



## A Full Line Up of Powerful Servos to Meet the Demands of Your Application!

Compumotor began manufacturing brushless servo motors with the release of the SM series in the spring of 1995. Since that time, we have continued to expand our product offering and have manufacturing plants in California and Italy.

### Innovation in Design

Compumotor utilizes two distinct technologies in the manufacturing of brushless servo motors. The Slotless Design and the Bridged Stator Design both reduce motor manufacturing costs while providing performance advantages to the user.

The slotless design eliminates all detent torque in the motor, providing superior performance in applications requiring smooth, low speed operation. This design also results in higher rotor inertia, providing an advantage in applications involving high inertia loads.

The bridged stator design results in extremely high torque-to-

inertia ratios, providing a performance advantage in applications requiring high accelerations. The bridged stator design also greatly reduces detent torque and mechanical noise when compared to a conventional slotted motor.

Compumotor can also provide an integrated planetary gearhead for use with our brushless servo motors. Our unique design integrates the pinion of the gearhead into the motor shaft, reducing total package length by almost two inches.

### Standards or Specials in 10 Days

Compumotor's brushless servo motors are manufactured in our modern JIT manufacturing facility. Highly evolved manufacturing philosophies provide levels of service and product availability previously unattainable in the servo motor industry.

Compumotor's lead times average less than ten days for all standard and custom servo motors.

#### SM Series



- Size 16 and 23
- 0.8 to 11.3 in-lb. continuous torque
- Slotless design
- Rugged housing (IP65 option)
- Connection options

#### SE Series



- Size 16 and 23
- 0.8 to 10.1 in-lb. continuous torque
- Slotless design
- Plastic encoder cover
- Short package length

#### BE Series



- Size 16, 23 and 34
- 1.4 to 46 in-lb. continuous torque
- Bridged stator design
- 2000-line encoder standard
- Connection options

#### M Series



- Size 105, 145 and 205mm
- Up to 90 Nm of power
- Brushless construction
- Encoder feedback and resolver

#### Planetary Gearheads



- Size 16, 23, 34 and 92
- Integrated pinion design
- Shortest package length available

#### NeoMetric & J Series



- 70 mm and 92 mm
- 6 to 61 in-lb. continuous torque
- Bridged stator design
- Rugged housing (IP65 option)
- Connection options

#### SL Series



- Size 42, 63, 102 and 140mm
- 20 to 350 lbs continuous force
- Slotless design
- High speeds
- High precision

## Custom Designed Servo Motors for Your Specific Application!

Compumotor offers a broad range of standard options with all of our brushless servo motor families. Our numerous shaft, feedback and connection options will fulfill the needs of most of our customers. However, we realize that from time to time the need arises to have a custom motor designed specially for your application.

Whether you need custom connectors, mounting, or a custom winding, Compumotor can build a motor designed to your exact specifications. Compumotor provides these special designs for our customers with:

- Minimal impact on product lead time
- Modest impact on pricing
- No minimum quantities

Compumotor's modern manufacturing system allows us to offer custom motor solutions without sacrificing product quality and availability. All of our custom motors are built in our standard servo motor work cell, and our computerized custom product tracking system allows us to provide consistent, high-quality custom products. And, because custom motor manufacturing is integrated into our standard manufacturing process, we can often build and ship custom designed motors and cables in the same time frame as standard products.

Compumotor provides this service for one simple reason: to make it easier for you, our customer, to integrate a Compumotor servo motor into your application. We provide more than just a component, we provide a custom designed servo motor solution.

### Common Special Requests

#### Connectorization

- Right angle connector housing
- MS connectors on back cover
- Special cable lengths
- Hi-flex cables
- Customer specified cables and connectors
- Cable exiting through back cover

#### Flanges

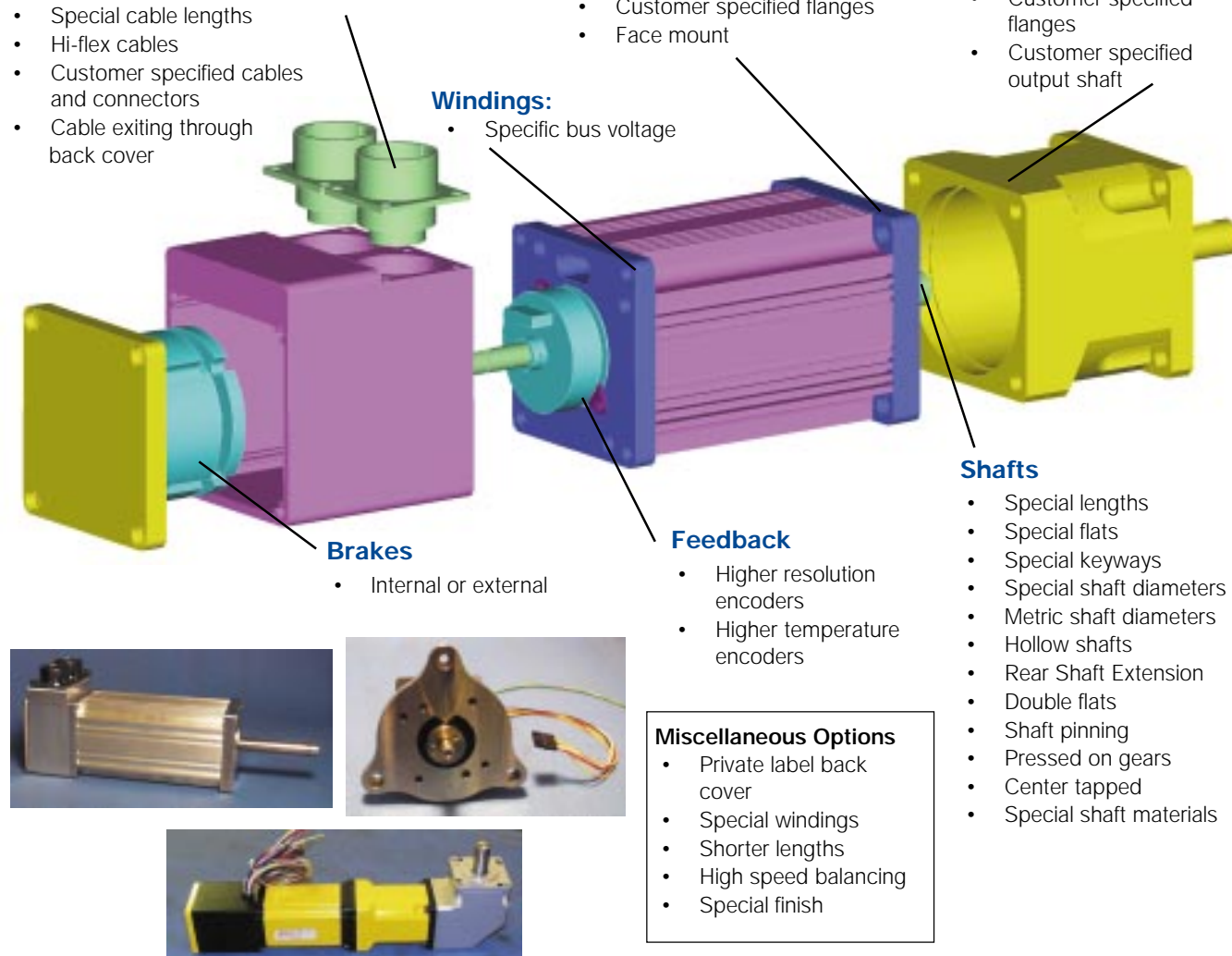
- Tapped mounting holes
- Customer specified flanges
- Face mount

#### Gearheads

- Non-standard ratios
- Customer specified flanges
- Customer specified output shaft

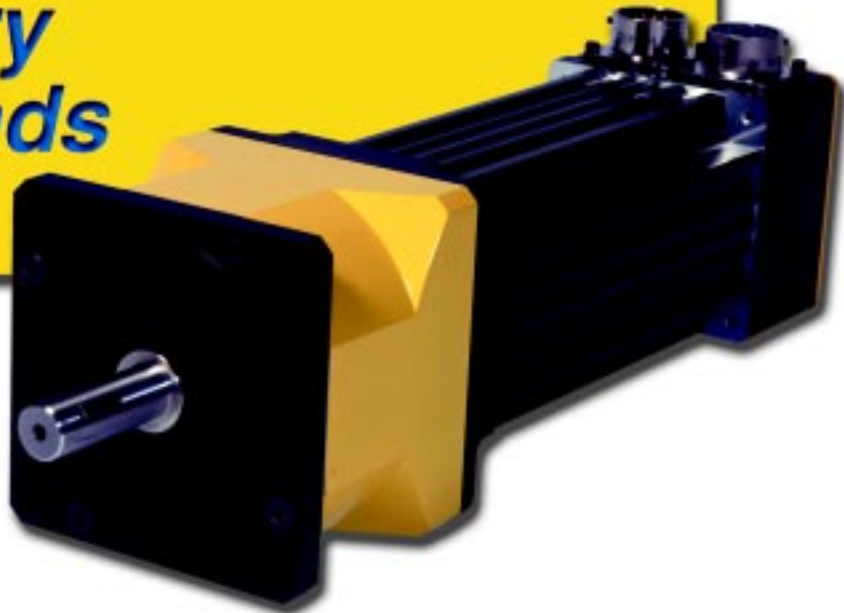
#### Windings:

- Specific bus voltage



Custom Designed Servo Motors For Your Specific Application. Call 1-800-358-9070 Today.

# Planetary Gearheads



## Integrated Design for Shortest Possible Package

Compumotor can provide an integrated planetary gearhead with the SM, SE, BE, NeoMetric Series or J Series brushless servo motors. By incorporating the pinion of the reducer into the motor's shaft design, Compumotor has achieved the shortest package length in the industry. This design eliminates the need for an adapter plate and coupling, resulting in a space savings of over two inches in total package length.

The integrated planetary gearheads are available in size 16, 23, 34 and 92mm. To simplify the application process, Compumotor provides a true system of specification for each motor gearhead combination.

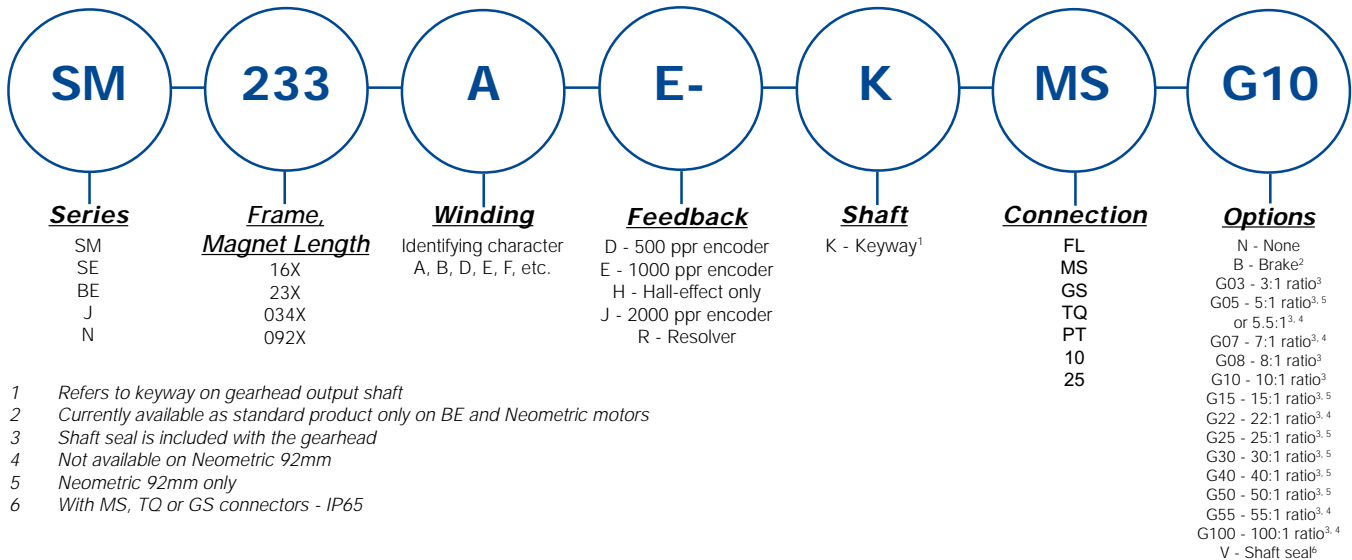
Compumotor can also provide custom gearhead solutions. Custom ratios, mounting flanges, and shafts can easily be incorporated into our standard package.

## Features

- Size 16, 23, 34 and 92mm
- Integrated design – Compact and short
- Shaft seal included with every gearhead
- Ratios:

GXX	RATIO	SM/SE (16, 23)	BE (23, 34)	Neo/J (34)	Neo/J (92)
G03	3:1	•	•	•	•
G05	5:1				•
G05	5.5:1	•	•	•	
G07	7:1	•	•	•	
G08	8:1				•
G10	10:1	•	•	•	•
G15	15:1				•
G22	22:1	•	•	•	
G25	25:1				•
G30	30:1				•
G40	40:1				•
G50	50:1				•
G55	55:1	•	•	•	
G100	100:1	•	•	•	

## Part Numbering System



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	$T_r$	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		oz-in/arc-min	40	40	40	40	125	125	125
		Nm/arc-min	0.28	0.28	0.28	0.28	0.88	0.88	0.88
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 more than one hour.

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

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 <sup>2</sup>	Kg-m <sup>2</sup>	
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.

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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		oz-in/arc-min	67	67	67	67	250	250	250
		Nm/arc-min	0.47	0.47	0.47	0.47	1.75	1.75	1.75
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 more than one hour.

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

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 <sup>2</sup>	Kg-m <sup>2</sup>	(°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.

Size 23 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 <sup>2</sup>	Kg-m <sup>2</sup>	
BE230	G03	3:01	8.6	0.96	27.7	3.10	1.22 E-04	1.38 E-05	2.35
	G05	5.5:1	16.1	1.80	51.1	5.72	2.65 E-05	2.99 E-06	2.35
	G07	7:1	20.1	2.25	64.6	7.24	1.93 E-05	2.18 E-06	2.35
	G10	10:1	29.7	3.33	93.2	10.44	11.35 E-05	1.53 E-06	2.35
	G22	22:1	62.5	7.00	195.1	21.85	2.70 E-05	3.05 E-06	2.61
	G55	55:1	156.0	17.47	487.5	54.60	1.34 E-05	1.51 E-06	2.61
	G100	100:1	283.6	31.76	886.3	99.27	1.33 E-05	1.50 E-06	2.61
BE231	G03	3:1	16.2	1.81	50.5	5.66	1.22 E-04	1.38 E-05	2.3
	G05	5.5:1	30.1	3.37	93.0	10.42	2.65 E-05	2.99 E-06	2.3
	G07	7:1	37.9	4.24	117.9	13.20	1.93 E-05	2.18 E-06	2.3
	G10	10:1	55.0	6.16	169.3	18.96	1.35 E-05	1.53 E-06	2.3
	G22	22:1	115.5	12.94	354.1	39.66	2.70 E-05	3.05 E-06	2.48
	G55	55:1	288.4	32.30	885.0	99.12	1.34 E-05	1.51 E-06	2.48
	BE232	G03	3:1	27.3	3.06	83.8	9.39	1.22 E-04	1.38 E-05
G05		5.5:1	50.4	5.64	153.9	17.24	2.65 E-05	2.99 E-06	1.49
G07		7:1	63.7	7.13	195.4	21.88	1.93 E-05	2.18 E-06	1.49
G10		10:1	92.0	10.30	280.1	31.37	1.35 E-05	1.53 E-06	1.49
G22		22:1	192.6	21.57	585.5	65.58	2.70 E-05	3.05 E-06	1.79
BE233	G03	3:1	36.1	4.04	110.1	12.33	1.22 E-04	1.38 E-05	1.32
	G05	5.5:1	66.5	7.45	202.2	22.65	2.65 E-05	2.99 E-06	1.32
	G07	7:1	84.2	9.43	256.9	28.77	1.93 E-05	2.18 E-06	1.32
	G10	10:1	121.2	13.57	368.0	41.22	1.35 E-05	1.53 E-06	1.32
	G22	22:1	253.7	28.41	768.8	86.11	2.70 E-05	3.05 E-06	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	$T_f$	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		oz-in/arc-min	100	100	100	100	250	250	250
		Nm/arc-min	0.70	0.70	0.70	0.70	2.00	2.00	2.00
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 more than one hour.

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

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 <sup>2</sup>	Kg-m <sup>2</sup>	
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.

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 <sup>2</sup>	Kg-m <sup>2</sup>	
BE341	G03	3:01	41.7	4.67	129.1	14.46	6.77E-04	7.65E-05	1.49
	G05	5.5:1	76.2	8.57	236.7	26.51	1.51E-04	1.71E-05	1.49
	G07	7:1	97.3	10.90	301.3	33.75	1.11E-04	1.25E-05	1.49
	G10	10:1	139.0	15.57	430.4	48.20	7.90E-05	8.93E-06	1.49
	G22	22:1	276.6	30.98	884.9	99.11	1.55E-04	1.75E-05	1.68
	G55	55:1	697.7	78.14	2218.4	248.46	7.94E-05	8.97E-06	1.68
BE342	G03	3:1	76.6	8.58	233.5	26.15	6.77E-04	7.65E-05	1.23
	G05	5.5:1	140.5	15.74	428.1	47.95	1.51E-04	1.71E-05	1.23
	G07	7:1	178.8	20.03	544.8	61.02	1.11E-04	1.25E-05	1.23
	G10	10:1	255.5	28.62	778.3	87.17	7.90E-05	8.93E-06	1.23
	G22	22:1	519.7	58.21	1611.3	180.47	1.55E-04	1.75E-05	1.39
	G55	55:1	1305.5	146.22	4034.4	451.85	7.94E-05	8.97E-06	1.39
BE343	G03	3:1	105.2	11.78	319.0	35.73	6.77E-04	7.65E-05	1.02
	G05	5.5:1	192.8	21.59	584.9	65.51	1.51E-04	1.71E-05	1.02
	G07	7:1	245.4	27.48	744.4	83.37	1.11E-04	1.25E-05	1.02
	G10	10:1	350.5	39.26	1063.5	119.11	7.90E-05	8.93E-06	1.02
	G22	22:1	718.2	80.44	2206.6	247.14	1.55E-04	1.75E-05	1.15
BE344	G03	3:1	131.7	14.75	398.6	44.64	6.77E-04	7.65E-05	0.89
	G05	5.5:1	241.4	27.04	730.8	81.85	1.51E-04	1.71E-05	0.89
	G07	7:1	307.3	34.42	930.1	104.17	1.11E-04	1.25E-05	0.89
	G10	10:1	438.9	49.16	1328.7	148.81	7.90E-05	8.93E-06	0.89
	G22	22:1	902.8	101.11	2760.4	309.16	1.55E-04	1.75E-05	0.96

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

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Size 92 Gearhead Mechanical Specifications

Parameter	Symbol	Units	G03	G05	G08	G10	G15	G25	G30	G40	G50
Ratio			3:1	5:1	8:01	10:1	15:1	25:1	30:1	40:1	50:1
Max. Input Torque	$T_r$	lb-in	301	199	81	42	66	40	30	25	20
		oz-in	4816	3184	1296	672	1056	640	480	400	320
		Nm	33.7	22.3	9.0	4.7	7.4	4.5	3.36	2.8	2.2
Friction Torque	$T_f$	oz-in	23	15.5	12	15	24	17	23.5	16	19
		Nm	.161	.109	.084	.105	.168	.119	.165	.112	.133
Viscous Damping	$T_d$	oz-in/Krpm Nm/Krpm	2	1.6	1.8	0.7	3.2	1.7	2.4	1.8	0.7
Torque Efficiency	E		0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Torsional Stiffness		oz-in/arc-min	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5
		Nm/arc-min	.49	.49	.49	.49	.49	.49	.49	.49	.49
Gearhead Weight		lbs	3.1	3.1	3.1	3.1	3.9	3.9	3.9	3.9	3.9
		Kg	1.4	1.4	1.4	1.4	1.8	1.8	1.8	1.8	1.8
Backlash		arc-min	10	10	10	10	12	12	12	12	12

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

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

Size 92 Motor/Gearhead System Specifications

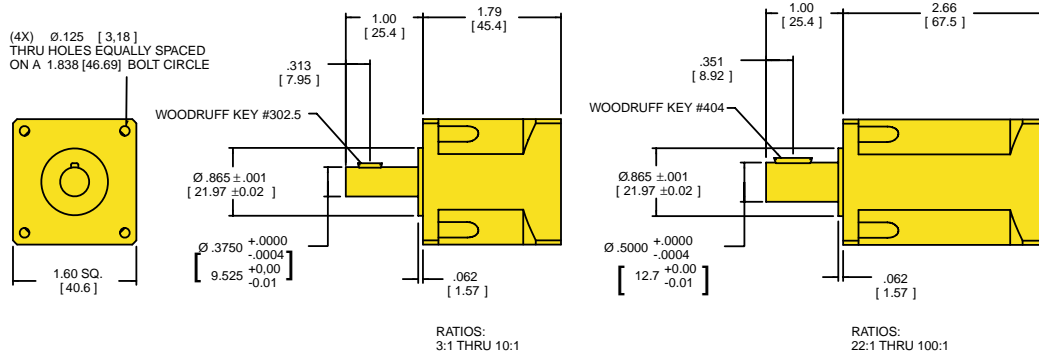
Motor Frame	Planetary Identifier	Ratio	Continuous Stall Torque		Peak Stall Torque		Gearhead Inertia		Thermal Resistance (°C/Watt)
			lb - in	Nm	lb - in	Nm	lb-in-sec <sup>2</sup>	Kg-m <sup>2</sup>	
N0921	G03	3:1	38.5	4.31	123.3	13.81	7.35E-04	8.30E-05	1.00
	G05	5:1	66.2	7.41	207.6	23.25	4.78E-04	5.40E-05	1.00
	G08	8:1	107.6	12.05	333.7	37.37	4.16E-04	4.70E-05	1.00
	G10	10:1	132.8	14.87	415.4	46.52	3.98E-04	4.50E-05	1.00
	G15	15:1	191.5	21.45	615.5	68.94	6.90E-04	7.80E-05	0.85
	G25	25:1	329.1	36.86	1035.7	116.00	4.43E-04	5.00E-05	0.85
	G30	30:1	383.8	42.99	1231.8	137.96	4.25E-04	4.80E-05	0.85
	G40	40:1	528.8	59.23	1659.5	185.86	4.16E-04	4.70E-05	0.85
G50	50:1	652.5	73.08	2065.8	231.37	4.43E-04	5.00E-05	0.85	
N0922	G03	3:1	71.3	7.99	221.7	24.83	7.35E-04	8.30E-05	0.85
	G05	5:1	121.0	13.55	371.7	41.63	4.78E-04	5.40E-05	0.85
	G08	8:1	195.1	21.85	596.3	66.79	4.16E-04	4.70E-05	0.85
	G10	10:1	242.2	27.13	743.7	83.29	3.98E-04	4.50E-05	0.85
	G15	15:1	355.6	39.83	1107.8	124.07	6.90E-04	7.80E-05	0.75
	G25	25:1	602.6	67.49	1856.4	207.92	4.43E-04	5.00E-05	0.75
	G30	30:1	712.1	79.76	2216.5	248.25	4.25E-04	4.80E-05	0.75
N0923	G03	3:1	108.5	12.15	333.3	37.33	7.35E-04	8.30E-05	0.68
	G05	5:1	183.0	20.50	557.7	62.46	4.78E-04	5.40E-05	0.68
	G08	8:1	294.3	32.96	893.9	100.12	4.16E-04	4.70E-05	0.68
	G10	10:1	366.2	41.01	1115.7	124.96	3.98E-04	4.50E-05	0.68
	G15	15:1	541.6	60.66	1665.9	186.58	6.90E-04	7.80E-05	0.59
N0924	G03	3:1	143.8	16.11	439.2	49.19	7.35E-04	8.30E-05	0.53
	G05	5:1	241.8	27.08	734.1	82.22	4.78E-04	5.40E-05	0.53
	G08	8:1	388.4	43.50	1176.2	131.73	4.16E-04	4.70E-05	0.53
	G15	15:1	718	80.42	2195.2	245.86	6.90E-04	7.80E-05	0.52

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

# Planetary Gearheads Dimensional Drawings

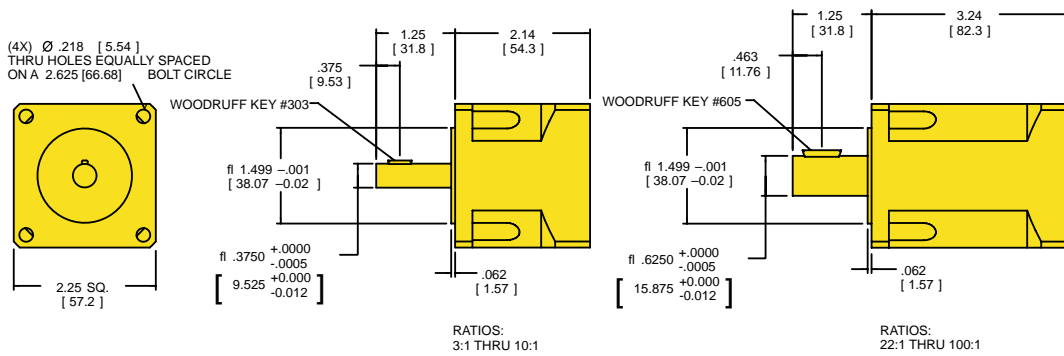
## Size 16, Dimensional Drawing

Dimensions in inches (mm)



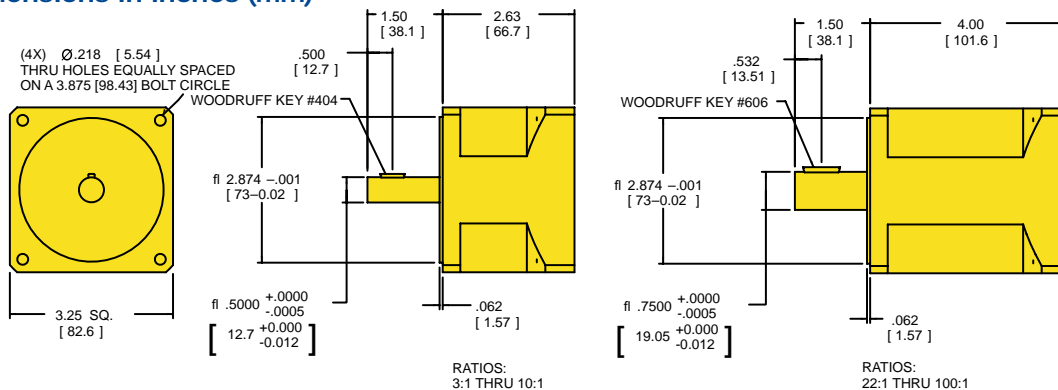
## Size 23, Dimensional Drawing

Dimensions in inches (mm)



## Size 34, Dimensional Drawing

Dimensions in inches (mm)

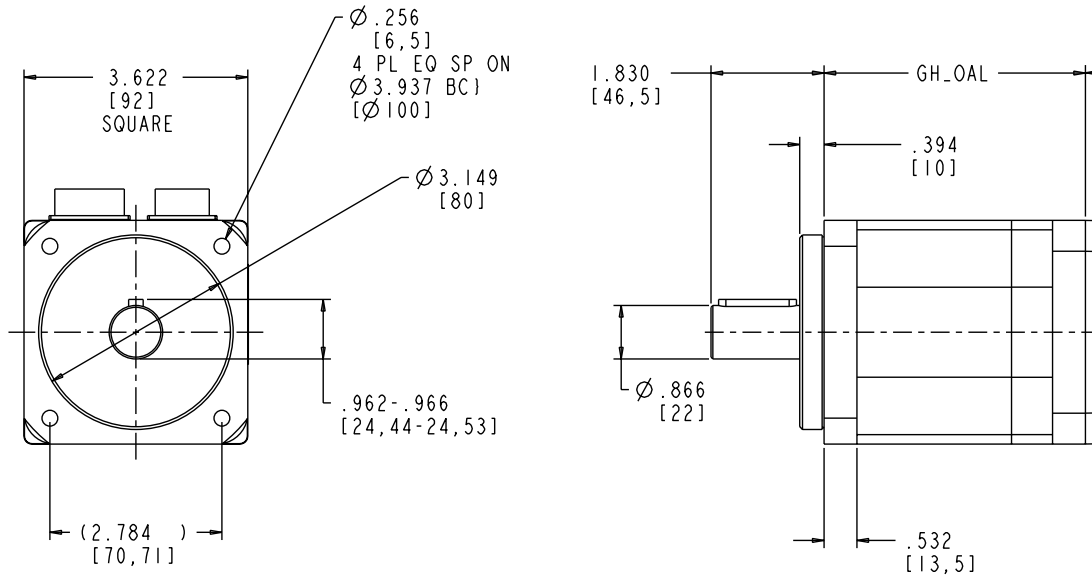


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# Planetary Gearheads Dimensional Drawings, continued

## Size 92, Dimensional Drawing

Dimensions in inches (mm)



RATIOS	GH_OAL
3, 5, 8, 10:1	2.330
15, 25, 30, 40, 50:1	4.230