

Winding types



-216P -216E -213E -110 -108 -107

Measured values

1 Measuring voltage	V	2.0	4.5	6.0	12.0	15.0	24.0
2 No-load speed	rpm	9000	10800	12300	12400	12400	14100
3 Stall torque	mNm (oz-in)	6.9 (0.98)	7.2 (1.02)	6.5 (0.93)	8 (1.13)	6.5 (0.91)	8.4 (1.19)
4 Average no-load current	mA	48.0	26.4	25.6	13.6	10.6	8.8
5 Typical starting voltage	V	0.03	0.06	0.08	0.10	0.15	0.20

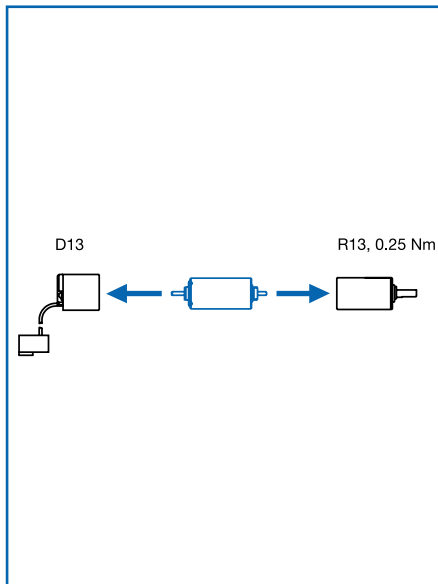
Max. recommended values

6 Max. continuous current	A	1.50	0.90	0.69	0.38	0.27	0.21
7 Max. continuous torque	mNm (oz-in)	3.0 (0.43)	3.42 (0.48)	3.03 (0.43)	3.33 (0.47)	2.99 (0.42)	3.18 (0.45)
8 Max. angular acceleration	10 ³ rad/s ²	242	225	271	252	288	274

Intrinsic parameters

9 Back-EMF constant	V/1000 rpm	0.22	0.41	0.48	0.95	1.19	1.67
10 Torque constant	mNm/A (oz-in/A)	2.10 (0.30)	3.92 (0.55)	4.58 (0.65)	9.1 (1.28)	11.4 (1.61)	15.9 (2.26)
11 Terminal resistance	ohm	0.61	2.45	4.20	13.7	26.4	45.6
12 Motor regulation R/k ²	10 ³ /Nms	138	160	200	166	204	179
13 Rotor inductance	mH	0.01	0.05	0.07	0.25	0.40	0.80
14 Rotor inertia	kgm ² · 10 ⁻⁷	0.38	0.38	0.28	0.33	0.26	0.29
15 Mechanical time constant	ms	5	6	6	5	5	5

Availability: see enclosed document at the end of the catalogue



- Thermal resistance:
 - rotor-body 10°C/W
 - body-ambient 40°C/W
- Thermal time constant - rotor / stator:
 - 6 s / 300 s
- Max. rated coil temperature: 100°C (210°F)
- Recom. ambient temperature range:
 - 30°C to +65°C (-22°F to +150°F)
- Viscous damping constant:
 - 0.04 x 10⁻⁶ Nms
- Max. axial static force for press-fit: 150 N
- End play:
 - ≤ 150 μm
 - Radial play: ≤ 30 μm
 - Shaft runout: ≤ 10 μm
- Max. side load at 5 mm from mounting face:
 - sleeve bearings 1.5 N
- Motor fitted with sleeve bearings (ball bearings optional)

