

Brushless DC-Servomotors

202 mNm

For combination with
 Gearheads:
 38A, 44/1
 Encoders:
 IE3-1024(L), 40B
 Drive Electronics:
 Speed Controller, Motion Controller

Series 4490 ... BS

| | 4490 H | 024 BS | 036 BS | 048 BS | |
|---|-------------------------------------|---------------------------|---------------------|---------------------|------------------------------|
| 1 Nominal voltage | U_N | 24 | 36 | 48 | Volt |
| 2 Terminal resistance, phase-phase | R | 0,690 | 1,340 | 2,130 | Ω |
| 3 Output power ¹⁾ | $P_{2 \text{ max.}}$ | 207 | 210 | 212 | W |
| 4 Efficiency | $\eta_{\text{ max.}}$ | 85 | 85 | 86 | % |
| 5 No-load speed | n_0 | 5 450 | 5 790 | 6 060 | rpm |
| 6 No-load current (with shaft \varnothing 6,0 mm) | I_0 | 0,217 | 0,160 | 0,129 | A |
| 7 Stall torque | M_H | 1 455 | 1 584 | 1 689 | mNm |
| 8 Friction torque, static | C_0 | 3,65 | 3,65 | 3,65 | mNm |
| 9 Friction torque, dynamic | C_v | $1,0 \cdot 10^{-3}$ | $1,0 \cdot 10^{-3}$ | $1,0 \cdot 10^{-3}$ | mNm/rpm |
| 10 Speed constant | k_n | 228 | 162 | 127 | rpm/V |
| 11 Back-EMF constant | k_E | 4,384 | 6,185 | 7,871 | mV/rpm |
| 12 Torque constant | k_M | 41,86 | 59,06 | 75,16 | mNm/A |
| 13 Current constant | k_I | 0,024 | 0,017 | 0,013 | A/mNm |
| 14 Slope of n-M curve | $\Delta n / \Delta M$ | 3,8 | 3,7 | 3,6 | rpm/mNm |
| 15 Terminal inductance, phase-phase | L | 220 | 435 | 720 | μH |
| 16 Mechanical time constant | τ_m | 5 | 5 | 5 | ms |
| 17 Rotor inertia | J | 130 | 130 | 130 | gcm^2 |
| 18 Angular acceleration | $\alpha_{\text{ max.}}$ | 112 | 122 | 130 | $\cdot 10^3 \text{ rad/s}^2$ |
| 19 Thermal resistance | $R_{\text{th} 1} / R_{\text{th} 2}$ | 1,35 / 3,94 | | | K/W |
| 20 Thermal time constant | τ_{w1} / τ_{w2} | 29 / 1 756 | | | s |
| 21 Operating temperature range | | - 30 ... +125 | | | $^{\circ}\text{C}$ |
| 22 Shaft bearings | | ball bearings, preloaded | | | |
| 23 Shaft load max.: | | | | | |
| – radial at 3 000/10 000 rpm (13,5 mm from mounting flange) | | 103 / 66 | | | N |
| – axial at 3 000/10 000 rpm (push-on only) | | 45 / 30 | | | N |
| – axial at standstill (push-on only) | | 135 | | | N |
| 24 Shaft play: | | | | | |
| – radial | \leq | 0,015 | | | mm |
| – axial | $=$ | 0 | | | mm |
| 25 Housing material | | aluminium, black anodized | | | |
| 26 Weight | | 750 | | | g |
| 27 Direction of rotation | | electronically reversible | | | |
| Coil connection | | Y Star-circuit | | | |

Recommended values - mathematically independent of each other

| | | | | | |
|-----------------------------------|----------------------|--------|--------|--------|-----|
| 28 Speed up to ²⁾ | $n_{e \text{ max.}}$ | 16 000 | 16 000 | 16 000 | rpm |
| 29 Torque up to ^{1) 2)} | $M_{e \text{ max.}}$ | 197,8 | 200,4 | 202,4 | mNm |
| 30 Current up to ^{1) 2)} | $I_{e \text{ max.}}$ | 5,05 | 3,63 | 2,88 | A |

¹⁾ at 10 000 rpm

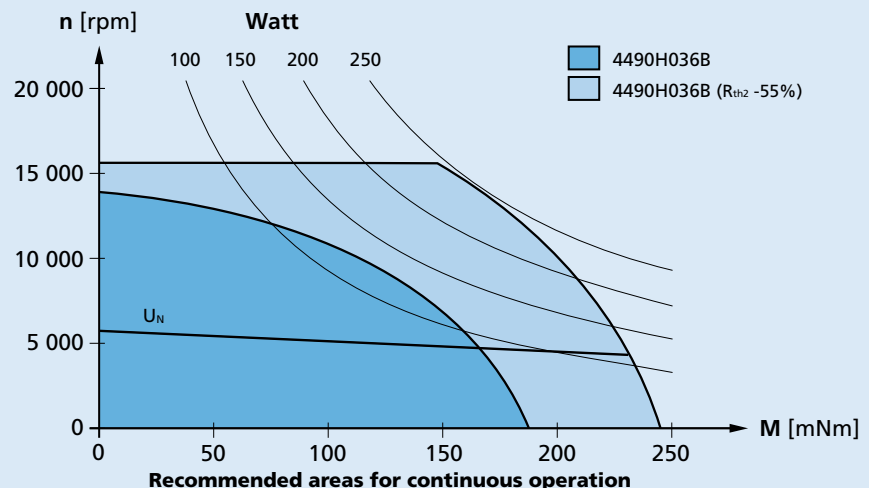
²⁾ thermal resistance $R_{\text{th} 2}$ by 55% reduced

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.

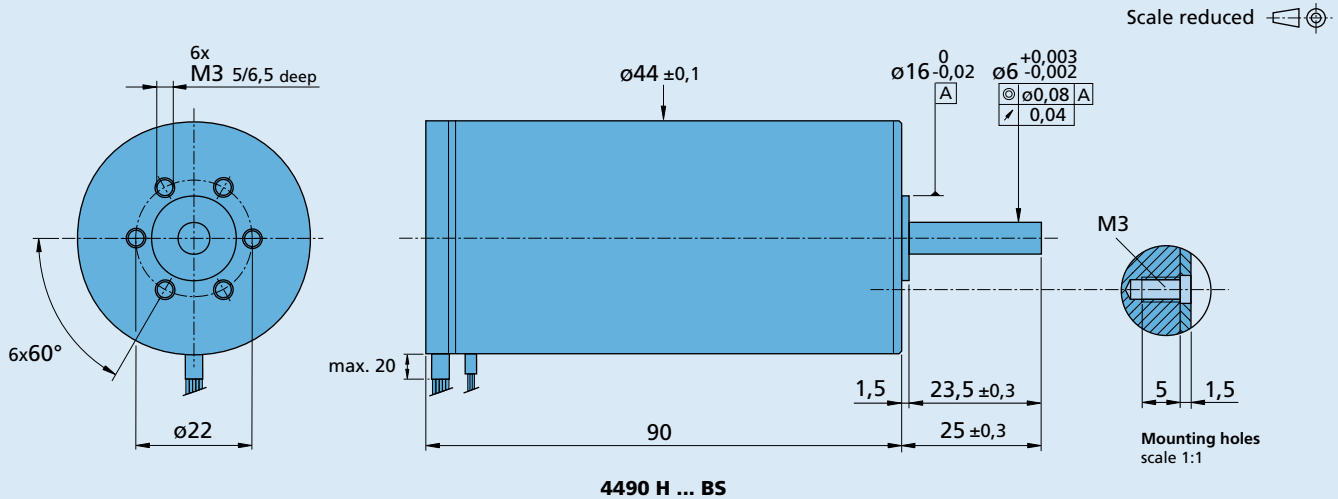
The diagram shows the motor in a completely insulated as well as thermally coupled condition ($R_{\text{th} 2}$ 55% reduced).

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.

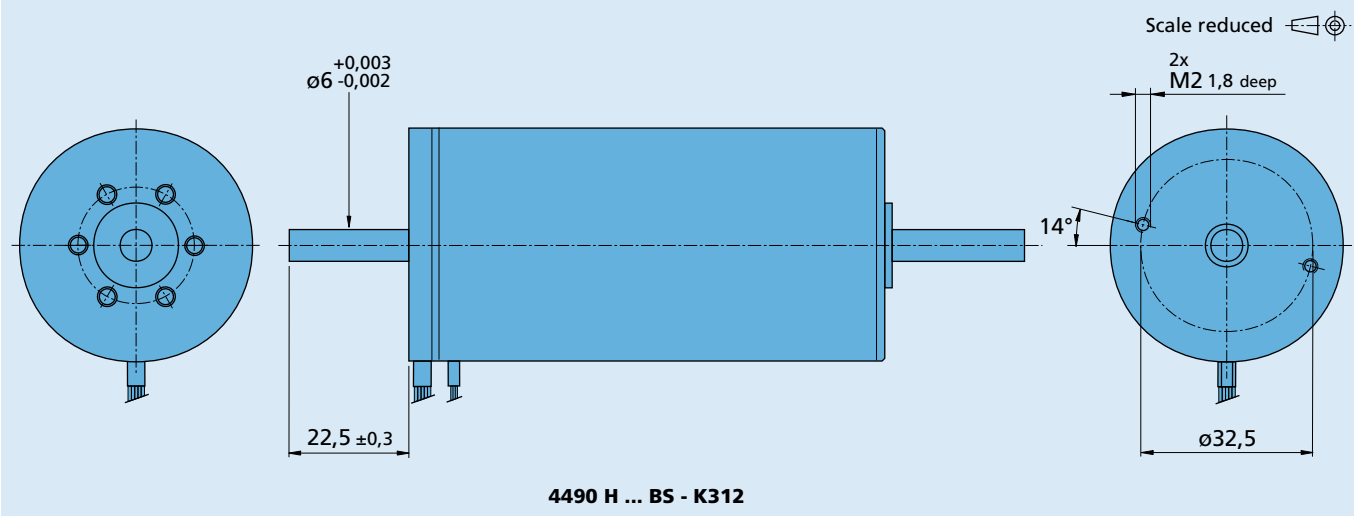


Options
K1155:
 Motors for operation with Motion Controllers

4490 H ... BS



4490 H ... BS - K312 with rear end shaft



Cable and connection information

