

Brushless Motors BR Series

Technology

Solutions

Electric Motors

Specialists in electric motors

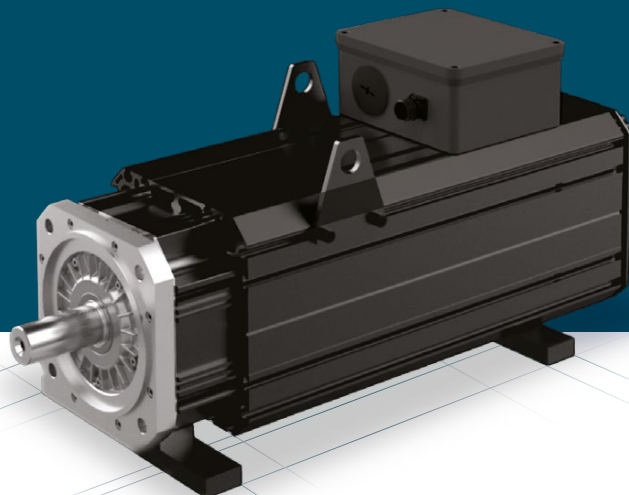
Connectivity

Application solving



Brushless Motors

BR Series



Specifications

- BR series servomotors, are designed to offer the highest dynamic performances in very compact dimensions and find their use in applications such as CNC lathes, servo pumps, metalworking machines, and woodworking machines.
- The use of Neodymium Iron Boron magnets with a high energy product, makes it possible to obtain motors with high specific power, capable of withstanding large overloads without risk of demagnetization.
- Low rotor inertias ensure the possibility of high acceleration and deceleration.
- Many sizes are available to cover a nominal torque range of 0.5 to 530 Nm and 3 speeds for each size.
- Ventilation is available for sizes BR7, BR8, and BR9.
- Electrical and mechanical customizations are made for all sizes (shaft size, painting, connections, IP protection, B5 and B35 construction form, etc.).
- Two brake options are available: permanent magnet or spring pressure brakes, and different types of feedback (resolvers, encoders, etc.).
- UL/CSA certification.

HIGHLIGHTS...

Liquid-cooled motor available for size BR9

Water is primarily conducted in the liquid-cooled motor because water has the best heat transfer coefficient. The water is circulated through the engine and repeatedly cooled by an external cooling unit. So, the motor does not overheat, and working at an optimal temperature, it can deliver a higher torque rating than an air-cooled motor. The general rule of thumb: the more current fed to the motor, the hotter the motor gets and the more it must be cooled to prevent its deterioration.

Choosing the right cooling method is not easy. Many factors contribute to the decision, and the reason for choosing water-cooled electric motors can be varied; here are the STRENGTHS:

- Water-cooled electric motors can dissipate heat better than air-cooled motors, so they can deliver high levels of torque without overheating the motor, and thus more dynamic processes are possible. These good properties of water-cooled motors, as far as dynamics are concerned, make it possible to reduce cycle times and increase machine productivity.
- When using water cooling, the requirements of small size, high dynamics, and high torque can be met through optimal cooling.
- Water cooling does not require cleaning related to fans, which by air impurities become dirty and prevent effective motor cooling; therefore, it results in minimal maintenance costs and increased hygiene especially in food processing.
- The effectiveness of water cooling does not depend on ambient temperature, and there is no loss of performance.
- Without fan motors, there is a significantly lower noise level when using water cooling.



Standard features

- Winding: three-phase star without accessible neutral
- Winding insulation: class H according to CEI 2-3 (2000)
- Dimensioning: class F (dT_{max}=105K) according to CEI EN 60034-1 (2000)
- Degree of protection: IP54 according to CEI EN 60034-5 (2001)
- Position sensor: 2-pole resolver
- Cooling: IC 410 (motor without servo-ventilation), IC 416 (servo-ventilated motor) according to CEI EN 60034-6 (1997)
- Grade of balancing: G 2.5 in accordance with ISO 1940-1 (1993) (balancing with half key for shafts with key CEI 2-23 (1993))
- Bearings: lubricated for life
- Thermal protection: thermal protector with normally closed contact. Operating temperature 130±5°C. (Maximum voltage 250Vac, maximum current 5Aac)
- Construction type: IM B5 according to CEI EN 60034-7 (1993)
- Operating position: any
- Colour: black RAL 9005
- Reference conditions: ambient temperature +40°C, max. altitude 1000m a.s.l.
- Storage temperature: -10°C ÷ +70°C
- Reference switching frequency: 8kHz

Options

- Position sensor:
 - digital encoder + Hall probes,
 - sinusoidal encoder,
 - EnDat absolute encoder,
 - Hyperface absolute encoder,
 - DSL encoder,
- Degree of protection: IP65 (refer to data in manual)
- Flying connector for power and signal
- Parking brake
- Keyless shaft
- Design: IM B35 according to IEC EN 60034-7 (1993)
- Oil seal (to be requested only if oil bath coupling is envisaged)
- Oil drain hole (for size 8 and 9)
- Special executions according to customer specifications

NEW STRENGTH

Brusatori Motors with Functional Safety

Safety as a duty and priority always! This is why Brusatori introduces a functional safety system in the DL4 motor range to ensure a high level of reliability and risk control to the product. By modifying the transducer fixing system inside the DL4 motor, or by directly introducing a Safety encoder, the safety of both the machinery and the operator involved is simultaneously guaranteed, and this is a very important added value and a guarantee for the market in which you are an active player.

Functional Safety means:

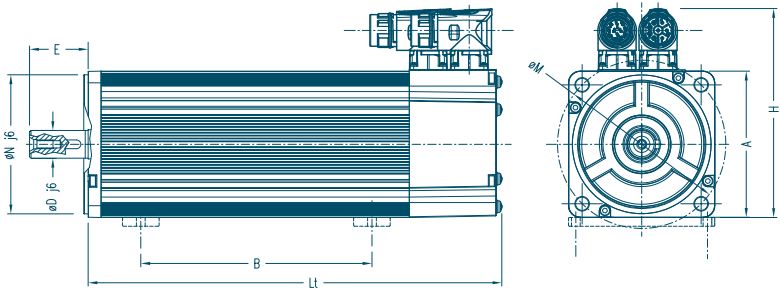
- regulatory
- reliability, management, control and predictability of risk
- user benefits
- systematic capability related to reliable product design
- constraints on the architecture of the object that affect its safety level
- PFD or PFH, i.e., the probability of dangerous random failures.

At present, 4 Encoders with Safety (FS) functionality are planned to be introduced, to which a new Resolver will be added.

- Encoder Hyperface SRS50S SAFETY
- Encoder Hyperface SRM50S SAFETY
- Encoder EnDat22 ECN1325 SAFETY
- Encoder EnDat22 EQN1337 SAFETY
- Resolver SAFETY

Motors

BR_03-05

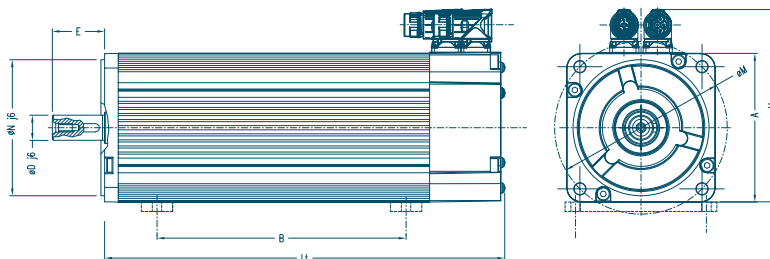


S I Z E	V O L T A G E	F A N	L E N G T H	UL/CSA AVAILABLE	S P E E D (rpm)	M O T O R D A T A									D I M E N S I O N S													
						T ₀ (Nm)	T _N (Nm)	P _N (W)	T _{max} (Nm)	I ₀ (Arms)	I _N (Arms)	I _{max} (Arms)	n _N (rpm)	J _m (kgcm ²)	B	Lt	D x E standard / on request	N	M	H	A							
B R 0 3	2 3 0 V	NO	32	YES (OBJY 2/8)	3000	0,8	0,64	201	2,4	0,94	0,78	2,75	3000	0,4	/	151	11 x 23 / 14 x 30	60	75	116,5	75							
					4000		0,64	268		1,3	1,08	3,78	4000															
					6000		0,64	402		1,95	1,62	5,68	6000															
		NO	34	YES (OBJY 2/8)	3000	1,6	1,3	408	4,8	1,7	1,43	4,95	3000	0,75														
					4000		1,3	545		2,26	1,91	6,59	4000															
					6000		1,3	817		3,54	2,98	10,3	6000															
	NO	36	YES (OBJY 2/8)	3000	2,4	1,9	597	7,2	2,61	2,15	7,61	3000	1,1															
				4000		1,9	796		3,39	2,79	9,89	4000																
				6000		1,9	1194		5,14	4,23	15	6000																
	NO	38	YES (OBJY 2/8)	3000	3	2,3	723	9	3,25	2,58	9,46	3000	1,45															
				4000		2,3	963		4,19	3,33	12,2	4000																
				6000		2,3	1445		6,63	5,28	19,3	6000																
	4 0 0 V	NO	32	YES (OBJY 2/8)	3000	0,8	0,64	201	2,4	0,65	0,54	1,9	3000	0,4														
					4000		0,64	268		0,82	0,68	2,38	4000															
					6000		0,64	402		1,06	0,88	3,09	6000															
		NO	34	YES (OBJY 2/8)	3000	1,6	1,3	408	4,8	1,05	0,88	3,05	3000	0,75														
					4000		1,3	545		1,36	1,15	3,96	4000															
					6000		1,3	817		2	1,68	5,82	6000															
NO		36	YES (OBJY 2/8)	3000	2,4	1,9	597	7,2	1,66	1,37	4,85	3000	1,1															
				4000		1,9	796		2	1,64	5,82	4000																
				6000		1,9	1194		3,03	2,49	8,83	6000																
NO		38	YES (OBJY 2/8)	3000	3	2,3	723	9	1,87	1,49	5,46	3000	1,45															
				4000		2,3	963		2,45	1,95	7,13	4000																
				6000		2,3	1445		3,7	2,94	10,8	6000																
B R 0 5	4 0 0 V	NO	51	YES	2000	2	1,8	377	6	0,87	0,81	2,53	2000	1,25	50	176*	19 x 40 / 14 x 30	95	115	143	100							
					3000		1,75	550		1,39	1,26	4,04	3000															
					4000		1,7	712		1,72	1,52	5,02	4000															
		NO	52	YES	2000	4	3,7	775	12	1,64	1,57	4,78	2000	2														
					3000		3,6	1131		2,55	2,38	7,44	3000															
					4000		3,5	1466		3,34	3,03	9,73	4000															
		NO	53	YES	2000	5,4	5	1047	16,2	2,32	2,23	6,76	2000	2,8														
					3000		4,8	1508		3,43	3,16	9,99	3000															
					4000		4,6	1927		4,59	4,06	13,4	4000															
		NO	54	YES	2000	6,9	6,3	1319	20,7	2,92	2,76	8,5	2000	3,5														
					3000		6	1885		4,32	3,9	12,6	3000															
					4000		5,6	2346		5,83	4,91	17	4000															
		NO	55	YES	2000	8,2	7,3	1529	24,6	3,41	3,15	9,95	2000	4,25														
					3000		6,8	2136		5,16	4,44	15	3000															
					4000		6,2	2597		6,93	5,44	20,2	4000															
		NO	56	YES	2000	9,3	8,2	1717	27,9	4,03	3,69	11,8	2000	5														
					3000		7,5	2356		5,99	5,02	17,5	3000															
					4000		6,7	2806		7,77	5,81	22,6	4000															
		NO	57	YES	2000	10,4	8,9	1864	31,2	4,37	3,88	12,7	2000	5,8														
					3000		8	2513		6,7	5,35	19,5	3000															
					4000		7	2932		8,74	6,11	25,5	4000															
		NO	58	YES	2000	11,5	9,6	2011	34,5	4,99	4,32	14,5	2000	6,5														
					3000		8,5	2670		7,2	5,53	21	3000															
					4000		7,5	3142		9,72	6,58	28,3	4000															

* with brake: + 40 mm

Motors

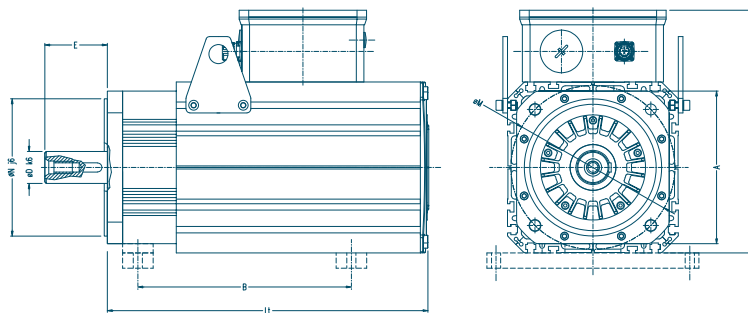
BR_07-V7



S I Z E	F A N	L E N G T H	UL/CSA AVAILABLE	S P E E D (rpm)	MOTOR DATA									DIMENSIONS						
					T ₀ (Nm)	T _N (Nm)	P _N (W)	T _{max} (Nm)	I ₀ (Arms)	I _N (Arms)	I _{max} (Arms)	n _N (rpm)	J _m (kgcm ²)	B	Lt	D x E standard / on request	N	M	H	A
B R 0 7	NO	071	YES	1500	5,8	5,6	880	13,2	1,9	1,9	4,5	1500	5,2	73*	217*	24 x 50 / 28 x 60	130	165	185	142
				2000		5,5	1152	12,7	2,4	2,4	5,5	2000								
				3000		5,4	1696	12,4	3,5	3,3	7,6	3000								
	NO	072	YES	1500	11,6	10,2	1602	25,9	3,7	3,4	8,6	1500	8,5	100*	245*					
				2000		10	2094	25,6	4,9	4,4	11	2000								
				3000		9,8	3079	25,4	7,2	6,2	16	3000								
	NO	073	YES	1500	17,5	16,5	2592	37,7	5,5	5,3	12,1	1500	11,8	128*	273*					
				2000		16	3351	38,6	7,4	7	16,7	2000								
				3000		14,1	4430	37,5	10,6	8,8	23,2	3000								
	NO	074	YES	1500	22	20,5	3220	48,3	6,6	6,4	14,9	1500	15,1	155*	300*					
				2000		20	4189	50	9	8,5	21,1	2000								
				3000		16,5	5184	50	13,4	10,3	30,9	3000								
	NO	075	YES	1500	25,5	24	3770	63	8	7,8	20,3	1500	18,4	183*	328*					
				2000		23,3	4880	61,1	10,2	9,7	25,2	2000								
				3000		18,5	5812	62,5	15,5	11,5	38,6	3000								
	NO	076	YES	1500	30	27,5	4320	74,4	9,2	8,8	23,6	1500	21,7	210*	355*					
				2000		25,6	5362	75,9	12,4	11	32,4	2000								
				3000		20	6283	75	18,2	12,5	46,4	3000								
	NO	077	YES	1500	34,2	30,5	4791	87,9	10,7	9,9	28,2	1500	25	238*	383*	28 x 60 / 24 x 50				
				2000		27,9	5843	88	14,1	11,9	37,3	2000								
				3000		21,3	6692	88,2	20,9	13,4	55	3000								
	NO	078	YES	1500	38,7	33,5	5262	100	12	10,8	32	1500	28,3	265*	410*					
				2000		30,4	6367	100	15,9	12,9	42,2	2000								
				3000		22,2	6974	100	23,5	13,9	61,8	3000								
B R V 7	YES	V71	YES	1500	8,1	7,4	1166	15,9	2,7	2,5	5,4	1500	5,2	/	312*	24 x 50 / 28 x 60	130	165	224	142
				2000		7	1466	15,3	3,4	3	6,5	2000								
				3000		6,3	1979	14,9	4,8	3,9	9,1	3000								
	YES	V72	YES	1500	15,4	14,6	2296	31,1	5	4,9	10,3	1500	8,5		340*					
				2000		14	2932	30,7	6,5	6,1	13,2	2000								
				3000		12,6	3958	30,5	9,4	8	19,2	3000								
	YES	V73	YES	1500	23	22	3456	45,2	7,2	7,1	14,5	1500	11,8		368*					
				2000		21,5	4503	46,3	9,7	9,4	20,1	2000								
				3000		19,5	6126	45	13,8	12,2	27,8	3000								
	YES	V74	YES	1500	31	29	4555	58	9,3	9	17,9	1500	15,1		395*					
				2000		28	5864	60	12,7	11,9	25,3	2000								
				3000		24	7540	60	18,6	15	37,1	3000								
	YES	V75	YES	1500	37	34	5341	75,7	11,6	11,1	24,4	1500	18,4		423*					
				2000		32,5	6807	73,3	14,8	13,5	30,2	2000								
				3000		28,5	8954	75	22,2	17,8	46,4	3000								
	YES	V76	YES	1500	42	39	6126	89,2	12,9	12,5	28,3	1500	21,7		450*					
				2000		37,5	7854	91	17,4	16,1	38,8	2000								
				3000		33	10367	90	25,3	20,6	55,7	3000								
	YES	V77	YES	1500	48	44,3	6959	105,5	15	14,4	33,9	1500	25		478*	28 x 60 / 24 x 50				
				2000		42	8796	105,6	19,8	18	44,8	2000								
				3000		36	11310	105,9	29,1	22,7	66	3000								
	YES	V78	YES	1500	54	49	7697	120	16,8	15,8	38,4	1500	28,3		505*					
				2000		47	9844	120	22,1	20	50,6	2000								
				3000		39	12252	120	32,5	24,3	74,2	3000								

* with brake: + 50 mm

Motors BR_08-V8



Pitch motors

Again with a view to energy saving and the use of renewable energy, Brusatori has for several years now been developing a number of types of pitch motors, starting with the first ones with DC power supply and then moving on to those with brushless technology.

These motors must guarantee robustness and a long service life, and have been designed for three main types of installation: onshore, nearshore and offshore.

Each of these requires specific characteristics due to the environmental conditions in which the motors operate.

For this reason, the choice of components produced by world-leading companies, the type of coating applied to the products, the high level of testing during the construction and final testing phases make the products ideal for the heavy-duty use to which they will be subjected.

Brusatori products can be used in turbines with a power output of over 10MW.

Main features

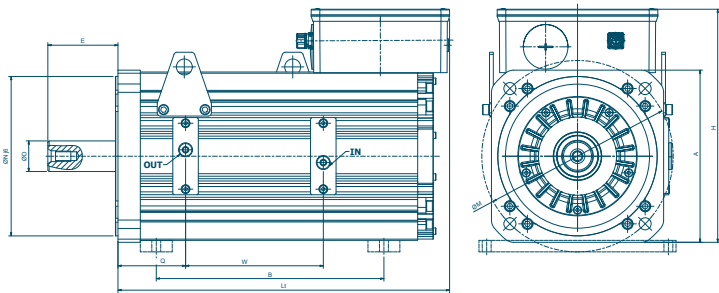
- Nominal torque up to 330Nm and peak torque 750Nm
- Possibility of equipping the motor with various types of resolver and encoder
- Motor equipped with parking brake
- Painting for onshore, nearshore, offshore environment
- Operating temperature -20 to +40°C
- Protection class IP65

S I Z E	F A N	L E N G T H	UL/CSA AVAILABLE	S P E E D (rpm)	MOTOR DATA									DIMENSIONS																																			
					T ₀ (Nm)	T _N (Nm)	P _N (W)	T _{max} (Nm)	I ₀ (Arms)	I _N (Arms)	I _{max} (Arms)	n _N (rpm)	J _m (kgcm ²)	B	Lt	D x E standard/ on request	N	M	H	A																													
B R 0 8	NO	082	YES	1000	32,5	31,5	3299	88	6,72	6,7	18,4	1000	49	156*	259*	42 x 82 / 38 x 80	180	215	272	200																													
				2000		30,5	6388		14,8	14,3	40,4	2000																																					
				3000		29,5	9268		20,2	18,8	55,1	3000																																					
	NO	084	YES	1000	60	56	5864	165	13,6	13,1	37,9	1000	89	231*	333*						42 x 82 / 38 x 80	180	215	272	200																								
				2000		51	10681		25,6	22,4	71	2000																																					
				3000		44	13823		40,9	30,9	114	3000																																					
	NO	086	YES	1000	82	72	7540	239	17	15,3	49,9	1000	128	306*	408*				42 x 82 / 38 x 80							180	215	272	200																				
				2000		62	12985		37,3	29	110	2000																																					
				3000		53	16650		46,6	31	137	3000																																					
	NO	088	YES	1000	102	90	9425	290	21,7	19,7	62,4	1000	167	380*	483*									42 x 82 / 38 x 80						180	215	272	200																
				2000		76,3	15980		43,5	33,5	125	2000																																					
				3000		65	20420		58	38	166	3000																																					
B R V 8	YES	V82	YES	1000	45	42,7	4472	100	9,3	9,08	21,9	1000	49	276*	383*													42 x 82 / 38 x 80						180	215	320	200												
				2000		42	8796		20,5	19,7	48,1	2000																																					
				3000		43	13509		27,9	27,4	65,6	3000																																					
	YES	V84	YES	1000	89	87	9111	218	20,2	20,4	52,4	1000	89	351*	428*																	42 x 82 / 38 x 80						180	215	320	200								
				2000		85	17802		37,9	37,3	98,3	2000																																					
				3000		80	25133		60,7	56,1	157	3000																																					
	YES	V86	YES	1000	130	124	12985	300	26,9	26,4	65,6	1000	128	426*	502*																					42 x 82 / 38 x 80						180	215	320	200				
				2000		118	24714		59,1	55,2	144	2000																																					
				3000		111	34872		73,9	64,9	180	3000																																					
	YES	V88	YES	1000	163	154	16127	400	34,7	33,8	90,2	1000	167	500*	577*																									42 x 82 / 38 x 80						180	215	320	200
				2000		144	30159		69,5	63,2	180	2000																																					
				3000		137	43040		92,7	80,1	241	3000																																					

* with brake: + 120 mm

Motors

BR_09-V9-W9



S I Z E	F A N	L E N G T H	UL/CSA AVAILABLE	S P E E D (rpm)	MOTOR DATA								DIMENSIONS																																
					T ₀ (Nm)	T _N (Nm)	P _N (W)	T _{max} (Nm)	I ₀ (Arms)	I _N (Arms)	I _{max} (Arms)	n _N (rpm)	J _m (kgcm ²)	B	Lt	D x E standard	N	M	H	A																									
B R 0 9	NO	092	YES	1000	100 (153)	93 (142)	9739 (14870)	168	21,6 (33)	21,6 (33)	38,3	1000	224	200*	340*	48 x 110	250	300	364	270																									
				2000	100 (151)	76 (130)	15917 (27227)		40,5 (61,1)	33,1 (56,6)	71,9	2000																																	
				3000	100 (151)	60 (93)	18850 (29217)		54 (81,5)	34,8 (54)	95,8	3000																																	
	NO	094	YES	1000	182 (270)	150 (230)	15708 (24086)	295	36,8 (54,7)	32,7 (50,1)	63,1	1000	401	307*	447*						48 x 110	250	300	364	270																				
				2000	182 (270)	113 (210)	23667 (43982)		73,7 (109)	49,2 (91,4)	126	2000																																	
				3000	182 (270)	45 (150)	14137 (47124)		98 (146)	26,1 (87,1)	168	3000																																	
	NO	096	YES	1000	270 (400)	205 (320)	21468 (33510)	440	58,3 (86,4)	47,6 (74,3)	100	1000	577	414*	554*				48 x 110							250	300	364	270																
				2000	270 (440)	115 (330)	24086 (69115)		97,2 (158)	44,5 (128)	167	2000																																	
				3000	270 (400)	0 (225)	0 (70686)		143 (216)	0 (131)	251	3000																																	
	NO	098	YES	1000	340 (493)	270 (370)	28274 (38746)	530	68,8 (99,8)	58,8 (80,6)	113	1000	753	521*	661*									48 x 110						250	300	364	270												
				2000	340 (493)	130 (342)	27227 (71628)		138 (200)	56,6 (149)	227	2000		521*	687*																														
				3000	340 (493)	0 (245)	0 (76969)		184 (266)	0 (142)	302	3000		521*	687*																														
B R V 9	YES	V92	YES	1000	145	143	14975	305	31,3	33,2	69	1000	224	300*	470*					48 x 110								250						300	364	270									
				2000	145	125	26180	305	58,7	54,4	130	2000																																	
				2800	145	117	34306	305	78,3	67,9	174	2800																																	
	YES	V94	YES	1000	310	290	30369	620	62,8	63,1	133	1000	401	407*	577*										48 x 110							250					300	364	270						
				2000	310	260	54454	620	127,3	110,2	265	2000																																	
				2800	300	230	67440	600	161,9	133,5	342	2800																																	
	YES	V96	YES	1000	440	395	41364	840	95	91,7	192	1000	577	514*	684*														48 x 110						250					300	364	270			
				2000	440	350	73304	840	158,3	135,5	319	2000																																	
				2800	440	300	87965	750	237,5	174,2	428	2800																																	
	YES	V98	YES	1000	580	530	55501	1100	117,4	115,4	235	1000	753	621*	791*																		48 x 110					250					300	364	270
				2000	580	470	98437	950	239,3	204,7	406	2000																																	
				2800	580	320	93829	880	313,1	185,8	502	2800																																	

* with brake: + 135 mm

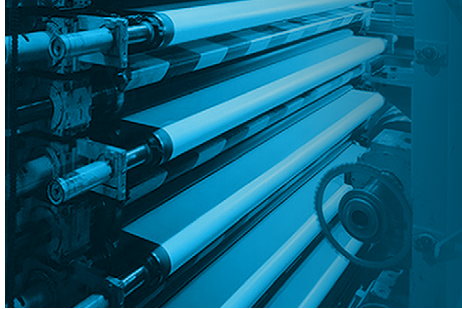
S I Z E	F A N	L E N G T H	S P E E D (rpm)	MOTOR DATA (WATER COOLED)										DIMENSIONS									
				T ₀ (Nm)	T _N (Nm)	P _N (W)	T _{max} (Nm)	I ₀ (Arms)	I _N (Arms)	I _{max} (Arms)	n _N (rpm)	J _m (kgcm ²)	Q (L/min)	B	Lt	Q	W	D x E standard / on request	N	M	H	A	
B R W 9	NO	W92	1000	185	167	17436	290	47	48	85	1000	224	6	250	413	102,5	120	48 x 110 / 55 x 110	250	300	365	270	
			1800		157	29594		82	79	149	1800												
			2600		145	39479		132	116	227	2600												
	NO	W94	1000	385	350	36652	590	97	90	168	1000	401	8	357	520	106	216						
			1800		330	62204		170	149	288	1800												
			2600		310	84404		227	187	355	2600												
	NO	W96	1000	555	510	53407	810	126	118	196	1000	577	10	464	606	109,5	312	55 x 110					
			1800		480	90478		209	185	327	1800												
			2600		445	121161		314	257	505	2600												
	NO	W98	1000	770	720	75398	1100	188	181	287	1000	753	12	567	709	113	408						
			1800		735	685		129119	314	301	501												1800

Applications



PLASTICS

Extrusion lines, pipe machines, profile machines, stretch lines, tape lines, recycling lines



PRINTING

Rotogravure printing machines, flexographic printing machines, converting lines, laminators, coating lines



TEXTILE

Ironers, dryers, vaporizers, calenders



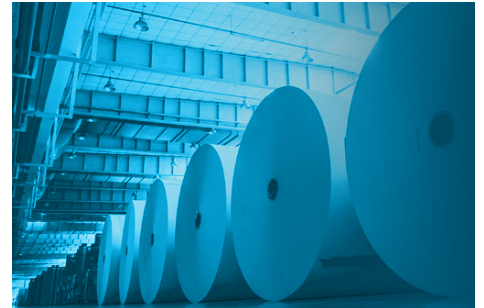
METALS

Winders-unwinders, loaders and stackers, tube lines, drawing lines, cable production lines, longitudinal and transverse cutting lines



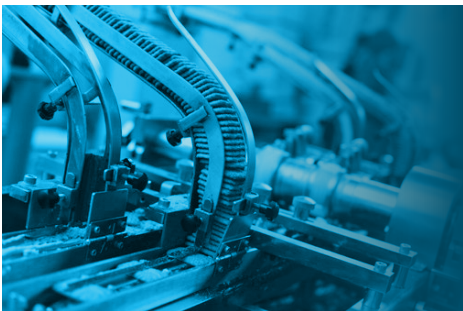
MACHINE TOOLS

Grinders, milling machines, machining centers, sawing machines



PAPER

Winders-unwinders, cutters, rewinders, wrappers



FOOD

Pasta machines, slaughterhouses lines, hydropulishers



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