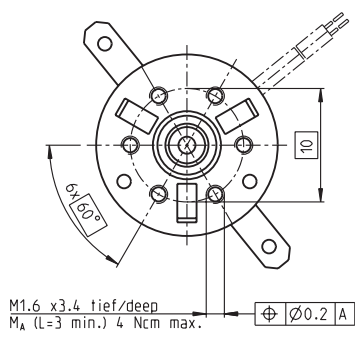
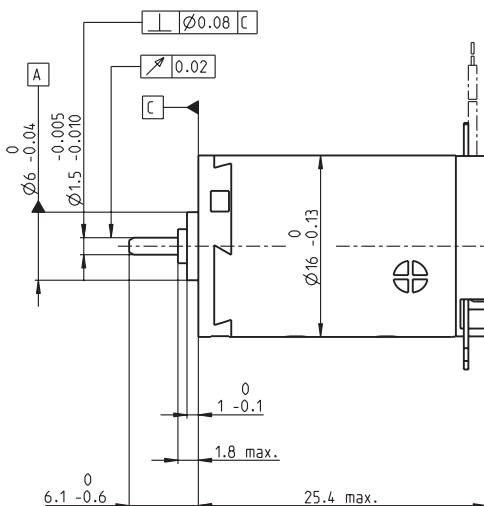
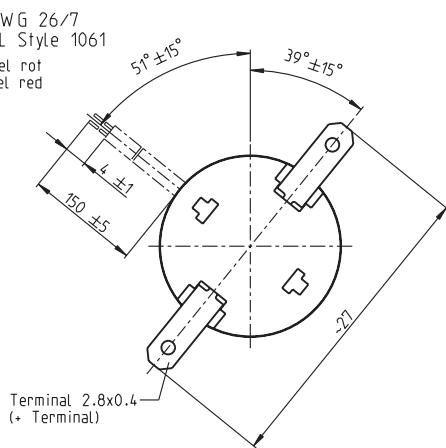


# A-max 16 $\varnothing 16$ mm, Precious Metal Brushes CLL, 2 Watt, C€ approved

Kabel AWG 26/7  
cabel UL Style 1061

⊕ Kabel rot  
cabel red



**M 1.5:1**

- Stock program
- Standard program
- Special program (on request)

## Order Number

with terminals	110041	110042	110043	110044	110045	110046	110047	110048	110049	110050
with cables	139820	352815	134844	231379	220514	304672	352823	352816	260678	352817

## Motor Data

### Values at nominal voltage

1 Nominal voltage	V	1.5	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0	30.0
2 No load speed	rpm	10800	12300	10100	12300	12300	13200	14100	13700	13800	11400
3 No load current	mA	61.3	38.1	13.9	12.7	9.54	8.57	7.99	6.53	5.83	3.37
4 Nominal speed	rpm	9140	8690	4510	6690	6650	7580	8480	8040	8120	5480
5 Nominal torque (max. continuous torque)	mNm	0.713	1.30	2.21	2.18	2.17	2.17	2.15	2.14	2.10	2.08
6 Nominal current (max. continuous current)	A	0.600	0.600	0.406	0.326	0.243	0.209	0.185	0.153	0.134	0.0864
7 Stall torque	mNm	4.79	4.51	4.03	4.82	4.77	5.16	5.44	5.22	5.12	4.04
8 Starting current	A	3.66	1.97	0.723	0.702	0.520	0.482	0.453	0.362	0.315	0.164
9 Max. efficiency	%	76	75	75	76	76	76	76	76	75	74

### Characteristics

10 Terminal resistance	$\Omega$	0.410	1.52	8.30	12.8	23.1	31.1	39.7	57.9	76.2	183
11 Terminal inductance	mH	0.017	0.0519	0.306	0.467	0.831	1.13	1.42	2.05	2.61	6.01
12 Torque constant	mNm / A	1.31	2.29	5.57	6.88	9.17	10.7	12.0	14.4	16.3	24.7
13 Speed constant	rpm / V	7290	4170	1720	1390	1040	893	795	663	587	387
14 Speed / torque gradient	rpm / mNm	2280	2770	2560	2590	2620	2600	2630	2670	2750	2880
15 Mechanical time constant	ms	25.2	23.7	23.1	23.2	23.2	23.2	23.3	23.3	23.4	23.8
16 Rotor inertia	gcm <sup>2</sup>	1.05	0.816	0.864	0.854	0.844	0.854	0.848	0.834	0.811	0.788

## Specifications

### Thermal data

17 Thermal resistance housing-ambient	29.8 K / W
18 Thermal resistance winding-housing	5.5 K / W
19 Thermal time constant winding	3.53 s
20 Thermal time constant motor	313 s
21 Ambient temperature	-30 ... +65°C
22 Max. permissible winding temperature	+85°C

### Mechanical data (sleeve bearings)

23 Max. permissible speed	19000 rpm
24 Axial play	0.05 - 0.15 mm
25 Radial play	0.012 mm
26 Max. axial load (dynamic)	0.8 N
27 Max. force for press fits (static)	35 N
28 Max. radial loading, 5 mm from flange	1.4 N

### Mechanical data (ball bearings)

23 Max. permissible speed	19000 rpm
24 Axial play	0.05 - 0.15 mm
25 Radial play	0.025 mm
26 Max. axial load (dynamic)	2.2 N
27 Max. force for press fits (static)	30 N
28 Max. radial loading, 5 mm from flange	7.8 N

### Other specifications

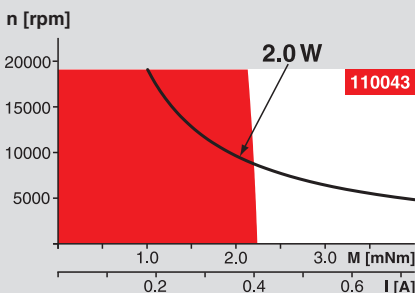
29 Number of pole pairs	1
30 Number of commutator segments	7
31 Weight of motor	21 g
CLL = Capacitor Long Life	

Values listed in the table are nominal.  
Explanation of the figures on page 49.

### Option

Ball bearings in place of sleeve bearings  
Without CLL

## Operating Range



## Comments

- Continuous operation**  
In observation of above listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient.  
= Thermal limit.
- Short term operation**  
The motor may be briefly overloaded (recurring).
- Assigned power rating**

## maxon Modular System

Overview on page 16 - 21

### Spur Gearhead

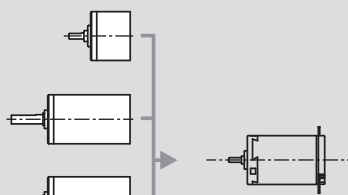
$\varnothing 16$  mm  
0.01 - 0.1 Nm  
Page 211 / 212 / 213 / 214

### Planetary Gearhead

$\varnothing 16$  mm  
0.06 - 0.18 Nm  
Page 215

### Planetary Gearhead

$\varnothing 16$  mm  
0.1 - 0.3 Nm  
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**Recommended Electronics:**  
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