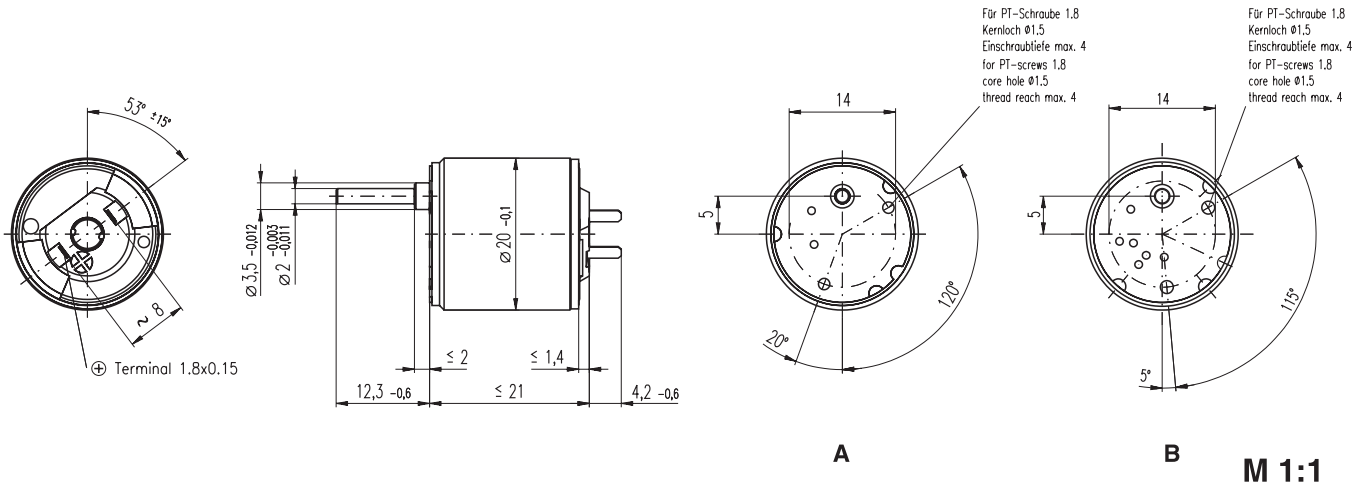


# GM 20 Ø20 mm, Precious Metal Brushes, 1.2 Watt



<span style="background-color: red; color: white;">■</span> Stock program	<span style="border: 1px solid black;">□</span> Standard program	<span style="background-color: #cccccc;">□</span> Special program (on request)	Dimension Drawing A	<b>Order Number</b>	167171	167172	167173	167165	167166	167167	167168	167169	167170	204978	204977	204968	204965	204975	204974
			Dimension Drawing B		2.5:1	10.5:1	55.1:1	159:1	371:1	2.5:1	10.5:1	55.1:1	159:1	371:1	2.5:1	10.5:1	55.1:1	159:1	371:1
			Gearhead reduction ratio																

Motor Data																				
Values at nominal voltage																				
1	Nominal voltage	V	6.0	6.0	6.0	6.0	6.0	9.0	9.0	9.0	9.0	9.0	12.0	12.0	12.0	12.0	12.0			
2	No load speed motor shaft	rpm	13500	13700	13700	13700	13700	13000	13400	13300	13400	13400	12900	13200	13100	13200	13200			
2	No load speed <sup>1)</sup>	rpm	5260	1300	248	86.1	36.9	5070	1270	241	83.9	36.0	5020	1250	238	82.9	35.5			
3	No load current	mA	19.9	12.5	14.1	12.8	12.9	12.8	8.15	9.17	8.33	8.39	9.37	5.94	6.7	6.08	6.12			
4	Nominal speed <sup>1)</sup>	rpm	2910	711	157	74.0	34.4	1430	347	78.8	62.4	31.6	1590	386	95.8	63.9	31.6			
5	Nominal torque <sup>1)</sup>	mNm	2.10	7.90	30.0	30.0	30.0	1.86	6.96	30.0	30.0	1.98	7.44	30.0	30.0	30.0	30.0			
6	Nominal current (max. continuous current)	A	0.236	0.235	0.194	0.0821	0.0458	0.136	0.136	0.127	0.0536	0.0299	0.107	0.107	0.0939	0.0396	0.022			
7	Stall torque <sup>1)</sup>	mNm	2.10	7.90	30.0	30.0	30.0	1.93	7.15	30.0	30.0	2.07	7.65	30.0	30.0	30.0	30.0			
8	Starting current	A	0.223	0.227	0.183	0.0705	0.0336	0.136	0.136	0.122	0.0468	0.0223	0.107	0.107	0.0896	0.0344	0.0164			
9	Max. efficiency <sup>1)</sup>	%	59	58	51	47	42	51	52	45	42	38	53	53	46	43	39			
Characteristics																				
10	Terminal resistance	Ω	11.9	11.9	11.9	11.9	11.9	48.8	48.8	48.8	48.8	48.8	78.7	78.7	78.7	78.7	78.7			
11	Terminal inductance	mH	0.209	0.209	0.209	0.209	0.209	0.475	0.475	0.475	0.475	0.475	0.875	0.875	0.875	0.875	0.875			
12	Torque constant <sup>1)</sup>	mNm / A	10.5	43.0	224	648	1510	15.8	64.9	338	978	2280	21.4	88.1	459	1330	3100			
13	Speed constant motor	rpm / V	2350	2350	2350	2350	2350	1560	1560	1560	1560	1560	1150	1150	1150	1150	1150			
13	Speed constant <sup>1)</sup>	rpm / V	913	222	42.6	14.7	6.31	605	147	28.2	9.77	4.19	446	108	20.8	7.19	3.08			
14	Speed / torque gradient <sup>1)</sup>	rpm / mNm	1040	61.4	2.26	0.271	0.0497	1870	111	4.07	0.488	0.0896	1640	96.8	3.56	0.427	0.0783			
15	Mechanical time constant <sup>1)</sup>	ms	59.6	59.6	59.6	59.6	59.6	67.4	67.4	67.4	67.4	65.7	65.7	65.7	65.7	65.7	65.7			
16	Moment of inertia <sup>1)</sup>	gcm <sup>2</sup>	5.48	92.7	2520	21000	115000	3.44	58.2	1580	13200	71900	3.83	64.8	1760	14700	80100			
Recommended limits																				
	Max. permissible speed <sup>1)</sup>	rpm	4700	1100	220	75.0	32.0	4700	1100	220	75.0	32.0	4700	1100	220	75.0	32.0			
	Max. torque short-term <sup>1)</sup>	mNm	3.00	10.0	50.0	100	100	3.00	10.0	50.0	100	100	3.00	10.0	50.0	100	100			

<sup>1)</sup> Values refer to gearhead output shaft

Specifications	Operating Range	Comments
<b>Thermal data</b> 17 Thermal resistance housing-ambient 25.5 K / W 18 Thermal resistance winding-housing 28.5 K / W 19 Thermal time constant winding 7.7 s 20 Thermal time constant gearmotor 255 s 21 Ambient temperature -20 ... +65°C 22 Max. permissible winding temperature +85°C  <b>Mechanical data (sleeve bearings)</b> 23 Max. permissible speed motor shaft 14700 rpm 24 Axial play 0.05 - 0.15 mm 25 Radial play 0.005 mm 26 Max. axial load (dynamic) 0.12 N 27 Max. force for press fits (static) 12 N 28 Max. radial loading, 3 mm from flange 0.6 N  <b>Other specifications</b> 29 Number of pole pairs 1 30 Number of commutator segments 5 31 Weight of motor 20 g	<b>Operating Range</b> 	<b>Continuous operation</b> 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.  <b>Short term operation</b> The motor may be briefly overloaded (recurring).  — Assigned power rating

Spur Gearhead	maxon Modular System	Encoder MEnc
Reduction No. of stages Sense of rotations 2.57 : 1 1 10.57 : 1 2 55.1 : 1 3 159.21 : 1 4 371.49 : 1 5		Overview on page 16 - 21 Encoder MEnc Ø13 mm 16 CPT, 2 channels Page 270
Values listed in the table are nominal. Explanation of the figures on page 49.	<b>Recommended Electronics:</b> LSC 30/2 Page 276 <b>Notes</b> 18	