

# Brushless DC-Servomotors

## 47,1 mNm

**For combination with**  
 Gearheads:  
 30/1(S), 32/3(S), 38A, 38/1(S), 38/2(S)  
 Encoders:  
 IE3-1024(L), 5500, 5540  
 Drive Electronics:  
 Speed Controller, Motion Controller

### Series 3564 ... B

	3564 K	012 B	024 B	036 B	048 B	
1 Nominal voltage	$U_N$	12	24	36	48	Volt
2 Terminal resistance, phase-phase	R	0,6	1,2	2,8	4,4	$\Omega$
3 Output power <sup>1)</sup>	$P_{2 \text{ max.}}$	109	101	101	101	W
4 Efficiency	$\eta_{\text{ max.}}$	81	81	81	82	%
5 No-load speed	$n_o$	7 850	11 300	11 550	12 200	rpm
6 No-load current (with shaft $\varnothing$ 4,0 mm)	$I_o$	0,206	0,189	0,131	0,109	A
7 Stall torque	$M_H$	291	371	379	401	mNm
8 Friction torque, static	$C_o$	1,10	1,10	1,10	1,10	mNm
9 Friction torque, dynamic	$C_v$	$2,4 \cdot 10^{-4}$	$2,4 \cdot 10^{-4}$	$2,4 \cdot 10^{-4}$	$2,4 \cdot 10^{-4}$	mNm/rpm
10 Speed constant	$k_n$	658	475	324	258	rpm/V
11 Back-EMF constant	$k_E$	1,521	2,107	3,089	3,877	mV/rpm
12 Torque constant	$k_M$	14,52	20,12	29,50	37,02	mNm/A
13 Current constant	$k_i$	0,069	0,050	0,034	0,027	A/mNm
14 Slope of n-M curve	$\Delta n / \Delta M$	27	31	31	31	rpm/mNm
15 Terminal inductance, phase-phase	L	96	194	427	678	$\mu\text{H}$
16 Mechanical time constant	$\tau_m$	10	11	11	11	ms
17 Rotor inertia	J	34	34	34	34	$\text{gcm}^2$
18 Angular acceleration	$\alpha_{\text{ max.}}$	86	109	111	118	$10^3 \text{rad/s}^2$
19 Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	2,5 / 6,3				K/W
20 Thermal time constant	$\tau_{w1} / \tau_{w2}$	23 / 1 175				s
21 Operating temperature range		- 30 ... +125				$^{\circ}\text{C}$
22 Shaft bearings		ball bearings, preloaded				
23 Shaft load max.:						
– radial at 3 000/20 000 rpm (7,4 mm from mounting flange)		108 / 73				N
– axial at 3 000/20 000 rpm (push-on only)		50 / 30				N
– axial at standstill (push-on only)		131				N
24 Shaft play:						
– radial	$\leq$	0,015				mm
– axial	$=$	0				mm
25 Housing material		aluminium, black anodized				
26 Weight		310				g
27 Direction of rotation		electronically reversible				
<b>Recommended values - mathematically independent of each other</b>						
28 Speed up to <sup>2)</sup>	$n_{\text{e max.}}$	27 000	27 000	27 000	27 000	rpm
29 Torque up to <sup>1) 2)</sup>	$M_{\text{e max.}}$	47,1	44,0	43,9	44,0	mNm
30 Current up to <sup>1) 2)</sup>	$I_{\text{e max.}}$	3,68	2,50	1,71	1,36	A

<sup>1)</sup> at 22 000 rpm

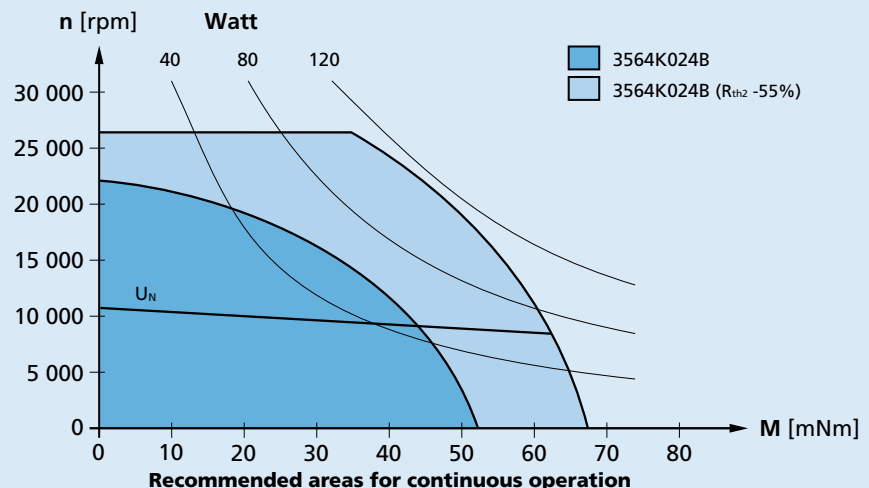
<sup>2)</sup> thermal resistance  $R_{\text{th} 2}$  by 55% reduced

#### Note:

The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{\text{th} 2}$  55% reduced).

The nominal voltage ( $U_N$ ) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.

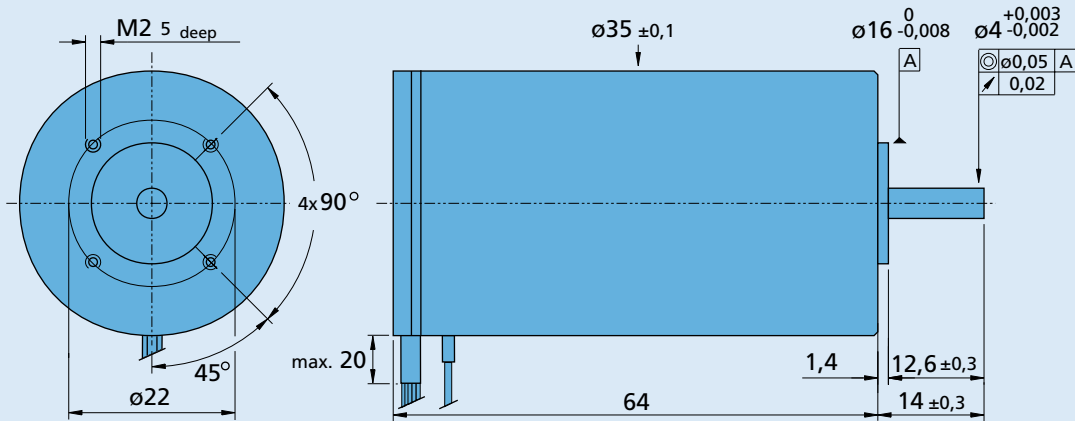


**Options**

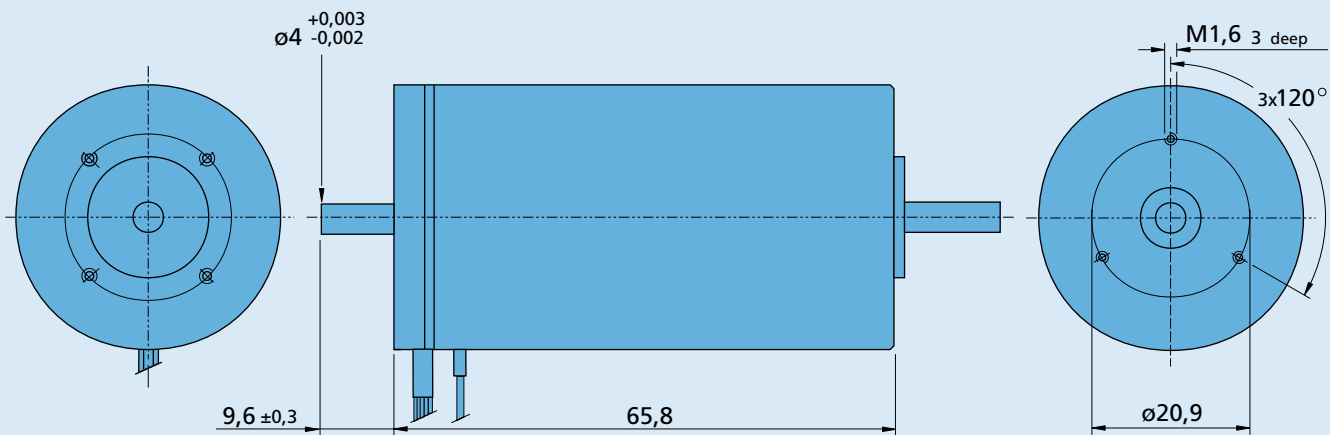
K1000:  
Motors in autoclavable version.

K1155:  
Motors for operation with Motion Controllers

**3564 K ... B**



**3564 K ... B - K312 with rear end shaft**



**Cable and connection information**

