



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

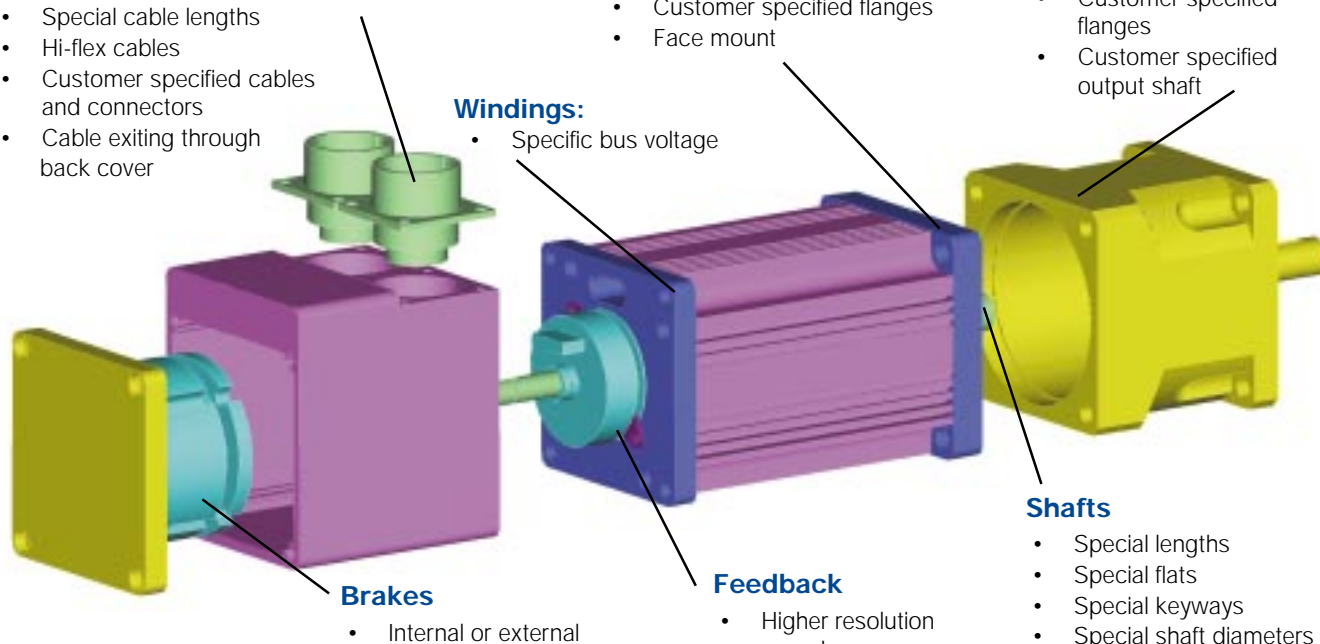
- Tapped mounting holes
- Customer specified flanges
- Face mount

Gearheads

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

Windings:

- Specific bus voltage



Brakes

- Internal or external

Feedback

- Higher resolution encoders
- Higher temperature encoders

Shafts

- Special lengths
- Special flats
- Special keyways
- Special shaft diameters
- Metric shaft diameters
- Hollow shafts
- Rear Shaft Extension
- Double flats
- Shaft pinning
- Pressed on gears
- Center tapped
- Special shaft materials

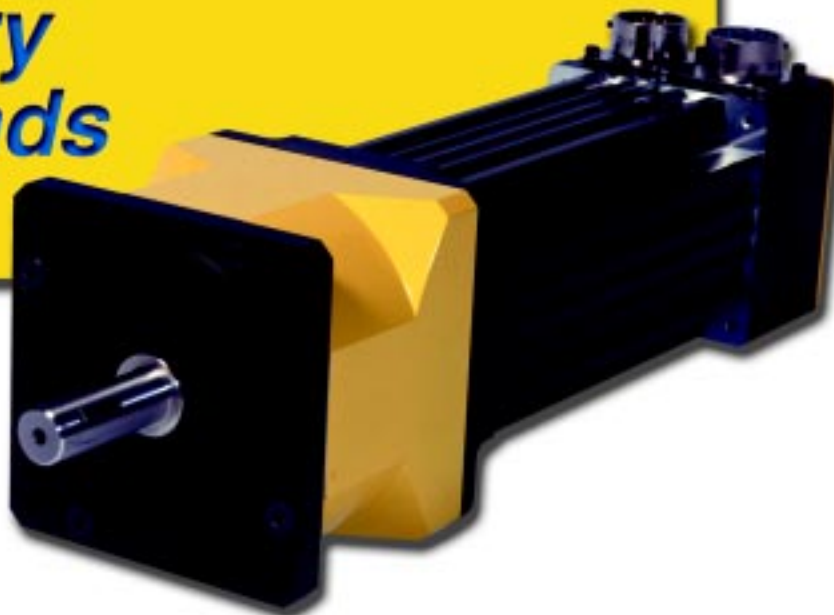
Miscellaneous Options

- Private label back cover
- Special windings
- Shorter lengths
- High speed balancing
- Special finish



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.

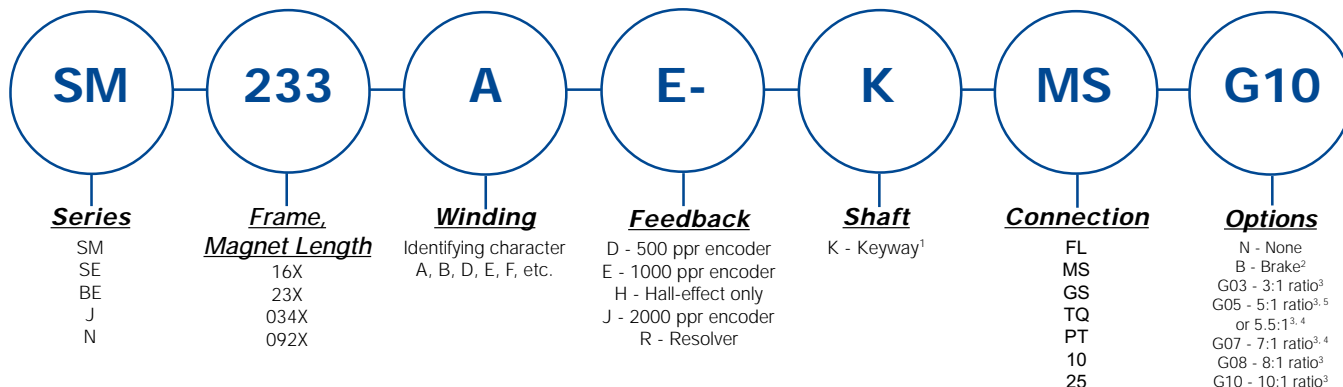
Compumotor can also provide custom gearhead solutions. Custom ratios, mounting flanges, and shafts can easily be incorporated into our standard package.

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



1 Refers to keyway on gearhead output shaft
 2 Currently available as standard product only on BE and Neometric motors
 3 Shaft seal is included with the gearhead
 4 Not available on Neometric 92mm
 5 Neometric 92mm only
 6 With MS, TQ or GS connectors - IP65

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 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.

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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 (°C/Watt) |
|----------------|----------------------|-------|-------------------------|-------|-------------------|-------|------------------------|-------------------|---------------------------------|
| | | | lb - in | Nm | lb - in | Nm | lb-in-sec ² | Kg-m ² | |
| 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 ² | Kg-m ² | |
| 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 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.

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 | |
| 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

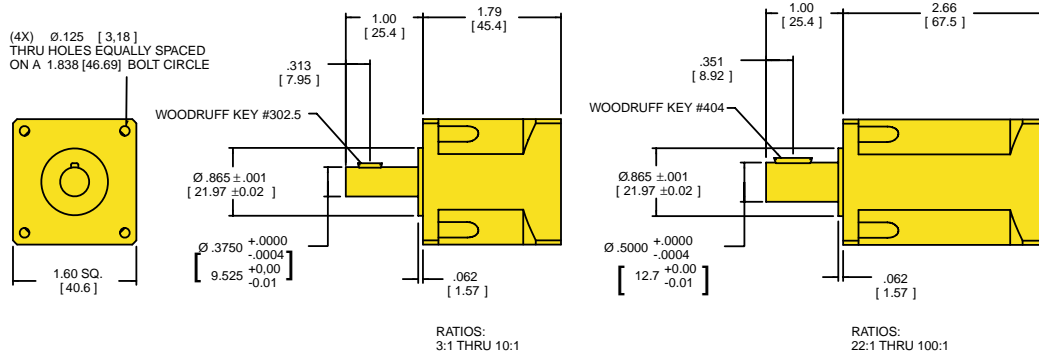
| Motor Frame | Planetary Identifier | Ratio | Continuous Stall Torque | | Peak Stall Torque | | Gearhead Inertia | | Thermal Resistance (°C/Watt) |
|-------------|----------------------|-------|-------------------------|--------|-------------------|----------|------------------------|-------------------|---------------------------------|
| | | | lb - in | Nm | lb - in | Nm | lb-in-sec ² | Kg-m ² | |
| 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

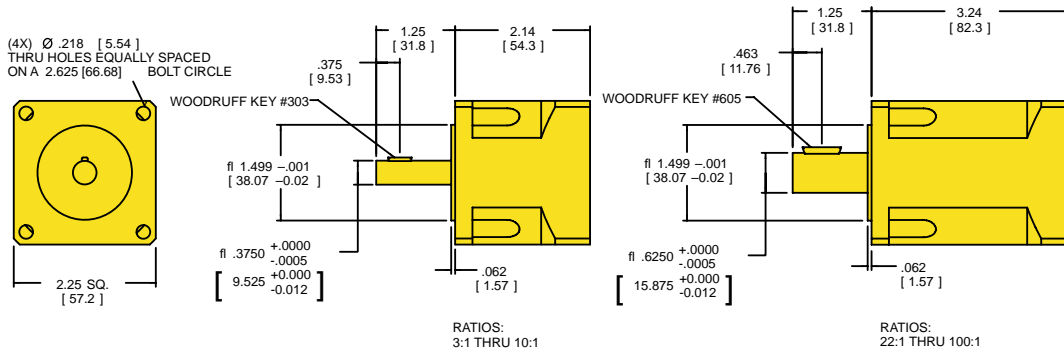
Size 16, Dimensional Drawing

Dimensions in inches (mm)



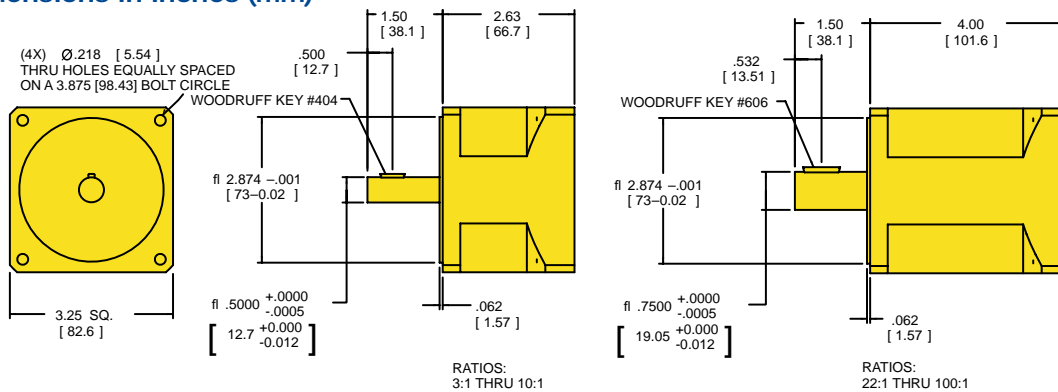
Size 23, Dimensional Drawing

Dimensions in inches (mm)



Size 34, Dimensional Drawing

Dimensions in inches (mm)

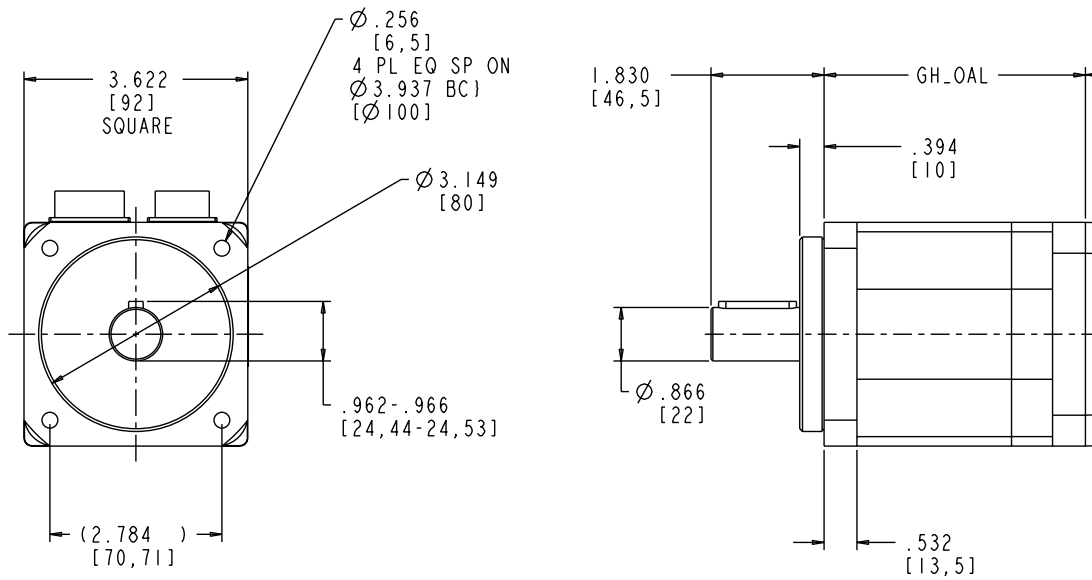


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Planetary Gearheads Dimensional Drawings, continued

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 |