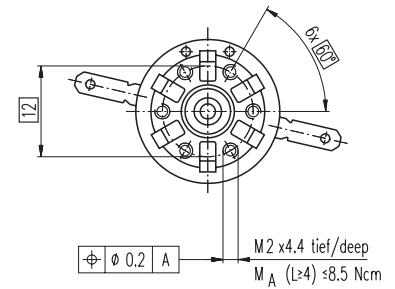
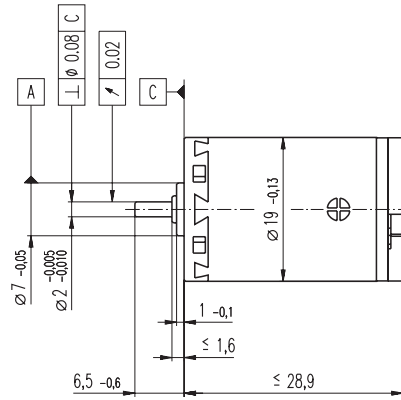
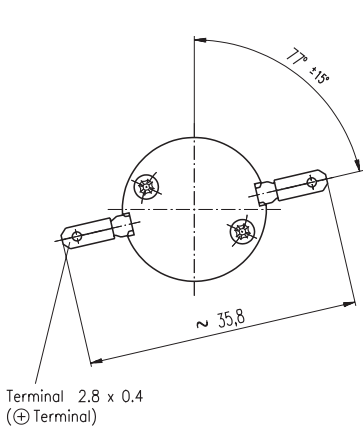


# A-max 19 Ø19 mm, Precious Metal Brushes CLL, 2.5 Watt, CE approved



## M 1:1

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

### Order Number

110081	110082	110083	110084	110085	110086	110087	110088	110089
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Motor Data		110081	110082	110083	110084	110085	110086	110087	110088	110089	
<b>Values at nominal voltage</b>											
1	Nominal voltage	V	1.5	3.6	4.5	6.0	9.0	12.0	15.0	18.0	24.0
2	No load speed	rpm	8010	10800	9400	7780	9200	10300	10300	9290	8850
3	No load current	mA	77.5	52.6	33.5	18.5	16.2	14.6	11.7	8.22	5.7
4	Nominal speed	rpm	6660	8040	5690	4020	5490	6530	6520	5470	4930
5	Nominal torque (max. continuous torque)	mNm	1.35	2.49	3.61	3.61	3.62	3.52	3.52	3.51	3.43
6	Nominal current (max. continuous current)	A	0.840	0.840	0.828	0.513	0.406	0.333	0.266	0.199	0.139
7	Stall torque	mNm	8.12	9.79	9.19	7.52	9.02	9.67	9.65	8.57	7.80
8	Starting current	A	4.62	3.13	2.04	1.04	0.982	0.884	0.705	0.472	0.307
9	Max. efficiency	%	76	76	77	76	77	77	77	76	75
<b>Characteristics</b>											
10	Terminal resistance	Ω	0.325	1.15	2.20	5.77	9.17	13.6	21.3	38.2	78.2
11	Terminal inductance	mH	0.0186	0.0587	0.121	0.314	0.506	0.719	1.12	1.98	3.87
12	Torque constant	mNm / A	1.76	3.13	4.50	7.23	9.19	10.9	13.7	18.2	25.4
13	Speed constant	rpm / V	5430	3050	2120	1320	1040	873	698	525	376
14	Speed / torque gradient	rpm / mNm	1000	1120	1040	1050	1040	1080	1090	1100	1160
15	Mechanical time constant	ms	26.6	24.3	23.7	23.6	23.5	23.6	23.7	23.7	24.0
16	Rotor inertia	gcm <sup>2</sup>	2.53	2.07	2.18	2.14	2.16	2.08	2.08	2.05	1.98

### Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient 21.3 K / W
  - 18 Thermal resistance winding-housing 10.5 K / W
  - 19 Thermal time constant winding 11 s
  - 20 Thermal time constant motor 351 s
  - 21 Ambient temperature -30 ... +65°C
  - 22 Max. permissible winding temperature +85°C
- Mechanical data (sleeve bearings)**
- 23 Max. permissible speed 16000 rpm
  - 24 Axial play 0.05 - 0.15 mm
  - 25 Radial play 0.012 mm
  - 26 Max. axial load (dynamic) 1 N
  - 27 Max. force for press fits (static) 80 N
  - 28 Max. radial loading, 5 mm from flange 2.7 N

- Mechanical data (ball bearings)**
- 23 Max. permissible speed 16000 rpm
  - 24 Axial play 0.05 - 0.15 mm
  - 25 Radial play 0.025 mm
  - 26 Max. axial load (dynamic) 3.3 N
  - 27 Max. force for press fits (static) 45 N
  - 28 Max. radial loading, 5 mm from flange 11.9 N

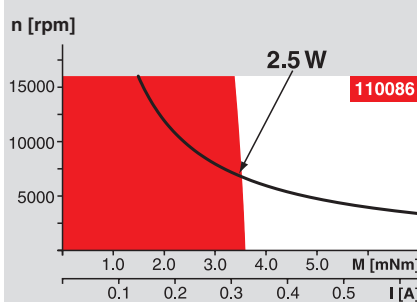
- Other specifications**
- 29 Number of pole pairs 1
  - 30 Number of commutator segments 9
  - 31 Weight of motor 33 g
- CLL = Capacitor Long Life

Values listed in the table are nominal.  
Explanation of the figures on page 47.

#### Option

- Ball bearings in place of sleeve bearings
- Pigtails in place of terminals
- Without CLL

### Operating Range



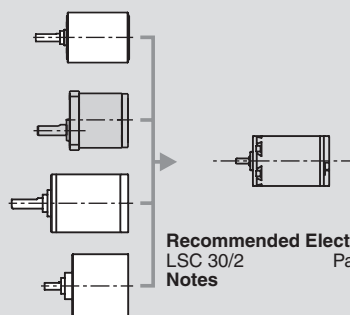
### Comments

- 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

- Planetary Gearhead**  
Ø19 mm  
0.1 - 0.3 Nm  
Page 217
- Spur Gearhead**  
Ø20.3 mm  
0.06 - 0.25 Nm  
Page 218
- Planetary Gearhead**  
Ø22 mm  
0.1 - 2.0 Nm  
Page 219 / 221 / 222
- Spur Gearhead**  
Ø24 mm  
0.1 Nm  
Page 225



**Recommended Electronics:**  
LSC 30/2 Page 268  
Notes 18