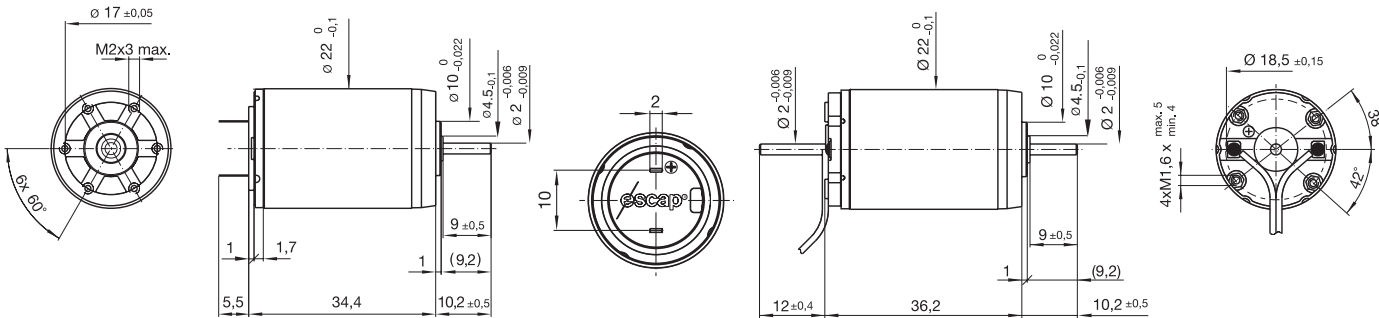


Max screw torque 130 mNm  
Max traction 300N



dimensions in mm  
mass: 68 g

22V28 ☉☉ • 201

22V48 ☉☉ • 204

**Winding Type**

☉☉

-216P

-213P

-216E

-213E

-210E

-208E

**Measured Values**

Measuring voltage	V	4.5	6.0	9.0	12.0	15.0	24.0
No-load speed	rpm	6400	7100	6700	7600	7500	6300
Stall torque	mNm (oz-in)	18.2 (2.59)	16.0 (2.27)	17.1 (2.42)	15.0 (2.13)	11.5 (1.63)	11.5 (1.62)
Average No-load current 1)	mA	18/27	15/22	9/13.5	7.6/11	6.0/9	3.2/4.8
Typical starting voltage 1)	V	0.06/0.2	0.08/0.3	0.10/0.4	0.15/0.6	0.24/1.0	0.4/1.6

**Max. Recommended Values**

Max. continuous current	A	1.55	1.15	0.77	0.58	0.40	0.23
Max. continuous torque	mNm (oz-in)	10.27 (1.45)	9.09 (1.29)	9.66 (1.37)	8.48 (1.20)	7.4 (1.05)	8.13 (1.15)
Max. angular acceleration	10 <sup>3</sup> rad/s <sup>2</sup>	105	113	98	105	102	134

**Intrinsic Parameters**

Back-EMF constant	V/1000 rpm	0.70	0.84	1.33	1.56	1.97	3.75
Torque constant	mNm/A (oz-in/A)	6.7 (0.95)	8.0 (1.13)	12.7 (1.80)	14.9 (2.11)	18.8 (2.66)	35.8 (5.07)
Terminal resistance	ohm	1.65	3.00	6.70	11.9	24.5	75.0
Motor regulation R/k <sup>2</sup>	10 <sup>3</sup> /Nms	37	47	42	54	69	58
Rotor inductance	mH	0.10	0.15	0.50	0.55	0.80	3.30
Rotor inertia	kgm <sup>2</sup> 10 <sup>-7</sup>	3.90	3.20	3.90	3.20	2.90	2.40
Mechanical time constant	ms	14	15	16	17	20	14

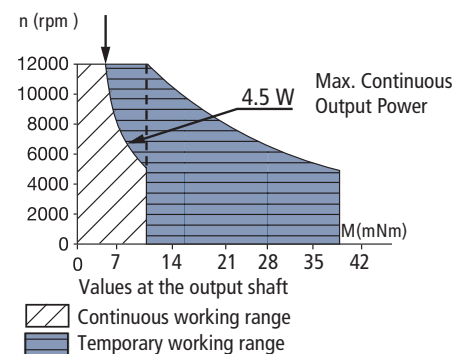
1) Single Shaft/double shaft

**Executions**

		Single Shaft	For F16	For E9
<b>Gearbox</b>	<b>Page</b>	<b>22V28</b>	<b>22V28</b>	<b>22V48</b>
R22	105	202	202	225
M22	106	201	201	204
K24	107	202	202	225
K27	108	202	202	225
RG1/8	111	201	201	204
RG1/9	112	201	201	204
K38	110	201	201	204
L10	115	201	201	204

- Thermal resistance: rotor-body 6°C/W  
body-ambient 22°C/W
- Thermal time constant - rotor / stator: 10 s / 460 s
- Max. rated coil temperature: 100°C (210°F)
- Recom. ambient temperature range: -30°C to +85°C (-22°F to +185°F)
- Viscous damping constant: 0.1 x 10<sup>-6</sup> 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 3 N  
- ball bearings 6 N
- Motor fitted with sleeve bearings (ball bearings optional)

**Max. Recommended Speed**



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