

Size 16 Gearhead Mechanical Specifications

Parameter	Symbol	Units	G03	G05	G07	G10	G22	G55	G100
Ratio			3:1	5.5:1	7:1	10:1	22:1	55:1	100:1
Maximum Input Torque	T_f	lb-in	39.0	21.4	16.4	9.9	8.5	3.1	1.2
		oz-in	624	343	263	158	136	49	19
		Nm	4.37	2.40	1.84	1.11	0.95	0.34	0.13
Friction Torque	T_f	oz-in	6.6	3.5	2.6	2.9	4.6	3.1	2.5
		Nm	0.046	0.025	0.018	0.020	0.032	0.022	0.018
Viscous Damping	T_d	oz-in/Krpm	2.4	1.2	0.6	0.4	0.3	0.3	0.3
		Nm/Krpm	0.0168	0.0084	0.0042	0.0028	0.0021	0.0021	0.0021
Torque Efficiency	E		0.96	0.96	0.96	0.96	0.93	0.93	0.93
Torsional Stiffness		arc-min/oz-in	0.025	0.025	0.025	0.025	0.008	0.008	0.008
		arc-min/Nm	3.57	3.57	3.57	3.57	1.14	1.14	1.14
Gearhead Weight		lbs	0.7	0.8	0.8	0.8	1.2	1.3	1.3
		Kg	0.32	0.36	0.36	0.36	0.54	0.59	0.59
Backlash		arc-min	7	6	6	6	10	10	10

Note: These specifications are for gearheads which have been operated for less than one hour.

$$\text{Gearhead Torque} = (\text{Motor Torque} - T_f - (B \times \text{Motor Shaft Speed})) \times \text{Gear Ratio} \times E$$

Size 16 Motor/Gearhead System Specifications

Motor Frame	Planetary Identifier	Ratio	Continuous Stall Torque		Peak Stall Torque		Gearhead Inertia		Thermal Resistance (°C/Watt)
			lb - in	Nm	lb - in	Nm	lb-in-sec ²	Kg-m ²	
SM160 SE160	G05	5.5:1	2.7	0.30	10.3	1.15	1.1 E-5	1.24 E-6	4.06
	G07	7:1	4.1	0.46	13.8	1.55	9.56 E-6	1.08 E-6	4.06
	G10	10:1	5.3	0.59	19.4	2.17	8.36 E-6	9.45 E-7	4.06
	G22	22:1	9.2	1.03	39.0	4.37	1.10 E-5	1.24 E-6	4.46
	G55	55:1	28.0	3.14	102.0	11.42	8.31 E-6	9.39 E-7	4.46
	G100	100:1	54.0	6.05	91.0	10.19	8.29 E-6	9.37 E-7	4.46
SM161 SE161	G03	3:1	3.1	0.35	11.2	1.25	3.25 E-5	3.67 E-6	3.41
	G05	5.5:1	6.5	0.73	21.5	2.41	1.10 E-5	1.24 E-6	3.41
	G07	7:1	9.0	1.01	27.8	3.11	9.56 E-6	1.08 E-6	3.41
	G10	10:1	12.5	1.40	40.0	4.48	8.36 E-6	9.45 E-7	3.41
	G22	22:1	24.0	2.69	84.0	9.41	1.10 E-5	1.24 E-6	3.63
	G55	55:1	65.0	7.28	143.0	16.02	8.31 E-6	9.39 E-7	3.63
	G100	100:1	91.0	10.19	91.0	10.19	8.29 E-6	9.37 E-7	3.63
SM162 SE162	G03	3:1	6.9	0.77	21.5	2.41	3.25 E-5	3.67 E-6	2.17
	G05	5.5:1	13.6	1.52	40.6	4.55	1.10 E-5	1.24 E-6	2.17
	G07	7:1	17.3	1.94	52.0	5.82	9.56 E-6	1.08 E-6	2.17
	G10	10:1	24.8	2.78	74.0	8.29	8.36 E-6	9.45 E-7	2.17
	G22	22:1	49.0	5.49	158.0	17.70	1.10 E-5	1.24 E-6	2.66
	G55	55:1	126.0	14.11	143.0	16.02	8.31 E-6	9.39 E-7	2.66

Torque limited by gearhead design. Motor must not exceed listed maximum input torque.

Size 23 Gearhead Mechanical Specifications

Parameter	Symbol	Units	G03	G05	G07	G10	G22	G55	G100
Ratio			3:1	5.5:1	7:1	10:1	22:1	55:1	100:1
Maximum Input Torque	T_r	lb-in	77.4	44.9	35.0	21.5	18.9	7.1	2.7
		oz-in	1238	718	560	344	303	114	43
		Nm	8.67	5.03	3.92	2.41	2.12	0.80	0.30
Friction Torque	T_f	oz-in	5.2	4.1	5.2	3.6	3.1	3.2	3.2
		Nm	0.036	0.029	0.036	0.025	0.022	0.022	0.022
Viscous Damping	T_d	oz-in/Krpm	5	1.2	1.1	0.7	2	1.2	0.8
		Nm/Krpm	0.035	0.0084	0.0077	0.0049	0.014	0.0084	0.0056
Torque Efficiency	E		0.96	0.96	0.96	0.96	0.93	0.93	0.93
Torsional Stiffness		arc-min/oz-in	0.015	0.015	0.015	0.015	0.004	0.004	0.004
		arc-min/Nm	2.14	2.14	2.14	2.14	0.57	0.57	0.57
Gearhead Weight		lbs	1.7	1.8	1.8	1.9	2.9	2.9	3.1
		Kg	0.77	0.82	0.82	0.86	1.32	1.32	1.41
Backlash		arc-min	6	6	6	6	10	10	10

Note: These specifications are for gearheads which have been operated for less than one hour.

$$\text{Gearhead Torque} = (\text{Motor Torque} - T_f - (B \times \text{Motor Shaft Speed})) \times \text{Gear Ratio} \times E$$

Size 23 Motor/Gearhead System Specifications

Motor Frame	Planetary Identifier	Ratio	Continuous Stall Torque		Peak Stall Torque		Gearhead Inertia		Thermal Resistance
			lb - in	Nm	lb - in	Nm	lb-in-sec ²	Kg-m ²	(°C/Watt)
SM230 SE230	G03	3:1	4.1	0.46	13.7	1.53	1.22 E-4	1.38 E-5	2.35
	G05	5.5:1	7.8	0.87	25.3	2.83	2.65 E-5	2.99 E-6	2.35
	G07	7:1	9.7	1.09	31.8	3.56	1.93 E-5	2.18 E-6	2.35
	G10	10:1	15.0	1.68	46.5	5.2	11.35 E-5	1.53 E-6	2.35
	G22	22:1	31.0	3.47	100.0	11.20	2.70 E-5	3.05 E-6	2.61
	G55	55:1	77.0	8.62	250.0	28.00	1.34 E-5	1.51 E-6	2.61
	G100	100:1	140.0	15.68	244.0	27.33	1.33 E-5	1.50 E-6	2.61
SM231 SE231	G03	3:1	7.7	0.86	23.2	2.60	1.22 E-4	1.38 E-5	2.30
	G05	5.5:1	14.2	1.59	42.6	4.77	2.65 E-5	2.99 E-6	2.30
	G07	7:1	18.1	2.03	54.2	6.07	1.93 E-5	2.18 E-6	2.30
	G10	10:1	25.8	2.89	77.5	8.68	1.35 E-5	1.53 E-6	2.30
	G22	22:1	53.0	5.94	167.0	18.70	2.70 E-5	3.05 E-6	2.48
	G55	55:1	132.0	14.78	371.0	41.55	1.34 E-5	1.51 E-6	2.48
	G100	100:1	241.0	26.99	244.0	27.33	1.33 E-5	1.50 E-6	2.48
SM232 SE232	G03	3:1	15.6	1.75	45.0	5.04	1.22 E-4	1.38 E-5	1.49
	G05	5.5:1	30.2	3.38	82.5	9.24	2.65 E-5	2.99 E-6	1.49
	G07	7:1	37.0	4.14	106.0	11.87	1.93 E-5	2.18 E-6	1.49
	G10	10:1	53.1	5.95	150.0	16.80	1.35 E-5	1.53 E-6	1.49
	G22	22:1	110.0	12.32	338.0	37.86	2.70 E-5	3.05 E-6	1.79
	G55	55:1	275.0	30.80	371.0	41.55	1.34 E-5	1.51 E-6	1.79
SM233 SE233	G03	3:1	25.0	2.80	70.9	7.94	1.22 E-4	1.38 E-5	1.32
	G05	5.5:1	45.3	5.07	129.9	14.55	2.65 E-5	2.99 E-6	1.32
	G07	7:1	56.2	6.29	165.4	18.52	1.93 E-5	2.18 E-6	1.32
	G10	10:1	84.3	9.44	234.4	26.25	1.35 E-5	1.53 E-6	1.32
	G22	22:1	169.0	18.93	401.0	44.91	2.70 E-5	3.05 E-6	1.35
	G55	55:1	371.0	41.55	371.0	41.55	1.34 E-5	1.51 E-6	1.35

Torque limited by gearhead design. Motor must not exceed listed maximum input torque.

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Size 34 Gearhead Mechanical Specifications

Parameter	Symbol	Units	G03	G05	G07	G10	G22	G55	G100
Ratio			3:1	5.5:1	7:1	10:1	22:1	55:1	100:1
Maximum Input Torque	T_r	lb-in	152.3	98.6	79.1	50.5	46.8	18.6	7.1
		oz-in	2437	1578	1266	808	749	297	114
		Nm	17.06	11.05	8.86	5.66	5.24	2.08	0.80
Friction Torque	T_f	oz-in	10	10	10	10	21	19	18
		Nm	0.070	0.070	0.070	0.070	0.147	0.133	0.126
Viscous Damping	T_d	oz-in/Krpm	2.5	2.0	1.5	1.3	1.5	0.3	0.1
		Nm/Krpm	0.0175	0.014	0.0105	0.0091	0.0105	0.0021	0.0007
Torque Efficiency	E		0.96	0.96	0.96	0.96	0.93	0.93	0.93
Torsional Stiffness		arc-min/oz-in	0.010	0.010	0.010	0.010	0.004	0.004	0.004
		arc-min/Nm	1.43	1.43	1.43	1.43	0.50	0.50	0.50
Gearhead Weight		lbs	4.3	4.6	4.6	4.8	7.4	7.6	7.7
		Kg	1.95	2.09	2.09	2.18	3.36	3.45	3.49
Backlash		arc-min	6	6	6	6	10	10	10

Note: These specifications are for gearheads which have been operated for less than one hour.

$$\text{Gearhead Torque} = (\text{Motor Torque} - T_f - (B \times \text{Motor Shaft Speed})) \times \text{Gear Ratio} \times E$$

Size 34 Motor/Gearhead System Specifications

Motor Frame	Planetary Identifier	Ratio	Continuous Stall Torque		Peak Stall Torque		Gearhead Inertia		Thermal Resistance (°C/Watt)
			lb - in	Nm	lb - in	Nm	lb-in-sec ²	Kg-m ²	
N0341 J0341	G03	3:1	14.7	1.65	45.6	5.11	6.77E-4	7.65E-5	1.49
	G05	5.5:1	26.2	2.93	83.7	9.37	1.51E-4	1.71E-5	1.49
	G07	7:1	33.8	3.79	106.2	11.89	1.11E-4	1.25E-5	1.49
	G10	10:1	46.9	5.25	150.0	16.80	7.90E-5	8.93E-6	1.49
	G22	22:1	89.0	9.97	317.0	35.50	1.55E-4	1.75E-5	1.68
	G55	55:1	228.0	25.54	800.0	89.60	7.94E-5	8.97E-6	1.68
	G100	100:1	421.0	47.15	542.0	60.70	7.87E-5	8.89E-6	1.68
N0342 J0342	G03	3:1	26.9	3.01	85.3	9.55	6.77E-4	7.65E-5	1.23
	G05	5.5:1	50.0	5.60	150.0	16.80	1.51E-4	1.71E-5	1.23
	G07	7:1	65.6	7.35	200.0	22.40	1.11E-4	1.25E-5	1.23
	G10	10:1	92.1	10.32	279.7	31.33	7.90E-5	8.93E-6	1.23
	G22	22:1	184.0	20.61	609.0	68.21	1.55E-4	1.75E-5	1.39
	G55	55:1	467.0	52.30	860.0	96.32	7.94E-5	8.97E-6	1.39
	G100	100:1	542.0	60.70	542.0	60.70	7.87E-5	8.89E-6	1.39
N0343 J0343	G03	3:1	43.7	4.89	128.7	14.41	6.77E-4	7.65E-5	1.02
	G05	5.5:1	78.1	8.75	234.9	26.31	1.51E-4	1.71E-5	1.02
	G07	7:1	101.6	11.38	300.0	33.60	1.11E-4	1.25E-5	1.02
	G10	10:1	145.6	16.31	431.2	48.29	7.90E-5	8.93E-6	1.02
	G22	22:1	295.0	33.04	902.0	101.02	1.55E-4	1.75E-5	1.15
	G55	55:1	744.0	83.33	860.0	96.32	7.94E-5	8.97E-6	1.15
N0344 J0344	G03	3:1	50.3	5.63	162.5	18.20	6.77E-4	7.65E-5	0.89
	G05	5.5:1	100.0	11.20	297.4	33.31	1.51E-4	1.71E-5	0.89
	G07	7:1	125.0	14.00	375.0	42.00	1.11E-4	1.25E-5	0.89
	G10	10:1	181.2	20.29	543.7	60.89	7.90E-5	8.93E-6	0.89
	G22	22:1	307.0	41.44	902.0	101.02	1.55E-4	1.75E-5	0.96
	G55	55:1	860.0	96.32	860.0	96.32	7.94E-5	8.97E-6	0.96

Torque limited by gearhead design. Motor must not exceed listed maximum input torque.