

# DC-Micromotors

## Precious Metal Commutation

### 2 mNm

For combination with  
 Gearheads:  
 15A, 16A, 16/7  
 Encoders:  
 IE2 – 16 ... 512

### Series 1717 ... SR

	1717 T	003 SR	006 SR	012 SR	018 SR	024 SR		
1 Nominal voltage	$U_N$	3	6	12	18	24	Volt	
2 Terminal resistance	R	1,07	4,30	17,1	50,1	68,8	$\Omega$	
3 Output power	$P_{2 \text{ max.}}$	1,97	1,96	1,97	1,50	1,96	W	
4 Efficiency	$\eta_{\text{ max.}}$	69	69	70	68	70	%	
5 No-load speed	$n_o$	14 000	14 000	14 000	12 300	14 000	rpm	
6 No-load current (with shaft $\varnothing$ 1,5 mm)	$I_o$	0,091	0,046	0,023	0,013	0,011	A	
7 Stall torque	$M_H$	5,37	5,34	5,38	4,66	5,36	mNm	
8 Friction torque	$M_R$	0,18	0,18	0,18	0,18	0,17	mNm	
9 Speed constant	$k_n$	4 820	2 410	1 210	709	602	rpm/V	
10 Back-EMF constant	$k_E$	0,207	0,414	0,829	1,410	1,660	mV/rpm	
11 Torque constant	$k_M$	1,98	3,96	7,92	13,50	15,90	mNm/A	
12 Current constant	$k_i$	0,505	0,253	0,126	0,074	0,063	A/mNm	
13 Slope of n-M curve	$\Delta n / \Delta M$	2 610	2 620	2 600	2 640	2 610	rpm/mNm	
14 Rotor inductance	L	17	65	260	760	1 040	$\mu\text{H}$	
15 Mechanical time constant	$\tau_m$	16	16	16	16	16	ms	
16 Rotor inertia	J	0,59	0,58	0,59	0,58	0,59	gcm <sup>2</sup>	
17 Angular acceleration	$\alpha_{\text{ max.}}$	92	92	92	80	92	$\cdot 10^3 \text{ rad/s}^2$	
18 Thermal resistance	$R_{\text{th} 1} / R_{\text{th} 2}$	4,5 / 27					K/W	
19 Thermal time constant	$\tau_{w1} / \tau_{w2}$	2,0 / 210					s	
20 Operating temperature range:								
– motor		– 30 ... + 85 (optional – 55 ... + 125)						$^{\circ}\text{C}$
– rotor, max. permissible		+ 125						$^{\circ}\text{C}$
21 Shaft bearings		sintered bronze sleeves	ball bearings	ball bearings, preloaded				
22 Shaft load max.:		(standard)	(optional)	(optional)				
– with shaft diameter		1,5	1,5	1,5			mm	
– radial at 3 000 rpm (3 mm from bearing)		1,2	5	5			N	
– axial at 3 000 rpm		0,2	0,5	0,5			N	
– axial at standstill		20	10	10			N	
23 Shaft play:								
– radial	$\leq$	0,03	0,015	0,015			mm	
– axial	$\leq$	0,2	0,2	0			mm	
24 Housing material		steel, black coated						
25 Weight		18					g	
26 Direction of rotation		clockwise, viewed from the front face						
<b>Recommended values - mathematically independent of each other</b>								
27 Speed up to	$n_{e \text{ max.}}$		10 000	10 000	10 000	10 000	10 000	rpm
28 Torque up to	$M_{e \text{ max.}}$		2	2	2	2	2	mNm
29 Current up to (thermal limits)	$I_{e \text{ max.}}$		1,20	0,60	0,30	0,18	0,15	A

