

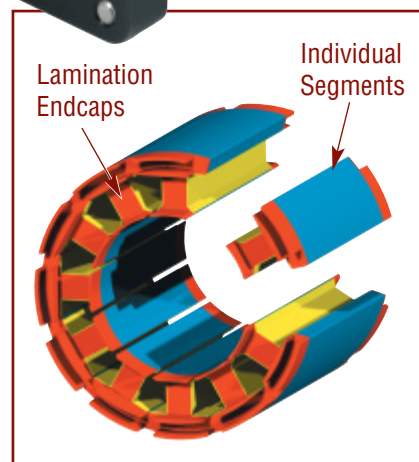
GSM Series - Excellent Ball Screw Replacement

This design incorporates Exlar's patented roller screw technology with an integral brushless servo motor for medium to high performance motion control applications. The GSM Series offers 5 times the travel life of similarly sized ball screw actuators. It also provides a smaller package with higher speed and higher load capacity than ball screws and other traditional rotary to linear conversion mechanisms. These features make the GSM Series an excellent replacement for ball screw actuators.

Selection of the proper feedback configuration allows GSM Series actuators to be powered by nearly every brand of brushless motor amplifier on the market. This flexibility allows GSM Series actuators to be incorporated into the highest performance single and multi-axis motion control systems in use today. In applications varying from food and beverage packaging, to multi-axis turning centers, to aircraft assembly, the GSM Series of actuators show incredible performance and durability.

Exlar's T-LAM technology incorporated into the motor design provides a solution with 35% more torque in the same package size as traditional brushless motors. The efficiencies of the GSM Series are a result of the limited heat generation qualities inherent in the segmented stator

design. The elimination of end turns in the stator, and the use of thermally conductive potting removes the parts most susceptible to



failure in a traditional stator. Other benefits include:

- Neodymium iron boron magnets provide high flux density and maximum motor torque.
- Thermally conductive potting of the entire stator provides increased heat dissipation and provides protection from contamination in oil-cooled units.
- Each stator segment contains individual phase wiring. External winding of individual segments provides maximum slot fill for maximum motor performance.
- Motors with T-LAM technology have Class H insulation systems compliant with UL requirements.

Features/Characteristics	
T-LAM™ segmented lamination stator technology	
2.25, 3.3 or 3.9 inch frame size	
3, 5.9, 10, 12 and 18 inch strokes	
0.1, 0.2, 0.4, 0.5 and .75 inch lead roller screws	
7 to 75 lbf-in torque motor availability	
Up to 33 inch per second linear speeds	
92 to 1983 lbf thrust capacity depending on motor selection	
Front flange, rear clevis, trunnion, side, double side or extended tie rods mounting options	
Encoder feedback with MS style connectors	
Molded and shielded cables available	
Anodized aluminum housing	
Competitively priced with ball screw actuators	
5 times the life of a similar sized ball screw actuator	
IP54 or IP65 sealing	
Class 180 H insulation	
UL recognized component	

EXLAR GSM SERIES ACTUATORS APPLICATIONS INCLUDE:

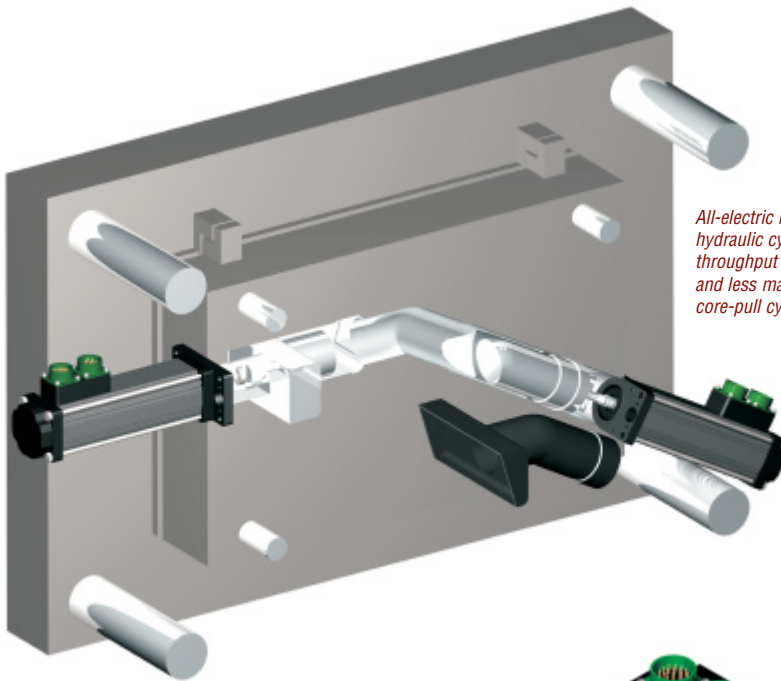
Hydraulic cylinder replacement
 Ball screw replacement
 Pneumatic cylinder replacement
 Chip and wafer handling
 Automated flexible fixturing
 Dispensers
 Machine tool
 Automated assembly
 Parts clamping
 Automatic tool changers
 Volumetric pumps
 Medical equipment

Conveyor diverters / gates
 Plastics equipment
 Cut-offs
 Die cutters
 Packaging machinery
 Entertainment
 Sawmill equipment
 Open / close doors
 Fillers
 Formers
 Precision grinders

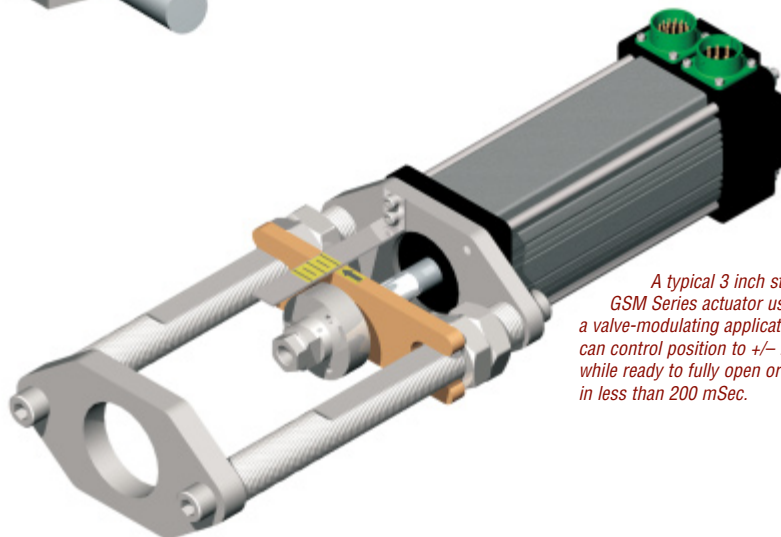
Indexing stages
 Lifts
 Product sorting
 Material cutting
 Material handling
 Riveting / fastening / joining
 Molding
 Volumetric pumps
 Semiconductor
 Pick and place systems
 Robot manipulator arms

Simulators
 Precision valve control
 Ventilation control systems
 Pressing
 Process control
 Tube bending
 Welding
 Stamping
 Test stands
 Tension control
 Web guidance
 Wire winding

GSM Series



All-electric replacement for hydraulic cylinders improves throughput with servo control and less maintenance for core-pull cylinders.



A typical 3 inch stroke GSM Series actuator used in a valve-modulating application can control position to +/- .5% while ready to fully open or close in less than 200 mSec.

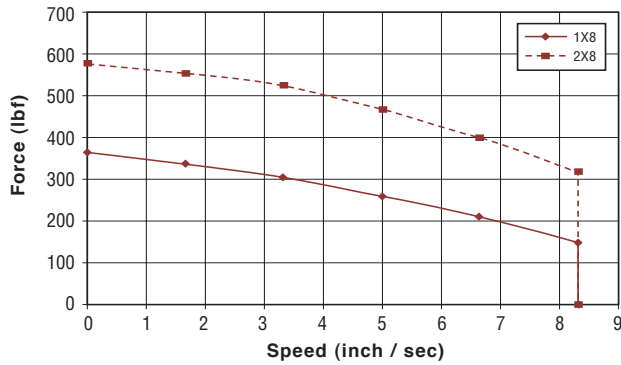


GSM-Series actuators can provide the precision at high force loads for fluid dispensing in a medical environment.

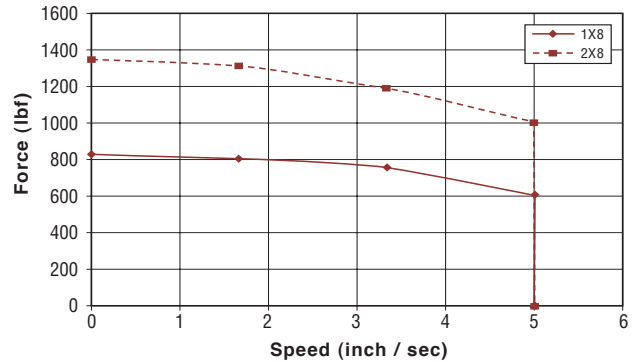
GSM Series Performance and Life Curves

The below speed vs. force curves represent approximate continuous thrust ratings at indicated linear speed. Different types of servo amplifiers will offer varying motor torque and thus actuator thrust. These values are at constant velocity and do not account for motor torque required for acceleration.

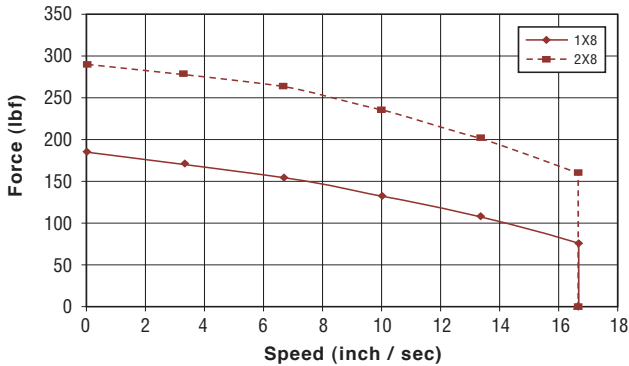
GSM20-.1 Inch Lead



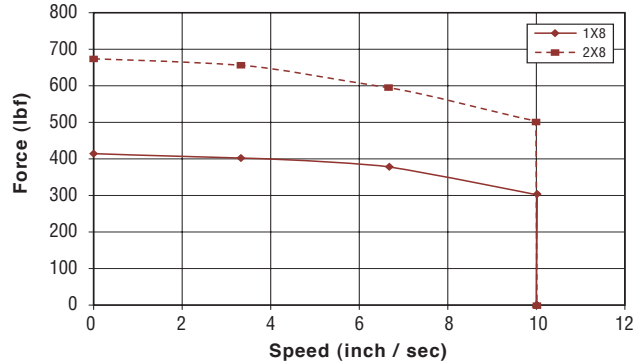
GSM30-.1 Inch Lead



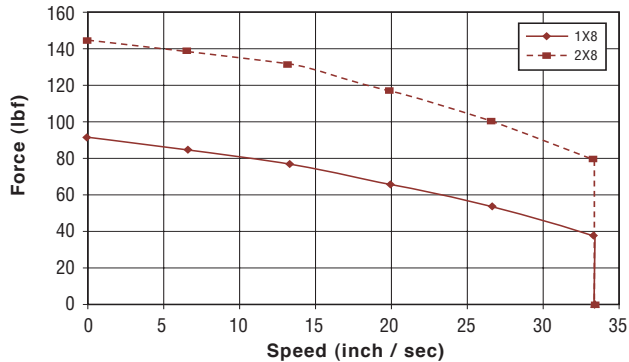
GSM20-.2 Inch Lead



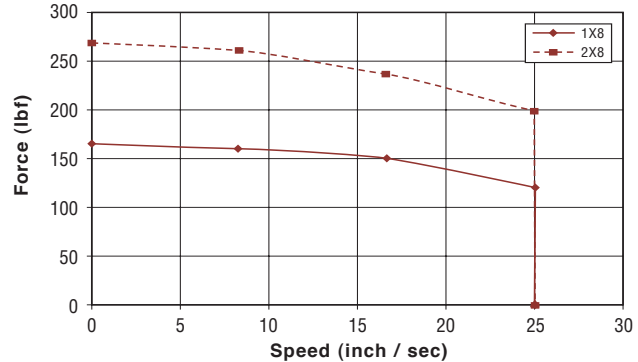
GSM30-.2 Inch Lead



GSM20-.4 Inch Lead

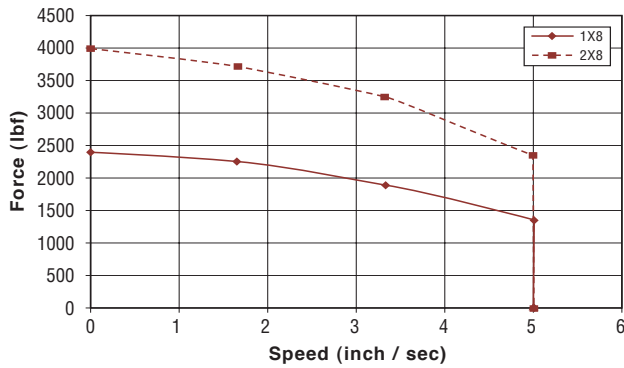


GSM30-.5 Inch Lead

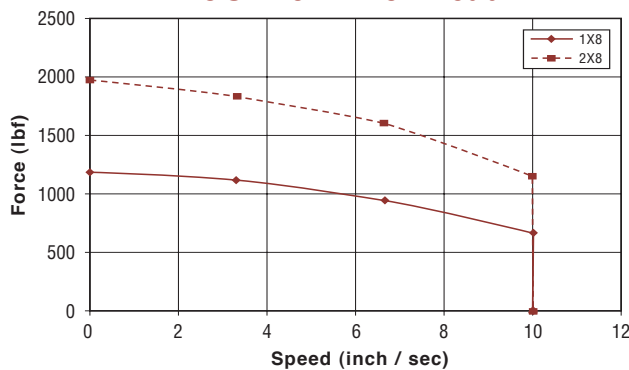


Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4" on GSM20 and 10" x 10" x 3/8" on GSM30

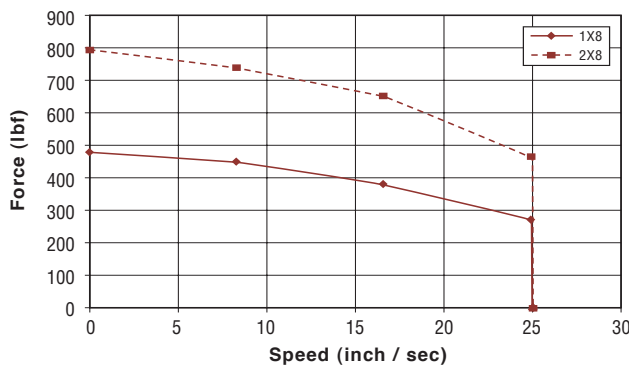
GSM40-.1 Inch Lead



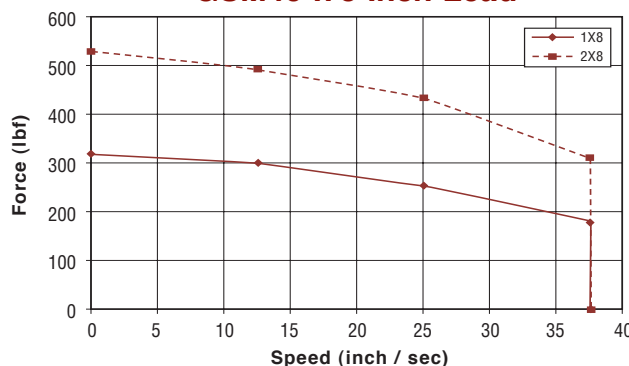
GSM40-.2 Inch Lead



GSM40-.5 Inch Lead



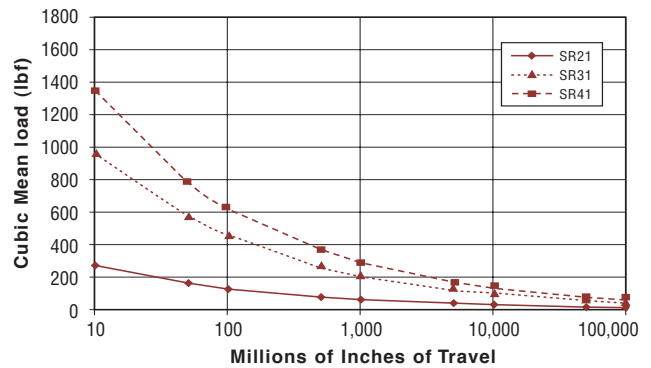
GSM40-.75 Inch Lead



Life Curves

The estimated travel life indicates the approximate expected travel life from the roller screw mechanism within the GSM30 at indicated cubic mean load. The chart below represents L10 travel life estimates. The reliability for these values is 90%. This information assumes that the roller screw is properly maintained and lubricated. The equation used to calculate the L10 life is: $\text{Travel } (C/F)^3$ (lead) in millions of inches./mm. Where C = the dynamic load rating of the screw and F is the cubic mean load rating of the application. For higher than 90% reliability, derating of this value is implemented. Contact Exlar application engineering for details.

GSM20, GSM30 & GSM40 L10 Travel life



Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" on GSM40

GSM20 & GSM30 Performance Specifications

Model No.	Frame Size in. (mm)	Stroke (nominal)* in (mm)	Screw Lead in (mm)	Continuous Force Rating lb (N) 1stack/2 stack	Max. Velocity in/sec (mm/sec)	Approx. Cont. Motor Torque 1 stack/2 stack lb-in (Nm)	Maximum Static Load lb (N)	Armature Inertia** Lb-in-s ² (Kg-m ²)	Dynamic Load Rating lb (N)	Weight (approx) lb (Kg)
GSM20-0301	2.25 (57)	3 (75)	0.1 (2.54)	367/578 (1632/2571)	8.33 (211.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00101 (0.000114)	1568 (6970)	6.5 (2.9)
GSM20-0302	2.25 (57)	3 (75)	0.2 (5.08)	183/289 (814/1286)	16.77 (423.33)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00101 (0.000114)	1219 (5422)	6.5 (2.9)
GSM20-0304	2.25 (57)	3 (75)	0.4 (10.16)	92/145 (409/645)	33.33 (846.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00101 (0.000114)	738 (3283)	6.5 (2.9)
GSM20-0601	2.25 (57)	6 (150)	0.1 (2.54)	367/578 (1632/2571)	8.33 (211.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00114 (0.000129)	1567 (6970)	7.0 (3.2)
GSM20-0602	2.25 (57)	6 (150)	0.2 (5.08)	183/289 (814/1286)	16.67 (423.33)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00114 (0.000129)	1219 (5422)	7.0 (3.2)
GSM20-0604	2.25 (57)	6 (150)	0.4 (10.16)	92/145 (409/645)	33.33 (846.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00114 (0.000129)	738 (3283)	7.0 (3.2)
GSM20-1001	2.25 (57)	10 (254)	0.1 (2.54)	367/578 (1632/2571)	8.33 (211.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00133 (0.000150)	1567 (6970)	7.5 (3.4)
GSM20-1002	2.25 (57)	10 (254)	0.2 (5.08)	183/289 (814/1286)	16.67 (423.33)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00133 (0.000150)	1219 (5422)	7.5 (3.4)
GSM20-1004	2.25 (57)	10 (254)	0.4 (10.16)	92/145 (409/645)	33.33 (846.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00133 (0.000150)	738 (3283)	7.5 (3.4)
GSM20-1201	2.25 (57)	12 (300)	0.1 (2.54)	367/578 (1632/2571)	8.33 (211.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00143 (0.000162)	1567 (6970)	8.0 (3.6)
GSM20-1202	2.25 (57)	12 (300)	0.2 (5.08)	183/289 (814/1286)	16.67 (423.33)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00143 (0.000162)	1219 (5422)	8.0 (3.6)
GSM20-1204	2.25 (57)	12 (300)	0.4 (10.16)	92/145 (409/645)	33.33 (846.67)	7.3/11.5 (0.82/1.30)	750 (3336)	0.00143 (0.000162)	738 (3283)	8.0 (3.6)
GSM30-0301	3.3 (84)	3 (75)	0.1 (2.54)	829/1347 (3688/5992)	5 (127)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00319 (0.000360)	3310 (14724)	9.5 (4.3)
GSM30-0302	3.3 (84)	3 (75)	0.2 (5.08)	415/674 (1846/2998)	10 (254)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00319 (0.000360)	3570 (15880)	9.5 (4.3)
GSM30-0305	3.3 (84)	3 (75)	0.5 (12.7)	166/269 (738/1197)	25 (635)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00319 (0.000360)	3016 (13416)	9.5 (4.3)
GSM30-0601	3.3 (84)	5.9 (150)	0.1 (2.54)	829/1347 (3688/5992)	5 (127)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00361 (0.000408)	3310 (14724)	11.5 (5.2)
GSM30-0602	3.3 (84)	5.9 (150)	0.2 (5.08)	415/674 (1846/2998)	10 (254)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00361 (0.000408)	3570 (15880)	11.5 (5.2)
GSM30-0605	3.3 (84)	5.9 (150)	0.5 (12.7)	166/269 (738/1197)	25 (635)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00361 (0.000408)	3016 (13416)	11.5 (5.2)
GSM30-1001	3.3 (84)	10 (250)	0.1 (2.54)	829/1347 (3688/5992)	5 (127)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00416 (0.00047)	3310 (14724)	19 (8.6)
GSM30-1002	3.3 (84)	10 (250)	0.2 (5.08)	415/674 (1846/2998)	10 (254)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00416 (0.00047)	3570 (15880)	19 (8.6)
GSM30-1005	3.3 (84)	10 (250)	0.5 (12.7)	166/269 (738/1197)	25 (635)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00416 (0.00047)	3016 (13416)	19 (8.6)
GSM30-1201	3.3 (84)	12 (305)	0.1 (2.54)	829/1347 (3688/5992)	5 (127)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00443 (0.000501)	3310 (14724)	22 (10)
GSM30-1202	3.3 (84)	12 (305)	0.2 (5.08)	415/674 (1846/2998)	10 (254)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00443 (0.000501)	3570 (15880)	22 (10)
GSM30-1205	3.3 (84)	12 (305)	0.5 (12.7)	166/269 (738/1197)	25 (635)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00443 (0.000501)	3016 (13416)	22 (10)
GSM30-1802	3.3 (84)	18 (455)	0.2 (5.08)	415/674 (1846/2998)	10 (254)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00533 (0.000602)	3570 (15880)	25 (11.3)
GSM30-1805	3.3 (84)	18 (455)	0.5 (12.7)	166/269 (738/1197)	25 (635)	16.5/26.8 (1.86/3.03)	1620 (7206)	0.00533 (0.000602)	3016 (13416)	25 (11.3)

*Please note that stroke mm are nominal dimensions. **Inertia +/- 5%.

For definition of terms see page 42.

GSM40 Performance Specifications

Model No.	Frame Size in. (mm)	Stroke (nominal)* in (mm)	Screw Lead in (mm)	Continuous Force Rating lb (N) 1stack/2 stack	Max. Velocity in/sec (mm/sec)	Approx. Cont. Motor Torque 1 stack/2 stack lb-in (Nm)	Maximum Static Load lb (N)	Armature Inertia** Lb-in-s ² (Kg-m ²)	Dynamic Load Rating lb (N)	Weight (approx) lb (Kg)
GSM40-0601	3.9 (99)	6 (150)	0.1 (2.54)	2393/3966 (10645/17642)	5 (127)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0152 (0.001717)	4736 (21067)	20 (9.1)
GSM40-0602	3.9 (99)	6 (150)	0.2 (5.08)	1196/1983 (5320/8821)	10 (254)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0152 (0.001717)	4890 (21751)	20 (9.1)
GSM40-0605	3.9 (99)	6 (150)	0.5 (12.7)	479/793 (2131/3527)	25 (635)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0152 (0.001717)	4218 (18763)	20 (9.1)
GSM40-0608	3.9 (99)	6 (150)	0.75 (19.05)	319/529 (1419/2353)	37.5 (953)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0152 (0.001717)	3328 (14804)	20 (9.1)
GSM40-1001	3.9 (99)	10 (250)	0.1 (2.54)	2393/3966 (10645/17642)	5 (127)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0175 (0.001977)	4736 (21067)	28 (12.7)
GSM40-1002	3.9 (99)	10 (250)	0.2 (5.08)	1196/1983 (5320/8821)	10 (254)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0175 (0.001977)	4890 (21751)	28 (12.7)
GSM40-1005	3.9 (99)	10 (250)	0.5 (12.7)	479/793 (2131/3527)	25 (635)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0175 (0.001977)	4218 (18763)	28 (12.7)
GSM40-1008	3.9 (99)	10 (250)	0.75 (19.05)	319/529 (1419/2353)	37.5 (953)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0175 (0.001977)	3328 (14804)	28 (12.7)
GSM40-1201	3.9 (99)	12 (305)	0.1 (2.54)	2393/3966 (10645/17642)	5 (127)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0186 (0.002102)	4736 (21067)	32 (14.5)
GSM40-1202	3.9 (99)	12 (305)	0.2 (5.08)	1196/1983 (5320/8821)	10 (254)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0186 (0.002102)	4890 (21751)	32 (14.5)
GSM40-1205	3.9 (99)	12 (305)	0.5 (12.7)	479/793 (2131/3527)	25 (635)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0186 (0.002102)	4218 (18763)	32 (14.5)
GSM40-1208	3.9 (99)	12 (305)	0.75 (19.05)	319/529 (1419/2353)	37.5 (953)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0186 (0.002102)	3328 (14804)	32 (14.5)
GSM40-1802	3.9 (99)	18 (455)	0.2 (5.08)	1196/1983 (5320/8821)	10 (254)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0220 (0.002486)	4890 (21751)	44 (19.9)
GSM40-1805	3.9 (99)	18 (455)	0.5 (12.7)	479/793 (2131/3527)	25 (635)	47.6/78.9 (5.38/8.91)	3966 (17642)	0.0220 (0.002486)	4218 (18763)	44 (19.9)

GSM Series

Definition of Terms

Force Rating: The linear force produced by the actuator at continuous motor torque.

Max Velocity: The linear velocity that the actuator will achieve at rated motor rpm.

Continuous Motor Torque: Torque produced by the motor at rated continuous current.

Maximum Static Load: The mechanical load limit of the actuator if re-circulated oil or other cooling method is used to allow higher than rated torque from the motor.

Armature Inertia: The rotary inertia of the armature of the GSM Series actuators. For calculation purposes, this value includes the screw inertia in a GSM actuator.

Dynamic Load Rating: A design constant used in calculating the estimated travel life of the roller screw. The cubic mean load is the load at which the device will perform one million revolutions.

*Please note that stroke mm are nominal dimensions. **Inertia +/- 5%

See above for definition of terms.

GSM20 Series Mechanical / Electrical Specifications

		GSM20							
Nominal Backlash	in (mm)	0.008 (.20)							
Lead Accuracy	in/ft (mm/300 mm)	0.001 (.025)							
Maximum Radial Load	lb (N)	15 (67)							
Environmental Rating: Standard		IP54							
MOTOR STATOR		118	138	158	168	218	238	258	268
RMS Sinusoidal Commutation									
Continuous Motor Torque	lbf-in (N-m)	7.6 (0.86)	7.3 (0.83)	7.0 (0.79)	7.0 (0.79)	11.9 (1.35)	11.5 (1.30)	11.2 (1.27)	11.3 (1.28)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C)	2.5 (0.28)	5.2 (0.59)	8.3 (0.94)	9.5 (1.07)	2.5 (0.28)	5.2 (0.59)	8.9 (1.00)	10.2 (1.15)
Continuous Current Rating	Amps	3.4	1.6	0.9	0.8	5.4	2.5	1.4	1.2
Peak Current Rating	Amps	6.9	3.1	1.9	1.6	10.8	4.9	2.8	2.5
Trapezoidal Commutation									
Continuous Motor Torque	lbf-in (N-m)	7.3 (0.82)	7.0 (0.79)	6.7 (0.76)	6.7 (0.76)	11.4 (1.29)	11.0 (1.24)	11.2 (1.21)	10.8 (1.22)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C)	1.9 (0.22)	4.1 (0.46)	6.5 (0.73)	7.4 (0.84)	1.9 (0.22)	4.1 (0.46)	6.9 (0.78)	7.9 (0.89)
Continuous Current Rating	Amps	4.2	1.9	1.1	1.0	6.6	3.0	1.7	1.5
Peak Current Rating	Amps	8.4	3.9	2.3	2.0	13.2	6.0	3.5	3.0
Motor Stator Data									
Voltage Constant (Ke)	Vrms / Krpm (+/- 10% @ 25°C)	16.9 23.9	35.6 50.3	56.9 80.5	64.9 91.8	16.9 23.9	35.6 50.3	60.5 85.5	69.4 98.1
Pole Configuration		8	8	8	8	8	8	8	8
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	2.6	12.5	35.2	45.8	1.1	5.3	16.0	20.7
Inductance (L-L)(+/- 5%)	mH	5.1	22.8	58.3	75.8	2.5	11.0	31.7	41.7
Brake Inertia	lbf-in-sec ² (Kg-cm ²)	0.00012 (0.135)							
Brake Current @ 24 Vdc	A	.33							
Brake Holding Torque	lbf-in (Nm)	19 (2.2)							
Brake Engage/Disengage Time	ms	14/28							
Mech. Time Constant (tm), ms	min	6.0	6.5	7.1	7.1	2.5	2.7	2.9	2.8
	max	8.5	9.2	10.1	10.1	3.6	3.9	4.0	4.0
Electrical Time Constant (te)	ms	2.0	1.8	1.7	1.7	2.2	2.1	2.0	2.0
Damping Constant	lbf-in/krpm (N-m/krpm)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)
Friction Torque	lbf-in (N-m)	1.00 (0.11)	1.00 (0.11)	1.00 (0.11)	1.00 (0.11)	1.00 (0.11)	1.00 (0.11)	1.00 (0.11)	1.00 (0.11)
Bus Voltage	Vrms	115	230	400	460	115	230	400	460
Speed @ Bus Voltage	rpm	5000	5000	5000	5000	5000	5000	5000	5000
Motor Wire Insulation		Class 180 H							
Motor Stator Rating		Class 180 H							
Thermal Switch, Stator Temp.	C°	130							
Std. Connectors ("S" Option): Motor & Brake		MS-3112-E16-8P							
Feedback		MS-3112-E16-23P							

All ratings at 25 degrees Celsius
 For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by .707 and current by 1.414.
 Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4"

Specifications subject to change without notice.

GSM30 Series Mechanical / Electrical Specifications

		GSM30							
Nominal Backlash	in (mm)	0.008 (.20)							
Lead Accuracy	in/ft (mm/300 mm)	0.001 (.025)							
Maximum Radial Load	lb (N)	20 (90)							
Environmental Rating: Standard		IP54							
MOTOR STATOR		118	138	158	168	218	238	258	268
RMS Sinusoidal Commutation									
Continuous Motor Torque	lbf-in	16.6	16.5	15.7	15.7	26.8	26.8	26.7	26.7
	(N-m)	(1.88)	(1.87)	(1.77)	(1.78)	(3.03)	(3.03)	(3.02)	(3.01)
Torque Constant (Kt)	lbf-in/A	4.4	8.7	15.5	17.5	4.4	8.7	15.5	17.5
	(+/- 10% @ 25°C) N-m/A	(0.49)	(0.99)	(1.75)	(1.98)	(0.49)	(0.99)	(1.75)	(1.98)
Continuous Current Rating	Amps	4.2	2.1	1.1	1.0	6.9	3.4	1.9	1.7
Peak Current Rating	Amps	8.5	4.2	2.3	2.0	13.7	6.8	3.8	3.4
Trapezoidal Commutation									
Continuous Motor Torque	lbf-in	15.9	15.8	14.9	15.0	25.6	25.6	25.5	25.5
	(N-m)	(1.79)	(1.78)	(1.69)	(1.70)	(2.89)	(2.89)	(2.88)	(2.88)
Torque Constant (Kt)	lbf-in/A	3.4	6.8	12.1	13.6	3.4	6.8	12.1	13.6
	(+/- 10% @ 25°C) (N-m/A)	(0.39)	(0.77)	(1.37)	(1.54)	(0.39)	(0.77)	(1.37)	(1.54)
Continuous Current Rating	Amps	5.2	2.6	1.4	1.2	8.4	4.2	2.4	2.1
Peak Current Rating	Amps	10.4	5.2	2.8	2.5	16.8	8.4	4.7	4.2
Motor Stator Data									
Voltage Constant (Ke)	Vrms / Krpm	29.9	59.7	106.0	119.5	29.9	59.7	106.0	119.5
	Vpk / Krpm	42.2	84.5	149.9	168.9	42.2	84.5	149.9	168.9
Pole Configuration		8	8	8	8	8	8	8	8
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	2.8	11.2	39.5	49.6	1.1	4.5	14.1	18.0
Inductance (L-L) (+/- 5%)	mH	7.7	30.7	96.8	123.0	3.7	14.7	46.2	58.7
Brake Inertia	lbf-in-sec ²	0.00033							
	(Kg-cm ²)	(0.38)							
Brake Current @ 24 Vdc	A	.5							
Brake Holding Torque	lbf-in	70							
	(Nm)	(8)							
Brake Engage/Disengage Time	ms	19/29							
Mech. Time Constant (tm), ms	min	6.5	6.5	7.3	7.2	2.6	2.6	2.6	2.6
	max	10.8	10.9	12.2	12.0	4.3	4.3	4.4	4.4
Electrical Time Constant (te)	ms	2.8	2.7	2.5	2.5	3.3	3.3	3.3	3.3
Damping Constant	lbf-in/krpm	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23
	(N-m/krpm)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.37)	(0.37)
Friction Torque	lbf-in	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
	(N-m)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.51)	(0.51)
Bus Voltage	Vrms	115	230	400	460	115	230	400	460
Speed @ Bus Voltage	rpm	3000	3000	3000	3000	3000	3000	3000	3000
Motor Wire Insulation		Class 180 H							
Motor Stator Rating		Class 180 H							
Thermal Switch, Stator Temp.	C°	130							
Std. Connectors ("S" Option): Motor & Brake		MS-3112-E16-8P							
Feedback		MS-3112-E16-23P							

All ratings at 25 degrees Celsius
 For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by .707 and current by 1.414.
 Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 3/8"

Specifications subject to change without notice.

GSM40 Series Mechanical / Electrical Specifications

		GSM40							
Nominal Backlash	in (mm)	0.008 (.20)							
Lead Accuracy	in/ft (mm/300 mm)	0.001 (.025)							
Maximum Radial Load	lb (N)	30 (135)							
Environmental Rating: Standard		IP54							
MOTOR STATOR		118	138	158	168	218	238	258	268
RMS Sinusoidal Commutation									
Continuous Motor Torque	lbf-in (N-m)	47.6 (5.38)	47.6 (5.37)	44.7 (5.05)	45.5 (5.14)	78.9 (8.91)	78.9 (8.91)	78.8 (8.91)	79.7 (9.00)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C)	4.1 (0.46)	8.2 (0.93)	14.6 (1.65)	16.8 (1.90)	4.1 (0.46)	8.2 (0.93)	14.6 (1.65)	16.8 (1.90)
Continuous Current Rating	Amps	12.9	6.5	3.4	3.0	21.4	10.7	6.0	5.3
Peak Current Rating	Amps	25.9	12.9	6.9	6.0	42.9	21.4	12.1	10.6
Trapezoidal Commutation									
	lbf-in (N-m)	45.5 (5.14)	45.4 (5.13)	42.7 (4.83)	43.5 (4.91)	75.3 (8.51)	75.3 (8.51)	75.3 (8.50)	76.1 (8.60)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C)	3.2 (0.36)	6.4 (0.72)	11.4 (1.28)	13.1 (1.48)	3.2 (0.36)	6.4 (0.72)	11.4 (1.28)	13.1 (1.48)
Continuous Current Rating	Amps	15.9	7.9	4.2	3.7	26.3	13.1	7.4	6.5
Peak Current Rating	Amps	31.7	15.8	8.4	7.4	52.5	26.3	14.8	13.0
Motor Stator Data									
Voltage Constant (Ke)	Vrms / Krpm (+/- 10% @ 25°C)	28.1 39.7	56.1 79.4	99.5 140.7	114.8 162.4	28.1 39.7	56.1 79.4	99.5 140.7	114.8 162.4
Pole Configuration		8	8	8	8	8	8	8	8
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	0.42	1.7	6.0	7.8	0.18	0.72	2.26	3.0
Inductance (L-L) (+/- 15%)	mH	3.0	11.9	37.5	49.8	1.4	5.8	18.2	24.2
Brake Inertia	lbf-in-sec ² (Kg-cm ²)	0.00096 (1.08)							
Brake Current @ 24 Vdc	A	0.67							
Brake Holding Torque	lbf-in (Nm)	97 (11)							
Brake Engage/Disengage Time	ms	20/29							
Mech. Time Constant (tm), ms	min	5.3	5.3	6.0	5.8	2.3	2.3	2.3	2.3
	max	7.7	7.7	8.7	8.4	3.3	3.3	3.3	3.2
Electrical Time Constant (te)	ms	7.0	7.0	6.2	6.4	8.0	8.0	8.0	8.2
Damping Constant	lbf-in/krpm (N-m/krpm)	3.25 (0.37)	3.25 (0.37)	3.25 (0.37)	3.25 (0.37)	3.25 (0.37)	3.25 (0.37)	3.25 (0.37)	3.25 (0.37)
Friction Torque	lbf-in (N-m)	4.50 (0.51)	4.50 (0.51)	4.50 (0.51)	4.50 (0.51)	4.50 (0.51)	4.50 (0.51)	4.50 (0.51)	4.50 (0.51)
Bus Voltage	Vrms	115	230	400	460	115	230	400	460
Speed @ Bus Voltage	rpm	3000	3000	3000	3000	3000	3000	3000	3000
Motor Wire Insulation		Class 180 H							
Motor Stator Rating		Class 180 H							
Thermal Switch, Stator Temp.	C°	130							
Std. Connectors ("S" Option): Motor & Brake		MS-3102-E20-15P							
Feedback		MS-3112-E16-23P							

All ratings at 25 degrees Celsius
 For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by .707 and current by 1.414.
 Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2"

Specifications subject to change without notice.

GSM Series Travel Options

PF = Preloaded Follower

This option offers a true zero backlash follower for the GSM Series actuator. The dynamic load rating of zero backlash, preloaded screws is 63% of the dynamic load rating of the standard non-preloaded screws. The calculated travel life of a preloaded screw will be 25% of the calculated travel life of the same size and lead of a non-preloaded screw for the same application. Preloaded follower is not available with absolute internal feedback option.

RB = Rear Electric Brake

This option provides an internal holding brake for the GSM Series actuators. The brake is spring activated and electrically released.

AR = External Anti-rotate Assembly

This option provides a rod and bushing to restrict the actuator rod from rotating when the load is not held by another method. Shorter actuators have single sided anti-rotation attachments. Longer lengths require attachments on both sides for proper operation.

XT = Special Travel Option Selections

The XT Option can be used to specify various special travel options on the GSM Series of Linear Actuators. Because this option can be used to specify many things, it is important that an order including the -XT option spell out in detail, the exact options being selected by the including of the -XT in the model number.

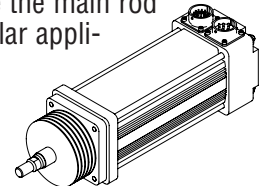
It is recommended that prior to ordering an actuator including the -XT specifier that a quote be obtained through Exlar's special products application engineers for the desired options, and that quote be referenced on, or included with any order placed.

Descriptions: This option provides an accordion style protective bellows to protect the main actuator rod from damage due to abrasives or other contaminants in the environment in which the actuator must survive. The standard material of this bellows is S2 Neoprene Coated Nylon, Sewn Construction. This standard bellows is rated for environmental temperatures of -40 degrees to 250 degrees F. Longer strokes may require the main rod of the actuator to be extended beyond standard length. Consult Exlar applications engineers for details.

Protective Bellows

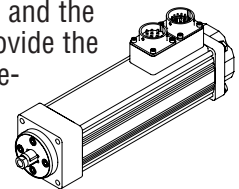
High Temp Protective Bellows

This option provides an accordion style protective bellows to protect the main actuator rod from damage due to abrasives or other contaminants in the environment in which the actuator must survive. The high temperature material of this bellows is D1 Teflon Coated Fiberglass, Sewn Construction. This standard bellows is rated for environmental temperatures of -67 degrees to 500 degrees F. Longer strokes may require the main rod of the actuator to be extended beyond standard length. Consult Exlar applications engineers for details.



Splined Main Rod

This option provides a main rod manufactured of ball spline shafting, and the front seal and bushing assembly replaced with a ball spline nut to provide the anti-rotate function without using an external mechanism. Rod diameters are the closest metric equivalents to standard Exlar rod sizes. This option is **NOT** sealed in any way. This option is not suitable for any environment in which contaminants come in contact with the actuator, and may enter the actuator.



L1, L2, L3 = Adjustable External Travel Switches

This option allows up to 3 external switches to be included with the GSM Series Actuator. These switches provide travel indication to the controller and are adjustable. See drawing on page 52. Must purchase anti-rotate with this option.

XL = Non-Standard Lubrication

This option provides for indication in the model number that the customer has specified a lubrication other than the standard provided by Exlar.

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	Actuator/Motor Series
-50	5000 rpm	GSM20
-30	3000 rpm	GSM30/GSM40
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 GSM-30-03-01-BSA-EM3-138-30 motor that normally has a 3000 rpm standard winding, can be changed to a 3300 rpm winding by changing the -30, to a -33. It can be changed to a 5000 rpm winding by changing the -30 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.

Feedback Options

LT = LVDT (VRVT) including conditioner

This option provides for an actuator containing an internally mounted LVDT (VRVT) transducer spanning the full stroke of the actuator. Inquire with Exlar engineering for details and conditioner output preference.

Due to the variability in size of some feedback devices, especially absolute feedback devices which are often very large relative to the size of the actuator motor, the actual size of the actuator may differ in length and width from these drawings for feedback types other than standard resolvers and standard encoders. Please consult Exlar for details. In the event that you order an actuator that differs from these standard dimensions, you will be sent a drawing of the final configuration of your actuator for approval.

Motor Options

GSM 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

Note: 3 stack not available in GSM Series

Rod End Attachments

Rear Clevis Pin

Spherical Rod Eye

Rod Eye

Rod Clevis

See drawings on pages 51-52.

Attachments ordered separate from actuator.

Housing Options

P5 = IP65 Sealing Option

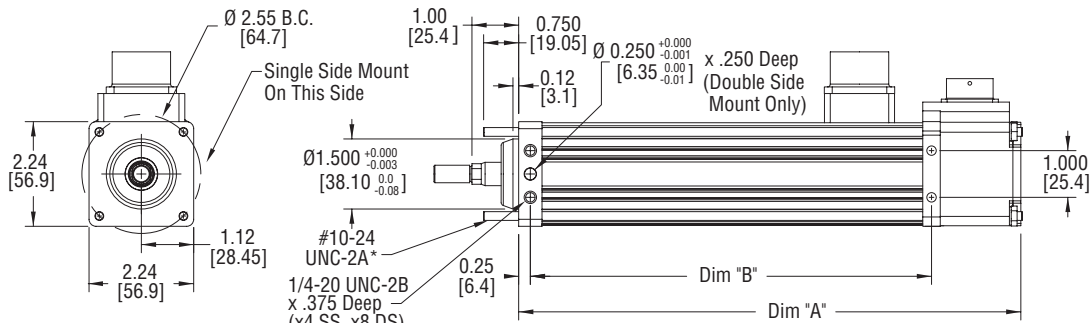
HC = Type III Hard Coat Anodized, Class 1

This option provides an actuator with type III hard coat anodized coating. Class 1, no dye.

XH = Special Housing Option

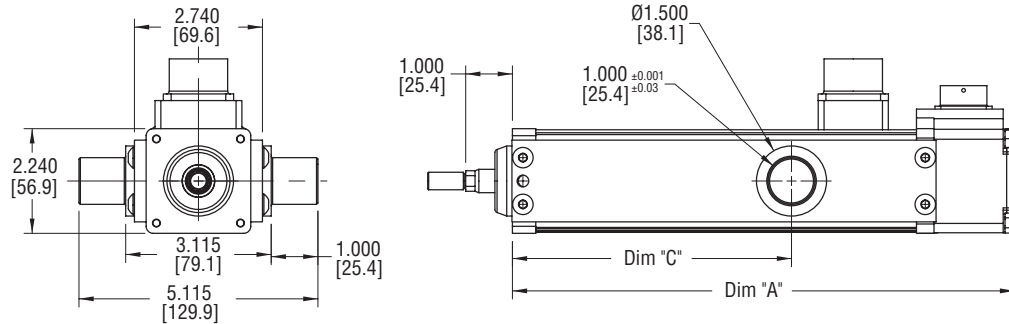
Any housing option that is not designated by the above codes should be listed as XH and described at time of order. All special options must be discussed with Exlar engineering.

GSM20 Double Side Mounts or Extended Tie Rod Mounts

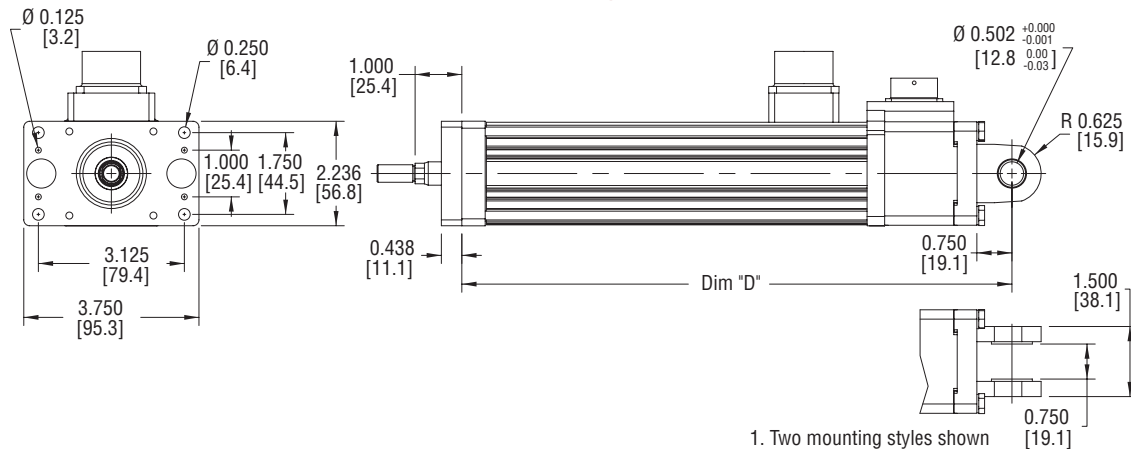


1. Three mounting styles shown
 2. Shown view is standard side for single side mount
- * If iM " metric tie rod option, thread = M5x0.8

GSM20 Trunnion Mount



GSM20 Clevis Mount or Front Flange Mount



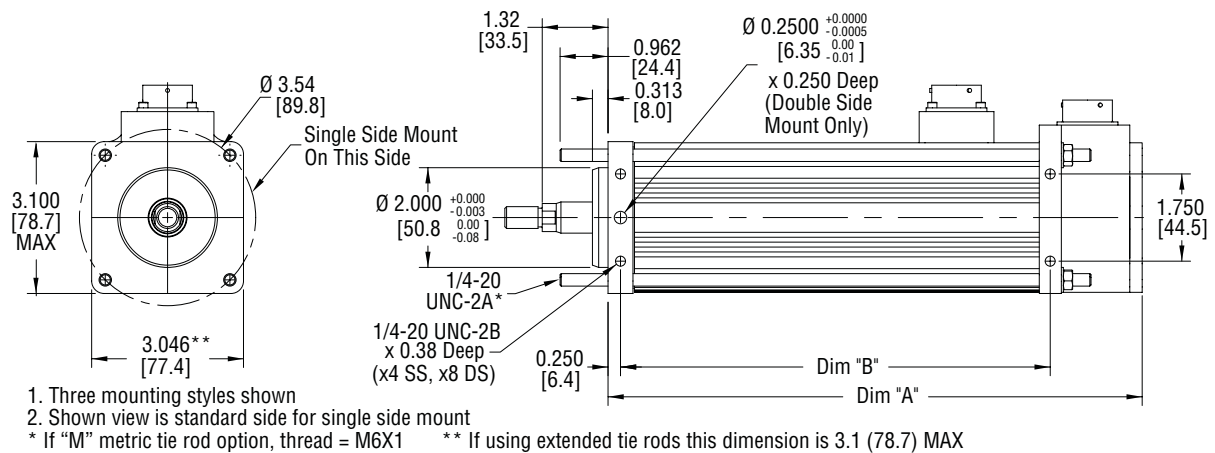
1. Two mounting styles shown
2. With flange mount, dimension A is equivalent to top two drawings

Dim	3 inch stroke (mm)	6 inch stroke (mm)	10 inch stroke (mm)	12 inch stroke (mm)
A	7.775 (197.5)	10.775 (273.7)	14.775 (375.3)	16.775 (426.1)
B	5.613 (142.6)	8.613 (218.8)	12.613 (320.4)	14.613 (371.2)
C	3.000 (76.2)	6.000 (152.4)	10.000 (254.4)	12.000 (304.8)
D	8.775 (222.9)	11.775 (299.1)	15.775 (400.7)	17.775 (451.5)

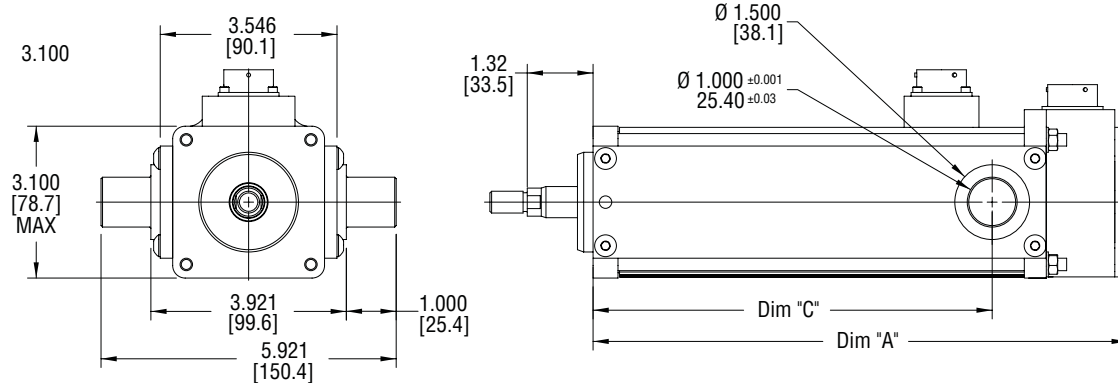
Note: Add 1.784 Inches (45.3mm) to Dims "A&D" if ordering a Brake (p. 29).

Due to the size of many absolute encoders, the selection of such feedback types for the size 20 and 30 actuators results in a larger package size than is shown in the drawings. Consult Exlar for details, or refer to the drawings provided after receipt of order.

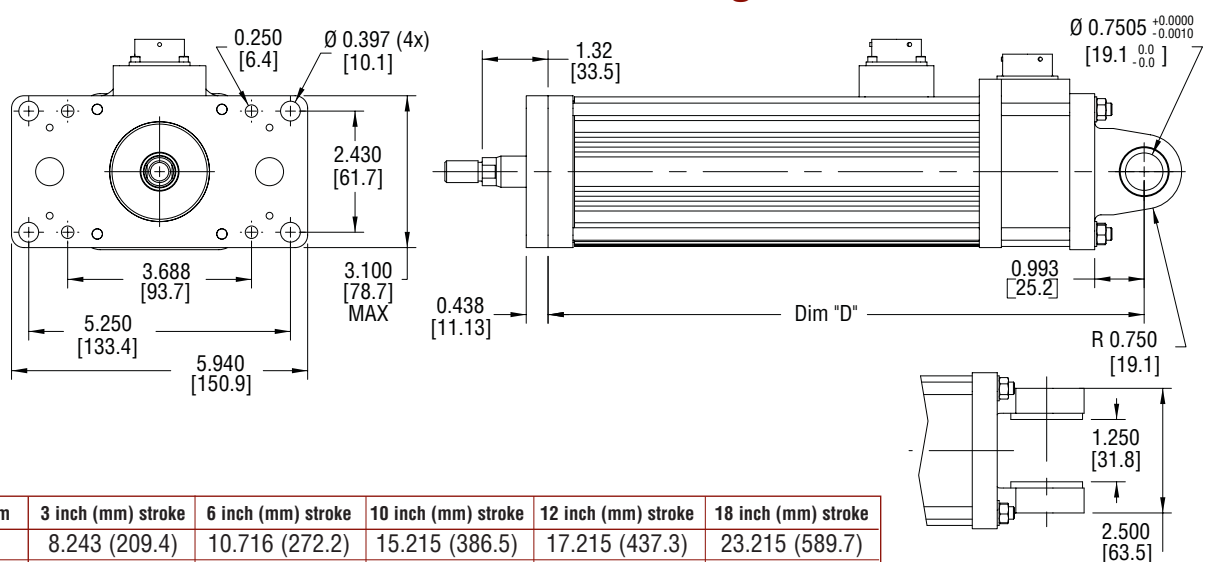
GSM30, Double Side Mounts or Extended Tie Rod Mount



GSM30 Side Trunnion Mount



GSM30 Rear Clevis Mount or Front Flange Mount



Dim	3 inch (mm) stroke	6 inch (mm) stroke	10 inch (mm) stroke	12 inch (mm) stroke	18 inch (mm) stroke
A	8.243 (209.4)	10.716 (272.2)	15.215 (386.5)	17.215 (437.3)	23.215 (589.7)
B	6.147 (156.1)	8.620 (218.9)	13.119 (333.3)	15.119 (384.0)	21.119 (536.4)
C	5.380 (136.7)	8.006 (203.4)	10.000 (254.0)	12.000 (304.8)	18.000 (457.2)
D	9.486 (240.9)	11.959 (303.8)	16.458 (418.0)	18.458 (468.8)	24.458 (621.2)

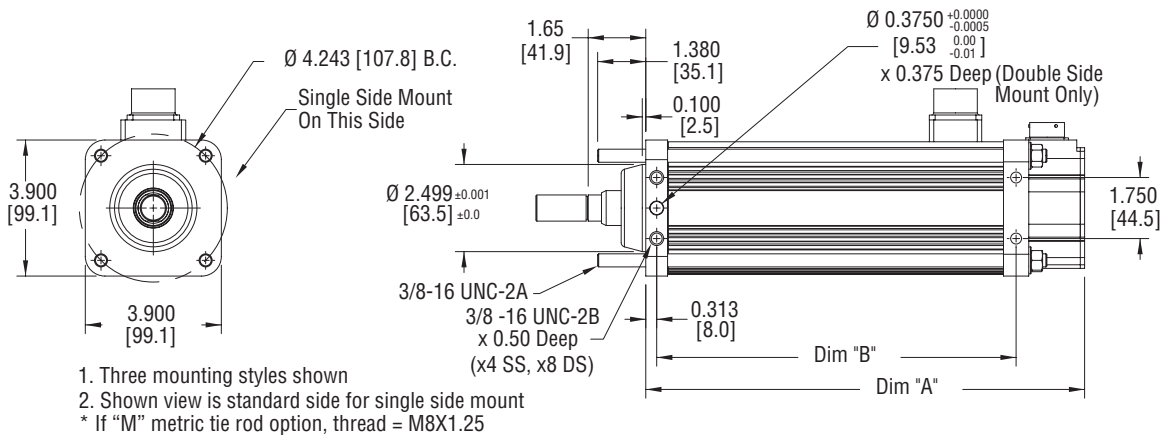
Note: Add 1.6 Inches (40.64 mm) to Dims "A", & "D" if ordering a Brake (p. 29).

- Two mounting styles shown
- With flange mount, dimension A is equivalent to top two drawings

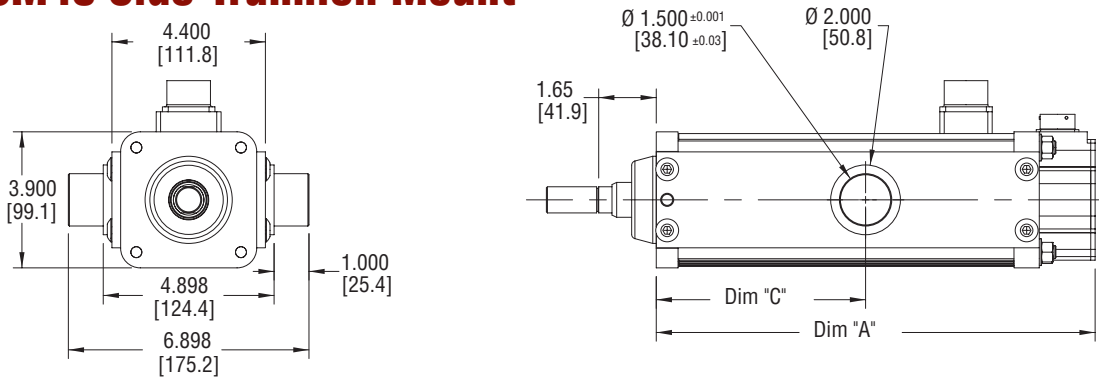
Drawings subject to change.
 Consult Exlar for certified drawings.

Due to the size of many absolute encoders, the selection of such feedback types for the size 20 and 30 actuators results in a larger package size than is shown in the drawings. Consult Exlar for details, or refer to the drawings provided after receipt of order.

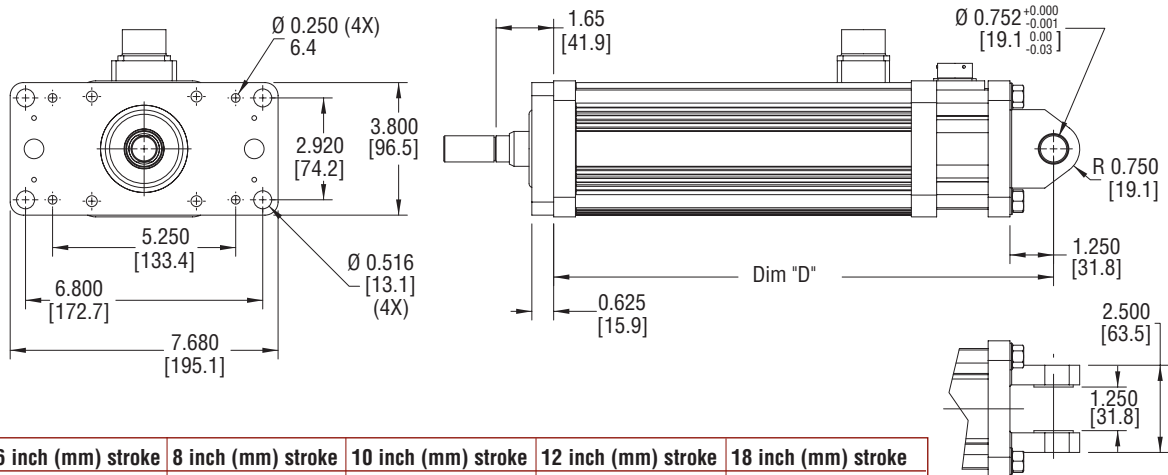
GSM40 Single, Double Side Mounts or Extended Tie Rod Mount



GSM40 Side Trunnion Mount



GSM40 Rear Clevis Mount or Front Flange Mount



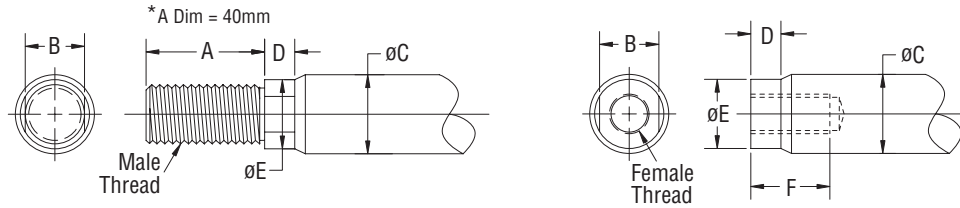
Dim	6 inch (mm) stroke	8 inch (mm) stroke	10 inch (mm) stroke	12 inch (mm) stroke	18 inch (mm) stroke
A	12.58 (319.6)	14.58 (370.4)	16.58 (421.1)	18.58 (472.0)	24.58 (624.4)
B	10.31 (261.8)	12.31 (312.6)	14.31 (363.5)	16.31 (414.2)	22.31 (566.6)
C	6.00 (152.4)	8.00 (203.2)	10.00 (254)	12.00 (304.8)	18.00 (457.2)
D	14.33 (364.0)	16.33 (414.8)	18.33 (465.6)	20.33 (516.4)	26.33 (668.8)

Note: Add 2.33 Inches (59.18) to Dims "A,B,&D" if ordering a Brake (p. 29).

1. Two mounting styles shown
2. With flange mount, dimension A is equivalent to top two drawings

Drawings subject to change. Consult Exlar for certified drawings.

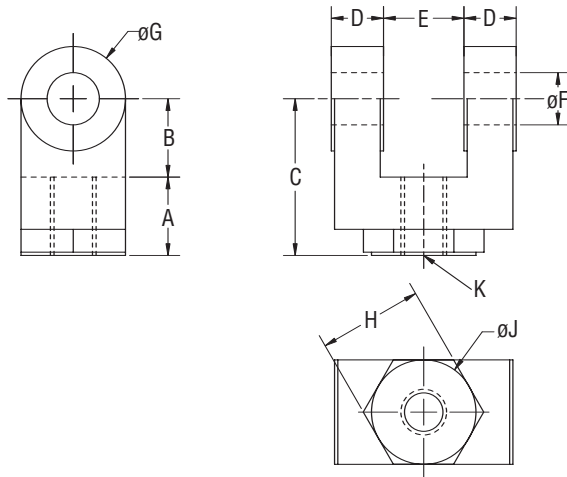
Actuator Rod End Options



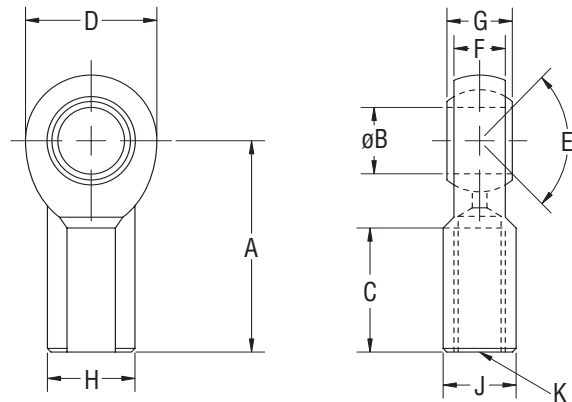
	A inch (mm)	B inch (mm)	øC inch (mm)	D inch (mm)	øE inch (mm)	F inch (mm)	Male U.S.	Male Metric	Female U.S.	Female Metric
GSM20	0.813 (20.7)	0.375 (9.5)	0.500 (12.7)	0.200 (5.1)	0.440 (11.2)	0.750 (19.1)	3/8 - 24 UNF - 2A	M8X1 6g	5/16 - 24 UNF - 2B	M8X1 6h
GSM30	0.750 (19.1)	0.500 (12.7)	0.625 (15.9)	0.281 (7.1)	0.562 (14.3)	0.750 (19.1)	7/16 - 20 UNF - 2A	M12X1.75* 6g	7/16 - 20 UNF - 2B	M10X1.5 6h
GSM40	1.500 (38.1)	0.750 (19.1)	1.000 (25.4)	0.381 (9.7)	0.875 (22.2)	1.000 (25.4)	3/4 - 16 UNF - 2A	M16X1.5 6g	5/8 - 18 UNF - 2B	M16X1.5 6h

Part numbers for rod attachment options indicate the through hole size or pin diameter. Before selecting a spherical rod eye for use with a GSM series actuator, please consult the information on the anti-rotation option for the GSM actuators. Spherical rod eyes will allow the rod to rotate if the load is not held.

Rod Clevis Dimensions



Spherical Rod Eye Dimensions

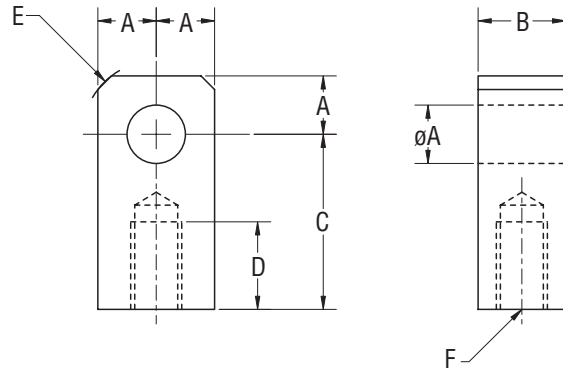


	GSM20 RC038	GSM30 RC050	GSM40 RC075		GSM20 SRM038	GSM30 SRM044	GSM40 SRM075
A	0.787" (20 mm)	0.75" (19.1 mm)	1.125" (28.58 mm)	A	1.625" (41.3 mm)	1.81" (46.0 mm)	2.88" (73.2 mm)
B	0.787" (20 mm)	0.75" (19.1 mm)	1.25" (31.75 mm)	øB	.375" (9.525 mm)	0.438" (11.13 mm)	0.75" (19.1 mm)
C	1.574" (40 mm)	1.50" (38.1 mm)	2.375" (60.3 mm)	C	.906" (23.0 mm)	1.06" (26.9 mm)	1.72" (43.7 mm)
D	.575" (14.6 mm)	0.50" (12.7 mm)	0.625" (15.88 mm)	D	1.0" (25.4 mm)	1.13" (28.7 mm)	1.75" (44.5 mm)
E	0.375" (9.5 mm)	0.765" (19.43 mm)	1.265" (32.13 mm)	E	6 deg	14 deg	14 deg
øF	0.375" (9.5 mm)	0.50" (12.7 mm)	0.75" (19.1 mm)	F	.406" (10.3 mm)	0.44" (11.1 mm)	0.69" (17.5 mm)
øG	0.75" (19.1 mm)	1.00" (25.4 mm)	1.50" (38.1 mm)	G	.500" (12.7 mm)	0.56" (14.2 mm)	0.88" (22.3 mm)
H	NA	1.00" (25.4 mm)	1.25" (31.75 mm)	H	.688" (17.4 mm)	0.75" (19.1 mm)	1.13" (28.7 mm)
øJ	NA	1.00" (25.4 mm)	1.25" (31.75 mm)	J	.562" (14.3 mm)	0.63" (16.0 mm)	1.00" (25.4 mm)
K	3/8-24	7/16-20	3/4-16	K	3/8-24	7/16-20	3/4-1

Drawings subject to change. Consult Exlar for certified drawings.

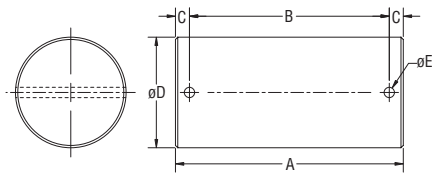
Rod Eye Dimensions

	GSM30	GSM40
	RE050	RE075
øA	0.50" (12.7 mm)	0.75" (19.1 mm)
B	0.75" (19.1 mm)	1.25" (31.8 mm)
C	1.50" (38.1 mm)	2.06" (52.3 mm)
D	0.75" (19.1 mm)	1.13" (28.7 mm)
E	0.63" (16.0 mm)	0.88" (22.3 mm)
F	7/16-20	3/4-16



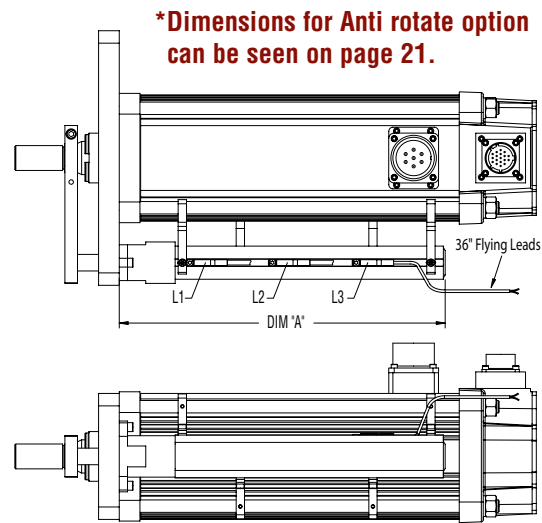
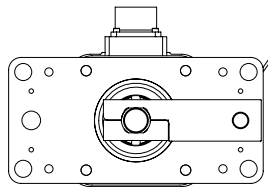
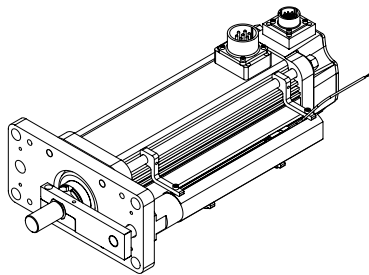
Rear Clevis Pin Dimensions

	A	B	C	øD	øE
GSM20 Clevis or GSM30 Rod Eye CP050	2.28" (57.9 mm)	1.94" (49.28 mm)	0.17" (4.32 mm)	0.50" (12.7 mm)	0.095" (2.41 mm)
GSM30 Clevis GSM40 Clevis CP075	3.09" (78.5 mm)	2.72" (69.1 mm)	0.19" (4.82 mm)	0.75" (19.1 mm)	0.14" (3.56 mm)



GSM20, GSM30 and GSM40 External Limit Switch Extension Options

Dim A	3 inch (mm) stroke	6 inch (mm) stroke	10 inch (mm) stroke	12 inch (mm) stroke	18 inch (mm) stroke
GSM20	5.515 (140.1)	8.515 (216.3)	12.5 (317.5)	14.515 (368.7)	NA NA
GSM30	6.932 (176.1)	9.832 (249.7)	13.832 (351.3)	15.832 (402.1)	21.832 (554.5)
GSM40	NA NA	9.832 (249.7)	13.832 (351.3)	15.832 (402.1)	21.832 (554.5)



The external limit switch option (requires anti-rotate option) for the GSM Series of linear actuators provides the user with 1, 2 or 3 externally mounted adjustable switches for use as the end of travel limit switches or home position sensors.

The number of switches desired is selected by ordering the L1, L2 or L3 option, in which 1, 2 or 3 switches will be provided, respectively.

The switches are 9-30 VDC powered, PNP output, with either normally open or normally closed logic operation depending on the switch configuration ordered. Below is a diagram which logic operation will be provided for each switch, based on the option ordered.

Option	SW1	SW2	SW3	Switch Type	Exlar Part #	Turck Part #
L1	Not Supplied	Normally Open	Not Supplied	Normally Closed Switch	24631	BIM-INT-RP6X
L2	Normally Closed	Not Supplied	Normally Closed	Normally Open Switch	22303	BIM-INT-AP6X
L3	Normally Closed	Normally Open	Normally Closed			

Drawings subject to change. Consult Exlar for certified drawings.

GSM Series Ordering Information

GSM **AA** - **BB** **CC** - **D** **E** **F** - **G****G****G** - **H****H****H** - **II** - **{XX..XX}**

AA = GSM Actuator Size

- 20 = 2.25 inch frame actuator
- 30 = 3.3 inch frame actuator
- 40 = 3.9 inch frame

BB = Stroke Length

- 03 = 3 inch stroke (GSM20 and GSM30)
- 06 = 6 inch, All (GSM30 = 5.9 inch)
- 10 = 10 inch (GSM20, GSM30 and GSM40)
- 12 = 12 inch (GSM20, GSM30 and GSM40)
- 18 = 18 inch (GSM30 and GSM40)

CC = Lead

- 01 = 0.1 inch (All Models)
- 02 = 0.2 inch (All Models)
- 04 = 0.4 inch (GSM20)
- 05 = 0.5 inch (GSM30 and GSM40)
- 08 = 0.75 inch (GSM40)³

D = Connections

- M = Manufacturer's Connector¹
- 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 = Mounting

- S = Side Mount
- D = Double Mount
- F = Front Flange
- R = Rear Flange
- B = Front and Rear Flange
- C = Rear Clevis
- E = Extended Tie Rod
- T = Trunnion Mount
- M = Metric Extended Tie Rods

F = Rod End

- A = Male, Metric
- B = Female, Metric
- M = Male, US Standard Thread
- F = Female, US Standard Thread

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

BaumueLLer:

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

GSM Series Ordering Information

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

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

Ormecc:

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

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

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

Yaskawa:

YS2 = Yaskawa Serial Encoder – SGMGH motor wiring 40/50/60 Exlar Frame Sizes

YS3 = Yaskawa Serial Encoder – SGMGH motor wiring 20/30 Exlar Frame Sizes

HHH = Motor Stator²

118 = 1 stack, 115 Vrms, 8 pole

138 = 1 stack, 230 Vrms, 8 pole

158 = 1 stack, 400 Vrms, 8 pole

168 = 1 stack, 460 Vrms, 8 pole

218 = 2 stack, 115 Vrms, 8 pole

238 = 2 stack, 230 Vrms, 8 pole

258 = 2 stack, 400 Vrms, 8 pole

268 = 2 stack, 460 Vrms, 8 pole

II = Motor Speed

30 = 3000 rpm, GSM30, GSM40

50 = 5000 rpm, GSM20

01-99 = Customer Specified Base Speed

XX .. XX = Travel and Housing Options (please list desired options) Travel Options

AR = External Anti-rotate

RB = Rear Brake

PF = Preloaded Follower⁴

L1/2/3 = External Limit Switch

XT = Special Travel Options, Protective & High temp Bellows or Splined Main Rod

Housing Options

P5 = IP65 Sealing Option⁵

HC = Type III Hard Coat Anodized⁶

XL = Special Lubrication

XM = Special Motor Options

Absolute Linear Feedback

LT = VRVT, including signal conditioner^{4, 7}

Note:

1. Available as described in Feedback Types.
2. Stator voltage and pole options allow for catalog rated performance at varying amplifier bus voltages and pole configuration requirements.
3. 0.75 lead not available in 12" stroke
4. The dynamic load rating of zero backlash, preloaded screws is 63% of the dynamic load rating of the standard non-preloaded screws. The calculated travel life of a preloaded screw will be 25% of the calculated travel life of the same size and lead of a non-preloaded screw. Preloaded follower is not available with absolute linear (LT) internal feedback option.
5. Not available with splined main rod option.
6. This housing option would typically be accompanied by the choice of the electroless nickel connectors if a connectorized unit were selected. This choice may also indicate the need for special material main rods or mounting.
7. Linear feedback is not available in the GSM20 and not available in the GSM30, 14" and 18".