

Introducing Exlar's SLM Series Motors and SLG Series Integrated Gearmotors

Brushless servo motor and gearmotor technology from Exlar provides the highest torque-to-size ratio available in motion control today. Small size, outstanding performance specifications, quality and customization capabilities offer



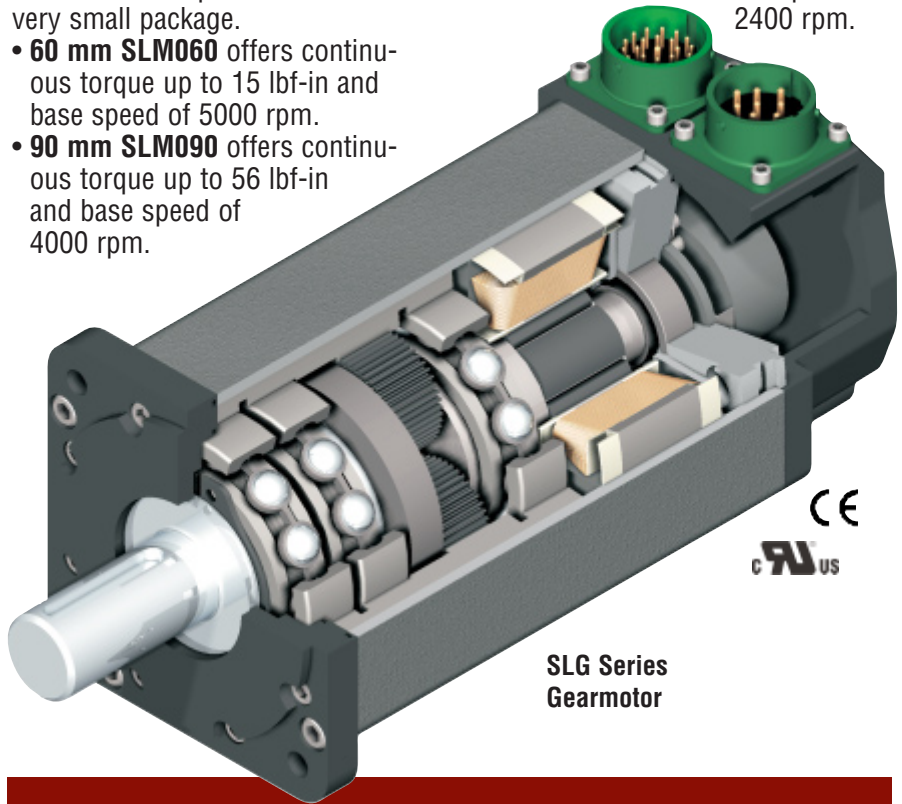
you the solution you need for your motion control application.

Very High Torque Density

Exlar's T-LAM technology produces an efficient and powerful motor in a very small package.

- **60 mm SLM060** offers continuous torque up to 15 lbf-in and base speed of 5000 rpm.
- **90 mm SLM090** offers continuous torque up to 56 lbf-in and base speed of 4000 rpm.

- **115 mm SLM115** offers continuous torque up to 176 lbf-in and base speed of 3000 rpm.
- **142 mm SLM142** offers continuous torque up to 237 lbf-in and base speed of 2400 rpm.



SLG Series Gearmotor

SLM Motor Standard Features

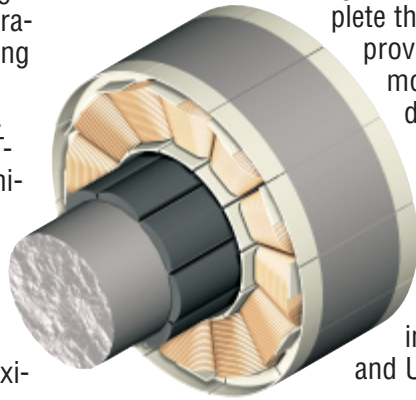
- UL recognized component IP65 sealing
- MS connectors embedded leads, or embedded leads with cable plugs
- Feedback configurations for nearly all servo amplifiers 115, 230 or 460 Vrms motor voltages
- Epoxy-coated housings Class 180H insulation system

SLG Gearmotor Standard Features

- All features of SLM motor shown above plus . . .
- High side load bearing design
- Integrated armature and sun gear
- Higher stiffness than bolt-on gearhead and motor
- 10 arc minute standard backlash
- Single and double reduction ratios: 4:1, 5:1, 10:1, 16:1, 20:1, 25:1, 40:1, 50:1, and 100:1

**Unique T-LAM™
Stator Design Advantage**

This innovative design offers several advantages over traditional motor winding for a more efficient and powerful motor. Built for durability, T-LAM segmented lamination stator technology consists of individual segments, each containing individual phase wiring for maxi-



mum motor performance. The robust insulation, high coercive strength magnets, and complete thermal potting all provide a more robust motor design – a design yielding a 35 to 70% torque increase in the same package size! T-LAM motor designs have Class 180-H insulation systems and UL recognition.

Customization to Suit Your Requirements

Exlar Corporation has capabilities allowing custom motors to be manufactured to meet your OEM requirements. Whatever your special requirements are . . . custom shafts, custom mountings, custom stators, custom housing materials . . . please contact Exlar or your local sales representative to discuss your needs.

Typical Applications

SLM Series Motors and SLG Series Gearmotors are perfectly suited for applications in any industry.

EXLAR SLM & SLG SERIES MOTORS APPLICATIONS INCLUDE:

Semiconductor

Labeling

Automotive Assembly

Winding Machines

Web Feed

Packaging

Stage Positioning

Plastics Machinery

Machine Tools

Parts Handling

Glass Manufacturing

Fluid Handling

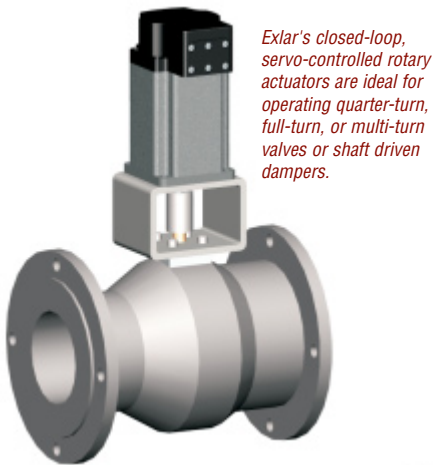
Conveyor Drives

Medical Applications

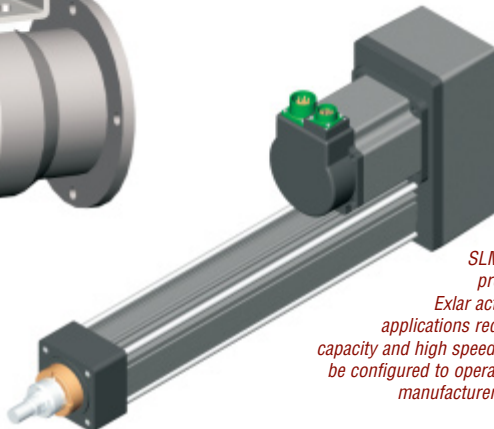
Tensioning

Simulation Robotics

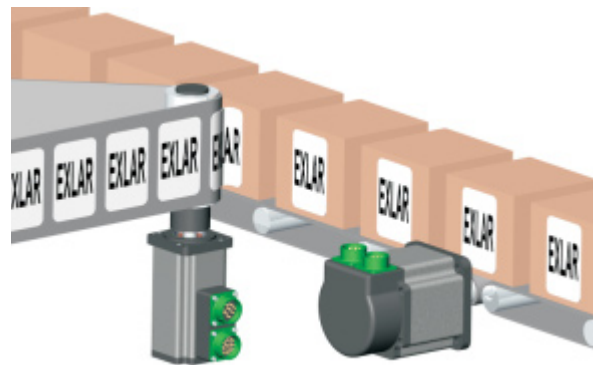
Screw Drives



Exlar's closed-loop, servo-controlled rotary actuators are ideal for operating quarter-turn, full-turn, or multi-turn valves or shaft driven dampers.



The FT Series combined with SLM/G Series motors provides a complete Exlar actuator solution for applications requiring heavy load capacity and high speeds. The motor can be configured to operate with nearly any manufacturer's servo amplifier.

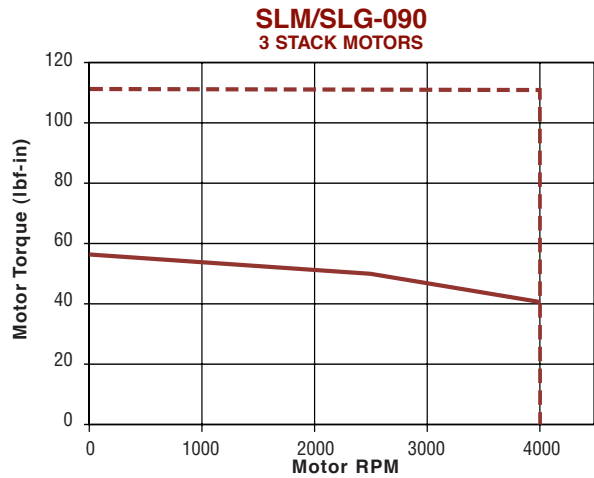
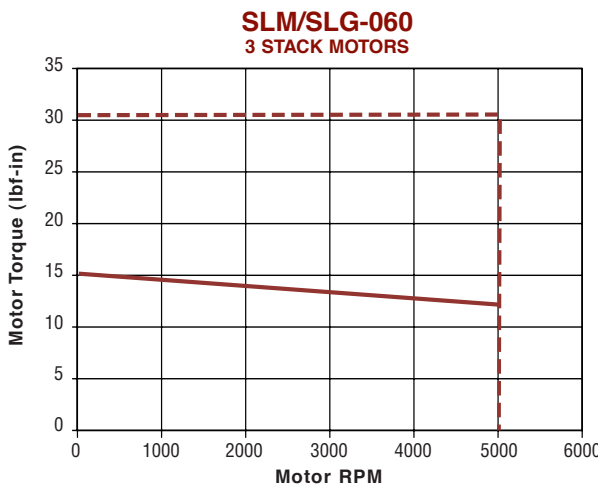
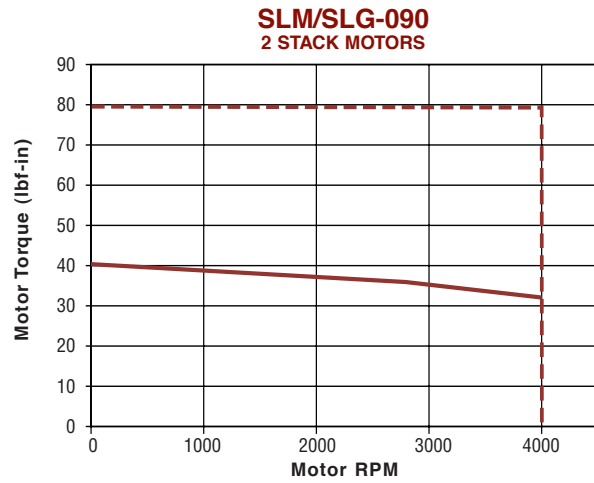
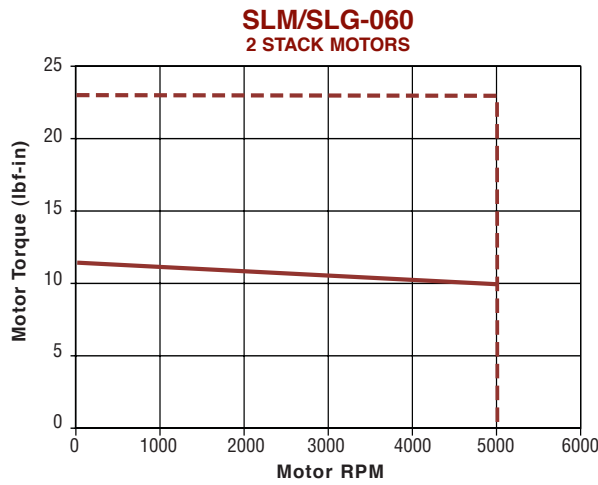
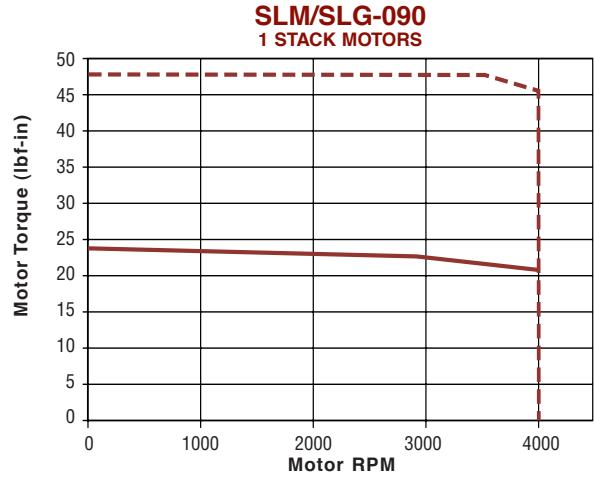
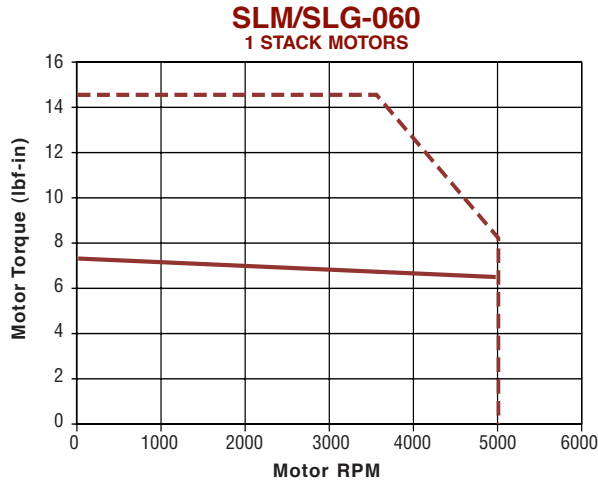


Exlar's brushless motors are the highest performance with very compact size. This makes them perfect for high-speed labeling and demanding conveyor drive applications.

SLM/SLG Series

SLM/SLG Speed/Torque Curves

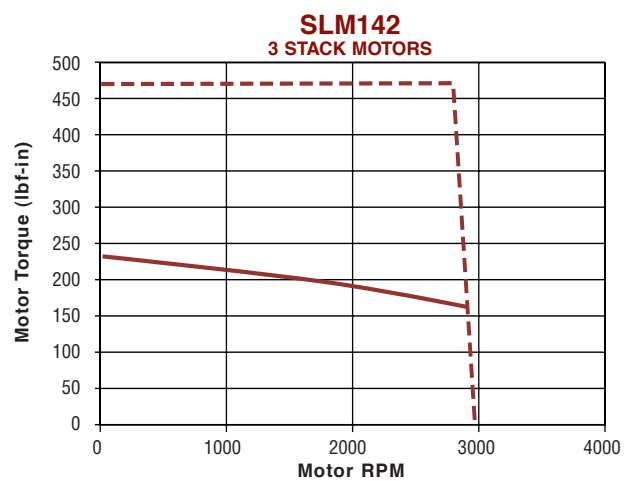
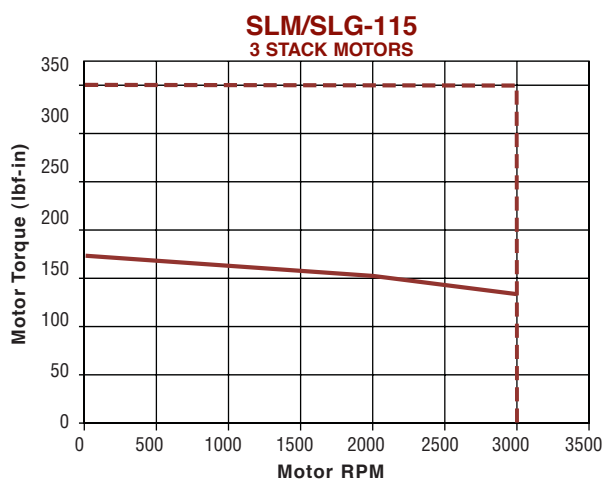
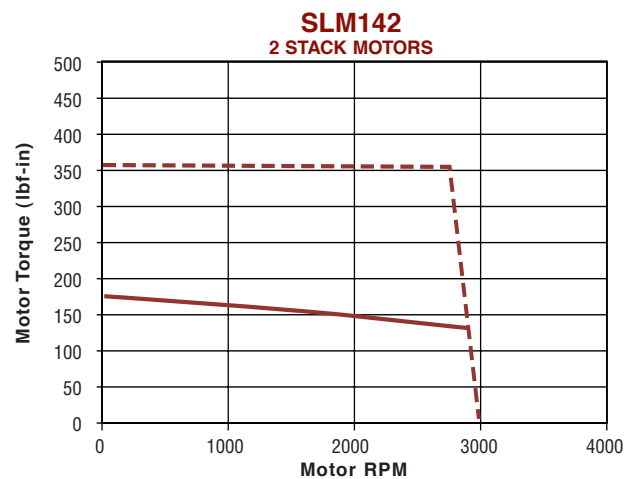
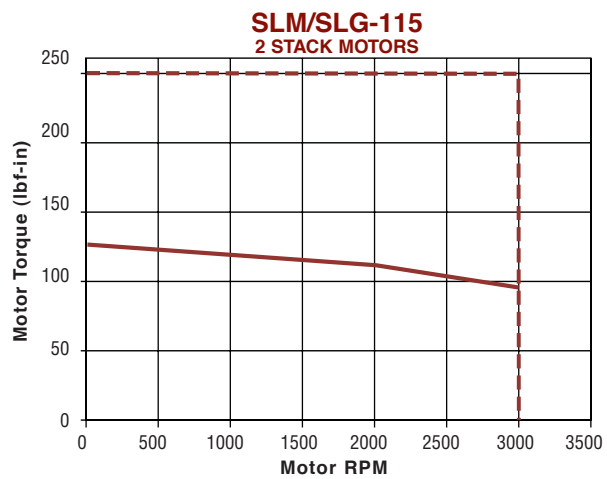
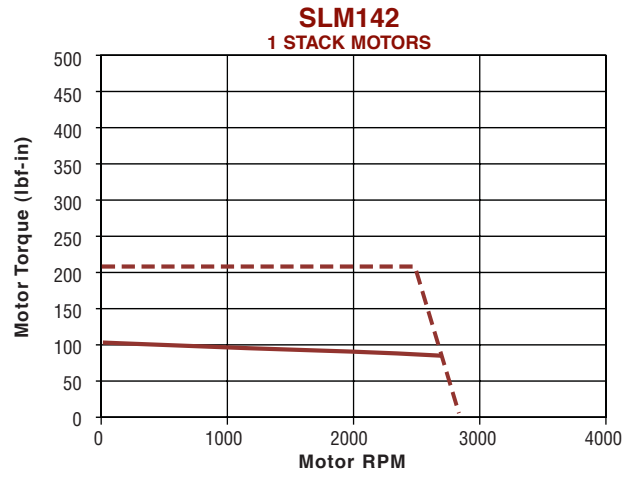
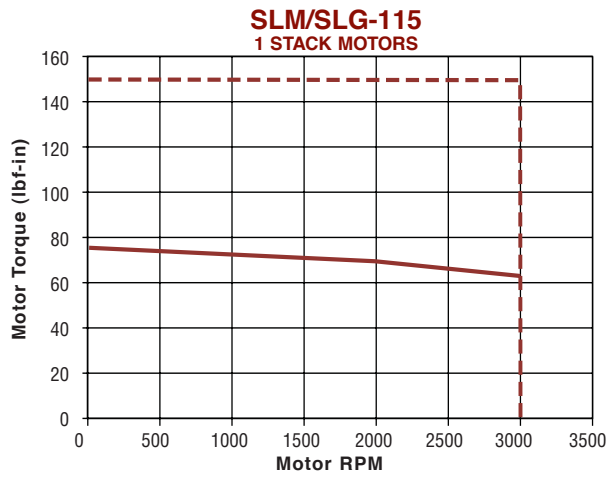
--- Peak Torque
 — Continuous Torque



Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4" on SLM/SLG060 and 10" x 10" x 3/8" on SLM/SLG090

SLM/SLG Speed/Torque Curves

--- Peak Torque
 — Continuous Torque



SLM/SLG Series

Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" on SLM/SLG115 and 12" x 12" x 1/2" on SLM/SLG142

SLM/SLG060 Electrical/Mechanical Specifications

| SLM/G060 Stator Data | | 1 Stack Motor | | | | 2 Stack Motor | | | | 3 Stack Motor | | | |
|----------------------------------|------------------------|-----------------|---------|---------|---------|---------------|---------|---------|---------|---------------|---------|---------|---------|
| Sinusoidal Commutation Data | | 118 | 138 | 158 | 168 | 218 | 238 | 258 | 268 | 318 | 338 | 358 | 368 |
| Continuous Motor Torque | lbf-in | 7.6 | 7.3 | 7.0 | 7.0 | 11.9 | 11.5 | 11.2 | 11.3 | 15.3 | 15.3 | 14.8 | 15.0 |
| | (Nm) | (0.86) | (0.83) | (0.79) | (0.79) | (1.35) | (1.30) | (1.27) | (1.28) | (1.73) | (1.73) | (1.67) | (1.69) |
| Peak Motor Torque | lbf-in | 15.3 | 14.7 | 14.0 | 14.0 | 23.8 | 23.0 | 22.5 | 22.6 | 30.7 | 30.7 | 29.6 | 29.9 |
| | (Nm) | (1.72) | (1.66) | (1.58) | (1.58) | (2.69) | (2.60) | (2.54) | (2.56) | (3.47) | (3.46) | (3.34) | (3.38) |
| Torque Constant (Kt) | lbf-in/A | 2.5 | 5.2 | 8.3 | 9.5 | 2.5 | 5.2 | 8.9 | 10.2 | 2.3 | 5.3 | 8.8 | 10.2 |
| (+/- 10% @ 25°C) | (Nm/A) | (0.28) | (0.6) | (0.9) | (1.1) | (0.3) | (0.6) | (1.0) | (1.1) | (0.3) | (0.6) | (1.0) | (1.1) |
| Continuous Current Rating | A | 3.4 | 1.6 | 1.9 | 0.8 | 5.4 | 2.5 | 1.4 | 1.2 | 7.3 | 3.2 | 1.9 | 1.6 |
| Peak Current Rating | A | 6.9 | 3.1 | 3.8 | 1.6 | 10.8 | 4.9 | 2.8 | 2.5 | 14.6 | 6.5 | 3.8 | 3.3 |
| Trapezoidal Commutation Data | | | | | | | | | | | | | |
| Continuous Motor Torque | lbf-in | 7.3 | 7.0 | 6.7 | 6.7 | 11.4 | 11.0 | 10.7 | 10.8 | 14.7 | 14.6 | 14.1 | 14.3 |
| | (Nm) | (0.82) | (0.79) | (0.76) | (0.76) | (1.29) | (1.24) | (1.21) | (1.22) | (1.66) | (1.65) | (1.6) | (1.61) |
| Peak Motor Torque | lbf-in | 14.6 | 14.0 | 13.4 | 13.4 | 22.8 | 22.0 | 21.5 | 21.6 | 29.3 | 29.3 | 28.3 | 28.6 |
| | (Nm) | (1.65) | (1.6) | (1.5) | (1.5) | (2.6) | (2.5) | (2.4) | (2.4) | (3.3) | (3.3) | (3.2) | (3.2) |
| Torque Constant (Kt) | lbf-in/A | 1.93 | 4.06 | 6.5 | 7.41 | 1.93 | 4.06 | 6.90 | 7.92 | 1.83 | 4.11 | 6.85 | 7.92 |
| (+/- 10% @ 25°C) | (Nm/A) | (0.22) | (0.46) | (0.73) | (0.84) | (0.22) | (0.46) | (0.78) | (0.89) | (0.21) | (0.46) | (0.77) | (0.89) |
| Continuous Current Rating | A | 4.22 | 1.93 | 1.15 | 1.01 | 6.59 | 3.02 | 1.74 | 1.52 | 8.96 | 3.98 | 2.30 | 2.02 |
| Peak Current Rating | A | 8.44 | 3.86 | 2.3 | 2.02 | 13.18 | 6.04 | 3.47 | 3.04 | 17.92 | 7.96 | 4.61 | 4.04 |
| Motor Data | | | | | | | | | | | | | |
| Voltage Constant (Ke) | Vpk/Krpm | 23.9 | 50.3 | 80.5 | 91.8 | 23.9 | 50.3 | 85.5 | 98.1 | 22.6 | 50.9 | 84.9 | 98.1 |
| (+/- 10% @ 25°C) | Vrms/Krpm | 16.9 | 35.6 | 56.9 | 64.9 | 16.9 | 35.6 | 60.5 | 69.4 | 16.0 | 36.0 | 60.0 | 69.4 |
| Pole Configuration | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Resistance (L-L)(+/- 5% @ 25°C) | Ohms | 2.62 | 12.52 | 35.22 | 45.79 | 1.11 | 5.26 | 15.95 | 20.69 | 0.62 | 3.14 | 9.36 | 12.22 |
| Inductance (L-L)(+/- 15%) | mH | 3.1 | 13.7 | 35.0 | 45.5 | 1.5 | 6.6 | 19.0 | 25.0 | 0.9 | 4.4 | 12.3 | 16.5 |
| SLM Armature Inertia | lb-in-sec ² | 0.000237 | | | | 0.000413 | | | | 0.000589 | | | |
| (+/- 5%) | (kg-cm ²) | (0.268) | | | | (0.466) | | | | (0.665) | | | |
| Brake Inertia | lb-in-sec ² | 0.000120 | | | | 0.000120 | | | | 0.000120 | | | |
| | (kg-cm ²) | (0.135) | | | | (0.135) | | | | (0.135) | | | |
| Brake Current @ 24 VDC | A | .33 | | | | .33 | | | | .33 | | | |
| Brake Holding Torque | lbf-in (Nm) | 18 (2.2) | | | | 18 (2.2) | | | | 18 (2.2) | | | |
| Brake Engage/Disengage Time | ms | 14/28 | | | | 14/28 | | | | 14/28 | | | |
| Mechanical Time Constant (tm) | ms | 1.41 | 1.52 | 1.67 | 1.67 | 0.60 | 0.64 | 0.67 | 0.66 | 0.37 | 0.37 | 0.40 | 0.39 |
| Electrical Time Constant (te) | ms | 1.18 | 1.09 | 0.99 | 0.99 | 1.34 | 1.25 | 1.19 | 1.21 | 1.42 | 1.41 | 1.32 | 1.35 |
| Damping Constant | lbf-in/krpm | 0.02 | 0.02 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.05 | 0.05 | 0.05 | 0.05 |
| | (N-m/krpm) | (0.002) | (0.002) | (0.002) | (0.002) | (0.003) | (0.003) | (0.003) | (0.003) | (0.006) | (0.006) | (0.006) | (0.006) |
| Friction Torque | lbf-in | 0.07 | 0.07 | 0.07 | 0.07 | 0.10 | 0.10 | 0.10 | 0.10 | 0.14 | 0.14 | 0.14 | 0.14 |
| | (Nm) | (0.008) | (0.008) | (0.008) | (0.008) | (0.011) | (0.011) | (0.011) | (0.011) | (0.016) | (0.016) | (0.016) | (0.016) |
| Voltage Rating | Vrms | 115 | 230 | 400 | 460 | 115 | 230 | 400 | 460 | 115 | 230 | 400 | 460 |
| Speed @ Bus Voltage | rpm | 5000 | | | | | | | | | | | |
| Stator Insulation System (Class) | | C | | | | | | | | | | | |
| Insulation System Volt Rating | Vrms | 460 | | | | | | | | | | | |
| Thermal Switch, Case Temp. | | C | | | | | | | | | | | |
| Environmental Rating | | IP65 | | | | | | | | | | | |
| Standard Connectors | Motor & Brake | MS-3112-E16-8P | | | | | | | | | | | |
| | Feedback | MS-3112-E16-23P | | | | | | | | | | | |

For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by .707 and current by 1.414.

SLG060 Gearmotor Data

| | | 1 Stack Stator | | | 2 Stack Stator | | | 3 Stack Stator | | | | |
|------------------------------|---|------------------|-------------------------|----------------------------------|------------------|-------------------------|-----------------------|------------------|--|--|--|--|
| SLG Armature Inertia* | lbf-in-sec ² (kg-cm ²) | 0.000226 (0.255) | | | 0.000401 (0.453) | | | 0.000576 (0.651) | | | | |
| Gearing Reflected Inertia | Single Reduction | | | | | | Double Reduction | | | | | |
| | | Gear Stages | lbf-in-sec ² | (kg-cm ²) | Gear Stages | lbf-in-sec ² | (kg-cm ²) | | | | | |
| | | 4:1 | 0.0000132 | (0.0149) | 16:1 | 0.0000121 | (0.0137) | | | | | |
| | | 5:1 | 0.0000087 | (0.00984) | 20:1, 25:1 | 0.0000080 | (0.00906) | | | | | |
| | 10:1 | 0.0000023 | (0.00261) | 40:1, 50:1, 100:1 | 0.0000021 | (0.00242) | | | | | | |
| Backlash at 1% rated torque: | 10 Arc minutes | | | Efficiency: Single reduction 91% | | | Double Reduction: 86% | | | | | |

*Add armature inertia to gearing inertia for total SLG system inertia

Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4"

SLM/G090 Electrical/Mechanical Specifications

| SLM/SLG090 Stator Data | | 1 Stack Motor | | | | 2 Stack Motor | | | | 3 Stack Motor | | | | |
|----------------------------------|---|-----------------|--------------------|-----------------|-----------------|-----------------|-----------------|-------------------|-----------------|------------------|------------------|------------------|-------------------|--|
| Sinusoidal Commutation Data | | 118 | 138 | 158 | 168 | 218 | 238 | 258 | 268 | 338 | 358 | 368 | | |
| Continuous Motor Torque | lbf-in (Nm) | 23.8 (2.69) | 24.0 (2.71) | 23.7 (2.68) | 24.0 (2.71) | 39.6 (4.48) | 40.0 (4.52) | 39.6 (4.47) | 40.0 (4.52) | 55.8 (6.31) | 55.5 (6.27) | 55.8 (6.30) | | |
| Peak Motor Torque | lbf-in (Nm) | 47.6 (5.38) | 48.0 (5.43) | 47.4 (5.35) | 48.0 (5.42) | 79.2 (8.95) | 80.1 (9.05) | 79.1 (8.94) | 80.0 (9.04) | 111.6 (12.61) | 111.0 (12.54) | 111.6 (12.61) | | |
| Torque Constant (Kt) | lbf-in/A (+/- 10% @ 25°C) (Nm/A) | 3.2 (0.37) | 6.6 (0.7) | 11.6 (1.3) | 13.3 (1.5) | 3.2 (0.4) | 6.6 (0.7) | 11.6 (1.3) | 13.3 (1.5) | 6.6 (0.7) | 11.6 (1.3) | 13.1 (1.5) | | |
| Continuous Current Rating | A | 8.2 | 4.0 | 2.3 | 2.0 | 13.6 | 6.8 | 3.8 | 3.4 | 9.5 | 5.3 | 4.8 | | |
| Peak Current Rating | A | 16.4 | 8.1 | 4.6 | 4.0 | 27.3 | 13.5 | 7.6 | 6.7 | 19.0 | 10.7 | 9.5 | | |
| Trapezoidal Commutation Data | | | | | | | | | | | | | | |
| Continuous Motor Torque | lbf-in (Nm) | 22.7 (2.57) | 22.9 (2.59) | 22.6 (2.56) | 22.9 (2.59) | 37.8 (4.27) | 38.2 (4.32) | 37.8 (4.27) | 38.2 (4.31) | 53.3 (6.02) | 53.0 (5.99) | 53.3 (6.02) | | |
| Peak Motor Torque | lbf-in (Nm) | 45.4 (5.13) | 45.9 (5.2) | 45.3 (5.1) | 45.8 (5.2) | 75.7 (8.5) | 76.5 (8.6) | 75.6 (8.5) | 76.4 (8.6) | 106.6 (12.0) | 106.0 (12.0) | 106.6 (12.0) | | |
| Torque Constant (Kt) | lbf-in/A (+/- 10% @ 25°C) (Nm/A) | 2.53 (0.29) | 5.17 (0.58) | 9.02 (1.02) | 10.34 (1.17) | 2.53 (0.29) | 5.17 (0.58) | 9.02 (1.02) | 10.34 (1.17) | 5.11 (0.58) | 9.07 (1.03) | 10.23 (1.16) | | |
| Continuous Current Rating | A | 10.04 | 4.96 | 2.80 | 2.48 | 16.71 | 8.27 | 4.68 | 4.13 | 11.65 | 6.53 | 5.82 | | |
| Peak Current Rating | A | 20.08 | 9.92 | 5.61 | 4.96 | 33.42 | 16.54 | 9.36 | 8.26 | 23.30 | 13.05 | 11.64 | | |
| Motor Data | | | | | | | | | | | | | | |
| Voltage Constant (Ke) | Vpk/Krpm (+/- 10% @ 25°C) Vrms/Krpm | 31.3 22.2 | 64.0 45.3 | 111.7 79.0 | 128.1 90.6 | 31.3 22.2 | 64.0 45.3 | 111.7 79.0 | 128.1 90.6 | 63.4 44.8 | 112.4 79.5 | 126.7 89.6 | | |
| Pole Configuration | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | | |
| Resistance (L-L) (+/- 5% @ 25°C) | Ohms | 0.75 | 3.06 | 9.57 | 12.28 | 0.30 | 1.21 | 3.78 | 4.86 | 0.69 | 2.19 | 2.75 | | |
| Inductance (L-L) (+/- 15%) | mH | 3.7 | 15.4 | 78.0 | 61.5 | 1.8 | 7.3 | 37.2 | 29.3 | 4.7 | 24.7 | 18.8 | | |
| SLM Armature Inertia | lb-in-sec ² (+/- 5%) (kg-cm ²) | | 0.00054 (0.609) | | | | | 0.00097 (1.09) | | | | | 0.00140 (1.58) | |
| Brake Inertia | lb-in-sec ² (kg-cm ²) | | 0.00096 (1.08) | | | | | 0.00096 (1.08) | | | | | 0.00096 (1.08) | |
| Brake Current @ 24 VDC | A | | .67 | | | | | .67 | | | | | .67 | |
| Brake Holding Torque | lbf-in (Nm) | | 97 (11) | | | | | 97 (11) | | | | | 97 (11) | |
| Brake Engage/Disengage Time | ms | | 20/29 | | | | | 20/29 | | | | | 20/29 | |
| Mechanical Time Constant (tm) | ms | 0.51 | 0.52 | 0.76 | 0.52 | 0.38 | 0.37 | 0.54 | 0.37 | 0.31 | 0.44 | 0.31 | | |
| Electrical Time Constant (te) | ms | 5.14 | 5.02 | 8.14 | 5.01 | 5.93 | 6.06 | 9.85 | 6.04 | 6.86 | 11.30 | 6.86 | | |
| Damping Constant | lbf-in/krpm (N-m/krpm) | 0.07 (0.008) | 0.07 (0.008) | 0.07 (0.008) | 0.07 (0.008) | 0.12 (0.014) | 0.12 (0.014) | 0.12 (0.014) | 0.12 (0.014) | 0.18 (0.020) | 0.18 (0.020) | 0.18 (0.020) | | |
| Friction Torque | lbf-in (Nm) | 0.20 (0.023) | 0.20 (0.023) | 0.20 (0.023) | 0.20 (0.023) | 0.35 (0.040) | 0.35 (0.040) | 0.35 (0.040) | 0.35 (0.040) | 0.50 (0.056) | 0.50 (0.056) | 0.50 (0.056) | | |
| Voltage Rating | Vrms | 115 | 230 | 400 | 460 | 115 | 230 | 400 | 460 | 230 | 400 | 460 | | |
| Speed @ Bus Voltage | rpm | 4000 | | | | | | | | | | | | |
| Stator Insulation System (Class) | °C | 180 (H) | | | | | | | | | | | | |
| Insulation System Volt Rating | Vrms | 460 | | | | | | | | | | | | |
| Thermal Switch, Case Temp. | °C | 100 | | | | | | | | | | | | |
| Environmental Rating | | IP65 | | | | | | | | | | | | |
| Standard Connectors | Motor & Brake | MS-3112-E16-8P | | | | | | | | | | | | |
| | Feedback | MS-3112-E16-23P | | | | | | | | | | | | |

For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by .707 and current by 1.414.

SLG090 Gearmotor Data

| SLG Armature Inertia* | | 1 Stack Stator | | | 2 Stack Stator | | | 3 Stack Stator | | |
|---|---|----------------------------------|--|-----------------------|-----------------------|--|-------------------------|----------------|-----------------------|--|
| SLG Armature Inertia* | lbf-in-sec ² (kg-cm ²) | 0.00114 (1.29) | | | 0.00157 (1.77) | | | 0.00200 (2.26) | | |
| Gearing Reflected Inertia | | Single Reduction | | | Double Reduction | | | | | |
| | Gear Stages | lbf-in-sec ² | | (kg-cm ²) | Gear Stages | | lbf-in-sec ² | | (kg-cm ²) | |
| | 4:1 | 0.000154 | | (0.174) | 16:1 | | 0.000115 | | (0.130) | |
| | 5:1 | 0.000100 | | (0.113) | 20:1, 25:1 | | 0.0000756 | | (0.0854) | |
| | 10:1 | 0.0000265 | | (0.0300) | 40:1, 50:1, 100:1 | | 0.0000203 | | (0.0230) | |
| Backlash at 1% rated torque: | 10 Arc minutes | Efficiency: Single reduction 91% | | | Double Reduction: 86% | | | | | |
| *Add armature inertia to gearing inertia for total SLG system inertia | | | | | | | | | | |
| Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 3/8" | | | | | | | | | | |

SLM/SLG115 Electrical/Mechanical Specifications

| SLM/SLG115 Stator Data | | 1 Stack Motor | | | | 2 Stack Motor | | | 3 Stack Motor | | |
|-------------------------------------|-----------------------------------|-----------------|---------|---------|---------|---------------|---------|---------|---------------|---------|---------|
| Sinusoidal Commutation Data | | 118 | 138 | 158 | 168 | 238 | 258 | 268 | 338 | 358 | 368 |
| Continuous Motor Torque | lbf-in | 75.8 | 74.2 | 74.4 | 74.2 | 123.8 | 121.6 | 123.8 | 174.2 | 173.1 | 177.1 |
| | (Nm) | (8.57) | (8.39) | (8.41) | (8.38) | (13.99) | (13.74) | (13.99) | (19.68) | (19.56) | (20.01) |
| Peak Motor Torque | lbf-in | 151.7 | 148.5 | 148.9 | 148.4 | 247.6 | 243.2 | 247.6 | 348.4 | 346.2 | 354.2 |
| | (Nm) | (17.14) | (16.77) | (16.82) | (16.77) | (27.98) | (27.48) | (27.98) | (39.36) | (39.11) | 40.02) |
| Torque Constant (Kt) | lbf-in/A | 4.5 | 8.7 | 15.7 | 17.4 | 8.7 | 15.9 | 17.4 | 8.5 | 15.9 | 17.6 |
| | (+/- 10% @ 25°C) (Nm/A) | (0.51) | (1.0) | (1.8) | (2.0) | (1.0) | (1.8) | (2.0) | (1.0) | (1.8) | (2.0) |
| Continuous Current Rating | A | 18.7 | 9.5 | 5.3 | 4.8 | 15.9 | 8.6 | 8.0 | 22.9 | 12.2 | 11.3 |
| Peak Current Rating | A | 37.4 | 19.1 | 10.6 | 9.5 | 31.8 | 17.1 | 15.9 | 45.8 | 24.4 | 22.5 |
| Trapezoidal Commutation Data | | | | | | | | | | | |
| Continuous Motor Torque | lbf-in | 72.4 | 70.9 | 71.1 | 70.9 | 118.2 | 116.1 | 118.2 | 166.4 | 165.3 | 169.1 |
| | (Nm) | (8.18) | (8.01) | (8.03) | (8.01) | (13.36) | (13.12) | (13.36) | (18.8) | (18.67) | (19.11) |
| Peak Motor Torque | lbf-in | 144.8 | 141.8 | 142.1 | 141.7 | 236.5 | 232.3 | 236.5 | 332.7 | 330.6 | 338.2 |
| | (Nm) | (16.36) | (16.0) | (16.1) | (16.0) | (26.7) | (26.2) | (26.7) | (37.6) | (37.3) | (38.2) |
| Torque Constant (Kt) | lbf-in/A | 3.53 | 6.78 | 12.22 | 13.55 | 6.78 | 12.37 | 13.55 | 6.63 | 12.37 | 13.7 |
| | (+/- 10% @ 25°C) (Nm/A) | (0.40) | (0.77) | (1.38) | (1.53) | (0.77) | (1.40) | (1.53) | (0.75) | (1.40) | (1.55) |
| Continuous Current Rating | A | 22.89 | 11.69 | 6.50 | 5.84 | 19.5 | 10.49 | 9.75 | 28.04 | 14.93 | 13.79 |
| Peak Current Rating | A | 45.78 | 23.38 | 12.99 | 11.68 | 39.0 | 20.98 | 19.18 | 55.24 | 29.85 | 27.18 |
| Motor Data | | | | | | | | | | | |
| Voltage Constant (Ke) | Vpk/Krpm | 43.8 | 83.9 | 151.4 | 167.9 | 83.9 | 153.3 | 167.9 | 82.1 | 153.3 | 169.7 |
| | (+/- 10% @ 25°C) Vrms/Krpm | 31.0 | 59.4 | 107.1 | 118.7 | 59.4 | 108.4 | 118.7 | 58.1 | 108.4 | 120 |
| Pole Configuration | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Resistance (L-L) (+/- 5% @ 25°C) | Ohms | 0.21 | 0.80 | 2.60 | 3.21 | 0.34 | 1.17 | 1.35 | 0.20 | 0.69 | 0.81 |
| Inductance (L-L) (+/- 15%) | mH | 2.1 | 7.8 | 25.5 | 31.3 | 3.8 | 12.7 | 15.2 | 2.4 | 8.4 | 10.2 |
| SLM Armature Inertia | lb-in-sec ² | 0.00344 | | | | 0.00623 | | | 0.00901 | | |
| | (+/- 5%) (kg-cm ²) | (3.89) | | | | (7.036) | | | (10.181) | | |
| Brake Inertia | lb-in-sec ² | 0.00327 | | | | 0.00327 | | | 0.00327 | | |
| | (kg-cm ²) | (3.70) | | | | (3.70) | | | (3.70) | | |
| Brake Current @ 24 VDC | A | .75 | | | | .75 | | | .75 | | |
| Brake Holding Torque | lbf-in (Nm) | 195 (22) | | | | 195 (22) | | | 195 (22) | | |
| Brake Engage/Disengage Time | ms | 25/50 | | | | 25/50 | | | 25/50 | | |
| Mechanical Time Constant (tm) | ms | 0.49 | 0.51 | 0.51 | 0.51 | 0.39 | 0.40 | 0.39 | 0.34 | 0.34 | 0.33 |
| Electrical Time Constant (te) | ms | 10.18 | 9.76 | 9.81 | 9.75 | 11.23 | 10.84 | 11.23 | 12.11 | 12.11 | 12.69 |
| Damping Constant | lbf-in/krpm | 0.21 | 0.21 | 0.21 | 0.21 | 0.35 | 0.35 | 0.35 | 0.40 | 0.40 | 0.40 |
| | (N-m/krpm) | (0.024) | (0.024) | (0.024) | (0.024) | (0.040) | (0.040) | (0.040) | (0.045) | (0.045) | (0.045) |
| Friction Torque | lbf-in | 0.56 | 0.56 | 0.56 | 0.56 | 1.00 | 1.00 | 1.00 | 1.20 | 1.20 | 1.20 |
| | (Nm) | (0.06) | (0.06) | (0.06) | (0.06) | (0.113) | (0.113) | (0.113) | (0.136) | (0.136) | (0.136) |
| Voltage Rating | Vrms | 115 | 230 | 400 | 460 | 230 | 400 | 460 | 230 | 400 | 460 |
| Speed @ Bus Voltage | rpm | 3000 | | | | | | | | | |
| Stator Insulation System (Class) | °C | 180 (H) | | | | | | | | | |
| Insulation System Volt Rating | Vrms | 460 | | | | | | | | | |
| Thermal Switch, Case Temp. | °C | 100 | | | | | | | | | |
| Environmental Rating | | IP65 | | | | | | | | | |
| Standard Connectors | Motor & Brake | MS-3102-E20-15P | | | | | | | | | |
| | Feedback | MS-3102-E20-23P | | | | | | | | | |

For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by .707 and current by 1.414.

SLG115 Gearmotor Data

| | | 1 Stack Stator | | | 2 Stack Stator | | | 3 Stack Stator | | |
|---|------------------|-------------------------|-----------------------|--|----------------------------------|-------------------------|-----------------------|-----------------------|--|--|
| SLG Armature Inertia* lbf-in-sec ² (kg-cm ²) | | 0.00538 (6.08) | | | 0.00816 (9.22) | | | 0.0109 (12.37) | | |
| Gearing Reflected Inertia | Single Reduction | | | | Double Reduction | | | | | |
| | Gear Stages | lbf-in-sec ² | (kg-cm ²) | | Gear Stages | lbf-in-sec ² | (kg-cm ²) | | | |
| | 4:1 | 0.000635 | (0.717) | | 16:1 | 0.000513 | (0.580) | | | |
| | 5:1 | 0.000428 | (0.484) | | 20:1, 25:1 | 0.000350 | (0.396) | | | |
| | 10:1 | 0.000111 | (0.125) | | 40:1, 50:1, 100:1 | 0.0000911 | (0.103) | | | |
| Backlash at 1% rated torque: | | 10 Arc minutes | | | Efficiency: Single reduction 91% | | | Double Reduction: 86% | | |

*Add armature inertia to gearing inertia for total SLG system inertia

Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2"

SLM142 Electrical/Mechanical Specifications

| SLM142 Stator Data | | 1 Stack Motor | | | | 2 Stack Motor | | | 3 Stack Motor | |
|----------------------------------|-------------------------|-----------------|-------|-------|-------|---------------|-------|-------|---------------|-------|
| Sinusoidal Commutation Data | | 118 | 138 | 158 | 168 | 238 | 258 | 268 | 358 | 368 |
| Continuous Motor Torque | lbf-in | 108.1 | 106.8 | 104.4 | 109.0 | 179.2 | 178.2 | 177.2 | 236.4 | 237.5 |
| | N-m | 12.21 | 12.07 | 11.79 | 12.31 | 20.25 | 20.13 | 20.02 | 26.70 | 26.83 |
| Peak Motor Torque | lbf-in | 216.1 | 213.7 | 208.8 | 218.0 | 358.4 | 356.3 | 354.4 | 472.7 | 474.9 |
| | N-m | 24.42 | 24.14 | 23.59 | 24.63 | 40.50 | 40.26 | 40.04 | 53.41 | 53.66 |
| Torque Constant (kt) | lbf-in/A | 5.9 | 11.8 | 20.1 | 23.5 | 11.8 | 20.1 | 23.5 | 20.1 | 23.9 |
| | N-m/A | 0.66 | 1.3 | 2.3 | 2.7 | 1.3 | 2.3 | 2.7 | 2.3 | 2.7 |
| Continuous Current Rating | A | 20.5 | 10.2 | 5.8 | 5.2 | 17.0 | 9.9 | 8.4 | 13.1 | 11.1 |
| Peak Current Rating | A | 41.1 | 20.3 | 11.6 | 10.4 | 34.1 | 19.8 | 16.8 | 26.2 | 22.2 |
| Trapezoidal Commutation Data | | | | | | | | | | |
| Continuous Motor Torque | lbf-in | 103.2 | 102.0 | 99.7 | 104.1 | 171.1 | 170.1 | 169.2 | 225.7 | 226.8 |
| | N-m | 11.66 | 11.53 | 11.26 | 11.76 | 19.34 | 19.22 | 19.12 | 25.50 | 25.62 |
| Peak Motor Torque | lbf-in | 206.4 | 204.1 | 199.4 | 208.2 | 342.3 | 340.3 | 338.4 | 451.4 | 453.5 |
| | N-m | 23.32 | 23.1 | 22.5 | 23.5 | 38.7 | 38.4 | 38.2 | 51.0 | 51.2 |
| Torque Constant (kt) | lbf-in/A | 4.58 | 9.16 | 15.71 | 18.33 | 9.16 | 15.71 | 18.33 | 15.71 | 18.66 |
| | N-m/A | 0.52 | 1.04 | 1.77 | 2.07 | 1.04 | 1.77 | 2.07 | 1.77 | 2.11 |
| Continuous Current Rating | A | 25.16 | 12.44 | 7.09 | 6.34 | 20.87 | 12.10 | 10.32 | 16.05 | 13.58 |
| Peak Current Rating | A | 50.33 | 24.88 | 14.18 | 12.69 | 41.73 | 24.20 | 20.63 | 32.11 | 27.16 |
| Motor Data | | | | | | | | | | |
| Voltage Constant (Ke) | Vpk/krpm | 56.8 | 113.5 | 194.6 | 227.1 | 113.5 | 194.6 | 227.1 | 194.6 | 231.1 |
| | Vrmn/krpm | 40.1 | 80.3 | 137.6 | 160.6 | 80.3 | 137.6 | 160.6 | 137.6 | 163.4 |
| Pole Configuration | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Resistance (L-L) | Ohm | 0.21 | 0.87 | 2.68 | 3.34 | 0.359 | 1.01 | 1.39 | 0.61 | 0.858 |
| Inductance (L-L) | mH | 5.4 | 21.7 | 63.9 | 78.3 | 10.4 | 30.5 | 41.5 | 20.0 | 28.2 |
| Armature Inertia | lbf-in-sec ² | 0.00927 | | | | 0.01537 | | | 0.02146 | |
| | kg-cm ² | 10.47 | | | | 17.36 | | | 24.25 | |
| Brake Inertia | lbf-in-sec ² | .008408 | | | | | | | | |
| | kg-cm ² | 9.5 | | | | | | | | |
| Brake Current at 24 VDC | A | 1.0 | | | | | | | | |
| Brake Holding Torque | lbf-in | 354 | | | | | | | | |
| | N-m | 39.99 | | | | | | | | |
| Brake Engage/Disengage Time | ms | 25/73 | | | | | | | | |
| Mechanical Time Constant (tm) | ms | 0.79 | 0.81 | 0.85 | 0.78 | 0.52 | 0.53 | 0.54 | 0.45 | 0.45 |
| Electrical Time Constant, (te) | ms | 25.59 | 25.02 | 23.88 | 23.43 | 30.58 | 30.22 | 29.89 | 32.60 | 32.90 |
| Damping Constant | lbf-in/krpm | 0.60 | 0.60 | 0.60 | 0.60 | 0.80 | 0.80 | 0.80 | 1.20 | 1.20 |
| | N-m/krpm | 0.068 | 0.068 | 0.068 | 0.068 | 0.090 | 0.090 | 0.090 | 0.136 | 0.136 |
| Friction Torque | lbf-in | 1.50 | 1.50 | 1.50 | 1.50 | 1.75 | 1.75 | 1.75 | 2.00 | 2.00 |
| | N-m | 0.17 | 0.17 | 0.17 | 0.17 | 0.20 | 0.20 | 0.20 | 0.23 | 0.23 |
| Bus Voltage | Vrms | 115 | 230 | 400 | 460 | 230 | 400 | 460 | 400 | 460 |
| Speed @ Bus Voltage | rpm | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 | 2400 |
| Sator Insulation System Class H | deg C | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 |
| Insulation System Voltage Rating | Vrms | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 | 460 |
| Thermal Switch, Case Temp | deg C | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Environmental Rating | | IP65 | IP65 | IP65 | IP65 | IP65 | IP65 | IP65 | IP65 | IP65 |
| Standard Connectors | Motor Power | MS-3102-E20-15P | | | | | | | | |
| | Feedback | PT02A16-23P | | | | | | | | |

For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by .707 and current by 1.414.

Gearmotor not available on 142 frame motor.

Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2"

SLG Series Gearmotor General Performance Specifications

Two torque ratings for the SLG Series Gearmotors are given in the table below. The left hand columns give the maximum (peak) allowable output torque for the indicated ratios of each size SLG Series Gearmotor. This IS NOT the rated output torque of the motor multiplied by the ratio of the reducer.

It is possible to select a configuration of the motor selection and gear ratio such that the rated motor torque, multiplied by the gear ratio exceeds these ratings. It is the responsibility of the user to ensure that the settings of the system, including the amplifier, do not allow these values to be exceeded.

The right hand columns give the output torque at the indicated speed which will result in 10,000 hour (L10). The setup of the system, including the amplifier, will determine the actual output torque and speed.

Output Torque Ratings - Mechanical

| Maximum Allowable Output Torque - Set by User | | | | Output Torque @ Speed for 10,000 Hour Life | | | | | |
|---|-------|---------------|---------|--|---------|----------|---------|----------|---------|
| Model | Ratio | Output Torque | | 1000 RPM | | 3000 RPM | | 5000 RPM | |
| | | lbf-in | (Nm) | lbf-in | (Nm) | lbf-in | (Nm) | lbf-in | (Nm) |
| SLG060 | 4:1 | 603 | (68.1) | 144 | (16.2) | 104 | (11.7) | 88 | (9.9) |
| | 5:1 | 522 | (58.9) | 170 | (19.2) | 125 | (14.1) | 105 | (11.9) |
| | 10:1 | 327 | (36.9) | 200 | (22.6) | 140 | (15.8) | 120 | (13.6) |
| | 16:1 | 603 | (68.1) | 224 | (25.3) | 160 | (18.1) | 136 | (15.4) |
| | 20:1 | 603 | (68.1) | 240 | (27.1) | 170 | (19.2) | 146 | (16.5) |
| | 25:1 | 522 | (58.9) | 275 | (31.1) | 200 | (22.6) | 180 | (20.3) |
| | 40:1 | 603 | (68.1) | 288 | (32.5) | 208 | (23.5) | 180 | (20.3) |
| | 50:1 | 522 | (58.9) | 340 | (38.4) | 245 | (27.7) | 210 | (23.7) |
| | 100:1 | 327 | (36.9) | 320 | (36.1) | 280 | (31.6) | 240 | (27.1) |
| SLG090 | 4:1 | 2078 | (234.8) | 600 | (67.8) | 456 | (51.5) | 396 | (44.7) |
| | 5:1 | 1798 | (203.1) | 775 | (87.6) | 590 | (66.7) | 510 | (57.6) |
| | 10:1 | 1126 | (127.2) | 890 | (100.6) | 680 | (76.8) | 590 | (66.7) |
| | 16:1 | 2078 | (234.8) | 912 | (103.4) | 688 | (77.7) | 592 | (66.9) |
| | 20:1 | 2078 | (234.8) | 980 | (110.7) | 740 | (83.6) | 640 | (72.3) |
| | 25:1 | 1798 | (203.1) | 1250 | (141.2) | 950 | (107.3) | 825 | (93.2) |
| | 40:1 | 2078 | (234.8) | 1200 | (135.6) | 920 | (103.9) | 800 | (90.4) |
| | 50:1 | 1798 | (203.1) | 1550 | (169.4) | 1200 | (135.6) | 1000 | (112.9) |
| | 100:1 | 1126 | (127.2) | 1100 | (124.3) | 1100 | (124.3) | 1100 | (124.3) |
| SLG115 | 4:1 | 4696 | (530.4) | 1392 | (157.3) | 1132 | (127.9) | 1000 | (112.9) |
| | 5:1 | 4066 | (459.4) | 1445 | (163.3) | 1175 | (132.8) | 1040 | (117.5) |
| | 10:1 | 2545 | (287.5) | 1660 | (187.6) | 1350 | (152.6) | 1200 | (135.6) |
| | 16:1 | 4696 | (530.4) | 2112 | (238.6) | 1714 | (193.0) | 1518 | (171.0) |
| | 20:1 | 4696 | (530.4) | 2240 | (253.1) | 1840 | (207.9) | 1620 | (183.0) |
| | 25:1 | 4066 | (459.4) | 2350 | (265.5) | 1900 | (214.7) | 1675 | (189.2) |
| | 40:1 | 4696 | (530.4) | 2800 | (316.4) | 2240 | (253.1) | 2000 | (225.9) |
| | 50:1 | 4066 | (459.4) | 2900 | (327.7) | 2350 | (265.5) | 2100 | (237.3) |
| | 100:1 | 2545 | (287.5) | 2500 | (282.5) | 2500 | (282.5) | 2400 | (271.2) |

Radial Load and Bearing Life

Side load ratings shown below are for 10,000 hour bearing life at 25mm from motor face at given rpm. Visit www.exlar.com for full details on radial load and bearing life.

| | RPM | 50 | 100 | 250 | 500 | 1000 |
|---------------|---------|------------|------------|------------|------------|------------|
| SLG060 | lbf (N) | 195 (867) | 155 (690) | 114 (507) | 90 (400) | 72 (320) |
| SLG090 | lbf (N) | 389 (1730) | 309 (1375) | 227 (1010) | 180 (801) | 143 (636) |
| SLG115 | lbf (N) | 939 (4177) | 745 (3314) | 549 (2442) | 435 (1935) | 346 (1539) |

Motor and Gearmotor Weight (lbs)

| SLM/G060 | Motor | 1 Stage | 2 Stage | SLM/G090 | Motor | 1 Stage | 2 Stage | SLM/G115 | Motor | 1 Stage | 2 Stage | SLM142 | |
|----------------|-------|---------|---------|----------------|-------|---------|---------|----------------|-------|---------|---------|--------------|-----|
| 1 Stack | 3.0 | 7.5 | 9.3 | 1 Stack | 5.4 | 12.8 | 14.8 | 1 Stack | 14.2 | 28 | 34 | 31 | |
| 2 Stack | 4.1 | 8.6 | 10.4 | 2 Stack | 7.8 | 15.2 | 17.2 | 2 Stack | 22.0 | 35.8 | 41.8 | 39 | |
| 3 Stack | 5.2 | 9.7 | 11.5 | 3 Stack | 10.2 | 17.6 | 19.6 | 3 Stack | 29.8 | 43.6 | 49.6 | 47 | |
| SLM/G060 Brake | 1.8 | | | SLM/G090 Brake | 2.7 | | | SLM/G115 Brake | 4.1 | | | SLM142 Brake | 6.0 |

(gear stages not available on SLM142)

Motor Speed Designators

All Exlar T-LAM motors and actuators carry a standard motor speed designator as defined below. This is representative of the standard base speed of the motor, for the selected bus voltage.

| Designator | Base Speed | Motor Series |
|------------|------------------------------|--------------|
| -50 | 5000 rpm | SLM/SLG060 |
| -40 | 4000 rpm | SLM/SLG090 |
| -30 | 3000 rpm | SLM/SLG115 |
| -24 | 2400 rpm | SLM142 |
| 01-99 | Special Speed, Consult Exlar | |

If the model number is created and the location for the motor speed designator is left blank, this is the base speed to which each motor will be manufactured. The model number can also be created including this standard speed designator.

Exlar also provides the flexibility to manufacture all of its "T-LAM" products with special base speeds to match the customer's exact application requirements. This may be a higher than standard speed motor, or lower base speed than standard which will allow the customer to get the required torque, at a speed optimized to their application, and use the minimum amount of current from their amplifier.

The call out for a special speed is configured in the model number by using a two digit code from 01-99. These numbers represent the number, in hundreds, of RPM that will be the base speed for the particular motor.

For example, an SLG-090-010-KCGS-AB1-138-40 motor that normally has a 4000 rpm standard winding, can be changed to a 3300 rpm winding by changing the -40, to a -33. It can be changed to a 5000 rpm winding by changing the -40 to a -50.

Changing this speed designator will change the ratings of the motor, and these must be obtained from Exlar applications engineers. Also, it is not possible to produce every possible speed from -01 to -99 for each motor at each voltage so please contact Exlar applications engineers for confirmation of the speed that is desired for the application.

Motor Options

SLM/SLG motor options are described with a 3 digit code. The first digit calls out the stack length, the second the rated bus voltage, and the third the number of poles of the motor. Refer to the mechanical/ electrical specifications for motor torque and actuator rated force.

118 = 1 stack,
115 Vrms, 8 Pole, Class 180 H

138 = 1 stack,
230 Vrms, 8 Pole, Class 180 H

158 = 1 stack,
400 Vrms, 8 Pole, Class 180 H

168 = 1 stack,
460 Vrms, 8 Pole, Class 180 H

218 = 2 stack,
115 Vrms, 8 Pole, Class 180 H

238 = 2 stack,
230 Vrms, 8 Pole, Class 180 H

258 = 2 stack,
400 Vrms, 8 Pole, Class 180 H

268 = 2 stack,
460 Vrms, 8 Pole, Class 180 H

318 = 3 stack,
115 Vrms, 8 Pole, Class 180 H

338 = 3 stack,
230 Vrms, 8 Pole, Class 180 H

358 = 3 stack,
400 Vrms, 8 Pole, Class 180 H

368 = 3 stack,
460 Vrms, 8 Pole, Class 180 H

Refer to specification pages 99-102 for availability of 115V stators by configuration.

Housing Options

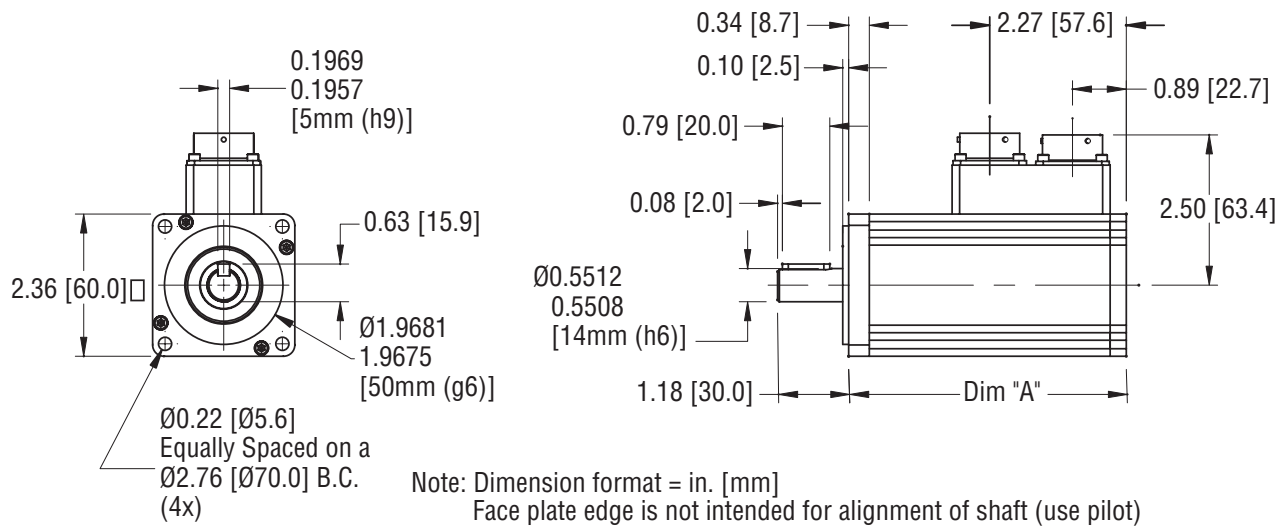
FG = Food Grade Epoxy, This option provides for a motor coated with FDA approved white epoxy.

SS = Stainless Steel Housing, This option provides a motor with all stainless steel construction. Housing dimensions for this option are not equal to the standard housing. Please inquire with Exlar for dimensions.

HC = Type III Hard Coat Anodized, Class 1, This option provides an actuator with type III hard coat anodized coating. Class 1, no dye.

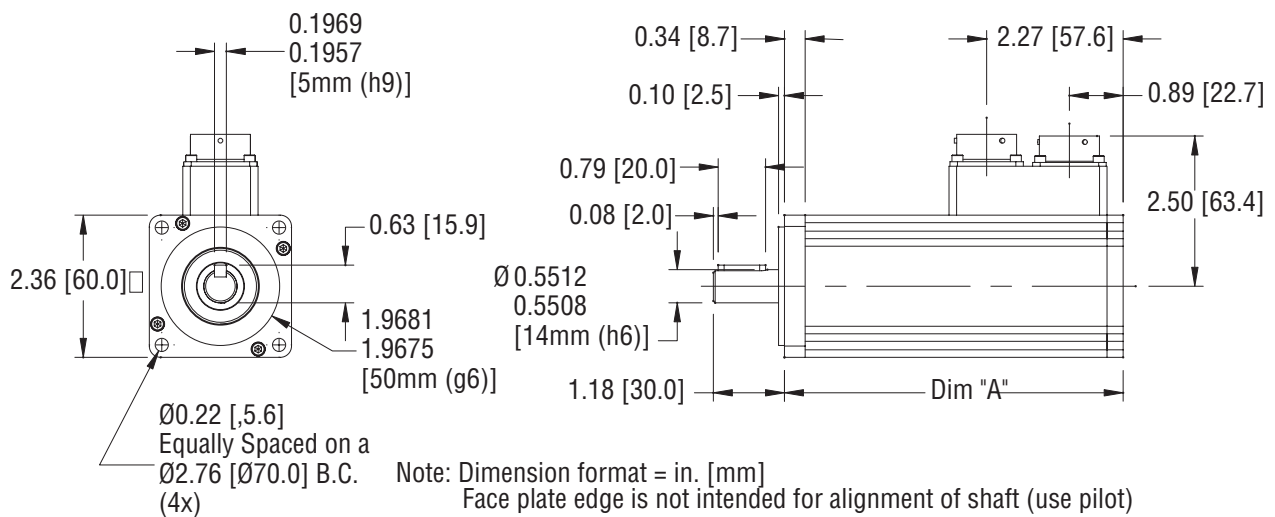
XH = Special Housing Option, Any housing option that is not designated by the above codes should be listed as XH and described at time of order. All special options must be discussed with Exlar engineering.

SLM060



| Dim | 1 Stack Motor | 2 Stack Motor | 3 Stack Motor |
|-----|---------------|---------------|---------------|
| A | 4.61 [117.1] | 5.86 [149.9] | 7.11 [180.6] |

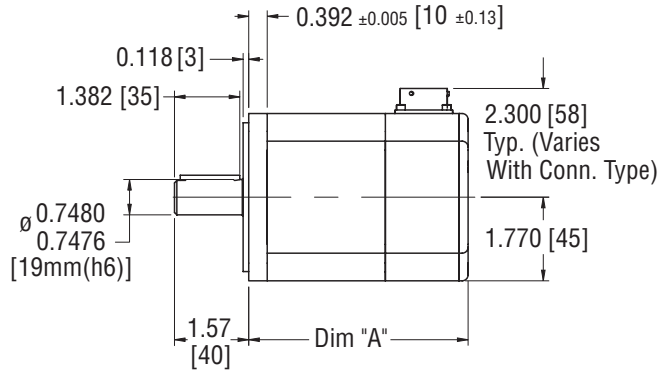
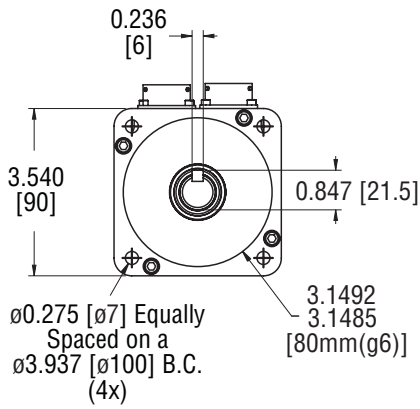
SLM060 With Brake Option



| Dim | 1 Stack Motor | 2 Stack Motor | 3 Stack Motor |
|-----|---------------|---------------|---------------|
| A | 6.63 [143.0] | 6.88 [174.7] | 8.13 [206.4] |

Drawings subject to change. Consult Exlar for certified drawings.

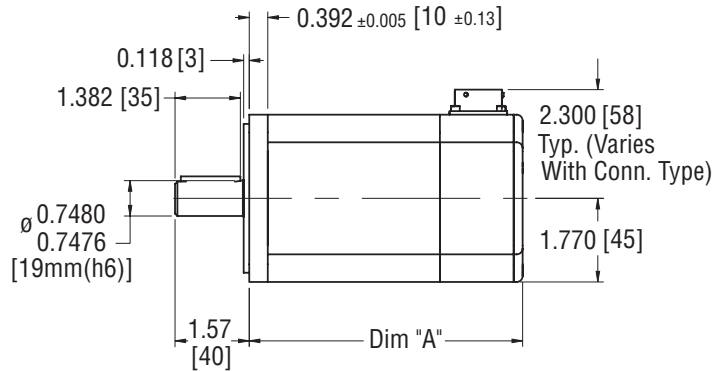
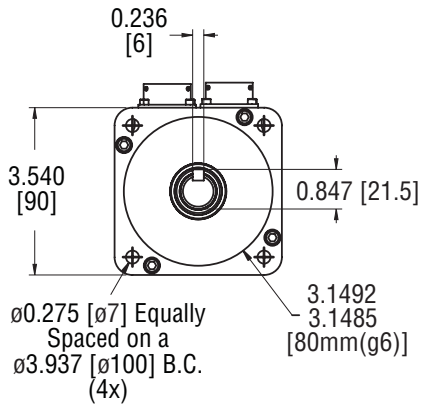
SLM090



Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim | 1 Stack Stator | 2 Stack Stator | 3 Stack Stator |
|-----|----------------|----------------|----------------|
| A | 4.650 [118] | 5.650 [144] | 6.650 [169] |

SLM090 With Brake Option

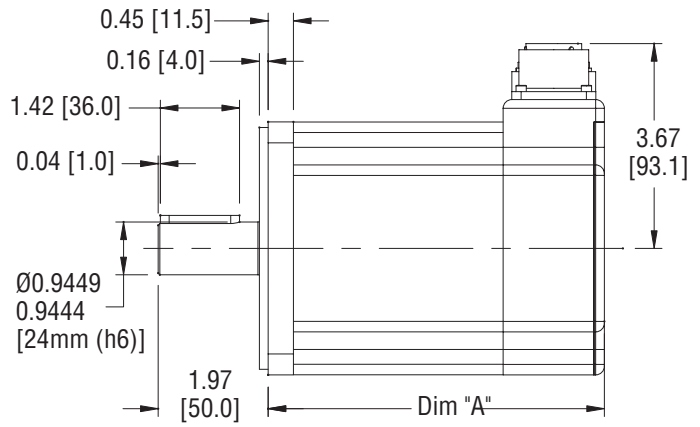
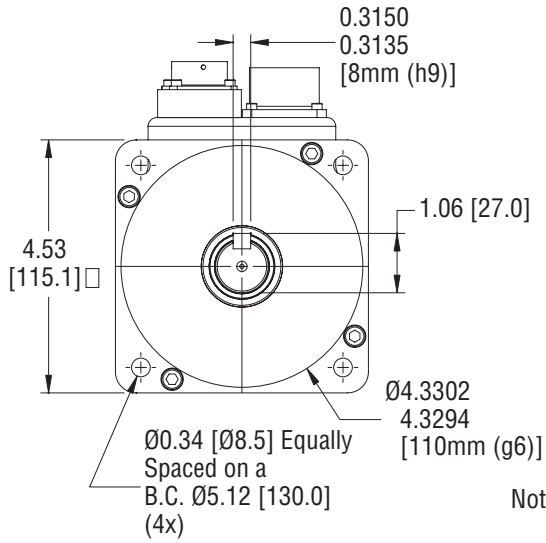


Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim | 1 Stack Stator | 2 Stack Stator | 3 Stack Stator |
|-----|----------------|----------------|----------------|
| A | 5.960 [151] | 6.960 [177] | 7.960 [202] |

Drawings subject to change. Consult Exlar for certified drawings.

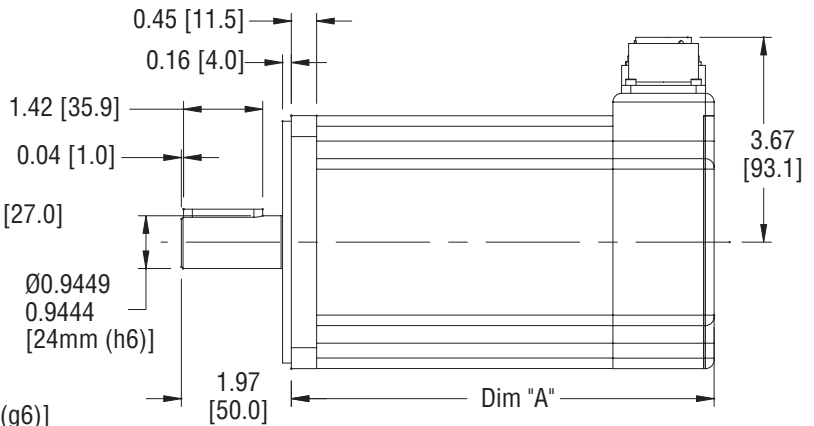
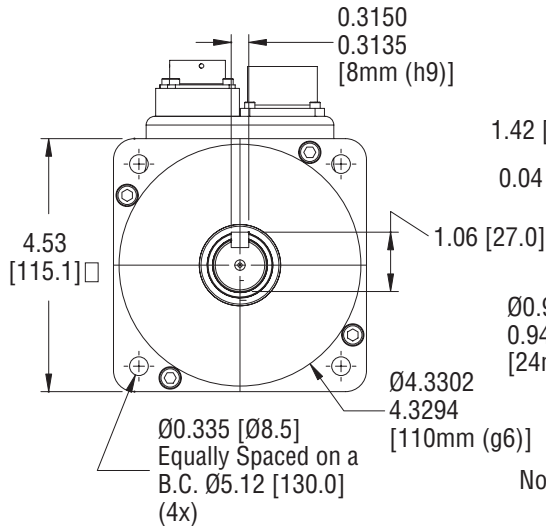
SLM115



Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim A | |
|-------------------|---------------|
| 1 stack, no brake | 6.02 (153.0) |
| 2 stack, no brake | 8.02 (203.7) |
| 3 stack, no brake | 10.02 (254.5) |

SLM115 With Brake Option

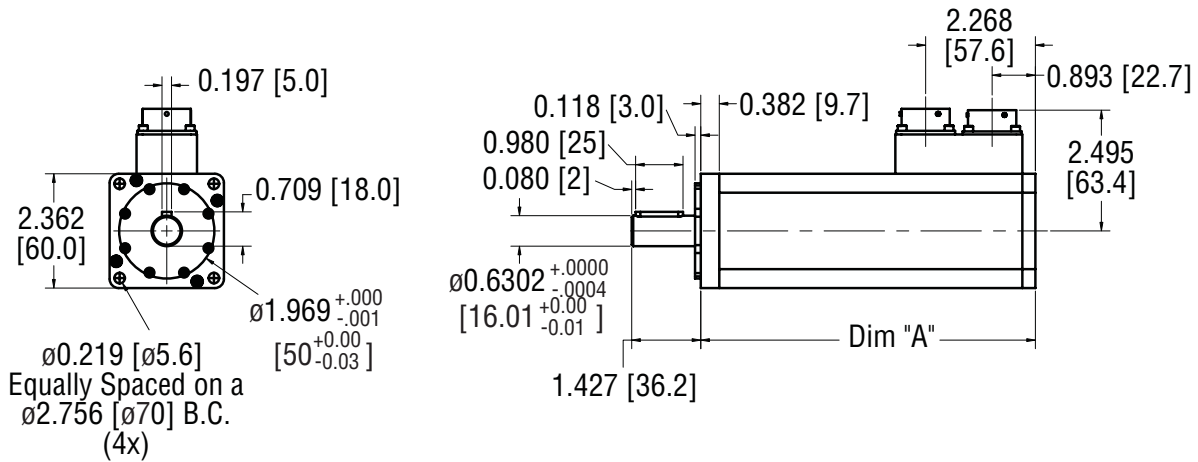


Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim A | |
|---------------------|---------------|
| 1 stack, with brake | 7.75 (196.9) |
| 2 stack, with brake | 9.75 (247.7) |
| 3 stack, with brake | 11.75 (298.5) |

Drawings subject to change. Consult Exlar for certified drawings.

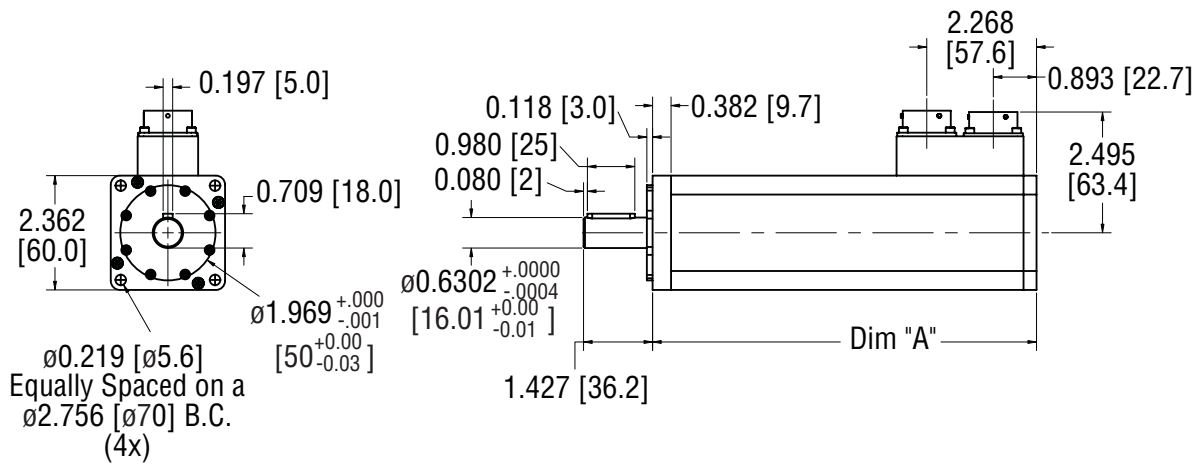
SLG060



Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim | 1 Stack Stator 1 Stage Gearhead | 2 Stack Stator 1 Stage Gearhead | 3 Stack Stator 1 Stage Gearhead |
|-----|------------------------------------|------------------------------------|------------------------------------|
| A | 6.915 [176] | 8.165 [207] | 9.415 [239] |
| Dim | 1 Stack Stator 2 Stage Gearhead | 2 Stack Stator 2 Stage Gearhead | 3 Stack Stator 2 Stage Gearhead |
| A | 7.960 [202] | 9.210 [234] | 10.460 [266] |

SLG060 With Brake Option

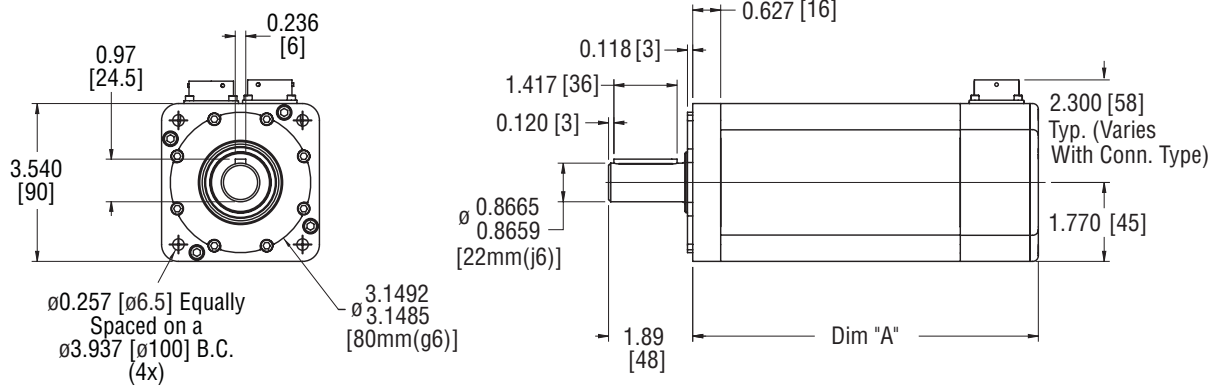


Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim | 1 Stack Stator 1 Stage Gearhead | 2 Stack Stator 1 Stage Gearhead | 3 Stack Stator 1 Stage Gearhead |
|-----|------------------------------------|------------------------------------|------------------------------------|
| A | 7.930 [201] | 9.180 [233] | 10.430 [265] |
| Dim | 1 Stack Stator 2 Stage Gearhead | 2 Stack Stator 2 Stage Gearhead | 3 Stack Stator 2 Stage Gearhead |
| A | 8.975 [228] | 10.225 [260] | 11.475 [291] |

Drawings subject to change. Consult Exlar for certified drawings.

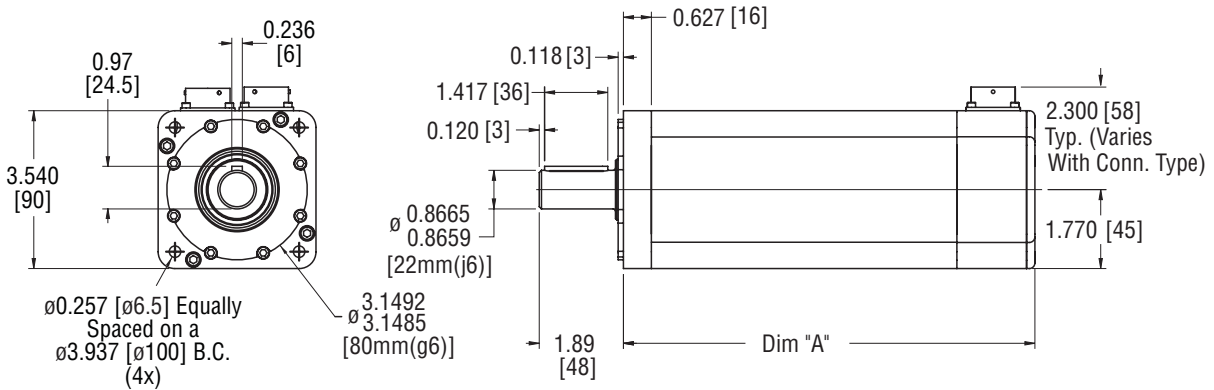
SLG090



Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim | 1 Stack Stator 1 Stage Gearhead | 2 Stack Stator 1 Stage Gearhead | 3 Stack Stator 1 Stage Gearhead |
|----------|------------------------------------|------------------------------------|------------------------------------|
| a | 7.760 [197] | 8.760 [223] | 9.760 [248] |
| Dim | 1 Stack Stator 2 Stage Gearhead | 2 Stack Stator 2 Stage Gearhead | 3 Stack Stator 2 Stage Gearhead |
| A | 9.025 [229] | 10.025 [255] | 11.025 [280] |

SLG090 With Brake Option



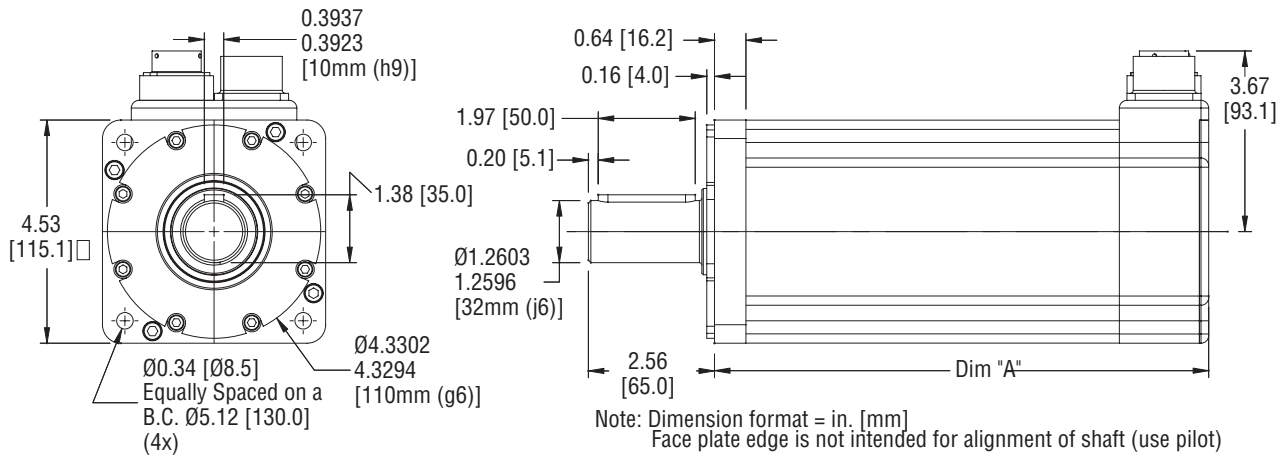
Note: Dimension format = in. [mm]
Face plate edge is not intended for alignment of shaft (use pilot)

| Dim | 1 Stack Stator 1 Stage Gearhead | 2 Stack Stator 1 Stage Gearhead | 3 Stack Stator 1 Stage Gearhead |
|----------|------------------------------------|------------------------------------|------------------------------------|
| A | 9.070 [230] | 10.070 [256] | 11.070 [281] |
| Dim | 1 Stack Stator 2 Stage Gearhead | 2 Stack Stator 2 Stage Gearhead | 3 Stack Stator 2 Stage Gearhead |
| A | 10.335 [263] | 11.335 [288] | 12.335 [313] |

Drawings subject to change. Consult Exlar for certified drawings.

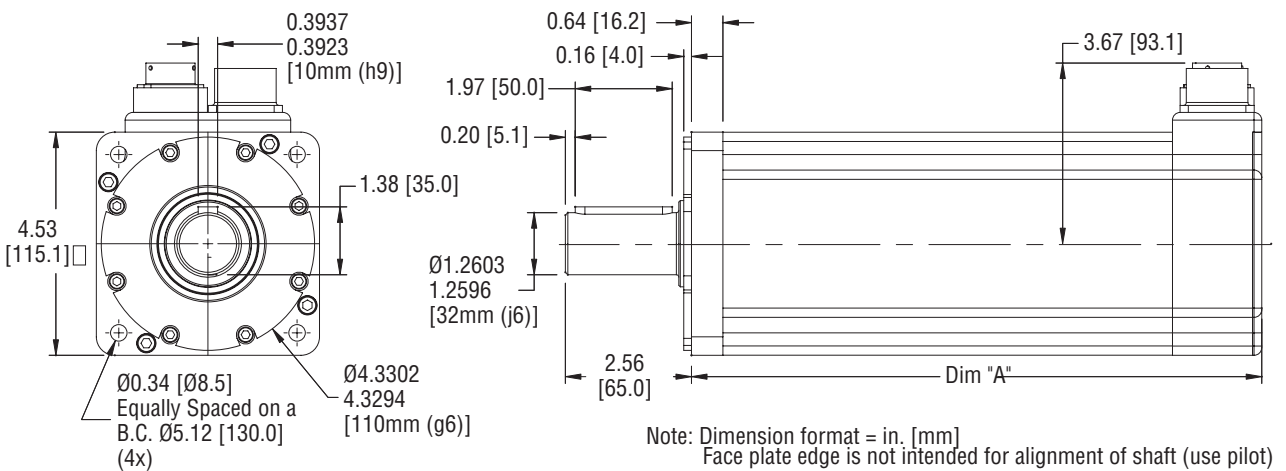
SLM/SLG Series

SLG115



| Dim | 1 Stack Stator 1 Stage | 2 Stack Stator 1 Stage | 3 Stack Stator 1 Stage | Dim | 1 Stack Stator 2 Stage | 2 Stack Stator 2 Stage | 3 Stack Stator 2 Stage |
|----------|---------------------------|---------------------------|---------------------------|----------|---------------------------|---------------------------|---------------------------|
| A | 10.03 [254.8] | 12.03 [305.6] | 14.03 [356.4] | A | 11.64 [295.7] | 13.64 [346.5] | 15.64 [397.3] |

SLG115 With Brake Option



| Dim | 1 Stack Stator 1 Stage | 2 Stack Stator 1 Stage | 3 Stack Stator 1 Stage | Dim | 1 Stack Stator 2 Stage | 2 Stack Stator 2 Stage | 3 Stack Stator 2 Stage |
|----------|---------------------------|---------------------------|---------------------------|----------|---------------------------|---------------------------|---------------------------|
| A | 11.58 [294.2] | 13.58 [345.0] | 15.58 [395.8] | A | 13.19 [335.1] | 15.19 [385.9] | 17.19 [436.7] |

Drawings subject to change. Consult Exlar for certified drawings.

SLM/SLG Series Motor Ordering Information

on pages 113-114

SLM/SLG Series Motor Ordering Information

SLM/G = Model Series

SLG = SLG Series Servo gear Motor
SLM = SLM Series Servo Motor (No Gear Reduction)

AAA = Frame Size

060 = 60 mm
090 = 90 mm
115 = 115mm
142 = 142mm

BBB = Gear Reduction Ratio

Blank = SLM

Single reduction ratios

004 = 4:1 005 = 5:1
010 = 10:1

Double reduction ratios

016 = 16:1 020 = 20:1
025 = 25:1 040 = 40:1
050 = 50:1 100 = 100:1

C = Shaft Type

K = Keyed
R = Smooth/Round
X = Special Shaft

D = Connections

M = Manufacturer's Connector²
I = Exlar standard M23 style
A = MS style (anodized)
D = MS style (electroless nickel)
B = Embedded leads 3 ft. std.
P = Embedded leads w/plug 3 ft. std. w/'A' plug
J = Embedded leads w/ "I" plug 3 ft. std.
X = Special (please specify)

E = Coating Options¹

G = Standard Gray E-Coat, Black Anodized⁷ Front/Rear Covers
E = Electroless Nickel Plated
F = Food Grade White
X = Special Coating

F = Brake Options

B = Brake
S = Standard No Brake

SLM/GAAA

- BBB

- CDEF

- GGG

- HHH

- II

- XX

- #####

GGG = Feedback Type (Also specify the Amplifier/Drive Model being used when ordering)

-Standard Incremental Encoder – 2048 line with commutation, 5vdc

-Standard Resolver – Size 15 resolver

-Motor files for use with select Emerson/CT, Rockwell /AB and Danaher/Kollmorgen Drives are available at www.exlar.com

Custom Feedback - Please consult application engineering: XX1 = Wiring and feedback device information must be provided and new feedback callout will be created

Mounting Only

Please consult application engineering: 001 = Feedback Mount – .375 inch shaft ready for size 15 resolver or encoder

002 = Feedback Mount – 8 mm shaft ready for feedback device

Allen-Bradley/Rockwell: (Actuators used with Kinetix and/or Sercos based control systems require a 3rd party motion database purchased from AB/Rockwell. Please contact your AB/Rockwell representative for support.)

AB1 = Standard Incremental Encoder - F/S/H motor wiring w/MS connectors for 'M' option

AB5 = Stegmann SRM050 Hyperface multi-turn absolute encoder - MPL 100mm or higher motor wiring w/MS connectors for 'M' option – Plug & Play feedback option

AB6 = Standard Resolver

AB7 = Standard Incremental Encoder - MPL 100mm or higher motor wiring w/MS connectors for 'M' option

AB8 = Standard Incremental Encoder - MPL 75mm or less motor wiring w/M23 euro connectors for 'M' option

AB9 = Hyperface Stegmann SRM050 multi-turn absolute encoder - MPL 75mm or less motor wiring w/M23 euro connectors for 'M' option – Plug & Play feedback option

ABA = Hyperface Stegmann SKM036 multi-turn absolute encoder - MPL 215mm or higher motor wiring w/MS connectors for 'M' option - 460V Stator only – Plug & Play feedback option

ABB = Hyperface Stegmann SKM036 multi-turn absolute encoder - MPL 75mm or less motor wiring w/M23 euro connectors for 'M' option - 460V Stator only – Plug & Play feedback option

AMKASYN:

AK1 = EnDat Heidenhain EQN1325 multi-turn absolute encoder - DS motor wiring w/M23 euro connectors for 'M' option

AK2 = EnDat Heidenhain EQN1125 multi-turn absolute encoder - DS motor wiring w/M23 euro connectors for 'M' option

Advanced Motion Control:

AM1 = Standard Incremental Encoder

AM2 = Encoder 1000 line, with commutation, 5 VDC

AM3 = Standard Resolver

AM5 = Encoder 5000 line, with commutation, 5 VDC

API Controls:

AP1 = Standard Resolver

AP2 = Standard Incremental Encoder

Aerotech:

AR1 = Encoder 5000 line, with commutation, 5 VDC

AR2 = Standard Incremental Encoder

ABB Robot:

BB1 = LTN Resolver

Baldor:

BD2 = Standard Resolver

BD3 = Standard Incremental Encoder

Beckhoff:

BE1 = EnDat Heidenhain EQN1125 multi-turn absolute encoder - AM motor wiring w/M23 euro connectors for 'M' option

Baumuller:

BM2 = Standard Resolver

B&R Automation:

BR1 = Standard Resolver

BR2 = EnDat Heidenhain EQN1325 multi-turn absolute encoder – 8LS/8LM motor wiring w/M23 euro connectors for 'M' option

Comau Robot:

CM1 = Standard Resolver

Copley Controls:

CO1 = Standard Incremental Encoder

CO2 = Standard Resolver

Control Techniques/Emerson:

CT1 = Hyperface Stegmann SRM050 multi-turn absolute encoder - FM/UM/EZ motor wiring w/M23 euro connectors for 'M' option

CT2 = Hyperface Stegmann SRM050 multi-turn absolute encoder – NT motor wiring w/MS connectors for 'M' option

CT3 = Hyperface Stegmann SKM036 multi-turn absolute encoder – FM/UM/EZ motor wiring w/M23 euro connectors for 'M' option

CT4 = Standard Incremental Encoder – FM/UM/EZ motor wiring w/M23 euro connectors for 'M' option

CT5 = Standard Resolver – FM/UM/EZ motor wiring w/M23 euro connectors for 'M' option

CT7 = Encoder 5000 line, with commutation, 5 VDC – FM/UM/EZ motor wiring w/M23 euro connectors for 'M' option

Delta Tau Data Systems:

DT1 = Encoder 1000 line, with commutation, 5 VDC

DT2 = Standard Resolver

Elmo Motion Control:

EL1 = Standard Resolver

EL2 = Standard Incremental Encoder

EL3 = EnDat Heidenhain EQN1125 multi-turn absolute encoder

Emerson/Control Techniques:

EM2 = Standard Incremental Encoder – NT motor wiring w/MS connectors for 'M' option

EM5 = Encoder 5000 line, with commutation, 5 VDC – NT motor wiring w/MS connectors for 'M' option

Elau:

EU1 = Hyperface Stegmann SRS050 single-turn absolute encoder – SH motor wiring w/MS connectors for 'M' option

EU3 = Hyperface Stegmann SKS036 single-turn absolute encoder– SH motor wiring w/MS connectors for 'M' option

EU4 = Hyperface Stegmann SKM036 multi-turn absolute encoder– SH motor wiring w/MS connectors for 'M' option

Consult Exlar's application engineering department regarding all special actuator components.

SLM/SLG Series Motor Ordering Information

Exlar:

EX4 = Standard Resolver

Fanuc Robot/CNC:

FA1 = PULSECODER alpha i AR128

FA2 = PULSECODER alpha A64

G&L Motion Control/Danaher Motion:

GL1 = Standard Incremental Encoder – HSM motor wiring w/ MS connectors for 'M' option

GL2 = Standard Incremental Encoder – LSM-MSM motor wiring w/M23 euro connectors for 'M' option

GL3 = Standard Incremental Encoder – NSM motor wiring w/MS connectors for 'M' option

GL4 = EnDat Heidenhain EQN1125 multi-turn absolute encoder – AKM motor wiring w/M23 euro connectors for 'M' option

Infranor:

IF1 = Standard Resolver

Indramat/Bosch-Rexroth:

IN1 = EnDat Heidenhain EQN1325 multi-turn absolute encoder – MKD/MHD motor wiring w/M23 euro connectors for 'M' option

IN5 = EnDat Heidenhain EQN1125 multi-turn absolute encoder – MKD/MHD motor wiring w/M23 euro connectors for 'M' option

IN6 = Standard Resolver – MKD/MHD motor wiring w/M23 euro connectors for 'M' option

IN7 = Hyperface Stegmann SRM050 multi-turn absolute encoder – MSK motor wiring w/M23 euro connectors for 'M' option – plug & play feedback option

Jetter Technologies:

JT1 = Standard Resolver – JH/JL motor wiring w/M23 euro connectors for 'M' option

Kollmorgen/Danaher:

KM4 = EnDat Heidenhain EQN1325 multi-turn absolute encoder – AKM motor wiring w/M23 euro connectors for 'M' option

KM5 = Standard Resolver – AKM motor wiring w/M23 euro connectors for 'M' option

KM6 = Standard Incremental Encoder – AKM motor wiring w/ M23 euro connectors for 'M' option

Kuka Robot:

KU1 = Tyco Size 21 Resolver

Kawasaki Robot:

KW1 = Kawasaki Special Encoder

Lenze/AC Tech:

LZ1 = Hyperface Stegmann SRM050 multi-turn absolute encoder – MCS motor wiring w/M23 euro connectors for 'M' option

LZ5 = Standard Resolver – MCS motor wiring w/ M23 euro connectors for 'M' option

LZ6 = Standard Incremental Encoder – MCS motor wiring w/ M23 euro connectors for 'M' option

Matuschek:

MC1 = LTN Resolver

Modicon:

MD1 = Standard Resolver

Moog:

MG1 = Standard Resolver

Motoman Robot:

MM1 = Yaskawa Serial Encoder

Metronix:

MX1 = Standard Resolver

MX2 = Hyperface Stegmann SKM036 multi-turn absolute encoder

MX3 = EnDat Heidenhain EQN1125 multi-turn absolute encoder

Nachi Robot:

NC1 = Tamagawa Serial Encoder

Ormec:

OR1 = Standard Resolver

OR2 = Standard Incremental Encoder – G series motor wiring w/ MS connectors for 'M' option

Parker Compumotor:

PC6 = Standard Incremental Encoder – SMH motor wiring w/M23 connectors for 'M' option – European only

PC7 = Standard Resolver – SMH motor wiring w/M23 connectors for 'M' option – European only

PC8 = Standard Incremental Encoder – MPP series motor wiring w/PS connectors for 'M' option – US Only

PC9 = Hyperface Stegmann SRM050 multi-turn absolute encoder – MPP motor wiring w/PS connectors for 'M' option – US Only

PC0 = Standard Resolver – MPP motor wiring w/PS connectors for 'M' option – US Only

Pacific Scientific:

PS2 = Standard Incremental Encoder

PS3 = Standard Resolver – PMA motor wiring w/M23 connectors for 'M' option

Stober Drives:

SB3 = EnDat Heidenhain EQN1125 multi-turn absolute encoder – ED/EK motor wiring w/M23 euro connectors for 'M' option

Seimens:

SM2 = Standard Resolver – 1FK7 motor wiring w/M23 connectors for 'M' option

SM3 = EnDat Heidenhain EQN1325 multi-turn absolute encoder – 1FK7 motor wiring w/M23 euro connectors for 'M' option

SM4 = EnDat Heidenhain EQN1125 multi-turn absolute encoder – 1FK7 motor wiring w/M23 euro connectors for 'M' option

SM5 = Heidenhain Incremental Encoder– 1FK7 motor wiring w/M23 euro connectors for 'M' option

SEW/Eurodrive:

SW1 = Standard Resolver – CM motor wiring w/ M23 euro connectors for 'M' option

SW2 = Standard Incremental Encoder

SW3 = Hyperface Stegmann SRM050 multi-turn absolute encoder – CM motor wiring w/ M23 euro connectors for 'M' option

Whedco/Fanuc:

WD1 = Standard Resolver

HHH = Motor Stator, All 8 Pole³

118 = 1 Stack, 115 Vrms

138 = 1 Stack, 230 Vrms

158 = 1 Stack, 400 Vrms

168 = 1 Stack, 460 Vrms

218 = 2 Stack, 115 Vrms

238 = 2 Stack, 230 Vrms

258 = 2 Stack, 400 Vrms

268 = 2 Stack, 460 Vrms

318 = 3 Stack, 115 Vrms

338 = 3 Stack, 230 Vrms

358 = 3 Stack, 400 Vrms

368 = 3 Stack, 460 Vrms

II = Optional Speed & Mechanical Designations

30 = 3000 rpm, SLM/G115

40 = 4000 rpm, SLM/G090

50 = 5000 rpm, SLM/G060

01-99 = Special Speed, Consult Exlar

XX = Part Number Designer for specials

HC = Type III hard coat anodized, Class 1¹

SS = Stainless steel housing¹

XH = Special housing or mounting option⁴

XM = Special motor options

XF = Special feedback option

XL = Special lubrication

= Part Number Designer for Specials

= Optional 5 digit assigned part number to designate unique model number for specials

Note: Any specials denoted by an X in the part number require definition and quotation from the factory.

1. These housing options would typically be accompanied by the choice of the electroless nickel connectors if a connectorized unit were selected. This choice may also indicate a need for special material main rods or flanges. Please inquire with Exlar Eng.
2. Available as described in Feedback Types.
3. See page 104 for explanation of voltage, speed and stack options.
4. When selecting special housing options, use "G" in this model mask location.