configuration for your application, take a look at the catalogue or contact us



(1) Those options are available for Gear Units, Gearmotors, Gear brake motors, Stand alone motors and Stand alone Brake motors

OPTIONS | AVAILABLE FOR EVOX COAXIAL GEAR UNIT

OPTION LIST DEEP DIVE

Lubricant

Gear Units are supplied as standard with the correct amount of oil necessary in their lifetime.

SO

Without oil fill

With this option active, Gear Units are supplied without lubricant. See the [Lubricant Oil Table](#) to fill the gear unit with the correct **type of oil, according to the application ambient conditions.**

Oil seals

Gear Units are supplied as standard with a Viton Seal in input and a single lip NBR Seal in output.

Suggested versions:

Ambient temperature Type of recommended seal	Below -25°C CTS	From -25°C to 0°C PN	From 0°C to 35°C Standard	From 35°C to 50°C PV	Over 50°C CTS
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CTS = [contact Bonfiglioli's Technical Service](#)

PV

Viton input and output seals

With this option active, Gear Units are supplied with Viton seals both in input and output.

PN

NBR output & input seals

With this option active, Gear Units are supplied with NBR seals both in input and output.

Output lip seals

Gear Units are supplied as standard with a single output lip seal.

DL

Double lip seal

With this option active, Gear Units are supplied with a double lip NBR seal in output.

Select with this option also "PV", if you want the double lip Viton seals in output.

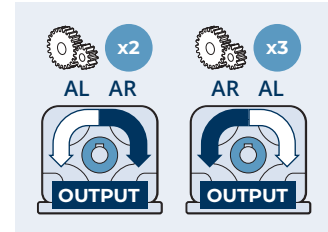
Gear unit backstop – Only for HS../NHS.. inputs

Gear units can be supplied with a backstop in case of HS input. For gearmotor backstops, see the [Motor Option List](#). Be mindful that the Clockwise [CW] and Counter-clockwise [CCW] rotation option of the output shaft depends on the gear unit stage number.

AR/AL

Free right/left rotation backstop

- **AR:** free right rotation
- **AL:** free left rotation



Output reinforced bearings

Gear units are supplied with strong and reliable ball bearings as standard; however, if your application requires higher performance, you can choose reinforced bearings in output with the following options.

OHR

Enhanced radial load capacity

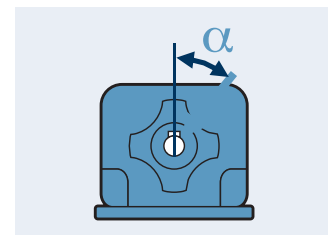
With those bearings, the radial loads at the gear unit output would be increased. This is the right solution for a decentralized (belt and pulley) or a chain-pinion transmission. The values listed in the following table are the rated ones and may vary based on output speed and service factor. Refer to the Performance Table with [Output Radial Load](#), to choose the right bearing for your application.

		CP07	CP17	CP37	CP47	CP57	CP67
Maximum allowed pure radial loads [N]	Standard version	1470	2460	4110	5240	Coming soon	
	OHR option	1640		6580	8420		

Parameters are calculated with the following criteria:

- $[M_{n2}]$ torque applied on output shaft
- most unfavourable gear unit rotating direction [CW or CCW]
- the applied radial force with the most unfavourable α angle, among all gear ratios
- radial load applied in the middle of the output shaft

The permitted radial loads can increase considerably when the parameters listed above vary. [contact Bonfiglioli's Technical Service](#) if your application requires radial loads greater than the values indicated in the tables, because they could be available with a standard gear unit or with a simple option



OHA

Enhanced axial load capacity

With those bearings, the axial loads at the gear unit output would be increased. This is the right solution for axial pumps or screw conveyors. Maximum axial load values are listed below:

		CP07	CP17	CP37	CP47	CP57	CP67
Maximum allowed pure axial loads [N]	Standard version	2370	3270	5600	7650	Coming soon	
	OHA option			15000	20000		

CTS = [contact Bonfiglioli's Technical Service](#)

These values do not depend on Service factor or output speed but are referred to pure axial forces in the Gear Unit direction. If output shaft has both radial and axial forces or the direction of the force is outgoing from the gear unit, [contact Bonfiglioli's Technical Service](#)

OPTIONS | AVAILABLE FOR EVOX COAXIAL GEAR UNIT

OPTION LIST DEEP DIVE

Input reinforced bearings – Only for HS../NHS.. inputs

Gear units are supplied with strong and reliable ball bearings as standard; however, if your application has different requirements, we can supply:

IHB

With those bearing, the radial loads capacity in input of the gear unit could be enhanced. This is the right solution for a decentralized (belt and pulley) or a chain-pinion transmission.

To select the most suitable solution, [contact Bonfiglioli's Technical Service](#)

Reduced backlash

RB

With this option active, Gear Units are supplied with a reduced angular backlash compared to the standard version.

Size	Standard backlash		Reduced backlash	
	2 stages	3 stages	2 stages	3 stages
0.7	11-18	20-25	7-12	10-16
17	11-18	20-25	7-12	10-16
37	11-18	20-25	7-12	10-16
47	11-18	20-25	7-12	10-16
57	Coming soon			
67				

CTS = [contact Bonfiglioli's Technical Service](#)

Value expressed in Minutes

Food ready gear unit

FO

With this output shaft option, plugs, screws and nameplates are made of stainless steel (INOX) or steel with zinc flake coating, or with food-grade materials. The gear unit is factory-filled with Klübersynth UH16-320 (pour point=30°C and max temperature=100°C) and PWH White Paint (Paint FDA and NFS Compliant, for incidental food contact areas as well as for drinking water contact).

Besides an improved corrosion resistance, this painting is also resistant to most of the detergents commonly used **in the food and beverage industry**.

For the particular organic-based material, no RAL colour can be precisely specified.

RAL5010

Painting

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

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
RAL7035	Light Grey	7035
RAL7001	Silver Grey	7001
RAL7037	Dusty Grey	7037
RAL5015	Sky Blue	5015
RAL5024	Pastel blue	5024

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

NOTE: "Paint" options can only be specified in conjunction with "Surface protection" options.

C3

Surface protection

When no specific protection class is requested, the surface of the gear units is by default at least equivalent to class C2 (UNI EN ISO 12944-2). For a higher degree of protection, the gear units can be supplied with a class **C3** and **C4** painting.

Surface protection	Typical environments	Maximum surface temperature	Corrosion class according to UNI EN ISO 12944-2
C3	Urban and industrial environments with up to 100% relative humidity (average air pollution)	120 °C	C3
C4	Industrial areas, coastal areas, chemical plants, with up to 100% relative humidity (high air pollution)	120 °C	C4

gear units with optional protection class **C3** or **C4** are available in a choice of colours.

Gear units can also be supplied with surface protection class **C5** according to UNI EN ISO 12944-2.

[Contact Bonfiglioli's Technical Service](#) for further details.

Certificates

ACM

Motor certificate of compliance

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

CC

Inspection certificate

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

OPTIONS | AVAILABLE FOR EVOX COAXIAL GEAR UNIT

OPTION LIST DEEP DIVE

Explosion Proof Gear Unit

EX

ATEX 2014/34/EU - 2D/2G T4 (135 °C)

With this option active, the gear unit can be installed in Ex 1 and 21 areas (categories 2G and 2D). The temperature class is T4 (max 135°C).

To comply with this particular environment, Gear Units are equipped with:

- Service plugs for periodic lubricant level checks
- Factory-charged with lubricant (synthetic oil)
- Fluoro elastomer seal rings as standard
- Nameplate indication of the product category and type of protection
- Components that can operate above the max temperature indicated as a limit in the regulation
- Temperature indicator supplied with each unit

The unique oil level allows you to fit EVOX CP in any of the positions with a single product code, as the standard version.

Moreover, the oil quantity is the same as in the standard version, please see the [oil fill table](#) for further information.

For the choice of an "EX" Gear Unit, the Mn2 (nominal torque) is the same as indicated in the [Gear Unit Performance Table](#), except for the following configurations with HS version:

	i	[n ₁ =1,400rpm]		Pn ₁	Solid Shaft
		Mn ₂	n ₂		
		Nm	rpm	kW	
CP17					
2 Stages	2.4	42	583	2.6	HS1/NHS1
	2.9	45	483	2.3	
	3.3	47	428	2.1	
CP37					
2 Stages	2.3	67	622	4.4	HS2/NHS2
	2.7	73	519	4.0	
	3.2	78	440	3.6	
	3.4	100	412	4.3	
	4.1	110	325	3.7	
	4.3	86	328	3.0	
	4.8	117	293	3.6	
	5.4	122	261	3.3	
	6.4	129	218	2.9	
	7.8	136	179	2.5	
CP47					
2 Stages	2.4	76	593	4.7	HS2/NHS2
	3.0	84	467	4.1	
	3.3	90	420	4.0	
	3.9	124	363	4.7	
	4.4	131	322	4.4	
	4.9	137	285	4.1	
	5.5	148	256	4.0	
	6.4	156	219	3.6	
	7.1	161	197	3.3	
	8.0	166	176	3.1	

For further information refer to the user manual at www.bonfiglioli.com for compliant maintenance procedures.

Explosive atmosphere

An explosive atmosphere, for the purposes of Directive 2014/34/EU, is defined as a mixture:

- a. of flammable substances, in the form of gases, vapours, mists or dusts;
- b. with air;
- c. under atmospheric conditions;
- d. in which, after ignition, combustion spreads to the entire unburned mixture (sometimes, mainly with dust, the combustion does not consume the whole quantity of combustible material).

For further information refer to the user manual at www.bonfiglioli.com for compliant maintenance procedures.

An atmosphere that could become explosive due to local and/or operational conditions is called a potentially explosive atmosphere.

European harmonized Atex standards

Directive 2014/34/EU stipulates the minimum safety requirements for products intended for use in explosion risk areas within the member countries of the European Union.

The directive also assigns such equipment to categories, which are defined by the directive itself.

The following table describes the zones into which the user of a plant, in which an explosive atmosphere may occur, is required to divide the equipment application areas.

Zones		Frequency of formation of a potentially explosive atmosphere	Hazard Types
Gaseous atmosphere G	Dusty atmosphere D		
0	20	Present continuously or for long periods	Permanent
1	21	Likely to occur occasionally under normal operating conditions	Potential
2	22	It is not likely to occur in normal operations, but if it does, it will only persist for short periods	Minimum

BONFIGLIOLI RIDUTTORI gear units selected in this catalogue are suitable for installation in zones 1, 21, highlighted in light grey in the above diagram, and are also suitable for installation in areas with a lower level of protection (areas 2 and 22).

As from 20 April 2016 the ATEX directive 2014/34/EU come into force throughout the entire European Union, and replace existing conflicting national and European laws on explosive atmospheres and the previous directive 94/9/EC.

It should be emphasised that, for the first time, the directives also govern mechanical, hydraulic and pneumatic equipment, and not only electrical equipment as has been the case so far.

With regard to the Machinery Directive 2006/42/EC it should be noted that directive 2014/34/EU is a set of extremely specific requirements dedicated to the dangers deriving from potentially explosive atmospheres, whereas the Machinery Directive contains only very general explosion safety requirements (Annex I).

Consequently, as regards protection against explosion in potentially explosive atmospheres, Directive 2014/34/EU takes precedence over the Machinery Directive.

The requirements of the Machinery Directive apply to all other risks regarding machinery.

OPTIONS | EVOX COAXIAL GEAR UNIT

MORE ON OPTIONS LIST

Levels of protection for the various categories of equipment

The various categories of equipment must be able to operate in conformity with the Manufacturer's operational specifications, at certain defined levels of protection.

The availability of BONFIGLIOLI RIDUTTORI products is highlighted in grey.

Level of protection	Category		Protection type	Operating conditions
	Group I	Group II		
Very high	M1		Two independent protection or safety devices that can operate even at the occurrence of two independent faults.	The equipment remains powered and functional even in the presence of an explosive atmosphere.
Very high		1	Two independent protection or safety devices that can operate even at the occurrence of two independent faults.	The equipment remains powered and operational in areas 0, 1, 2 (G) and/or areas 20, 21, 22 (D).
High	M2		Protection suitable for normal operation and severe conditions.	The power supply to the equipment is interrupted in the presence of a potentially explosive atmosphere.
High		2	Protection suitable for normal operation and frequent failures or equipment where malfunctioning is normal.	The equipment remains powered and operational in areas 1, 2 (G) and/or areas 21, 22 (D).
Normal	2	3	Protection suitable for normal operation.	The pieces of equipment remain powered and operational in areas 2 (G) and/or areas 22 (D).

Group definition

Group I Applies to equipment intended for use underground work in mines and their surface installations, exposed to the risk of firedamp and/or combustible dust being released.

Group II Applies to equipment intended for use in other environments in which explosive atmospheres are likely to occur.

BONFIGLIOLI RIDUTTORI products may not therefore be installed in mines, classified in Group I and in Group II, category 1.

To summarise, the classification of equipment in to groups, categories and zones is illustrated in the table below, where by the availability of BONFIGLIOLI RIDUTTORI products is highlighted in grey.

	Group I		Group II			
	Mining, firedamp		Other potentially explosive areas (gas, dust)			
Category	M1	M2	1	2	3	
Atmosphere			Gas Dust	Gas Dust	Gas	Dust
Areas			0 20	1 21	2	22
Gear unit protection type				Ex h Gb Ex h Db	Ex h Gc	Ex h Dc

The products described here in conform to the minimum safety requirements of European Directive 2014/34/EU, which is part of the directives known as ATEX (ATmosphères EXplosibles).

Certificate of conformity

The Certificate of conformity, is the document certifying conformity of the product to Directive 2014/34/EU.

The validity of the Declaration is bound to observance of the instructions given in the User, Installation and Service Manual for safe use of the product throughout its service life. Users can download it at www.bonfiglioli.com.

The instructions regarding ambient conditions are of particular importance inasmuch as failure to observe them during operation of the product renders the certificate null and void.

In case of doubt regarding the validity of the certificate of conformity, contact the BONFIGLIOLI RIDUTTORI technical department.

ELECTRIC MOTOR EVOX



PRODUCT OVERVIEW

BONFIGLIOLI PORTFOLIO

EVOX BXN, MXN and MNN are asynchronous low voltage (<1000V) e-motors and brake motors, developed in the sign of modularity, efficiency and reliability.

The aim of this product is to be compliant with your needs, both in standalone version and in a compact coupling with Bonfiglioli Gear Units.



Efficiency	Compact		IEC	Power [kW]
	IE1/NEMA Standard	IE3/NEMA Premium	IE3/NEMA Premium	
Series	MNN	MXN	BXN	
Poles	4	4	4	
	05 MA	05 MA	63 MA	0.12
	05MB	05MB	63MB	0.18
	05MC	10 MA	71 MA	0.25
	10 MA			0.25
	10MB	10MB	71MB	0.37
	10MC	20 MA	80 MA	0.55
	20 MA			0.55
	20MB	20MB	80MB	0.75
		25S	90S	1.1
		25L	90L	1.5
		30LA	100LA	2.2
		30LB	100LB	3
		35M	112M	4
		40S	132S	5.5
		40M	132M	7.5

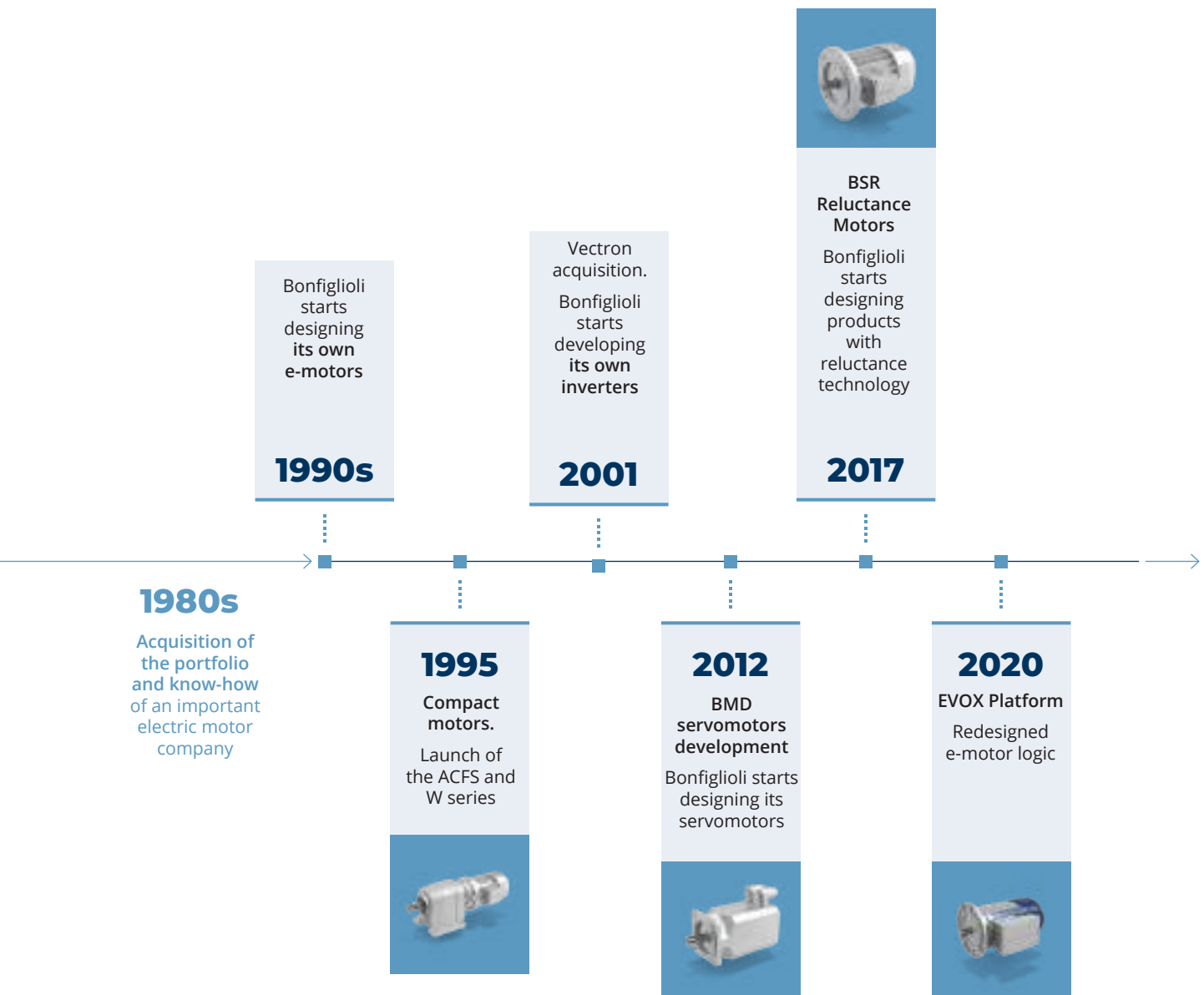
Coming soon

The Motor and Inverter in Bonfiglioli History



In the 1990s, Bonfiglioli integrated its gear unit design within the product portfolio and the know-how of an important local company, and started designing its own electric motors to create robust and efficient gearmotors.

In recent years Bonfiglioli has integrated its offer with servomotors and reluctance motors. In 2001, with the acquisition of Vectron, it began to design and manufacture inverters, thus becoming a **Solution Provider**.



PRODUCT OVERVIEW




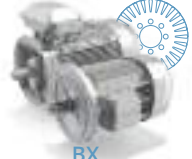








BONFIGLIOLI PORTFOLIO

E-motor Offer

Bonfiglioli offers a great set of opportunities to match your application requirements around the world: you just need to choose your solution.

evox

Gear unit

	IEC adapter	Compact adapter
IE4 NEMA Efficiency Super Premium	 BSR...E	
IE3 NEMA Premium Efficiency	 BXN	 MX
	 BX	 MXN
	 BSR...O	
IE2 NEMA High Efficiency	 BE	 ME
	 BSR...O	
IE1 NEMA Standard Efficiency	 BN	 M
		 MNN

Complete your solution

 S2U, S2U IP66	 Agile	 Active Cube	 ANG	 AxiaVert	 AEC
Inverters					Regenerative Inverters
 BMX	 BMC	 DGM	 DGM Modular	 Asynchronous type technology	 Reluctance type technology
Motion Controller		Decentralized inverters			



PRODUCT OVERVIEW

STANDARDS & DIRECTIVES

European standard requirements

Main directives

BXN, MXN and MNN motors meet the requirements of Directives 2014/35/EU (LVD - Low Voltage Directive), the 2014/30/EU (EMC - Electromagnetic Compatibility Directive), the 2009/125/EC (ERP - Energy Related Products Directive) and 2011/65/EU (RoHS - Restriction of Hazardous Substances) and their nameplates bear the CE mark.

As for the EMC Directive, construction is in accordance with standards CEI EN 60034-1 (Rotating electrical machines Part 1: Rating and performance), CEI EN 61000-6-2 (Generic standards - Immunity for industrial environments), CEI EN 61000-6-4 (Generic standards - Emission standard for industrial environments).

This product should not be mixed with general household waste.

Disposal has to be carried out in conformity with Directive 2012/19/EU, where established, and in accordance to national regulations. They should be disposed of in accordance with any other legislation in force through the country.



Capacitive filter

Motors with FD brakes, when fitted with the suitable capacitive filter at rectifier input (option CF), meet the emission limits required by Standards CEI EN 61000-6-3 and CEI EN 60204-1.

Ventilation

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

Motors must be installed allowing access for maintenance purposes on motor and brake, if supplied. For other cooling devices, please see the options section in this catalogue.

Noise

Noise levels, measured using ISO 1680, within the maximum levels specified in standard CEI EN 60034-9.

Vibration balancing

Rotor shaft is balanced with half key fitted, and falls within vibration class N, as standard CEI EN 60034-14.

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.

Other international requirements

BXN, MXN and MNN motors can be sold in the most important markets worldwide such as Europe, UK, USA, Canada, China*, Brazil, Russia, Australia and New Zealand.

UKCA conformity

BXN, MXN and MNN motors comply with the directives applicable in the United Kingdom, and their nameplates bear the UKCA mark (United Kingdom Conformity Assessed mark).

EAC conformity

All Bonfiglioli motors comply with the EAC (EurAsian Conformity) regulations of the Eurasian Economic Customs Union of Russia, Kazakhstan and Belarus.

GEMS and EECA conformity

BXN, MXN and MNN motors meet the requirements of the Australia Greenhouse and Energy Minimum Standards (GEMS) regulator and the New Zealand Energy Efficiency and Conservation Authority (EECA).

UL and CSA conformity

BXN, MXN and MNN motors are certified in compliance with UL safety standards for the American market and CSA for the Canadian market as stated on UL file E308649. Their nameplates bear the UL mark.

INMETRO conformity

BXN and MXN motors with WD3 or WD4/WD10 windings are certified for the Brazilian market, as stated on INMETRO file 000040/2022. The motors will have an additional label with the INMETRO logo.

BIS conformity

BXN and MXN motors comply with the requirements of the Bureau of Indian Standards (BIS), and their nameplates bear the ISI mark.

CCC conformity*

BXN and MXN motors, with WD1 and WD3 windings and power ranging from 0.12kW to 1.1kW, comply with the requirements of the China Compulsory Certification (CCC), and their nameplates bear the CCC mark.

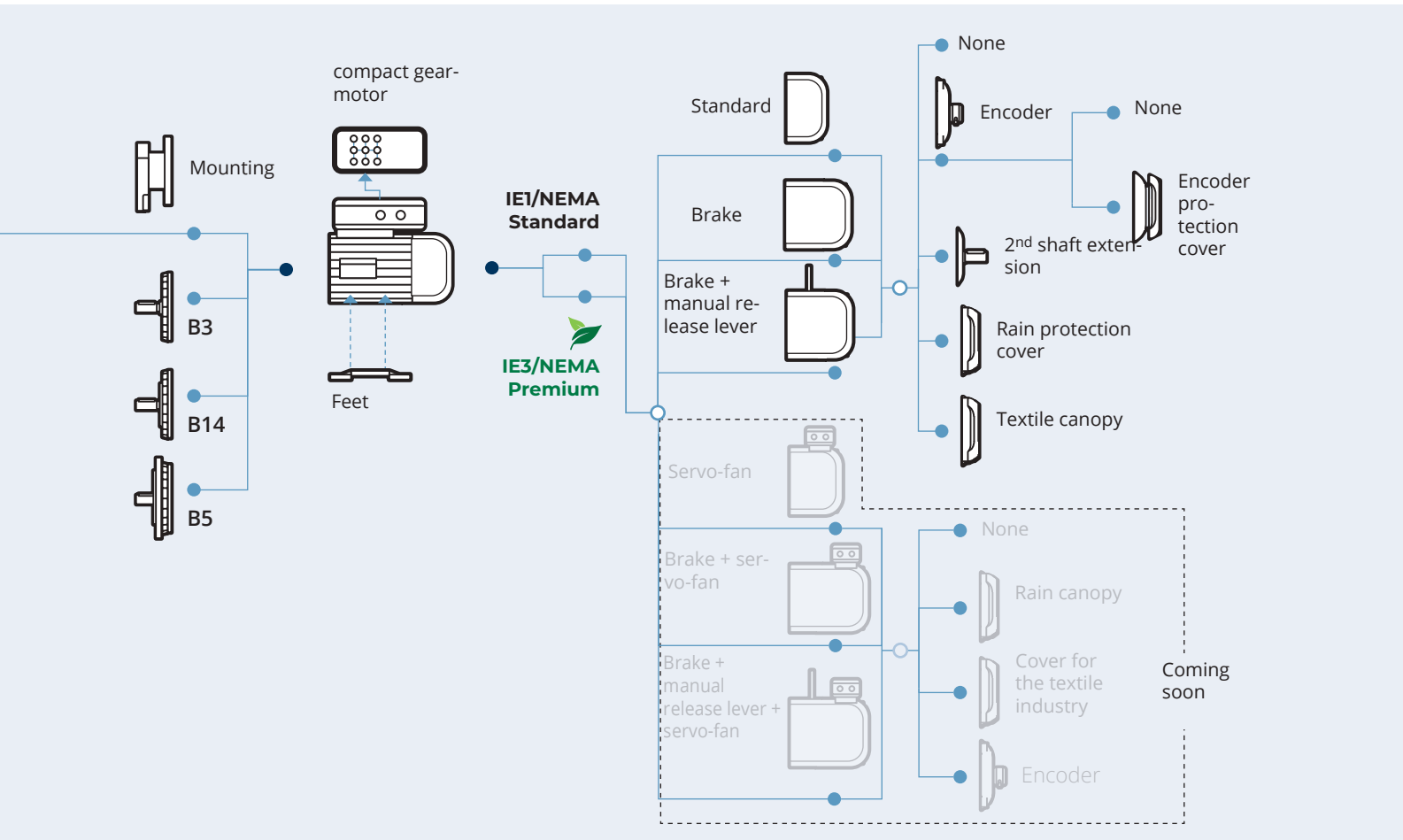


*The motor must be configured with the global motor option (CN).

PRODUCT MODULARITY



Lots of e-motor versions available to perfectly match your application needs.



AC and DC brake are available.



Suitable applications



Smart Conveyor



Features	Benefits
Advanced and accurate sensorless vector control providing high starting torque at low speed	Reducing current consumption at starting phase
Built-in PLC functions	Smart Conveyor programming without PLC
Standby mode	Energy saving
Integrated monitoring tool	Inverter failure prevention and diagnostics analysis



Wrapping Machine




Features	Benefits
Sensorless accurate control or closed-loop advanced vectorial control	Wrapping Machine progressive start and stop
PI control with advanced derivative control	Optimized film tension control
Configurable position and speed control via parameters	Variable lifting speed and up/down controls
Built-in PLC functions	Wrap cycle adjustment
Possible sync between several drives	Machine can operate without any PLC



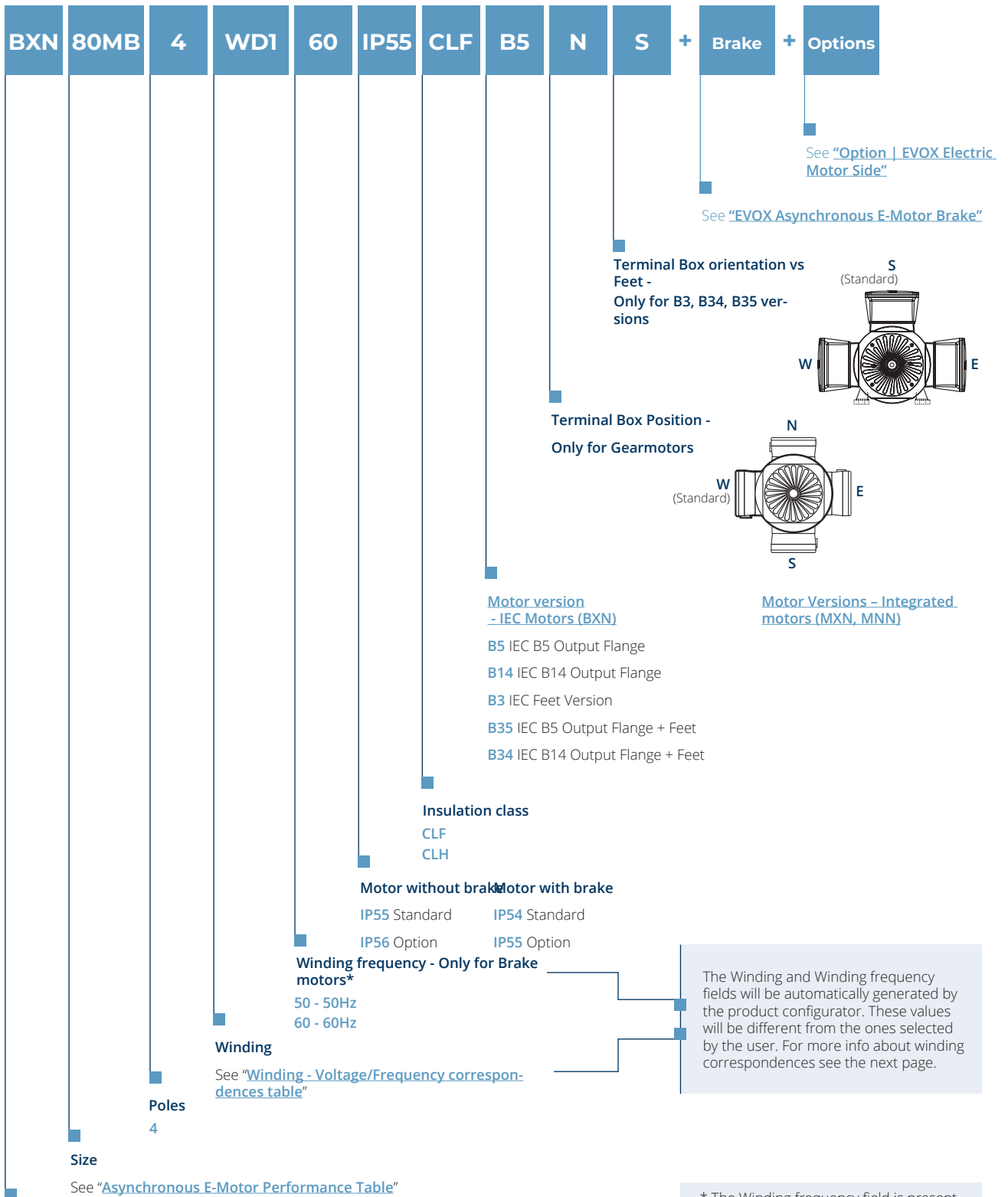
Vertical automatic storage



Features	Benefits
SBC (Safety Brake Control)	Minimized application risks
Sensor-connected ready	Scheduled maintenance-ready
See Bonfiglioli BMC  < To be connected to Motion Controller (CSP mode)	<ul style="list-style-type: none"> Machine complete integration Single supplier
All EVOX encoders are compatible with AxiaVert	Flexible application
iOS & Desktop user-friendly application and Bluetooth/Wi-Fi inverter connection	<ul style="list-style-type: none"> Plug & Play solution Easy troubleshooting



DESIGNATION



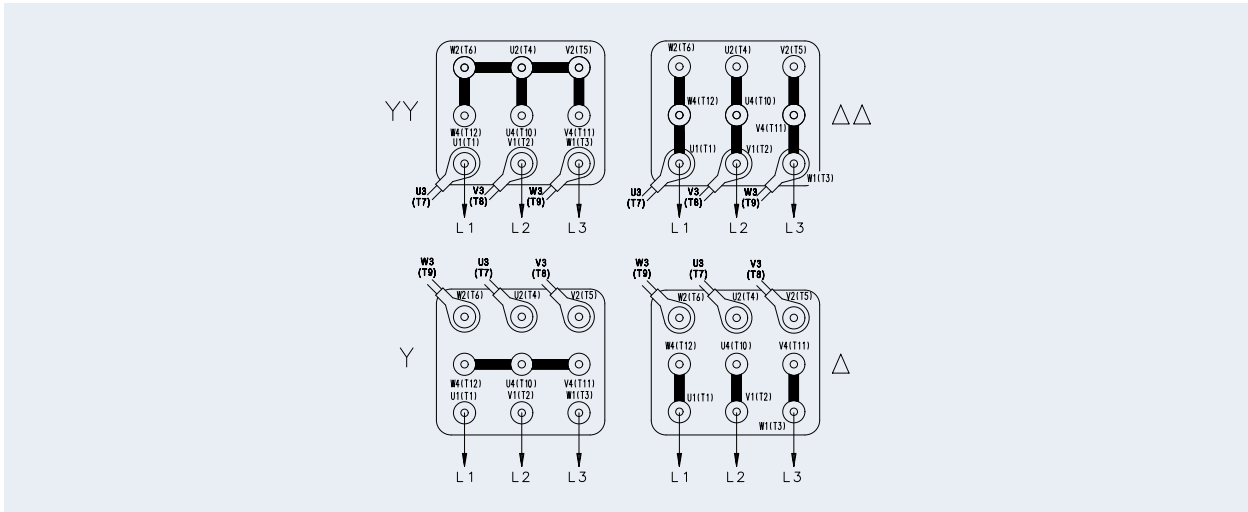
Asynchronous E-motor series

- BXN** Stand alone motor IE3/NEMA Premium
- MXN** Integrated Motor IE3/NEMA Premium
- MNN** Integrated Motor IE1/NEMA Standard

WINDING

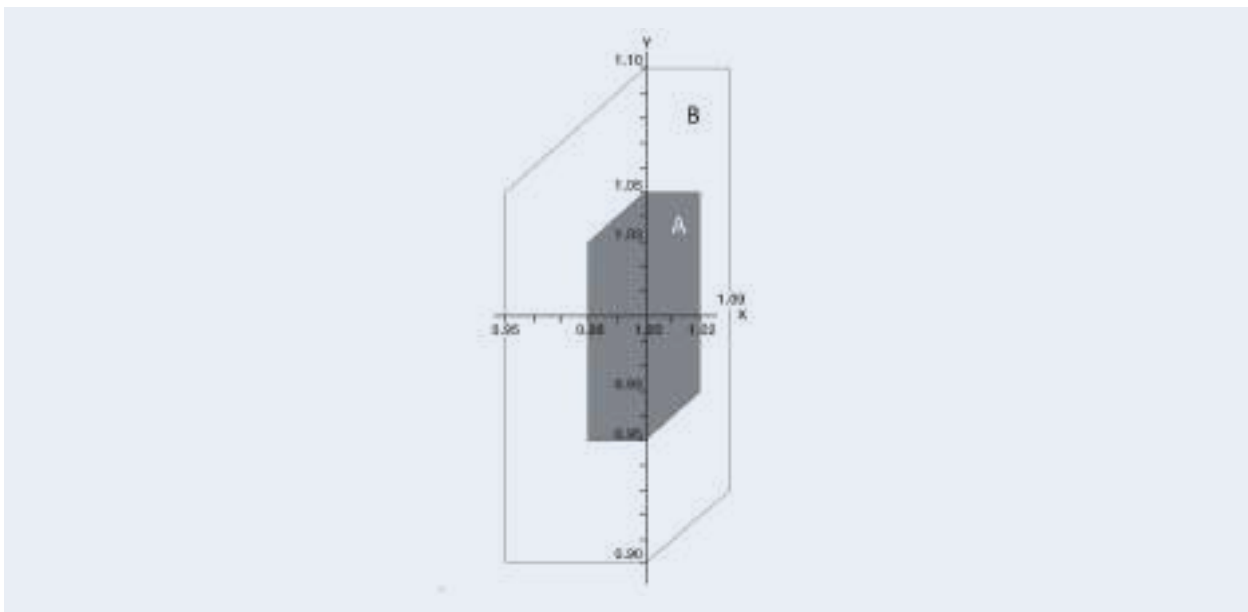
Terminal box 9 PIN arrangement

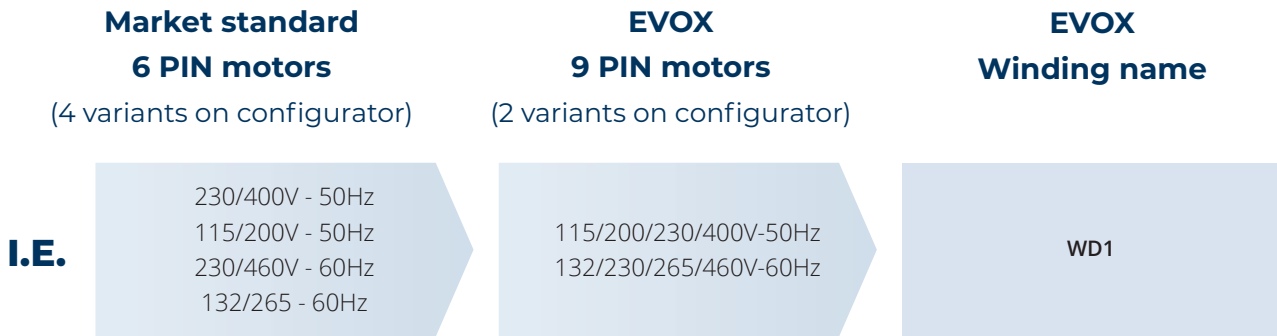
Rotation is possible in both directions. If terminals U1, V1, and W1 are connected to line phases L1, L2 and L3, clockwise rotation (from drive end) is obtained. For counter clockwise rotation, switch two phases.



All EVOX motors are designed according to standard 60034-1, which states that a motor must be able to operate continuously in zone A within $\pm 5\%$ of rated voltage and $\pm 2\%$ of rated frequency, guaranteeing rated torque. Operation is also guaranteed in Zone B within a range of $\pm 10\%$ of rated voltage and over a range of $+3 / -5\%$ of frequency, but the machine may have performance deviations or overtemperatures exceeding those at rated voltage within the $\pm 5\%$ range.

According to the standard, prolonged operation at the limits of zone B at $\pm 10\%$ is not recommended. For out-of-tolerance operation, temperature may exceed the limit provided in the relevant insulation class by 10 K.












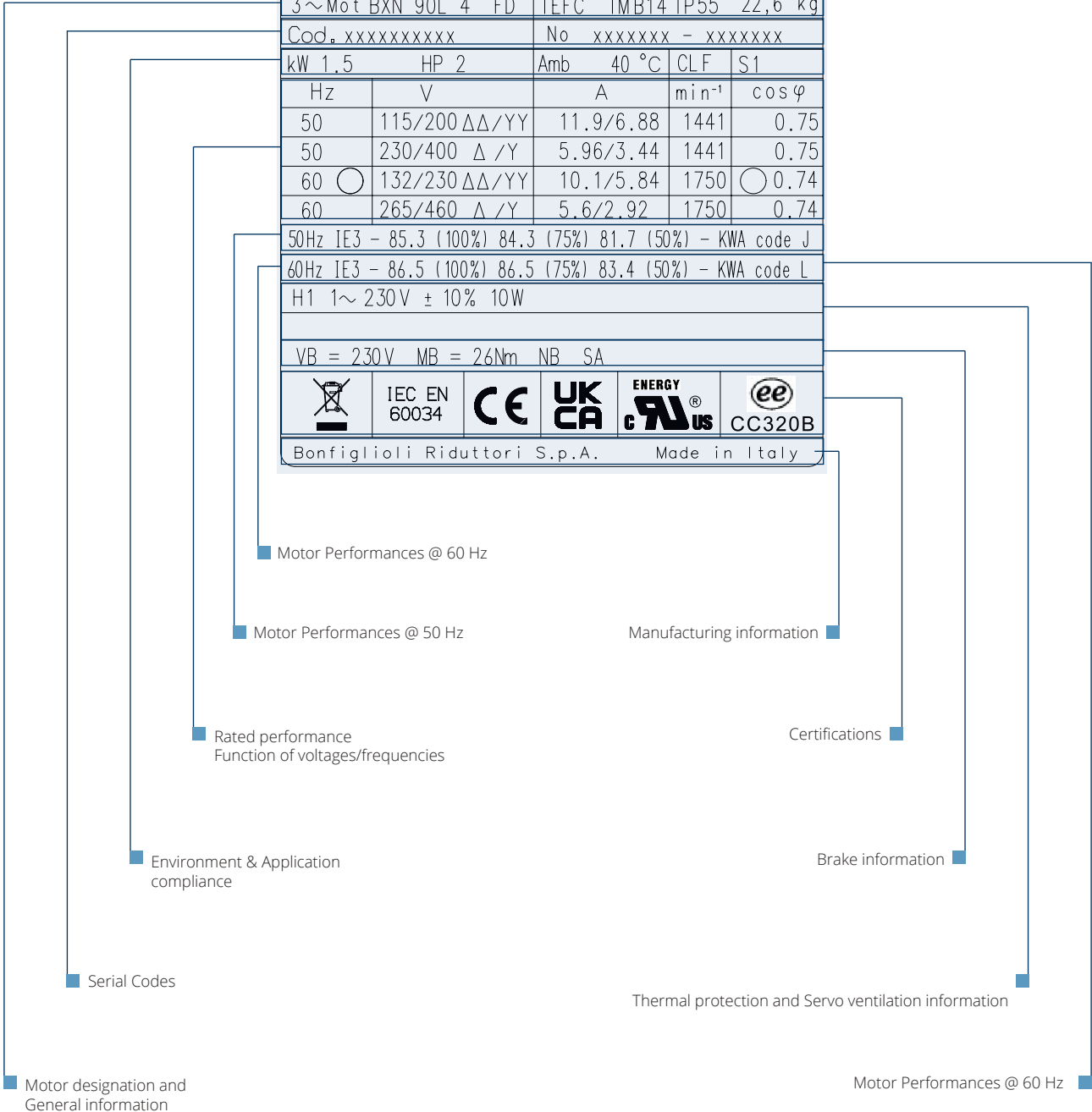
Product selector Winding - Voltage/Frequency correspondences

IEC 63-80 or compact 05-20						IEC 90-112 or compact 25-35						Higher than IEC 132 or compact 40					
Winding	Motor supply {V}				Frequency [Hz]	Winding	Motor supply {V}				Frequency [Hz]	Winding	Motor supply {V}				Frequency [Hz]
	ΔΔ	YY	Δ	Y			ΔΔ	YY	Δ	Y			ΔΔ	YY	Δ	Y	
WD1	115	200	230	400	50	WD1	115	200	230	400	50	WD8	230	400	460	—	50
	132	230	265	460	60		132	230	265	460	60		265	460	530	—	60
—						—						WD2	200	346	400	690	50
WD3	110	190	220	380	50	WD3	110	190	220	380	50	WD9	220	380	440	—	50
	127	220	255	440	60		127	220	255	440	60		255	440	510	—	60
WD4	95	165	190	330	50	WD4	95	165	190	330	50	WD10	190	330	380	660	50
	110	190	220	380	60		110	190	220	380	60		220	380	440	—	60
WD5	120	208	240	415	50	WD5	120	208	240	415	50	WD11	240	415	480	—	50
	140	240	280	480	60		140	240	280	480	60		280	480	550	—	60
—						—						WD6	208	360	415	720	50
WD7	147	255	290	500	50	WD7	147	255	290	500	50	WD12	290	500	575	—	50
	165	290	330	575	60		165	290	330	575	60		330	575	—	—	60



NAMEPLATE DESIGNATION

 Bonfiglioli											
3~Mot BXL 90L 4 FD					TEFC IMB14 IP55 22,6 kg						
Cod. xxxxxxxxxxxx					No xxxxxxxx - xxxxxxxx						
kW 1.5		HP 2		Amb 40 °C		CLF		S1			
Hz	V	A		min ⁻¹		cos φ					
50	115/200 ΔΔ/YY	11.9/6.88		1441		0.75					
50	230/400 Δ/Y	5.96/3.44		1441		0.75					
60	132/230 ΔΔ/YY	10.1/5.84		1750		0.74					
60	265/460 Δ/Y	5.6/2.92		1750		0.74					
50Hz IE3 - 85.3 (100%) 84.3 (75%) 81.7 (50%) - KWA code J											
60Hz IE3 - 86.5 (100%) 86.5 (75%) 83.4 (50%) - KWA code L											
H1 1~ 230V ± 10% 10W											
VB = 230V MB = 26Nm NB SA											
		IEC EN 60034									
Bonfiglioli Riduttori S.p.A.					Made in Italy						



PROTECTION CLASS

IPxx

Index of protection

The IP – index of protection – shows the protection rate of the device from any external agents. It is composed of IP and 2 numbers, which show:

- the first digit describes the degree of protection rate against solid objects, dust, the solid particles and bodies.
- the second digit describes the degree of protection offered against liquids.

Solids Particles < 50 mm 1	Solids Particles < 12.5 mm 2	Solids Particles < 2.5 mm 3	Solids Particles < 1 mm 4	Solids Protected against particles 5	Solids Particles tight 6		
Water Vertical drip- ping water 1	Water Dripping water < 15° 2	Water Spraying water 3	Water Spraying water 4	Water Water jet 5	Water Pressure water jet 6	Water Immersion < 1 meter 7	Water Immersion ≥ 3 meters 8
Low level of protection			Standard level of protection		High level of protection		

Standard motors are designed to IP55 degree of protection and IP54 in case of brake motors. They can be installed in dusty or humid environments.

IP examples:

IP54: • Protection against dust deposits • Protected against spray water

IP55: • Protection against dust deposits • Protection against water jets from any direction

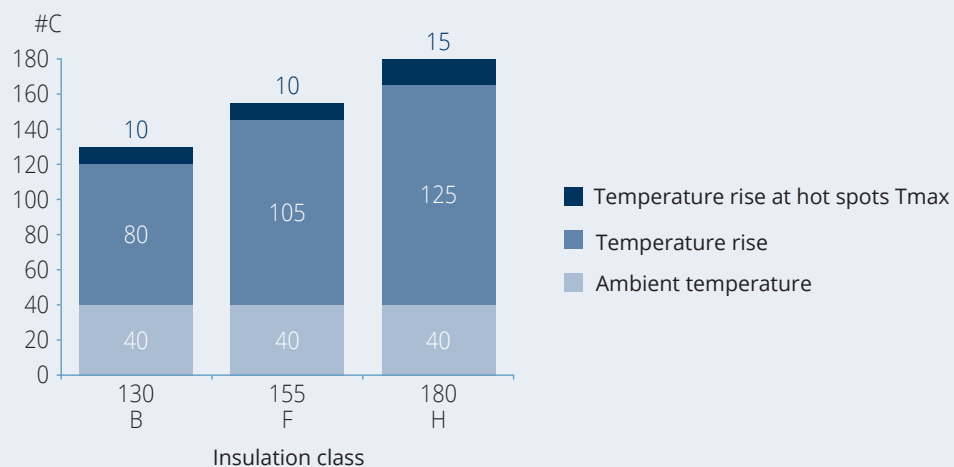
IP56: • Protection against dust deposits • Protection against powerful water jets from any direction

DESIGNATION

INSULATION CLASS

NEMA motor insulation classes describes the ability of motor insulation in the windings to handle heat (Ref. IEC 60085 and IEC 60034-1). There are four insulation classes in use namely: A, B, F, and H. All four classes identify the allowable temperature rise from an ambient temperature of 40° C (104° F). Classes B and F are the most common in many applications.

Temperature rise (T) and maximum temperatures at hot spots (Tmax) for insulation classes (IEC 60034-1).



CL F

Class F insulation

Bonfiglioli electric motors have been designed as standard with a class F insulation system (enamelled wire, insulators, impregnation resins). In standard motors, stator winding overtemperature normally remains below the 80 K limit corresponding to class B overtemperature. Class F allows temperature increases of 105 K (measured by the resistance variation method) and maximum temperatures of 155°C in motor hot spots.

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

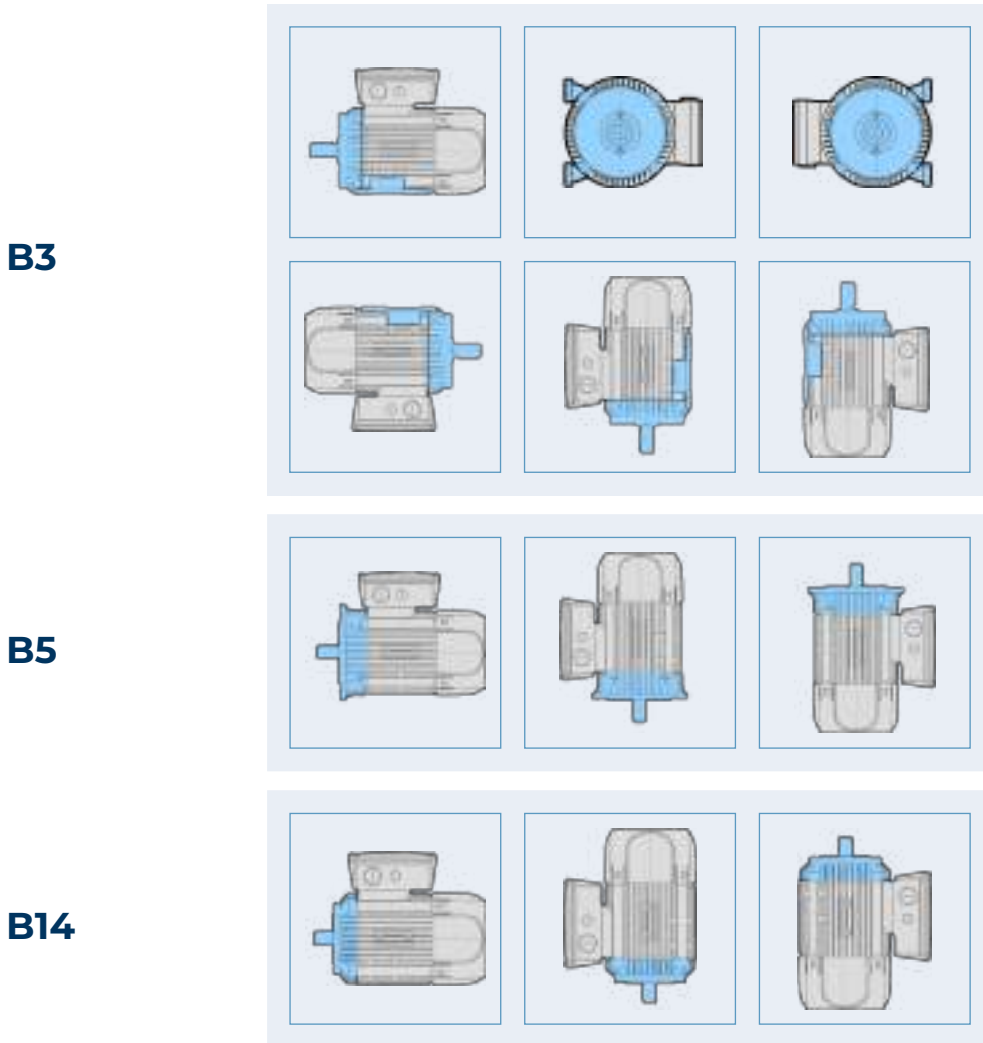
Class H insulation

Motors manufactured in insulation class H are available at request. This option fits for special constructions, where the necessary winding is class H and impregnated with special varnishes which enable it to operate in conditions of high temperatures with relative air humidity of up to 100%.

VERSIONS

Motor Versions – IEC motors (BXN)

BXN motors are available in the design versions as indicated in the table below as per Standards EN 60034-7. Motor reporting on nameplate the standard mounting position can be mounted in the position illustrated in the following table:



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

For outdoor applications where the motor is mounted with the output shaft facing downwards, the selection of rain protection cover (RC) option is recommended.

In this case, specify this request during the ordering phase, because it is not present in standard motor versions.

Motor Versions – Integrated motors (MXN, MNN)

In case a compact motor of the EVOX platform (MXN and MNN) is configured as a stand-alone product, please refer to the following list:

Motor series	Motor size	CP gear unit size	Coupling
MXN/MNN	05MA - 25L	≤ 47	C
		> 47	L
	30LA - 30LB	≥ 47	C

PERFORMANCE

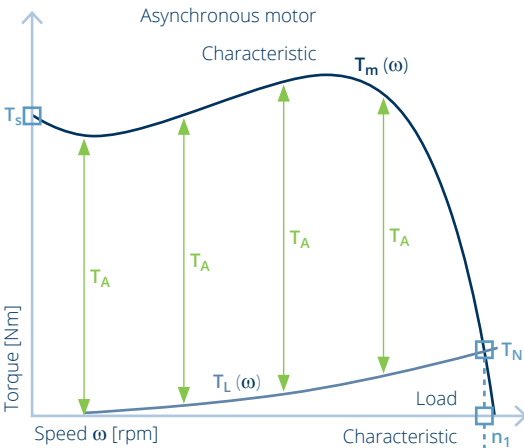
EVOX ELECTRIC MOTOR

Tables introduction

Motor designation		Output power		Output speed n_1	Inertia	η			Torque			Weight
IEC	Compact	P_{n1}		[rpm]	$J \times 10^{-4}$	50%	75%	100%	T_N	T_S/T_N	T_A/T_N	IEC B5
		[kW]	[HP]		[kgm ²]	[%]	[%]	[%]	[Nm]	[Nm]	[Nm]	[kg]
BXN 63MA 4	MXN 05MA 4	0.12	0.16	1,407	1.82	52.5	60.3	64.8	0.8	2.9	1.7	4.6
BXN 63MB 4	MXN 05MB 4	0.18	0.25	1,373	2.92	63.3	68.8	69.9	1.3	3.1	1.8	5.7

Rated Voltage V_N - Different winding executions

Motor designation		380 V				400 V				415 V			
IEC	Compact	Current		KVA	Code	Current		KVA	Code	Current		KVA	Code
		$\cos\phi$	I_N	I_S/I_N		$\cos\phi$	I_N	I_S/I_N		$\cos\phi$	I_N	I_S/I_N	
			[A]				[A]				[A]		
BXN 63MA 4	MXN 05MA 4	0.61	0.48	3.4	H	0.58	0.47	3.4	H	0.57	0.46	3.4	H
BXN 63MB 4	MXN 05MB 4	0.61	0.65	3.5	G	0.61	0.61	3.5	G	0.62	0.59	3.5	G



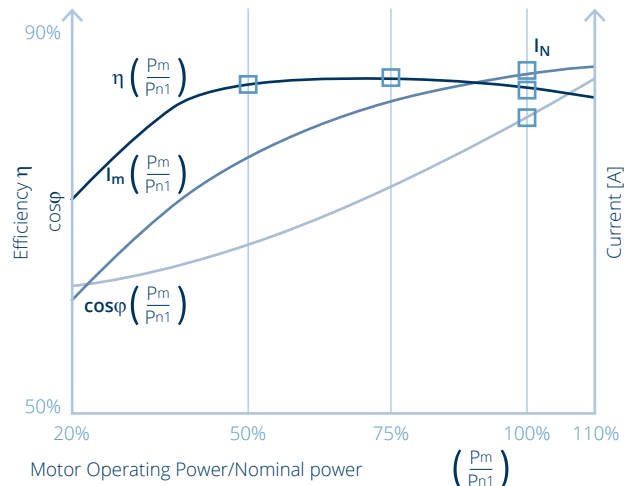
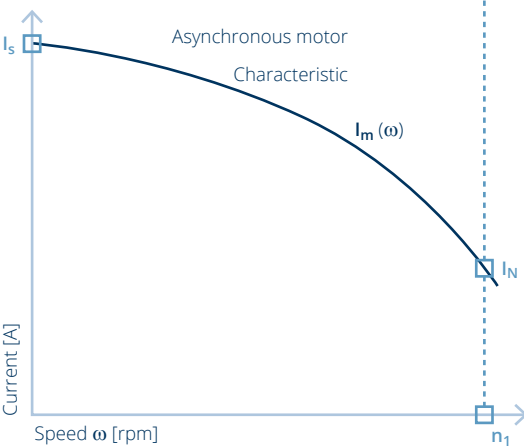
T_A = Acceleration torque

The T_A indicated in this catalogue is calculated with a finite element method because it is dependent from the Load Characteristic and the time.

$$T_a(t) = T_m(t) - T_L(t) = J \frac{\delta\omega}{\delta t}$$

(J is the motor + load inertia, both reduced at the output motor shaft)

T_A in this catalogue is calculated without a Load Characteristics and with only the EVOX motor inertia.



Please, refer to [Configuration Guidelines & Setup](#) section before the motor configuration, in order to select the correct Power.

Tolerances

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

Tolerance rule	Tolerance parameter
-0.15 (1 - η) $P \leq 50\text{kW}$	η
$-(1 - \cos\phi)/6$ min 0.02 max 0.07	$\cos\phi$
$\pm 20\%^*$	Slip
+20%	I_s
-15% +25%	T_s
-10%	Max torque

(*) $\leq 30\%$ for motors with $P_n < 1\text{kW}$

Coefficient code for locked-rotor KVA - Nameplate marking

KVA coefficient is a good solution to compare the inrush of different manufactures' motors than % inrush current. The reason being that if a motor has a high full load current, the % inrush will be lower than a motor with the same inrush current but a lower full load current.

Letter designation	KVA per horsepower*	Letter designation	KVA per horsepower*
A	0 - 3.15	L	9.0 - 10.0
B	3.15 - 3.55	M	10.0 - 11.2
C	3.55 - 4.0	N	11.2 - 12.5
D	4.0 - 4.5	P	12.5 - 14.0
E	4.5 - 5.0	R	14.0 - 16.0
F	5.0 - 5.6	S	16.0 - 18.0
G	5.6 - 6.3	T	18.0 - 20.0
H	6.3 - 7.1	U	20.0 - 22.4
J	7.1 - 8.0	V	22.4 and up
K	8.0 - 9.0		

(*) the KVAs defined as horsepower range include the lower figure up to, but not including, the higher figure.

To determinate KVA per HP, use the following formula:

$$\frac{\text{KVA}}{P_{n1} \text{ [express in HP]}} \text{ where } \text{KVA} = V_n I_s \frac{\sqrt{3}}{1000}$$

PERFORMANCE

EVOX ELECTRIC MOTOR

Performance Table – 50Hz

IE3/NEMA Premium - 400 V - 50 Hz - 4 poles

Motor designation		Output power P_{n1}		Output speed n_1	Inertia J_m $J \times 10^{-4}$	η			Torque			Weight
IEC	Compact	[kW]	[HP]	[rpm]	[kgm ²]	50%	75%	100%	T_N	T_S/T_N	T_A/T_N	[kg]
BXN 63MA 4	MXN 05MA 4	0.12	0.16	1,407	1.82	52.5	60.3	64.8	0.8	2.9	1.7	4.6
BXN 63MB 4	MXN 05MB 4	0.18	0.25	1,373	2.92	63.3	68.8	69.9	1.3	3.1	1.8	5.7
BXN 71MA 4	MXN 10MA 4	0.25	0.33	1,388	6.28	67.9	72.8	73.5	1.7	1.6	2.4	6.5
BXN 71MB 4	MXN 10MB 4	0.37	0.50	1,419	9.70	70.8	76.0	77.3	2.5	2.6	2.5	8.3
BXN 80MA 4	MXN 20MA 4	0.55	0.75	1,447	17.78	77.4	80.9	80.8	3.6	1.9	1.6	10.7
BXN 80MB 4	MXN 20MB 4	0.75	1.00	1,451	28.89	82.5	85.1	82.5	4.9	2.4	2.0	14.4
BXN 90S 4	MXN 25S 4	1.1	1.50	1,448	31.76	83.5	85.9	84.1	7.3	2.4	3.4	15.6
BXN 90L 4	MXN 25L 4	1.5	2.00	1,441	34.96	81.7	84.3	85.3	9.9	2.6	2.4	16.6
BXN 100LA 4	MXN 30LA 4	2.2	3.00	1,458	90.01	86.3	88.4	86.7	14.4	3.4	2.3	29.5
BXN 100LB 4	MXN 30LB 4	3.0	4.00	1,452	90.01	86.2	88.0	87.7	19.7	3.2	3.0	29.5

Motor designation		380 V				400 V				415 V			
IEC	Compact	Current			KVA	Current			KVA	Current			KVA
		$\cos\phi$	IN	I_S/I_N	Code	$\cos\phi$	IN	I_S/I_N	Code	$\cos\phi$	IN	I_S/I_N	Code
			[A]				[A]				[A]		
BXN 63MA 4	MXN 05MA 4	0.61	0.48	3.4	H	0.58	0.47	3.4	H	0.57	0.46	3.4	H
BXN 63MB 4	MXN 05MB 4	0.61	0.65	3.5	G	0.61	0.61	3.5	G	0.62	0.59	3.5	G
BXN 71MA 4	MXN 10MA 4	0.73	0.71	4.8	H	0.74	0.67	4.8	H	0.73	0.65	4.8	H
BXN 71MB 4	MXN 10MB 4	0.65	1.12	6.3	L	0.66	1.05	6.3	L	0.63	1.06	6.3	L
BXN 80MA 4	MXN 20MA 4	0.73	1.40	6.1	J	0.75	1.31	6.1	J	0.73	1.29	6.1	J
BXN 80MB 4	MXN 20MB 4	0.78	1.71	7.4	K	0.78	1.63	7.4	K	0.79	1.56	7.4	K
BXN 90S 4	MXN 25S 4	0.78	2.51	7.3	J	0.78	2.38	7.3	J	0.77	1.33	7.3	J
BXN 90L 4	MXN 25L 4	0.75	3.59	6.7	J	0.75	3.44	6.7	J	0.75	3.31	6.7	J
BXN 100LA 4	MXN 30LA 4	0.80	4.68	8.8	L	0.81	4.42	8.8	L	0.81	4.28	8.8	L
BXN 100LB 4	MXN 30LB 4	0.81	6.39	8.1	K	0.80	6.14	8.1	K	0.80	5.93	8.1	K

IE1/NEMA Standard - 400 V - 50 Hz - 4 poles

Motor designation		Output power P_{n1}		Output speed n_1	Inertia J_m $J \times 10^{-4}$	η			Torque			Weight
IEC	Compact	[kW]	[HP]	[rpm]	[kgm ²]	50%	75%	100%	T_N	T_S/T_N	T_A/T_N	[kg]
	MNN 05MA 4	0.12	0.16	1,340	1.80	45.8	52.4	50.0	0.9	2.0	1.5	4.5
	MNN 05MB 4	0.18	0.25	1,330	2.00	49.9	56.5	57.0	1.3	2.5	1.3	4.8
	MNN 05MC 4	0.25	0.33	1,317	2.92	60.4	65.5	61.5	1.8	2.6	1.4	5.7
	MNN 10MA 4	0.25	0.33	1,375	4.58	58.0	65.4	61.5	1.7	1.5	1.8	5.6
	MNN 10MB 4	0.37	0.50	1,368	6.28	65.4	70.8	66.0	2.6	1.5	1.6	6.5
	MNN 10MC 4	0.55	0.75	1,360	7.99	67.9	72.7	70.0	3.9	1.8	1.5	7.4
	MNN 20MA 4	0.55	0.75	1,423	12.23	70.3	74.9	70.0	3.7	1.3	1.0	8.8
	MNN 20MB 4	0.75	1.00	1,414	15.56	73.8	77.4	72.1	5.1	1.4	1.4	9.9

Motor designation		380 V				400 V				415 V			
IEC	Compact	Current			KVA	Current			KVA	Current			KVA
		$\cos\phi$	IN	I_S/I_N	Code	$\cos\phi$	IN	I_S/I_N	Code	$\cos\phi$	IN	I_S/I_N	Code
			[A]				[A]				[A]		
	MNN 05MA 4	0.71	0.47	2.6	F	0.68	0.47	2.6	F	0.68	0.45	2.6	F
	MNN 05MB 4	0.67	0.70	2.7	F	0.64	0.69	2.7	F	0.62	0.68	2.7	F
	MNN 05MC 4	0.65	0.91	2.9	F	0.67	0.85	2.9	F	0.67	0.82	2.9	F
	MNN 10MA 4	0.73	0.78	3.9	G	0.70	0.77	3.9	G	0.69	0.75	3.9	G
	MNN 10MB 4	0.75	1.07	4.3	G	0.74	1.03	4.3	G	0.74	0.99	4.3	G
	MNN 10MC 4	0.75	1.57	4.3	G	0.75	1.49	4.3	G	0.75	1.44	4.3	G
	MNN 20MA 4	0.80	1.40	4.2	F	0.78	1.38	4.2	F	0.76	1.35	4.2	F
	MNN 20MB 4	0.79	1.89	4.5	F	0.80	1.77	4.5	F	0.78	1.74	4.5	F



Performance Table – 60Hz

IE3/NEMA Premium - 460 V - 60 Hz - 4 poles

Motor designation		Output power P _{n1}		Output speed n ₁	Inertia J _m × 10 ⁻⁴	η			Torque			Weight
IEC	Compact	[kW]	[HP]	[rpm]	[kgm ²]	50%	75%	100%	T _N	T _S /T _N	T _A /T _N	[kg]
BXN 63MA 4	MXN 05MA 4	0.12	0.16	1,724	1.82	54.2	62.2	66.0	0.7	3.8	2.7	4.6
BXN 63MB 4	MXN 05MB 4	0.18	0.25	1,719	2.92	65.0	71.1	69.5	1.0	3.9	3.0	5.7
BXN 71MA 4	MXN 10MA 4	0.25	0.33	1,706	6.28	68.5	74.1	73.4	1.4	1.8	2.1	6.5
BXN 71MB 4	MXN 10MB 4	0.37	0.50	1,731	9.70	70.7	76.6	78.2	2.0	3.1	4.4	8.3
BXN 80MA 4	MXN 20MA 4	0.55	0.75	1,755	17.76	77.7	82.1	81.1	3.0	2.2	2.2	10.7
BXN 80MB 4	MXN 20MB 4	0.75	1.00	1,757	28.85	82.3	85.8	85.5	4.1	2.7	3.0	14.4
BXN 90S 4	MXN 25S 4	1.1	1.50	1,754	31.76	83.5	86.6	86.5	6.0	2.7	2.9	15.6
BXN 90L 4	MXN 25L 4	1.5	2.00	1,750	35.11	83.4	86.5	86.5	8.2	2.8	2.4	16.6
BXN 100LA 4	MXN 30LA 4	2.2	3.00	1,765	90.01	87.1	89.6	89.5	11.9	3.8	2.8	29.5
BXN 100LB 4	MXN 30LB 4	3.0	4.00	1,761	90.01	87.1	89.5	89.5	16.3	3.6	4.4	29.5

Motor designation		380 V				460 V				575 V			
IEC	Compact	Current			KVA	Current			KVA	Current			KVA
		cosφ	I _N	I _S /I _N	Code	cosφ	I _N	I _S /I _N	Code	cosφ	I _N	I _S /I _N	Code
			[A]				[A]				[A]		
BXN 63MA 4	MXN 05MA 4	0.52	0.53	4.1	L	0.52	0.44	4.1	L	0.51	0.35	4.1	L
BXN 63MB 4	MXN 05MB 4	0.56	0.67	4.7	K	0.55	0.56	4.7	K	0.51	0.48	4.7	K
BXN 71MA 4	MXN 10MA 4	0.70	0.72	6.0	K	0.70	0.59	6.0	K	0.71	0.47	6.0	K
BXN 71MB 4	MXN 10MB 4	0.60	1.19	7.7	N	0.61	0.96	7.7	N	0.60	0.79	7.7	N
BXN 80MA 4	MXN 20MA 4	0.71	1.41	7.3	K	0.72	1.15	7.3	K	0.75	0.88	7.3	K
BXN 80MB 4	MXN 20MB 4	0.77	1.71	8.8	L	0.76	1.43	8.8	L	0.75	1.16	8.8	L
BXN 90S 4	MXN 25S 4	0.77	1.33	7.3	J	0.75	2.10	8.5	L	0.75	2.10	8.5	L
BXN 90L 4	MXN 25L 4	0.75	3.50	8.3	L	0.74	2.92	8.3	L	0.74	2.34	8.3	L
BXN 100LA 4	MXN 30LA 4	0.79	4.72	10.5	M	0.79	3.89	10.5	M	0.78	3.14	10.5	M
BXN 100LB 4	MXN 30LB 4	0.79	6.46	9.8	M	0.78	5.37	9.8	M	0.77	4.34	9.8	M

IE1/NEMA Standard - 460 V - 60 Hz - 4 poles

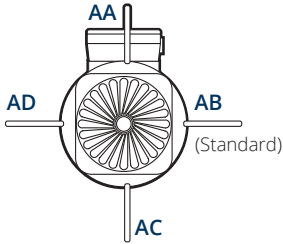
Motor designation		Output power P _{n1}		Output speed n ₁	Inertia J _m × 10 ⁻⁴	η			Torque			Weight
IEC	Compact	[kW]	[HP]	[rpm]	[kgm ²]	50%	75%	100%	T _N	T _S /T _N	T _A /T _N	[kg]
	MNN 05MA 4	0.12	0.16	1,687	1.8	48.1	55.2	62.0	0.7	2.7	2.2	4.5
	MNN 05MB 4	0.18	0.25	1,669	2.0	52.0	59.2	66.0	1.0	3.4	1.9	4.8
	MNN 05MC 4	0.25	0.33	1,672	2.9	63.1	68.9	68.0	1.4	3.6	2.1	5.7
	MNN 10MA 4	0.25	0.33	1,696	4.6	59.6	67.0	68.0	1.4	1.8	2.8	5.6
	MNN 10MB 4	0.37	0.50	1,694	6.3	66.8	72.6	70.0	2.1	1.8	2.6	6.5
	MNN 10MC 4	0.55	0.75	1,689	8.0	70.5	75.4	74.0	3.1	2.2	2.4	7.4
	MNN 20MA 4	0.55	0.75	1,736	12.2	71.5	76.3	74.0	3.0	1.4	1.6	8.8
	MNN 20MB 4	0.75	1.00	1,730	15.6	75.6	79.5	77.0	4.1	1.7	1.6	9.9

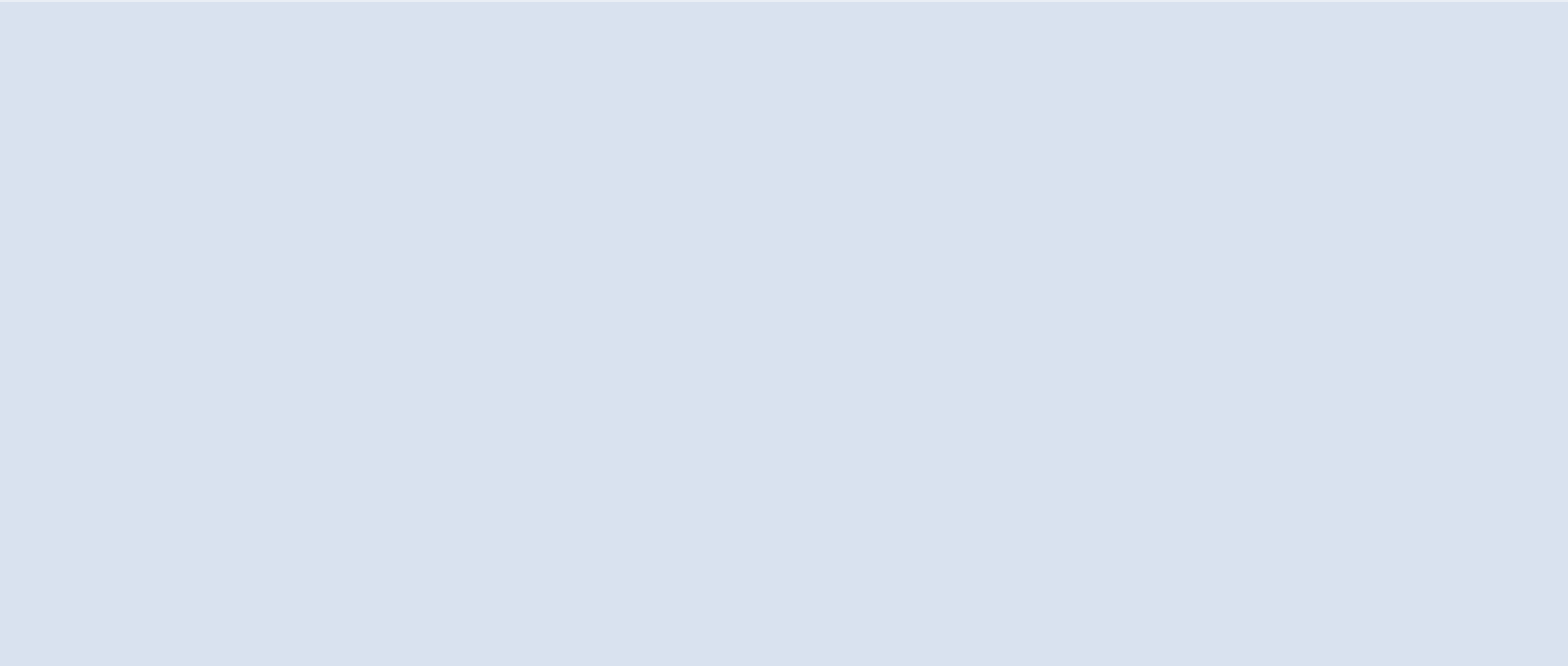
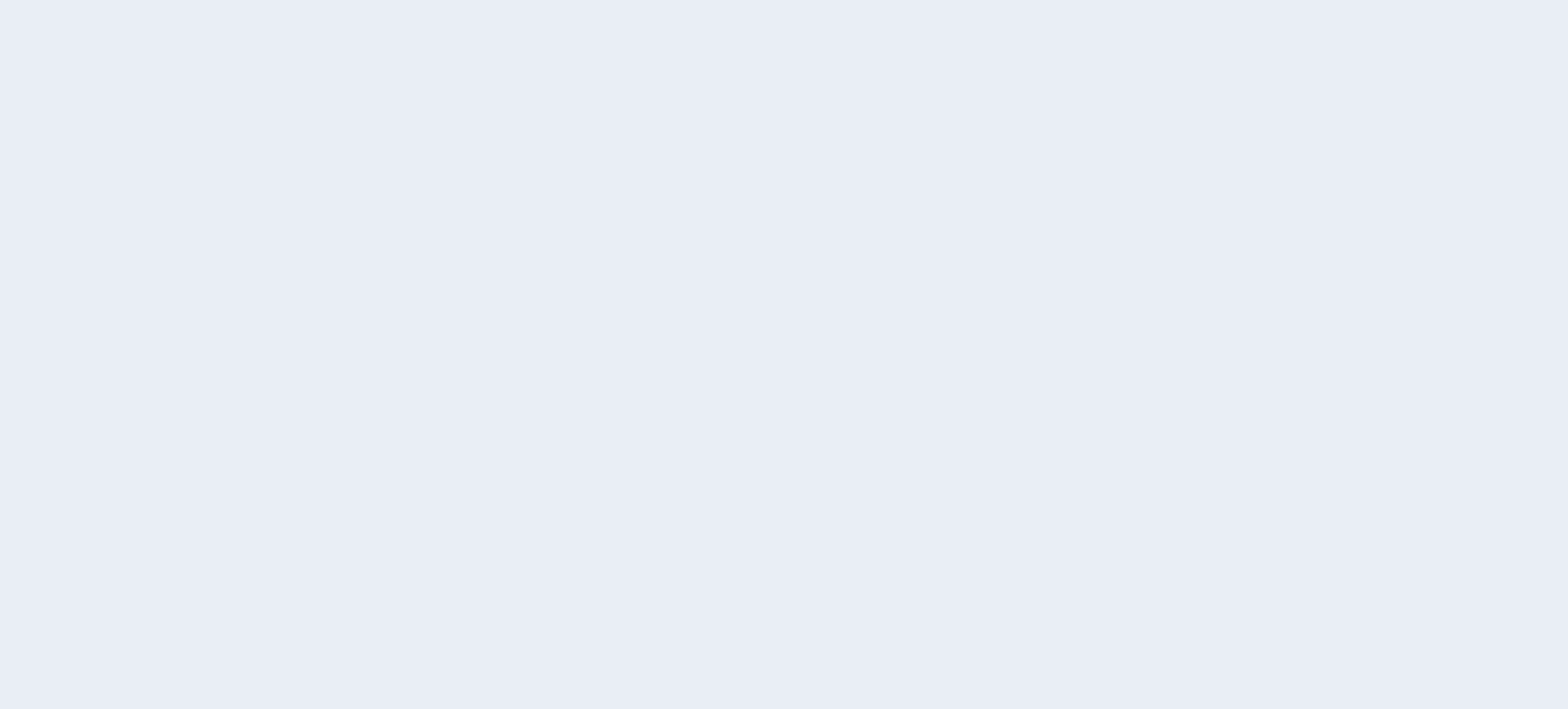
Motor designation		380 V				460 V				575 V			
IEC	Compact	Current			KVA	Current			KVA	Current			KVA
		cosφ	I _N	I _S /I _N	Code	cosφ	I _N	I _S /I _N	Code	cosφ	I _N	I _S /I _N	Code
			[A]				[A]				[A]		
	MNN 05MA 4	0.60	0.52	3.4	J	0.59	0.43	3.4	J	0.59	0.35	3.4	J
	MNN 05MB 4	0.54	0.81	3.5	J	0.56	0.65	3.5	J	0.56	0.52	3.5	J
	MNN 05MC 4	0.58	0.92	3.9	J	0.59	0.76	3.9	J	0.60	0.60	3.9	J
	MNN 10MA 4	0.65	0.84	4.8	J	0.66	0.68	4.8	J	0.66	0.55	4.8	J
	MNN 10MB 4	0.70	1.09	5.4	J	0.69	0.91	5.4	J	0.69	0.73	5.4	J
	MNN 10MC 4	0.70	1.58	5.6	J	0.69	1.31	5.6	J	0.67	1.08	5.6	J
	MNN 20MA 4	0.74	1.45	5.1	H	0.74	1.20	5.1	H	0.70	1.02	5.1	H
	MNN 20MB 4	0.76	1.87	5.5	H	0.77	1.54	5.5	H	0.80	1.19	5.5	H



BRAKE | EVOX ELECTRIC MOTOR

BRAKE OPTION LIST

Motor	+	FD	15	NB	R	AA	SA	230	CF	+	Options
											<p>Capacitive filter</p> <ul style="list-style-type: none"> - (Standard) No capacitive filter CF Capacitive filter
											<p>Brake supply</p> <ul style="list-style-type: none"> For FD brake see DC Brake Supply table For FA brake see AC Brake Supply table
											<p>Separate brake supply</p> <ul style="list-style-type: none"> DIR (Standard) No separate brake supply SD Separate DC brake supply SA Separate AC brake supply
											<p>Brake hand release lever position</p> 
											<p>Brake hand release lever</p> <ul style="list-style-type: none"> - (Standard) No release lever R Lever with a return spring RM Lever with a release blocked position
											<p>AC/DC type rectifier</p> <ul style="list-style-type: none"> - (Standard) No rectifier NB SB
											<p>Brake torque</p> <ul style="list-style-type: none"> For FD brake see Performance Table – DC Brake For FA brake see Performance Table – AC Brake
											<p>Brake type</p> <ul style="list-style-type: none"> - (Standard) No brake FD DC brake FA AC brake





BRAKE PERFORMANCE

Tables introduction

Motor designation		Brake Release Braking											Z ₀		Inertia Weight		Max static brake torque								
IEC	Compact	ID	t ₁	t _{1s}	t ₂	t _{2c}	P	W _{max}	W		NB	SB	Jx10 ⁻⁴	IEC B5	1.8	2.5	3.5	5	7.5	10	13	15	20	26	40
BXN	MXN	ms					W	KJ	MJ	[1/h]	[kgm ²]	[kg]	Nm												
63MA 4	05MA 4	FD02	30	15	80	9	17	4.5	1.4	0.18	15	8,900	11,000	2.4	6.3										
[Values calculated at maximum braking torque, average air gap and brake setting 230/400 V - 50 Hz]							[Max. permissible initial frequency without load (I=50%)]								[Max brake torque tolerance ±15%]										

BRAKE | EVOX ELECTRIC MOTOR

Performance Table – DC Brake

Motor designation		Brake Release				Braking				Wmax			Z ₀ (50Hz)		Z ₀ (60Hz)		Inertia Weight		Max static brake torque												
IEC	Compact	ID	t ₁	t _{1s}	t ₂	t _{2c}	P	10 s/h	100 s/h	1000 s/h	W	NB	SB	NB	SB	Jx10 ⁻⁴	IEC B5	1.75	2.5	3.5	5	7.5	10	13	15	20	26	40	50	60	100
BXN	MXN	ms				W	KJ	MJ	[1/h]		[1/h]		[kgm ²]	[kg]	Nm																
63MA 4	05MA 4	FD02	30	15	80	9	17	4.5	1.4	0.18	15	8,900	11,000	8,900	11,000	2.4	6.3	●													
63MB 4	05MB 4	FD02	30	15	80	9	17	4.5	1.4	0.18	15	7,000	9,000	7,000	9,000	3.5	7.4		●												
71MA 4	10MA 4	FD53	60	30	100	12	24	7	1.9	0.23	25	5,700	8,100	5,700	8,100	7.4	9.2			●											
71MB 4	10MB 4	FD53	60	30	100	12	24	7	1.9	0.23	25	6,400	9,900	6,400	9,900	10.8	11.0			●											
80MA 4	20MA 4	FD04	80	35	140	15	33	10	3.1	0.35	30	2,500	5,200	2,500	5,200	19.8	14.6				●										
80MB 4	20MB 4	FD04	80	35	140	15	33	10	3.1	0.35	30	2,000	4,100	2,000	4,100	30.8	18.3					●									
90S 4	25S 4	FD05	130	65	170	20	45	18	4.5	0.5	50	2,800	6,600	2,800	6,600	35.8	21.6										●				
90L 4	25L 4	FD05	130	65	170	20	45	18	4.5	0.5	50	1,400	3,100	1,400	3,100	39.1	22.6											●			
100LA 4	30LA 4	FD15	430	65	170	20	45	18	4.5	0.5	50	1,400	2,400	520	1,400	94.0	36.5												●		
100LB 4	30LB 4	FD15	430	65	170	20	45	18	4.5	0.5	50	2,000	3,700	-	890	94.0	36.5												●		

Motor designation		Brake Release				Braking				Wmax			Z ₀		Inertia Weight		Max static brake torque														
IEC	Compact	ID	t ₁	t _{1s}	t ₂	t _{2c}	P	10 s/h	100 s/h	1000 s/h	W	NB	SB	Jx10 ⁻⁴	IEC B5	1.75	2.5	3.5	5	7.5	10	13	15	20	26	40					
	MNN	ms				W	KJ	MJ	[1/h]		[1/h]		[kgm ²]	[kg]	Nm																
	05MA 4	FD02	30	15	80	9	17	4.5	1.4	0.18	15	8,000	10,000	2.1	5.9	●															
	05MB 4	FD02	30	15	80	9	17	4.5	1.4	0.18	15	6,400	8,200	2.4	6.3		●														
	05MC 4	FD02	30	15	80	9	17	4.5	1.4	0.18	15	5,700	7,300	3.5	7.4			●													
	10MA 4	FD53	60	30	100	12	24	7	1.9	0.23	25	9,900	14,000	5.7	8.3				●												
	10MB 4	FD53	60	30	100	12	24	7	1.9	0.23	25	5,600	8,800	7.4	9.2				●												
	10MC 4	FD53	60	30	100	12	24	7	1.9	0.23	25	3,300	6,700	9.1	10.1					●											
	20MA 4	FD04	80	35	140	15	33	10	3.1	0.35	30	2,600	5,300	14.2	12.7						●										
	20MB 4	FD04	80	35	140	15	33	10	3.1	0.35	30	1,900	3,900	17.6	13.8												●				

■ DC brake torque
 ● Suggested torque



Performance Table – AC Brake

Motor designation		Brake	Release	Braking		Wmax				Z ₀	Z ₀	Inertia	Weight	Max static brake torque													
IEC	Compact	ID	t ₁	t ₂	P	10 s/h	100 s/h	1000 s/h	W	Z ₀ (50Hz)	Z ₀ (60Hz)	Jx10 ⁻⁴	IEC B5	1.75	2.5	3.5	5	7.5	10	13	15	20	26	40	50	60	100
BXN	MXN	ms			W	KJ				[1/h]	[1/h]	[kgm ²]	[kg]	Nm													
63MA 4	05MA 4	FA02	4	20	60	4.5	1.4	0.18	15	13,000	11,000	2.4	6.1	•													
63MB 4	05MB 4	FA02	4	20	60	4.5	1.4	0.18	15	9,600	9,000	3.5	7.2			•											
71MA 4	10MA 4	FA03	4	40	80	7	1.9	0.23	25	1,400	8,100	7.4	8.9				•										
71MB 4	10MB 4	FA03	4	40	80	7	1.9	0.23	25	8,800	9,900	10.8	10.7				•										
80MA 4	20MA 4	FA04	6	60	110	10	3.1	0.35	30	5,100	5,200	19.8	14.5					•									
80MB 4	20MB 4	FA04	6	60	110	10	3.1	0.35	30	4,300	4,100	30.8	18.2							•							
90S 4	25S 4	FA05	8	90	250	18	4.5	0.5	50	7,600	6,600	35.8	22.3										•				
90L 4	25L 4	FA05	8	90	250	18	4.5	0.5	50	4,800	3,100	39.1	23.3										•				
100LA 4	30LA 4	FA15	8	90	250	18	4.5	0.5	50	2,400	1,400	94.0	36.5											•			
100LB 4	30LB 4	FA15	8	90	250	18	4.5	0.5	50	3,700	890	94.0	36.5											•			

Motor designation		Brake	Release	Braking		Wmax				Z ₀	Inertia	Weight	Max static brake torque													
IEC	Compact	ID	t ₁	t ₂	P	10 s/h	100 s/h	1000 s/h	W	Z ₀	Jx10 ⁻⁴	IEC B5	1.75	2.5	3.5	5	7.5	10	13	15	20	26	40			
BXN	MXN	ms			W	KJ				[1/h]	[kgm ²]	[kg]	Nm													
	05MA 4	FA02	4	20	60	4.5	1.4	0.18	15	10,000	2.1	5.7	•													
	05MB 4	FA02	4	20	60	4.5	1.4	0.18	15	8,200	2.4	6.1			•											
	05MC 4	FA02	4	20	60	4.5	1.4	0.18	15	7,300	3.5	7.2			•											
	10MA 4	FA03	4	40	80	7	1.9	0.23	25	14,000	5.7	8.0				•										
	10MB 4	FA03	4	40	80	7	1.9	0.23	25	8,800	7.4	8.9				•										
	10MC 4	FA03	4	40	80	7	1.9	0.23	25	6,700	9.1	9.8					•									
	20MA 4	FA04	6	60	110	10	3.1	0.35	30	5,300	14.2	12.6						•								
	20MB 4	FA04	6	60	110	10	3.1	0.35	30	3,900	17.6	13.7								•						

■ AC brake torque
 • Suggested torque

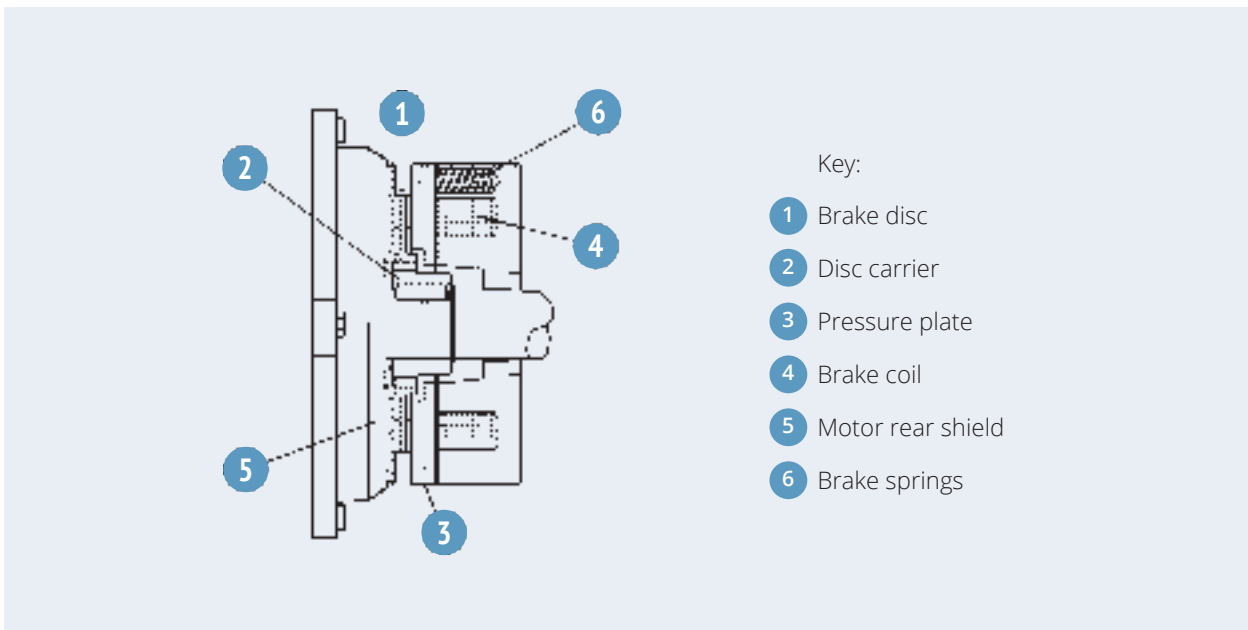
BRAKE | EVOX ELECTRIC MOTOR

BRAKE OPTION LIST DEEP DIVE

Asynchronous brake motors

Standard electric motors can be equipped with a brake thus creating a self-braking motor. The brake helps in situation where it is necessary a quickly and safely stop of the machine. The Bonfiglioli electric brake motors incorporate a spring-applied electromagnetic brake which can be powered by a continuous (DC) or asynchronous (AC) power source.

All brakes are designed to provide *fail-safe* operation, meaning that they are applied by spring action in the event of power failure.



In case of power failure, pressure springs push the reinforcement plate against the brake disc. The disc is trapped between the reinforcement plate and the motor shield, thus stopping shaft rotation. When coil is energised, a magnetic field - strong enough to overcome spring action - attracts the reinforcement plate. The brake disc, which is integral with the motor shaft, is thus released.

Brake type selection

FD brakes [DC brake power supply]: they are suitable for applications where a smooth, progressive, dynamic, silent and soft reaction time is requested. Due to its proprieties and the extensive use on the market, this solution is **highly suggested by Bonfiglioli**.

FA brakes [AC brake power supply]: they are suitable for applications where a fast reaction time and a quick stop is requested.

Cases	Brake supply	Brake choice	Separate brake supply
1	AC Connected to the terminal box of the motor	FA FD + rectifier	DIR
2	AC Dedicated AC	FA FD + rectifier	SA
3	AC Dedicated DC	FD	SD

Bonfiglioli solution

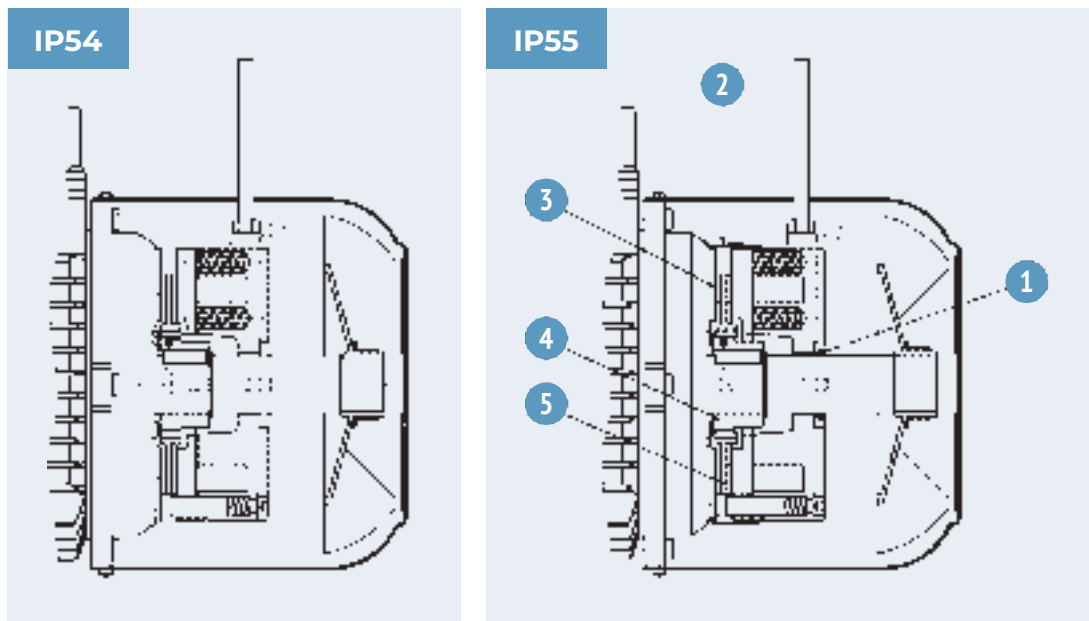
Brake type

FD

DC brake type

Direct current toroidal-coil electromagnetic brake bolted onto the 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. If requested, the motors may be equipped with a manual release lever with automatic return (R) or a system for holding the brake in the released position (RM). See variant in 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 the 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](#)



BXN, MXN and MNN brake motors comes with an IP54 protection degree as standard and it is possible to configure them with an IP55 as an option. If **IP55** is selected, the following construction variants will be applied:

- 1 V-ring at N.D.E. of motor shaft
- 2 Dust and waterproof rubber seal
- 3 Stainless steel ring placed between motor shield and brake disc
- 4 Stainless steel hub
- 5 Stainless steel brake disc

For FD technical specifications, refer to the performance section ([link](#))

BRAKE | EVOX ELECTRIC MOTOR

OPTIONS | BRAKE

FA

AC brake type

The electromagnetic brake operates from three-phase alternated current power supply and is secured on motor 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.

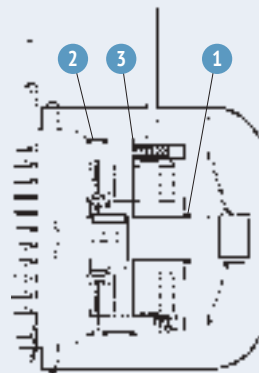
Torque adjustment range is $30\% M_{bMAX} < M_b < M_{bMAX}$ (where M_{bMAX} is maximum braking torque as shown in the tab). Thanks to their high dynamic characteristics, FA brakes are ideal for heavy-duty applications as well as applications requiring frequent stops/starts and very fast response times. If requested, the motors may be equipped with a manual release lever with automatic return (R). See variant in paragraph "BRAKE RELEASE SYSTEMS" for available release lever locations.

For applications involving lifting and/or high hourly energy dissipation, [contact Bonfiglioli's Technical Service](#).

IP54



IP55



Standard protection class is IP54.

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


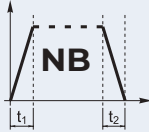
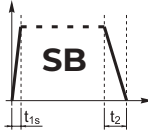
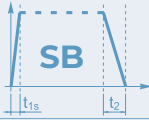

- 1 V-ring at motor shaft input
- 2 Dust and waterproof rubber seal
- 3 O-ring

For FA technical specifications, refer to the performance section ([link](#))

AC/DC rectifier type

The FD brake coil can be directly fed with DC current or by an AC/DC connection operated by a diode half-wave rectifier ($V_{DC} \approx 0,45 \times V_{AC}$). A rectifier is a circuit that converts the Alternating Current (AC) input power into a Direct Current (DC) output power. Evox products are available in versions NB and SB, as detailed in the table below:



	Brake	Standard	At request
BXN 63	FD 02		
BXN 71	FD 03 - FD 53		
BXN 80	FD 04		
BXN 90S	FD 14		
BXN 90L	FD 05		
BXN 100	FD 15		
BXN 112	FD 06S		
BXN 132	FD 56 - FD 06 - FD 07		

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

NB

Simple half-wave rectifiers

Rectifier **NB** lets just one half of each complete AC supply wave through, to transform it into a DC supply. The brake release response time is reduced.

SB

Double half-wave rectifiers:

Rectifier **SB** with electronic energizing control over-energizes the electromagnet upon power-up to cut brake release response times 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 times
- Brake exposed to extreme thermal stress

BRAKE | EVOX ELECTRIC MOTOR

OPTIONS | BRAKE

Brake hand 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 system parts operated by the motor.

Availability of the various disengagement devices is indicated below:

	R	RM
BXN_FD	BXN 63 ... BXN 90 BXN 100 ... BXN 132	BXN 63 ... BXN 90 BXN 100 ... BXN 132
BXN_FA	BXN 63 ... BXN 90 BXN 100 ... BXN 132	⊖

R

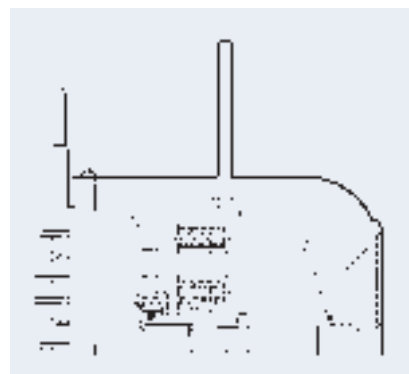
Lever with return spring

With this options, the return spring brings the release lever back in the original position.

RM

Lever with a release blocked position

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



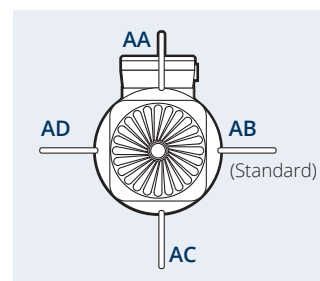
Brake hand release lever position

AA

Release lever orientation

Unless otherwise specified, the release lever is located 90° away from the terminal box – identified by letters [AB] in the diagram on the right – in a clockwise direction on both R and RM options.

Alternative lever positions [AA], [AC] and [AD] are also possible when the corresponding option is specified.



Separate brake supply

DIR

Direct brake supply

The brake system is directly powered through the electric motor terminal board power supply

SA

Brake AC separate power supply

The brake coil is directly powered through an independent line, separated from the motor one.

FA-SA: the rated AC voltage must be specified. E.g. SA 230 (V AC)

FD-NB/SB-SA: the rated AC voltage which powers the rectifier must be specified. E.g. SA 400 (V AC)

SD

Brake DC separate power supply

The brake coil is directly powered with a DC current and the rectifier is not present.

The rated coil voltage must be specified, E.g. SD 24 (V DC).

Brake supply

230

FD brake power supply

A rectifier installed inside the terminal box feeds the DC brake coil. Wiring connection across rectifier and brake coil is performed as factory standard.

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

Brake power supply voltage is indicated in the following table, regardless of the mains frequency:

FD-SD brake supply voltages

4P	Motor supply	Braking system supply	Voltage (V CC)
BXN 63 ... BXN 90 BXN100 .. BXN 132	More options depending on the chosen winding and frequency	The brake coil is directly powered with DC	24
			48
			56
			74
			90
			100
			110
			150
180			

Configurable for motors with 50HZ and 60HZ power supply

BRAKE | EVOX ELECTRIC MOTOR

MORE ON BRAKE OPTIONS

FD-SA brake supply voltages

4P	Motor supply	Braking system supply	Voltage (V AC)
BXN 63 ... BXN 90 BXN100 .. BXN 132	More options depending on the chosen winding and frequency	The brake rectifier is powered with a separate AC	110
			115
			120
			127
			132
			165
			200
			208
			220
			230
			240
			330
			380
			400
			415
440			
460			

Configurable for motors with 50HZ and 60HZ power supply

FD brake connection

For switch-pole motors, and where a separate brake power supply is required, connection to rectifier must comply with brake winding voltage stated in the motor nameplate.

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

Table (1) – Brake coil with direct power supply, the brake activates when the AC line is interrupted.

Table (2) – Brake coil with separate power supply, a.c. line interruption.

Table (3) – Brake coil with direct power supply, the brake activates when the AC and DC lines are interrupted.

Table (4) – Brake coil with separate power supply, a.c. and d.c. lines interruption.

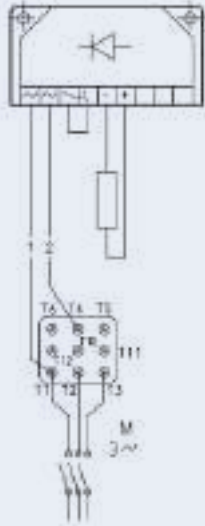


Table (1)
FD DIR

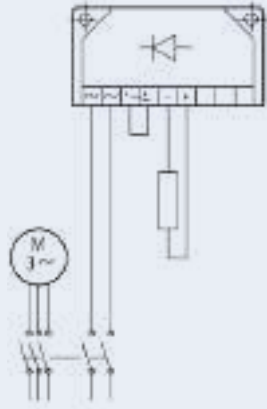


Table (2)
FD SA

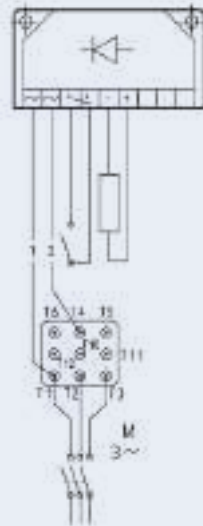


Table (3)
FD DIR

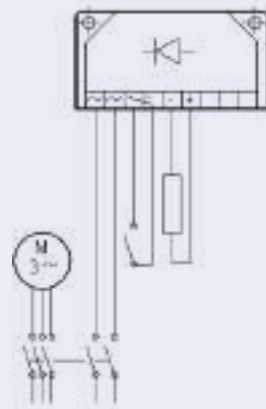


Table (4)
FD SA

BRAKE | EVOX ELECTRIC MOTOR

OPTIONS | BRAKE

Brake supply

230

FA brake power supply

In single speed motors, power supply is brought to the brake coil directly 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. The following table reports standard AC brake power supply ratings for single pole motors:

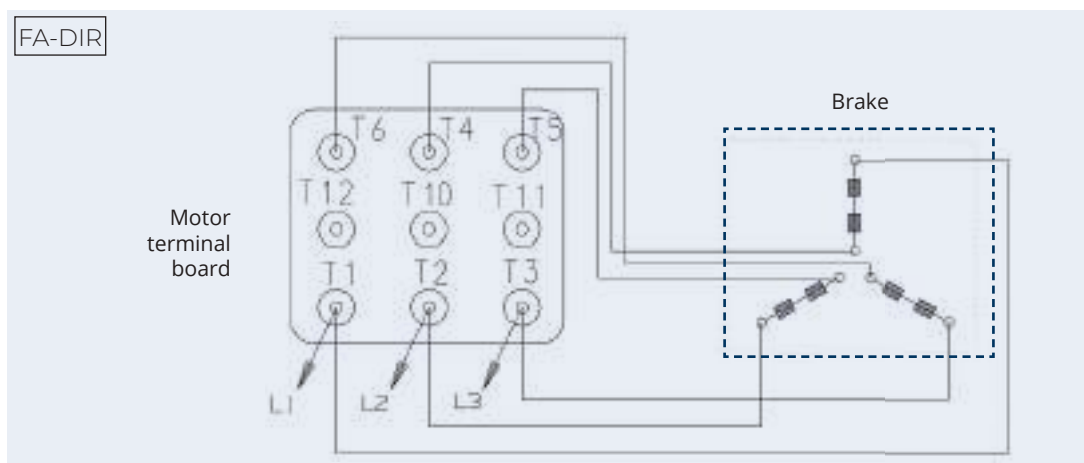
FD-SA brake supply voltages

4P	Motor supply	Braking system supply	Voltage (V AC)
BXN 63 ... BXN 90 BXN100 .. BXN 132	More options depending on the chosen winding and frequency	The brake works with the chosen winding configuration of the motor power supply. For more information please refer to the voltage and frequency section. In any case, you can find connection info on the terminal kit integrated in the motor.	200
			220
			230
			240
			330
			380
			400
			415
			440
			460
575			

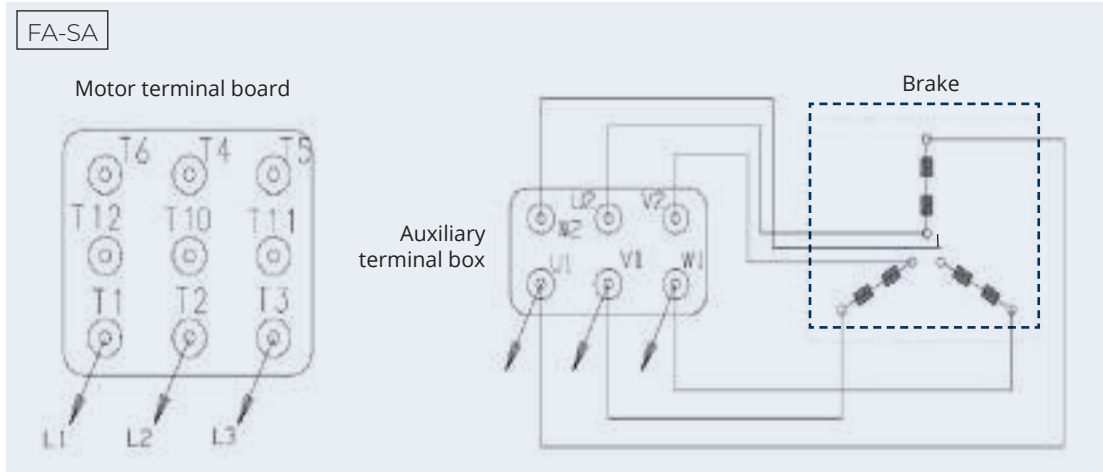
- Configurable for motors with 50HZ and 60HZ power supply
- Configurable only for motors with 50Hz power supply
- Configurable only for motors with 60Hz power supply

FA brake connection

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



At request, single-pole motors with separate power supply are equipped with an auxiliary terminal board with 6 terminals for brake connections. See diagram below.



Capacitive filter

CF

Capacitive filter

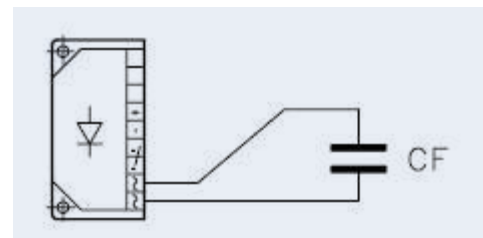
An optional capacitive filter is available for brake motors type FD only. When the suitable capacitive filter is installed upstream of the rectifier (option CF), motors comply with the emission limits required by standard EN6100-6-3:2007 "Electromagnetic compatibility (EMC) - Generic standards - Part 6-3: Emission standard for residential, commercial and light-industrial environments".

Essentially, the capacitive filter absorbs some of the electromagnetic waves interference so that the motor will be suitable for light industrial, residential and commercial applications.

Brake connection when equipped with the CF option:

Motors with FD brake, when fitted with the suitable capacitive filter at rectifier input (option CF), meet the emission limits required by Standard EN 61000-6-3:

«Electromagnetic compatibility - Generic Emission Standard - Part 6.3: Residential, commercial and light industrial environments»



OPTIONS | EVOX ELECTRIC MOTOR SIDE

OPTION LIST

Motor	+	Brake	+	S2-10MIN	E3	EN1	H1	TP	PS	RC	CN
											<p>Certifications</p> <ul style="list-style-type: none"> - (Standard) CE, UKCA, UL CN Global motor <p>External protection</p> <ul style="list-style-type: none"> - (Standard) No external protection RC Rain protection cover TC Textile canopy EC Encoder protection cover <p>Shaft double projection</p> <ul style="list-style-type: none"> - (Standard) No shaft double projection PS Shaft double projection <p>Tropicalization</p> <ul style="list-style-type: none"> - (Standard) Without tropicalization TP Tropicalization <p>Anti-condensation heaters</p> <ul style="list-style-type: none"> - (Standard) Without anti-condensation heaters H1 Anti-con. heater Supply voltage 230 V NH1 Anti-con. heater Supply voltage 115 V <p>Feedback units</p> <ul style="list-style-type: none"> - (Standard) Without encoder EN1 Incremental encoder, Vin=5V, line-driver output RS 421 EN2 Incremental encoder, Vin=10-30V, line-driver output RS 422 EN3 Incremental encoder, Vin=12-30V, push-pull output 12-30V EN4 Encoder sin/cos, Vin=4,5-5,5V, output Sinus 0,5Vpp EN5 Absolute encoder single-turn, HIPERFACE® interface, Vin=7-12V EN6 Absolute encoder multi-turn, HIPERFACE® interface, Vin=7-12V <p>Thermal protection</p> <ul style="list-style-type: none"> - (Standard) Without thermal protection E3 Thermal sensors, triggers a signal at a specific temperature (CLF: 150° & CLH:180°) D3 Thermal switch, switches off the motor at a specific temperature (CLF: 150° & CLH:180°) PT1000 Resistance thermometer K1 KTY 84-130 temperature sensor
				<p>Duty Cycle</p> <p>S2-10MIN Duty Cycle S2. Duration: 10 min [black]</p> <p>S2-30MIN Duty Cycle S2. Duration: 30 min</p> <p>S2-60MIN Duty Cycle S2. Duration: 60 min</p> <p>S3-25% Duty Cycle S3. Intermittance: 25%</p> <p>S3-40% Duty Cycle S3. Intermittance: 40%</p> <p>S3-70% Duty Cycle S3. Intermittance: 70%</p>							





Surface protection

- (Standard) C2 protection

C3

C4

For C5 according to UNI EN ISO 12944-2, please contact our Technical Customer Support for further details

Painting

RAL7042 Traffic Grey A

RAL5010 Gentian Blue

RAL9005 Jet Black

RAL9006 White aluminium

RAL9010 Pure White

RAL7035 Light Grey

RAL7001 Silver Grey

RAL7037 Dusty Grey

RAL5015 Sky Blue

RAL5024 Pastel blue

Certificates

- (Standard) Without certificate

AC Gear unit compliance certificate

ACM Motor compliance certificate

CC Inspection certificate

(1) Those options are available for Gear Units, Gearmotors, Gear brake motors, Stand alone motors and Stand alone Brake motors

OPTIONS | EVOX ELECTRIC MOTOR SIDE

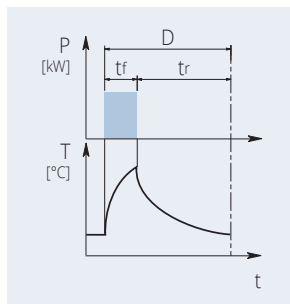
OPTION LIST DEEP DIVE

Duty Cycle

Unless specified, catalogue motor power refers to continuous duty S1. Any different condition has to be classified in the correct Duty Cycle, according with CEI EN 60034-1.

S2-...MIN

S2 Duty Cycle (Limited duration duty)



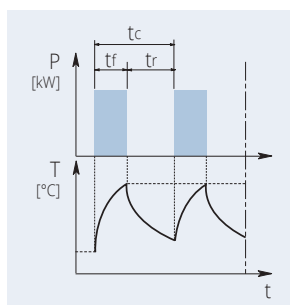
This type of duty is characterized by operation at a constant load for a limited time [t_f], which is shorter than the time required to reach thermal balance, followed by an idle period [t_r] where the motor can return to the ambient temperature.

The duration of the duty cycle is: $D=t_f+t_r$

t_f = operating time under constant load
 t_r = idle period

S3-...%

S3 Duty Cycle (Periodical intermittent duty)



This type of duty is characterized by a sequence of identical operation cycles formed by a constant load operation and an idle period.

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

t_f = operating time under constant load
 t_r = idle period
 t_c = cycle time

$$I = \frac{t_f}{t_f + t_r} \cdot 100$$

t_f = operating time under constant load
 t_r = idle period

For a S2 & S3 duty cycle motor, the required motor power should be multiplied by the coefficient reported in the following table.

	Service Duty						
	S2			S3			S4 - S9
	D (min)			Intermittance (I)			Contact us
	10	30	60	25%	40%	70%	
f_m	1.35	1.15	1.05	1.25	1.15	1.1	

If cycles from S2 to S9 are chosen, the motor nameplate will be marked with the cycle name, an increased power rating and electrical data to suit the type of duty.

For further details, please [contact Bonfiglioli's Technical Service](#)

Thermal protection

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 severe and demanding application or by an insufficient ventilation of the environment.

This additional protection is highly recommended on servo-ventilated motors (IC416).

E3

Thermistors

These are semi-conductors having rapid resistance variation when they are close to the rated switch off temperature (150°C for CLF or 180° for CLH insulation class). 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"). Usually this kind of thermal protection is easy to be found on inverters.

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.

D3

Bimetallic thermostats

These types of protective devices house a bimetal disk. Bimetal switches operate on the principle of mechanical deformation as a result of long-term heating. Bimetal strips bent as a result of such heating have a spring action that results in sudden reversal of the curvature (concave to convex or vice-versa).

When the rated switch off temperature (150°C for CLF or 180° for CLH insulation class) is reached, these temperature detectors (NC contacts) can deactivate an auxiliary circuit. The circuit can only be reclosed following a considerable fall in temperature. Three bimetallic thermostats connected in series are usually employed, with normally closed contacts. The terminals are located on an auxiliary terminal-board.

Bimetal switches are suitable protection devices in the case of slowly rising motor temperatures. When the motor current rises quickly (e.g. with a locked rotor), these switches are not suitable due to their large thermal time constants.

OPTIONS | EVOX ELECTRIC MOTOR SIDE

OPTION LIST DEEP DIVE

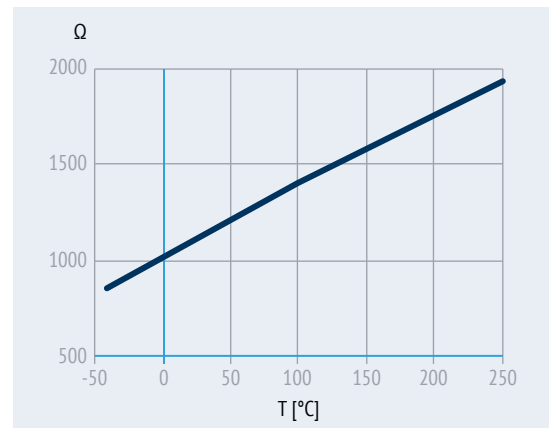
PT1000

Resistance thermometer

The resistance thermometer has a chip for a temperature sensor, the resistance of which changes in relation to temperature according to a series of reproducible basic values. The changes in resistance are transferred as changes in current.

At 0 °C, the measurement resistances are adjusted to 1000 Ω for the Pt1000 and correspond to the accuracy class B (i.e. the relationship between resistance and temperature). The limit deviation is ±0.3 °C, and the admissible deviations are defined in EN 60751. The Pt1000 resistance thermometer will, in the future, gradually replace the KTY84-130 temperature sensors available today. The relationship between the temperature and the electrical resistance of conductors is utilized in the Pt1000 to measure the temperature, just like with the additional resistance thermometers described above. Pure metals undergo larger changes in resistance than alloys and have a relatively constant temperature coefficient.

°C	Ω	°C	Ω
-40	843	110	1,423
-30	882	120	1,461
-20	922	130	1,498
-10	961	140	1,536
0	1,000	150	1,573
10	1,039	160	1,611
20	1,078	170	1,648
30	1,117	180	1,685
40	1,155	190	1,722
50	1,194	200	1,759
60	1,232	210	1,795
70	1,271	220	1,832
80	1,309	230	1,868
90	1,347	240	1,905
100	1,385	250	1,941

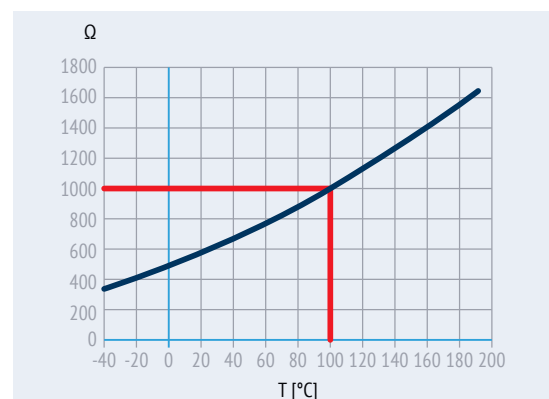


K1

KTY 84-130 temperature sensor

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. Within the measuring range, however, the KTY 84-130 characteristic rises almost linearly. The temperature sensor is embedded in the winding overhang of the motor in the same way as the components mentioned above. It is characterized by its outstanding precision, high reliability, and temperature stability, as well as a fast response time. Thanks to these properties, which permit the almost analogue monitoring of winding temperature, the KTY 84-130 is preferred for converter operation. Thermistors cannot control relays directly and must be connected to a suitable disconnect device. Terminals (polarized) for 1 x KTY 84-130 are provided on an auxiliary terminal strip.

°C	Ω min	Ω max	°C	Ω min	Ω max
0	474	522	130	1,152	1,235
10	514	563	140	1,216	1,309
20	555	607	150	1,282	1,385
25	577	629	160	1,350	1,463
30	599	652	170	1,420	1,544
40	645	700	180	1,492	1,628
50	694	750	190	1,566	1,714
60	744	801	200	1,641	1,803
70	797	855	210	1,719	1,894
80	852	912	220	1,798	1,988
90	910	970	230	1,879	2,085
100	970	1,030	240	1,962	2,184
110	1,029	1,096	250	2,046	2,286
120	1,089	1,164	260	2,132	2,390



Feedback units

Motors can be combined with six different types of encoders in order to achieve feedback circuits. The installation requires an expansion module which depends on the type of the encoder selected.

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

EN1

Incremental encoder

EN2

These encoders are speed sensors obtained with optic-electronic technology and can be utilized as speed transducers. They are composed by an electric circuit and an optic disk integral with the shaft. Usually, there are 2 main standards for incremental encoder outputs: Push-pull and Line driver. The first one is useful in case of long wirings, the second one for applications in high electromagnetic pollution environments.

EN3

EN4

SIN/COS encoder

These encoders are both speed and position sensors obtained with optic-electronic technology and can be used as position and speed transducers at the same time. Usually employed for applications that require very high dynamic features.

EN5

Absolute encoder

These encoders are position sensors obtained with optic-electronic technology and can be utilized as position transducers. Usually employed for applications that require high precision

EN6

	EN1	EN2	EN3	EN4	EN5	EN6
Encoder type	Incremental	Incremental	Incremental	sin/cos	Absolute single turn	Absolute multi-turn
Output interface	TTL/RS 442	TTL/RS 442	HTL push-pull	Sinus VPP 0.5	HIPERFACE®	HIPERFACE®
Power supply voltage VIN [V]	4 ... 6	10 ... 30	12 ... 30	4.4 ... 5.5	7 ... 12	7 ... 12
Output voltage [V]	5	5	12 ... 30	-	-	-
Current in unloaded conditions [mA]	120	100	100	40	80	80
Pulses per revolution	1024					
Steps per revolution	-	-	-	-	15 bit	15 bit
Revolutions	-	-	-	-	-	12 bit
Number of signals	6 (A, B, Z + inverted signals)			6 (cos-, cos+, sin-, sin+, Z, Z)		-
Max. output frequency [kHz]	600				200	
Max. speed [rpm]	6,000 (9,000 rpm for 10s)					
Temperature range [°C]	-30 ... +100					
Protection class	IP65					

The Bonfiglioli ACU and ANG inverter series can manage all 6 types of encoders mentioned above and can be easily selected through the product configurator platform.

OPTIONS | EVOX ELECTRIC MOTOR SIDE

OPTION LIST DEEP DIVE


Anti-condensation heaters

H1

Anti-condensation heaters

Where an application involves high humidity or extreme temperature fluctuations, e.g. inactive motors in humid atmospheres or motors that are subject to widely fluctuating temperatures, 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 below:

	H1 1~230V ± 10% P[W]
BXN 63 ... BXN 80	10
BXN 90 ... BXN 100 BXN 112 ... BXN 132	25

Warning! Always cut off the anti-condensation heater power before operating the motor.

Tropicalization

TP

Tropicalization

The TP option uses stators that are impregnated with highly hydrolysis-resistant resins. This allows the motors to be used in areas with increased air humidity and temperature, such as in tropical climate conditions.

The used wiring insulation materials and the impregnating resin protect the motor against termite-related damage

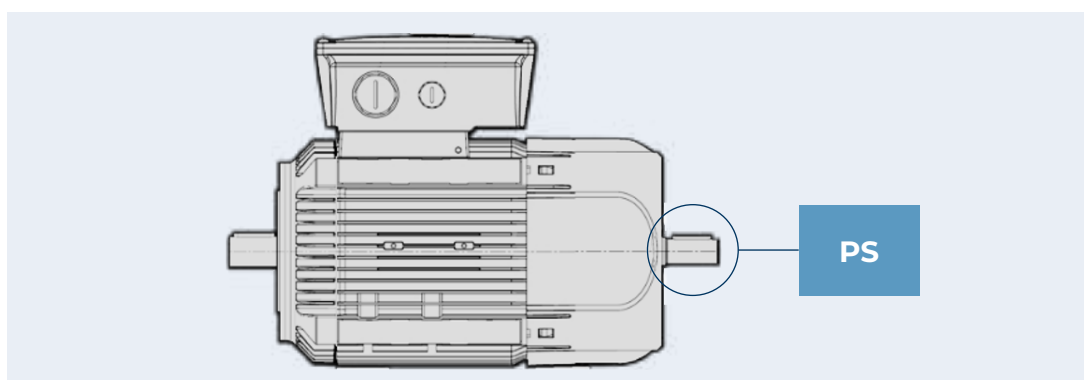
Second shaft extension

PS

Second shaft extension

The PS option provides the motor for an additional shaft end. This second shaft end is designed with a conventional keyway and key in accordance with DIN 6885 Sheet 1 (ISO 773).

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



External protection

External protection canopies are used to prevent damages caused by external conditions, such as rain or cellulose particles to the electrical motor.

RC

Rain canopy

The rain canopy protects the motor from dripping and avoids the penetration of solid bodies. It is recommended when motor is installed in a vertical position with the shaft downwards. Only in this position a perfect coverage from rain is granted. The guard extends the length of the motor or brake motor. Please check the dimensions table ([link](#)).

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

TC

Textile canopy

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. The overall dimensions are the same as drip cover type RC.

This option with variants PS, EN1, EN2, EN3, EN4, EN5, EN6.



EC

Encoder canopy

Option EC is a cover variant specifically made for our encoders. It protects them from impacts and may help in prolonging their productive life.



OPTIONS | EVOX ELECTRIC MOTOR

MORE ON OPTIONS LIST

Certifications

CN

Global motor

With the CN option, BXN and MXN motors can be sold in the most important markets worldwide such as Europe, UK, USA, Canada, China, Russia, Australia, New Zealand and Brazil. In detail, the motor will bear the CE, UKCA, UL, INMETRO*, CCC marks and the necessary labelling on the nameplate. The motors also comply with EAC and EECA requirements.

This option is available in the following winding/power combinations:

Motor series	Size	Power	Service Duty	Winding
BXN	63MA - 90L	0.12 to 1.5 kW	S1	WD1
MXN	05MA - 25L			

Motor series	Size	Power	Service Duty	Winding
BXN	63MA to 80MA	0.12 to 0.55 kW	S1	WD3
MXN	05MA to 20MA			

* INMETRO standard on WD3 and WD4/WD10 windings with power ranging from 0.12kW to 1.5kW.

Certificates

ACM

Motor certificate of compliance

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

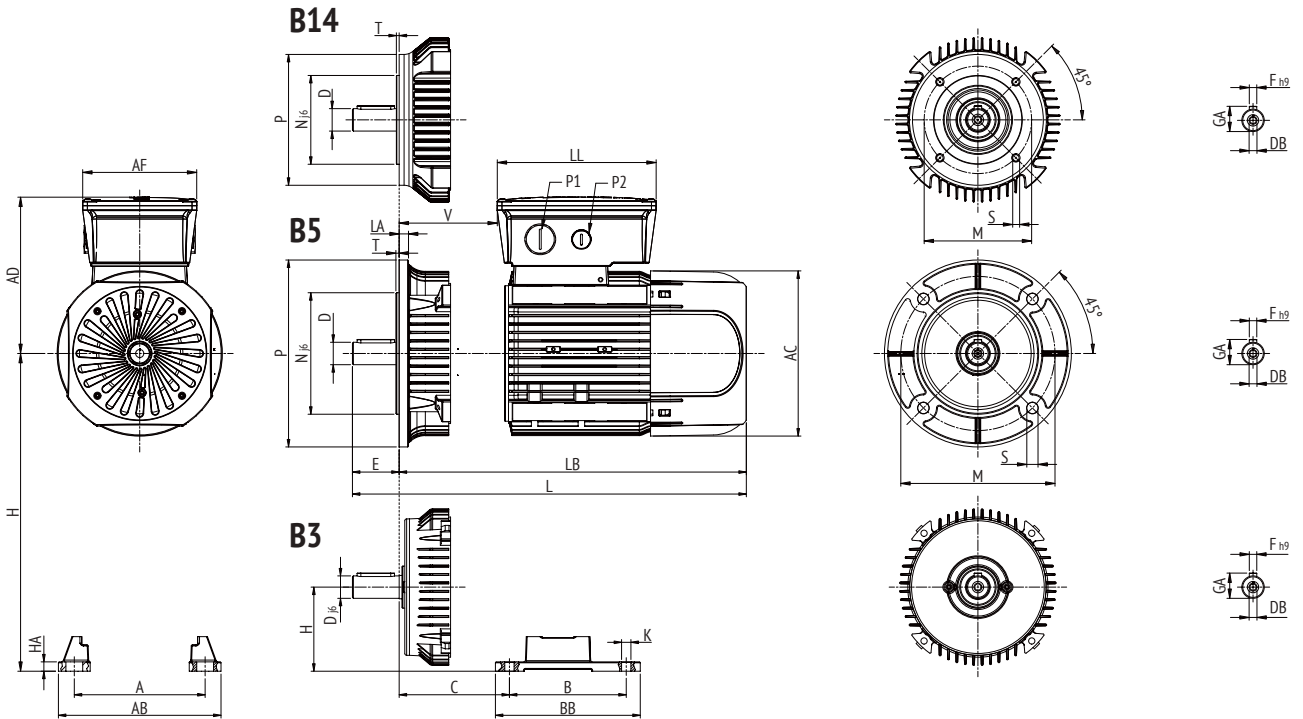
CC

Inspection certificate

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

SIZES

EVOX ELECTRIC MOTOR



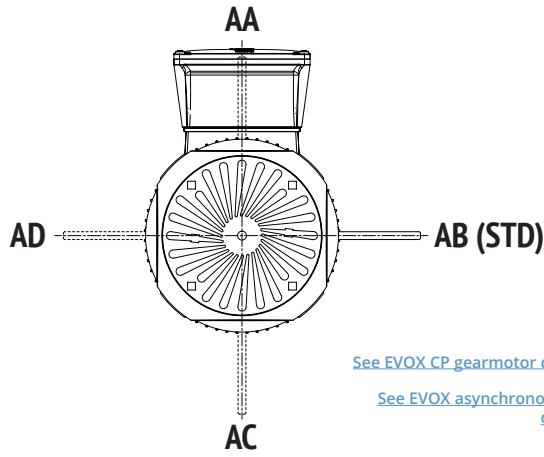
Motor size	Output shaft					Motor overall dimensions							Cable Entry	
	D	E	DB	GA	F	AC	L	LB	AD	AF	LL	V	P1	P2
	[mm]					[mm]								
BXN63	11	23	M4	12.5	4	122	281	258	136	112	165	37	M20	M16
BXN71	14	30	M5	16	5	138	292	262	138	112	165	34	M25	M16
BXN80	19	40	M6	21.5	6	158	346	306	148	112	165	40	M25	M16
BXN90	24	50	M8	27	8	177	365	315	170	122	170	43	M25	M16
BXN100	28	60	M10	31	8	192	434	374	179	122	170	42	M25	M16

Motor size	B5 Version						B14 Version				
	M	N	P	S	T	LA	M	N	P	S	T
	[mm]						[mm]				
BXN63	115	95	140	9.5	3	9	75	60	90	M5	2.5
BXN71	130	110	160	9.5	3.5	9	85	70	105	M6	2.5
BXN80	165	130	200	11.5	3.5	10	100	80	120	M6	3
BXN90	165	130	200	11.5	3.5	10	115	95	140	M8	3
BXN100	215	180	250	14	4	11	130	110	160	M8	3.5

Motor size	B3 Version							
	B	A	HA	BB	AB	K	C	H
	[mm]							
BXN63	80	100	8	96	120	7	40	63
BXN71	90	112	8	112	135	7	45	71
BXN80	100	125	8	124	153	10	50	80
BXN90S	100	140	8	155	174	10	56	90
BXN90L	125	140	8	155	174	10	56	90
BXN100	140	160	10	175	202	12	63	100

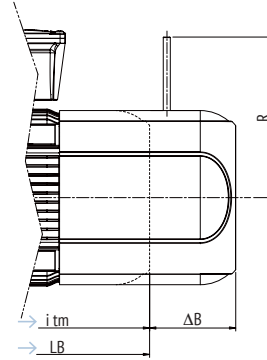


BRAKE AND E-MOTOR OPTIONS

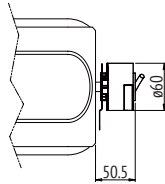


[See EVOX CP gearmotor dimensions](#)

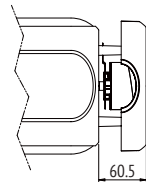
[See EVOX asynchronous e-motor dimensions](#)



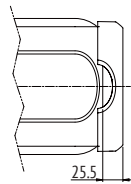
ENx



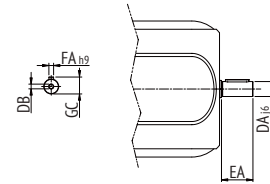
ENx + EC



RC / TC

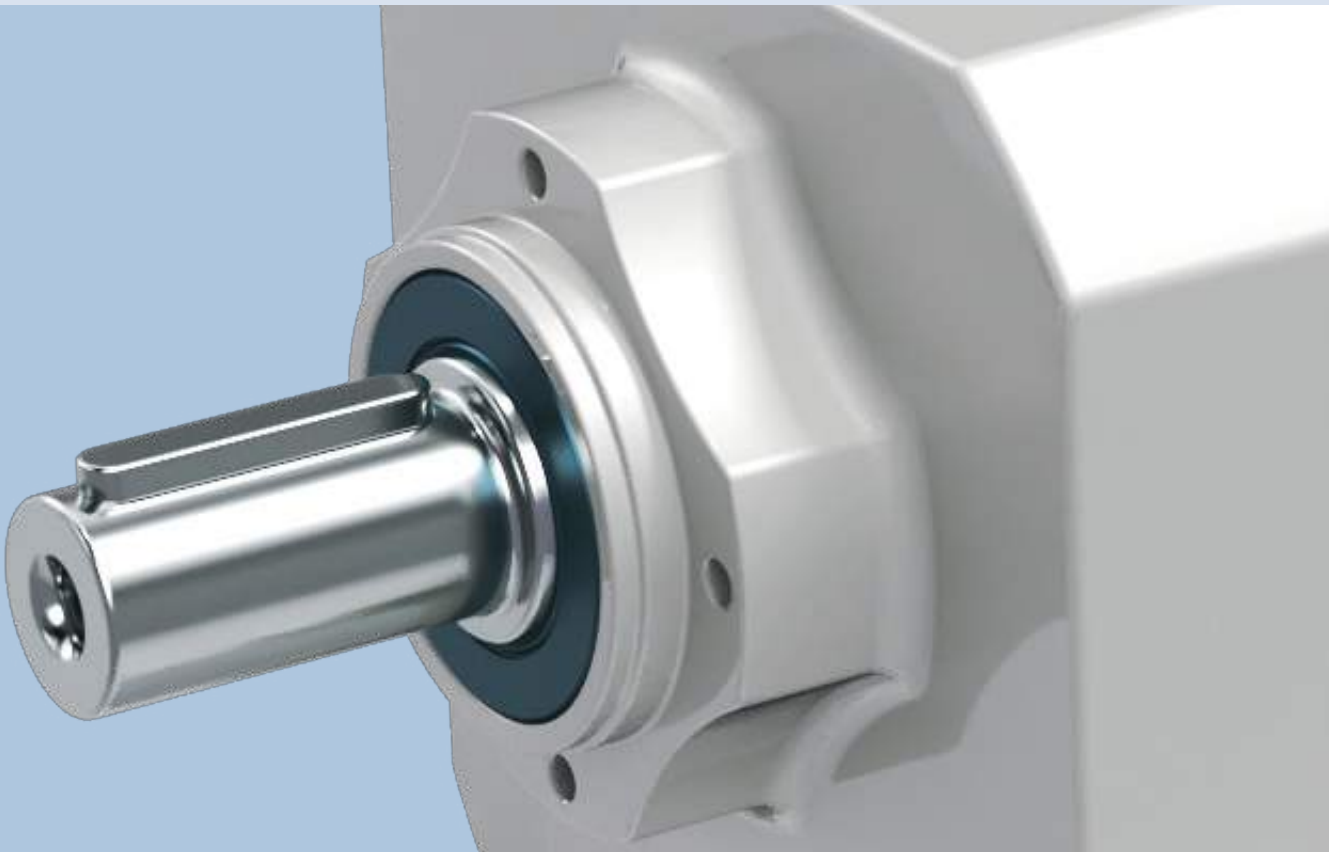


PS



Motor size	ΔB	R		PS Motor shaft double end				
		FD	FA	DA	EA	DB	GC	FA
	[mm]	[mm]		[mm]				
BXN63	47	96	116	9	20	M3	10.2	3
BXN71	59	103	121	11	23	M4	12.5	4
BXN80	71	129	131	14	30	M5	16	5
BXN90	68	160	160	19	40	M6	21.5	6
BXN100	87	160	160	24	50	M8	27	8

ORDER INFO



OUR GLOBAL PRESENCE

Thanks to an international network of closely interconnected commercial and production sites, we can guarantee the same high standards of Bonfiglioli quality anywhere at any given time. We know that our direct presence in local markets is the key to long-lasting success, so our family includes 15 production sites, 24 commercial sites and more than 550 distributors around the world.

Our organization is always close by, offering complete and efficient solutions and supporting our customers with dedicated services, co-engineering and after-sales assistance.



15
PRODUCTION SITES



24
COMMERCIAL SITES



80
COUNTRIES



550
DISTRIBUTORS



~4.000
PEOPLE

AUSTRALIA

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