

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

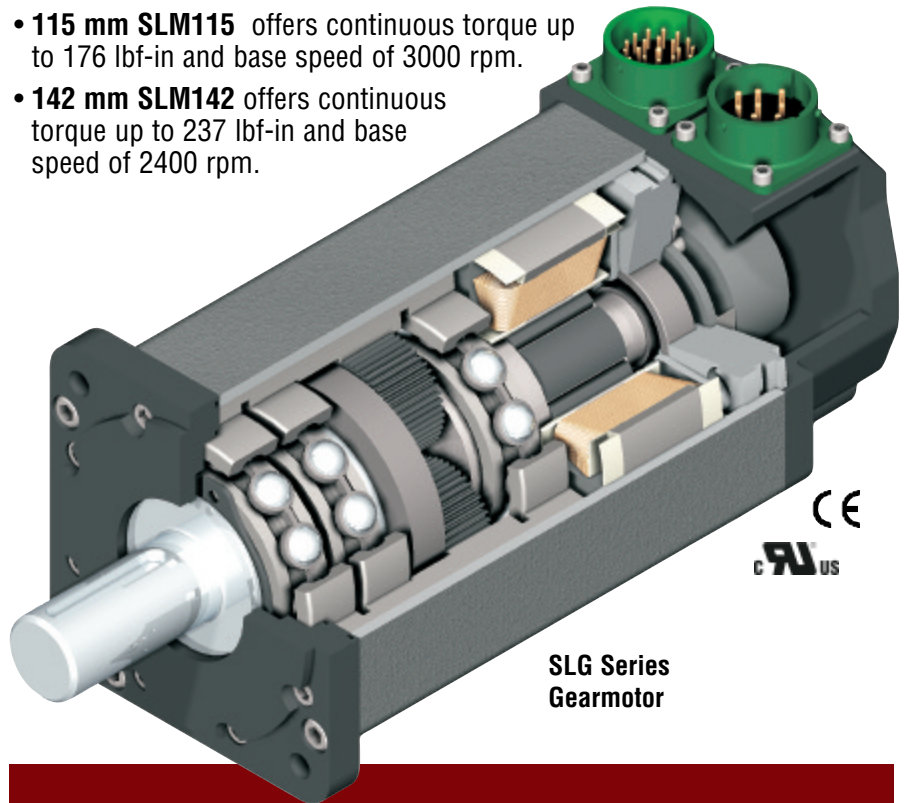
Brushless servo motor and gearmotor technology from Exlar provides the highest torque-to-size ratio available in motion control today. Small size, outstanding performance specifications, quality and customization capabilities offer you the solution you need for your motion control application.



## 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

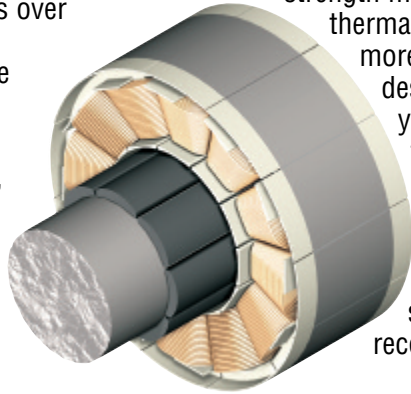
Higher stiffness than bolt-on gearhead and motor

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 maximum 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**

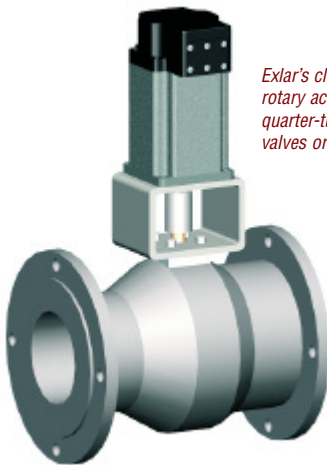
**Conveyor Drives**

**Medical Applications**

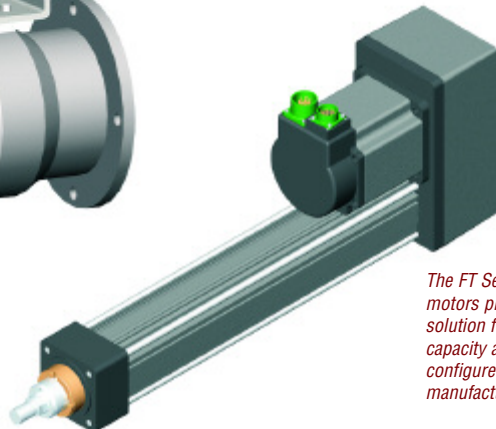
**Tensioning**

**Simulation Robotics**

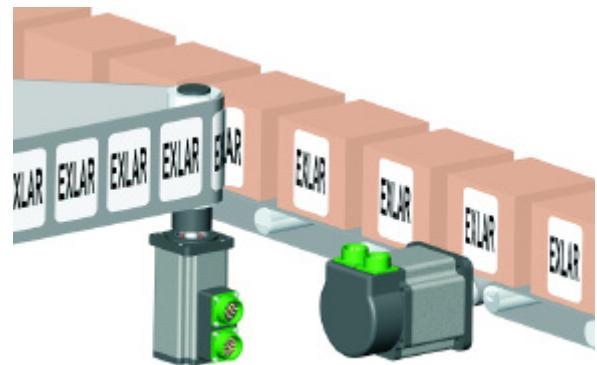
**Screw Drives**



*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.*



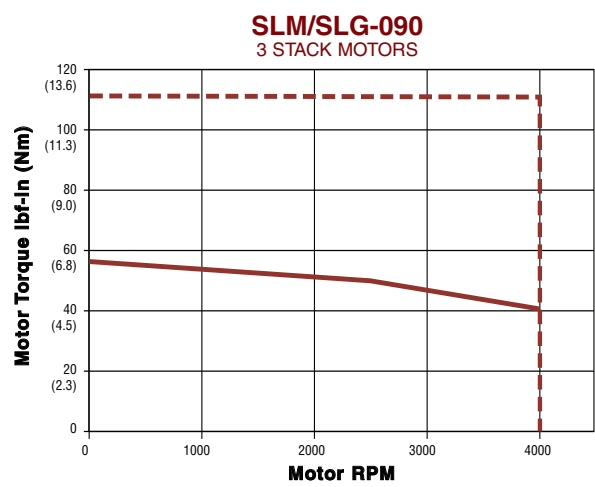
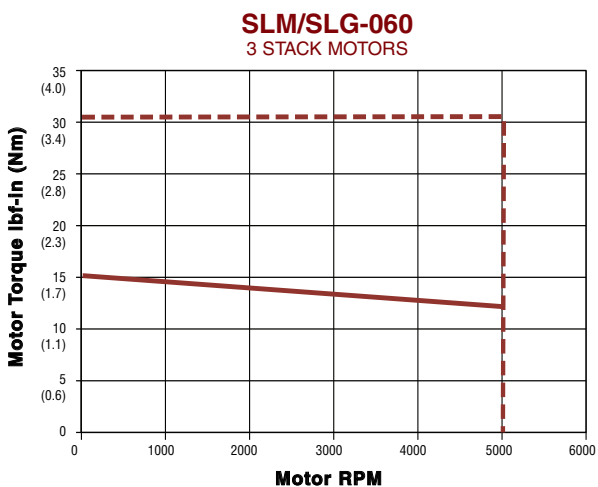
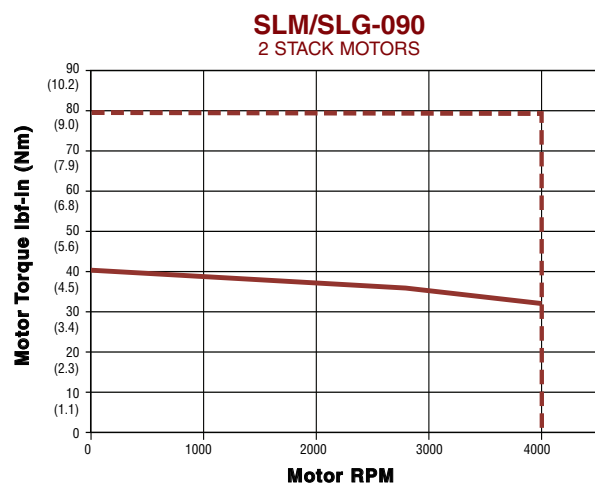
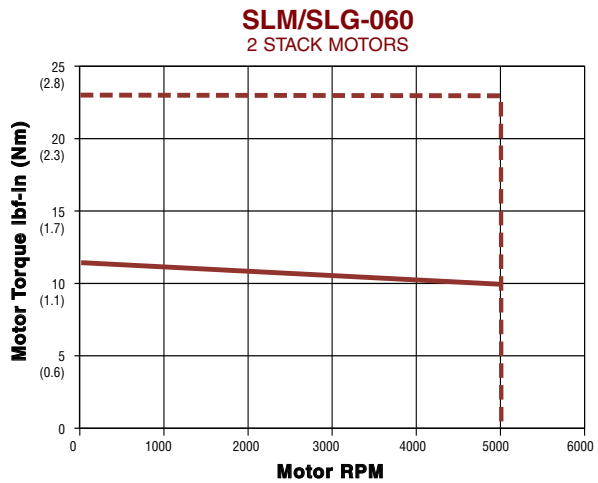
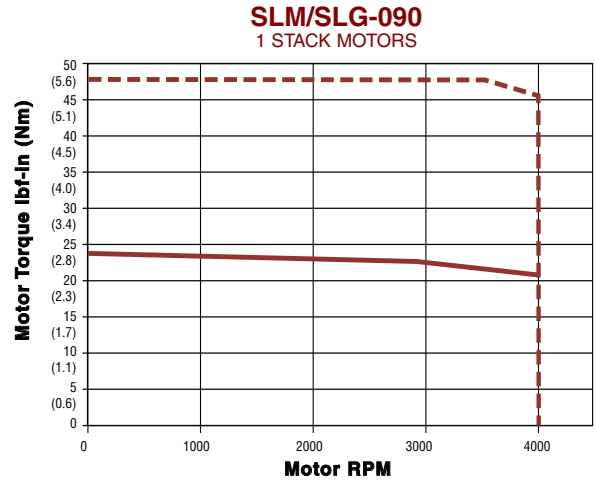
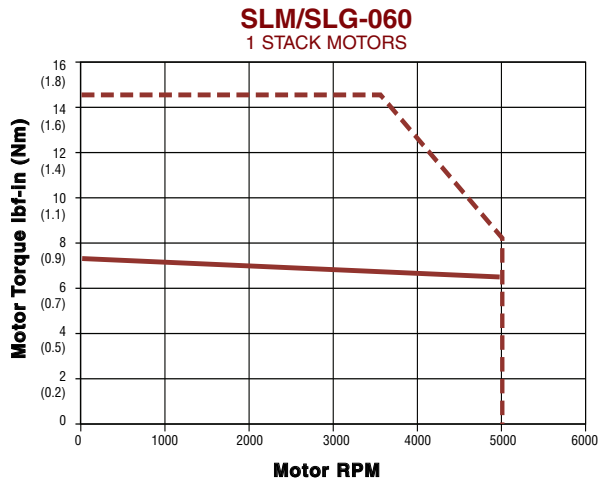
*Exlar's brushless motors are the highest performance with very compact size. This makes them perfect for high-speed labeling and demanding conveyor drive applications.*

**SLM/SLG  
Series**

## SLM/SLG Speed/Torque Curves

These speed vs. torque curves represent approximate continuous torque ratings at indicated rpms. Different types of servo amplifiers will offer varying motor torque.

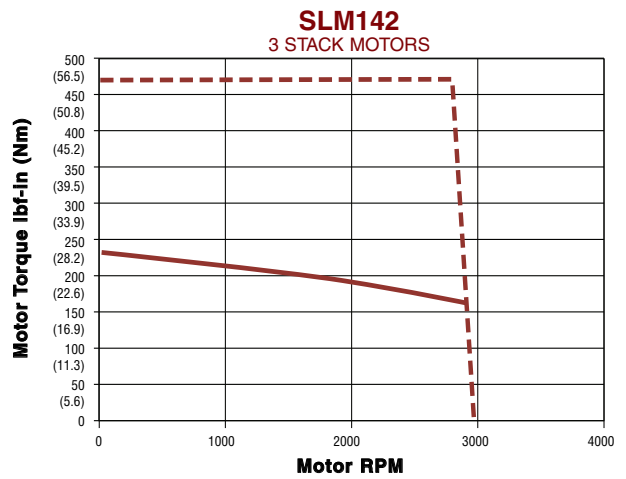
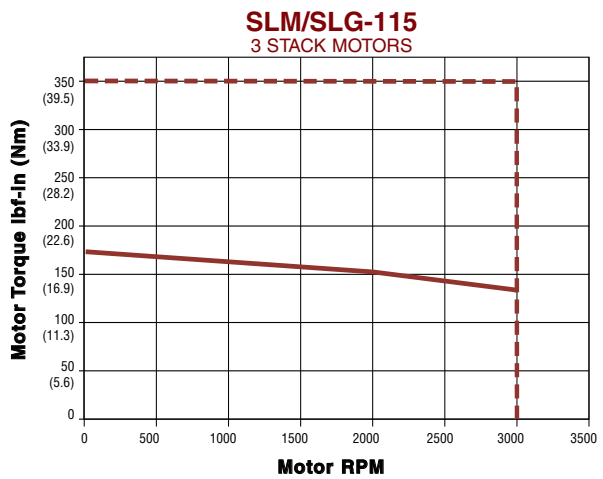
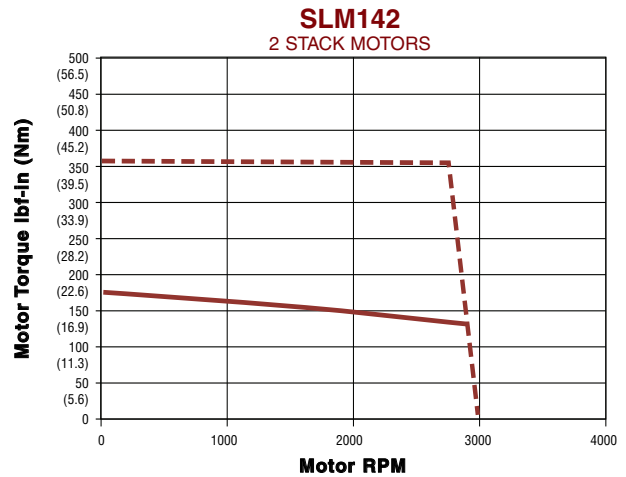
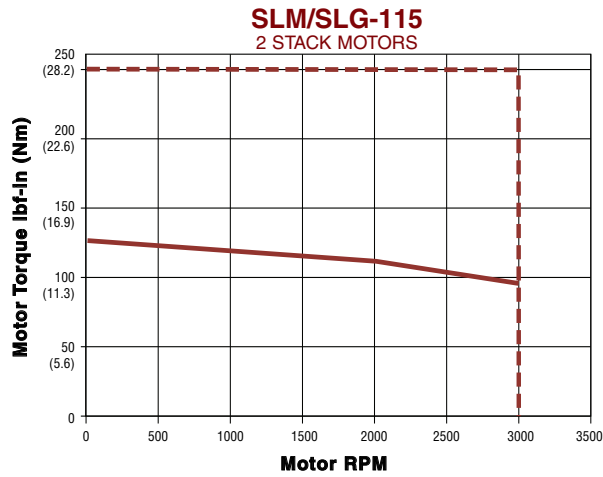
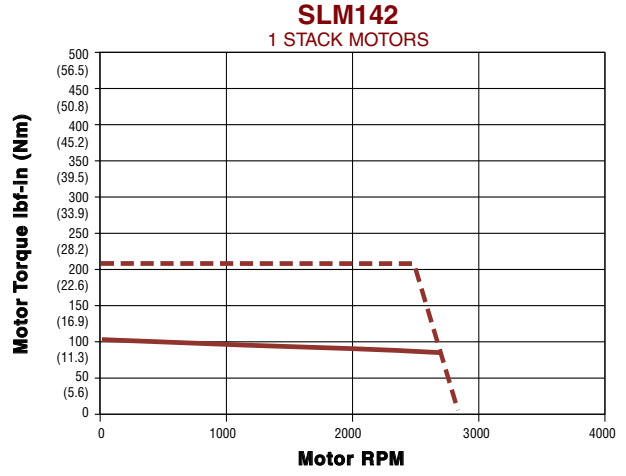
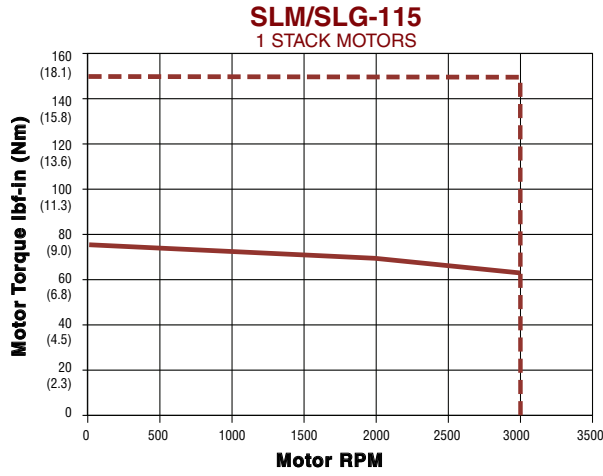
--- Peak Torque  
 — Continuous Torque



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 <sup>2</sup>	0.000237				0.000413				0.000589			
(+/- 5%)	(kg-cm <sup>2</sup> )	(0.268)				(0.466)				(0.665)			
Brake Inertia	lb-in-sec <sup>2</sup>	0.000120				0.000120				0.000120			
	(kg-cm <sup>2</sup> )	(0.135)				(0.135)				(0.135)			
Brake Current @ 24 VDC	A	.33				.33				.33			
Brake Holding Torque	lbf-in (Nm)	19 (2.2)				19 (2.2)				19 (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, Stator 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 <sup>2</sup> ( kg-cm <sup>2</sup> )	0.000226 (0.255)			0.000401 (0.453)			0.000576 (0.651)		
Gearing Reflected Inertia	Single Reduction				Double Reduction					
		Gear Stages	lbf-in-sec <sup>2</sup>	(kg-cm <sup>2</sup> )		Gear Stages	lbf-in-sec <sup>2</sup>	(kg-cm <sup>2</sup> )		
		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 <sup>2</sup> (+/- 5%) (kg-cm <sup>2</sup> )		0.00054 (0.609)					0.00097 (1.09)					0.00140 (1.58)	
Brake Inertia	lb-in-sec <sup>2</sup> (kg-cm <sup>2</sup> )		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, Stator Temp.	°C	130												
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

		1 Stack Stator			2 Stack Stator			3 Stack Stator			
SLG Armature Inertia*	lbf-in-sec <sup>2</sup> (kg-cm <sup>2</sup> )	0.00114 (1.29)			0.00157 (1.77)			0.00200 (2.26)			
Gearing Reflected Inertia		Single Reduction			Double Reduction						
	Gear Stages	lbf-in-sec <sup>2</sup>		(kg-cm <sup>2</sup> )	Gear Stages		lbf-in-sec <sup>2</sup>		(kg-cm <sup>2</sup> )		
	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
<b>Trapezoidal Commutation Data</b>											
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
<b>Motor Data</b>											
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 (+/- 5%)	lb-in-sec <sup>2</sup>	0.00344				0.00623			0.00901		
	(kg-cm <sup>2</sup> )	(3.89)				(7.036)			(10.181)		
Brake Inertia	lb-in-sec <sup>2</sup>	0.00327				0.00327			0.00327		
	(kg-cm <sup>2</sup> )	(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, Stator Temp.	°C	130									
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 <sup>2</sup> (kg-cm <sup>2</sup> )		0.00538 (6.08)		0.00816 (9.22)		0.0109 (12.37)	
Gearing Reflected Inertia	Single Reduction			Double Reduction			
	Gear Stages	lbf-in-sec <sup>2</sup>	(kg-cm <sup>2</sup> )	Gear Stages	lbf-in-sec <sup>2</sup>	(kg-cm <sup>2</sup> )	
	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" 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 <sup>2</sup>	0.00927				0.01537			0.02146	
	kg-cm <sup>2</sup>	10.47				17.36			24.25	
Brake Inertia	lbf-in-sec <sup>2</sup>	.008408								
	kg-cm <sup>2</sup>	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								
Stator Insulation System Class H	deg C	180								
Insulation System Voltage Rating	Vrms	460								
Thermal Switch, Stator Temp	deg C	130								
Environmental Rating		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	lbf-in (Nm)		1000 RPM		3000 RPM		5000 RPM	
				lbf-in (Nm)	lbf-in (Nm)	lbf-in (Nm)	lbf-in (Nm)	lbf-in (Nm)	lbf-in (Nm)
<b>SLG060</b>	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)
					1000 RPM	2500 RPM	4000 RPM		
<b>SLG090</b>	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)
					1000 RPM	2000 RPM	3000 RPM		
<b>SLG115</b>	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](http://www.exlar.com) for full details on radial load and bearing life.

	RPM	50	100	250	500	1000
<b>SLM/G060</b>	lbf (N)	195 (867)	155 (690)	114 (507)	90 (400)	72 (320)
<b>SLM/G090</b>	lbf (N)	389 (1730)	309 (1375)	227 (1010)	180 (801)	143 (636)
<b>SLM/G115</b>	lbf (N)	939 (4177)	745 (3314)	549 (2442)	435 (1935)	346 (1539)
<b>SLM142</b>	lbf (N)	1350 (6006)	1071 (4767)	789 (3512)	626 (2788)	497 (2213)

### Motor and Gearmotor Weight (lbs)

<b>SLM/G060</b>	Motor	1 Stage	2 Stage	<b>SLM/G090</b>	Motor	1 Stage	2 Stage	<b>SLM/G115</b>	Motor	1 Stage	2 Stage	<b>SLM142</b>	
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 SLG090-010-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 100-103 for availability of 115V stators by configuration.

## Housing Options

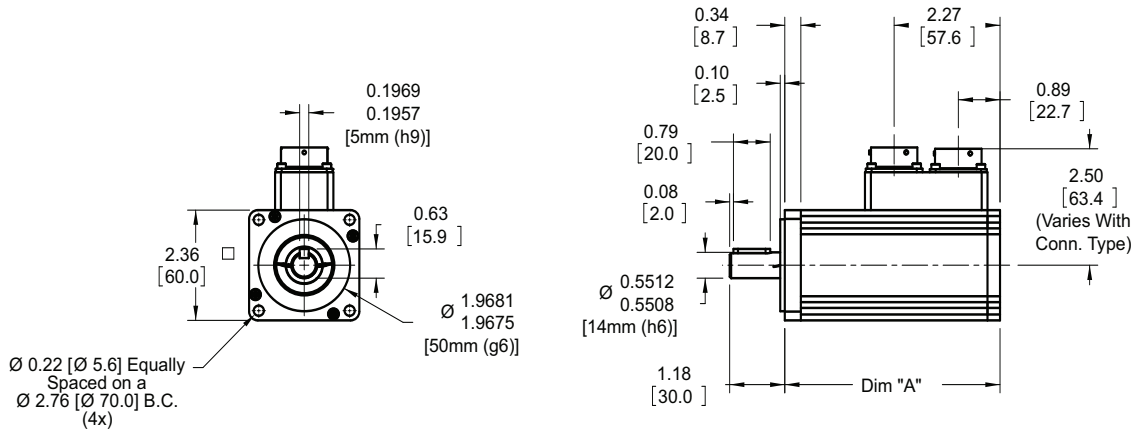
**FG = Smooth White Epoxy**, This option provides for a motor coated with FDA approved white epoxy.

**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.

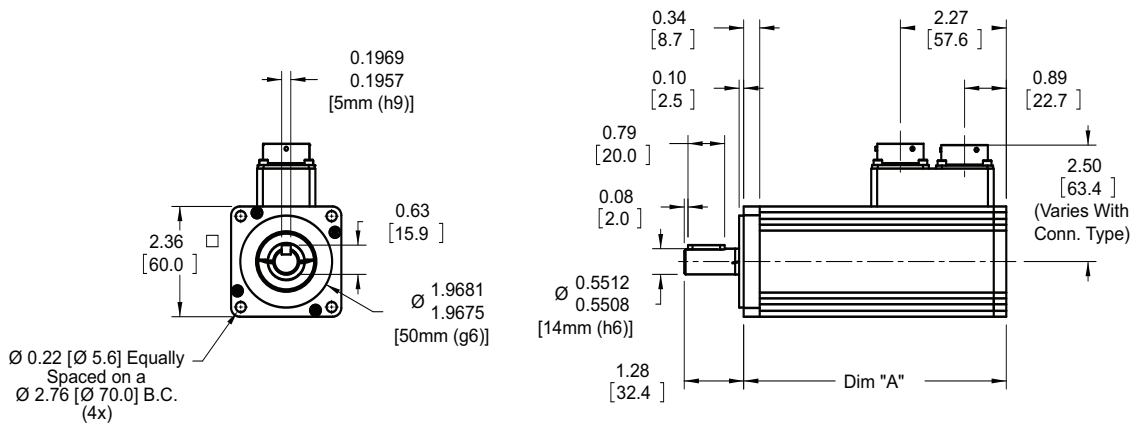
# SLM060



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

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

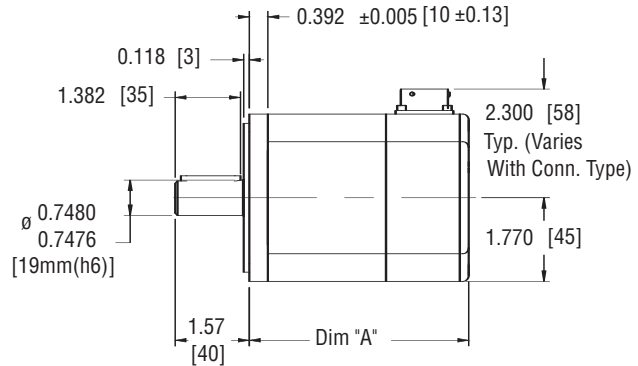
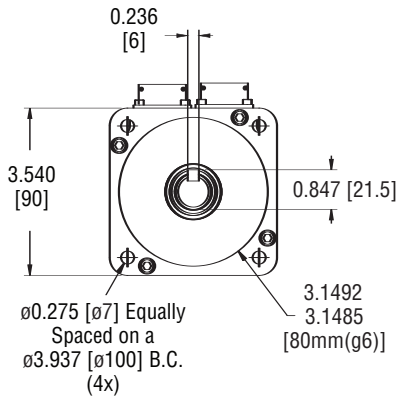


Note: Dimension format = in. [mm]  
Face plate edge is not intended for alignment of shaft (use pilot)

Dim	1 Stack Motor	2 Stack Motor	3 Stack Motor
A	5.63 [143.0]	6.88 [174.7]	8.13 [206.4]

Drawings subject to change. Consult Exlar for certified drawings.

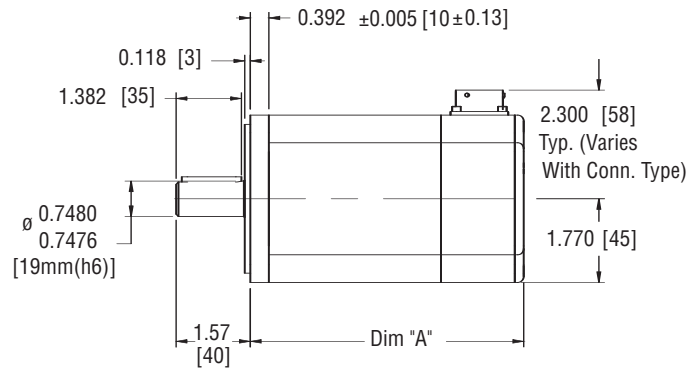
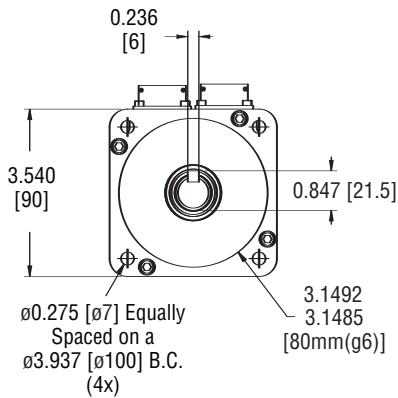
# SLM090



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

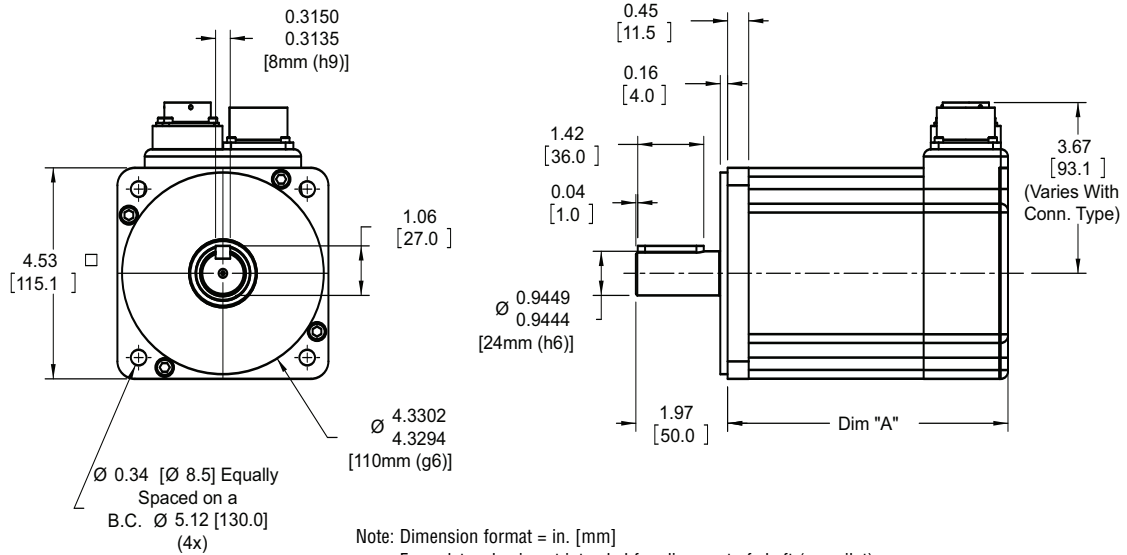


Note: Dimension format = in. [mm]  
Face plate edge is not intended for alignment of shaft (use pilot)

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

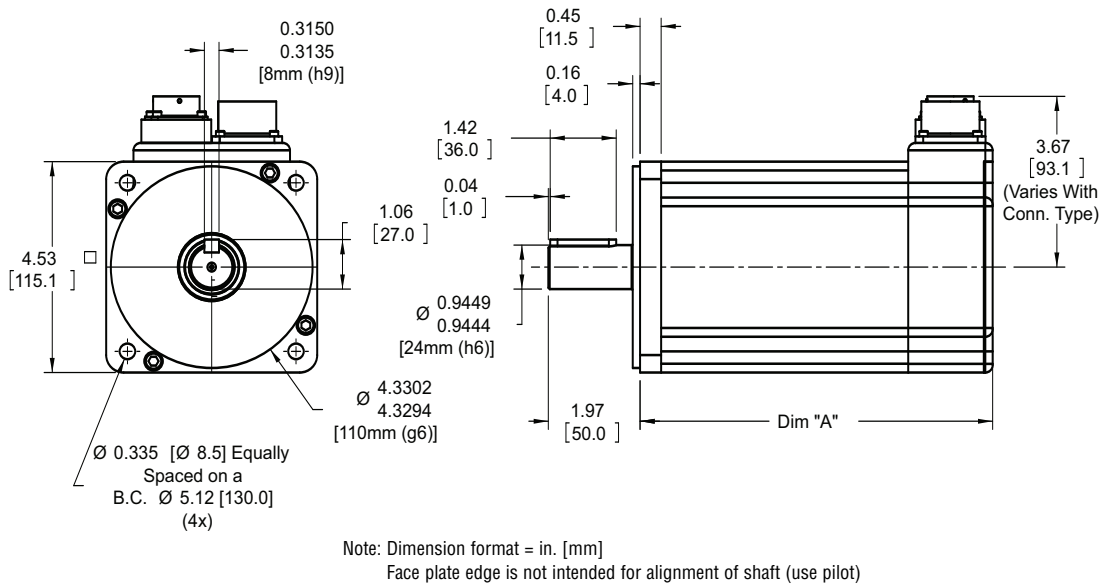
Drawings subject to change. Consult Exlar for certified drawings.

# SLM115



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)

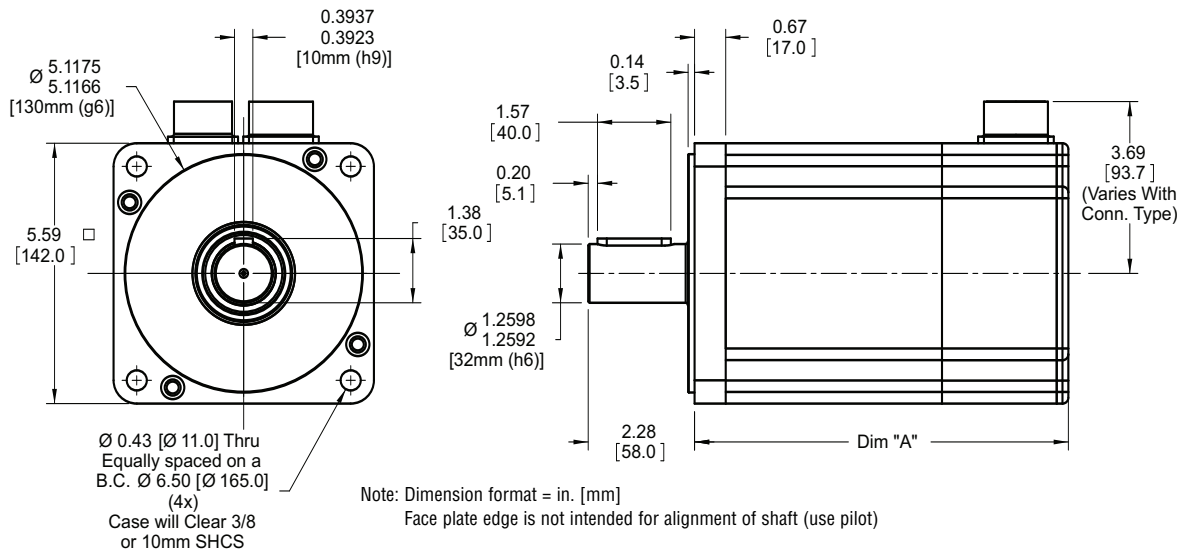
# SLM115 With Brake Option



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)

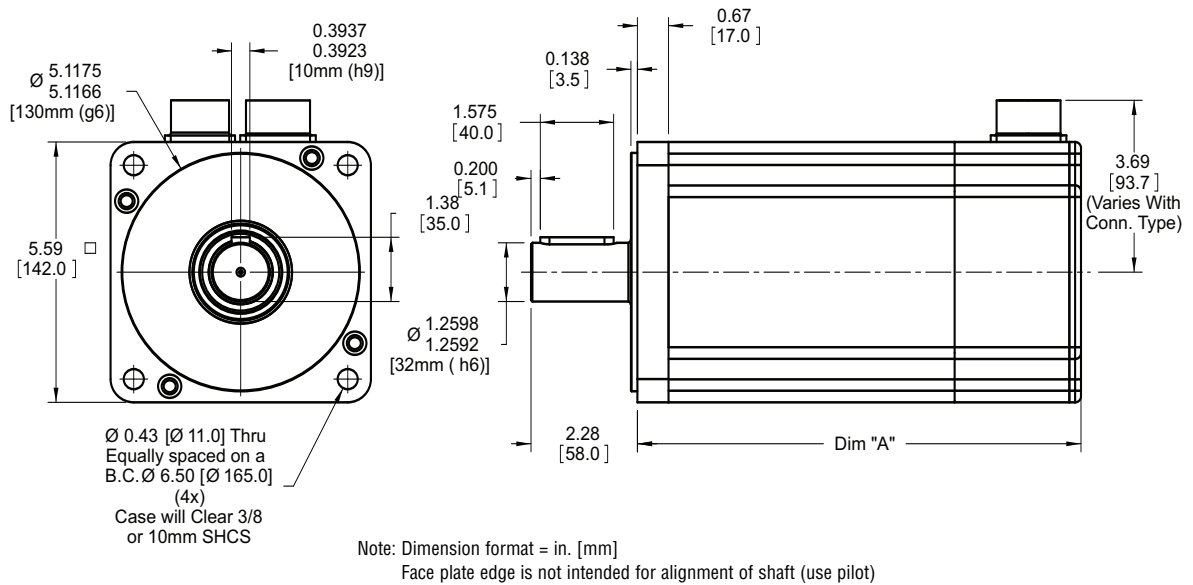
Drawings subject to change. Consult Exlar for certified drawings.

## SLM142



Dim A	
1 stack, no brake	7.87 (199.8)
2 stack, no brake	9.62 (244.2)
3 stack, no brake	11.37 (288.7)

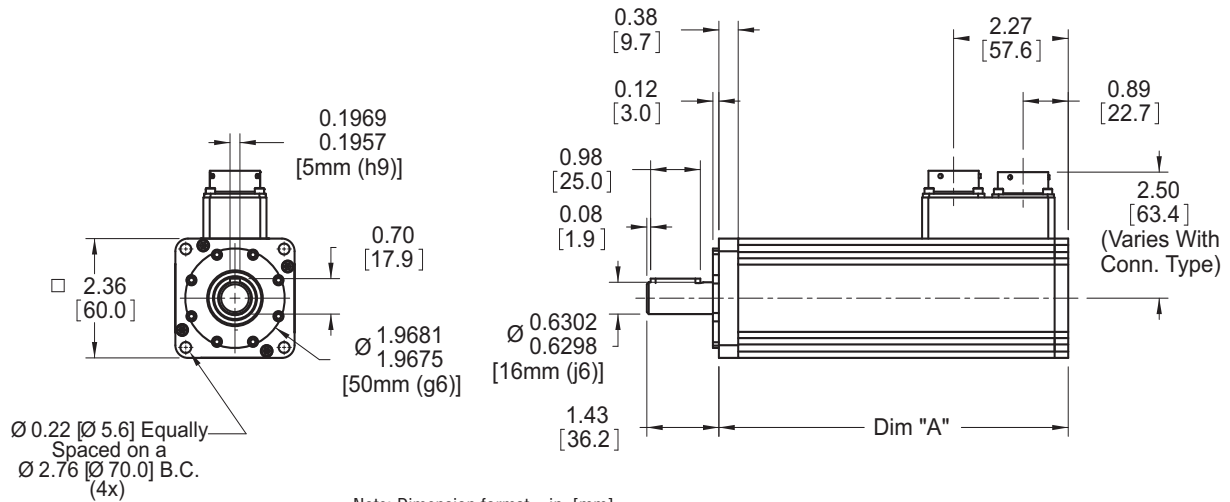
## SLM142 with Brake Option



Dim A	
1 stack, with brake	9.53 (241.9)
2 stack, with brake	11.28 (286.4)
3 stack, with brake	13.03 (330.8)

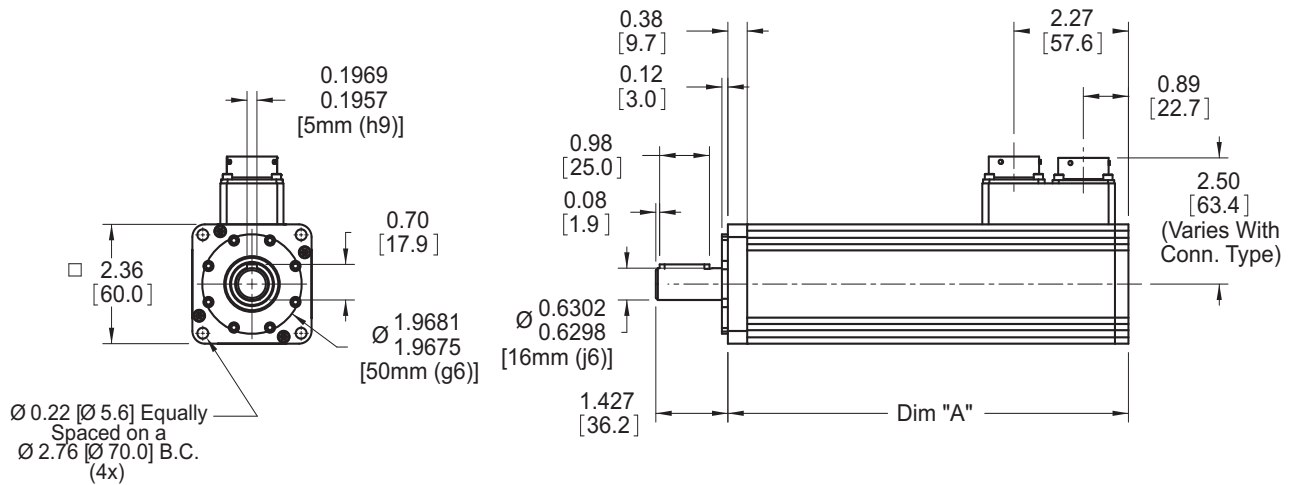
Drawings subject to change. Consult Exlar for certified drawings.

# SLG060



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]

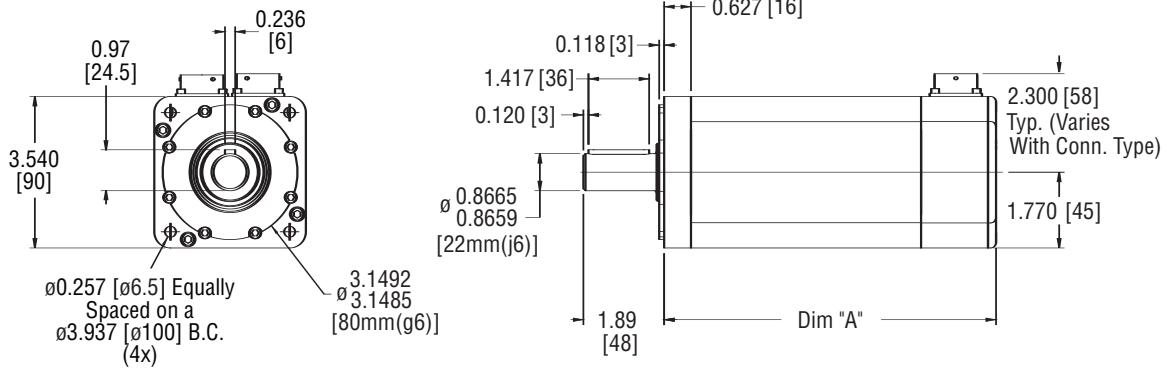
# SLG060 with Brake Option



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.

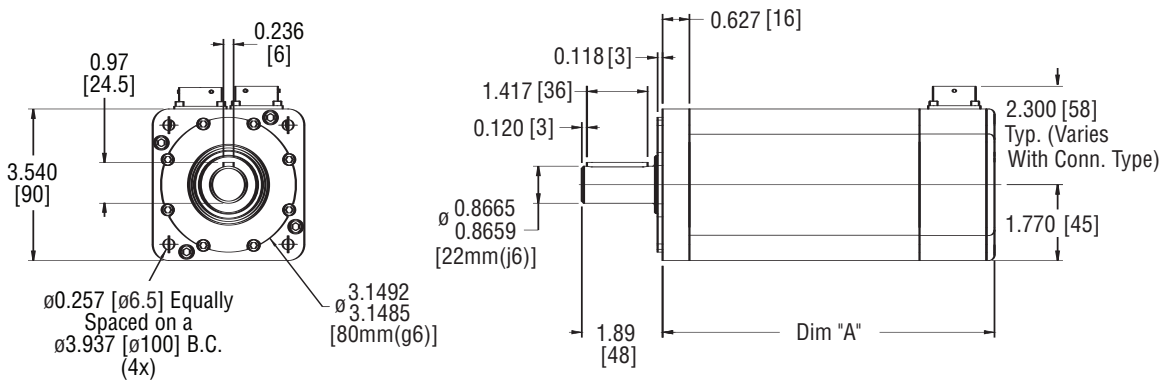
# SLG090



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
<b>a</b>	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
<b>A</b>	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)

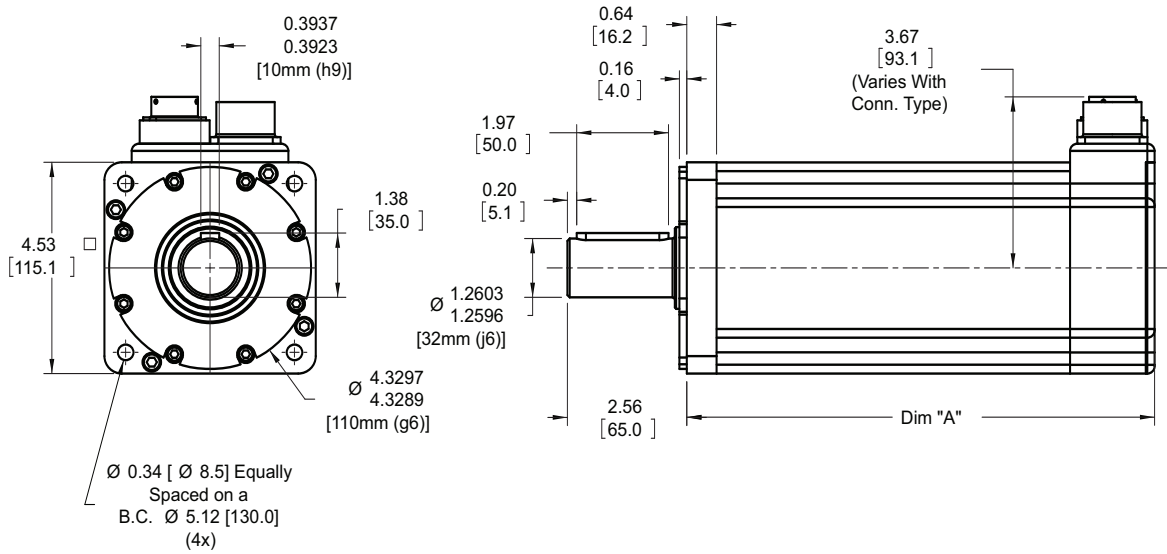
Dim	1 Stack Stator 1 Stage Gearhead	2 Stack Stator 1 Stage Gearhead	3 Stack Stator 1 Stage Gearhead
<b>A</b>	9.070 [230]	10.070 [256]	11.070 [281]
Dim	1 Stack Stator 2 Stage Gearhead	2 Stack Stator 2 Stage Gearhead	3 Stack Stator 2 Stage Gearhead
<b>A</b>	10.335 [263]	11.335 [288]	12.335 [313]

Drawings subject to change. Consult Exlar for certified drawings.

SLM/SLG  
Series

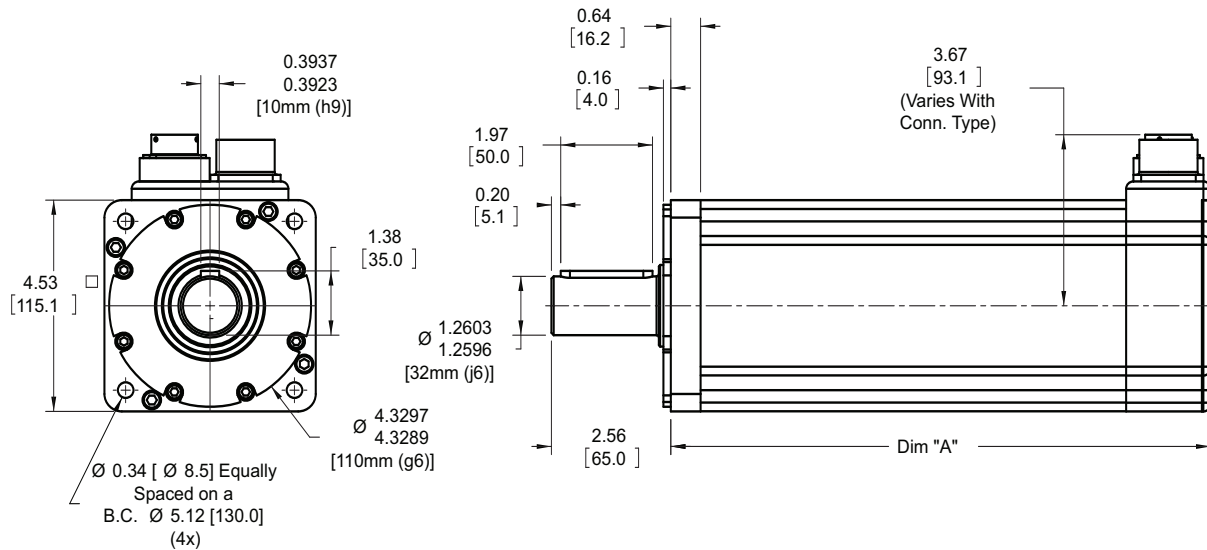


# SLG115



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
<b>A</b>	10.03 [254.8]	12.03 [305.6]	14.03 [356.4]	<b>A</b>	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
<b>A</b>	11.58 [294.2]	13.58 [345.0]	15.58 [395.8]	<b>A</b>	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 114-115**

## 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 Connector<sup>2</sup>  
 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 Options<sup>1</sup>

G = Anodized Aluminum Front/Rear Covers  
 E = Electroless Nickel Plated  
 F = Smooth White Epoxy  
 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 (8192 cts per rev. index pulse, Hall commutation, 5vdc)  
 -Standard Resolver – Size 15, 1024 line (2048 cts per rev. two phase resolver)

*-Motor files for use with select Emerson/CT, Rockwell /AB and Danaher/Kollmorgen Drives are available at [www.exlar.com](http://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.)

AB5 = Stegmann SRM050 Hiperface 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 = Hiperface Stegmann SRM050 multi-turn absolute encoder - MPL 75mm or less motor wiring w/M23 euro connectors for 'M' option – Plug & Play feedback option

ABA = Hiperface 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 = Hiperface 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 – BSM motor wiring w/M23

connectors for 'M' option

BD3 = Standard Incremental Encoder – BSM motor wiring w/M23 connectors for 'M' option

### Beckhoff:

BE1 = EnDat Heidenhain EQN1125 multi-turn absolute encoderr – 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 = Hiperface Stegmann SRM050 multi-turn absolute encoder – FM/UM/EZ motor wiring w/M23 euro connectors for 'M' option

CT3 = Hiperface 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 = Hiperface Stegmann SRM050 multi-turn absolute encoder – SH motor wiring w/MS connectors for 'M' option

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

### 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

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

# SLM/SLG Series Motor Ordering Information

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:**

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

IN7 = Hiperface Stegmann SKM036 multi-turn absolute encoder – MSK motor wiring w/M23 euro connectors for 'M' option – plug & play 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 = Hiperface 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

**Metronix:**

MX1 = Standard Resolver

MX2 = Hiperface Stegmann SKM036 multi-turn absolute encoder

MX3 = EnDat Heidenhain EQN1125 multi-turn absolute encoder

**Mitsubishi:**

MT1 = Mitsubishi Absolute Encoder – HF-SP motor wiring with 'M' option

**Modicon:**

MD1 = Standard Resolver

**Momentum:**

MN1 = Hyperface Stegmann SRM050 multi-turn absolute encoder – MN motor wiring w/M23 connectors for 'M' option

MN2 = EnDat Heidenhain EQN1325 multi-turn absolute encoder – MN motor wiring connectors for 'M' option

MN3 = Std incremental encoder – MN motor wiring w/M23 connectors for 'M' option

MN4 = Std resolver – MN motor wiring w/M23 connectors for 'M' option

**Moog:**

MG1 = Standard Resolver

**Motoman Robot:**

MM1 = Yaskawa Serial 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 = Hiperface 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

**Siemens:**

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

**SEW/Eurodrive:**

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

SW2 = Standard Incremental Encoder

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

**Whedco:**

WD1 = Standard Resolver

**HHH = Motor Stator, All 8 Pole<sup>3</sup>**

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 Designator for specials**

HC = Type III hard coat anodized, Class 1<sup>1</sup>

SS = Stainless steel housing<sup>1</sup>

XH = Special housing or mounting option<sup>4</sup>

XM = Special motor options

XF = Special feedback option

XL = Special lubrication

**#### = Part Number Designator 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. Please inquire with Exlar Eng.
2. Available as described in Feedback Types.
3. See page 105 for explanation of voltage, speed and stack options.
4. When selecting special housing options, use "G" in this model mask location.