

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

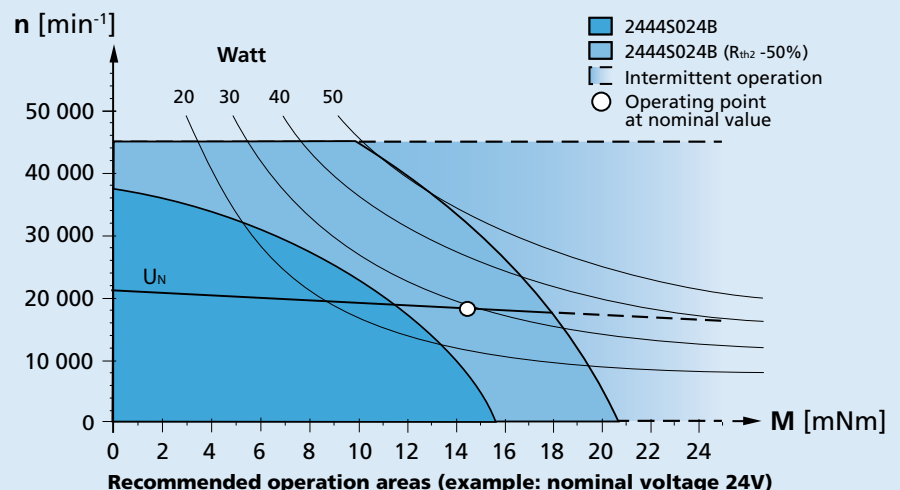
Note: Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The R_{th2} value has been reduced by 25%.

Note:

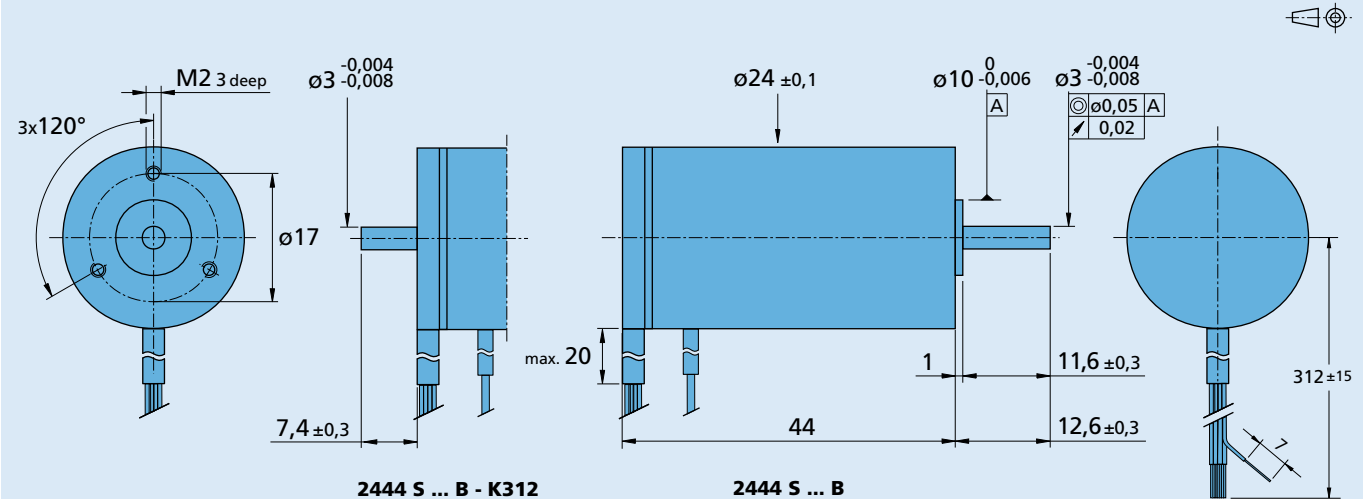
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

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	Phase C	yellow
K1026	Sensorless	Motor without Hall sensors	Phase B	orange
K1555	Lead wires length	Single lead wires 750 mm long in PTFE	Phase A	brown
K903	Lead wires length	Single lead wires 1000 mm long in PTFE	GND	black
K1838	Encoder combination	Motor with rear end shaft for combination with Encoder IE3	U _{DD} (+5V)	red
K313	Encoder combination	Motor with rear end shaft for combination with Encoder IE2	Hall sensor C	grey
K312	Encoder combination	Motor with rear end shaft for combination with Encoder HEDS/HEDL/HEDM	Hall sensor B	blue
K3051	Encoder combination	Motor with rear end shaft for combination with Encoder AES	Hall sensor A	green
K179	Bearing lubrication	For vacuum of 10 ⁻⁵ Pa @ 22°C	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
22GPT	HEDS 5500	SC 2402 P	MBZ To view our large range of accessory parts, please refer to the "Accessories" chapter.
22/7	IE3-1024	SC 2804 S	
23/1	IE3-1024 L	SC 5004 P	
26/1	HEDL 5540	SC 5008 S	
26/1R	AES-4096	MCBL 3002 P	
30/1	AES-4096 L	MCBL 3002 S	
30/1 S		MCBL 3003 P	
		MCBL 3006 S	
		MC 5004 P	
		MC 5004 P STO	
		MC 5005 S	