

Brushless DC-Servomotors

2 Pole Technology

18 mNm
51 W

Series 2444 ... B

Values at 22°C and nominal voltage		2444 S	024 B	048 B	
1	Nominal voltage	U_N	24	48	V
2	Terminal resistance, phase-phase	R	2	8,54	Ω
3	Efficiency, max.	η_{max}	79	78	%
4	No-load speed	n_0	22 200	21 600	min ⁻¹
5	No-load current, typ. (with shaft \varnothing 3 mm)	I_0	0,159	0,076	A
6	Stall torque	M_H	123	118,5	mNm
7	Friction torque, static	C_0	0,746	0,746	mNm
8	Friction torque, dynamic	C_V	$3,87 \cdot 10^{-5}$	$3,87 \cdot 10^{-5}$	mNm/min ⁻¹
9	Speed constant	k_n	927	450	min ⁻¹ /V
10	Back-EMF constant	k_E	1,08	2,22	mV/min ⁻¹
11	Torque constant	k_M	10,3	21,2	mNm/A
12	Current constant	k_I	0,097	0,047	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	180	181	min ⁻¹ /mNm
14	Terminal inductance, phase-phase	L	175	740	μ H
15	Mechanical time constant	τ_m	10,8	10,8	ms
16	Rotor inertia	J	5,7	5,7	gcm ²
17	Angular acceleration	α_{max}	216	208	$\cdot 10^3$ rad/s ²
18	Thermal resistance	R_{th1} / R_{th2}	2,4 / 11,6		K/W
19	Thermal time constant	τ_{w1} / τ_{w2}	9,6 / 470		s
20	Operating temperature range:				
	– motor		-30 ... +125		°C
	– winding, max. permissible		+125		°C
21	Shaft bearings		ball bearings, preloaded		
22	Shaft load max.:				
	– with shaft diameter		3		mm
	– radial at 3 000 min ⁻¹ (5 mm from mounting flange)		31		N
	– axial at 3 000 min ⁻¹ (push only)		16		N
	– axial at standstill (push only)		57		N
23	Shaft play:				
	– radial	\leq	0,015		mm
	– axial	$=$	0		mm
24	Housing material		aluminium, black anodized		
25	Mass		98		g
26	Direction of rotation		electronically reversible		
27	Speed up to	n_{max}	45 000		min ⁻¹
28	Number of pole pairs		1		
29	Hall sensors		digital		
30	Magnet material		SmCo		
Rated values for continuous operation					
31	Rated torque	M_N	14,2	14,3	mNm
32	Rated current (thermal limit)	I_N	1,58	0,772	A
33	Rated speed	n_N	18 800	18 100	min ⁻¹

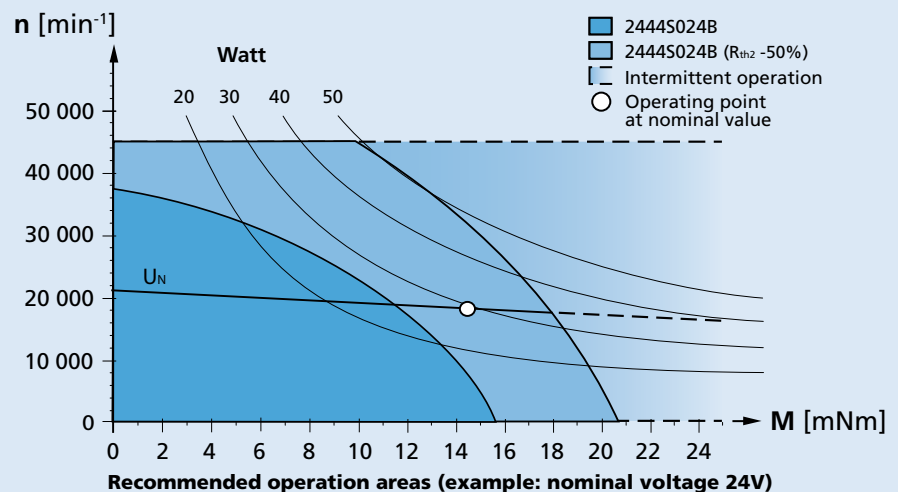
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

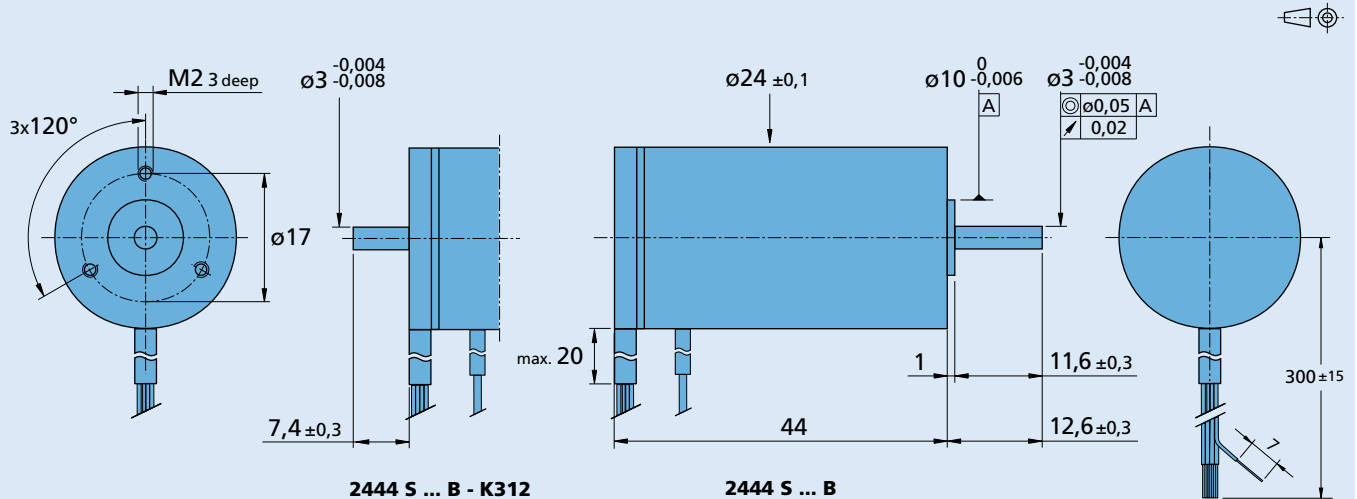
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition (R_{th2} 50% 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.



Dimensional drawing



Option, cable and connection information

Example product designation: **2444S024B-K1155**

Option	Type	Description	Connection	
			Function	Colour
K1155	Controller combination	Analog Hall sensors for combination with Motion Controller MCBL		
K1026	Sensorless	Motor without Hall sensors		
K1555	Lead wires length	Single lead wires 750 mm long in PTFE	Phase B	yellow
K903	Lead wires length	Single lead wires 1000 mm long in PTFE	Phase A	orange
K1838	Encoder combination	Motor with rear end shaft for combination with Encoder IE3	GND	black
K313	Encoder combination	Motor with rear end shaft for combination with Encoder IE2	U _{DD} (+5V)	red
K312	Encoder combination	Motor with rear end shaft for combination with Encoder HEDS/HEDL/HEDM	Hall sensor C	grey
K179	Bearing lubrication	For vacuum of 10 ⁻⁵ Pa @ 22°C	Hall sensor B	blue
			Hall sensor A	green
			Standard cable	
			Single wires, material PTFE	
			AWG 24: Phase A/B/C	
			AWG 26: Hall A/B/C, U _{DD} , GND	

Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
22/7 23/1 26/1 26/1 S 30/1 30/1 S	HEDS 5500 IE3-1024 IE3-1024 L HEDL 5540	SC 2402 SC 2804 SC 5004 SC 5008 MC 5004 MC 5005 MCBL 3002 MCBL 3003 MCBL 3006	MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter.