Bonfiglioli

Vectron

BTD - BCR

Synchronous Servomotors

Bonfiglioli

power, control and green solutions

Power, control and green solutions

Bonfiglioli, one name for a large international group.

It was back in 1956 that Clementino Bonfiglioli established in Bologna, Italy, the company that still bears his name. Now, some fifty years later, the same enthusiasm and dedication is driving Bonfiglioli to become the world's top name in power transmission and control solutions. Through directly controlled subsidiaries and production plants around the world, Bonfiglioli designs, manufactures and distributes a complete range of gearmotors, drive systems and planetary gearboxes, and boasts the most integrated offering on the market today.

Now, to emphasise its commitment to health, safety and environmental sustainability, Bonfiglioli is adding the term "green" to the description of its offering.

This commitment can be seen too in the Group's new trademark, made up of three shapes and colours identifying Bonfiglioli's three main business areas - Power, Control & Green Solutions and symbolising a set of values that includes openness and respect for other cultures.

In a market in which excellent product quality alone is no longer sufficient, Bonfiglioli also provides experience, know-how, an extensive sales network, excellent pre-sales and after-sales service and modern communication tools and systems to create high level solutions for industry, mobile machinery and renewable energy.

Bonfiglioli solutions

Innovative solutions for industrial field.

Bonfiglioli Riduttori today is one of the top brands in the power transmission industry.
The company's success is the result of a business strategy that relies on three fundamental factors: know-how, innovation and quality.
The complete range of Bonfiglioli brand gearmotors offers excellent technical characteristics and guarantees the highest performance. Substantial investment and technical expertise have enabled the company to achieve an annual production output of 1600000 units using completely automated processes.

Certification of the company's Quality System by DNV and TÜV is proof of the high quality standards achieved.
With the acquisition of the Vectron brand, Bonfiglioli is now established as leader of the industrial automation sector.

Bonfiglioli Vectron delivers products and services for completely integrated inverter solutions. These solutions complement Bonfiglioli's power transmission and control offering to the industrial sector.

Since 1976, Bonfiglioli Trasmital's know-how in the power transmission industry has focused on special applications offering 100% reliability in the manufacturing of gearmotors for mobile machinery.

This includes the full range of slew and wheel drive applications and gearboxes for wind turbine pitch and yaw drive systems.
Today Bonfiglioli Trasmital stands at the forefront of the industry as a key partner to top manufacturers worldwide.

Synchronous Servomotors

Advanced technologies for all industrial fields.

These brushless, sinusoidal motors are designed for a three phase power supply, 200 V AC and 330 V AC, and feature free ventilation. All models are equipped with a thermistor type temperature sensor.
These synchronous servomotors are ideal for applications in machines with high dynamic requirements. They are particularly suited to robotic applications in plastic and metal machining, packaging, food and beverage processing, winding and textile industries.
They are manufactured using the latest technology for optimised magnetic circuitry and electric motor windings and offer significantly improved torque reserve and motor longevity.
BTD and BCR Series servomotors can only be controlled in speed and/or torque by a suitable electronic servo drive. The servo drive therefore constitutes an integral part of the actuator and requires perfect synchronisation with it in order to achieve optimum performance.
The combination of BTD and BCR servomotors with frequency inverters from Bonfiglioli Vectron's ACTIVE CUBE Series guarantees excellent synergy by optimising the mathematical model of the motor in the drive using a self-learning function assisted by the frequency inverter's own configuration software. For further information on frequency inverters, refer to the Bonfiglioli Vectron Active Cube catalogues and manuals.
BTD and BCR Series motors are designed for use as part of a machine and should only be installed after a thorough check on compatibility with other devices.
Since each servomotor has a protective temperature sensor (PTC) integrated in the motor windings, operating temperature is constantly acquired and monitored by the drive to prevent all risk of damage to the motor irrespective of operating conditions.
An optional electromechanical holding brake is available for all models. Brake operation is controlled entirely by the frequency inverter.
Always bear in mind that synchronous servomotors are designed for use by expert mechatronic technicians.

Standards and directives

BTD and BCR Series servomotors conform to the requirements of EEC directive 73/23 (Low Voltage Directive) and EEC directive 89/336 (Electromagnetic Compatibility Directive) and carry the CE mark on their data plate.
For the purposes of the EMC Directive, they are manufactured according to CEI EN standard 60034-1 section 12, EN 50081, EN 50082.
Even if fitted with electromechanical brakes, these motors still fall within the emission limits specified by EN 50081-1 "Electromagnetic Compatibility – Generic Requirements - Part 1: Residential, commercial and light industry".
They also satisfy the requirements of CEI EN standard 60204-1 "Electrical equipment of machines".
They likewise conform to CEI EN 61000-6-4 "Electromagnetic compatibility, Part 6-4: generic standards, Emission standards for industrial environments" and CEI EN 61000-6-2 Ed. 2 "Electromagnetic compatibility (EMC), Part 6-2: generic standards, Immunity for industrial environments".
As far as UL conformity for the North American market is concerned, these Bonfiglioli servomotors satisfy the requirements of UL 1004 (file number E 321737).
It is the responsibility of the manufacturer or assembler of the machine in which these motors are incorporated to ensure the safety of that machine as a whole and its conformity to all relevant end product directives.

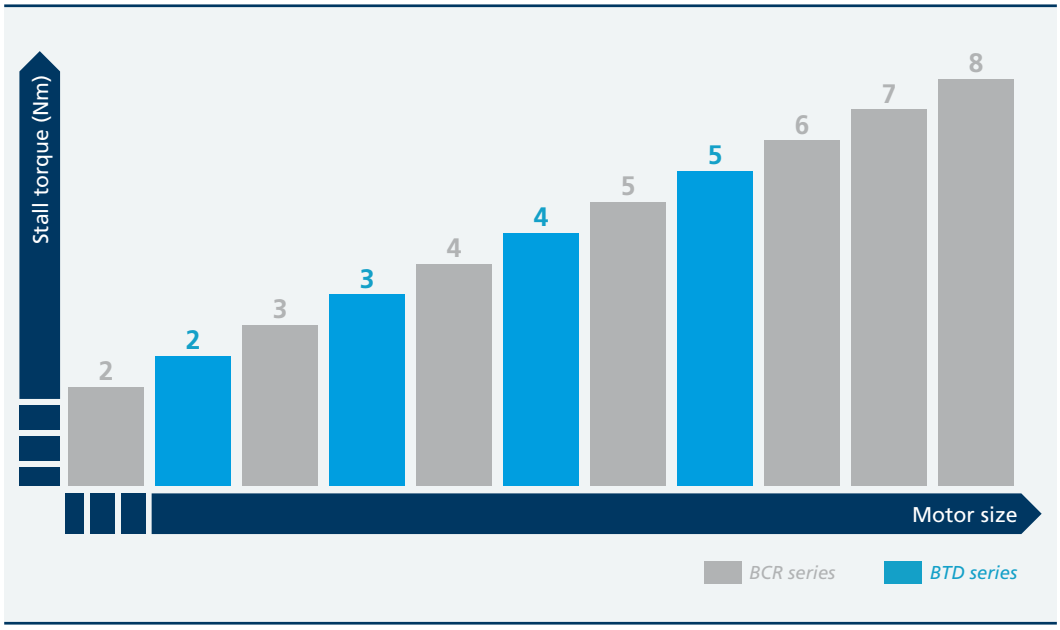
Symbols and units of measure

Symbol	U.m.	Description
n_n	[min^{-1}]	Rated speed
M_n	[Nm]	Rated torque
P_n	[kW]	Rated power
I_n	[A]	Rated current
M_0	[Nm]	Stall torque
I_0	[A]	Stall current
M_{max}	[Nm]	Peak torque
I_{max}	[A]	Peak current
n_{max}	[min^{-1}]	Max. speed
K_T	[Nm/A]	Torque constant
K_E	[V/1000min^{-1}]	Counter-electromotive force constant
R_{pp}	[_]	Statoric resistance between two phases
L_{pp}	[mH]	Statoric inductance between two phases
τ_{el}	[ms]	Electric time constant
τ_{therm}	[min]	Thermal time constant
J_M	[$Kgcm^2$]	Motor moment of inertia
m	[kg]	Mass (weight) of motor
J_{Br}	[$Kgcm^2$]	Holding brake moment of inertia
m_{Br}	[Kg]	Weight of holding brake
M_{Br}	[Nm]	Torque of holding brake
P_{Br}	[W]	Electrical power absorbed by holding brake
V_{Br}	[V]	Supply voltage to holding brake
t_{Brc}	[ms]	Braking torque stabilisation time from voltage disconnect to brake
t_{Brs}	[ms]	Reduction time to 10% of braking torque from voltage reconnect to brake

The Bonfiglioli Vectron servomotor range

The Bonfiglioli Vectron servomotor range is made up of two series of actuators, one designated BCR and the other BTD. The difference between the two series lies in the extension of their speed and torque interval as well their overload and efficiency.
That is reached thanks two different construction technologies:
- standard wound-stator technology for BCR
- advanced wound-poles technology for BTD.
Thanks to features above, BCR offers a wide torque range and a significant overload capacity, as well BTD provide a high dynamic coefficient and high efficiency.

Each series is split on several sizes corresponding to equal flange dimension.
Each flange is available on several motor length able to provide as many torque levels.
BCR series warrant continuous duty torque up to 115 Nm with 400% overload.
BTD series fulfils the needs of compactness where the torque comes out from space saving. The winding construction and permanent magnets quality allows to reach torque density up to 16 Nm/dm^3.

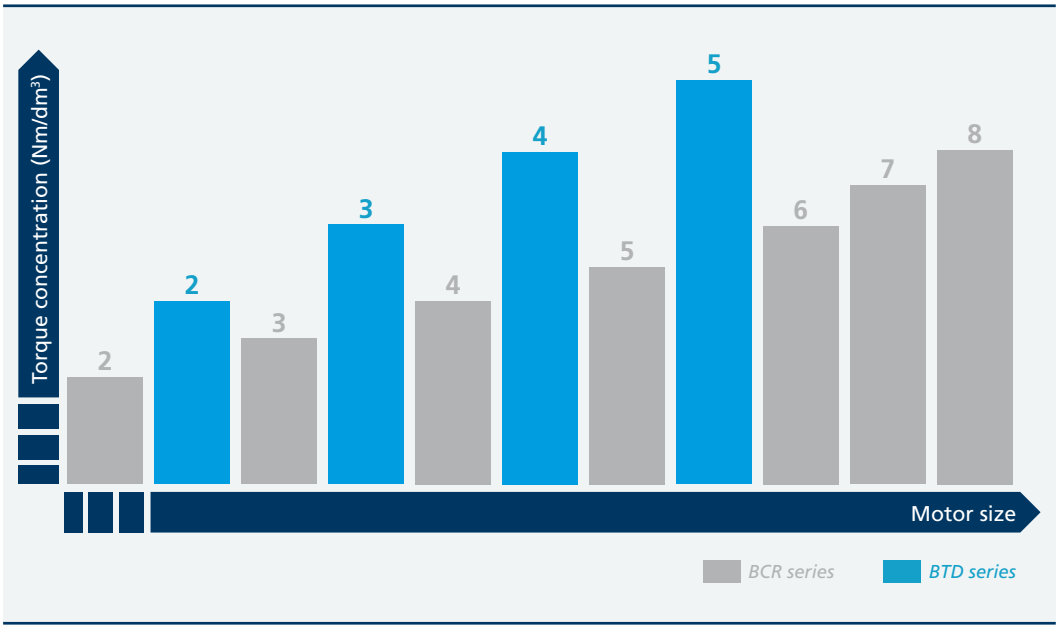


Torque distribution

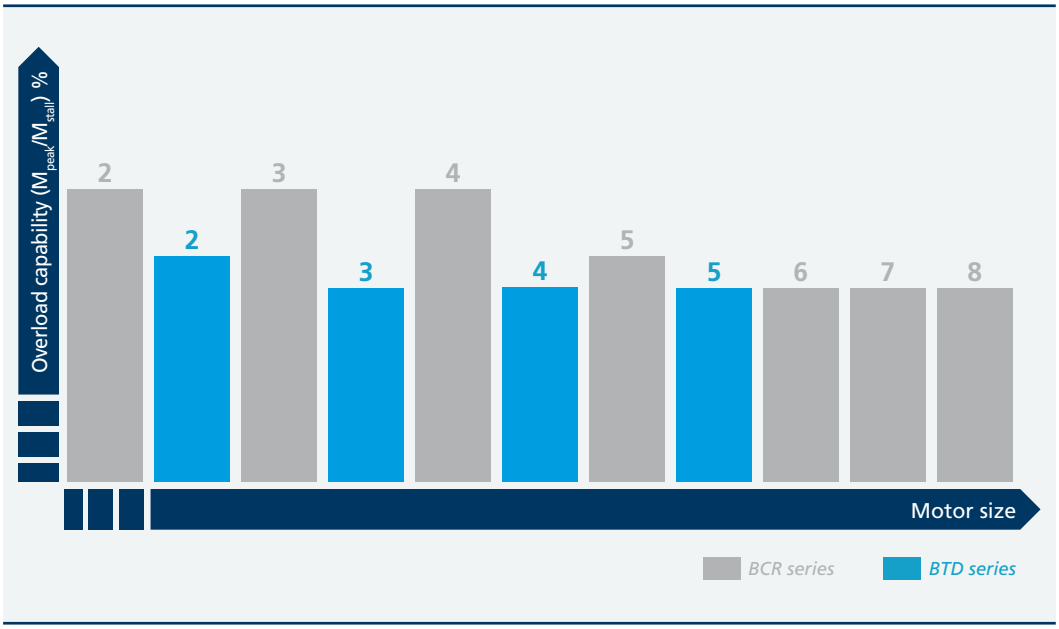
The Bonfiglioli Vectron servomotor range

BCR and BTD share out the torque range and overall dimensions with extreme efficiency, offering a wide spectrum of application solutions characterized by strong dynamics and rational compactness.

Specific torque



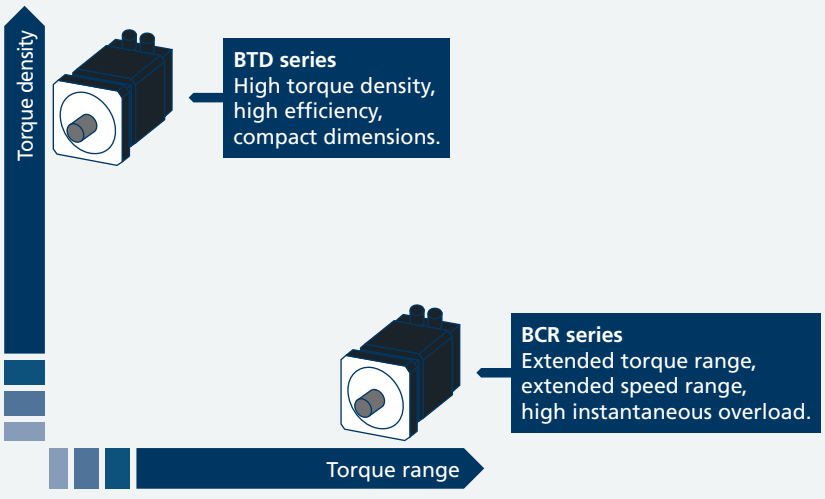
Dynamic torque



The Bonfiglioli Vectron servomotor range

BTD and BCR series are the ideal solutions for designers of servosystems which find always in them a successful answer to opposed needs of dynamics and compactness.

Every motion control application find its right solution choosing among BTD or BCR:
- high torque and high overload
- high torque and narrow space
- high torque and high efficiency
- high overload and wide torque range



Commercial designation of Bonfiglioli servomotors

Bonfiglioli servomotors are technically identified by their designation. This consists of a rigorous succession of alphanumeric characters, whose positions and values conform to precise rules and define the characteristics of the product.
The complete designation provides a unique identification of the exact servomotor configuration and distinguishes it from all the other possible configurations available from the catalogue.

The designation is made up of two main parts, containing fields for:
- BASIC variants
- OPTIONAL variants

Both the basic variant and optional variant sections of the designation are divided into fields, each of which defines a particular design feature of the motor.
The basic variant fields are all mandatory. Those of the optional variants are only used if the motor has different characteristics to those that are standard for the basic variants.
Each Bonfiglioli servomotor is identified by its series (BCR or BTD), size (2, 3, 4, 5, 6, 7, 8), (stall) torque, (rated) speed and AC supply voltage.

The BASIC variant fields are used to designate the 5 properties of BCR and BTD servomotors listed above and define the following standard characteristics:
- Standard geometric dimensions
  (see the technical specifications section)
- IP65 index of protection
- Motor shaft without keyway
- No electromechanical holding brake
- 2-pole feedback resolver
- Vertically fixed 8 - pin power connectors
- Vertically fixed 12 - pin control connectors
- CE, UL and cUL certification

Any deviation from the above standard characteristics implies an OPTIONAL variant. This is expressed using the next 8 optional fields in the designation string.
All basic variant and optional variant fields can assume only one value at a time. These values are selected from a limited set of pre-defined values for each field in the designation.

Commercial designation of Bonfiglioli servomotors

Designation BTD

Basic variants

Optional variants

BTD	2	0026	45	230	....	67	FD24	K	....	PA08	CA12	....

Series
BTD

Motor size
2 size 2
3 size 3
4 size 4
5 size 5

Motor stall torque
0026 0.26 Nm
0053 0.53 Nm
0074 0.74 Nm
0095 0.95 Nm
0190 1.90 Nm
0325 3.25 Nm
0410 4.10 Nm
0420 4.20 Nm
0630 6.30 Nm
0860 8.60 Nm
1160 11.60 Nm
1490 14.90 Nm
1870 18.70 Nm
2730 27.30 Nm

Motor rated speed
30 3000 min^{-1}
45 4500 min^{-1}

Motor AC voltage
230 200 VAC
400 330 VAC

Mechanical interface
(blank) dimensions conform to the default table IMB

IP degree
(blank) IP65 (default)
67 IP67
67OV IP67 o-ring viton

Holding brake
(blank) no brake (default)
FD24 DC-current brake 24VDC

Shaft keyway
(blank) no keyway (default)
K keyway according to DIN 6885

Feed-back transducer
(blank) 2poles RESOLVER (default)

Power connector
(blank) fixed vertical 8 pins (default)
PA08 fixed flange oriented 8 pins
PB08 fixed flange-symmetric oriented 8 pins
PT08 revolving 8 pins

Signal connector
(blank) fixed vertical 12 pins (default)
CA12 fixed flange oriented 12 pins
CB12 fixed flange-symmetric oriented 12 pins
CT12 revolving 12 pins

Standards compliance
(blank) CE, UL, cUL (default)

Commercial designation of Bonfiglioli servomotors

Designation BCR

Basic variants

Optional variants

BCR	2	0020	20	230	....	67	FD24	K	....	PA08	CA12	....

Series
BCR

Motor size
2 size 2
3 size 3
4 size 4
5 size 5
6 size 6
7 size 7
8 size 8

Motor stall torque
0020 0.2 Nm
0040 0.4 Nm
0060 0.6 Nm
0065 0.65 Nm
0080 0.8 Nm
0130 1.3 Nm
0250 2.5 Nm
0260 2.6 Nm
0300 3.0 Nm
0530 5.3 Nm
0660 6.6 Nm
0750 7.5 Nm
1050 10.5 Nm
1350 13.5 Nm
1700 17.0 Nm
1900 19.0 Nm
2200 22.0 Nm
2700 27.0 Nm
2900 29.0 Nm
3200 32.0 Nm
4000 40.0 Nm
0400 40.0 Nm (only for BCR8)
0680 68.0 Nm (only for BCR8)
0930 93.0 Nm (only for BCR8)
1150 115.0 Nm (only for BCR8)

Motor rated speed
20 2000 min^{-1}
30 3000 min^{-1}
45 4500 min^{-1}

Motor AC voltage
230 200 VAC
400 330 VAC (350VAC only for BCR8)

Mechanical interface
(blank) dimensions conform to the default table IMB

IP degree
(blank) IP65 (default)
67 IP67
67OV IP67 o-ring viton

Holding brake
(blank) no brake (default)
FD24 DC-current brake 24VDC

Shaft keyway
(blank) no keyway (default)
K keyway according to DIN 6885

Feed-back transducer
(blank) 2poles RESOLVER (default)

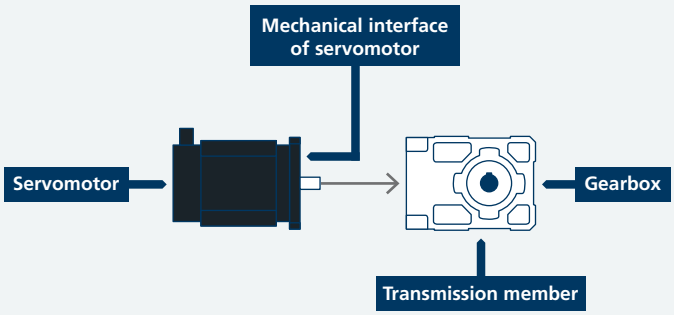
Power connector
(blank) fixed vertical 8 pins (default)
PA08 fixed flange oriented 8 pins
PB08 fixed flange-symmetric oriented 8 pins
PT08 revolving 8 pins

Signal connector
(blank) fixed vertical 12 pins (default)
CA12 fixed flange oriented 12 pins
CB12 fixed flange-symmetric oriented 12 pins
CT12 revolving 12 pins

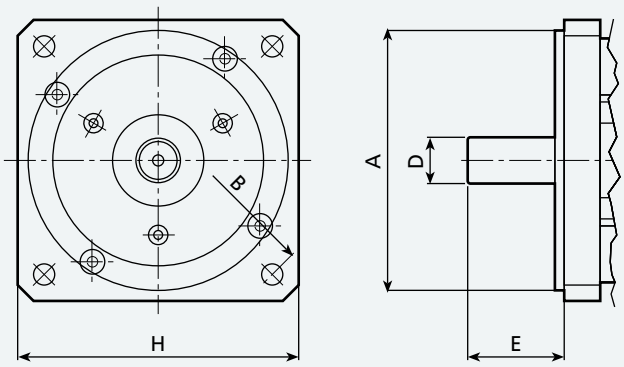
Standards compliance
(blank) CE, UL, cUL (default)

Mechanical interface

Concerning BTD and BCR servomotors, the physical part in charge of coupling with other transmission components (gearboxes, joints, …) is named Mechanical Interface.
Therefore the Mechanical Interface is a part of the motor and includesboth flange and shaft univocally defined by its geometrical dimensions. The flange and the shaft of BTD and BCR are described by fixed geometrics according to a standard Bonfiglioli configuration oriented to coupling with gearboxes, but also available to be adapted to other application requirements.



Mechanical interface:
connection Flange + transmission Shaft.
The interface geometry is defined by quantities H, B, A, D, E published in the side drawing whose numerical values (mm) depend on motor series and motor size.



The basic configuration of BTD and BCR servomotors is defined by the following table:

IMB table (Basic Mechanical Interface)

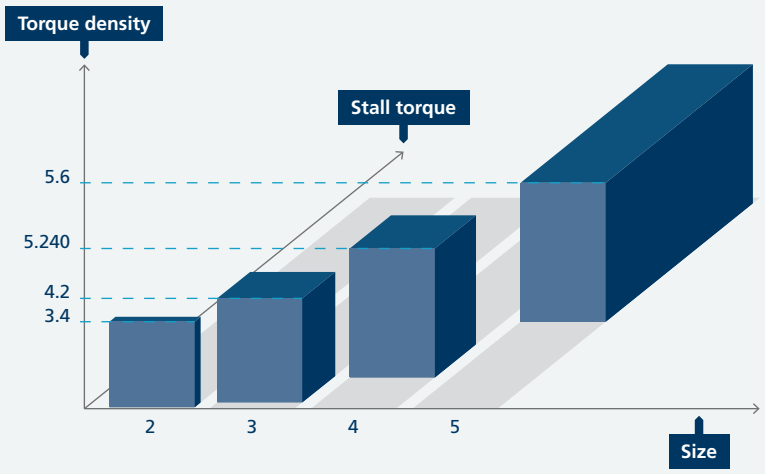
	Servomotor							
Mechanical interface	**BTD2 BCR2**	**BTD3 BCR3**	**BTD4 BCR4**	**BTD5 BCR5**	**BCR6**	**BCR7**	**BCR8**	
ø shaft (D) [mm]	9	14	19	24	24	28	38	42
Shaft lenght (E) [mm]	21.5	27	37	46.5	46.5	54	76	106
ø motor centering (A) [mm]	40	80	95	130	180	180	230	230
ø holes distance (B) [mm]	63	100	115	165	215	215	265	265
Flange (H) [mm]	55	86	98	142	190	190	240	240

The data of the table correspond to blank character into designation field named “mechanical interface”.
Different interface dimensions can be agreed together Bonfiglioli Drive Service Centre upon technical evaluation and feasibility analysis of application.

BTD - Servomotor brushless (compact)

The modern magnet and electrical circuits employed in BTD allow to reduce the temperature and to increase the motor torque keeping limited the dimensions.
The BTD series is developed in 4 sizes identified by progressive digits (from 2 to 5) corresponding to identical quantity of flanges designed for defined coupling with gearboxes.
To each size of flange several torque values are available corresponding to different motor length from which it is possible to extract great torque quantities inside reduced volumes.
The meaning of the name is the following:
BTD = **B**rushless-**T**orque-**D**ensity
The high torque concentration (3.4 ÷ 5.6 Nm/dm³) makes the BTD able to fulfil the applications in which a space saving is required without renouncing to performances.

Series	Size	Flange	Speed	Stall torque				Torque density
		[mm]	[min⁻¹]	[Nm]				[Nm/dm³]
BTD	2	55	4500	0.26	0.53	0.74	0.95	3.4
	3	86	3000	0.95	1.9	3.25	4.2	4.2
	4	98	3000	4.1	6.3	8.6	-	5.2
	5	142	3000	11.6	14.9	18.7	27.3	5.6

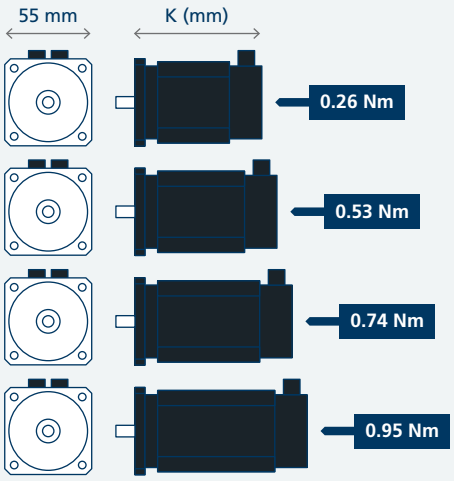


BTD2 - 0.26 ÷ 0.95 Nm

All BTD servomotors belonging to size 2 are equipped by the same geometrical flange, whereas the are differentiated by the length correlated to torque capacity.

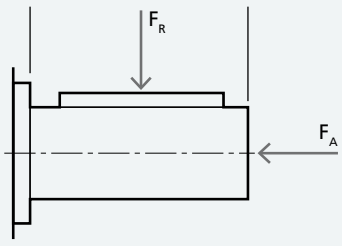
The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

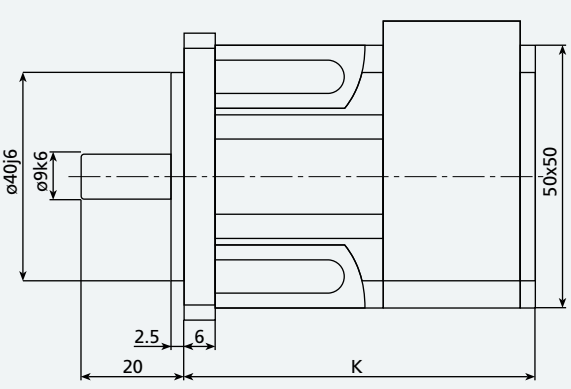
The motor size BTD2 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 4500 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.

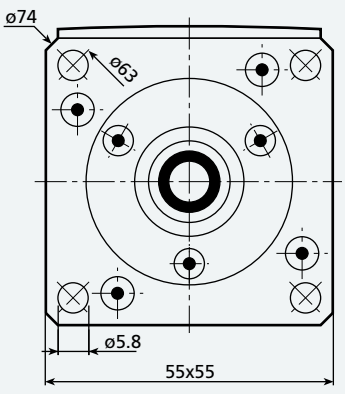


Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BTD2-0026	0.26	4500	55	67	105
BTD2-0053	0.53			82	120
BTD2-0074	0.74			97	135
BTD2-0095	0.95			112	150

Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BTD2-0026	219	42
BTD2-0053	234	45
BTD2-0074	245	46
BTD2-0095	252	48





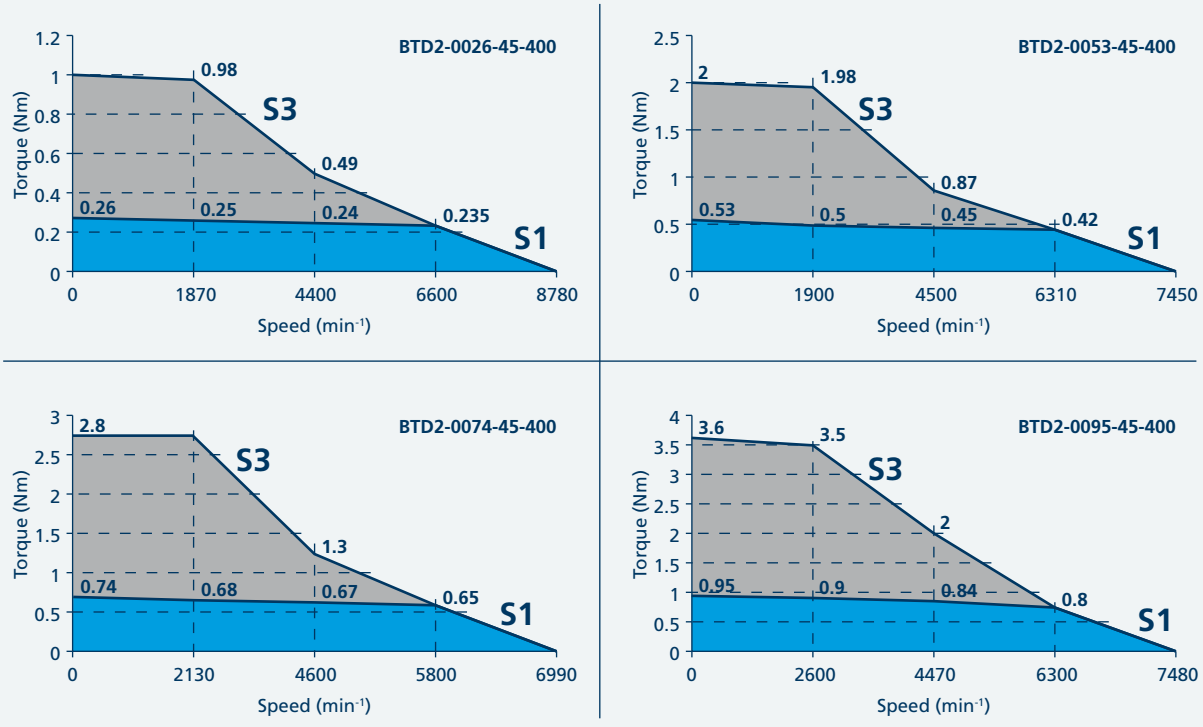


BTD2 400V

Motor		BTD2-0026-45-400	BTD2-0053-45-400	BTD2-0074-45-400	BTD2-0095-45-400
Stall torque	M_o [Nm]	0.26	0.53	0.74	0.95
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.24	0.45	0.67	0.84
Rated AC current	I_n [A]	0.68	0.66	0.89	1.19
Stall AC current	I_o [A]	0.42	0.73	0.96	1.31
Torque peak	M_{max} [Nm]	1.0	2.0	2.8	3.6
Current peak	I_{max} [A]	1.7	3.0	3.9	5.3
EMF constant	K_E [V/1000min^{-1}]	37.5	44.0	47.0	44.0
Torque constant	K_T [Nm/A]	0.62	0.73	0.78	0.73
Rated power	P_n [W]	110	210	315	395
Phase to phase stator resistance	R_{pp} [Ω]	106	54	37.9	21.6
Phase to phase stator inductance	L_{pp} [mH]	176.0	104.0	70.0	49.1
Rotor inertia	J_m [kgcm^2]	0.06	0.08	0.10	0.12
Electrical time constant	τ_{el} [ms]	1.7	1.9	1.8	2.3
Thermal time constant	τ_{th} [min]	13	15	20	22
Mechanical time constant	τ_{mec} [ms]	2.9	1.4	1.1	0.8
Weight without brake	m_M [kg]	0.750	0.920	1.090	1.260
Weight with brake	m_{MF} [kg]	1.190	1.360	1.530	1.700

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

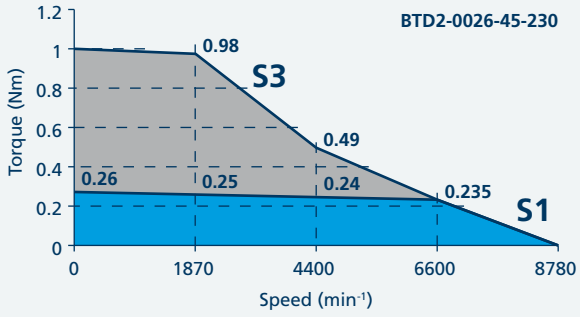


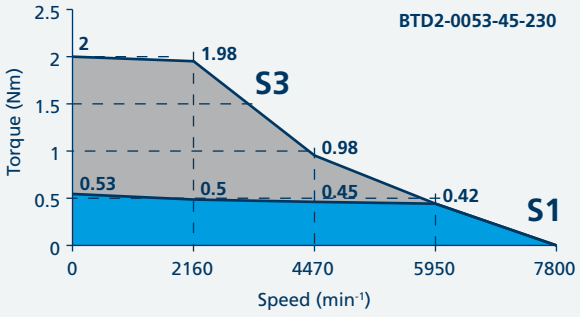
BTD2 230V

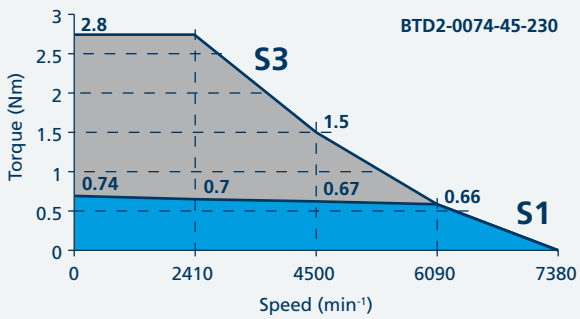
Motor		BTD2-0026-45-230	BTD2-0053-45-230	BTD2-0074-45-230	BTD2-0095-45-230
Stall torque	M_o [Nm]	0.26	0.53	0.74	0.95
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.24	0.45	0.67	0.84
Rated AC current	I_n [A]	0.68	1.11	1.55	1.90
Stall AC current	I_o [A]	0.70	1.26	1.66	2.10
Torque peak	M_{max} [Nm]	1.0	2.0	2.8	3.6
Current peak	I_{max} [A]	2.9	5.1	6.7	8.5
EMF constant	K_E [V/1000min^{-1}]	21.0	25.5	27.0	27.5
Torque constant	K_T [Nm/A]	0.37	0.42	0.45	0.45
Rated power	P_n [W]	110	210	315	395
Phase to phase stator resistance	R_{pp} [Ω]	36.8	17.4	12.1	8.4
Phase to phase stator inductance	L_{pp} [mH]	62.0	34.1	22.8	19.4
Rotor inertia	J_m [kgcm^2]	0.06	0.08	0.10	0.12
Electrical time constant	τ_{el} [ms]	1.7	2.0	1.9	2.3
Thermal time constant	τ_{th} [min]	13	15	20	22
Mechanical time constant	τ_{mec} [ms]	3.2	1.4	1.0	0.8
Weight without brake	m_M [kg]	0.750	0.920	1.090	1.260
Weight with brake	m_{MF} [kg]	1.190	1.360	1.530	1.700

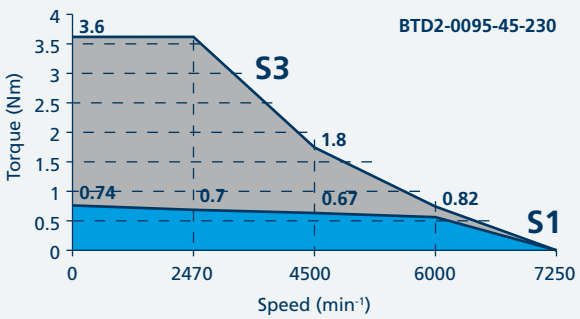
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C







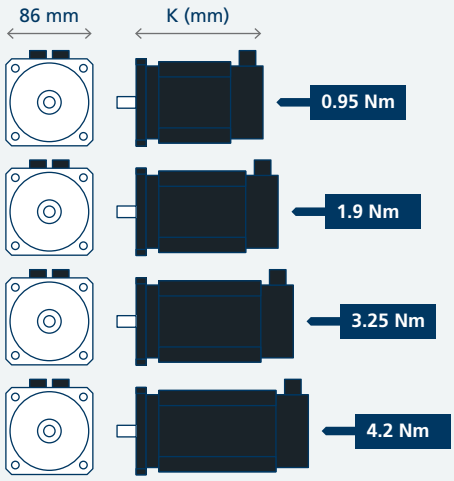


BTD3 - 0.95 ÷ 4.2 Nm

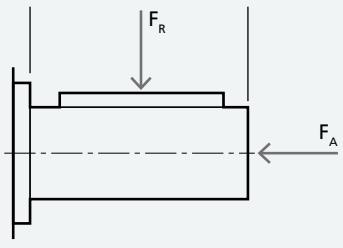
All BTD servomotors belonging to size 3 are equipped by the same geometrical flange, whereas the are differentiated by the length correlated to torque capacity.

The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

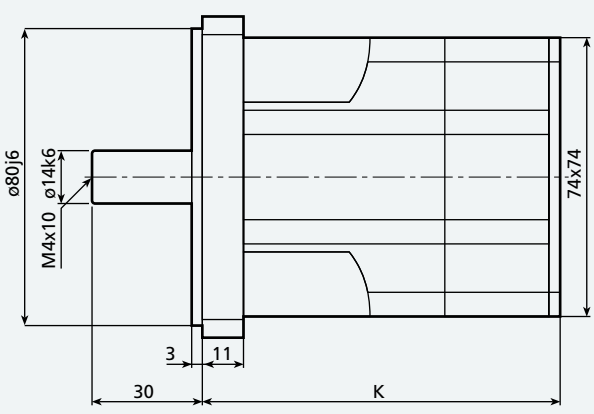
The motor size BTD3 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.

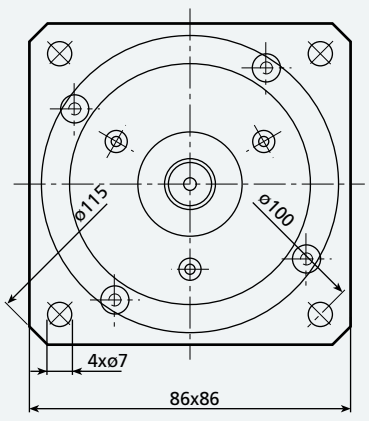


Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BTD3-0095	0.95	3000	86	95	135
BTD3-0190	1.9			113	153
BTD3-0325	3.25			149	189
BTD3-0420	4.2			185	225



Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BTD3-0095	335	64
BTD3-0190	368	70
BTD3-0325	406	77
BTD3-0420	427	81



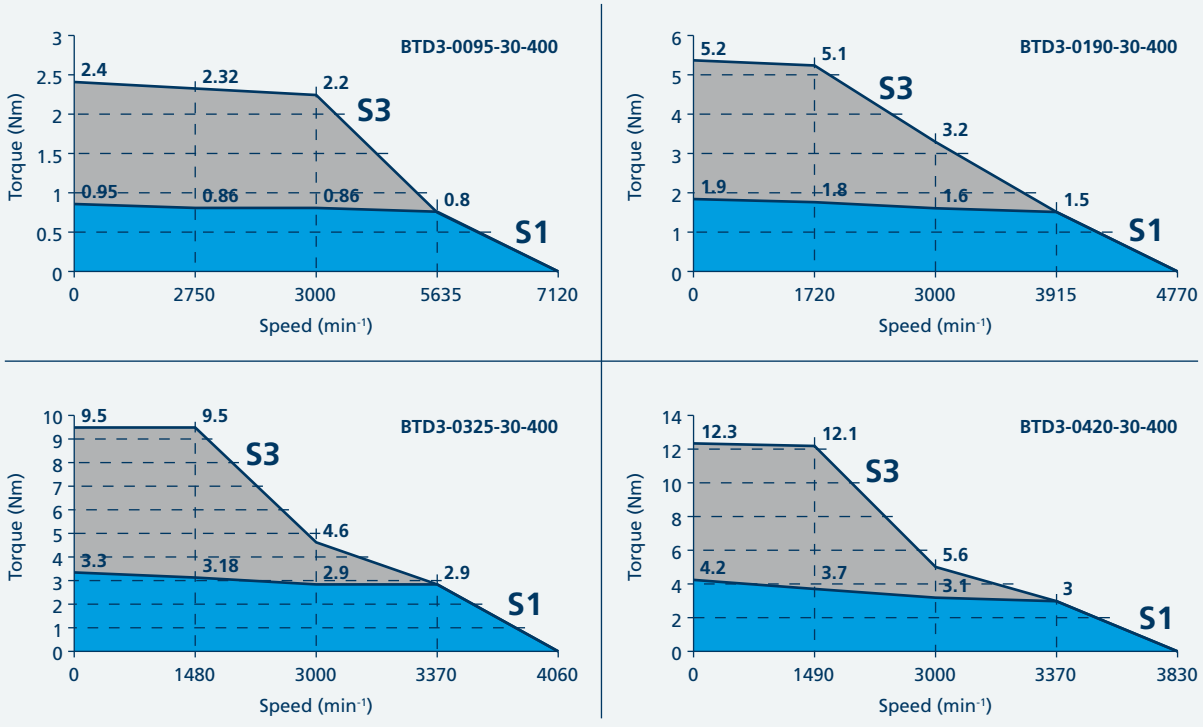


BTD3 400V

Motor		BTD3-0095-30-400	BTD3-0190-30-400	BTD3-0325-30-400	BTD3-0420-30-400
Stall torque	M_o [Nm]	0.95	1.9	3.25	4.2
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	10	10	10	10
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.86	1.6	2.9	3.1
Rated AC current	I_n [A]	1.28	1.46	2.3	2.3
Stall AC current	I_o [A]	1.32	1.66	2.4	3
Torque peak	M_{max} [Nm]	2.4	5.2	9.5	12.3
Current peak	I_{max} [A]	4.9	6.7	10.6	12.9
EMF constant	K_E [V/1000min^{-1}]	43.5	69	81	86
Torque constant	K_T [Nm/A]	0.72	1.14	1.34	1.42
Rated power	P_n [W]	270	500	910	970
Phase to phase stator resistance	R_{pp} [Ω]	12.6	11.6	6.5	4.6
Phase to phase stator inductance	L_{pp} [mH]	38	42.3	30.6	26.1
Rotor inertia	J_m [kgcm^2]	0.5	0.7	1.1	1.5
Electrical time constant	τ_{el} [ms]	3	3.6	4.7	5.7
Thermal time constant	τ_{th} [min]	25	30	33	36
Mechanical time constant	τ_{mec} [ms]	2.1	1.1	0.7	0.6
Weight without brake	m_M [kg]	1.525	2.090	3.220	4.350
Weight with brake	m_{MF} [kg]	2.115	2.680	3.810	4.940

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

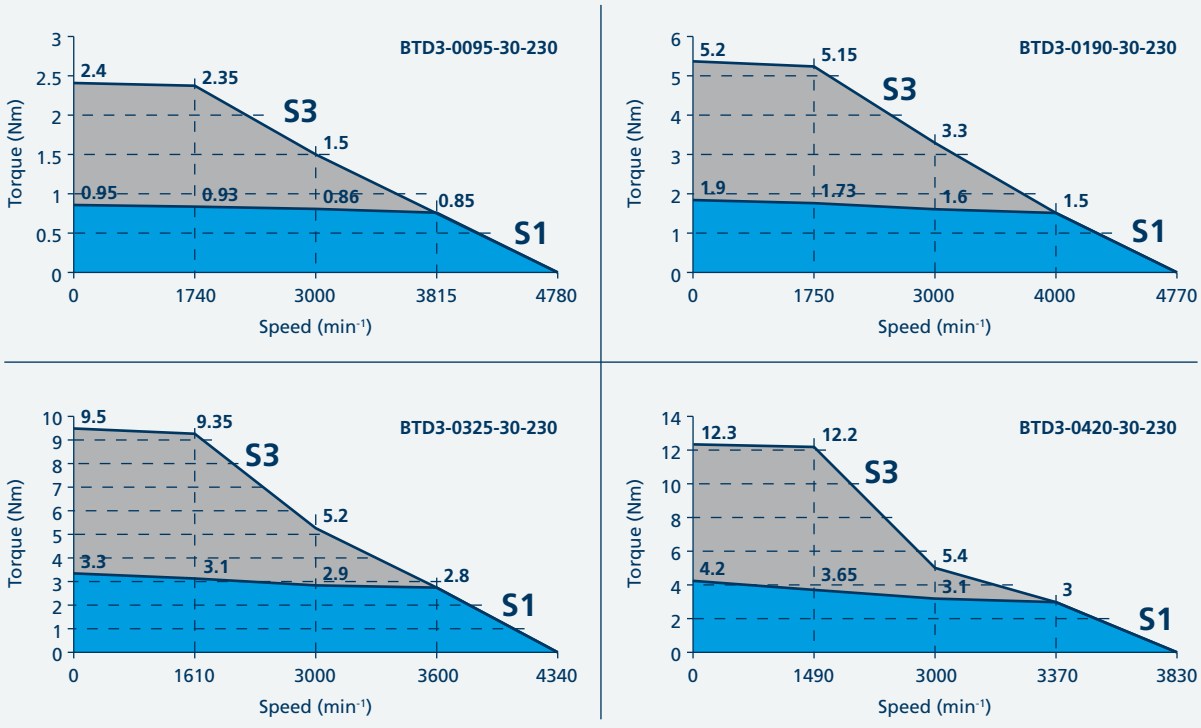


BTD3 230V

Motor		BTD3-0095-30-230	BTD3-0190-30-230	BTD3-0325-30-230	BTD3-0420-30-230
Stall torque	M_o [Nm]	0.95	1.9	3.25	4.2
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	10	10	10	10
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.86	1.6	2.9	3.1
Rated AC current	I_n [A]	1.43	2.4	4	3.7
Stall AC current	I_o [A]	1.47	2.8	4.3	4.8
Torque peak	M_{max} [Nm]	2.4	5.2	9.5	12.3
Current peak	I_{max} [A]	5.4	11.1	18.6	21
EMF constant	K_E [V/1000min^{-1}]	39	41.5	46	53
Torque constant	K_T [Nm/A]	0.65	0.69	0.76	0.88
Rated power	P_n [W]	270	500	910	970
Phase to phase stator resistance	R_{pp} [Ω]	9.9	4	2.2	1.77
Phase to phase stator inductance	L_{pp} [mH]	30.6	15.4	9.8	10
Rotor inertia	J_m [kgcm^2]	0.5	0.7	1.1	1.5
Electrical time constant	τ_{el} [ms]	3.1	3.9	4.5	5.6
Thermal time constant	τ_{th} [min]	25	30	33	36
Mechanical time constant	τ_{mec} [ms]	2.1	1.0	0.7	0.6
Weight without brake	m_M [kg]	1.525	2.090	3.220	4.350
Weight with brake	m_{MF} [kg]	2.115	2.680	3.810	4.940

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

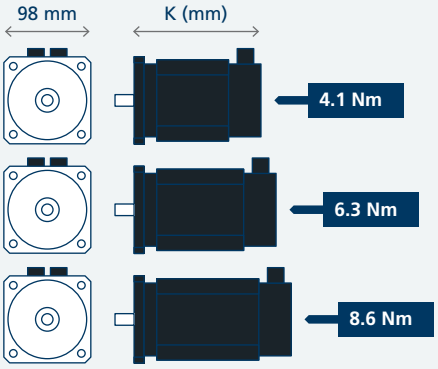


BTD4 - 4.1 ÷ 8.6 Nm

All BTD servomotors belonging to size 4 are equipped by the same geometrical flange, whereas the are differentiated by the length correlated to torque capacity.

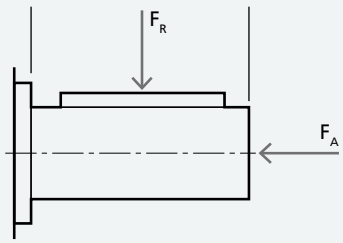
The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

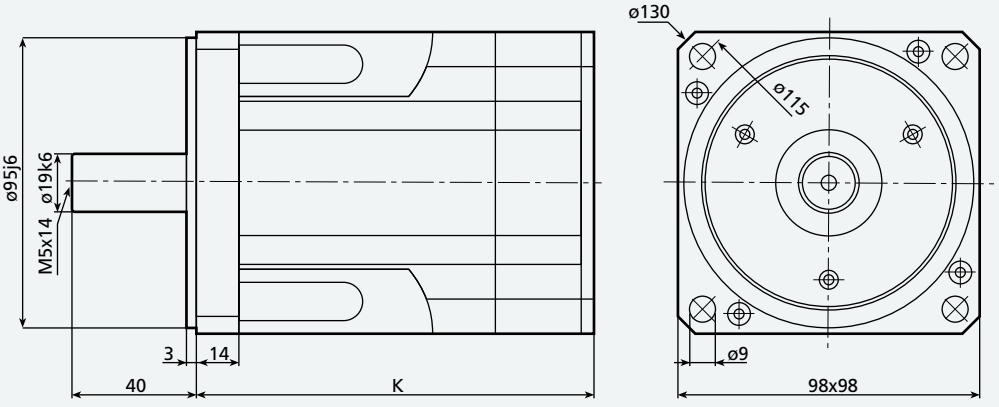
The motor size BTD4 is structured on three torque levels corresponding to different three motor lengths with nominal speed equal to 3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.



Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BTD4-0410	4.1	3000	98	125	166
BTD4-0630	6.3			155	196
BTD4-0860	8.6			185	226

Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BTD4-0410	594	113
BTD4-0630	648	123
BTD4-0860	682	130



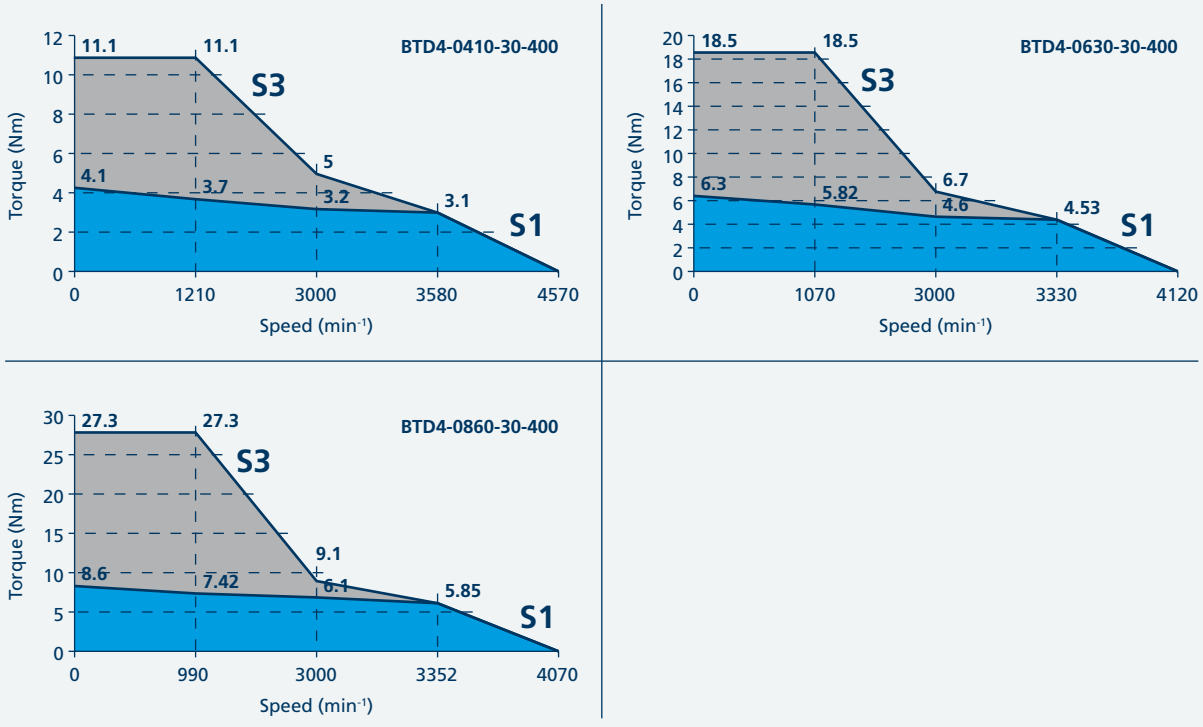


BTD4 400V

Motor		BTD4-0410-30-400	BTD4-0630-30-400	BTD4-0860-30-400
Stall torque	M_o [Nm]	4.1	6.3	8.6
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330
Motor poles number	p_{mot}	10	10	10
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [Nm]	3.2	4.6	6.1
Rated AC current	I_n [A]	2.8	3.6	4.8
Stall AC current	I_o [A]	3.4	4.77	6.4
Torque peak	M_{max} [Nm]	11.1	18.5	27
Current peak	I_{max} [A]	13.6	21	31
EMF constant	K_E [V/1000min^{-1}]	72	80	81
Torque constant	K_T [Nm/A]	1.19	1.32	1.34
Rated power	P_n [W]	1000	1440	1910
Phase to phase stator resistance	R_{pp} [Ω]	4	2.7	1.81
Phase to phase stator inductance	L_{pp} [mH]	34	25	18.6
Rotor inertia	J_m [kgcm^2]	1.7	2.6	3.5
Electrical time constant	τ_{el} [ms]	8.5	9.9	10.3
Thermal time constant	τ_{th} [min]	29	31	33
Mechanical time constant	τ_{mec} [ms]	0.8	0.7	0.6
Weight without brake	m_M [kg]	4.275	5.340	6.960
Weight with brake	m_{MF} [kg]	5.095	6.160	7.780

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

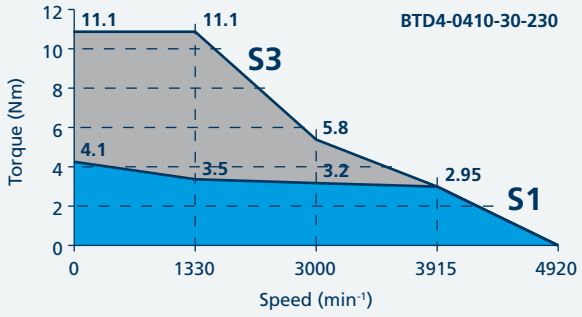


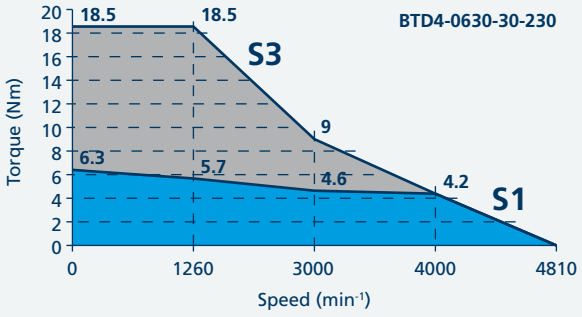
BTD4 230V

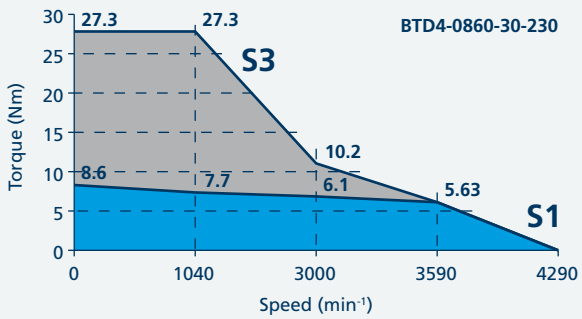
Motor		BTD4-0410-30-230	BTD4-0630-30-230	BTD4-0860-30-230
Stall torque	M_o [Nm]	4.1	6.3	8.6
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200
Motor poles number	p_{mot}	10	10	10
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [Nm]	3.2	4.6	6.1
Rated AC current	I_n [A]	5	7	8.3
Stall AC current	I_o [A]	6	9.13	11.2
Torque peak	M_{max} [Nm]	11.1	18.5	27
Current peak	I_{max} [A]	24	40	53
EMF constant	K_E [V/1000min^{-1}]	40.5	41.5	46.5
Torque constant	K_T [Nm/A]	0.67	0.69	0.77
Rated power	P_n [W]	1000	1440	1910
Phase to phase stator resistance	R_{pp} [Ω]	1.24	0.70	0.59
Phase to phase stator inductance	L_{pp} [mH]	10.6	6.9	6.2
Rotor inertia	J_m [kgcm^2]	1.7	2.6	3.5
Electrical time constant	τ_{el} [ms]	8.5	9.9	10.3
Thermal time constant	τ_{th} [min]	29	31	33
Mechanical time constant	τ_{mec} [ms]	0.8	0.6	0.6
Weight without brake	m_M [kg]	4.275	5.340	6.960
Weight with brake	m_{MF} [kg]	5.095	6.160	7.780

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C





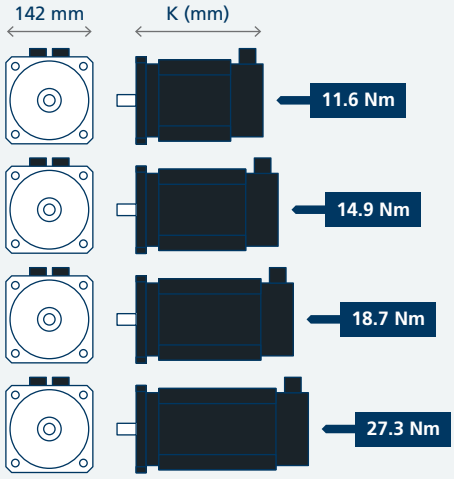


BTD5 - 11.6 ÷ 27.3 Nm

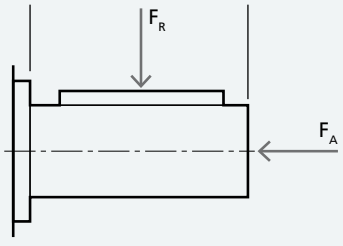
All BTD servomotors belonging to size 5 are equipped by the same geometrical flange, whereas the are differentiated by the length correlated to torque capacity.

The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

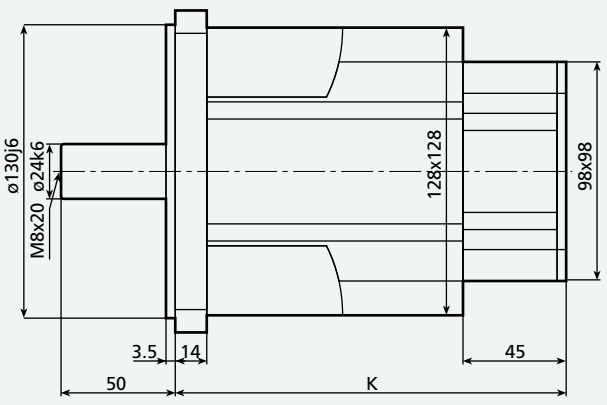
The motor size BTD5 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.

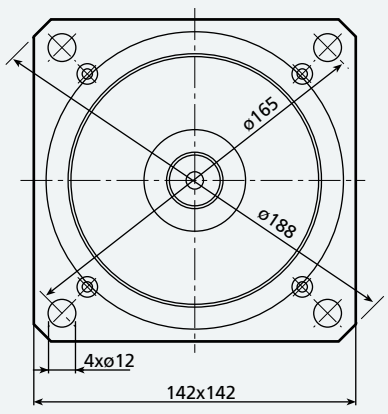


Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BTD5-1160	11.6	3000	142	173	224
BTD5-1490	14.9			201	252
BTD5-1870	18.7			231	282
BTD5-2730	27.3			291	342



Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BTD5-1160	672	128
BTD5-1490	713	135
BTD5-1870	743	141
BTD5-2730	783	149



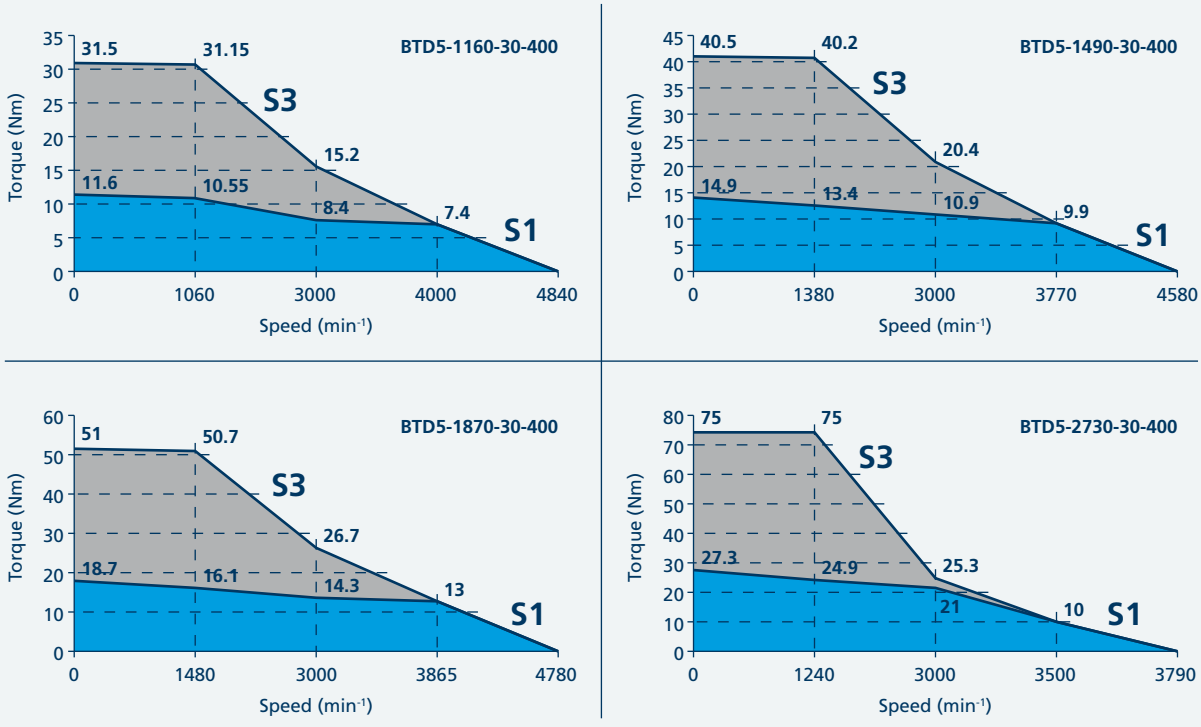


BTD5 400V

Motor		BTD5-1160-30-400	BTD5-1490-30-400	BTD5-1870-30-400	BTD5-2730-30-400
Stall torque	M_o [Nm]	11.6	14.9	18.7	27.3
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	10	10	10	10
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	8.4	10.9	14.3	21
Rated AC current	I_n [A]	7.9	9.6	13.1	14.9
Stall AC current	I_o [A]	10.4	12.5	16.4	19
Torque peak	M_{max} [Nm]	32	41	51	75
Current peak	I_{max} [A]	49	49	61	68
EMF constant	K_E [V/1000min^{-1}]	68	72	69	87
Torque constant	K_T [Nm/A]	1.12	1.19	1.14	1.44
Rated power	P_n [W]	2640	3420	4490	6600
Phase to phase stator resistance	R_{pp} [Ω]	0.71	0.48	0.35	0.32
Phase to phase stator inductance	L_{pp} [mH]	11.4	8.5	6.4	6.8
Rotor inertia	J_m [kgcm^2]	6.8	8.3	11.0	15.3
Electrical time constant	τ_{el} [ms]	16.0	16.8	18.3	21
Thermal time constant	τ_{th} [min]	50	55	60	75
Mechanical time constant	τ_{mec} [ms]	0.7	0.5	0.5	0.4
Weight without brake	m_M [kg]	8.100	10.100	12.100	16.100
Weight with brake	m_{MF} [kg]	9.180	11.180	13.180	17.180

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

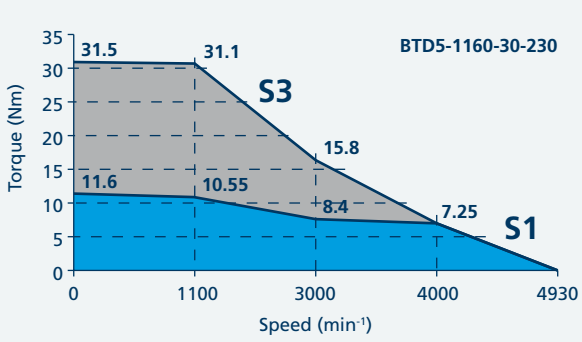


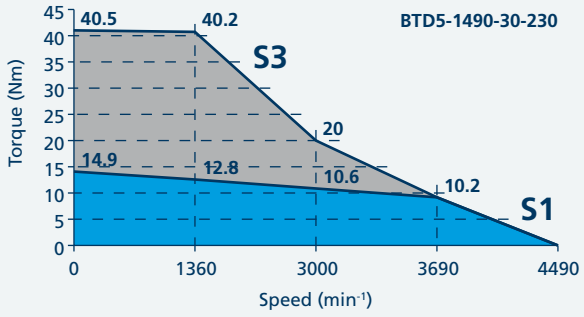
BTD5 230V

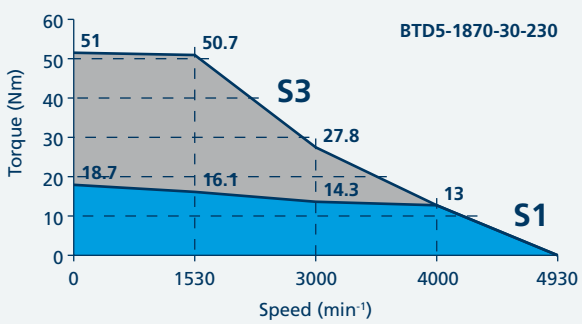
Motor		BTD5-1160-30-230	BTD5-1490-30-230	BTD5-1870-30-230	BTD5-2730-30-230
Stall torque	M_o [Nm]	11.6	14.9	18.7	27.3
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	10	10	10	10
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	8.4	10.9	14.3	21.0
Rated AC current	I_n [A]	13.2	15.6	22.4	25.4
Stall AC current	I_o [A]	17.3	20.1	27.9	32.4
Torque peak	M_{max} [Nm]	32	41	51	75
Current peak	I_{max} [A]	82	80	105	116
EMF constant	K_E [V/1000min^{-1}]	40.5	44.5	40.5	51.0
Torque constant	K_T [Nm/A]	0.67	0.74	0.67	0.84
Rated power	P_n [W]	2640	3420	4490	6600
Phase to phase stator resistance	R_{pp} [Ω]	0.25	0.19	0.12	0.12
Phase to phase stator inductance	L_{pp} [mH]	4.0	3.2	2.2	2.3
Rotor inertia	J_m [kgcm^2]	6.8	8.3	11.0	15.3
Electrical time constant	τ_{el} [ms]	16.0	16.8	18.3	19.2
Thermal time constant	τ_{th} [min]	50	55	60	75
Mechanical time constant	τ_{mec} [ms]	0.7	0.5	0.5	0.4
Weight without brake	m_M [kg]	8.100	10.100	12.100	16.100
Weight with brake	m_{MF} [kg]	9.180	11.180	13.180	17.180

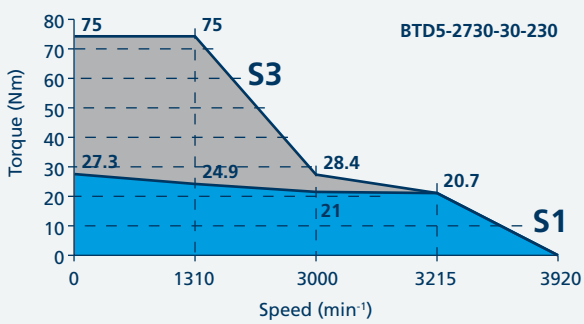
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C





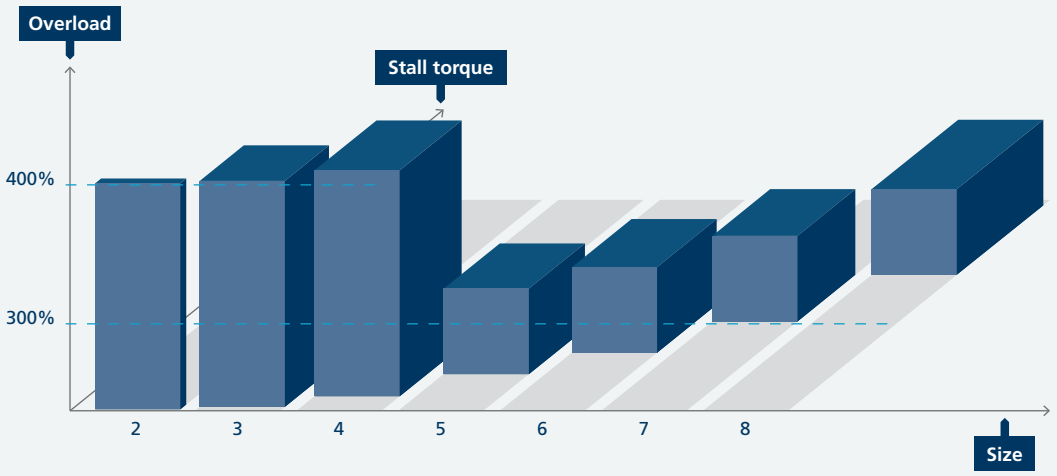




BCR - Servomotor brushless (high dynamics)

The architecture of magnet circuits and the winding insulation give to BCR high dynamic performances always assuring a long life time to him.
The BCR series is developed in 7 sizes identified by progressive digit (from 2 to 8) corresponding to identical quantity of flanges designed for defined coupling with gearboxes.
BTD alike, BCR series also makes available several torque values obtained from several motor lengths from which it is possible to extract high continuous torque and high temporary overload up to 400% of nominal levels.
The meaning of the name is the following:
BCR = **B**rushless-**C**lassic-**R**ange
The large torque range (0.2 ÷ 115 Nm) in continuous duty and the high overload make the BCR very suitable for high dynamic applications where significant accelerations are involved.

Series	Size	Flange	Speed	Stall torque					Overload
		[mm]	[min^{-1}]	[Nm]					[%]
BCR	2	55	4500	0.2	0.4	0.6	0.8	-	400
	3	86	4500	0.65	1.3	2.5	3.0	-	400
	4	98	3000	1	2.6	5.3	7.5	-	400
	5	142	3000	6.6	10.5	13.5	17.0	22.0	300
	6	190	3000	13.5	19.0	22.0	29.0	-	300
	7	190	3000	27.0	32.0	40.0	-	-	300
	8	240	3000/2000	40.0	68.0	93.0	115.0	-	300

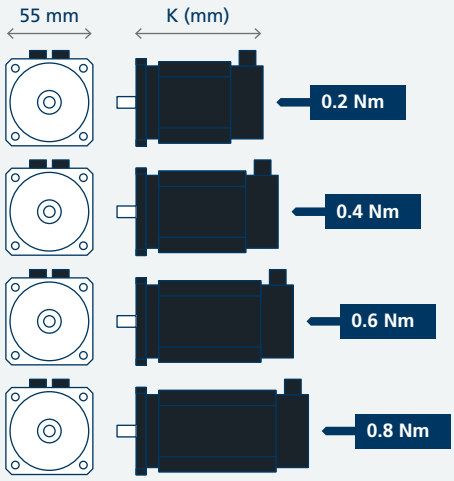


BCR2 - 0.2 ÷ 0.8 Nm

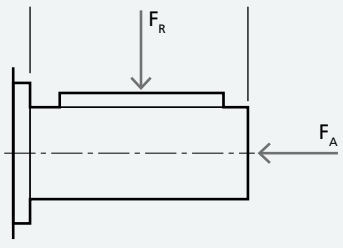
All BCR servomotors belonging to size 2 are equipped by the same geometrical flange, whereas the are differentiated by the length (K) correlated to torque capacity.

The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

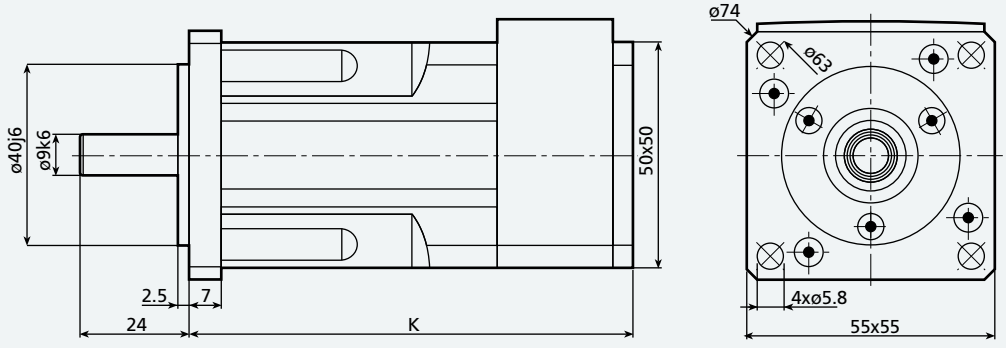
The motor size BCR2 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 4500 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.



Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BCR2-0020	0.2	4500	55	98	131
BCR2-0040	0.4			113	146
BCR2-0060	0.6			128	161
BCR2-0080	0.8			143	176



Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BCR2-0020	225	43
BCR2-0040	237	45
BCR2-0060	245	47
BCR2-0080	252	48

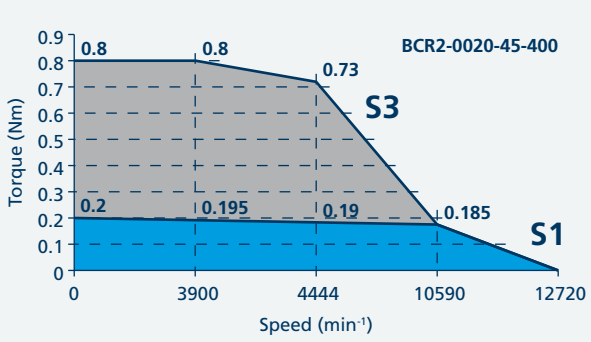


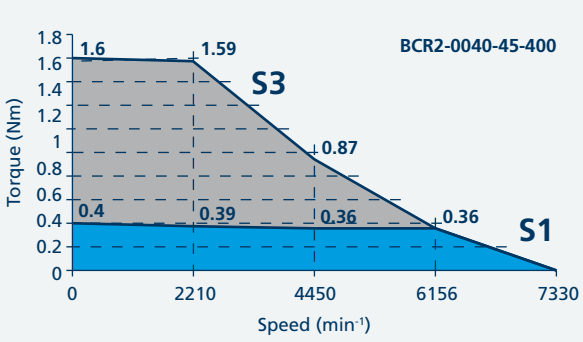
BCR2 400V

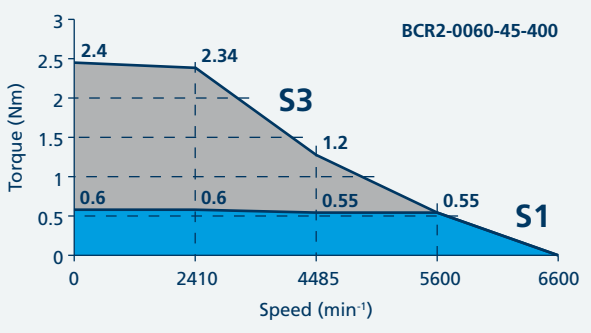
Motor		BCR2-0020-45-400	BCR2-0040-45-400	BCR2-0060-45-400	BCR2-0080-45-400
Stall torque	M_o [Nm]	0.2	0.4	0.6	0.8
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.19	0.36	0.55	0.72
Rated AC current	I_n [A]	0.48	0.51	0.70	0.86
Stall AC current	I_o [A]	0.47	0.54	0.73	0.91
Torque peak	M_{max} [Nm]	0.8	1.6	2.4	3.2
Current peak	I_{max} [A]	2.0	2.3	3.1	3.9
EMF constant	K_E [V/1000min^{-1}]	25.5	45.0	50.0	53.0
Torque constant	K_T [Nm/A]	0.42	0.74	0.83	0.88
Rated power	P_n [W]	90	170	260	340
Phase to phase stator resistance	R_{pp} [Ω]	84.0	77.0	51.0	38.4
Phase to phase stator inductance	L_{pp} [mH]	50.0	62.0	45.5	39.7
Rotor inertia	J_m [kgcm^2]	0.06	0.08	0.11	0.13
Electrical time constant	τ_{el} [ms]	0.59	0.80	0.90	1.00
Thermal time constant	τ_{th} [min]	10	15	20	22
Mechanical time constant	τ_{mec} [ms]	4.9	1.9	1.4	1.1
Weight without brake	m_M [kg]	0.9	1.06	1.21	1.36
Weight with brake	m_{MF} [kg]	1.05	1.21	1.36	1.51

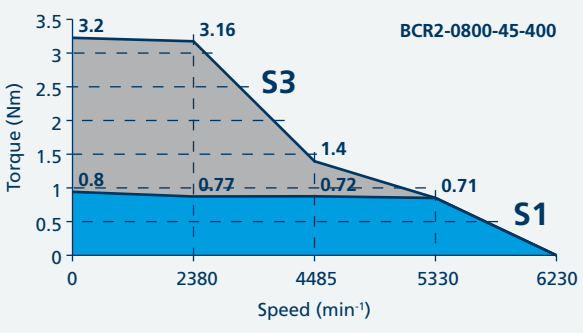
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C







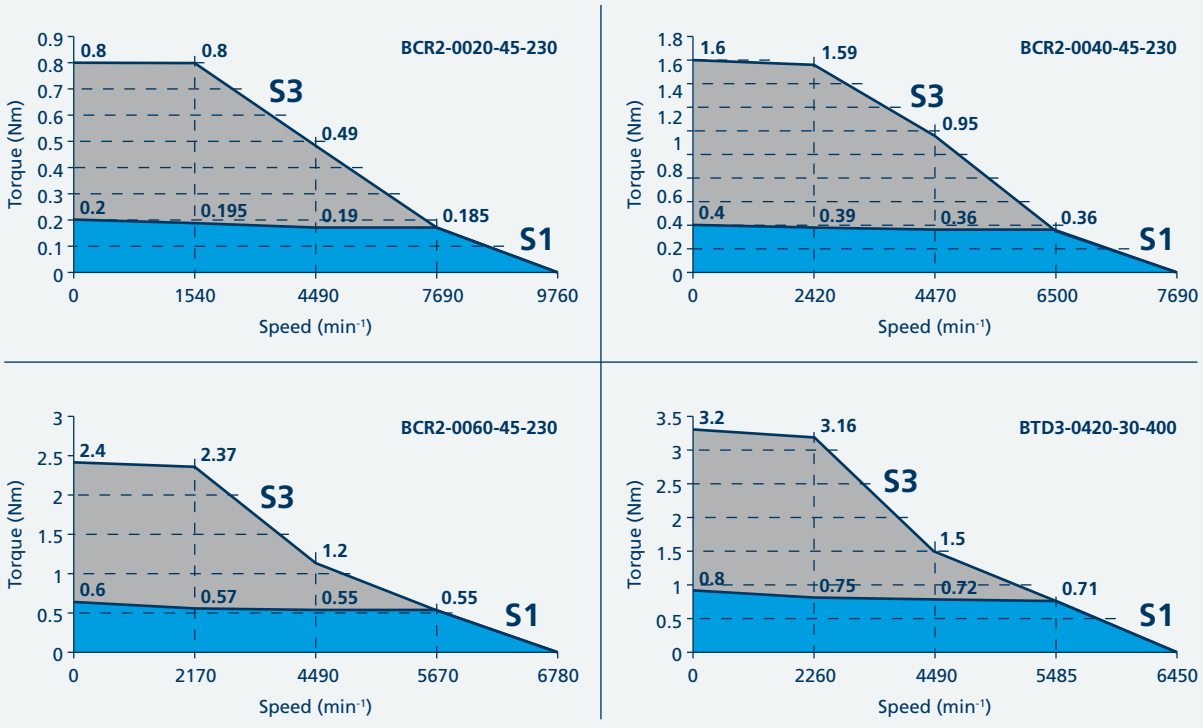


BCR2 230V

Motor		BCR2-0020-45-230	BCR2-0040-45-230	BCR2-0060-45-230	BCR2-0080-45-230
Stall torque	M_o [Nm]	0.2	0.4	0.6	0.8
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.19	0.36	0.55	0.72
Rated AC current	I_n [A]	0.60	0.88	1.18	1.47
Stall AC current	I_o [A]	0.59	0.93	1.23	1.56
Torque peak	M_{max} [Nm]	0.8	1.6	2.4	3.2
Current peak	I_{max} [A]	2.5	4.0	5.3	6.7
EMF constant	K_E [V/1000min^{-1}]	20.5	26.0	30.0	31.0
Torque constant	K_T [Nm/A]	0.34	0.43	0.49	0.51
Rated power	P_n [W]	90	170	260	340
Phase to phase stator resistance	R_{pp} [Ω]	54.0	26.3	19.9	14.6
Phase to phase stator inductance	L_{pp} [mH]	32.0	21.4	17.2	14.4
Rotor inertia	J_m [kgcm^2]	0.06	0.08	0.11	0.13
Electrical time constant	τ_{el} [ms]	0.59	0.82	0.87	0.98
Thermal time constant	τ_{th} [min]	10	15	20	22
Mechanical time constant	τ_{mec} [ms]	4.9	2.0	1.5	1.3
Weight without brake	m_M [kg]	0.9	1.06	1.21	1.36
Weight with brake	m_{MF} [kg]	1.05	1.21	1.36	1.51

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

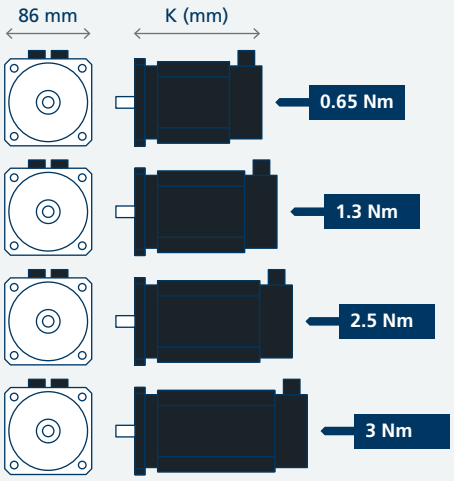


BCR3 - 0.65 ÷ 3 Nm

All BCR servomotors belonging to size 3 are equipped by the same geometrical flange, whereas the are differentiated by the length (K) correlated to torque capacity.

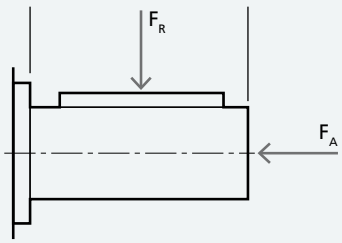
The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

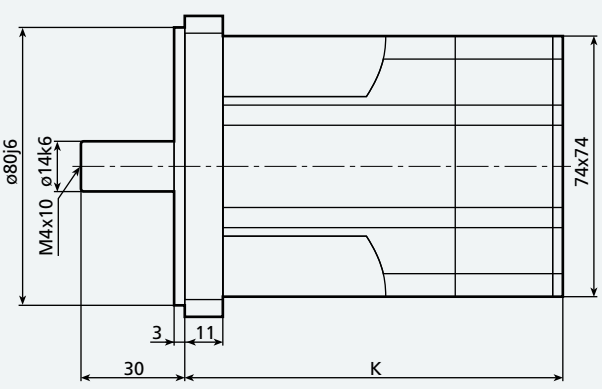
The motor size BCR3 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 4500 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.

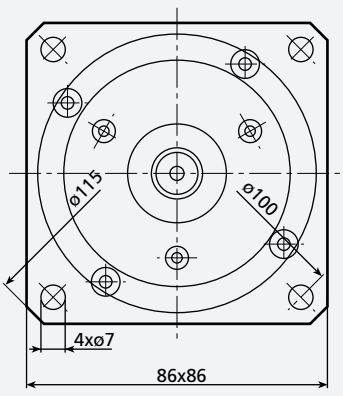


Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BCR3-0065	0.65	4500	86	109	142
BCR3-0130	1.3			127	160
BCR3-0250	2.5			163	196
BCR3-0300	3.0			181	214

Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BCR3-0065	370	70
BCR3-0130	393	75
BCR3-0250	422	80
BCR3-0300	431	82





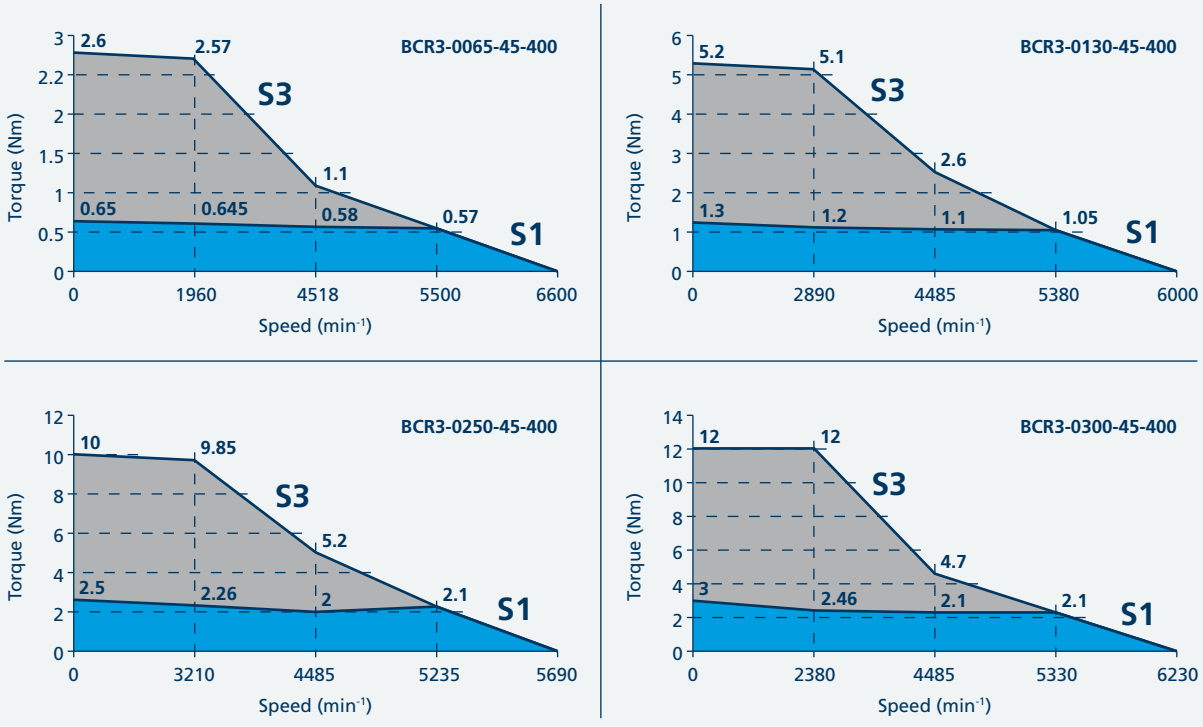


BCR3 400V

Motor		BCR3-0065-45-400	BCR3-0130-45-400	BCR3-0250-45-400	BCR3-0300-45-400
Stall torque	M_o [Nm]	0.65	1.3	2.5	3
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.58	1.05	2.0	2.1
Rated AC current	I_n [A]	0.75	1.24	2.2	2.0
Stall AC current	I_o [A]	0.79	1.43	2.6	2.6
Torque peak	M_{max} [Nm]	2.6	5.2	10.0	12.0
Current peak	I_{max} [A]	3.4	6.1	11.2	12.4
EMF constant	K_E [V/1000min^{-1}]	50.0	55.0	58.0	63.0
Torque constant	K_T [Nm/A]	0.83	0.91	0.96	1.04
Rated power	P_n [W]	220	495	940	990
Phase to phase stator resistance	R_{pp} [Ω]	50.0	17.0	7.0	6.0
Phase to phase stator inductance	L_{pp} [mH]	62.0	29.9	15.4	14.2
Rotor inertia	J_m [kgcm^2]	0.50	0.65	1.4	1.5
Electrical time constant	τ_{el} [ms]	1.2	1.8	2.2	2.3
Thermal time constant	τ_{th} [min]	25	30	32	33
Mechanical time constant	τ_{mec} [ms]	6.4	2.3	1.8	1.4
Weight without brake	m_M [kg]	1.75	2.25	3.20	3.65
Weight with brake	m_{MF} [kg]	2.22	2.72	3.67	4.12

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

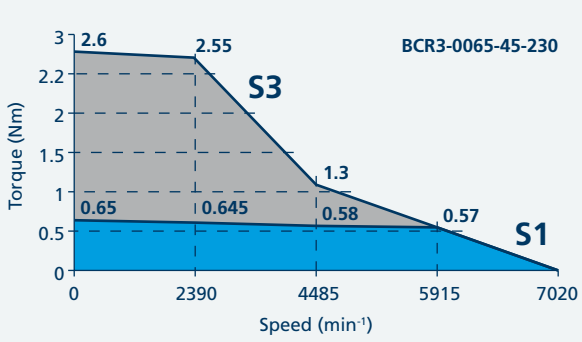


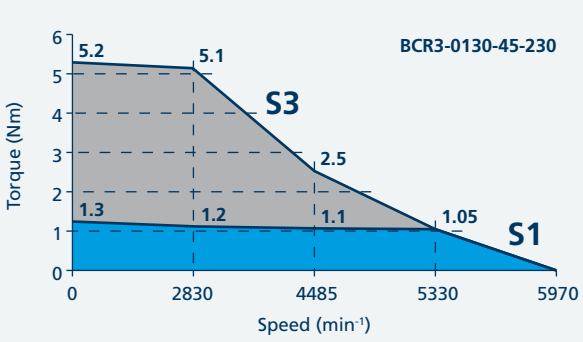
BCR3 230V

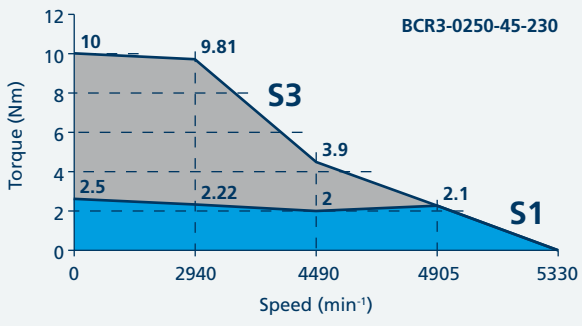
Motor		BCR3-0065-45-230	BCR3-0130-45-230	BCR3-0250-45-230	BCR3-0300-45-230
Stall torque	M_o [Nm]	0.65	1.3	2.5	3
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.58	1.05	2.0	2.1
Rated AC current	I_n [A]	1.31	2.0	3.4	3.6
Stall AC current	I_o [A]	1.38	2.4	4.0	4.8
Torque peak	M_{max} [Nm]	2.6	5.2	10.0	12.0
Current peak	I_{max} [A]	5.9	10.1	17.3	21.0
EMF constant	K_E [V/1000min^{-1}]	28.5	33.5	37.5	37.5
Torque constant	K_T [Nm/A]	0.47	0.55	0.62	0.62
Rated power	P_n [W]	220	495	940	990
Phase to phase stator resistance	R_{pp} [Ω]	15.6	6.5	3.0	2.1
Phase to phase stator inductance	L_{pp} [mH]	20.0	11.1	6.0	5.0
Rotor inertia	J_m [kgcm^2]	0.50	0.65	1.4	1.5
Electrical time constant	τ_{el} [ms]	1.3	1.7	2.0	2.4
Thermal time constant	τ_{th} [min]	25	30	32	33
Mechanical time constant	τ_{mec} [ms]	6.1	2.4	1.9	1.4
Weight without brake	m_M [kg]	1.75	2.25	3.20	3.65
Weight with brake	m_{MF} [kg]	2.22	2.72	3.67	4.12

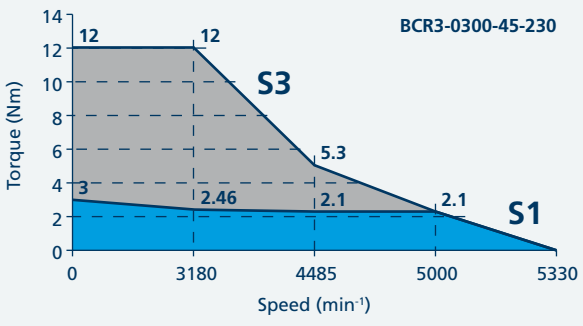
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C







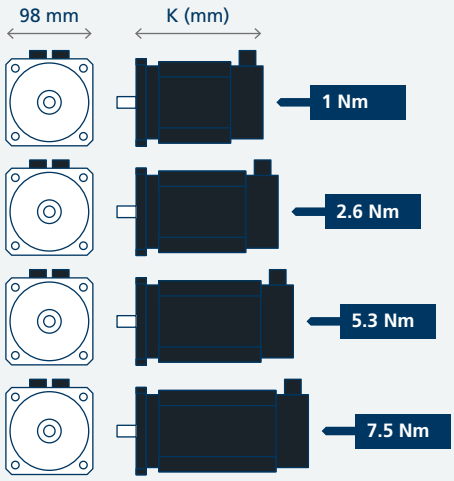


BCR4 - 1 ÷ 7.5 Nm

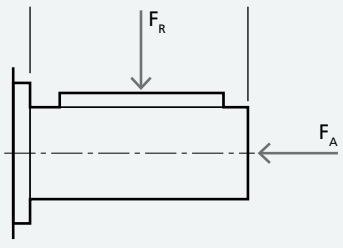
All BCR servomotors belonging to size 4 are equipped by the same geometrical flange, whereas the are differentiated by the length (K) correlated to torque capacity.

The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

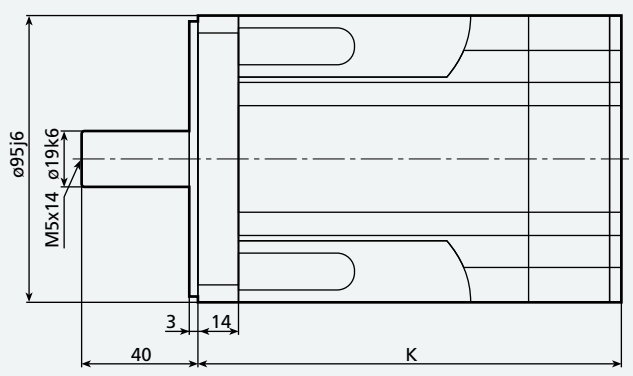
The motor size BCR4 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.

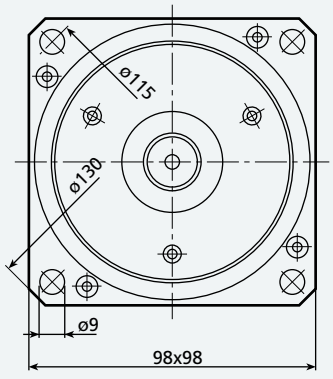


Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BCR4-0100	1	3000	98	116	148
BCR4-0260	2.6			146	178
BCR4-0530	5.3			176	208
BCR4-0750	7.5			221	253



Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BCR4-0100	328	62
BCR4-0260	638	121
BCR4-0530	676	128
BCR4-0750	711	135



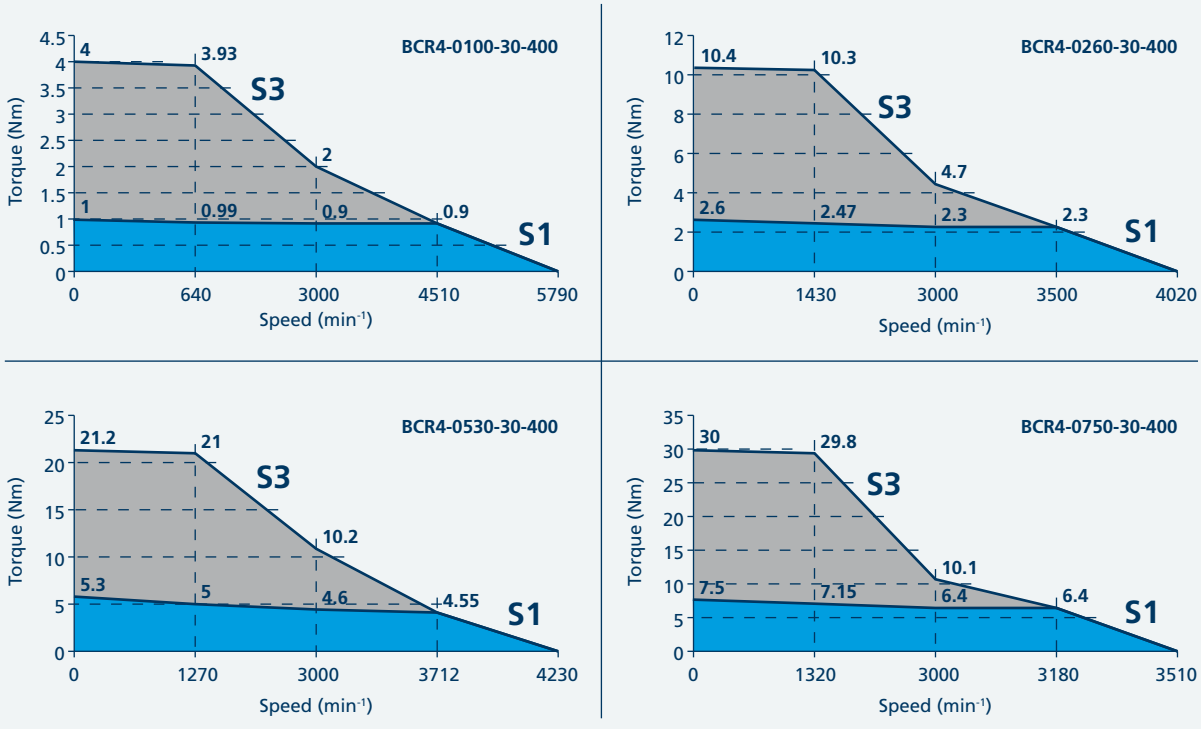


BCR4 400V

Motor		BCR4-0100-30-400	BCR4-0260-30-400	BCR4-0530-30-400	BCR4-0750-30-400
Stall torque	M_o [Nm]	1.0	2.6	5.3	7.5
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.98	2.3	4.6	6.4
Rated AC current	I_n [A]	1.05	1.85	3.8	4.4
Stall AC current	I_o [A]	1.06	1.92	4.1	4.8
Torque peak	M_{max} [Nm]	4	10.4	21.0	30.0
Current peak	I_{max} [A]	6.4	11.5	25.0	29.0
EMF constant	K_E [V/1000min^{-1}]	57	82.0	78.0	94.0
Torque constant	K_T [Nm/A]	0.94	1.36	1.29	1.55
Rated power	P_n [W]	280	720	1440	2010
Phase to phase stator resistance	R_{pp} [Ω]	16.3	9.6	4.2	3.0
Phase to phase stator inductance	L_{pp} [mH]	75	41.5	24.0	19.2
Rotor inertia	J_m [kgcm^2]	0.79	1.9	2.7	4.2
Electrical time constant	τ_{el} [ms]	2.1	4.3	5.7	6.4
Thermal time constant	τ_{th} [min]	45	60	64	66
Mechanical time constant	τ_{mec} [ms]	5.6	1.7	1.2	0.9
Weight without brake	m_M [kg]	2.7	4.5	5.6	7.7
Weight with brake	m_{MF} [kg]	3.52	5.32	6.42	8.52

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

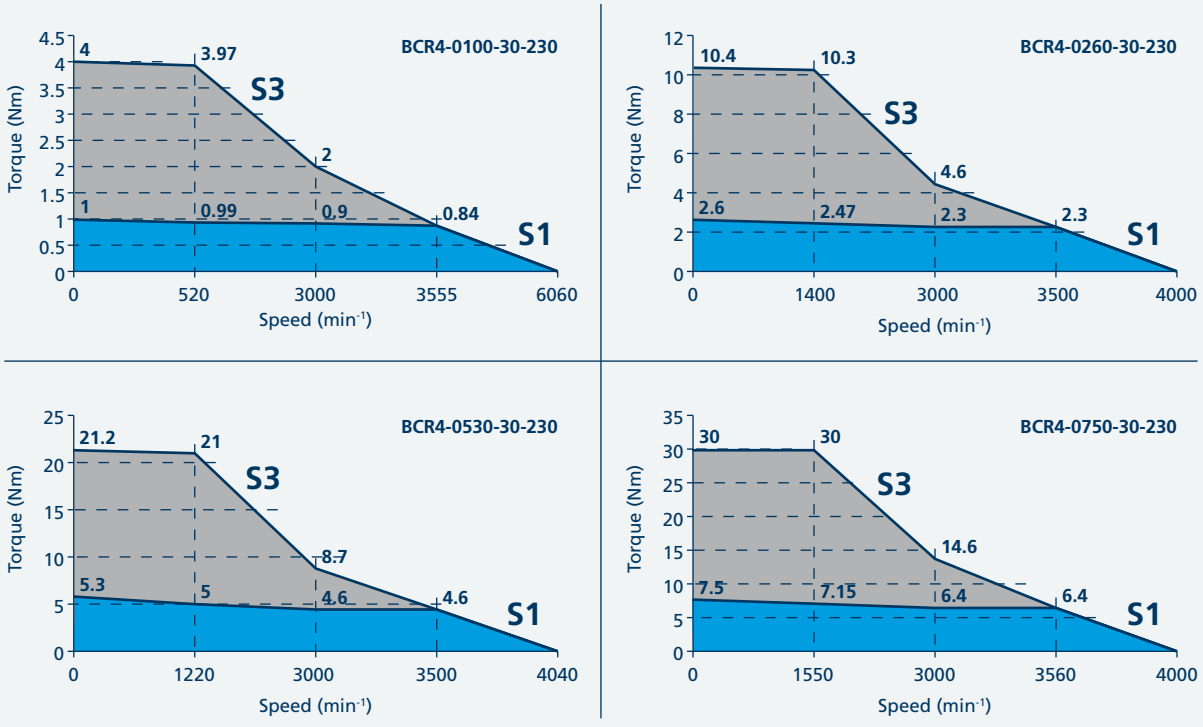


BCR4 230V

Motor		BCR4-0100-30-230	BCR4-0260-30-230	BCR4-0530-30-230	BCR4-0750-30-230
Stall torque	M_o [Nm]	1.0	2.6	5.3	7.5
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	0.98	2.3	4.6	6.4
Rated AC current	I_n [A]	1.8	3.0	5.9	8.1
Stall AC current	I_o [A]	1.83	3.1	6.5	9.1
Torque peak	M_{max} [Nm]	4	10.4	21.0	30.0
Current peak	I_{max} [A]	11	18.9	39.0	54.0
EMF constant	K_E [V/1000min^{-1}]	33	50.0	49.5	50.0
Torque constant	K_T [Nm/A]	0.55	0.83	0.82	0.83
Rated power	P_n [W]	280	720	1440	2010
Phase to phase stator resistance	R_{pp} [Ω]	13.5	3.6	1.66	0.87
Phase to phase stator inductance	L_{pp} [mH]	25.7	15.9	9.8	5.6
Rotor inertia	J_m [kgcm^2]	0.79	1.9	2.7	4.2
Electrical time constant	τ_{el} [ms]	1.9	4.4	5.9	6.4
Thermal time constant	τ_{th} [min]	45	60	64	66
Mechanical time constant	τ_{mec} [ms]	6.2	1.7	1.1	0.9
Weight without brake	m_M [kg]	2.7	4.5	5.6	7.7
Weight with brake	m_{MF} [kg]	3.52	5.32	6.42	8.52

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

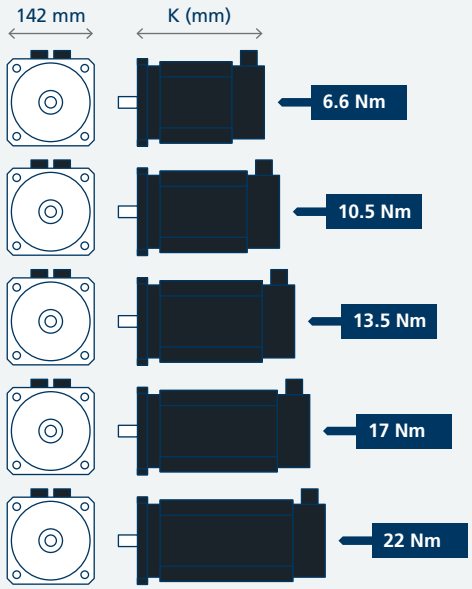


BCR5 - 6.6 ÷ 22 Nm

All BCR servomotors belonging to size 5 are equipped by the same geometrical flange, whereas the are differentiated by the length (K) correlated to torque capacity.

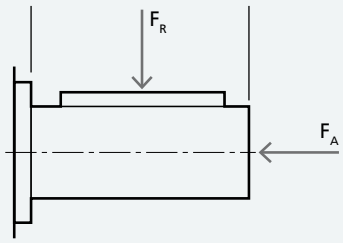
The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

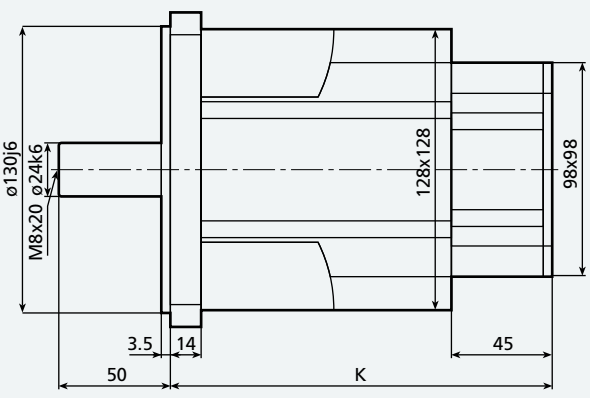
The motor size BCR5 is structured on five torque levels corresponding to different five motor lengths with nominal speed equal to 3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.

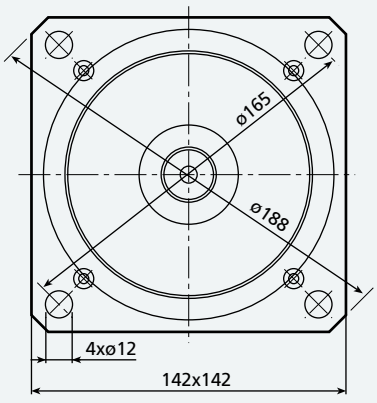


Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BCR5-0660	6.6	3000	142	185	228
BCR5-1050	10.5			219	262
BCR5-1350	13.5			236	279
BCR5-1700	17			270	313
BCR5-2200	22			304	347

Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BCR5-0660	693	132
BCR5-1050	733	139
BCR5-1350	748	142
BCR5-1700	772	147
BCR5-2200	790	150





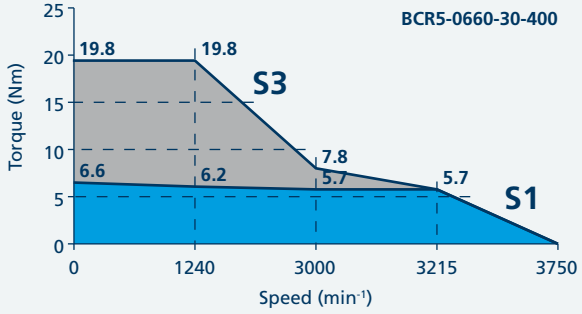


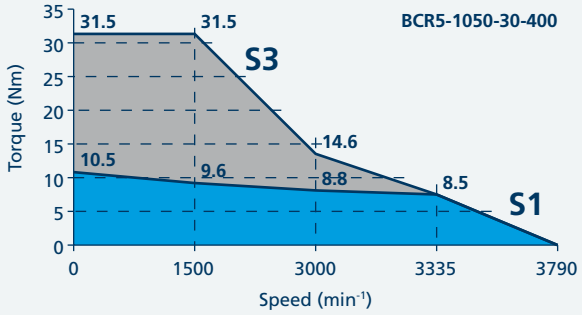
BCR5 400V

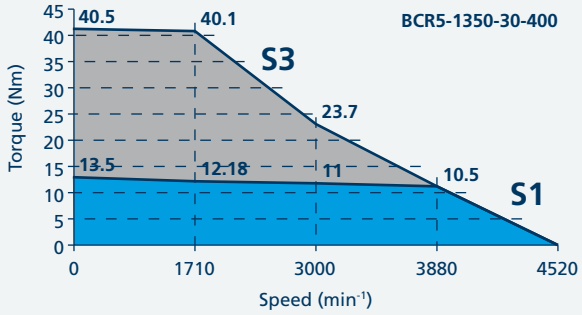
Motor		BCR5-0660-30-400	BCR5-1050-30-400	BCR5-1350-30-400	BCR5-1700-30-400	BCR5-2200-30-400
Stall torque	M_o [Nm]	6.6	10.5	13.5	17.0	22.0
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2	2
Rated torque	M_n [Nm]	5.7	8.8	11.0	14.5	17.5
Rated AC current	I_n [A]	4.0	6.3	9.5	10.0	10.5
Stall AC current	I_o [A]	4.5	7.3	11.2	11.4	12.8
Torque peak	M_{max} [Nm]	19.8	32.0	41.0	51.0	66.0
Current peak	I_{max} [A]	23	36	56	57	64
EMF constant	K_E [V/1000min^{-1}]	88.0	87.0	73.0	90.0	104.0
Torque constant	K_T [Nm/A]	1.46	1.44	1.21	1.49	1.72
Rated power	P_n [W]	1790	2760	3450	4550	5500
Phase to phase stator resistance	R_{pp} [Ω]	4.2	1.70	0.95	0.95	0.95
Phase to phase stator inductance	L_{pp} [mH]	27.8	15.2	9.0	10.0	10.5
Rotor inertia	J_m [kgcm^2]	4.0	6.2	7.3	9.5	11.7
Electrical time constant	τ_{el} [ms]	6.7	9.0	9.5	10.6	11.1
Thermal time constant	τ_{th} [min]	45	50	55	60	75
Mechanical time constant	τ_{mec} [ms]	1.4	0.9	0.8	0.7	0.7
Weight without brake	m_M [kg]	7.5	10.0	11.2	13.7	16.2
Weight with brake	m_{MF} [kg]	9.3	11.8	13.0	15.5	18.0

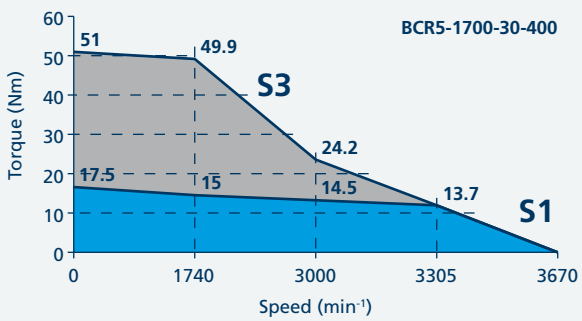
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

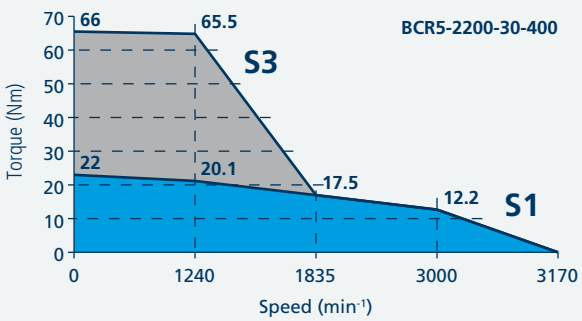
Torque-speed characteristic: ambient temperature 40°C









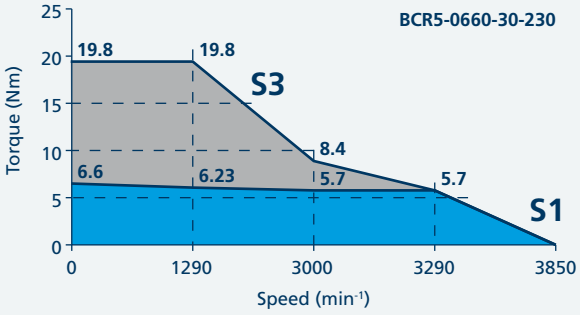


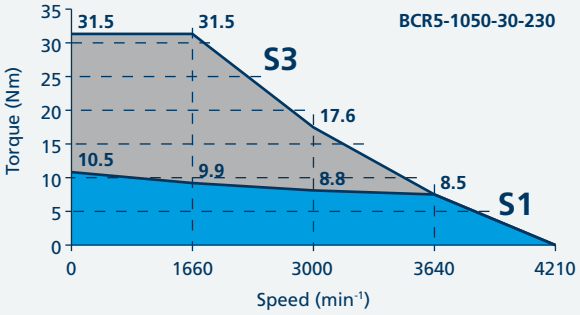
BCR5 230V

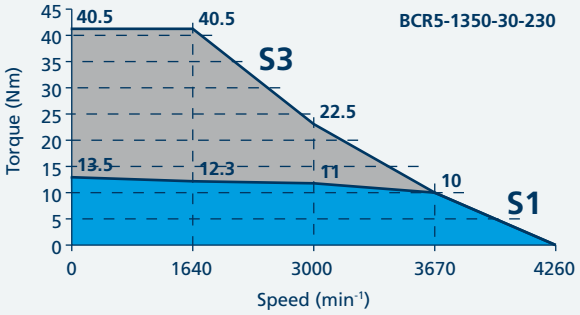
Motor		BCR5-0660-30-230	BCR5-1050-30-230	BCR5-1350-30-230	BCR5-1700-30-230	BCR5-2200-30-230
Stall torque	M_o [Nm]	6.6	10.5	13.5	17.0	22.0
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2	2
Rated torque	M_n [Nm]	5.7	8.8	11.0	14.5	17.5
Rated AC current	I_n [A]	6.8	11.5	14.5	16.0	20.2
Stall AC current	I_o [A]	7.7	13.4	17.4	18.4	25.6
Torque peak	M_{max} [Nm]	19.8	32.0	41.0	51.0	66.0
Current peak	I_{max} [A]	38	67	87	91	127
EMF constant	K_E [V/1000min^{-1}]	52.0	47.5	47.0	56.0	52.0
Torque constant	K_T [Nm/A]	0.86	0.79	0.78	0.93	0.86
Rated power	P_n [W]	1790	2760	3450	4550	5500
Phase to phase stator resistance	R_{pp} [Ω]	1.44	0.51	0.38	0.36	0.24
Phase to phase stator inductance	L_{pp} [mH]	9.6	4.6	3.6	3.8	2.6
Rotor inertia	J_m [kgcm^2]	4.0	6.2	7.3	9.5	11.7
Electrical time constant	τ_{el} [ms]	6.7	9.0	9.5	10.6	10.8
Thermal time constant	τ_{th} [min]	45	50	55	60	75
Mechanical time constant	τ_{mec} [ms]	1.3	0.9	0.8	0.7	0.7
Weight without brake	m_M [kg]	7.5	10.0	11.2	13.7	16.2
Weight with brake	m_{MF} [kg]	9.3	11.8	13.0	15.5	18.0

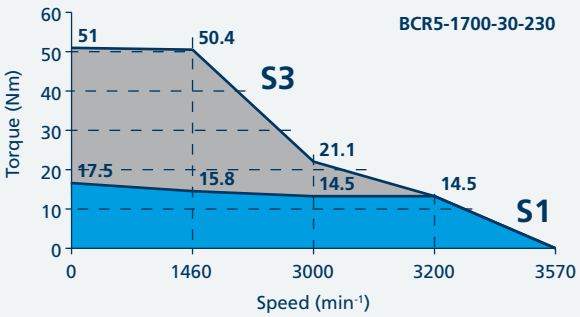
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

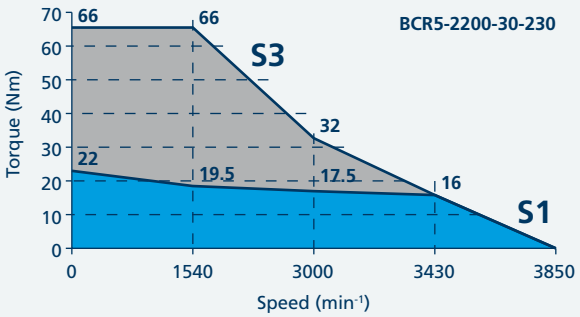
Torque-speed characteristic: ambient temperature 40°C









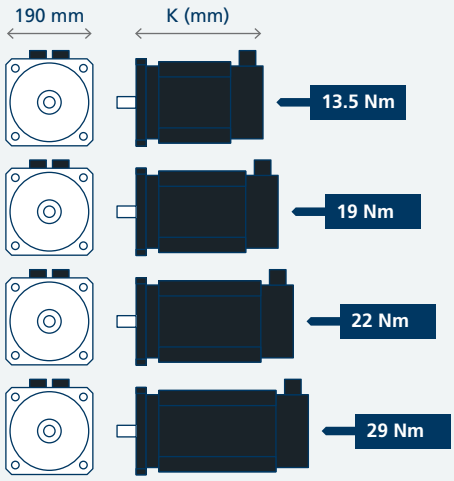


BCR6 - 13.5 ÷ 29 Nm

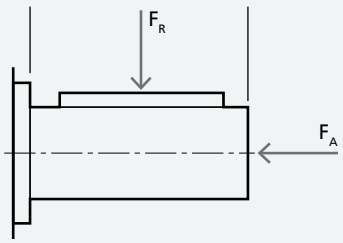
All BCR servomotors belonging to size 6 are equipped by the same geometrical flange, whereas the are differentiated by the length (K) correlated to torque capacity.

The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

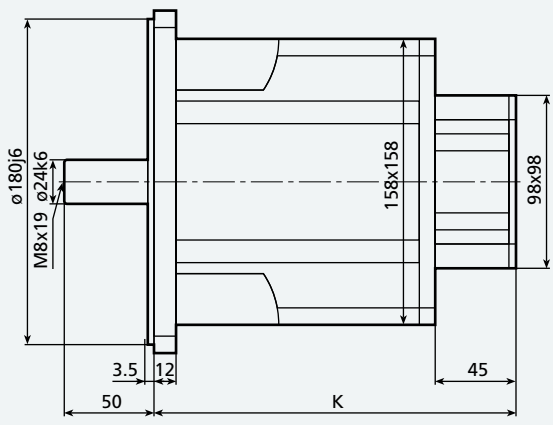
The motor size BCR6 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.

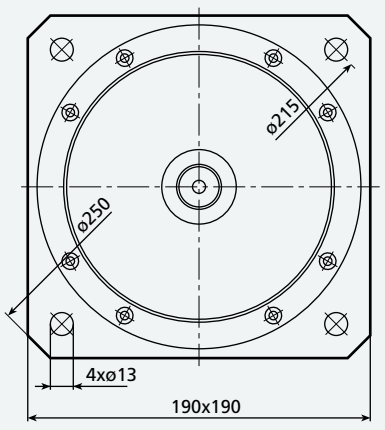


Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BCR6-1350	13.5	3000	190	201	254
BCR6-1900	19			235	288
BCR6-2200	22			250	303
BCR6-2900	29			310	363



Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BCR6-1350	708	135
BCR6-1900	743	141
BCR6-2200	756	144
BCR6-2900	794	151



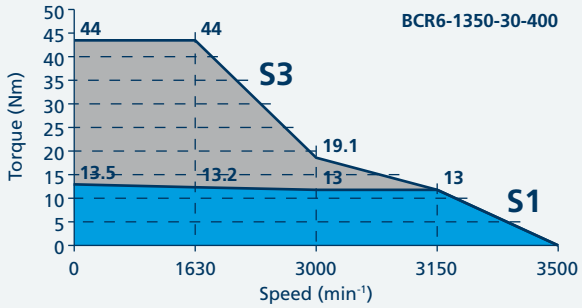


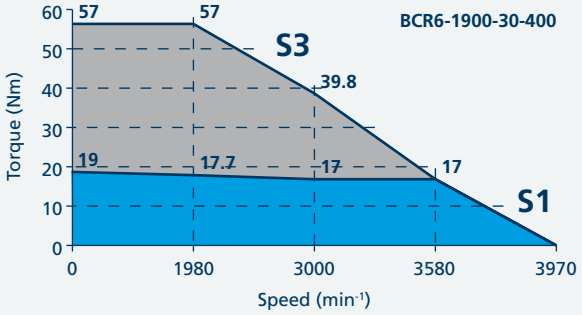
BCR6 400V

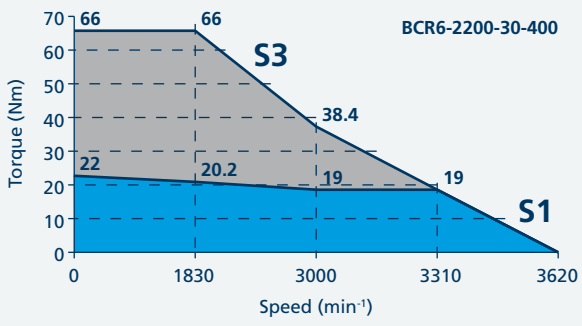
Motor		BCR6-1350-30-400	BCR6-1900-30-400	BCR6-2200-30-400	BCR6-2900-30-400
Stall torque	M_o [Nm]	13.5	19	22	29
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	13.0	17.0	19.0	24.0
Rated AC current	I_n [A]	8.2	12.8	13.1	14.7
Stall AC current	I_o [A]	8.2	13.8	14.6	17.2
Torque peak	M_{max} [Nm]	41.0	57.0	66.0	87.0
Current peak	I_{max} [A]	35	59	62	73
EMF constant	K_E [V/1000min^{-1}]	100.0	83.0	91.0	102.0
Torque constant	K_T [Nm/A]	1.65	1.37	1.51	1.69
Rated power	P_n [W]	4080	5340	5970	7540
Phase to phase stator resistance	R_{pp} [Ω]	1.10	0.42	0.41	0.31
Phase to phase stator inductance	L_{pp} [mH]	13.5	6.3	6.4	5.6
Rotor inertia	J_m [kgcm^2]	13.1	18.7	22.0	33.0
Electrical time constant	τ_{el} [ms]	12.3	15.0	15.6	18.1
Thermal time constant	τ_{th} [min]	45	53	60	70
Mechanical time constant	τ_{mec} [ms]	0.9	0.7	0.7	0.6
Weight without brake	m_M [kg]	13.9	18.2	20.3	26.7
Weight with brake	m_{MF} [kg]	16.76	21.06	23.16	29.56

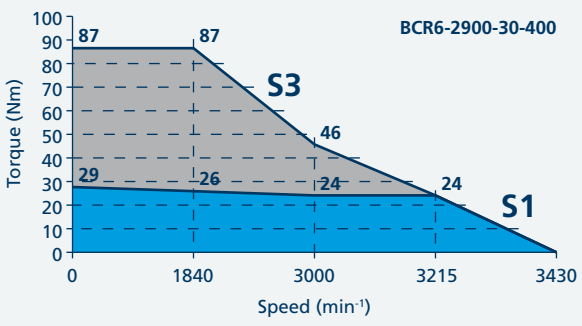
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C







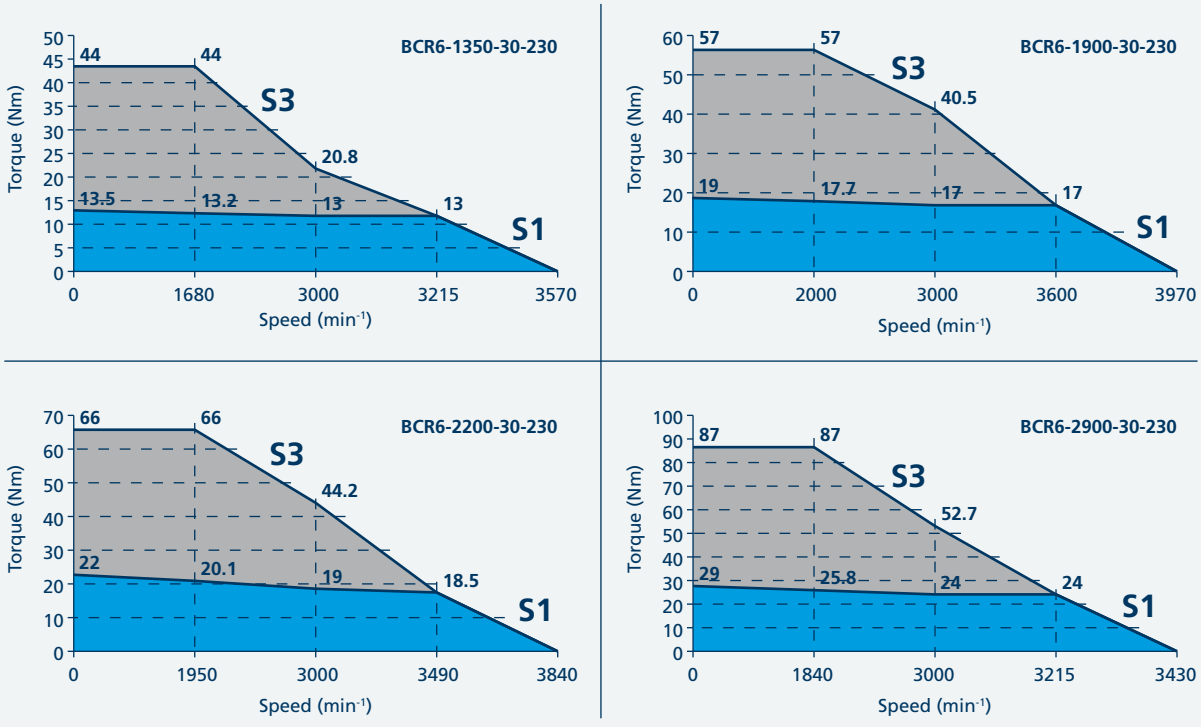


BCR6 230V

Motor		BCR6-1350-30-230	BCR6-1900-30-230	BCR6-2200-30-230	BCR6-2900-30-230
Stall torque	M_o [Nm]	13.5	19	22	29
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	13.0	17.0	19.0	24.0
Rated AC current	I_n [A]	14.6	21.3	22.9	26.8
Stall AC current	I_o [A]	14.6	23.0	25.6	31.3
Torque peak	M_{max} [Nm]	41.0	57.0	66.0	87.0
Current peak	I_{max} [A]	62	97	108	132
EMF constant	K_E [V/1000min^{-1}]	56.0	50.0	52.0	56.0
Torque constant	K_T [Nm/A]	0.93	0.83	0.86	0.93
Rated power	P_n [W]	4080	5340	5970	7540
Phase to phase stator resistance	R_{pp} [Ω]	0.34	0.15	0.13	0.09
Phase to phase stator inductance	L_{pp} [mH]	4.2	2.3	2.1	1.7
Rotor inertia	J_m [kgcm^2]	13.1	18.7	22.0	33.0
Electrical time constant	τ_{el} [ms]	12.4	15.3	16.2	18.9
Thermal time constant	τ_{th} [min]	45	53	60	70
Mechanical time constant	τ_{mec} [ms]	0.9	0.7	0.7	0.6
Weight without brake	m_M [kg]	13.9	18.2	20.3	26.7
Weight with brake	m_{MF} [kg]	16.76	21.06	23.16	29.56

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C

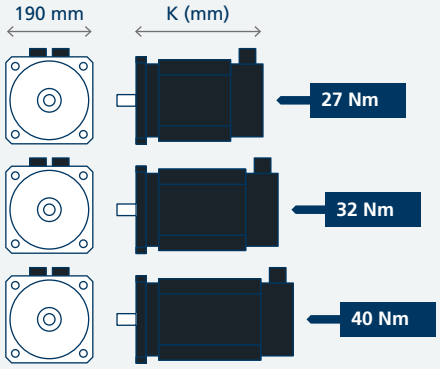


BCR7 - 27 ÷ 40 Nm

All BCR servomotors belonging to size 7 are equipped by the same geometrical flange, whereas the are differentiated by the length (K) correlated to torque capacity.

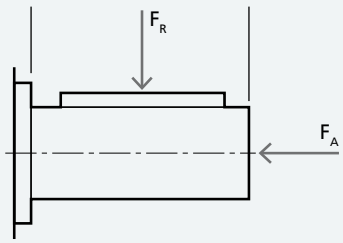
The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

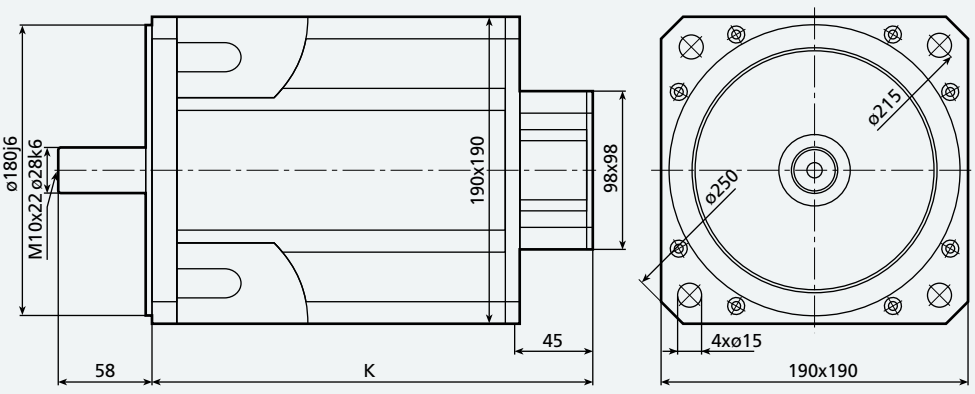
The motor size BCR7 is structured on three torque levels corresponding to different three motor lengths with nominal speed equal to 3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.



Motor	Stall torque	Rated speed	Flange	Length K	
	[Nm]	[min^{-1}]	[mm]	Without brake	With brake
BCR7-2700	27	3000	190	242	296
BCR7-3200	32			257	311
BCR7-4000	40			287	341

Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BCR7-2700	1348	256
BCR7-3200	1370	260
BCR7-4000	1406	267



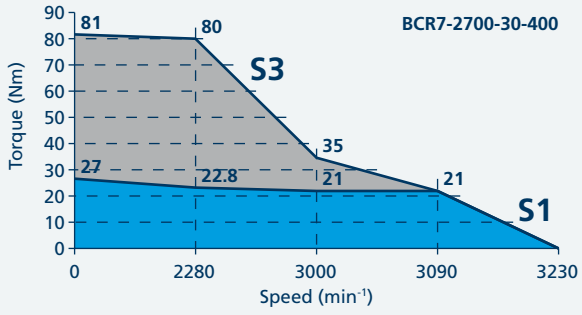


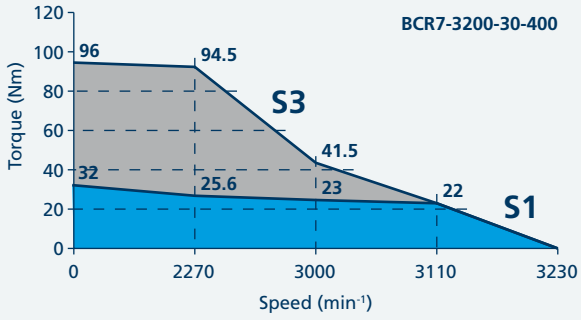
BCR7 400V

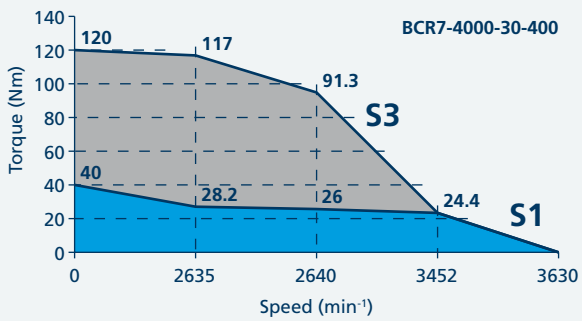
Motor		BCR7-2700-30-400	BCR7-3200-30-400	BCR7-4000-30-400
Stall torque	M_o [Nm]	27	32	40
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330
Motor poles number	p_{mot}	6	6	6
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [Nm]	21.0	23.0	26.0
Rated AC current	I_n [A]	13.5	15.0	17.9
Stall AC current	I_o [A]	16.0	19.0	24.7
Torque peak	M_{max} [Nm]	81.0	96.0	120.0
Current peak	I_{max} [A]	62	74	96
EMF constant	K_E [V/1000min^{-1}]	102	102	98
Torque constant	K_T [Nm/A]	1.69	1.69	1.62
Rated power	P_n [W]	6600	7160	8170
Phase to phase stator resistance	R_{pp} [Ω]	0.43	0.35	0.23
Phase to phase stator inductance	L_{pp} [mH]	4.4	3.8	2.7
Rotor inertia	J_m [kgcm^2]	36.1	39.0	45.5
Electrical time constant	τ_{el} [ms]	10.2	10.8	11.7
Thermal time constant	τ_{th} [min]	60	67	72
Mechanical time constant	τ_{mec} [ms]	0.9	0.8	0.7
Weight without brake	m_M [kg]	23.5	26.0	31.5
Weight with brake	m_{MF} [kg]	26.75	29.25	34.4

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C





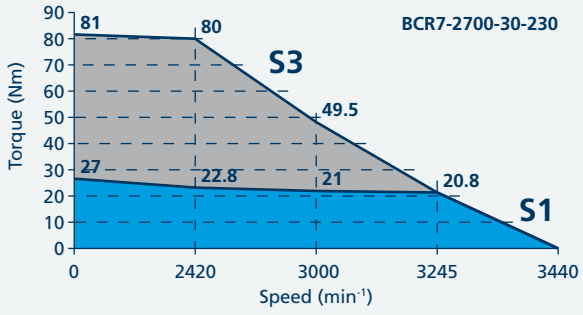


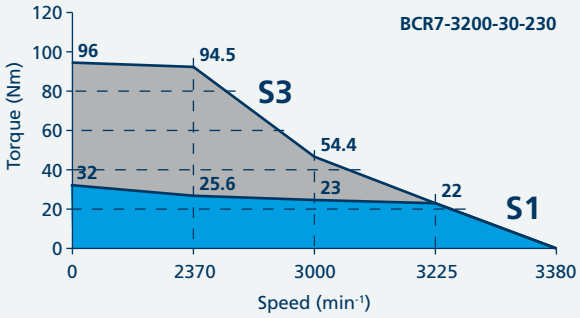
BCR7 230V

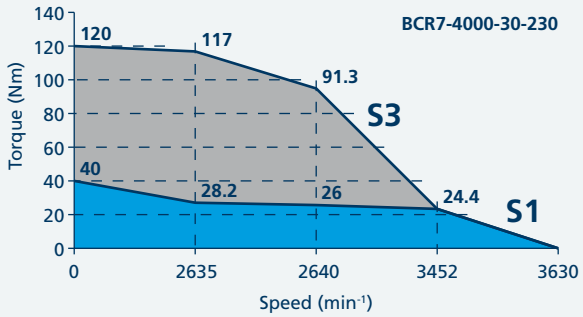
Motor		BCR7-2700-30-230	BCR7-3200-30-230	BCR7-4000-30-230
Stall torque	M_o [Nm]	27	32	40
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200
Motor poles number	p_{mot}	6	6	6
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [Nm]	21.0	23.0	26.0
Rated AC current	I_n [A]	23.7	25.9	31.8
Stall AC current	I_o [A]	28.2	32.8	44.0
Torque peak	M_{max} [Nm]	81.0	96.0	120.0
Current peak	I_{max} [A]	110	128	172
EMF constant	K_E [V/1000min^{-1}]	58	59	55
Torque constant	K_T [Nm/A]	0.96	0.98	0.91
Rated power	P_n [W]	6600	7160	8170
Phase to phase stator resistance	R_{pp} [Ω]	0.15	0.12	0.07
Phase to phase stator inductance	L_{pp} [mH]	2.2	3.0	0.8
Rotor inertia	J_m [kgcm^2]	36.1	39.0	45.5
Electrical time constant	τ_{el} [ms]	14.7	10.8	11.4
Thermal time constant	τ_{th} [min]	60	67	72
Mechanical time constant	τ_{mec} [ms]	1.0	0.9	0.7
Weight without brake	m_M [kg]	23.5	26.0	31.5
Weight with brake	m_{MF} [kg]	26.75	29.25	34.4

All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C





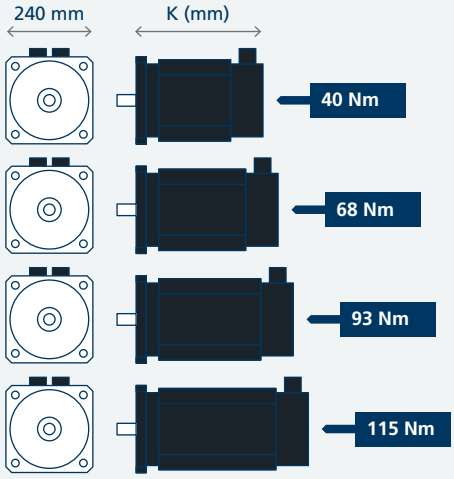


BCR8 - 40 ÷ 115 Nm

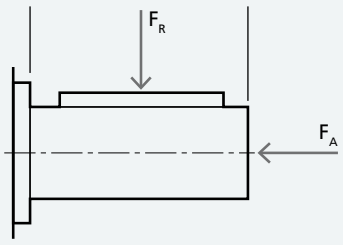
All BCR servomotors belonging to size 8 are equipped by the same geometrical flange, whereas the are differentiated by the length (K) correlated to torque capacity.

The basic motor configuration does not provide the electromechanical brake which is an option. When the brake is installed the motor length is increased.

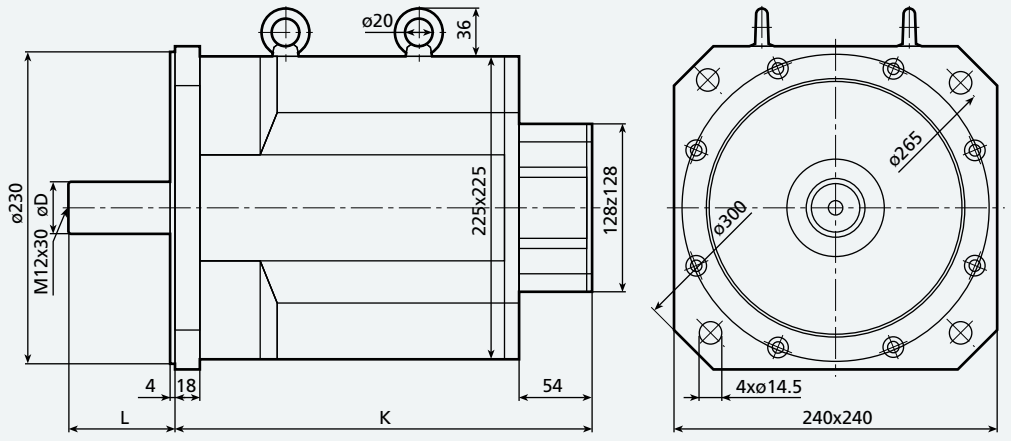
The motor size BCR8 is structured on four torque levels corresponding to different four motor lengths with nominal speed equal to 2000/3000 min^{-1}.
The motor is available with power supply both 3ph x 400VAC and 3ph x 230VAC, keeping the same mechanical performances.
On standard motor both power and control connectors are installed for electrical connection to the inverter.
On demand, several connectors orientation can be supplied.



Motor	Stall torque	Rated speed	Shaft		Flange	Length K	
	[Nm]	[min^{-1}]	Diameter ø	Length L	[mm]	Without brake	With brake
BCR8-0400	40	3000	38	80	240	311	379
BCR8-0680	68	2000	38	80		379	447
BCR8-0930	93	2000	42	110		447	515
BCR8-1150	115	2000	42	110		515	583



Motor	Max load on shaft (N)	
	Radial F_R	Axial F_A
BCR8-0400	1702	323
BCR8-0680	1785	339
BCR8-0930	1775	337
BCR8-1150	1823	346

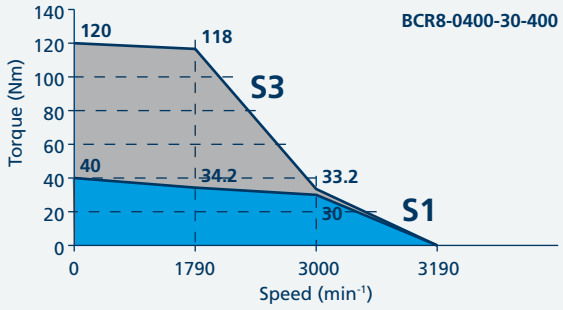


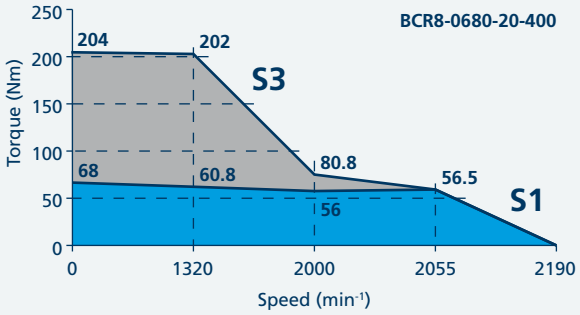
BCR8 400V

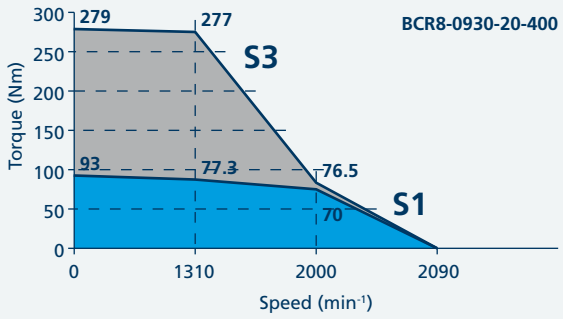
Motor		BCR8-0400-30-400	BCR8-0680-20-400	BCR8-0930-20-400	BCR8-1150-20-400
Stall torque	M_o [Nm]	40	68	93	115
Rated speed	n_n [min^{-1}]	3000	2000	2000	2000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	350	350	350	350
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	p_{res}	2	2	2	2
Rated torque	M_n [Nm]	30.0	56.0	70.0	85.0
Rated AC current	I_n [A]	17.8	22.0	25.3	32.4
Stall AC current	I_o [A]	21.8	25.4	33.1	42.1
Torque peak	M_{max} [Nm]	120	204	279	345
Current peak	I_{max} [A]	85	99	129	164
EMF constant	K_E [V/1000min^{-1}]	111	162	170	165
Torque constant	K_T [Nm/A]	1.84	2.7	2.8	2.7
Rated power	P_n [W]	9420	11730	14660	17800
Phase to phase stator resistance	R_{pp} [Ω]	0.25	0.24	0.15	0.11
Phase to phase stator inductance	L_{pp} [mH]	5.7	6.3	4.8	3.4
Rotor inertia	J_m [kgcm^2]	76	114	153	190
Electrical time constant	τ_{el} [ms]	23	26	32	31
Thermal time constant	τ_{th} [min]	47	65	79	90
Mechanical time constant	τ_{mec} [ms]	1.0	0.7	0.5	0.5
Weight without brake	m_M [kg]	41	56	73	89
Weight with brake	m_{MF} [kg]	50.5	65.5	92.5	98.5

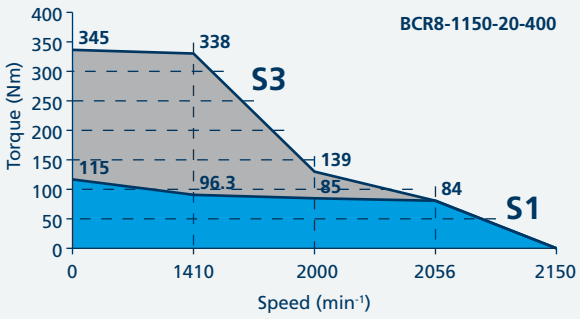
All motor characteristics are referred to following conditions:
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic: ambient temperature 40°C



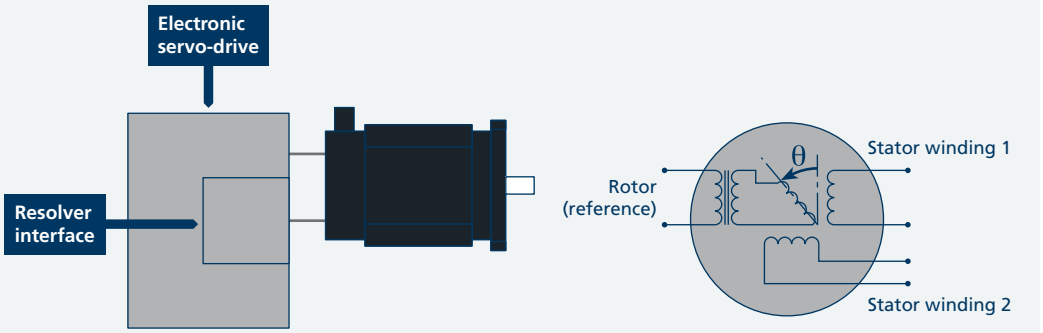




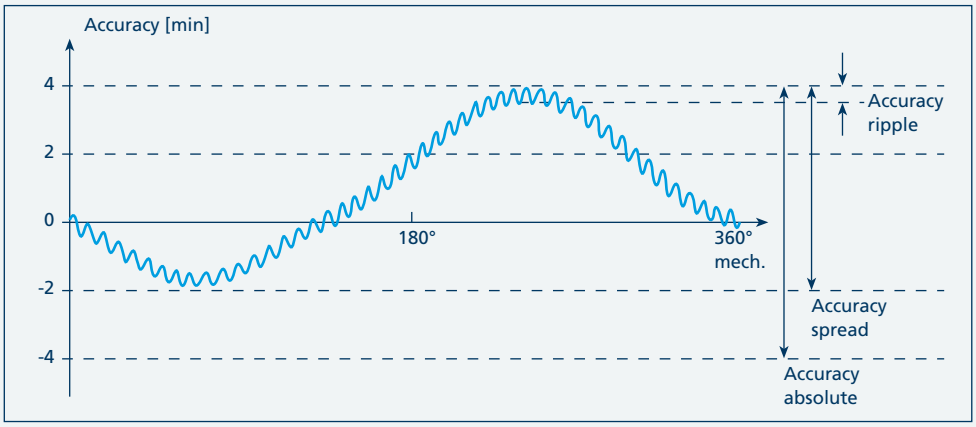


Feedback resolver

All servomotors in the Bonfiglioli BCR and BTD Series use a two - pole feedback resolver to achieve a level of accuracy of 1' of ripple at the motor shaft.



Use of this type of transducer guarantees an absolute accuracy of ± 4' at the motor shaft as well as a maximum ripple of 1'.

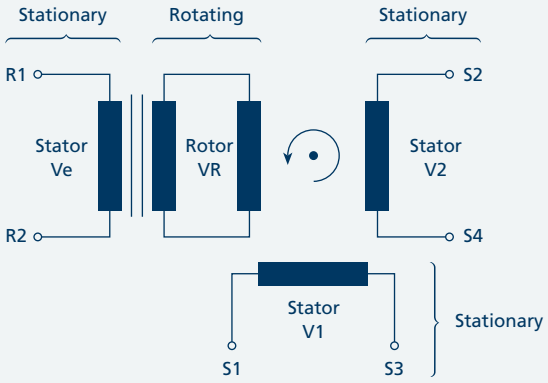


Accuracy (ε) = electrical angle (θ_{el}) - mechanical angle (θ_{mech})

Frequency inverters from the Bonfiglioli Vectron ACTIVE series use a sophisticated electronic interface to acquire drive signals. Use of BCR and BTD servomotors with these frequency inverters dramatically reduces the effects of harmonic distortion on the sinusoidal signals and significantly improves both absolute and ripple accuracy.

On request, BCR and BTD servomotors can be fitted with absolute and sin/cos encoders. Contact the Bonfiglioli Drives Service Centre for further information.

Resolver data sheet

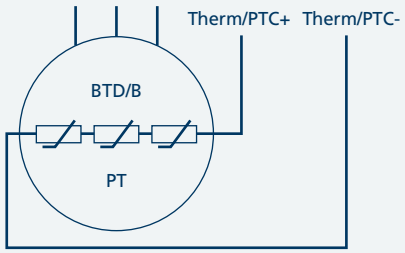


Item	Value
Poles number	2
Transformation ratio	0.5±0.05
Input voltage	7 V_{rms}
Input current	58 mA
Input frequency	5 kHz
Phase shift	8°
Null voltage	30 mV max
Impedence Z_{ro} (Ω)	75 j 98
Impedence Z_{rs} (Ω)	70 j 85
Impedence Z_{so} (Ω)	180 j 230
Impedence Z_{ss} (Ω)	170 j 200
DC resistence (±10%) Rotor	40 Ω
DC resistence (±10%) Stator	102 Ω
Accuracy	±10’
Accuracy ripple	1’ max
Operatine temperature	-55°C…+155°C
Max Speed	20,000 min^{-1}
Shock (11ms)	£ 100 m/s^2
Vibration (10 to 500 Hz)	£ 500 m/s^2
Weight Rotor	25 g
Weight Stator	60 g
Rotor Inertia	0.02 x 10^{-4} kgm^2
Insulation Housing/Winding	500 V min.
Insulation Winding/Winding	250 V min.
Rotor technology	Completely impregnated
Stator technology	Completely impregnated
Stator length	16.1 mm

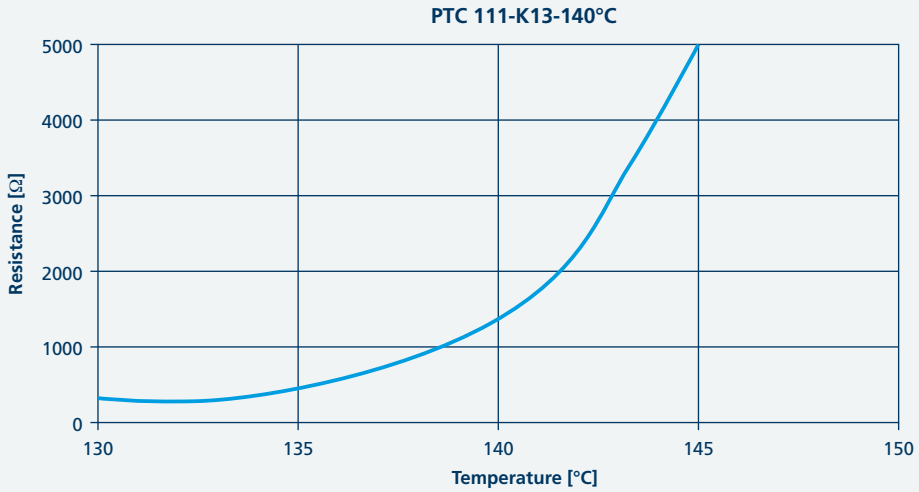
PTC thermal protection

All motors in the BCR and BTD Series are equipped with an integrated PTC temperature sensor to protect the windings against overtemperatures exceeding the capacity of the motor's class F insulation.

These sensors are not options but standard equipment on all Bonfiglioli servomotors, in conformity to DIN standard 44081.



The PTC sensor integrated in the BCR and BTD servomotors uses double insulation technology to ensure conformity to EN61800-5-1 safety standards when the motors are connected to a frequency inverter.
The PTC temperature sensor consists of a special ceramic resistor whose Ohmic value varies with the temperature of the electrical winding with which it is held on close contact. Each temperature value generates a known resistance, so that provided the resistor is fed at a constant voltage, the output current can be used to determine the corresponding temperature. If temperature reaches an established limit, the circuit monitoring the signal trips the necessary cutout to disconnect power to the motor and prevent damage.



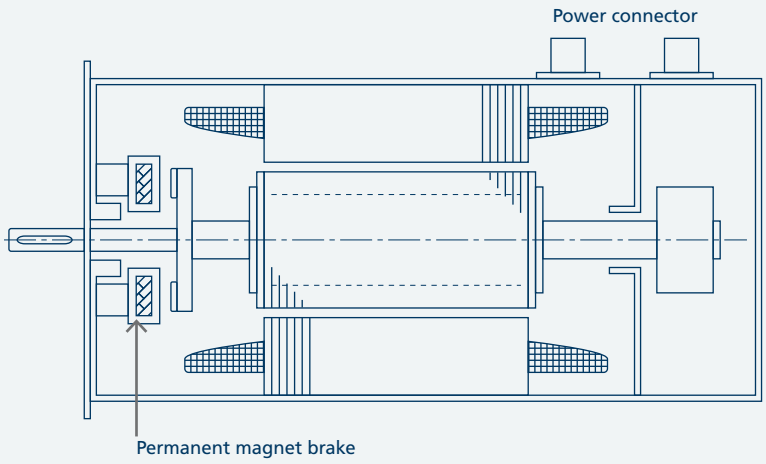
The output signal from the PTC sensor passes through the motor 12 - pin signal connector, on pins 2 (PTC+) and 6 (PTC-), together with the resolver signals.

Electromechanical holding brake (option)

BTD and BCR are used as four-quadrant actuators then they are designed to offer positive torque when they are running as motors, as well negative torque when they are running as generator.
Therefore both are able to brake dynamically and statically (standstill torque) the mechanical load in every work-point consistent with corresponding motor curve.
Anyway when an enduring downtime is required to the motor, an optional parking brake is available in order to save energy.

The brake option can be ordered by using the value 'FD24' into corresponding position of the servomotor designation (see page 8 and 9 of this catalogue).
When the motor is delivered without brake, the brake fitting is not possible.

The brake coil power supply must be 24V DC-voltage.
The brake option is responsible of an increment of the motor length (see K dimension in each motor drawing)
When the brake is installed, its wires are linked to power connector together motor winding.

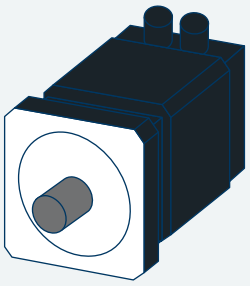


For each motor size, a suitable electromechanical brake is fitted with different braking torque in function of motor features.

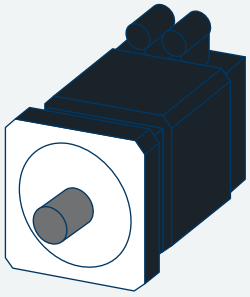
Brake data	Unit	BTD2	BTD3	BTD4	BTD5	BCR2	BCR3	BCR4	BCR5	BCR6	BCR7	BCR8
Torque	Nm	2	4.5	9	18	2.0	4.5	9.0	18.0	36.0	36.0	145.0
Power supply	VDC	24 (+ 6% - 10%)										
Nominal power	W	11	12	18	24	11	12	18	24	26	26	50
Moment of inertia	Kgcm²	0.068	0.18	0.54	1.66	0.068	0.18	0.54	1.66	5.56	5.56	53.0
Weight	Kg	0.440	0.590	0.820	1.080	0.15	0.47	0.650	1.350	2.860	3.250	9.500

Electrical connectors

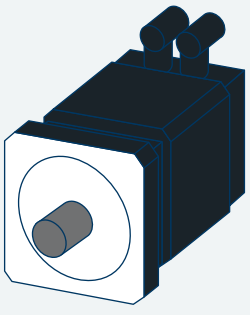
Even in their basic configurations, BTD and BCR Series servomotors come complete with all the necessary power and signal connectors.
These are located at the top rear of the motor where they are easily accessible to cables.
Connectors come with vertically oriented pins as default, but are also available with horizontal pins either facing the flange (types PA and CA) or facing in the opposite direction (types PB and CB).
Connectors can also be horizontally oriented but able to rotate about an axis perpendicular to the surface of the motor casing (types PT and CT).



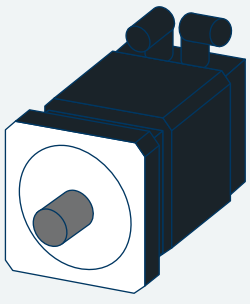
Vertical orientation (default)



Orientation facing flange
PAxx and CAxx



Orientation opposite to flange
PBxx and CBxx



Variable orientation (rotating)
PTxx and CTxx

All motor connectors are male and fully compatible with the corresponding female connectors on the accessory cables.

Connectors layout

The connectors are integral part of servomotors BTD and BCR.
Although the side picture is referred to vertical case, the functional layout of electrical contacts internally housed does not depend on orientation of connector.

Power connector (motor + brake)
The power connectors include the pins for motor supply but also the ones for brake supply even if the brake is not installed.

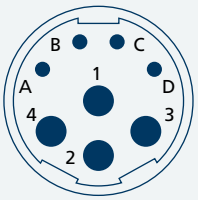
That allows to unify the visual representation of functions relevant to each contact assembled into connector housing.

Motor + brake

Pin	Description
1	Phase U
4	Phase V
3	Phase W
2	Earth / SL
C	Brake +
D	Brake -
A	nc / reserved
B	nc / reserved

Servomotors BTD2-BTD5 / BCR2-BCR7:

Power connector (male)



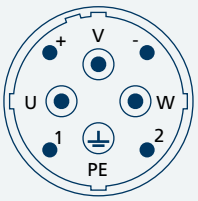
Type: Intercontec type B, dim. 1, 4+4 poles

Motor + brake

Pin	Description
U	Phase U
V	Phase V
W	Phase W
PE	Earth / SL
+	Brake +
-	Brake -
1	nc / reserved
2	nc / reserved

Servomotors BCR8:

Power connector (male)



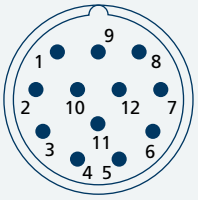
Type: Intercontec type B, dim. 1.5, 4+4 poles

Signal connector (resolver + PTC)
The signal connectors are in charge of electrical link among resolver housed into servomotor and inverter assigned to reception of him. In the same connector are also included the PTC terminals coming from motor winding where they are always installed for motor thermal protection. The pins layout is independent on motor series and motor size.

Resolver + PTC

Pin	Description
3	Cos + (S4)
7	Cos - (S2)
4	Sin + (S1)
8	Sin - (S3)
5	Ref + (R2)
9	Ref - (R1)
2	Therm / PTC +
6	Therm / PTC -

Resolver connector + PTC (male)

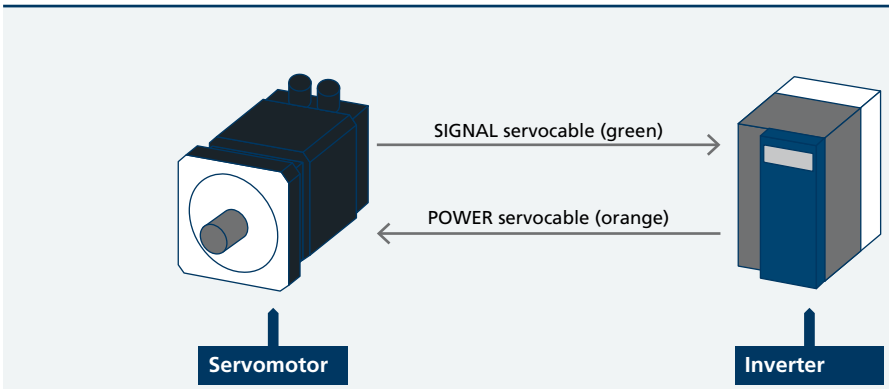


Type: Intercontec type A, 12 poles

Servocables

The word servocable is referred to electrical cable connecting Bonfiglioli servomotor to respective inverter.
For both BCR and BTD servomotors a servocables selection is available for power supply and sensor feed-back, justifying the distinction between power cables and signal cables.
The power cable besides providing energy to motor, also supports the brake feed-in when it is present on board as option.

The signal cables instead are in charge of transmission of electrical signals generated by feed-back equipment installed on motor. The same cable is also oriented to convey the PTC signals always installed inside the motor.
All servocables are available in three different and fixed lengths (3 meters, 5 m, 10 m) offering to user an exhaustive proposal to numerous needs of configuration.



Servocables

Signal servocables (green)

Signal cables are recognized by the green colour according to Desina standard. The conductors number, their cross-section and their terminal type depend on transducer typology supported by the cable. Currently the cable is in charge of resolver connection.
Both cable ends are executed with two different terminations:
- on motor side the cable is equipped with metal circular connector in which twelve female contact are assembled in order to favour an easy and sure plug-in with respective male connector present on motor;
- on inverter side, instead, the cable terminates with DB9 male standard connector for easy and sure plug-in with corresponding DB9 female present on EMRES-03 interface of inverter Active Cube Bonfiglioli. The cable is also available in a second version implemented with ferrules for connection to screw terminals on the inverter.

Inverter side *Motor side*

The ordering codes of the signal cables are described in the following table:

Feedback device	Cable type			Notes	
	3 meters	5 meters	10 meters	Motor side termination	Inverter side termination
Resolver	8RTC0325	8RTC0525	8RTC1025	Circular connector 12 pins female	SUB-D9
	8RTC0325L	8RTC0525L	8RTC1025L	Circular connector 12 pins female	8 flying leads

The signal cables fulfil the following technical requirement

Compliance	DESINA (ISO 23570), UL/CSA, ROHS
Shielding	Tinned cupper netting with > 85 % covering
External insulator	PUR green color
Conductors	Cupper strand tinned
Bend radius	10 x outer diameter N° max bending cycles = 10 millions
Acceleration	Max. 4 m/s^2
Temperature	Stocking -30°C +80°C / Running 0°C +60°C

Power servocables (orange)

Both cable ends of the power cable are executed with two different termination typology:
- on motor side the cable is equipped with metal circular connector in which eight female contacts are assembled in order to favour an easy and sure plug-in with respective male connector present on the motor;
- on inverter side, instead, the cable terminates with flying leads covered by ferrules for plug-in into screw terminal of the inverter

Inverter side *Motor side*

All described power cables fulfil the following technical features

Compliance	DESINA (ISO 23570), UL/CSA, ROHS
Shielding	Tinned cupper netting with > 85 % covering
External insulator	PUR orange color
Conductors	Cupper strand tinned consistent with DIN VDE 95 Kl.6
Bend radius	Not moved = 7 x outer diameter Moved = 12 x outer diameter N° max bending cycles = 10 millions
Acceleration	Max. 4 m/s^2
Temperature	Stocking -30°C +80°C / Running 0°C +60°C

Power servocables (orange)

In order to face different current level absorbed by different motor sizes, the power cables are executed with four conductors cross sections (1.5 mm², 2.5 mm², 4.0 mm², 10.0 mm²) alternative among them. For user helping during servomotor-cable match selection, the following tables are proposed where side to each motor the optimized cable is suggested.

The cable ordering code is structured in the following mode:
42MBCxxyy
where the field xxyy changes in function of cable length and conductors cross section (see side table)

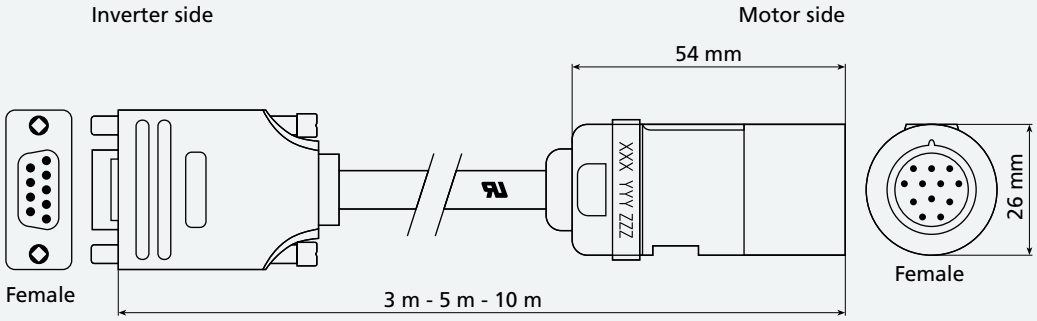
Servomotor BTD	Power cable types		
	3 meters	5 meters	10 meters
BTD 2 0026 45 400	42MBC0315	42MBC0515	42MBC1015
BTD 2 0053 45 400			
BTD 2 0074 45 400			
BTD 2 0095 45 400			
BTD 2 0026 45 230			
BTD 2 0053 45 230			
BTD 2 0074 45 230			
BTD 2 0095 45 230			
BTD 3 0095 30 400			
BTD 3 0190 30 400			
BTD 3 0325 30 400			
BTD 3 0420 30 400			
BTD 3 0095 30 230			
BTD 3 0190 30 230			
BTD 3 0325 30 230			
BTD 3 0420 30 230			
BTD 4 0410 30 400			
BTD 4 0630 30 400			
BTD 4 0860 30 400			
BTD 4 0410 30 230			
BTD 4 0630 30 230			
BTD 4 0860 30 230			
BTD 5 1160 30 400			
BTD 5 1490 30 400			
BTD 5 1870 30 400	42MBC0325	42MBC0525	42MBC1025
BTD 5 2730 30 400			
BTD 5 1160 30 230			
BTD 5 1490 30 230			
BTD 5 1870 30 230	42MBC0340	42MBC0540	42MBC1040
BTD 5 2730 30 230			

Power servocables (orange)

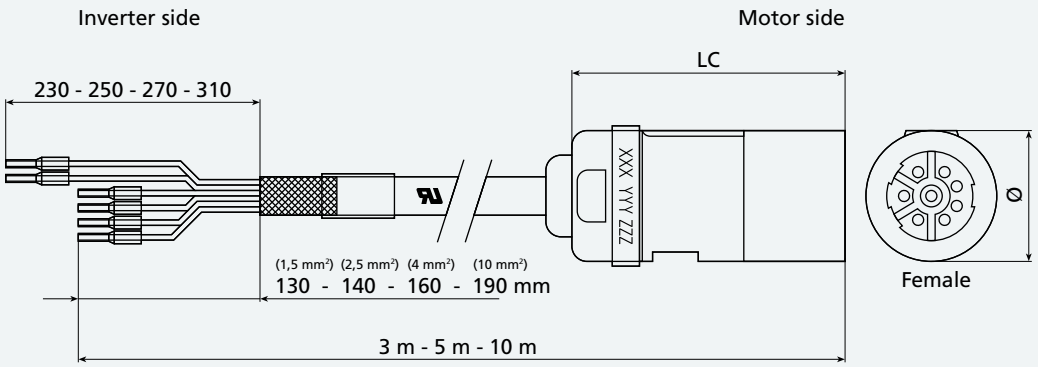
The cable ordering code is structured in the following mode:
42MBCxxyy
where the field xxyy changes in function of cable length and conductors cross section (see side table)

Servomotor BCR	Power cable types		
	3 meters	5 meters	10 meters
BCR 2 0020 45 400	42MBC0315	42MBC0515	42MBC1015
BCR 2 0040 45 400			
BCR 2 0060 45 400			
BCR 2 0080 45 400			
BCR 2 0020 45 230			
BCR 2 0040 45 230			
BCR 2 0060 45 230			
BCR 2 0080 45 230			
BCR 3 0065 45 400			
BCR 3 0130 45 400			
BCR 3 0250 45 400			
BCR 3 0300 45 400			
BCR 3 0065 45 230			
BCR 3 0130 45 230			
BCR 3 0250 45 230			
BCR 3 0300 45 230			
BCR 4 0100 30 400			
BCR 4 0260 30 400			
BCR 4 0530 30 400			
BCR 4 0750 30 400			
BCR 4 0100 30 230			
BCR 4 0260 30 230			
BCR 4 0530 30 230			
BCR 4 0750 30 230			
BCR 5 0660 30 400			
BCR 5 1050 30 400			
BCR 5 1350 30 400			
BCR 5 1700 30 400			
BCR 5 2200 30 400			
BCR 5 0660 30 230			
BCR 5 1050 30 230			
BCR 5 1350 30 230	42MBC0325	42MBC0525	42MBC1025
BCR 5 1700 30 230	42MBC0325	42MBC0525	42MBC1025
BCR 5 2200 30 230	42MBC0340	42MBC0540	42MBC1040
BCR 6 1350 30 400	42MBC0315	42MBC0515	42MBC1015
BCR 6 1900 30 400			
BCR 6 2200 30 400			
BCR 6 2900 30 400	42MBC0325	42MBC0525	42MBC1025
BCR 6 1350 30 230	42MBC0315	42MBC0515	42MBC1015
BCR 6 1900 30 230	42MBC0340	42MBC0540	42MBC1040
BCR 6 2200 30 230			
BCR 6 2900 30 230			
BCR 7 2700 30 400	42MBC0325	42MBC0525	42MBC1025
BCR 7 3200 30 400			
BCR 7 4000 30 400	42MBC0340	42MBC0540	42MBC1040
BCR 7 2700 30 230			
BCR 7 3200 30 230			
BCR 7 4000 30 230	42MBC03100	42MBC05100	42MBC10100
BCR 8 0400 30 400			
BCR 8 0680 20 400			
BCR 8 0930 20 400			
BCR 8 1150 20 400			

Signal cable (type 8RTCxxyy)



Power cable (type 42MBCxxyy)



Cable type	LC	Ø
	(mm)	(mm)
42MBCXX15	75	28
42MBCXX25		
42MBCXX40		
42MBCXX100	95	45.8

Added value

Sharing the value of our work with you.

The development of effective, tailored solutions for a wide range of applications is a fundamental aspect of our work.
We succeed in this because we co-operate closely with our customers, listen to their requests and work with them to improve our own performance.

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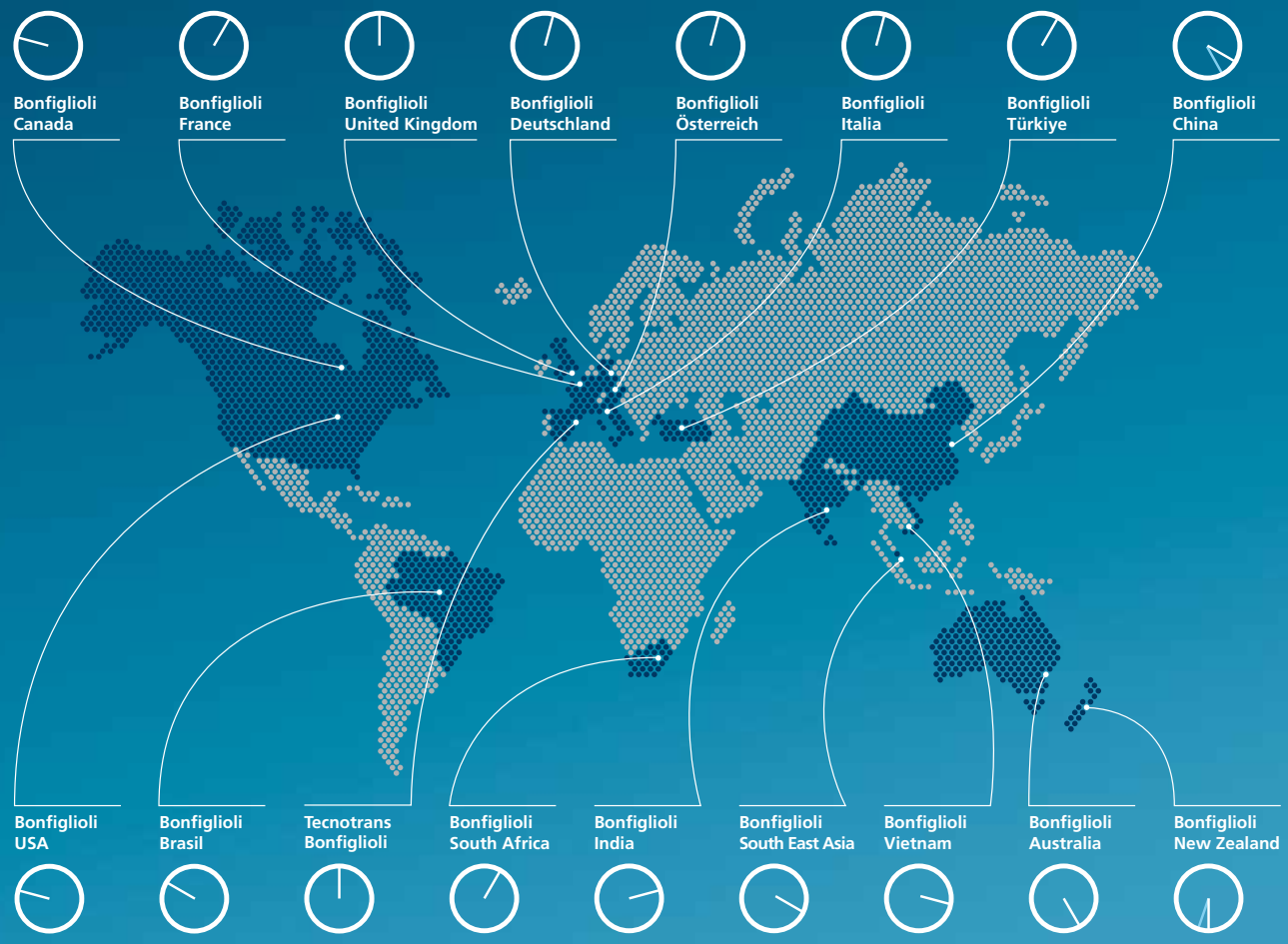
Our work increasingly brings us into contact with other nations and cultures, for which we have the greatest respect and with whom we share a vision of sustainable development based on renewable energy.
This bond of commitment allows us to be an authoritative and reliable global partner for the present and the future.

Branches and facilities

Our branches



Our production facilities

Bonfiglioli is your partner worldwide for power transmission and motion control.

Customer satisfaction has always been one of Bonfiglioli's key values. It is pursued around the world, and in a wide range of contexts, by a network of subsidiaries located in 17 countries and on 5 continents.

Each subsidiary provides rapid and efficient pre-sales and after-sales service, and can guarantee prompt deliveries from local assembly plant and warehouses.

In addition to our directly controlled subsidiaries, Bonfiglioli can also rely on an extensive network of authorised dealers, selected for their ability to guarantee excellent pre-sales and after-sales assistance.

To give everybody the chance to purchase a Bonfiglioli product - anywhere.

This is the ambitious objective that drives the development of our added value sales networks, off and on-line.

BEST (Bonfiglioli Excellence Service Team) is one of the most modern sales organisations in the field of power transmission.

Our BEST partners can benefit from our local assembly plant and warehouses, our training courses and tools, and our promotional activities.

For the first time ever, manufacturer and distributors are working together from the product assembly stage and in the design of new applications, in a sharing process that sees one party transferring know-how and technology and the other partly providing a thorough knowledge of the local market.

Bonfiglioli worldwide network.

Bonfiglioli Australia
2, Cox Place Glendenning NSW 2761
Locked Bag 1000 Plumpton NSW 2761
Tel. (+ 61) 2 8811 8000 - Fax (+ 61) 2 9675 6605
www.bonfiglioli.com.au - sales@bonfiglioli.com.au

Bonfiglioli Brazil
Travessa Cláudio Armando 171 - Bloco 3
CEP 09861-730 - Bairro Assunção
São Bernardo do Campo - São Paulo
Tel. (+55) 11 4344 1900 - Fax (+55) 11 4344 1906
www.bonfigliolidobrasil.com.br
bonfiglioli@bonfigliolidobrasil.com.br

Bonfiglioli Canada
2-7941 Jane Street - Concord, Ontario L4K 4L6
Tel. (+1) 905 7384466 - Fax (+1) 905 7389833
www.bonfigliolicanada.com
sales@bonfigliolicanada.com

Bonfiglioli China
19D, No. 360 Pu Dong Nan Road
New Shanghai International Tower
200120 Shanghai
Tel. (+86) 21 5054 3357 - Fax (+86) 21 5970 2957
www.bonfiglioli.cn - bdssales@bonfiglioli.com.cn

Bonfiglioli Deutschland
Sperberweg 12 - 41468 Neuss
Tel. (+49) 02131 2988-0
Fax (+49) 02131 2988-100
www.bonfiglioli.de - info@bonfiglioli.de

Bonfiglioli España
TECNOTRANS BONFIGLIOLI S.A.
Pol. Ind. Zona Franca sector C, calle F, n°6
08040 Barcelona
Tel. (+34) 93 4478400 - Fax (+34) 93 3360402
www.tecnotrans.com - tecnotrans@tecnotrans.com

Bonfiglioli France
14 Rue Eugène Pottier BP 19
Zone Industrielle de Moimont II
95670 Marly la Ville
Tel. (+33) 1 34474510 - Fax (+33) 1 34688800
www.bonfiglioli.fr - btf@bonfiglioli.fr

Bonfiglioli India
PLOT AC7-AC11 Sidco Industrial Estate
Thirumudivakkam - Chennai 600 044
Tel. +91(0) 44 24781035 - 24781036 - 24781037
Fax +91(0) 44 24780091 - 24781904
www.bonfiglioliindia.com - bonfig@vsnl.com

Bonfiglioli Italia
Via Sandro Pertini lotto 7b
20080 Carpiano (Milano)
Tel. (+39) 02 985081 - Fax (+39) 02 985085817
www.bonfiglioli.it
customerservice.italia@bonfiglioli.it

Bonfiglioli New Zealand
88 Hastie Avenue, Mangere Bridge, Auckland
2022, New Zealand - PO Box 11795, Ellerslie
Tel. (+64) 09 634 6441 - Fax (+64) 09 634 6445
npollington@bonfiglioli.com.au

Bonfiglioli Österreich
Molkereistr 4 - A-2700 Wiener Neustadt
Tel. (+43) 02622 22400 - Fax (+43) 02622 22386
www.bonfiglioli.at - info@bonfiglioli.at

Bonfiglioli South East Asia
No 21 Woodlands indusrial park E1
#02-03 Singapore 757720
Tel. (+65) 6893 6346/7 - Fax (+65) 6893 6342
www.bonfiglioli.com.au
sales@bonfiglioli.com.sg

Bonfiglioli South Africa
55 Galaxy Avenue,
Linbro Business Park - Sandton
Tel. (+27) 11 608 2030 OR - Fax (+27) 11 608 2631
www.bonfiglioli.co.za
bonfigsales@bonfiglioli.co.za

Bonfiglioli Türkiye
Atatürk Organíze Sanayi Bölgesi,
10015 Sk. No: 17, Çigli - Izmir
Tel. +90 (0) 232 328 22 77 (pbx)
Fax +90 (0) 232 328 04 14
www.bonfiglioli.com.tr
info@bonfiglioli.com.tr

Bonfiglioli United Kingdom
Industrial Solutions
Unit 7, Colemeadow Road
North Moons Moat - Redditch,
Worcestershire B98 9PB
Tel. (+44) 1527 65022 - Fax (+44) 1527 61995
www.bonfiglioli.com
uksales@bonfiglioli.com
Mobile Solutions
3 - 7 Grosvenor Grange, Woolston
Warrington - Cheshire WA1 4SF
Tel. (+44) 1925 852667 - Fax (+44) 1925 852668
www.bonfiglioli.co.uk
mobilesales@bonfiglioli.co.uk

Bonfiglioli USA
3541 Hargrave Drive Hebron, Kentucky 41048
Tel. (+1) 859 334 3333 - Fax (+1) 859 334 8888
www.bonfiglioliusa.com
industrialsales@bonfiglioliusa.com
mobilesales@bonfiglioliusa.com

Bonfiglioli Vietnam
Lot C-9D-CN My Phuoc Industrial Park 3
Ben Cat - Binh Duong Province
Tel. (+84) 650 3577411 - Fax (+84) 650 3577422
www.bonfiglioli.vn - salesvn@bonfiglioli.com

Bonfiglioli
power, control and green solutions

Bonfiglioli has been designing and developing innovative and reliable power transmission and control solutions for industry, mobile machinery and renewable energy applications since 1956.

Bonfiglioli Riduttori S.p.A.
Via Giovanni XXIII, 7/A
40012 Lippo di Calderara di Reno
Bologna (Italy)

tel: +39 051 647 3111
fax: +39 051 647 3126
bonfiglioli@bonfiglioli.com
www.bonfiglioli.com

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