INDUSTRY PROCESS
AND AUTOMATION SOLUTIONS

BONFIGLIOLI VECTRON

Synchronous Servomotors

BTD - BCR

GB

BONFIGLIOLI

BTD - BCR

Contents

Industry Process and Automation Solutions

Symbols and units of measure

Symbol	U.m.	Description
n_n	[rpm]	Rated speed
M_N	[Nm]	Rated torque
P_n	[kW]	Rated power
IN	[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}	[rpm]	Max. speed
K_T	[Nm/A]	Torque constant
K_E	[V/1000rpm]	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

Product description

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 248375).

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.

BTD - BCR

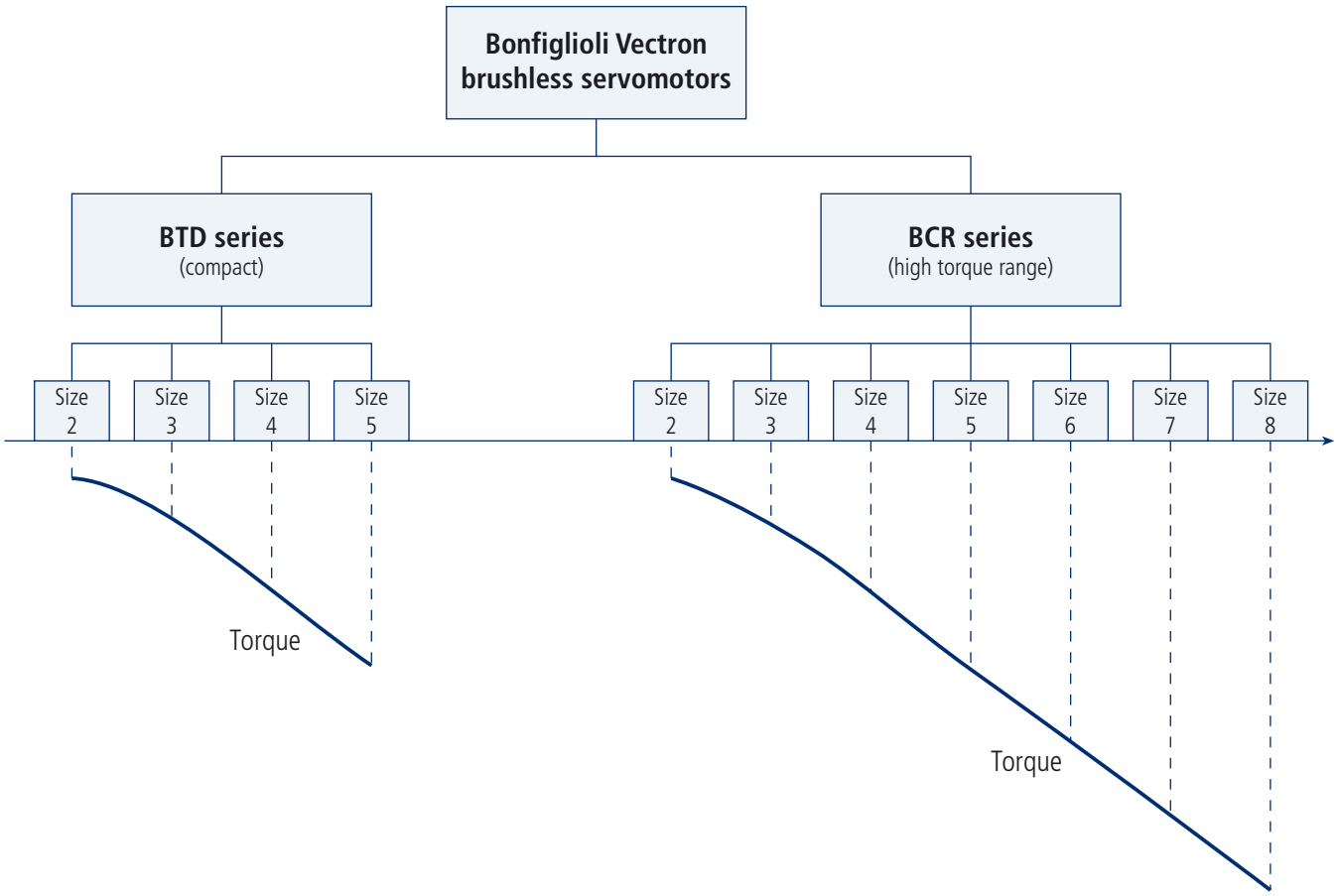
The Bonfiglioli Vectron servomotor range

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 ranges, as well their overload and efficiency. This is achieved by mean of two different technologies: standard wound-stator for BCR, advanced pole-wound for BTD. Thanks to features above, BCR offers a large torque reserve and long lifetime, as well BTD provides a big dynamic coefficient and low heating.

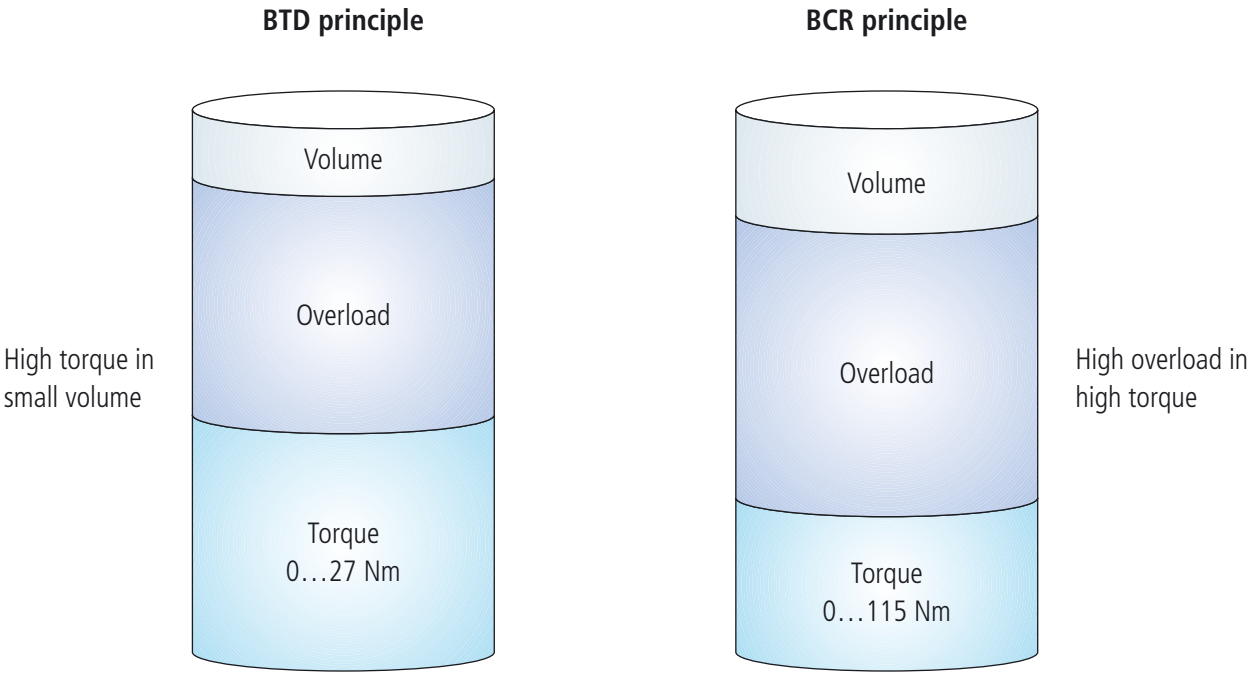
Each series includes a number of mechanical sizes, corresponding to different flange dimensions. Each flange size is available with motors of different lengths, capable of developing different levels of torque.

The BCR Series is designed to guarantee a broad continuous torque interval of up to 115 Nm with a corresponding overload of 400%.

The BTD Series is designed to satisfy the need for high torque from compact motors. The stator winding technology and excellent quality of the permanent magnets in the rotor allow the BTD Series to achieve a torque density of 15.3 Nm/dm^3.

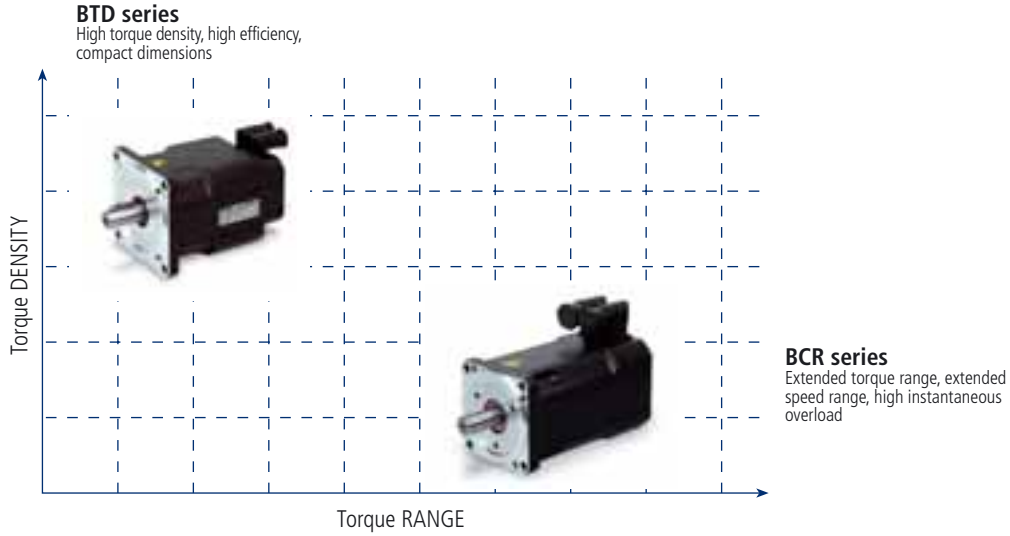


The covered torque range and the overall dimensions are shared between BCR and BTD with effects on the space saving.



BTD and BCR Series actuators represent the ideal solution for servo-system designers seeking servomotors that are capable of satisfying the opposite requirements of excellent dynamics and compact dimensions.

Together they are able to offer an optimized solution for any required specification:
- high torque and overload
- high torque into restricted volume
- high torque and efficiency
- high overload and large speed 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.

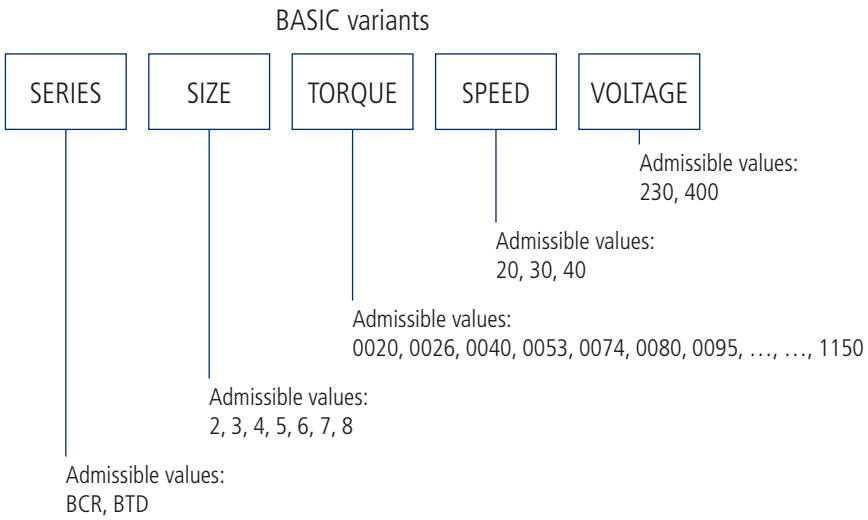
The BASIC variant fields are used to designate the 5 properties of BCR and BTD servomotors listed above and define the following standard characteristics:
- Standard geometric dimensions (see the technical specifications section)
- IP65 index of protection
- Motor shaft without keyway
- No electromechanical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

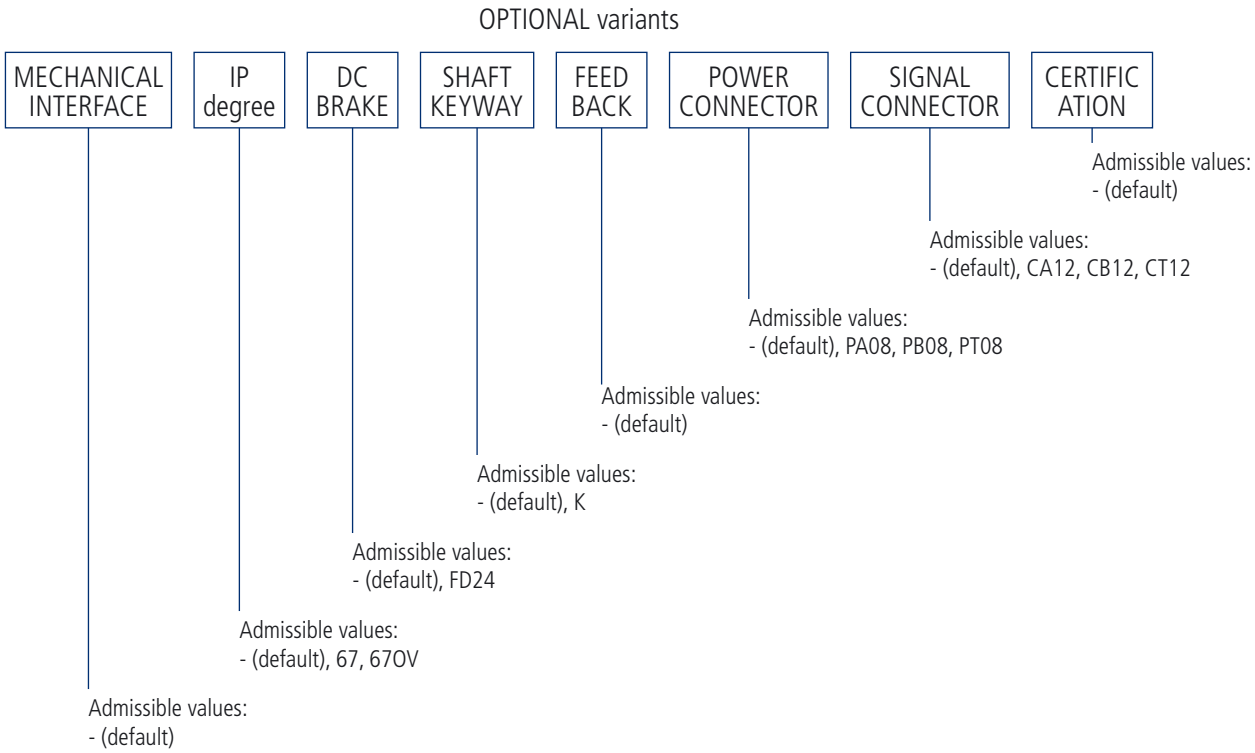
Any deviation from the above standard characteristics implies an OPTIONAL variant. This is expressed using the next 8 optional fields in the designation string.

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

On the basis of these rules, the structure of the designation can be represented as follows:





BTD designation

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

Standards compliance:
- = CE, UL, cUL (default)

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

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

Feed-back transducer:
- = 2poles RESOLVER (default)

Shaft keyway:
- = no keyway (default)
K = keyway according to DIN 6885

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

IP degree:
- = IP65 (default)
67 = IP67
67OV = IP67 oring-viton

Mechanical interface:
- = (default) See flange and shaft dimensions for each motor size

Motor AC voltage:
230 = 200 VAC
400 = 330 VAC

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

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 size:
2 = size 2
3 = size 3
4 = size 4
5 = size 5

BTD series

BCR designation

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

Standards compliance:
- = CE, UL, cUL (default)

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

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

Feed-back transducer:
- = 2poles RESOLVER (default)

Shaft keyway:
- = no keyway (default)
K = keyway according to DIN 6885

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

IP degree:
- = IP65 (default)
67 = IP67
67OV = IP67 oring-viton

Mechanical interface:
- = (default) See flange and shaft dimensions for each motor size

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

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

Motor stall torque:

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

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

BCR series

BTD brushless servomotor (torque density)

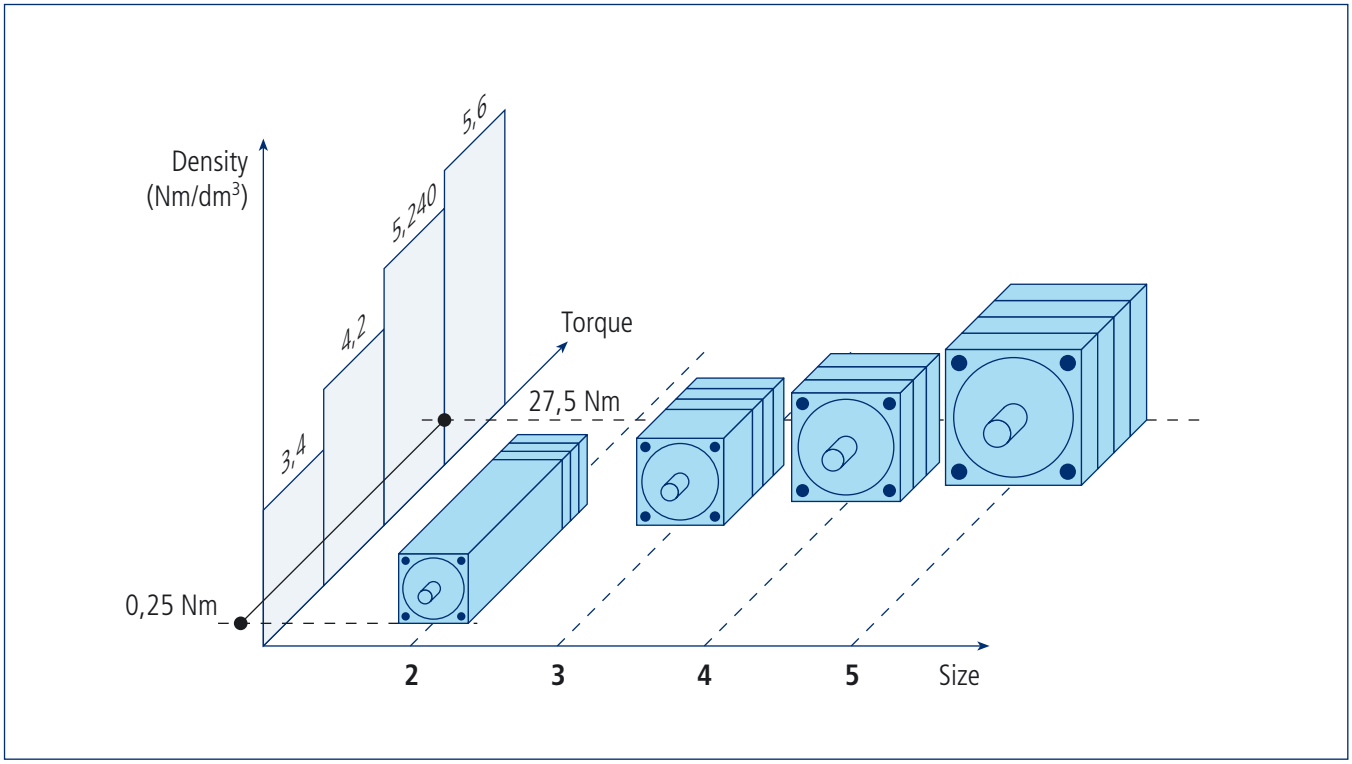
Up-to-date electrical and magnetic circuits employed in this servomotor series make able BTD to reduce the motor temperature and to increase the driving force combined in very small frame.

The BTD series is developed in four sizes identified by progressive number (from 2 to 5) corresponding to identical quantity of flanges designed for defined coupling with gearboxes.
For each flange size several torque values are available obtained from several lengths of the motor from which it is possible to extract an high torque value since small motor volume.

The BTD series name come from this characteristic:
BTD = **B**rushless-**T**orque-**D**ensity

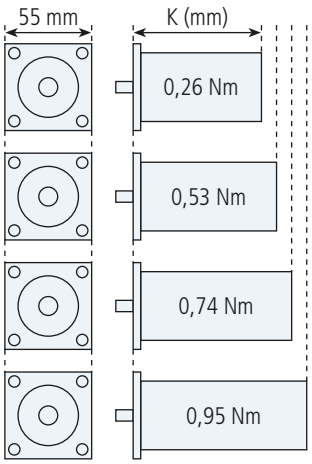
The wide torque range (0.26 ÷ 27.5 Nm) is shared between several motor sizes and flanges and is able to supply the best solution for every application requirement where performances must be adapted to small volumes.

Series	Size	Flange [mm]	Speed [min^{-1}]	Stall torque [Nm]				Torque density [Nm/dm^3]
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

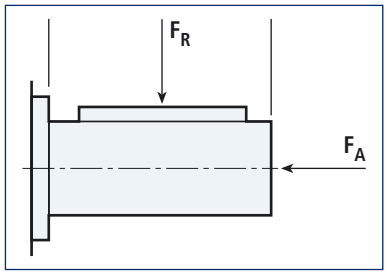


All BTD servomotors size 2 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board.

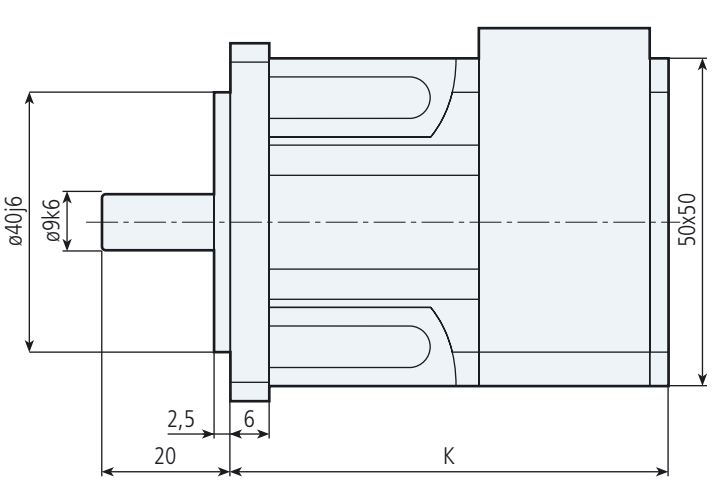
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BTD2-0026	0,26	4500	55	67	105
BTD2-0053	0,53			82	120
BTD2-0074	0,74			97	135
BTD2-0095	0,95			112	150

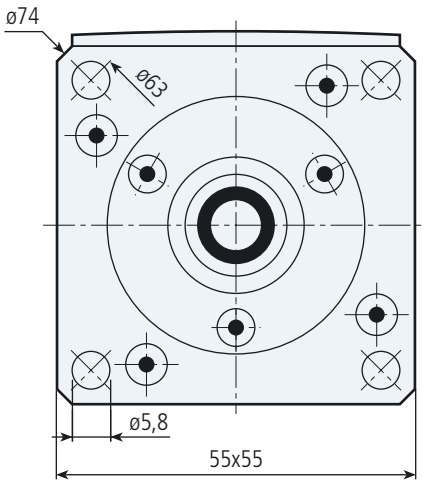


The BTD2 size is structured on four torque levels corresponding to four motor lengths, with 4500 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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

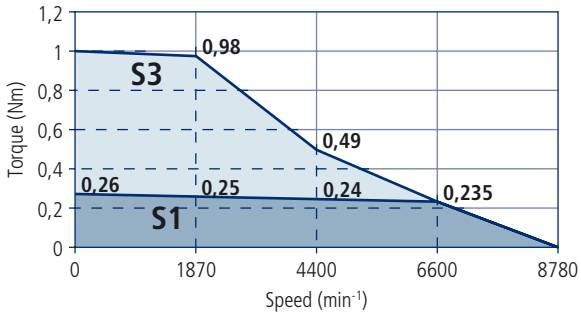
Motor		BTD2-0026-45-400	BTD2-0053-45-400	BTD2-0074-45-400	BTD2-0095-45-400
Stall torque	M_o [m]	0,26	0,53	0,74	0,95
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles 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
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:

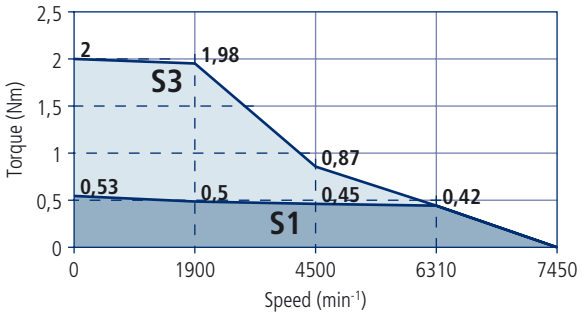
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

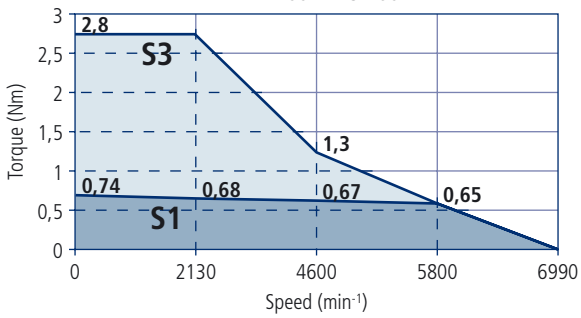
BTD2-0026-45-400



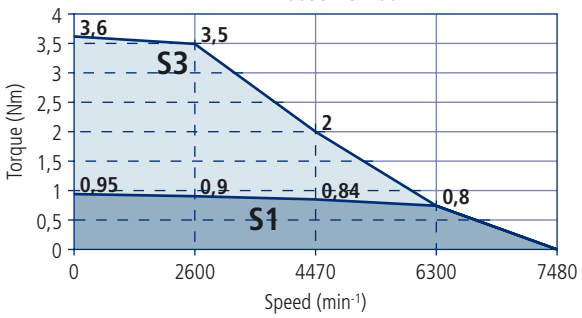
BTD2-0053-45-400



BTD2-0074-45-400



BTD2-0095-45-400



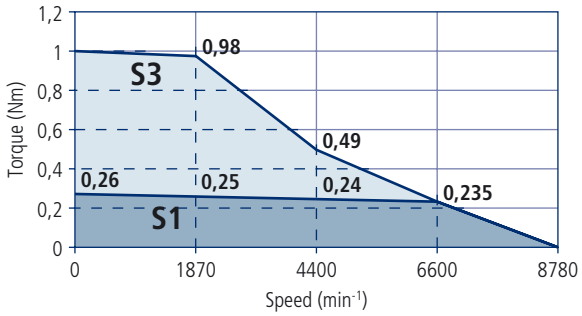
Motor		BTD2-0026-45-230	BTD2-0053-45-230	BTD2-0074-45-230	BTD2-0095-45-230
Stall torque	M_o [m]	0,26	0,53	0,74	0,95
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles 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
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:

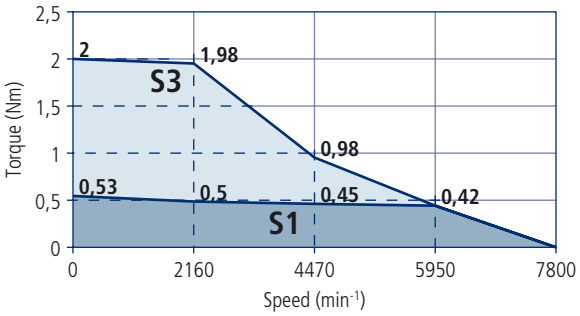
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

BTD2-0026-45-230



BTD2-0053-45-230



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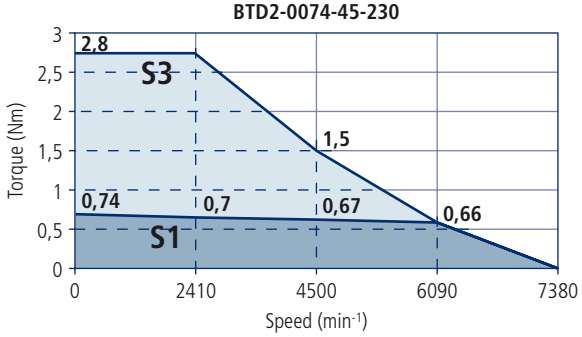
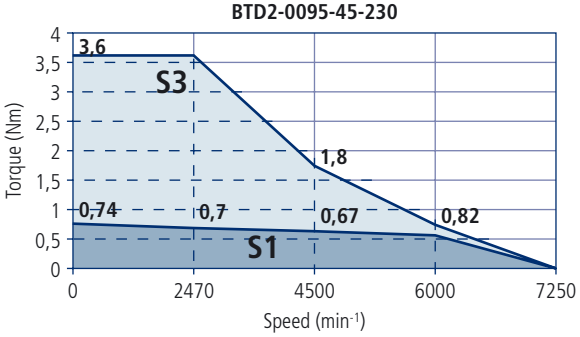
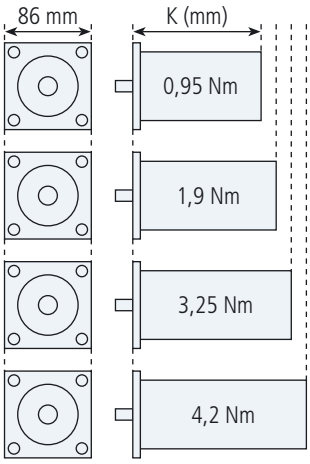


BTD2-0095-45-230

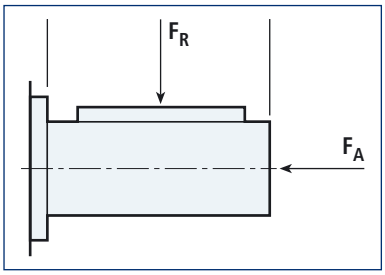


All BTD servomotors size 3 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board.

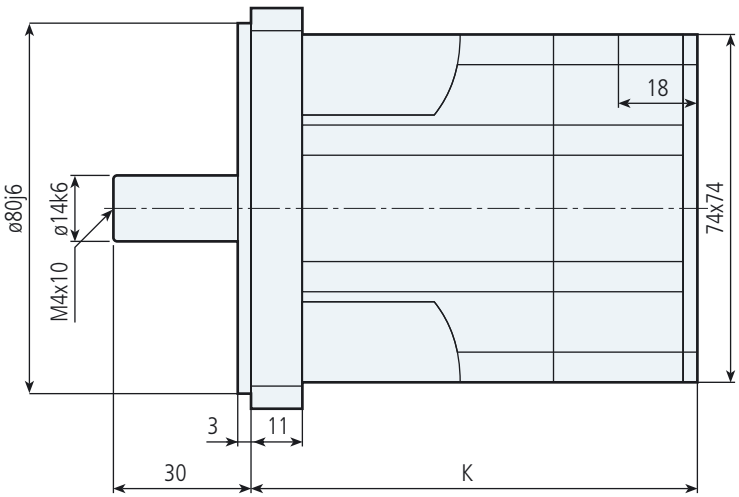


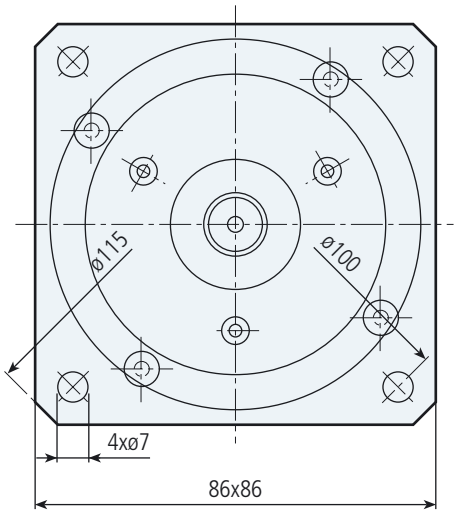
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BTD3-0095	0,95	3000	86	95	135
BTD3-0190	1,9			113	153
BTD3-0325	3,25			149	189
BTD3-0420	4,2			185	225

The BTD3 size is structured on four torque levels corresponding to four motor lengths, with 3000 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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



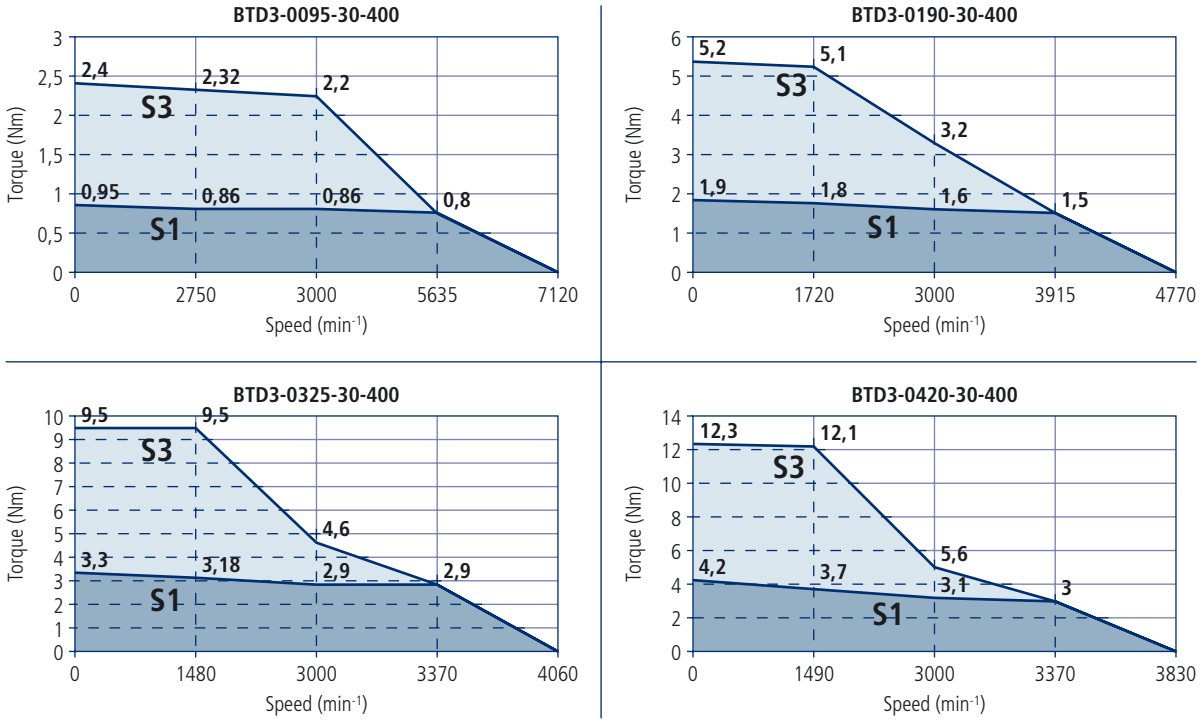


Motor		BTD3-0095-30-400	BTD3-0190-30-400	BTD3-0325-30-400	BTD3-0420-30-400
Stall torque	M_o [m]	0,95	1,9	3,25	4,2
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	10	10	10	10
Resolver poles 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
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

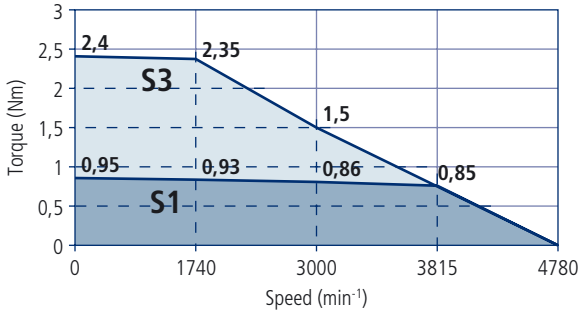
Motor		BTD3-0095-30-230	BTD3-0190-30-230	BTD3-0325-30-230	BTD3-0420-30-230
Stall torque	M_o [m]	0,95	1,9	3,25	4,2
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	10	10	10	10
Resolver poles 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
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:

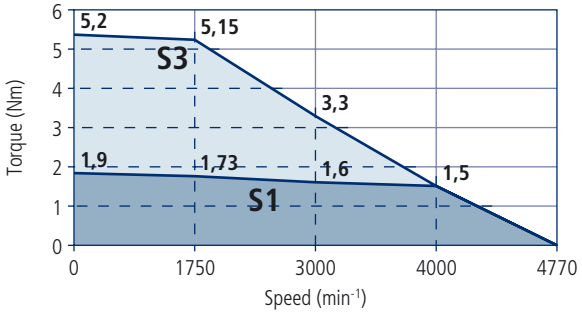
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

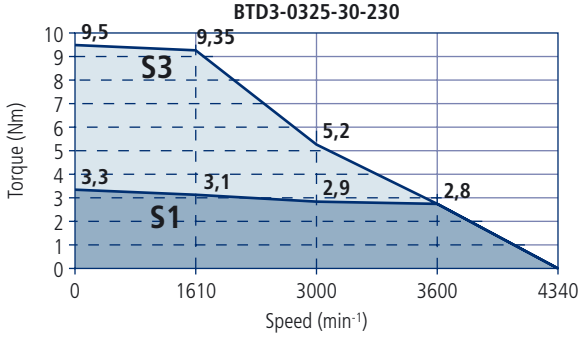
BTD3-0095-30-230



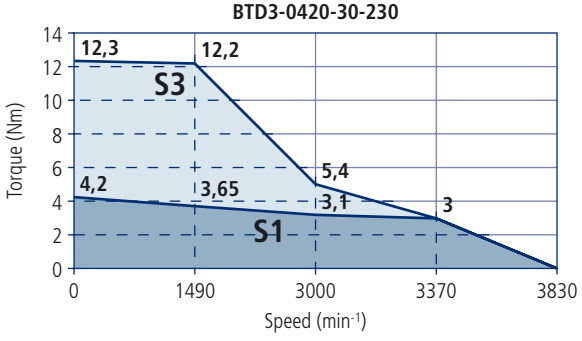
BTD3-0190-30-230



BTD3-0325-30-230

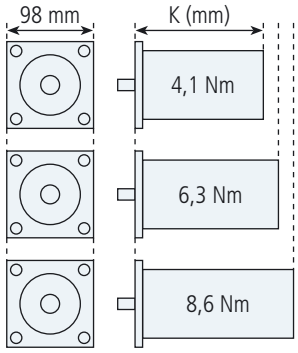


BTD3-0420-30-230

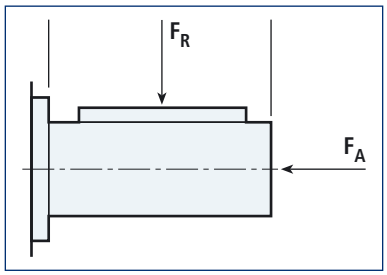


All BTD servomotors size 4 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board.

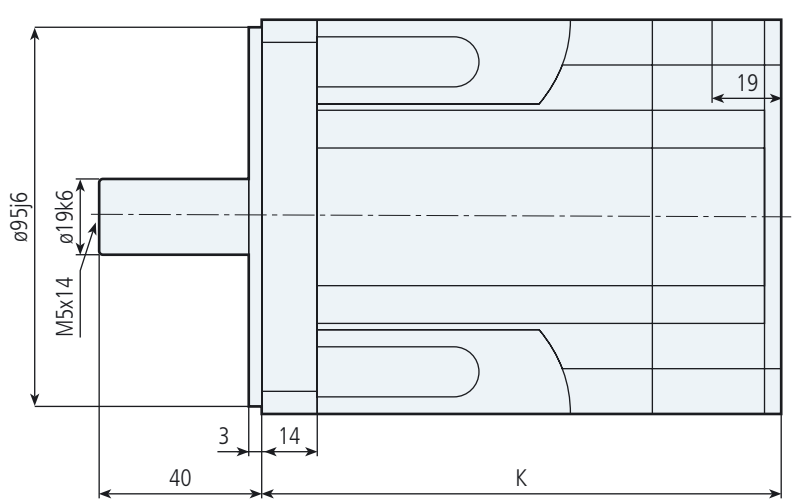
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BTD4-0410	4,1	3000	98	125	166
BTD4-0630	6,3			155	196
BTD4-0860	8,6			185	226

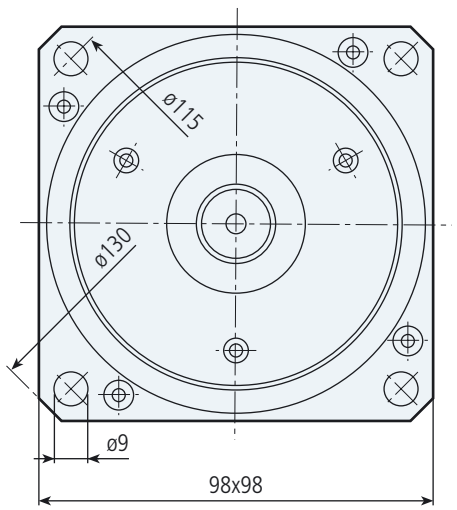


The BTD4 size is structured on three torque levels corresponding to four motor lengths, with 3000 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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

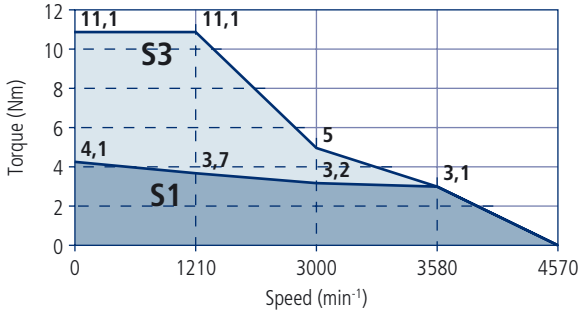
Motor		BTD4-0410-30-400	BTD4-0630-30-400	BTD4-0860-30-400
Stall torque	M_o [m]	4,1	6,3	8,6
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330
Motor poles number	p_{mot}	10	10	10
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [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
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:

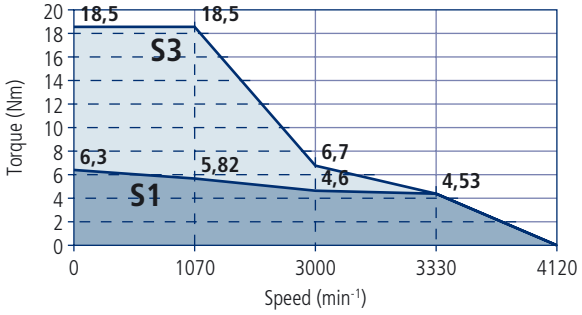
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

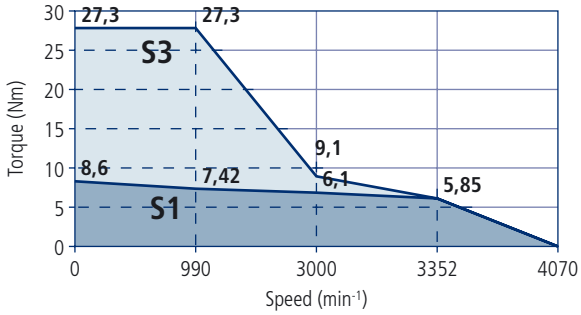
BTD4-0410-30-400



BTD4-0630-30-400



BTD4-0860-30-400



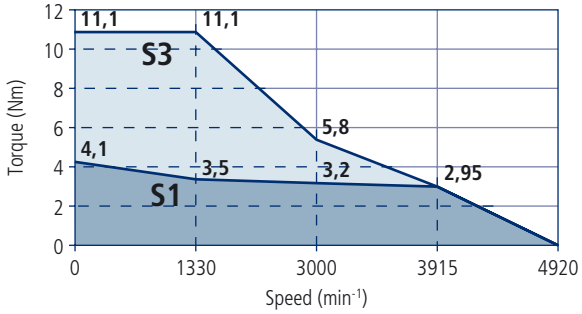
Motor		BTD4-0410-30-230	BTD4-0630-30-230	BTD4-0860-30-230
Stall torque	M_o [m]	4,1	6,3	8,6
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200
Motor poles number	p_{mot}	10	10	10
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [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
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:

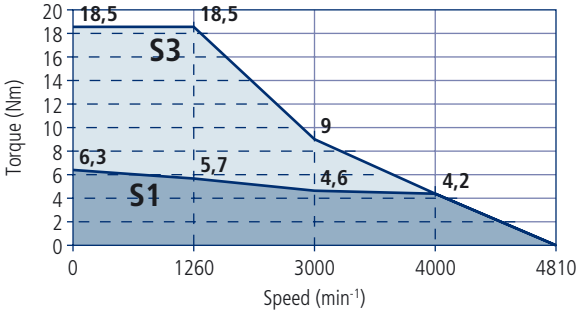
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

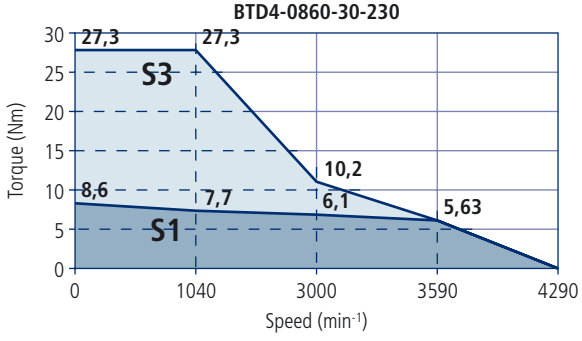
BTD4-0410-30-230



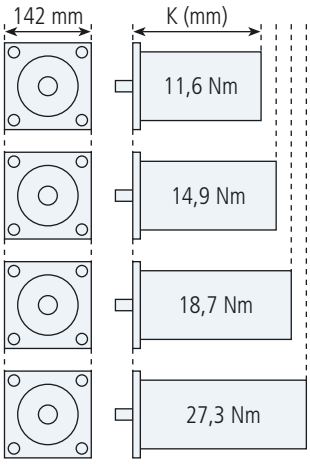
BTD4-0630-30-230



BTD4-0860-30-230

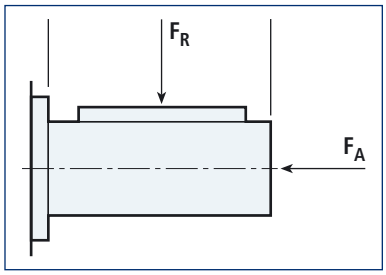


All BTD servomotors size 5 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board.

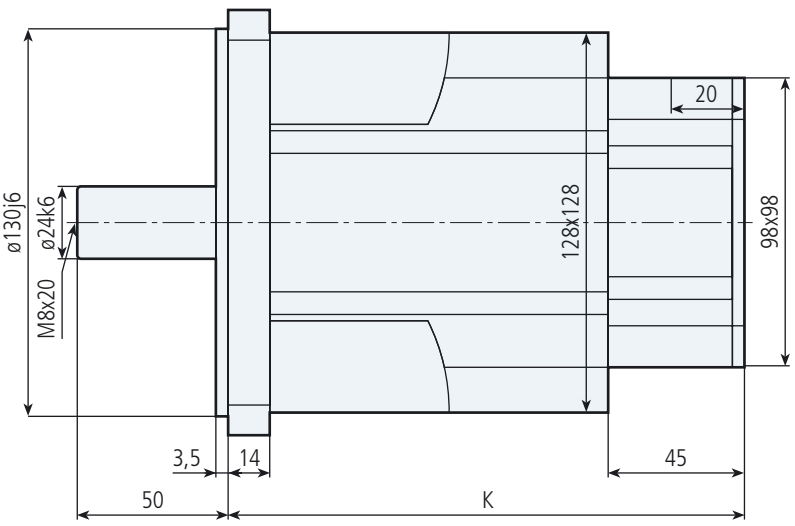


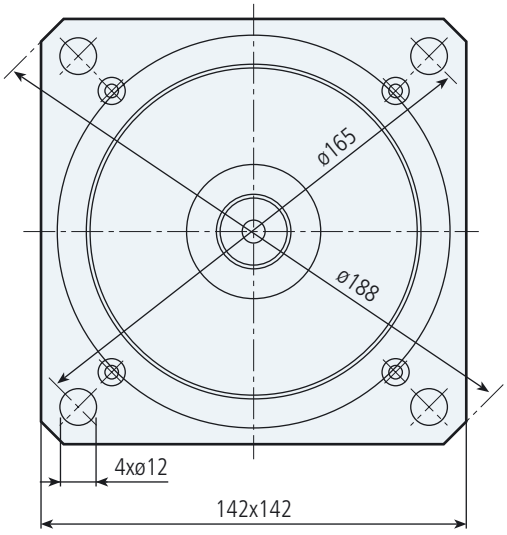
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BTD5-1160	11,6	3000	142	173	224
BTD5-1490	14,9			201	252
BTD5-1870	18,7			231	282
BTD5-2730	27,3			291	342

The BTD5 size is structured on four torque levels corresponding to four motor lengths, with 4500 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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



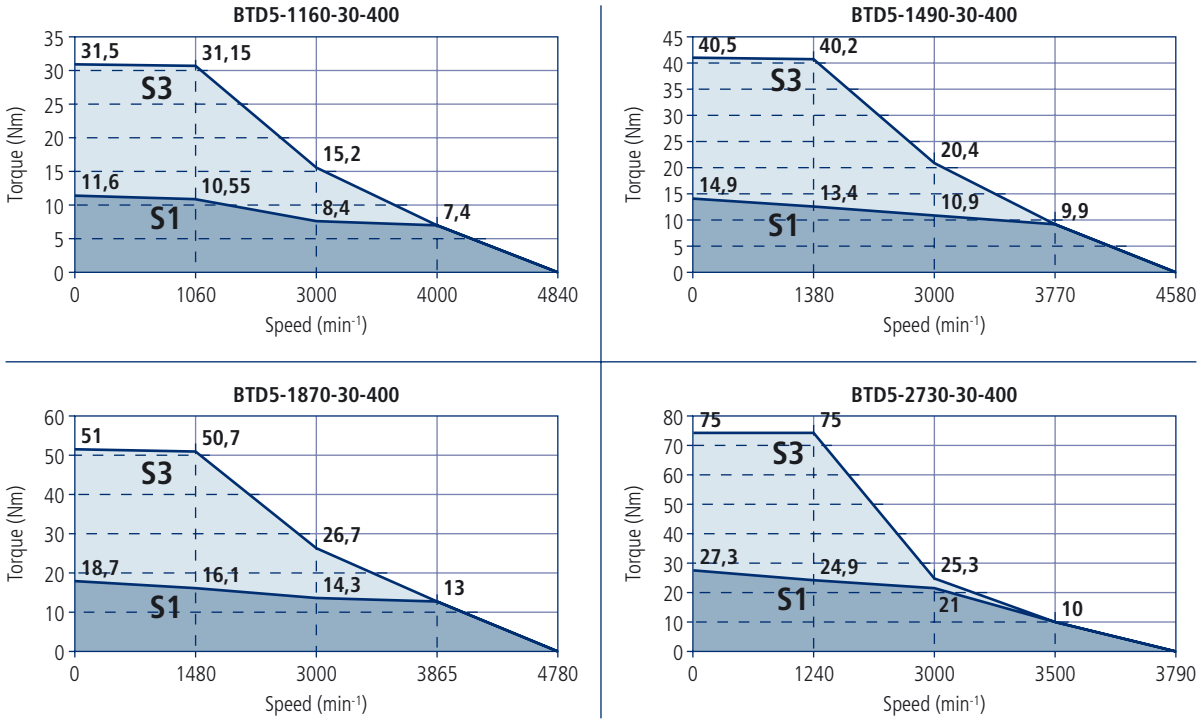


Motor		BTD5-1160-30-400	BTD5-1490-30-400	BTD5-1870-30-400	BTD5-2730-30-400
Stall torque	M_o [m]	11,6	14,9	18,7	27,3
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	10	10	10	10
Resolver 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
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



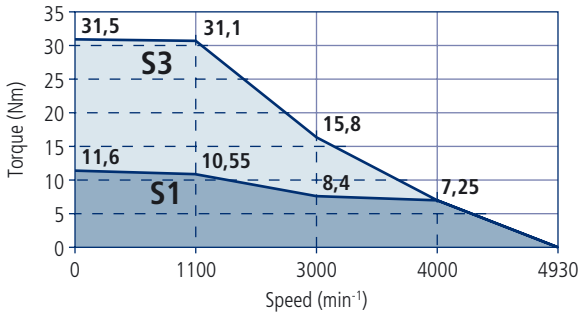
Motor		BTD5-1160-30-230	BTD5-1490-30-230	BTD5-1870-30-230	BTD5-2730-30-230
Stall torque	M_o [m]	-	-	-	-
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	10	10	10	10
Resolver poles number	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
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:

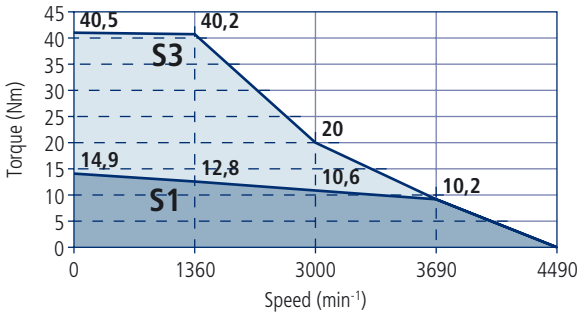
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

BTD5-1160-30-230



BTD5-1490-30-230



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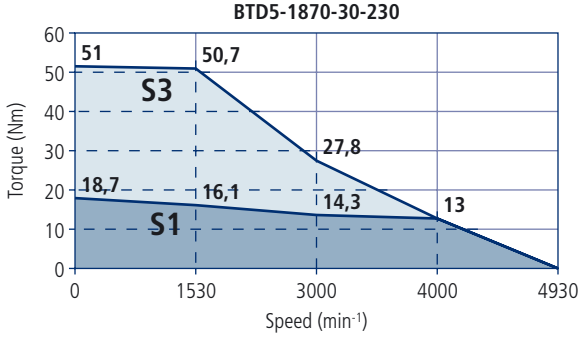

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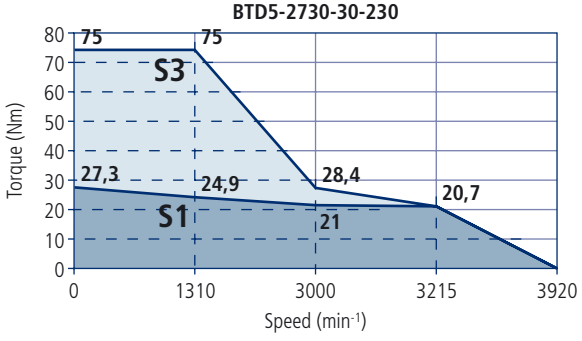


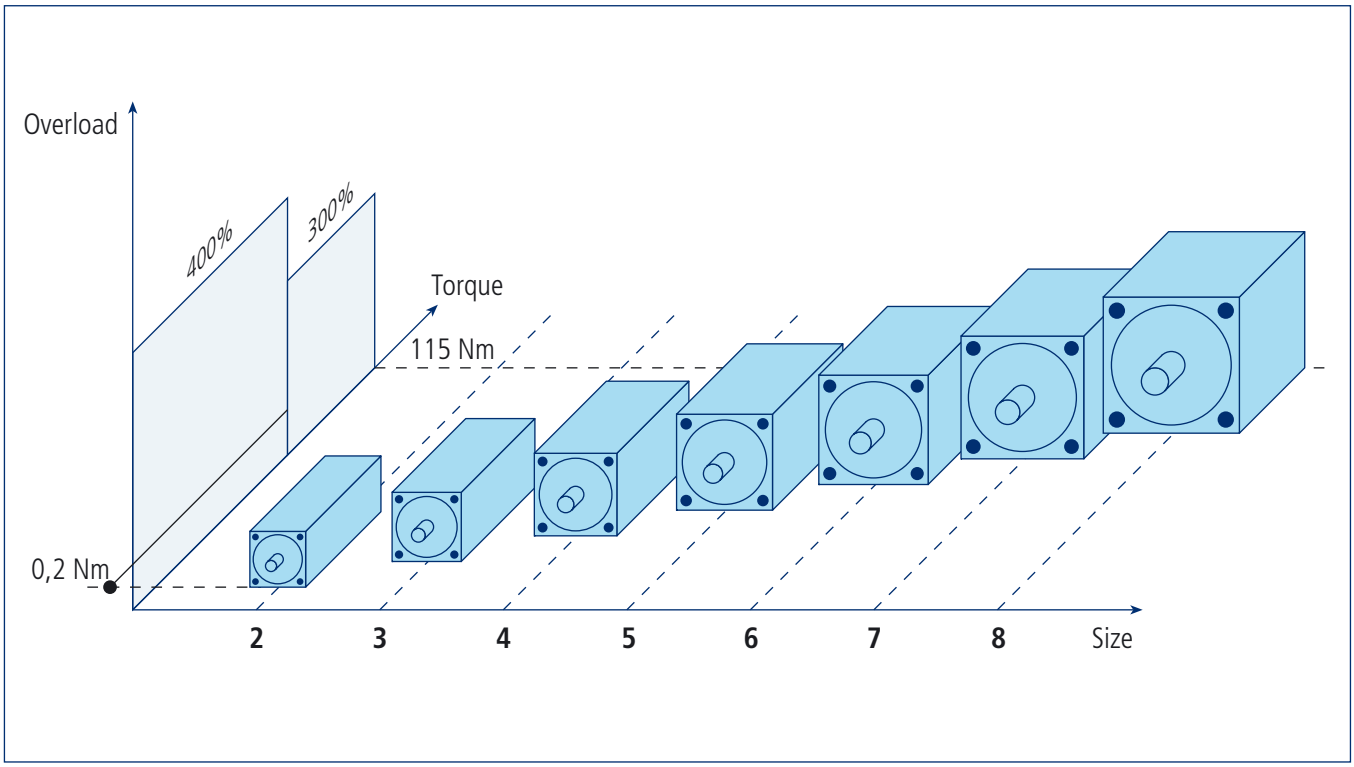
The BCR series is developed in seven sizes identified by progressive number (from 2 to 8) corresponding to identical quantity of flanges designed for defined coupling with gearboxes.

BTD alike, BCR series also makes available several torque values obtained from several lengths of the motor from which it is possible to extract high torque continuous levels and high temporary overload up to 400%.

The name of BCR (Brushless Classic Range) takes origin from most important feature of this servomotor which is able to warrant an high torque in a wide speed range.

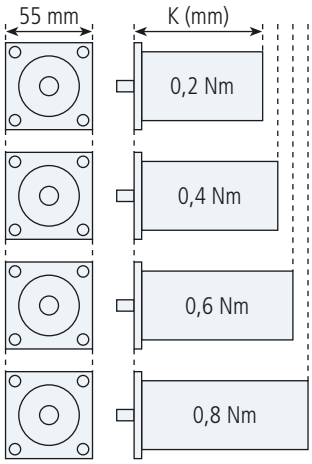
The large torque range (0.2 ÷ 115 Nm) in continuous service and the high short time overload render the BCR very suitable for high dynamic applications.

Series	Size	Flange [mm]	Speed [min^{-1}]	Stall torque [Nm]					Overload %
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



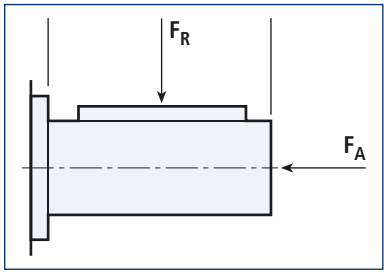
BCR2

All BCR servomotors size 2 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board.

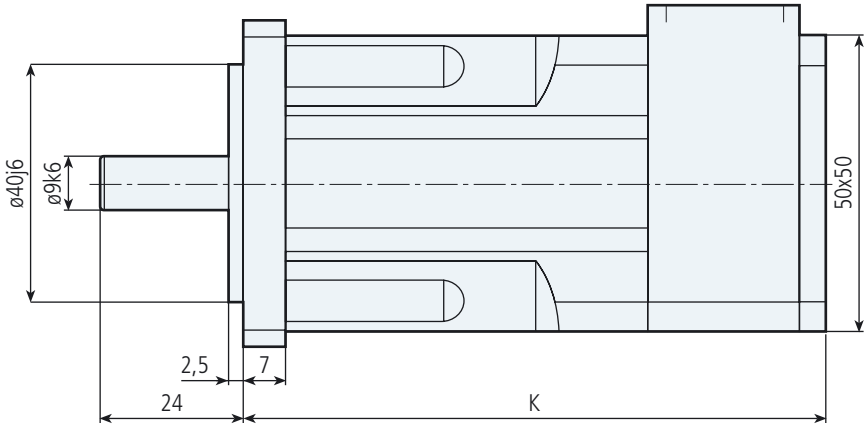


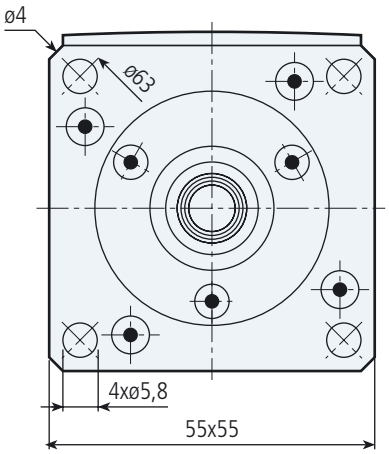
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BCR2-0020	0,2	4500	55	98	131
BCR2-0040	0,4			113	146
BCR2-0060	0,6			128	161
BCR2-0080	0,8			143	176

The BCR2 size is structured on four torque levels corresponding to four motor lengths, with 4500 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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



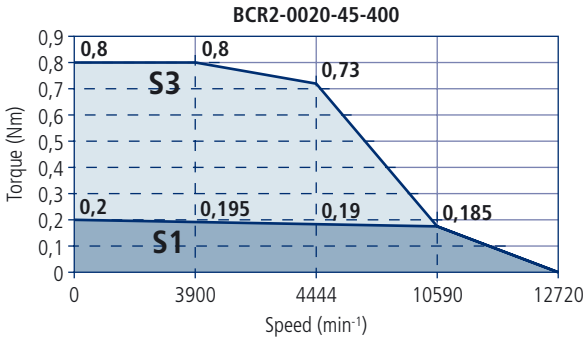


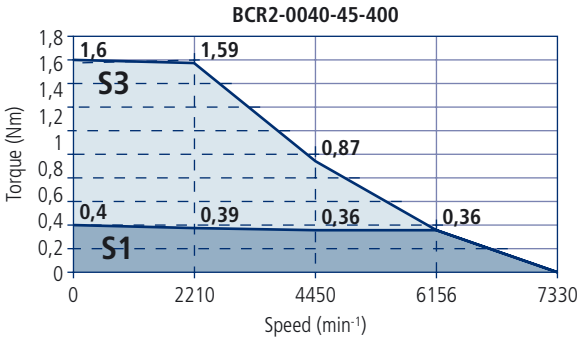
Motor		BCR2-0020-45-400	BCR2-0040-45-400	BCR2-0060-45-400	BCR2-0080-45-400
Stall torque	M_o [m]	0.2	0.4	0.6	0.8
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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

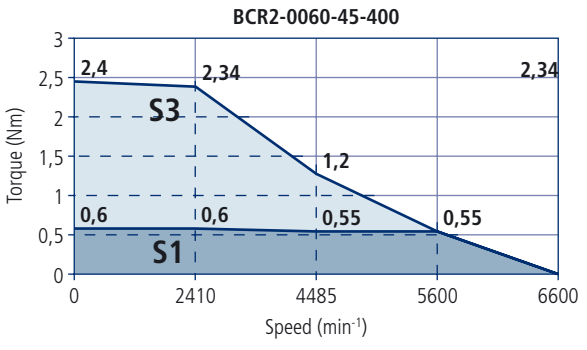
All motor characteristics are referred to following conditions:

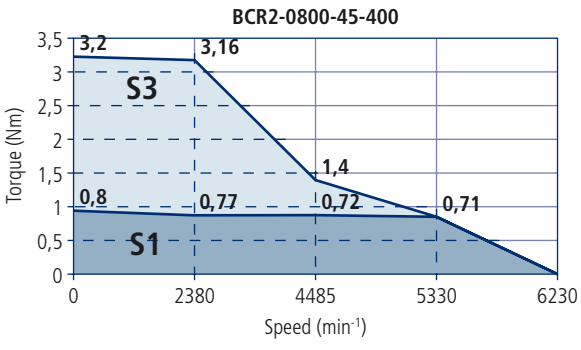
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C









BCR2 230V

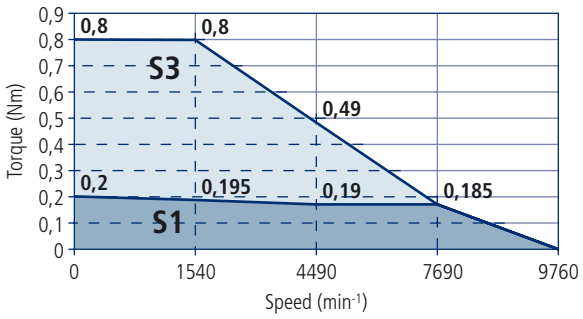
Motor		BCR2-0020-45-230	BCR2-0040-45-230	BCR2-0060-45-230	BCR2-0080-45-230
Stall torque	M_o [m]	0.2	0.4	0.6	0.8
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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:

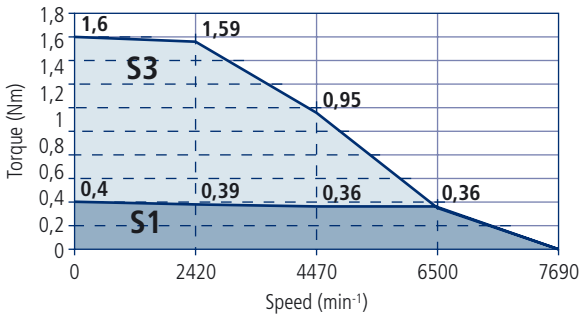
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

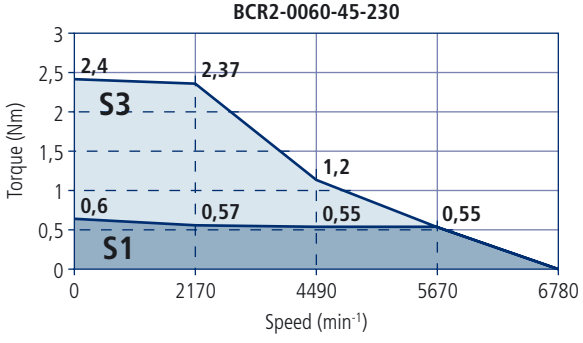
BCR2-0020-45-230



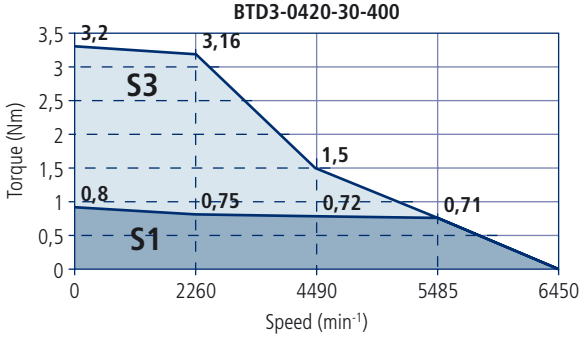
BCR2-0040-45-230



BCR2-0060-45-230

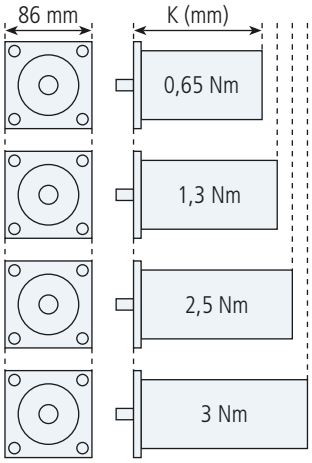


BTD3-0420-30-400

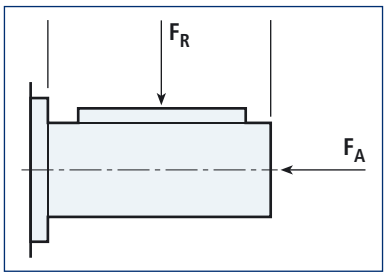


All BCR servomotors size 3 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board

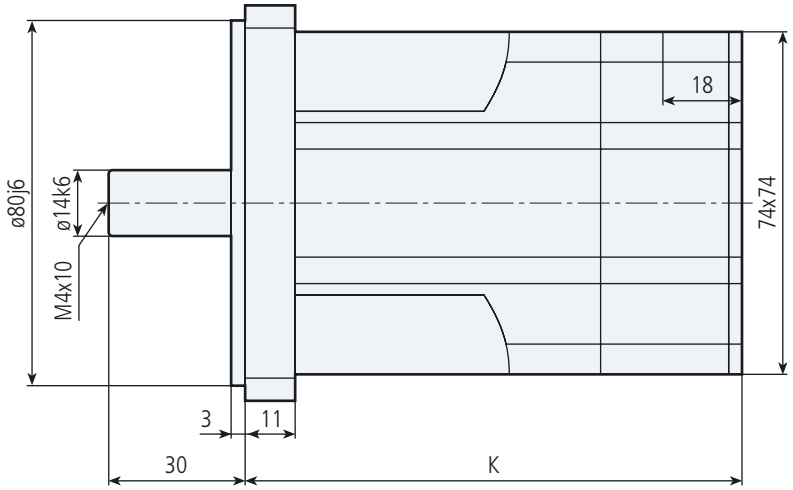
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BCR3-0065	0,65	4500	86	109	142
BCR3-0130	1,3			127	160
BCR3-0250	2,5			163	196
BCR3-0300	3,0			181	214

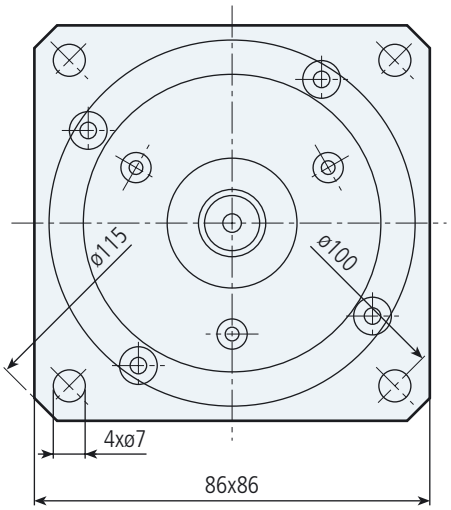


The BCR3 size is structured on four torque levels corresponding to four motor lengths, with 4500 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter)



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

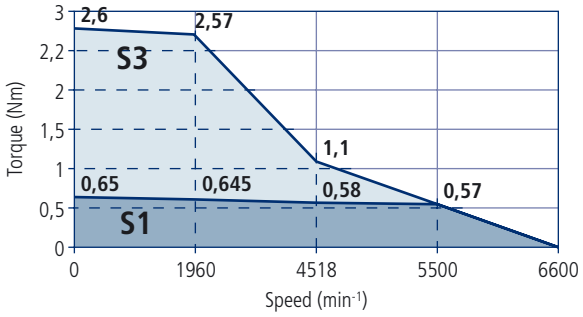
Motor		BCR3-0065-45-400	BCR3-0130-45-400	BCR3-0250-45-400	BCR3-0300-45-400
Stall torque	M_o [m]	0.65	1.3	2.5	3
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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:

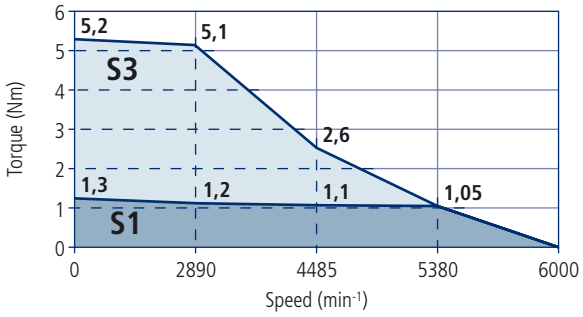
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

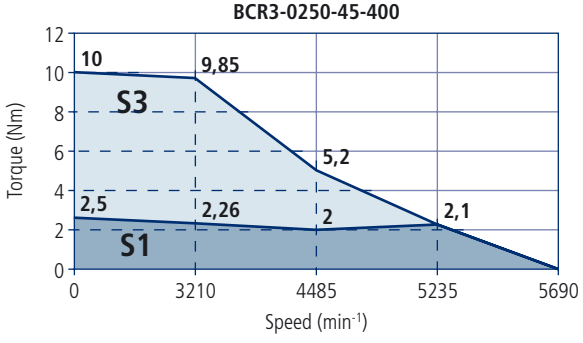
BCR3-0065-45-400



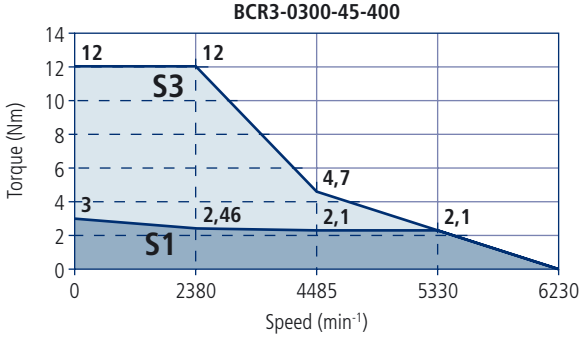
BCR3-0130-45-400



BCR3-0250-45-400



BCR3-0300-45-400



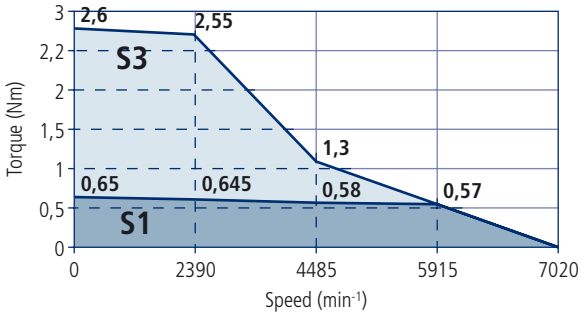
Motor		BCR3-0065-45-230	BCR3-0130-45-230	BCR3-0250-45-230	BCR2-0300-45-230
Stall torque	M_o [m]	0.65	1.3	2.5	3
Rated speed	n_n [min^{-1}]	4500	4500	4500	4500
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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:

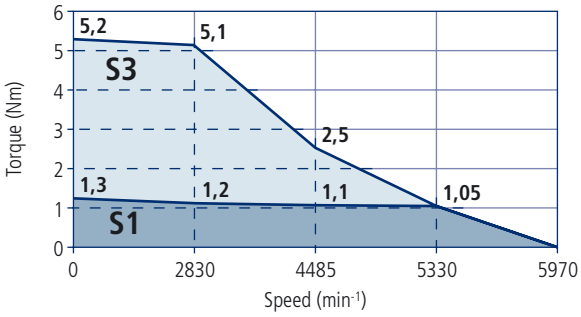
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

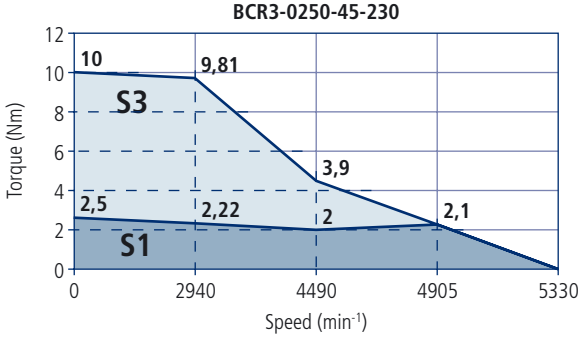
BCR3-0065-45-230



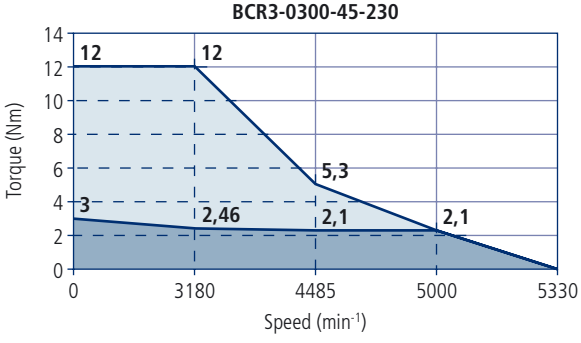
BCR3-0130-45-230



BCR3-0250-45-230

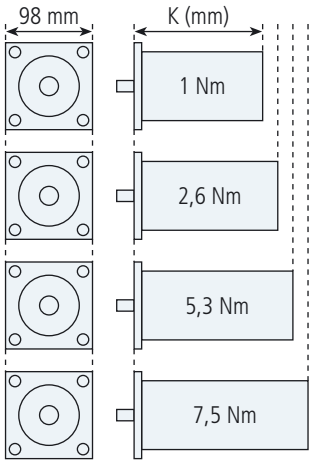


BCR3-0300-45-230



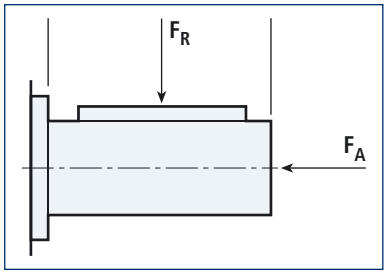
BCR4

All BCR servomotors size 4 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board

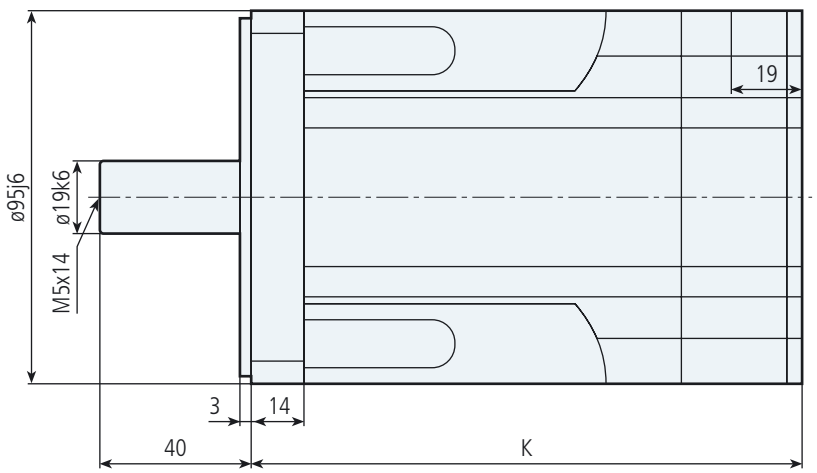


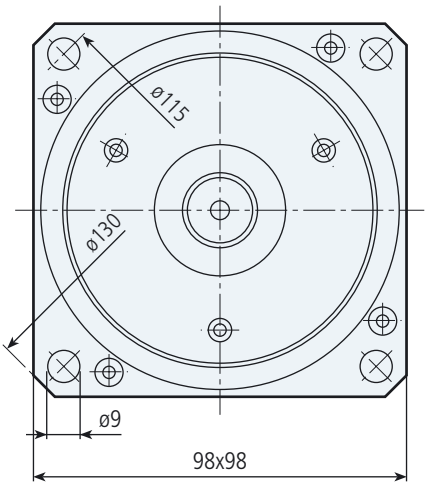
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BCR4-0100	1	3000	98	116	148
BCR4-0260	2,6			146	178
BCR4-0530	5,3			176	208
BCR4-0750	7,5			221	253

The BCR4 size is structured on four torque levels corresponding to four motor lengths, with 3000 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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





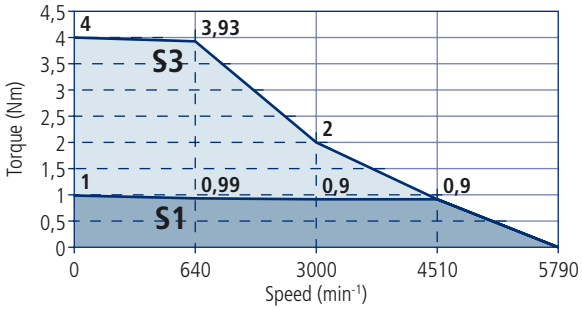
Motor		BCR4-0100-30-400	BCR4-0260-30-400	BCR4-0530-30-400	BCR4-0750-30-400
Stall torque	M_o [m]	1.0	2.6	5.3	7.5
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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:

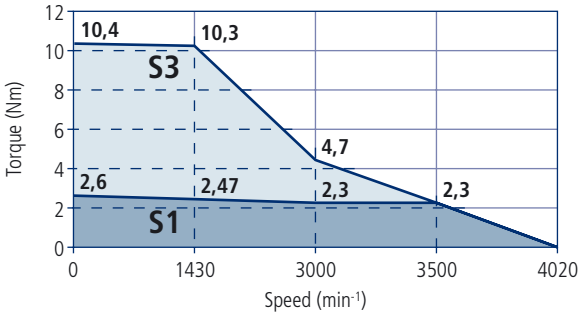
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

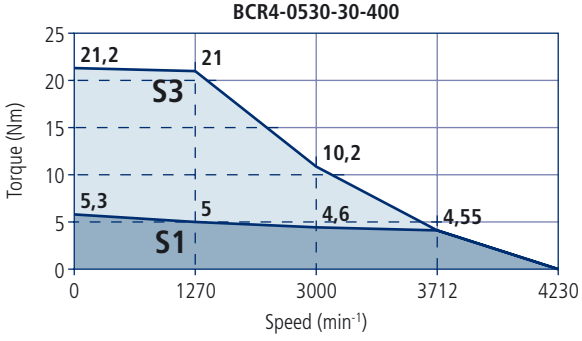
BCR4-0100-30-400



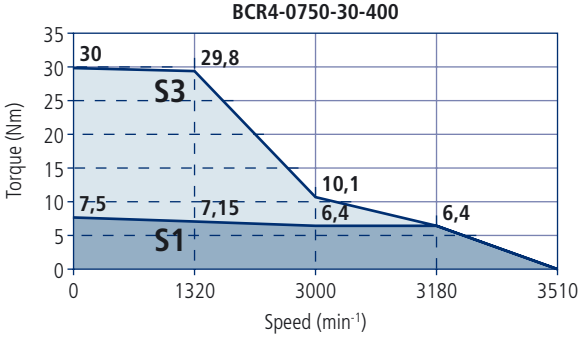
BCR4-0260-30-400



BCR4-0530-30-400



BCR4-0750-30-400



BCR4 230V

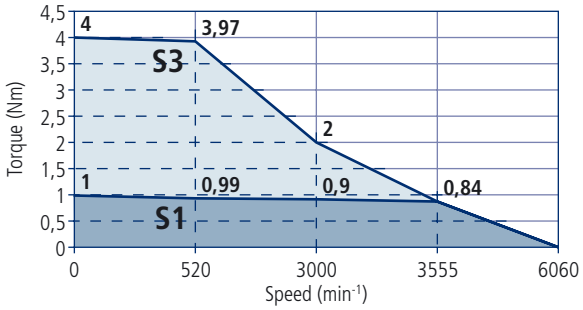
Motor		BCR4-0100-30-230	BCR4-0260-30-230	BCR4-0530-30-230	BCR4-0750-30-230
Stall torque	M_o [m]	1.0	2.6	5.3	7.5
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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:

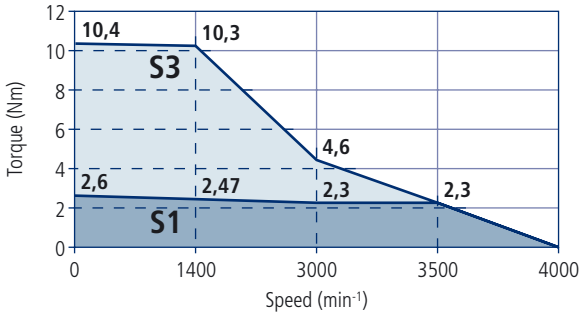
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

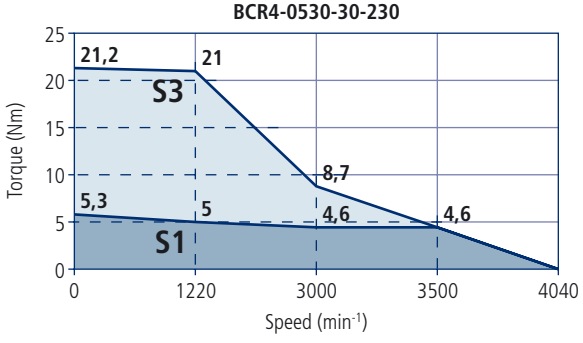
BCR4-0100-30-230



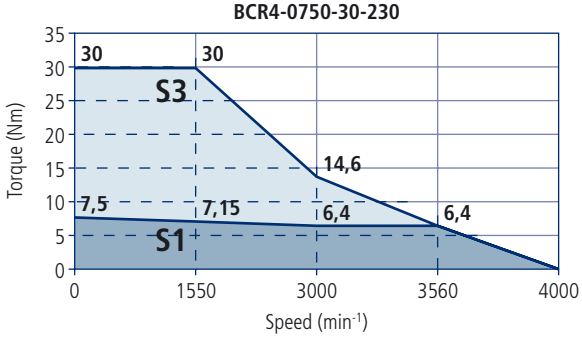
BCR4-0260-30-230



BCR4-0530-30-230

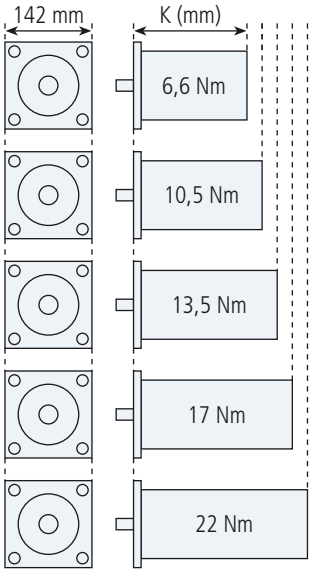


BCR4-0750-30-230

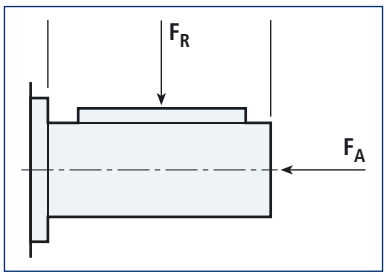


All BCR servomotors size 5 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board

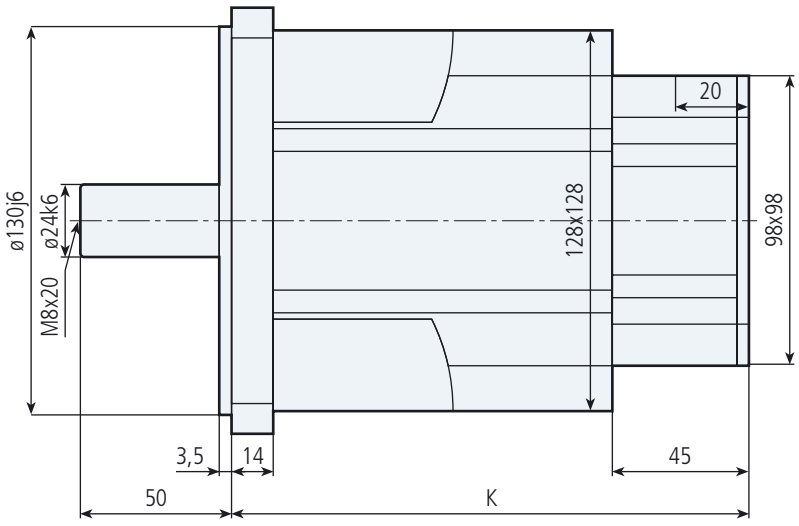
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BCR5-0660	6,6	3000	142	185	228
BCR5-1050	10,5			219	262
BCR5-1350	13,5			236	279
BCR5-1700	17			270	313
BCR5-2200	22			304	347

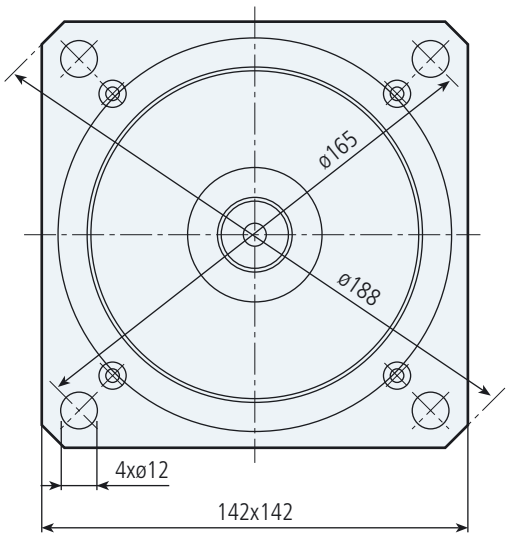


The BCR5 size is structured on five torque levels corresponding to five motor lengths, with 3000 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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

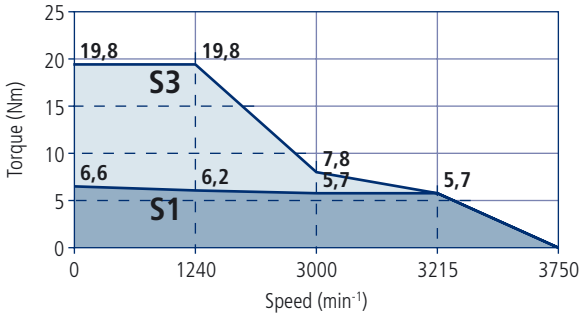
Motor		BCR5-0660-30-400	BCR5-1050-30-400	BCR5-1350-30-400	BCR5-1700-30-400	BCR5-2200-30-400
Stall torque	M_0 [m]	6.6	10.5	13.5	17.0	22.0
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330	330
Motor poles number	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_0 [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
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:

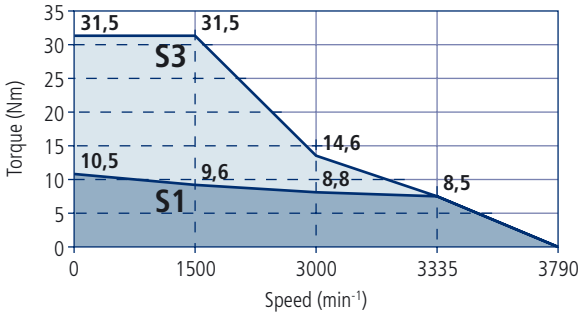
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

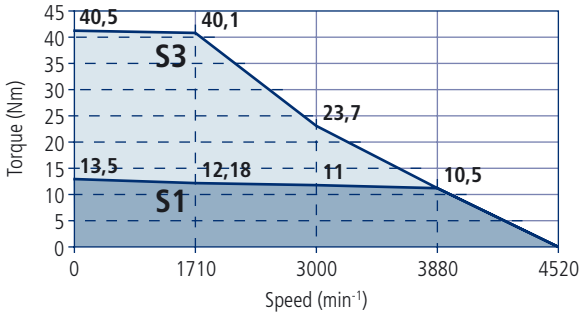
BCR5-0660-30-400



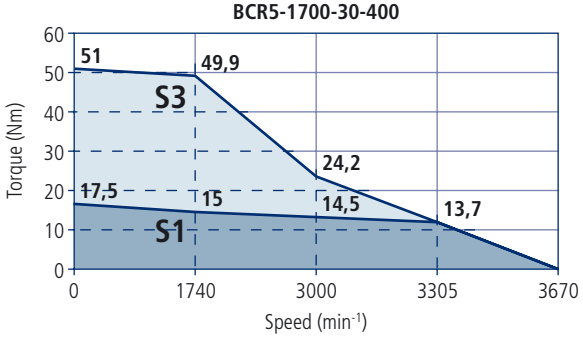
BCR5-1050-30-400



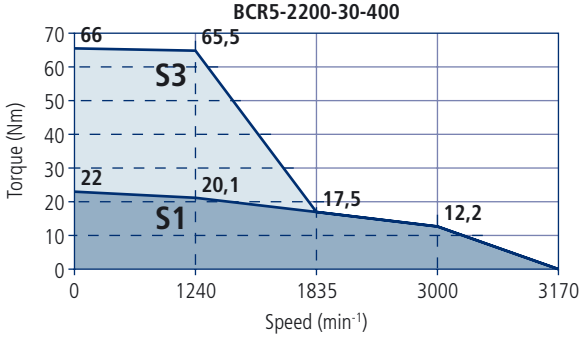
BCR5-1350-30-400



BCR5-1700-30-400



BCR5-2200-30-400



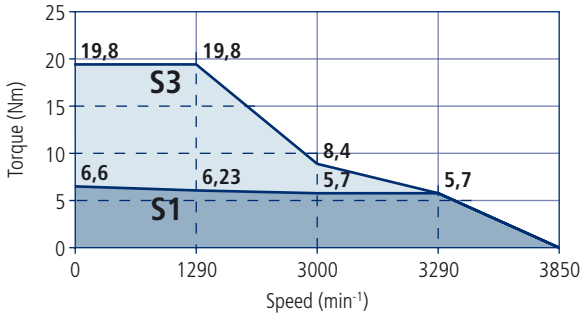
Motor		BCR5-0660-30-230	BCR5-1050-30-230	BCR5-1350-30-230	BCR5-1700-30-230	BCR5-2200-30-230
Stall torque	M_o [m]	6.6	10.5	13.5	17.0	22.0
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200	200
Motor poles number	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
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:

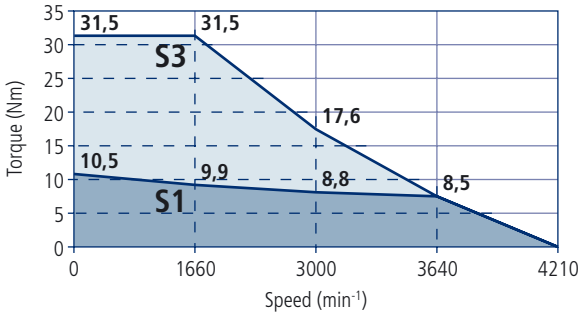
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

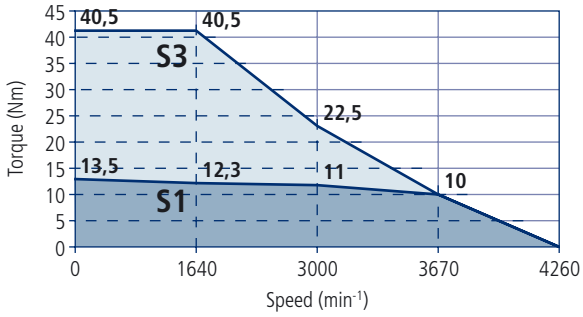
BCR5-0660-30-230



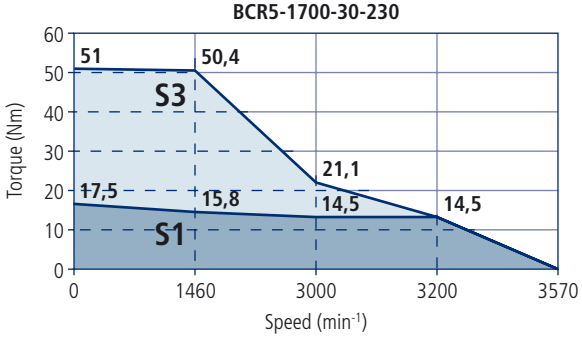
BCR5-1050-30-230



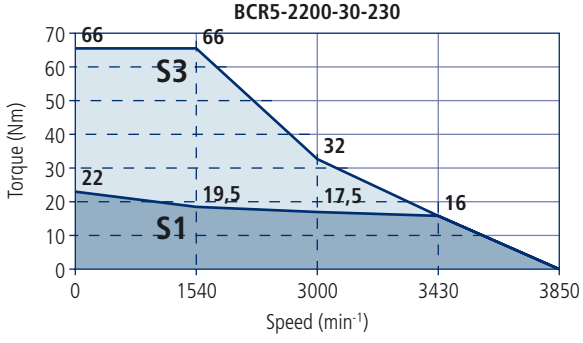
BCR5-1350-30-230



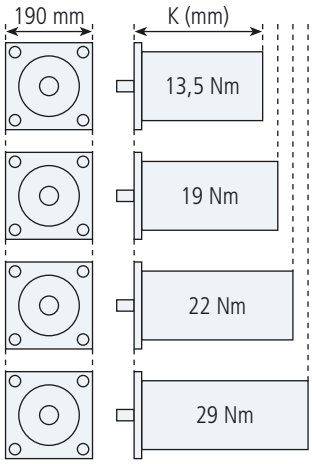
BCR5-1700-30-230



BCR5-2200-30-230

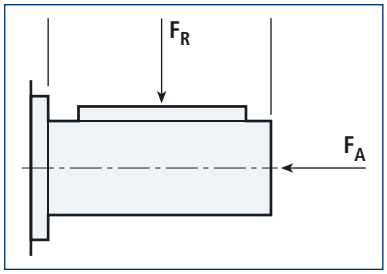


All BCR servomotors size 6 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board

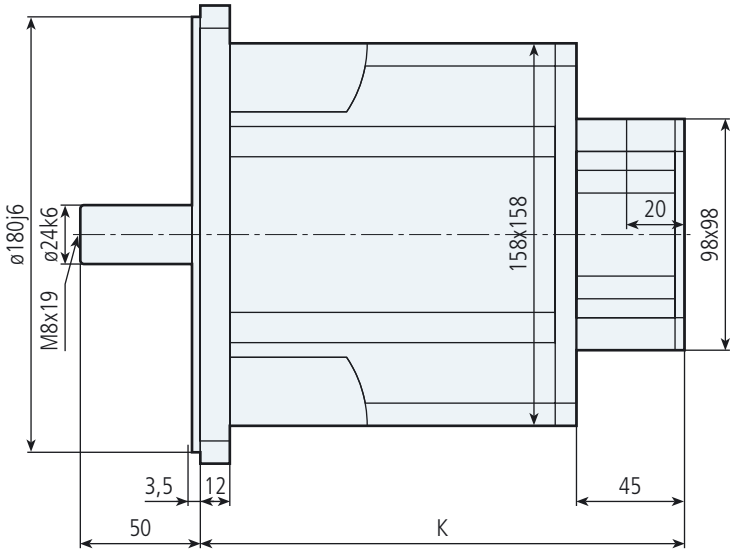


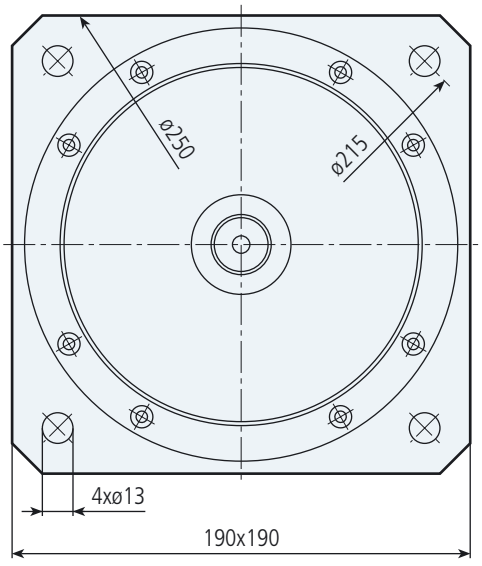
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BCR6-1350	13,5	3000	190	201	254
BCR6-1900	19			235	288
BCR6-2200	22			250	303
BCR6-2900	29			310	363

The BCR6 size is structured on four torque levels corresponding to four motor lengths, with 3000 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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



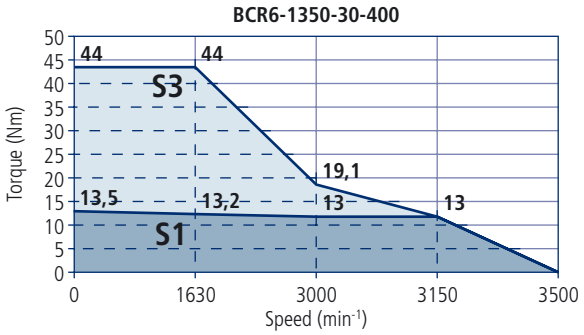


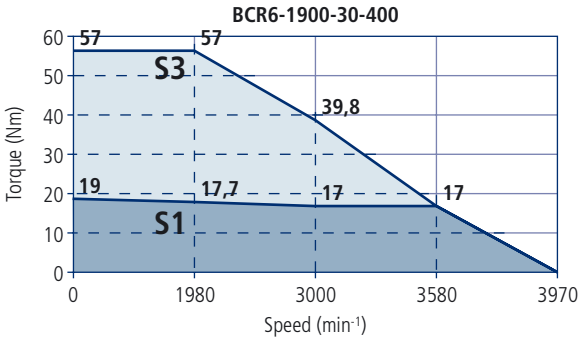
Motor		BCR6-1350-30-400	BCR6-1900-30-400	BCR6-2200-30-400	BCR6-2900-30-400
Stall torque	M_o [m]	13.5	19	22	29
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330	330
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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

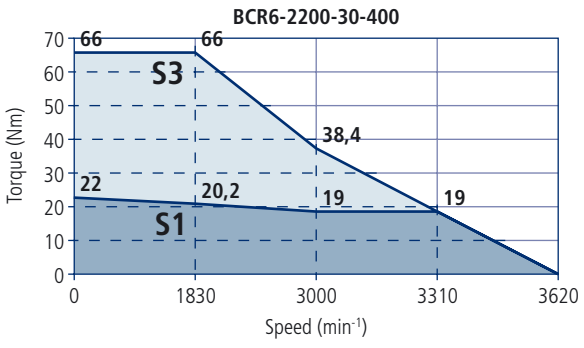
All motor characteristics are referred to following conditions:

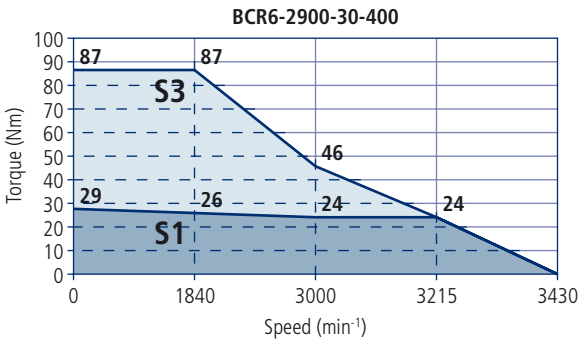
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C









BCR6 230V

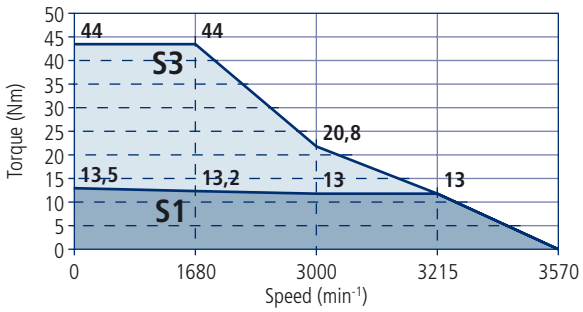
Motor		BCR6-1350-30-230	BCR6-1900-30-230	BCR6-2200-30-230	BCR6-2900-30-230
Stall torque	M_o [m]	13.5	19	22	29
Rated speed	n_n [min^{-1}]	3000	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200	200
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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:

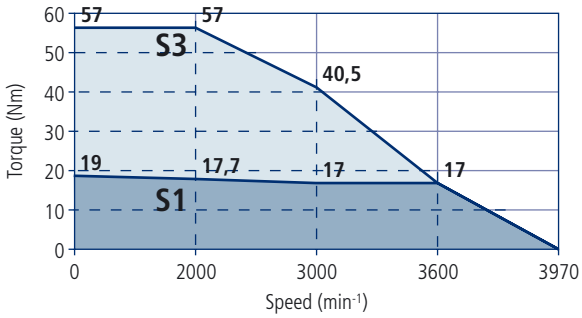
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

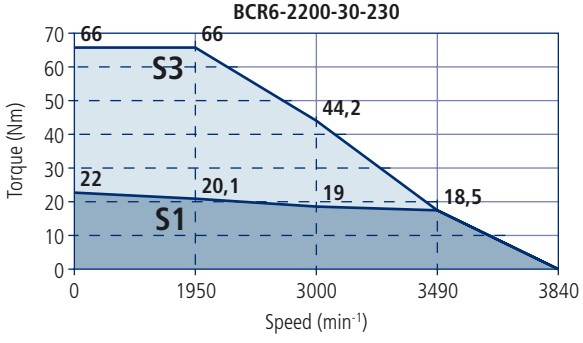
BCR6-1350-30-230



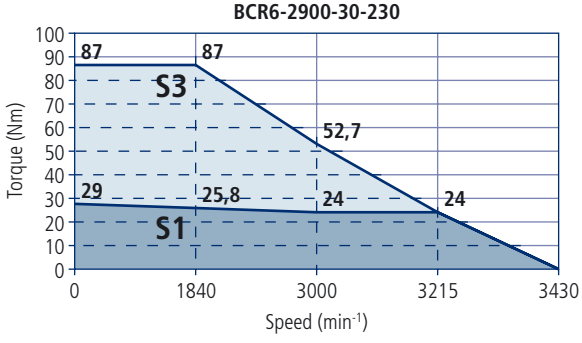
BCR6-1900-30-230



BCR6-2200-30-230

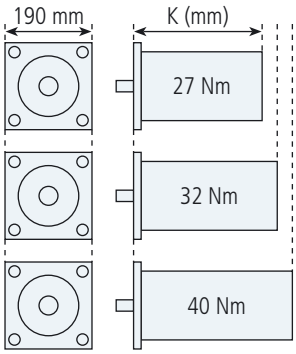


BCR6-2900-30-230

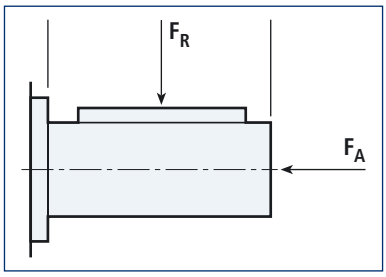


All BCR servomotors size 7 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board

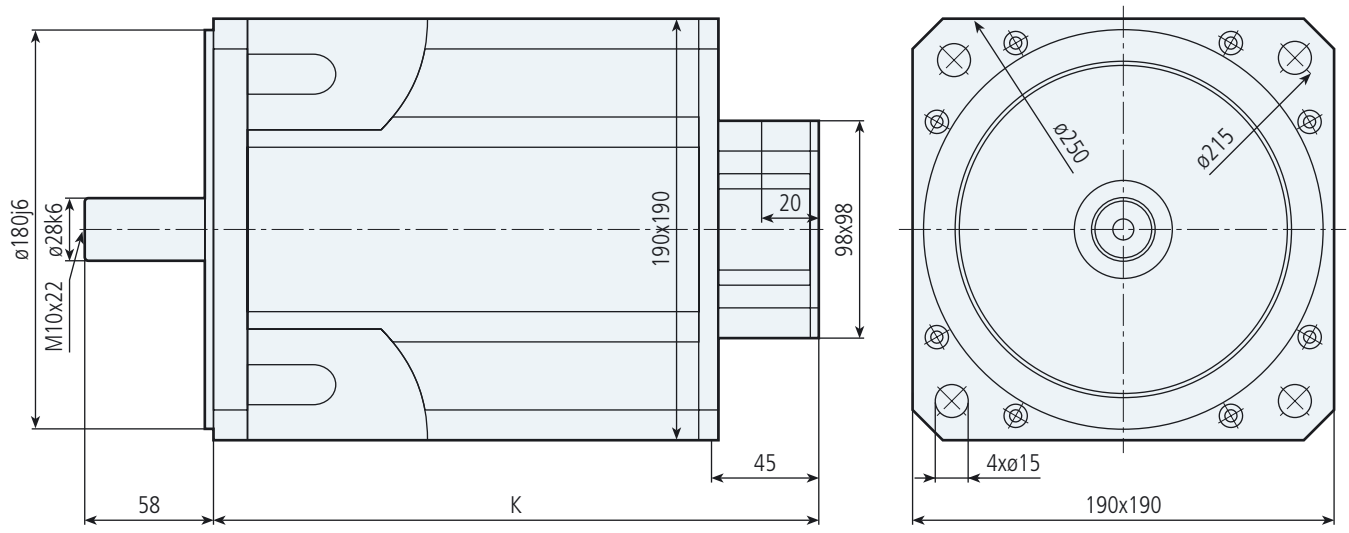
Motor	Stall torque (Nm)	Rated speed (min^{-1})	Flange (mm)	Length K (mm)	
				Without brake	With brake
BCR7-2700	27			242	296
BCR7-3200	32			257	311
BCR7-4000	40	3000	190	287	341



The BCR7 size is structured on three torque levels corresponding to three motor lengths, with 3000 min^{-1} rated speed.
The motor is available in 3ph x 400VAC and in 3ph x 230VAC preserving the same torque performances.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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

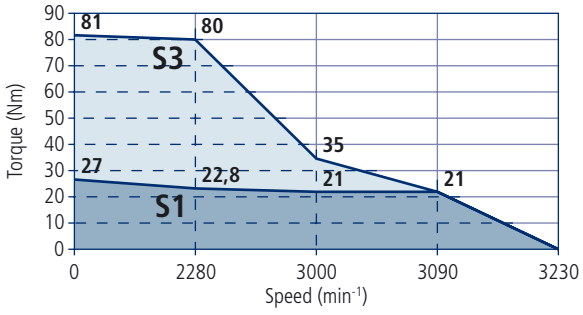
Motor		BCR7-2700-30-400	BCR7-3200-30-400	BCR7-4000-30-400
Stall torque	M_o [m]	27	32	40
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	560	560	560
Rated AC motor voltage	V_n [V]	330	330	330
Motor poles number	p_{mot}	6	6	6
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [Nm]	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
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:

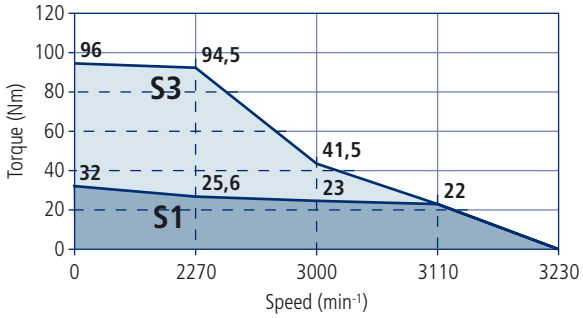
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

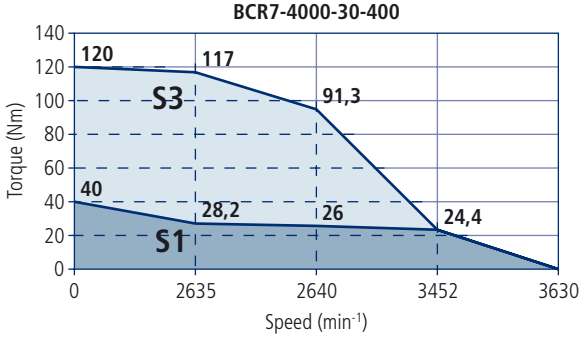
BCR7-2700-30-400



BCR7-3200-30-400



BCR7-4000-30-400



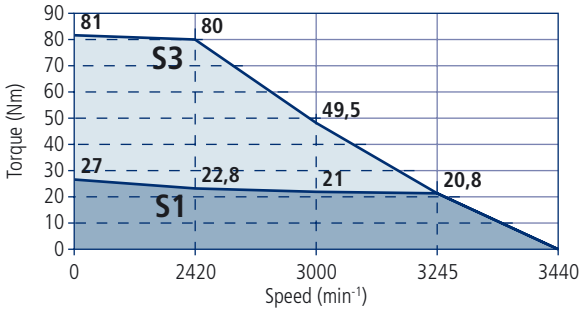
Motor		BCR7-2700-30-230	BCR7-3200-30-230	BCR7-4000-30-230
Stall torque	M_o [m]	27	32	40
Rated speed	n_n [min^{-1}]	3000	3000	3000
Inverter DC-bus	V_{dc} [V]	320	320	320
Rated AC motor voltage	V_n [V]	200	200	200
Motor poles number	p_{mot}	6	6	6
Resolver poles number	p_{res}	2	2	2
Rated torque	M_n [Nm]	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
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:

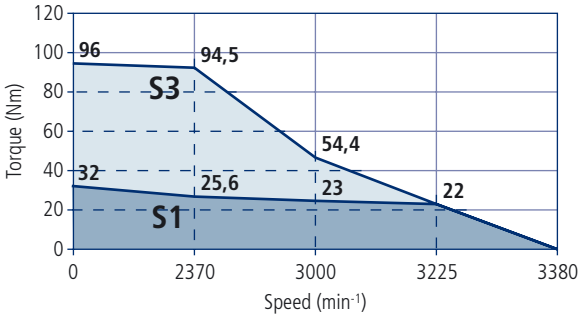
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

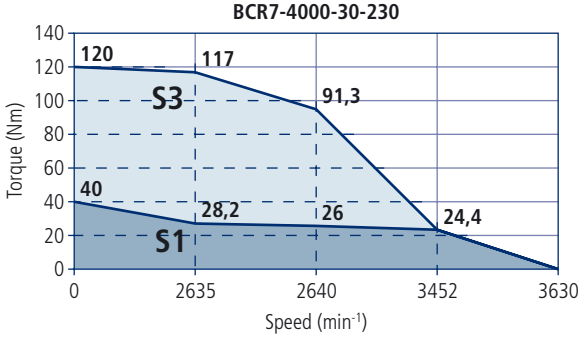
BCR7-2700-30-230



BCR7-3200-30-230



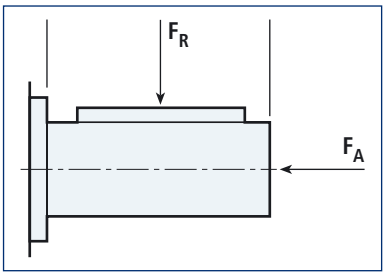
BCR7-4000-30-230



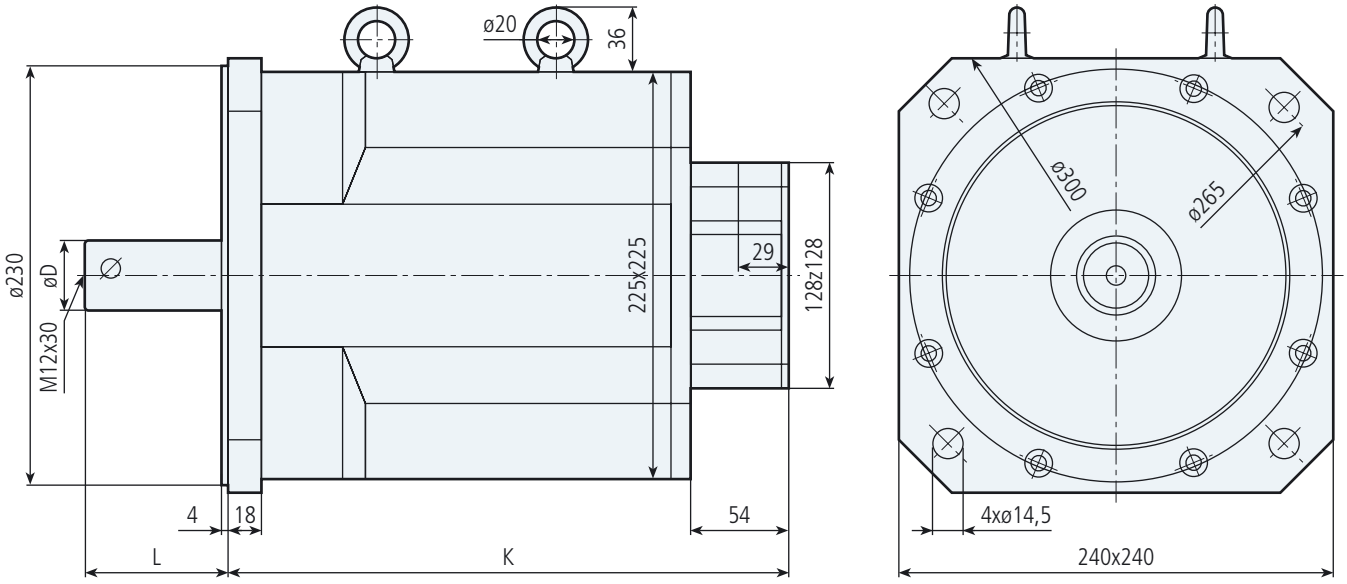
All BCR servomotors size 8 are described by the same geometrical flange, while they are different in relation to motor length (K) which is depending on motor torque.
The basic motor version is not supplied with electromechanical holding brake but this is an option and it can be selected by using the designation ordering string (see chapter related to servomotor designation).
Therefore the full motor length (K) can have two different values depending on brake or not-brake on board

Motor	Stall torque (Nm)	Rated speed (min^{-1})	Shaft (mm)		Flange (mm)	Length K (mm)	
			Diameter ø	Length L		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

The BCR8 size is structured on four torque levels corresponding to four motor lengths, with 2000 and 3000 min^{-1} rated speed.
The motor is available in 3ph x 400VAC only.
On standard servomotor both connectors are installed for power and control electrical connections between servomotor and electronic drive. On demand more connector types are available (see connector chapter).



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



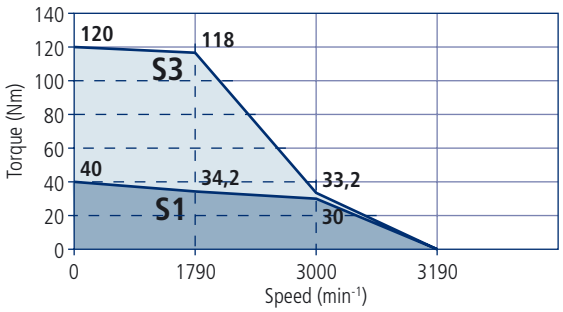
Motor		BCR8-0400-20-400	BCR8-0680-30-400	BCR8-0930-30-400	BCR8-1150-30-400
Stall torque	M_o [m]	40	68	93	115
Rated speed	n_n [min^{-1}]	3000	2000	2000	2000
Inverter DC-bus	V_{dc} [V]	560	560	560	560
Rated AC motor voltage	V_n [V]	350	350	350	350
Motor poles number	p_{mot}	6	6	6	6
Resolver poles number	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
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:

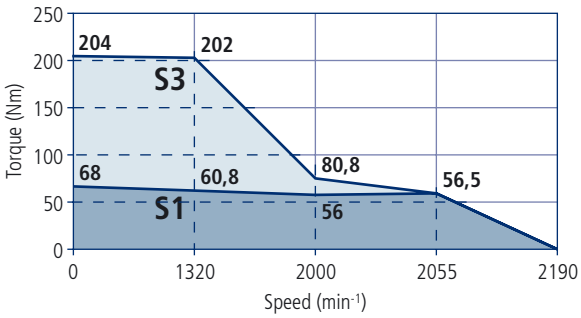
T_{amb} = 40 °C (ambient temperature)
ΔT = 105 °C (winding heating temperature)
S1 curve = for continuous duty
S3 curve = for intermittent duty

Torque-speed characteristic:
ambient temperature 40°C

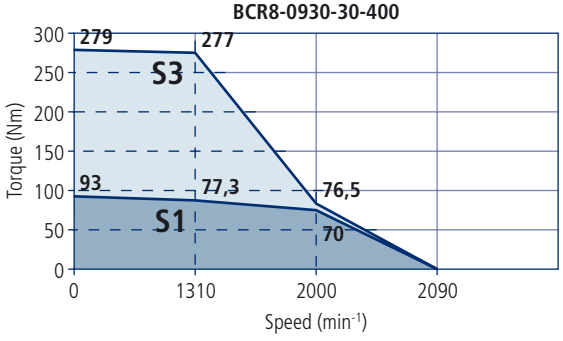
BCR8-0400-30-400



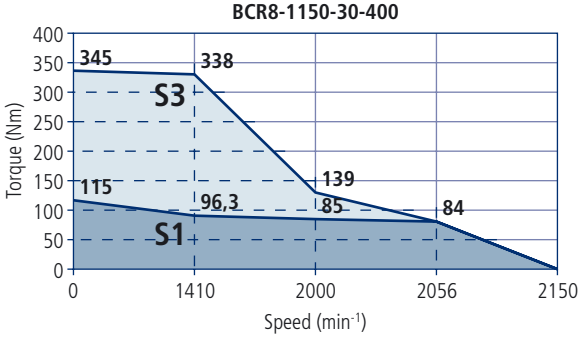
BCR8-0680-30-400



BCR8-0930-30-400

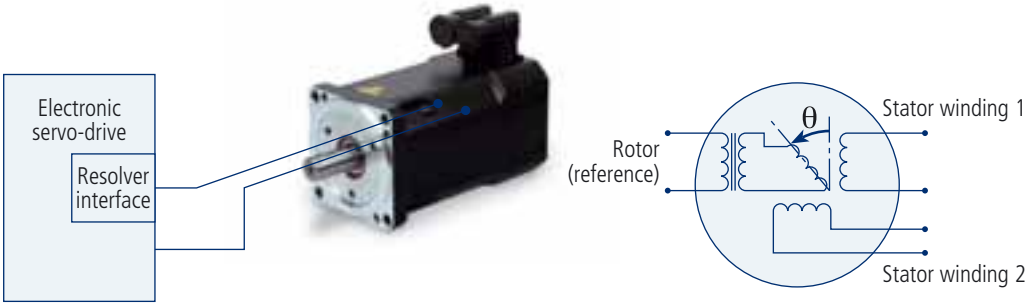


BCR8-1150-30-400

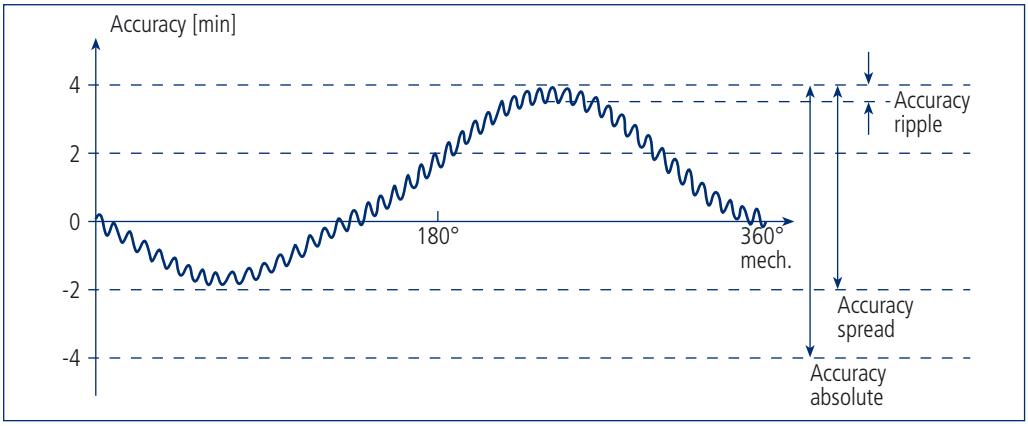


Feedback resolver

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.



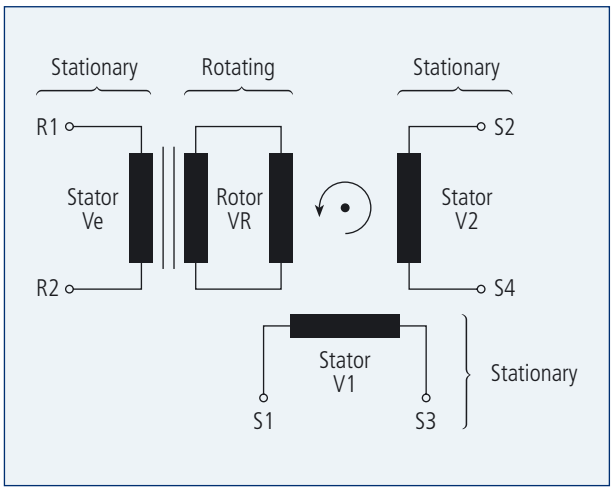
Use of this type of transducer guarantees an absolute accuracy of ± 4′ at the motor shaft as well as a maximum ripple of 1′.



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

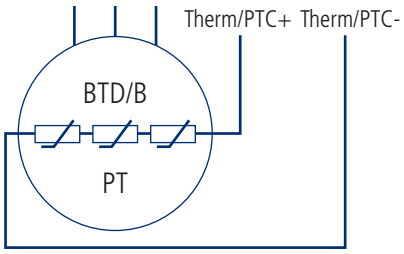
Frequency inverters from the Bonfiglioli Vectron ACTIVE series use a sophisticated electronic interface to acquire drive signals. Use of BCR and BTD servomotors with these frequency inverters dramatically reduces the effects of harmonic distortion on the sinusoidal signals and significantly improves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



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



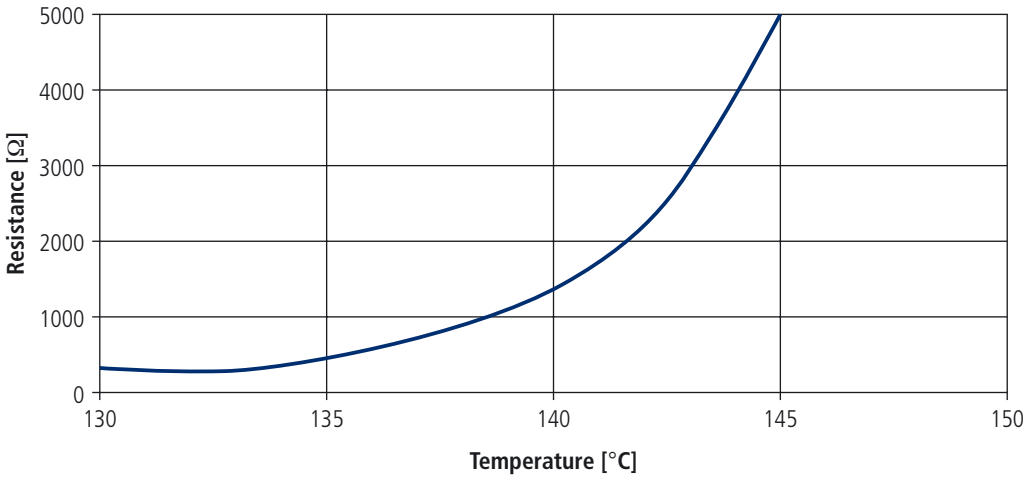
All motors in the BCR and BTD Series are equipped with an integrated PTC temperature sensor to protect the windings against overtemperatures exceeding the capacity of the motor's class F insulation.

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.

PTC 111-K13-140°C

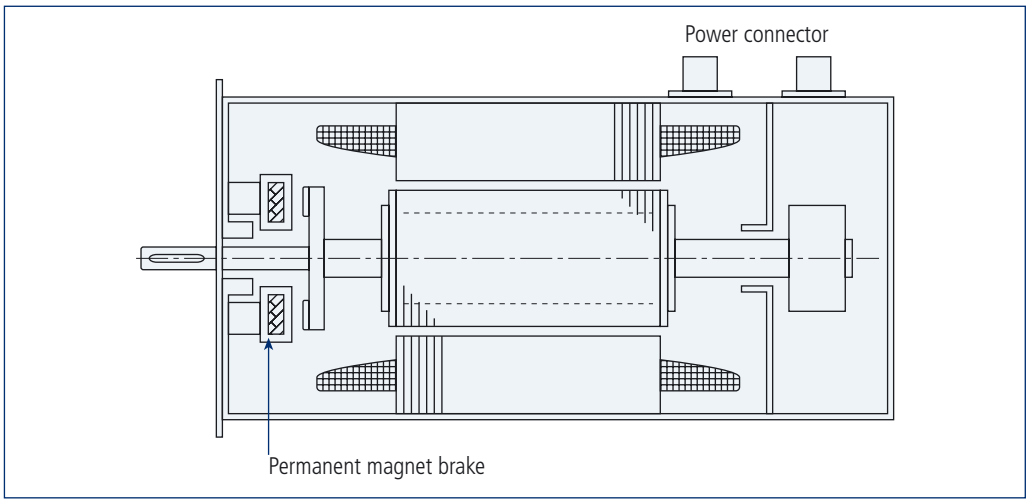


The output signal from the PTC sensor passes through the motor 12 - pin signal connector, on pins 2 (PTC+) and 6 (PTC-), together with the resolver signals.

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.



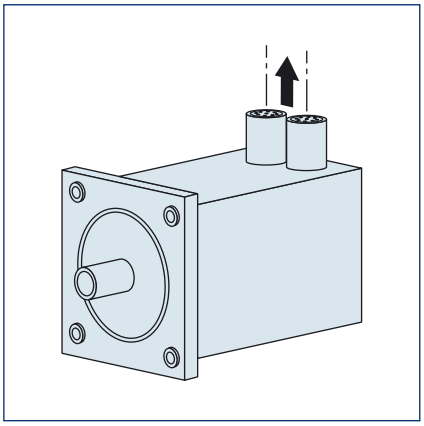
For each motor size, a suitable electromechanical brake is fitted with different braking torque in function of motor features.

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

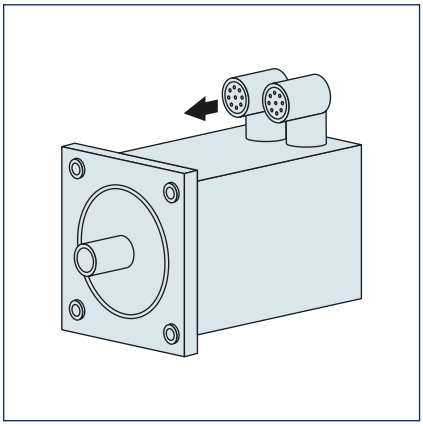
Electrical connectors

Even in their basic configurations, BTD and BCR Series servomotors come complete with all the necessary power and signal connectors.

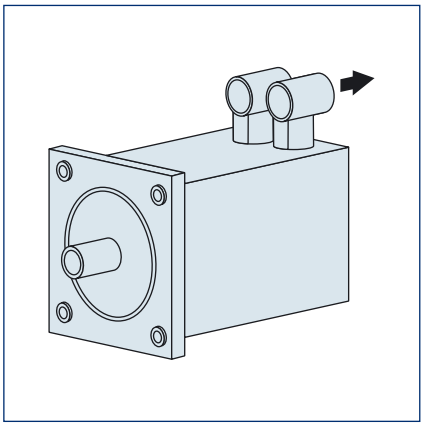
These are located at the top rear of the motor where they are easily accessible to cables.
Connectors come with vertically oriented pins as default, but are also available with horizontal pins either facing the flange (types PA and CA) or facing in the opposite direction (types PB and CB).
Connectors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



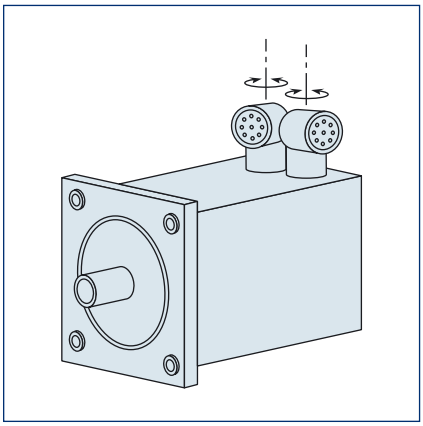
Vertical orientation (default)



Orientation facing flange
PAxx and CAxx



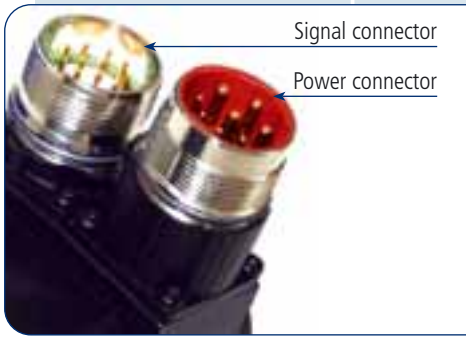
Orientation opposite to flange
PBxx and CBxx



Variable orientation (rotating)
PTxx and CTxx

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

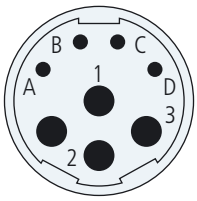
Detail of connectors on motor.
The photo shows standard fixed vertical connectors. The pin layout does not depend on the type of connector but is common to all types of connector, including fixed horizontal and rotating connectors.



Power connector (motor + brake)

Power connectors contain power supply pins for motor and brake, whether the motor is a self-braking model or not.
The pins are arranged in two groups of four in the layout shown in the table below.

Power connector (male)



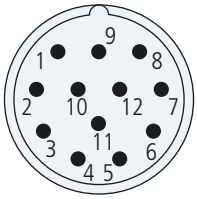
Type: Intercontec type B, size 1, 4+4 poles
Intercontec type B, size 1.5, 4+4 poles (only for BCR8)

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

Signal connector (resolver + PTC sensor)

Signal connectors contain pins for resolver and PTC sensor, which is a standard internal component of all motors.

Resolver + PTC connector (male)



Type: Intercontec type A, 12 poles

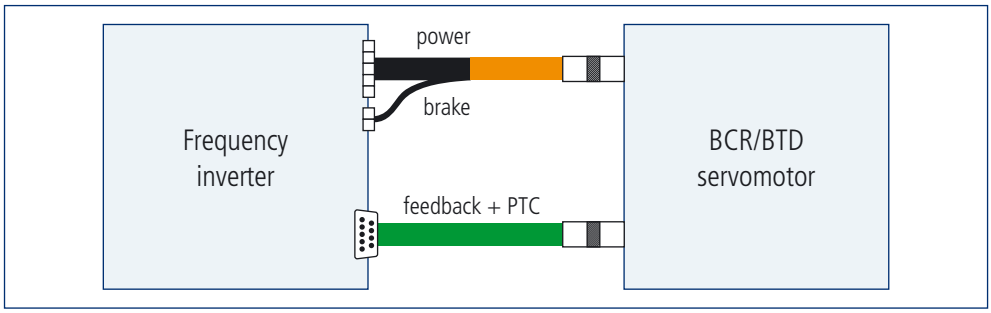
Resolver + PTC	
Pin	**Description**
3	Cos + (S4)
7	Cos - (S2)
4	Sin + (S1)
8	Sin - (S3)
5	Ref + (R2)
9	Ref - (R1)
2	Therm / PTC +
6	Therm / PTC -

Servo-cables (accessories)

The term 'servocable' refers to the electrical cables that connect Bonfiglioli brushless servomotors to their frequency inverters.
An assortment of servocables is available for all sizes of BTD and BCR Series servomotors, for both power supply and signal feedback.
Bonfiglioli servocables logically fall into one of two classes: "power" and "signal".
All cables are available in three lengths:

- 3 m
- 5 m
- 10 m

Power cables can in turn be divided into cables for systems "without brake" and "with brake" for use with either normal servomotors or self-braking servomotors.
Signal cables are designed to carry resolver and PTC temperature sensor signals.

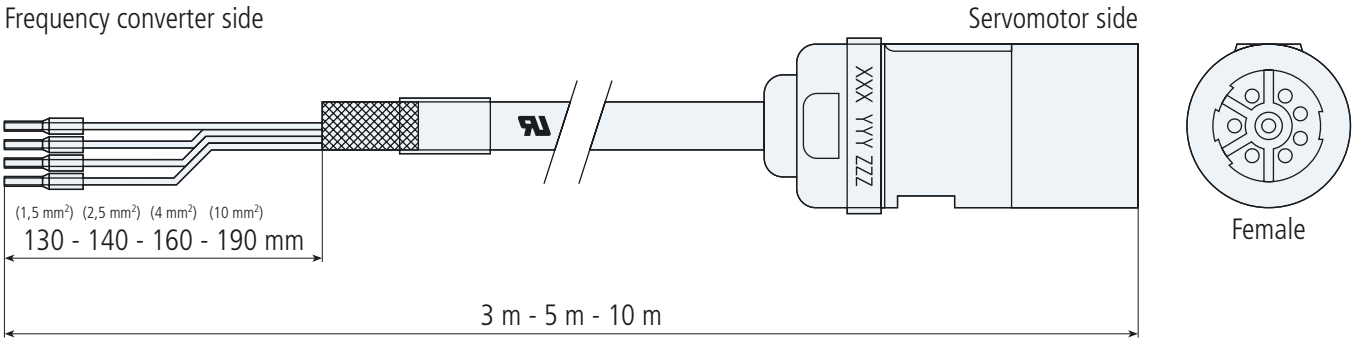


Block diagram of Bonfiglioli servo-package

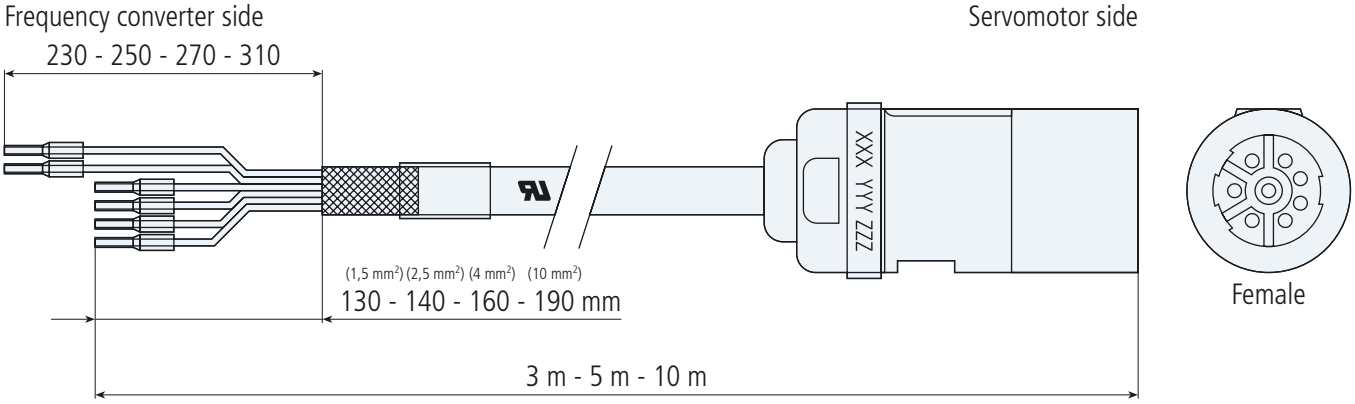
27 different types of Bonfiglioli servocables are available, varying in length and wire thickness according to the following table:

Cable type	Characteristics		Code
Power cables (motor only)	4 x (1.5 mm^2)	3 metres	40MC0315
	4 x (1.5 mm^2)	5 metres	40MC0515
	4 x (1.5 mm^2)	10 metres	40MC1015
	4 x (2.5 mm^2)	3 metres	40MC0325
	4 x (2.5 mm^2)	5 metres	40MC0525
	4 x (2.5 mm^2)	10 metres	40MC1025
	4 x (4 mm^2)	3 metres	40MC0340
	4 x (4 mm^2)	5 metres	40MC0540
	4 x (4 mm^2)	10 metres	40MC1040
	4 x (10 mm^2)	3 metres	40MC03100
	4 x (10 mm^2)	5 metres	40MC05100
	4 x (10 mm^2)	10 metres	40MC10100
Power cables (motor + brake)	4 x (1.5 mm^2) + 2 x (1.0 mm^2)	3 metres	42MBC0315
	4 x (1.5 mm^2) + 2 x (1.0 mm^2)	5 metres	42MBC0515
	4 x (1.5 mm^2) + 2 x (1.0 mm^2)	10 metres	42MBC1015
	4 x (2.5 mm^2) + 2 x (1.0 mm^2)	3 metres	42MBC0325
	4 x (2.5 mm^2) + 2 x (1.0 mm^2)	5 metres	42MBC0525
	4 x (2.5 mm^2) + 2 x (1.0 mm^2)	10 metres	42MBC1025
	4 x (4.0 mm^2) + 2 x (1.5 mm^2)	3 metres	42MBC0340
	4 x (4.0 mm^2) + 2 x (1.5 mm^2)	5 metres	42MBC0540
	4 x (4.0 mm^2) + 2 x (1.5 mm^2)	10 metres	42MBC1040
	4 x (10 mm^2) + 2 x (1 mm^2)	3 metres	42MBC03100
	4 x (10 mm^2) + 2 x (1 mm^2)	5 metres	42MBC05100
	4 x (10 mm^2) + 2 x (1 mm^2)	10 metres	42MBC10100
Signal cables (resolver + PTC sensor)	8 x (0.25 mm^2)	3 metres	8RTC0325
	8 x (0.25 mm^2)	5 metres	8RTC0525
	8 x (0.25 mm^2)	10 metres	8RTC1025

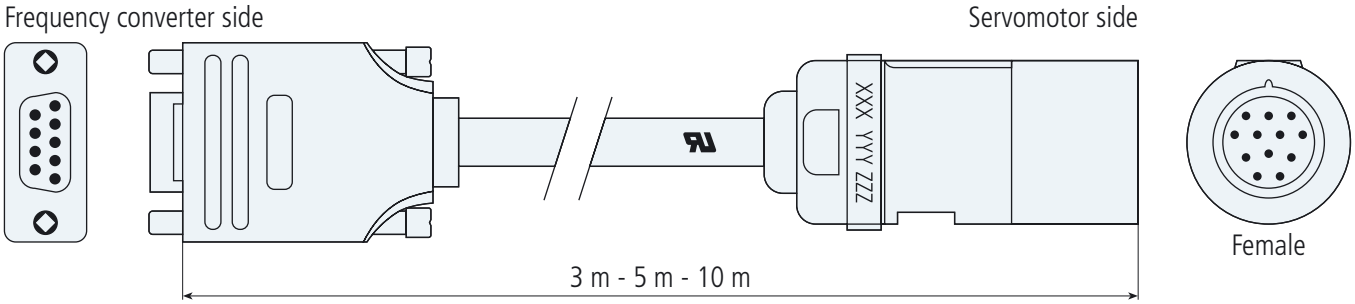
Power cable for motor only (type 40MCXXXX):



Power cable for motor and brake (type 42MBCXXXX):



Signal cable for Resolver and PTC (type 8RTCXXXX):



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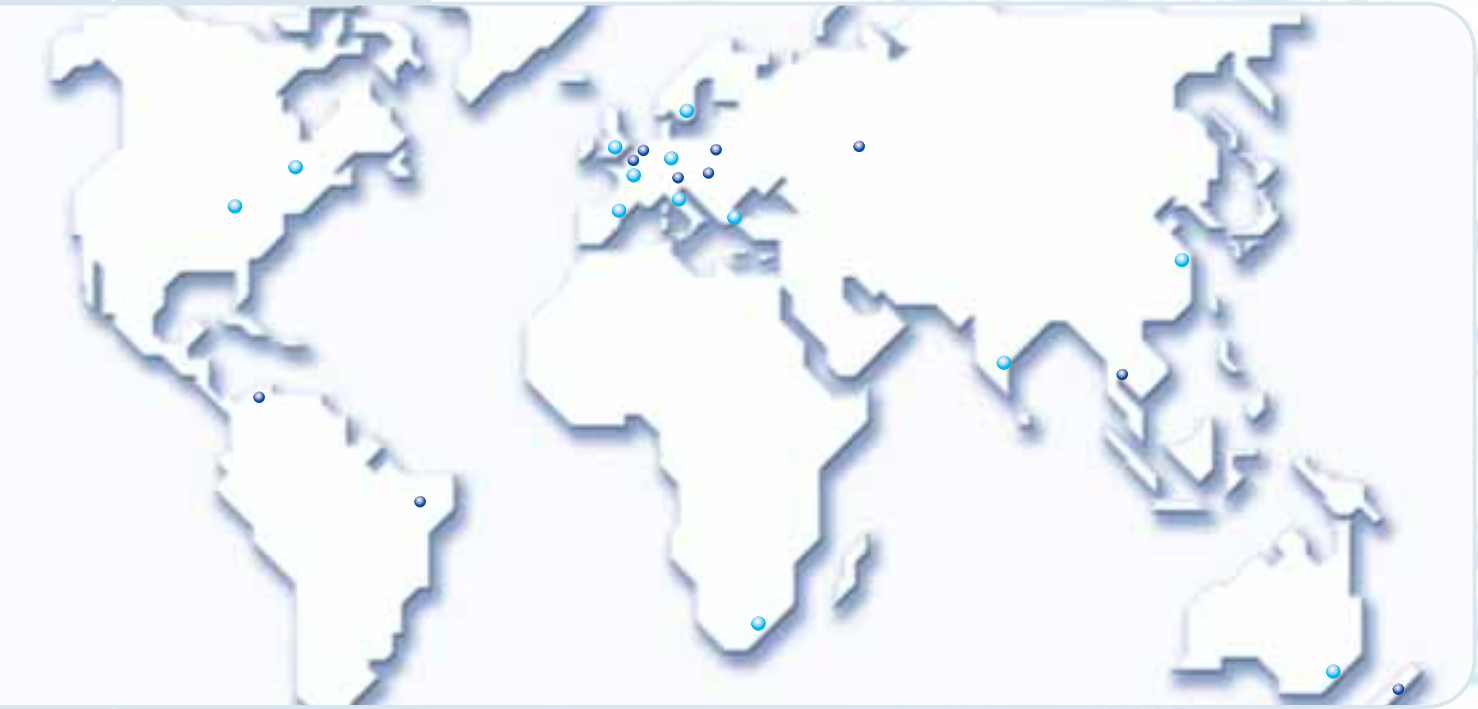

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