



Electrical Data	****	319P	313P	311P	216E	215E	208E		
1 Nominal Voltage	V	6	9	12	18	24	48	Volt	
2 No-Load Speed	n_0	8,500	6,700	7,200	8,100	8,900	6,200	rpm	
3 No-Load Current	I_0	140.0	75.0	60.0	45.0	40.0	15.0	mA	
4 Terminal Resistance	R	0.8	2.7	4.1	7.9	10.7	107.2	Ω	
5 Output Power	$P_{2max.}$	15.7	16.3	16.6	15.7	16.2	14.7	W	
6 Stall Torque	mNm	50 (7.1)	42 (5.9)	46 (6.5)	47 (6.7)	57 (8.1)	32 (4.54)	mNm (oz-in)	
7 Efficiency	$\eta_{max.}$	75	74	75	67	91	91	%	
8 Max continuous speed	$n_{e max.}$	12,000	12,000	12,000	12,000	12,000	12,000	rpm	
9 Max continuous torque	$M_{e max.}$	15.7 (2.3)	16.3 (2.3)	16.6 (2.3)	15.7 (2.2)	16.2 (2.3)	14.7 (2.1)	mNm (oz-in)	
10 Max continuous current	$I_{e max.}$	2.60	1.42	1.15	0.83	0.71	0.22	A	
11 Back-EMF Constant	k_E	0.69	1.31	1.64	2.18	2.64	7.54	mV/rpm	
12 Torque Constant	k_M	6.60	12.50	15.70	20.80	25.20	72.00	mNm/A	
13 Motor Regulation	R/k^2	18.0	16.0	15.8	17.80	17.32	20.64	$10^3/Nms$	
14 Friction Torque	T_F	0.92 (0.13)	0.94 (0.13)	0.94 (0.13)	0.94 (0.13)	1.01 (0.14)	1.08 (0.15)	mNm (oz-in)	
15 Rotor Inductance	L	0.04	0.16	0.25	0.50	0.60	7.00	mH	
16 Mechanical Time Constant	τ_m	6.7	7.0	6.6	8.4	7.8	6.9	ms	
17 Rotor Inertia	J	4.90	4.39	4.20	4.74	4.50	3.32	$g.cm^2$	
18 Thermal Resistance (rotor/body)	R_{th1} / R_{th2}	6/22	6/22	6/22	6/22	6/22	6/22	$^{\circ}C/W$	
19 Thermal Time Constant (rotor/stator)	τ_{w1}/τ_{w2}	9/550	9/550	9/550	9/550	9/550	9/550	$^{\circ}C/W$	
20 Operating Temperature Range:	motor	-30°C to 125°C (-22°F to 257°F)						$^{\circ}C (^{\circ}F)$	
	rotor	155°C (311°F)						$^{\circ}C (^{\circ}F)$	
21 Shaft Load max.:		With sleeve bearings							
	at 3,000 rpm (5mm from bearing)	-radial	3.0 (10.8)						N (oz)
	at 3,000 rpm	-axial	150 (539.5)						N (oz)
22 Shaft play:		-radial	<0.03 (0.0012)						mm (inch)
		-axial	0.15 (0.0059)						mm (inch)
23 Weight	g	53 (1.87)						g (oz)	

Execution				
Gearbox	Single Shaft	MR2	E9	HEDS
R22	Contact Us	Contact Us	Contact Us	Contact Us
M22	Contact Us	Contact Us	Contact Us	Contact Us
K24	Contact Us	Contact Us	Contact Us	Contact Us
K27	Contact Us	Contact Us	Contact Us	Contact Us

