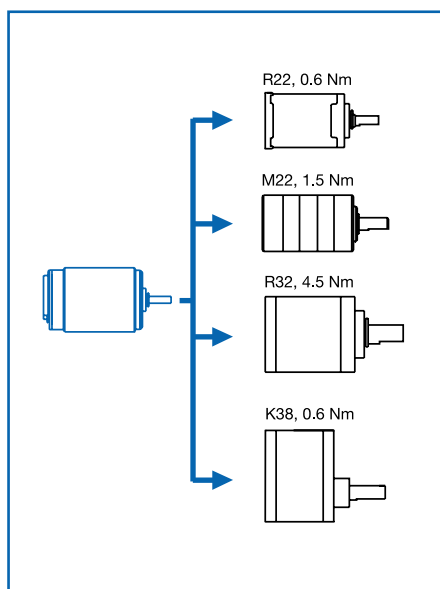


Winding types	<span style="border: 1px solid black; padding: 2px;">...</span>	-219P	-219	-416E
<b>Measured values</b>				
1 Measuring voltage	V	9.0	18.0	32.0
2 No-load speed	rpm	7900	7900	7400
3 Stall torque	mNm (oz-in)	57 (8.1)	63 (8.86)	65 (9.26)
4 Average no-load current	mA	125.0	65.0	35.0
5 Typical starting voltage	V	--	--	--
<b>Max. recommended values</b>				
6 Max. continuous current	A	2.15	1.13	0.63
7 Max. continuous torque	mNm (oz-in)	21.6 (3.06)	22.8 (3.23)	24.2 (3.42)
8 Max. angular acceleration	10 <sup>3</sup> rad/s <sup>2</sup>	51	53	34
<b>Intrinsic parameters</b>				
9 Back-EMF constant	V/1000 rpm	1.12	2.24	4.26
10 Torque constant	mNm/A (oz-in/A)	10.7 (1.51)	21.4 (3.03)	40.7 (5.76)
11 Terminal resistance	ohm	1.70	6.15	19.9
12 Motor regulation R/k <sup>2</sup>	10 <sup>3</sup> /Nms	15	13	12
13 Rotor inductance	mH	0.10	0.50	2.40
14 Rotor inertia	kgm <sup>2</sup> · 10 <sup>-7</sup>	10.70	10.70	17.80
15 Mechanical time constant	ms	16	14	21

Availability: see enclosed document at the end of the catalogue



- Thermal resistance:
  - rotor-body 5°C/W
  - body-ambient 12°C/W
- Thermal time constant - rotor / stator: 17 s / 760 s
- Max. rated coil temperature: 155°C
- Recom. ambient temperature range: -10°C to +80°C (14°F to 176°F)
- Max. axial static force for press-fit: 250 N
- End play: ≤ 150 µm
- Radial play: ≤ 18 µm
- Shaft runout: ≤ 10 µm
- Max. side load at 5 mm from mounting face:
  - sleeve bearings 6 N
  - ball bearings 8 N
- Motor fitted with sleeve bearings (ball bearings optional)

