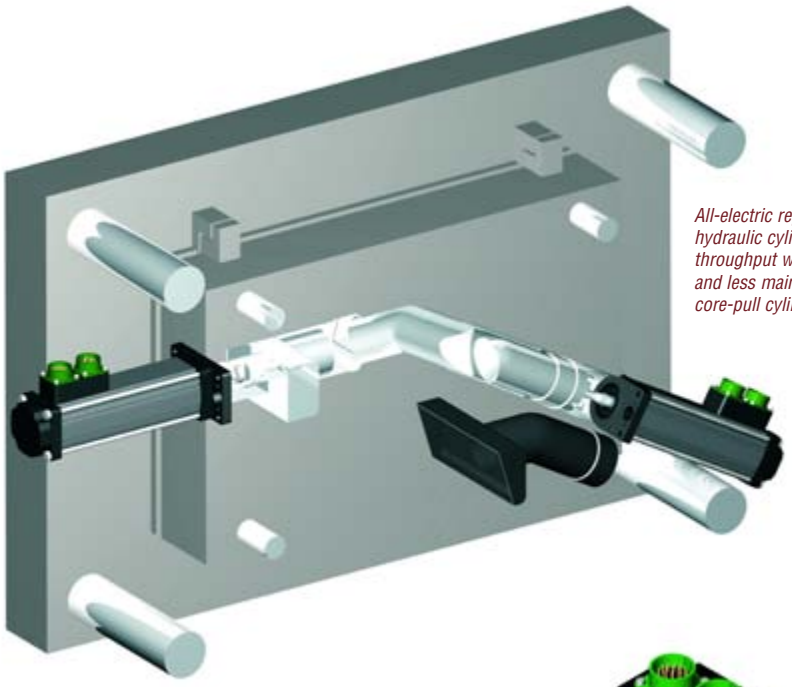
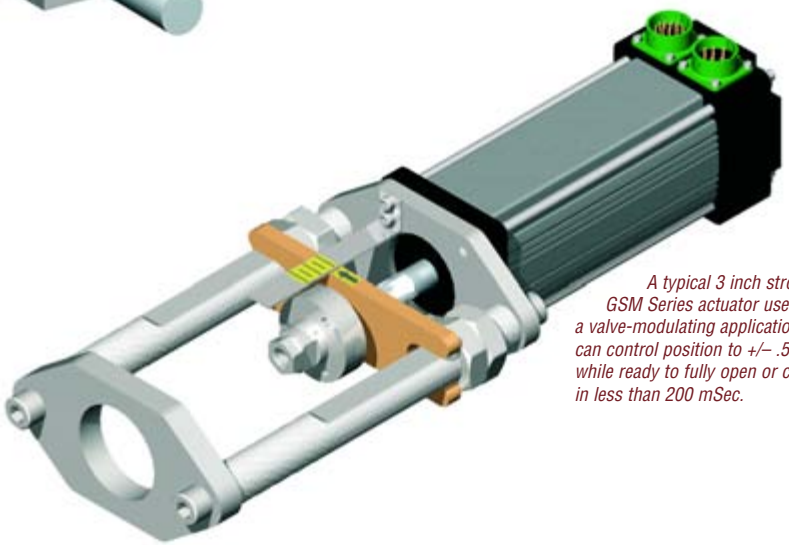
EXLAR GSM SERIES ACTUATORS APPLICATIONS INCLUDE:

- 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



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



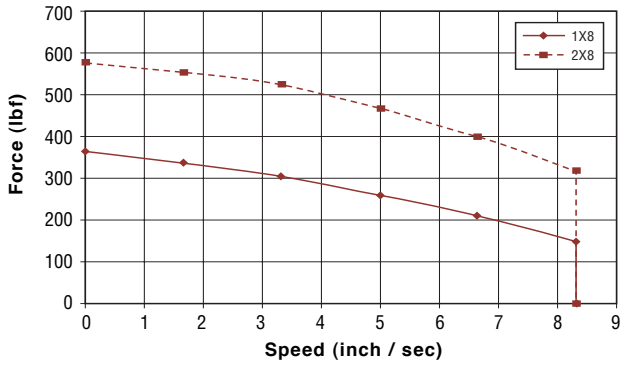
A typical 3 inch stroke GSM Series actuator used in a valve-modulating application can control position to +/– .5% while ready to fully open or close in less than 200 mSec.

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

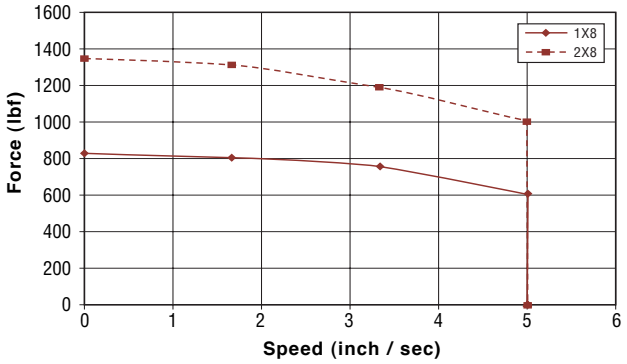
GSM Series Performance and Life Curves

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.

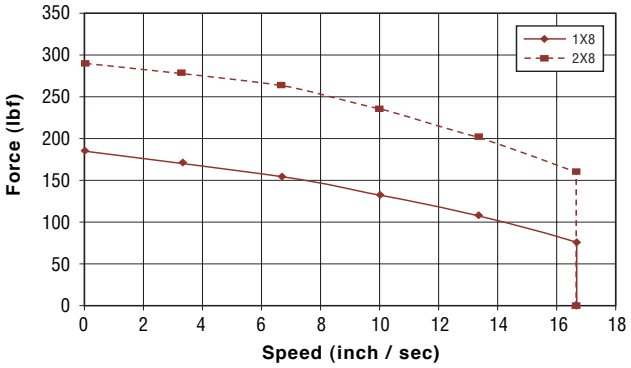
GSM20-.1 Inch Lead



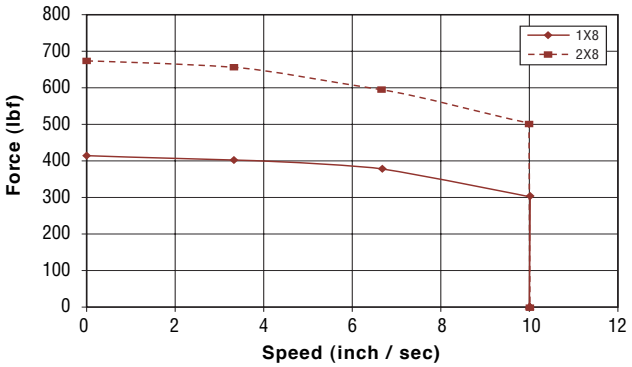
GSM30-.1 Inch Lead



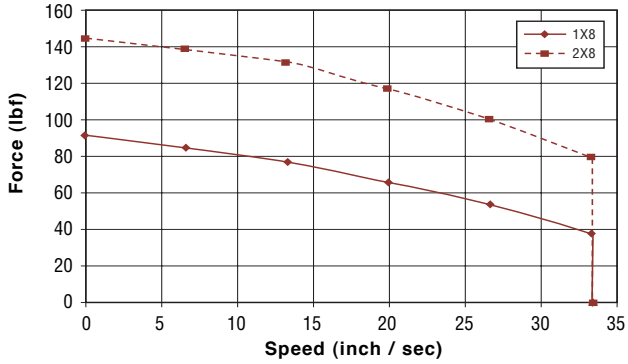
GSM20-.2 Inch Lead



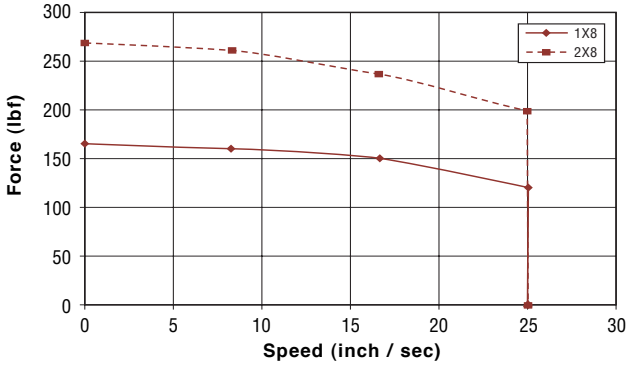
GSM30-.2 Inch Lead



GSM20-.4 Inch Lead

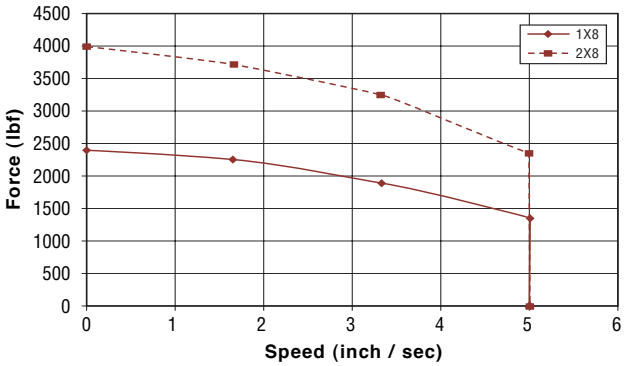


GSM30-.5 Inch Lead

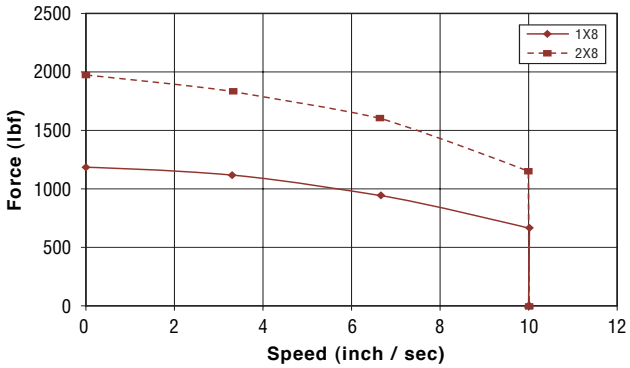


Test data derived using NEMA recommended aluminum heatsink 10˝ x 10˝ x 1/4˝ on GSM20 and 10˝ x 10˝ x 3/8˝ on GSM30

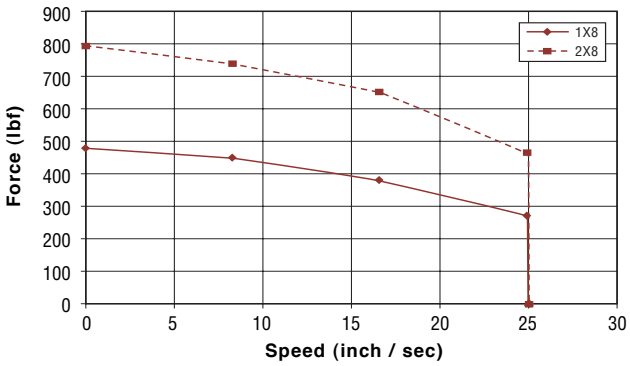
GSM40-.1 Inch Lead



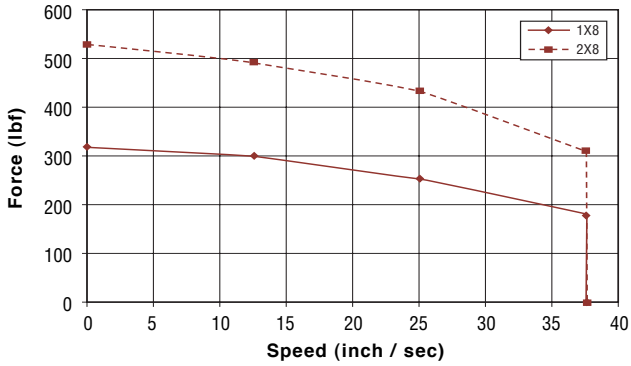
GSM40-.2 Inch Lead



GSM40-.5 Inch Lead



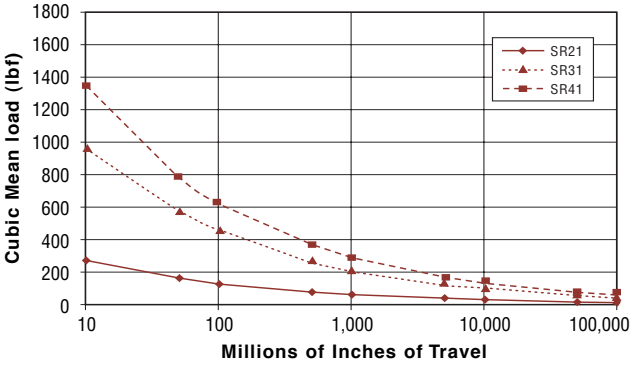
GSM40-.75 Inch Lead



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 on the right 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: 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 12.

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)

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	7.6	7.3	7.0	7.0	11.9	11.5	11.2	11.3
	(N-m)	(0.86)	(0.83)	(0.79)	(0.79)	(1.35)	(1.30)	(1.27)	(1.28)
Torque Constant (Kt)	lbf-in/A	2.5	5.2	8.3	9.5	2.5	5.2	8.9	10.2
(+/– 10% @ 25˚C)	N-m/A	(0.28)	(0.59)	(0.94)	(1.07)	(0.28)	(0.59)	(1.00)	(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	7.3	7.0	6.7	6.7	11.4	11.0	11.2	10.8
	(N-m)	(0.82)	(0.79)	(0.76)	(0.76)	(1.29)	(1.24)	(1.21)	(1.22)
Torque Constant (Kt)	lbf-in/A	1.9	4.1	6.5	7.4	1.9	4.1	6.9	7.9
(+/– 10% @ 25˚C)	(N-m/A)	(0.22)	(0.46)	(0.73)	(0.84)	(0.22)	(0.46)	(0.78)	(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	16.9	35.6	56.9	64.9	16.9	35.6	60.5	69.4
(+/– 10% @ 25˚C)	Vpk / Krpm	23.9	50.3	80.5	91.8	23.9	50.3	85.5	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	160	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	0.000336	0.000336	0.000336	0.000336	0.000336	0.000336	0.000336	0.000336
	(Kg-cm^2)	(0.32)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)	(0.38)
Brake Current @ 24 Vdc	A	.33	.33	.33	.33	.33	.33	.33	.33
Brake Holding Torque	lbf-in	18	18	18	18	18	18	18	18
	(Nm)	(2.2)	(2.2)	(2.2)	(2.2)	(2.2)	(2.2)	(2.2)	(2.2)
Brake Engage/Disengage Time	ms	14/28	14/28	14/28	14/28	14/28	14/28	14/28	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	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
	(N-m/krpm)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Friction Torque	lbf-in	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	(N-m)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(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 with peak sinusoidal commutation Kt = Ktrms(0.707), Ic = Icrms/(0.707), Ipk = Ipkrms/(0.707)
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	.000938	.000938	.000938	.000938	.000938	.000938	.000938	.000938
	(Kg-cm^2)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)
Brake Current @ 24 Vdc	A	.66	.66	.66	.66	.66	.66	.66	.66
Brake Holding Torque	lbf-in	28	28	28	28	28	28	28	28
	(Nm)	(3.2)	(3.2)	(3.2)	(3.2)	(3.2)	(3.2)	(3.2)	(3.2)
Brake Engage/Disengage Time	ms	20/29	20/29	20/29	20/29	20/29	20/29	20/29	20/29
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 with peak sinusoidal commutation Kt = Ktrms(0.707), Ic = Icrms/(0.707), Ipk = Ipkrms/(0.707)
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	47.6	47.6	44.7	45.5	78.9	78.9	78.8	79.7
	(N-m)	(5.38)	(5.37)	(5.05)	(5.14)	(8.91)	(8.91)	(8.91)	(9.00)
Torque Constant (Kt)	lbf-in/A	4.1	8.2	14.6	16.8	4.1	8.2	14.6	16.8
(+/– 10% @ 25˚C)	N-m/A	(0.46)	(0.93)	(1.65)	(1.90)	(0.46)	(0.93)	(1.65)	(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	45.5	45.4	42.7	43.5	75.3	75.3	75.3	76.1
	(N-m)	(5.14)	(5.13)	(4.83)	(4.91)	(8.51)	(8.51)	(8.50)	(8.60)
Torque Constant (Kt)	lbf-in/A	3.2	6.4	11.4	13.1	3.2	6.4	11.4	13.1
(+/– 10% @ 25˚C)	(N-m/A)	(0.36)	(0.72)	(1.28)	(1.48)	(0.36)	(0.72)	(1.28)	(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	28.1	56.1	99.5	114.8	28.1	56.1	99.5	114.8
(+/– 10% @ 25˚C)	Vpk / Krpm	39.7	79.4	140.7	162.4	39.7	79.4	140.7	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	.000938	.000938	.000938	.000938	.000938	.000938	.000938	.000938
	(Kg-cm^2)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)	(1.06)
Brake Current @ 24 Vdc	A	.66	.66	.66	.66	.66	.66	.66	.66
Brake Holding Torque	lbf-in	97	97	97	97	97	97	97	97
	(Nm)	(11)	(11)	(11)	(11)	(11)	(11)	(11)	(11)
Brake Engage/Disengage Time	ms	20/29	20/29	20/29	20/29	20/29	20/29	20/29	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	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
	(N-m/krpm)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)
Friction Torque	lbf-in	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
	(N-m)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(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-3102-E20-15P							
	Feedback	MS-3112-E16-23P							

All ratings at 25 degrees Celsius
For amplifiers with peak sinusoidal commutation Kt = Ktrms(0.707), Ic = Icrms/(0.707), Ipk = Ipkrms/(0.707)
Test data derived using NEMA recommended aluminum heatsink 12˝ x 12˝ x 1/2˝

Specifications subject to change without notice.

Standard Connectors

The “S” connector option on the GSM Series of actuators provides for an actuator with Exlar’s standard MS style connectors, compatible with Exlar’s standard cables.

Cables For GSM Series Actuators With Exlar Standard “S” Connections

Power Cables	Connecto-rization	Description	Standard Exlar Power Cable
GSM20	S	Standard Power, Molded, Shielded	PC1-MC-xxx
GSM30	E	Standard Power, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	PC1-EC-xxx
GSM40	S	Standard Power, Molded, Shielded	PC7-MC-xxx
	S	Standard Power, Anodized, Required If Using Brake Option	PC7-AC-xxx
	E	Standard Power, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	PC7-EC-xxx
Feedback Cables			**Standard Exlar Feedback Cable**
GSM20	S	Standard Resolver Feedback, Anodized, Molded, Shielded	EC4-MC-xxx
GSM30	S	Standard Encoder Feedback, Anodized, Molded, Shielded	EC4-MC-xxx
	E	Standard Resolver Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	EC4-EC-xxx
	E	Standard Encoder Feedback, Anodized, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	EC4-EC-xxx
GSM40	S	Standard Resolver Feedback, Anodized, Molded, Shielded	EC4-MC-xxx
	S	Standard Encoder Feedback, Anodized, Molded, Shielded	EC4-MC-xxx
	E	Standard Resolver Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	EC1-EC-xxx
	E	Standard Encoder Feedback, Anodized, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	EC1-EC-xxx
Brake Cables			**Standard Exlar Brake Cable**
GSM20	S	Brake Leads In Power Cable Connector	N/A
GSM30	E	Brake Leads In Power Cable Connector	N/A
GSM40	S	Brake Leads In Power Cable Connector	N/A
	E	Brake Leads In Power Cable Connector	N/A

* Standard lengths of 15’, 25’ and 50’

Specifications subject to change without notice.

Cables For GSM Series Actuators With "M" Connectors

Exlar Actuator	Amplifier Manufacturer and Type	Exlar Feedback Callout	Power Cable Manufacturer	Power Cable Part Number	Feedback Cable Manufacturer	Feedback Cable Part Number
GSM20 GSM30	Allen Bradley Ultra 100/200	AB1	Exlar	PC1-MC-xxx	Allen Bradley	9101-1366-xxx
	Allen Bradley Ultra 3000/5000	AB7*	Allen Bradley	2090-UXNPAMP-16Sxx	Allen Bradley	2090-UXNFBMP-Sxx
	Allen Bradley Ultra 3000/5000	AB4/AB5*	Allen Bradley	2090-UXNPAMP-16Sxx	Allen Bradley	2090-UXNFBMP-Sxx**
	Control Techniques En, Epsilon and MDS Series	EM2	Control Techniques	CMDS-xxx	Control Techniques	CFCS-xxx
	Kollmorgen Servo Star & Servo Star CD	KM1	Kollmorgen	CSSSRHA1H-xxx (set includes feedback cable)	Kollmorgen	CSSSRHA1H-xxx (set includes power cable)
	Kollmorgen Servo Star 600	KM5/KM2	Kollmorgen	CSSSRHG1H-xxx (set includes feedback cable)	Kollmorgen	CSSSRHG1H-xxx (set includes power cable)
	Kollmorgen Servo Star 600	KM3/KM4	Kollmorgen	CSSSS3HG2H-xxx set includes feedback cable)	Kollmorgen	CSSSS3HG2H-xxx (set includes power cable)
	Bosch/Rexroth Indramat DKC Series, ECO Drive	IN1	Bosch/Rexroth Indramat	IKG4077, IKG4017, IKG4009, IKG4008 depending on Indramat amplifier	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DKC Series, ECO Drive	IN2	Bosch/Rexroth Indramat	IKG4077, IKG4017, IKG4009, IKG4008 depending on Indramat amplifier	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DKC Series, ECO Drive	IN4/IN3	Bosch/Rexroth Indramat	IKG4009	Bosch/Rexroth Indramat	IKS4374
	Bosch/Rexroth Indramat DIAX Series	IN1	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIAX Series	IN2	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIAX Series	IN3	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4374
	Parker Compumotor Gemini Series	PC3	Exlar	PC6-MC-xxx	Parker Compumotor	71-018308-XX
	Yaskawa Sigma II Series (3 inch and smaller motors 100/200VAC)	YS3	Yaskawa	B1E-xxA	Yaskawa	JZSP-CMP02-XX(B)
	Yaskawa Sigma II Series (3 inch and smaller motors 400VAC)	YS3	Yaskawa	BAE-xxA	Yaskawa	JZSP-CMP02-XX(B)
GSM40	Allen Bradley Ultra 100/200	AB1	Exlar	PC7-MC-xxx	Allen Bradley	9101-1366-xxx
	Allen Bradley Ultra 3000/5000	AB7*	Allen Bradley	2090-UXNPAMP-14Sxx	Allen Bradley	2090-UXNFBMP-Sxx
	Allen Bradley Ultra 3000/5000	AB4/AB5*	Allen Bradley	2090-UXNPAMP-14Sxx	Allen Bradley	2090-UXNFBMP-Sxx**
	Control Techniques En, Epsilon and MDS Series	EM2	Control Techniques	CMMS-xxx	Control Techniques	CFCS-XXX
	Kollmorgen Servo Star & Servo Star CD	KM1	Kollmorgen	CSSSRHA2H-xxx (set includes feedback cable)	Kollmorgen	CSSSRHA2H-xxx (set includes power cable)
	Kollmorgen Servo Star 600	KM5/KM2	Kollmorgen	CSSSRHG2H-xxx (set includes feedback cable)	Kollmorgen	CSSSRHG2H-xxx (set includes power cable)
	Kollmorgen Servo Star 600	KM4/KM3	Kollmorgen	CSSSS3HG2H-xxx (set includes feedback cable)	Kollmorgen	CSSSS3HG2H-xxx (set includes power cable)
	Bosch/Rexroth Indramat DKC Series, ECO Drive	IN1	Bosch/Rexroth Indramat	IKG4009	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DKC Series, ECO Drive	IN2	Bosch/Rexroth Indramat	IKG4009	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DKC Series, ECO Drive	IN3/IN4	Bosch/Rexroth Indramat	IKG4009	Bosch/Rexroth Indramat	IKS4374
	Bosch/Rexroth Indramat DIAX Series	IN1	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIAX Series	IN2	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIAX Series	IN3	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4374
	Parker Compumotor Gemini Series	PC3	Exlar	PC7-MC-xxx	Parker Compumotor	71-018308-XX
	Yaskawa Sigma II Series (4 inch and larger motors 100/200VAC)	YS2	Yaskawa	B1E-xxA	Yaskawa	JZSP-CMP02-XX(B)
	Yaskawa Sigma II Series (4 inch and larger motors 400VAC)	YS2	Yaskawa	BAE-xxA	Yaskawa	JZSP-CMP02-XX(B)

* For manufactured cables that do not contain leads for brake connection within the power or feedback cable, the "M" connector configuration will be provided with Exlar's standard power receptacle, and Exlar's standard PC1-AC-xxx, or PC7-AC-xxx power cable should be used.

** Exlar Corporation uses absolute encoders for AB4 and AB5 configurations that are powered by 5 VDC. A customer not using Allen-Bradley's universal feedback cable referenced here, must make provisions such that the wiring scheme provides connectivity according to Allen-Bradley's wiring requirements for 5 VDC encoder power from the amplifier to the encoder.

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 Electic 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

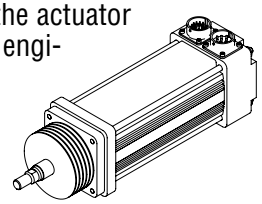
The XT Option can be used to specify various special travel options on the GSM Series of Linear Actuators. Because this option can be used to specify many things, it is important that an order including the -XT option spell out in detail, the exact options being selected by the including of the -XT in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

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 standard material of this bellows is neoprene coated nylon. This standard bellows is rated for environmental temperatures of -54 degrees to 121 degrees Celsius. Longer strokes may require the main rod of the actuator to be extended beyond standard length. Consult Exlar applications engineers for details.

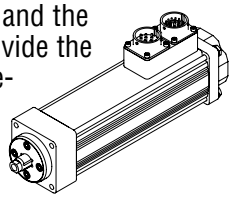


High Temp Protective Bellows

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 silicone coated fiberglass. This standard bellows is rated for environmental temperatures of -73 degrees to 288 degrees Celsius. 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 57. 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.

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 55-57.
Attachments ordered separate from actuator.

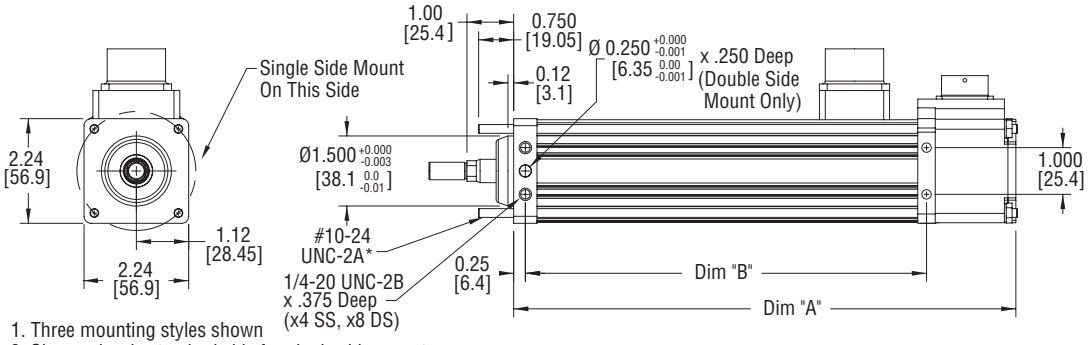
Housing Options

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.

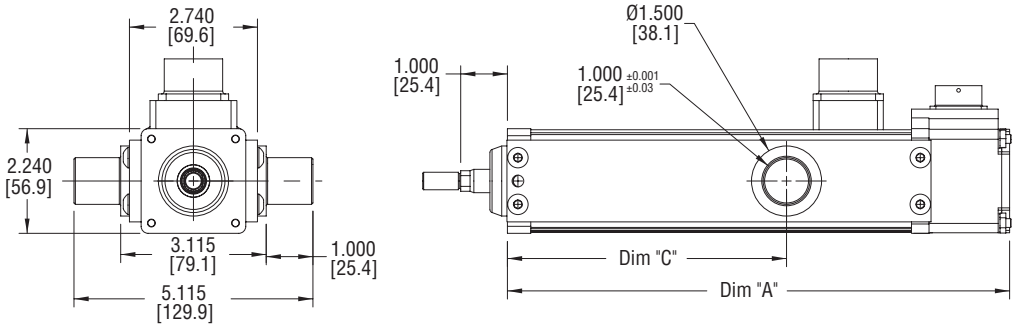
GSM20 Double Side Mounts or Extended Tie Rod Mounts



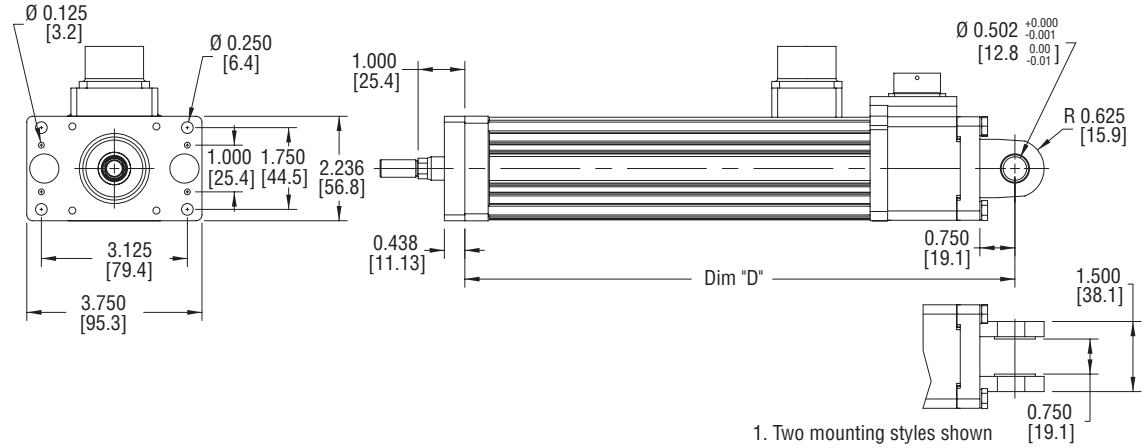
1. Three mounting styles shown
2. Shown view is standard side for single side mount

* If M ” metric tie rod option, thread = M5X0.8

GSM20 Trunnion Mount



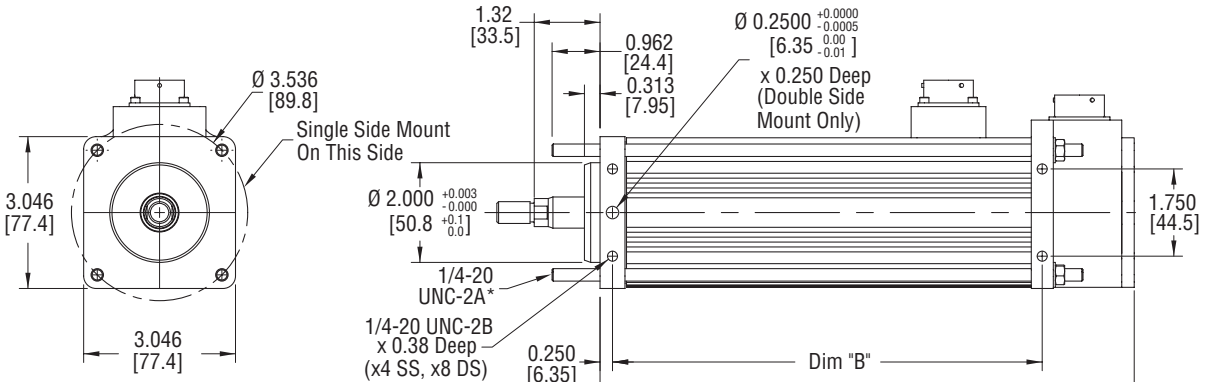
GSM20 Clevis Mount or Front Flange Mount



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 1.9 inches (48 mm) to Dims A & B if ordering Brake.				

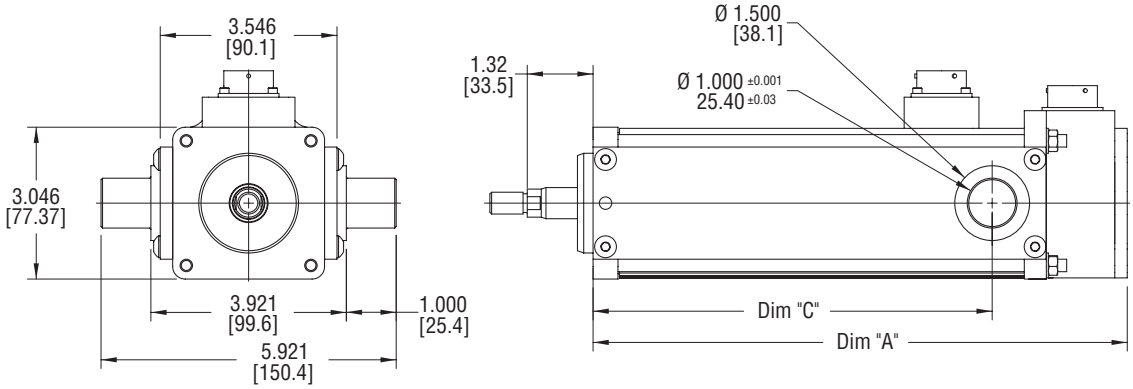
GSM30, Double Side Mounts or Extended Tie Rod Mount



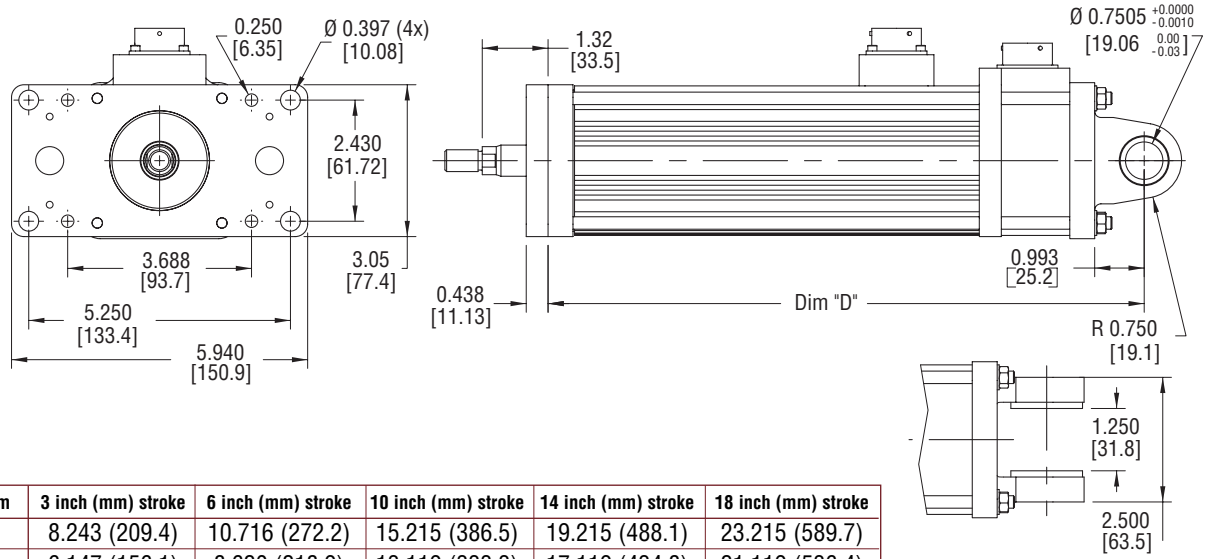
1. Three mounting styles shown
2. Shown view is standard side for single side mount

* If "M" metric tie rod option, thread = M6X1

GSM30 Side Trunnion Mount



GSM30 Rear Clevis Mount or Front Flange Mount



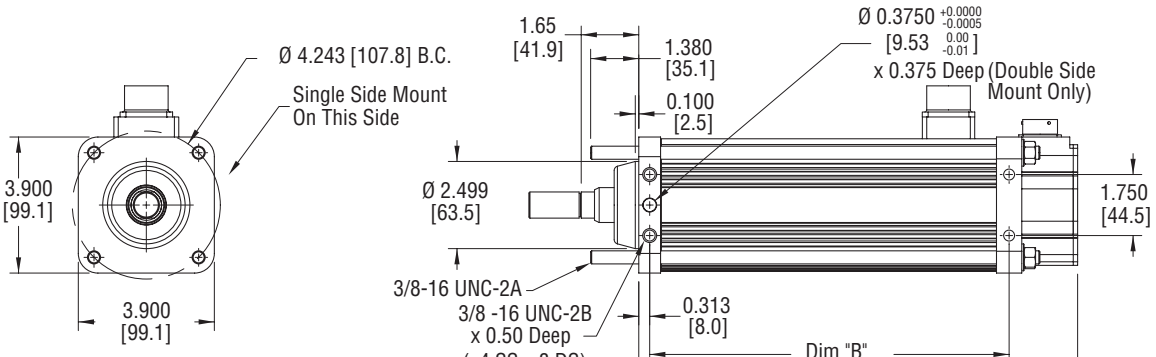
Dim	3 inch (mm) stroke	6 inch (mm) stroke	10 inch (mm) stroke	14 inch (mm) stroke	18 inch (mm) stroke
A	8.243 (209.4)	10.716 (272.2)	15.215 (386.5)	19.215 (488.1)	23.215 (589.7)
B	6.147 (156.1)	8.620 (218.9)	13.119 (333.3)	17.119 (434.8)	21.119 (536.4)
C	5.380 (136.7)	8.006 (203.4)	10.000 (254.0)	14.000 (355.6)	18.000 (457.2)
D	9.486 (240.9)	11.959 (303.8)	16.458 (418.0)	20.458 (519.6)	24.458 (621.2)

Note: Add 1.6 Inches to Dims "A, & D" if ordering an Electric Brake.

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

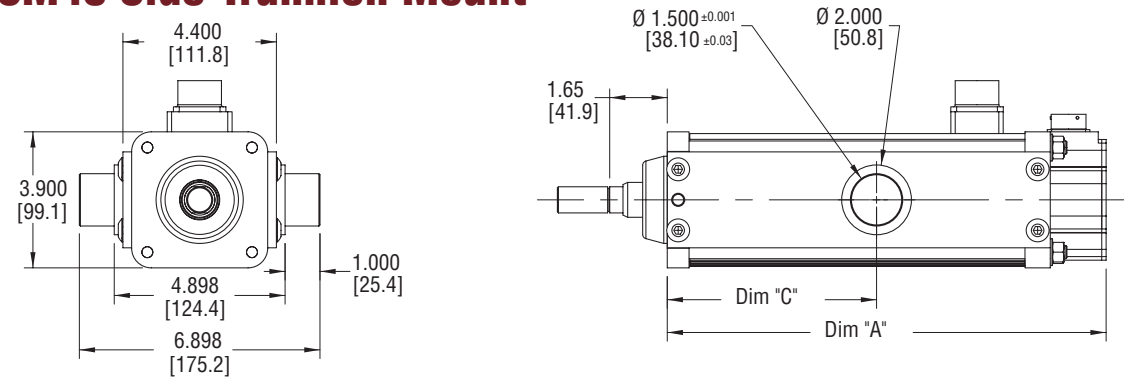
Drawings subject to change. Consult Exlar for certified drawings.

GSM40 Single, Double Side Mounts or Extended Tie Rod Mount

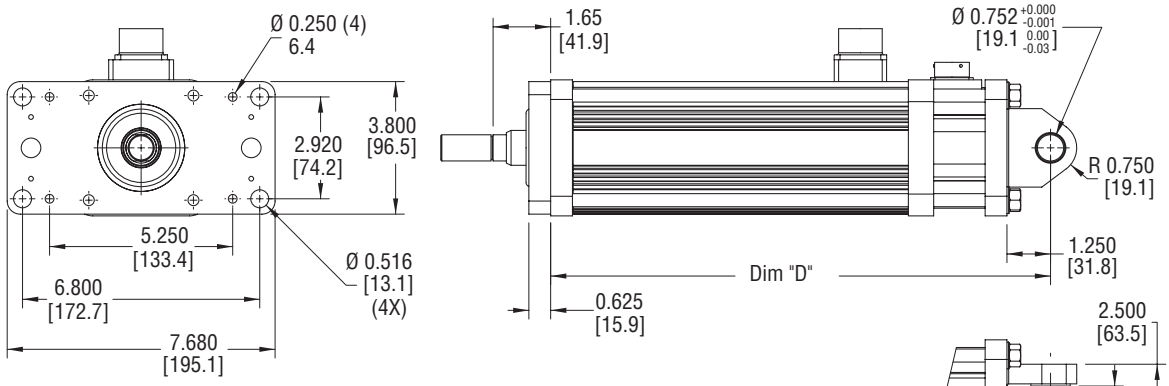


1. Three mounting styles shown
2. Shown view is standard side for single side mount
* If "M" metric tie rod option, thread = M8X1.25

GSM40 Side Trunnion Mount



GSM40 Rear Clevis Mount or Front Flange Mount



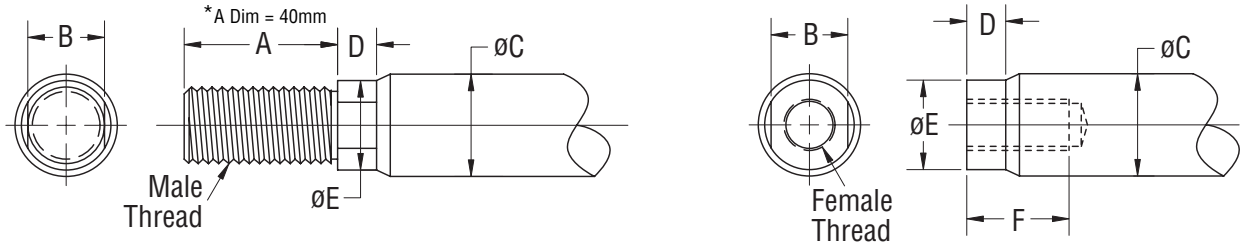
Dim	6 inch (mm) stroke	8 inch (mm) stroke	10 inch (mm) stroke	12 inch (mm) stroke	18 inch (mm) stroke
A	12.58 (319.6)	14.58 (370.4)	16.58 (421.1)	18.58 (472.0)	24.58 (624.4)
B	10.31 (261.8)	12.31 (312.6)	14.31 (363.5)	16.31 (414.2)	22.31 (566.6)
C	6.00 (152.4)	8.00 (203.2)	10.00 (254)	12.00 (304.8)	18.00 (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 2.330 Inches to Dims "A,B,&D" if ordering an Electric Brake.

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.

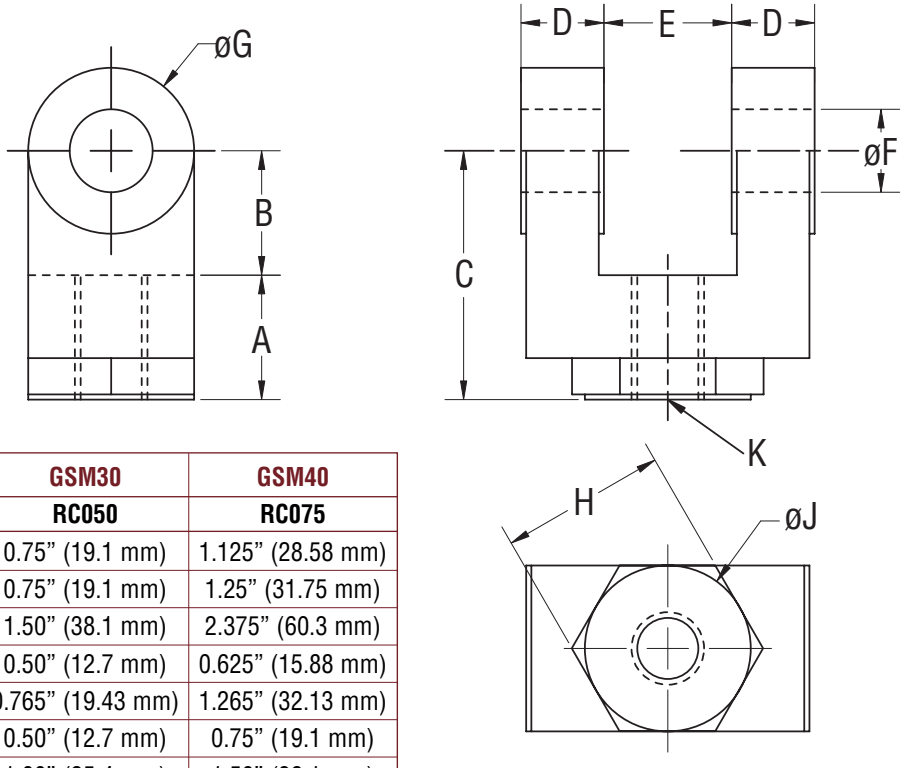
Actuator Rod End Options



	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	5/16 – 24 UNF – 2B	M8X1
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 UN F– 2A	M12X1.75*	7/16 – 20 UNF – 2B	M10X1.5
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	5/8 – 18 UNF – 2B	M16X1.5

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.

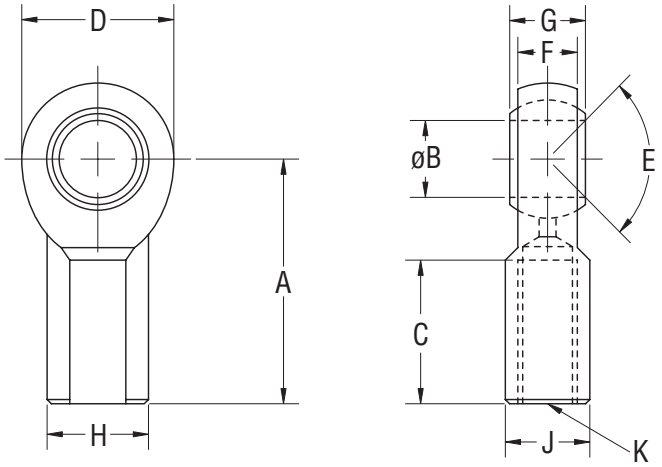
Rod Clevis Dimensions



	GSM20	GSM30	GSM40
	RC038	**RC050**	**RC075**
A	0.787” (20 mm)	0.75” (19.1 mm)	1.125” (28.58 mm)
B	0.787” (20 mm)	0.75” (19.1 mm)	1.25” (31.75 mm)
C	1.574” (40 mm)	1.50” (38.1 mm)	2.375” (60.3 mm)
D	.575” (14.6 mm)	0.50” (12.7 mm)	0.625” (15.88 mm)
E	0.375” (9.5 mm)	0.765” (19.43 mm)	1.265” (32.13 mm)
øF	0.375” (9.5 mm)	0.50” (12.7 mm)	0.75” (19.1 mm)
øG	0.75” (19.1 mm)	1.00” (25.4 mm)	1.50” (38.1 mm)
H	NA	1.00” (25.4 mm)	1.25” (31.75 mm)
øJ	NA	1.00” (25.4 mm)	1.25” (31.75 mm)
K	3/8-24	7/16-20	3/4-16

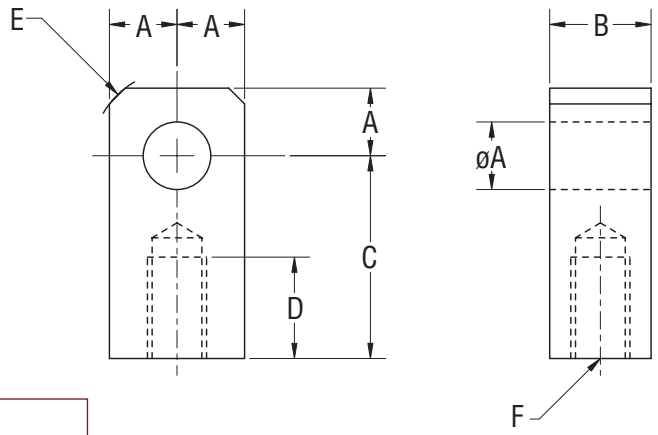
Drawings subject to change. Consult Exlar for certified drawings.

Spherical Rod Eye Dimensions



	GSM20	GSM30	GSM40
	SRM038	**SRM044**	**SRM075**
A	1.625” (41.3 mm)	1.81” (46.0 mm)	2.88” (73.2 mm)
øB	.375” (9.525 mm)	0.438” (11.13 mm)	0.75” (19.1 mm)
C	.906” (23.0 mm)	1.06” (26.9 mm)	1.72” (43.7 mm)
D	1.0” (25.4 mm)	1.13” (28.7 mm)	1.75” (44.5 mm)
E	±6 deg	14 deg	14 deg
F	.406” (10.3 mm)	0.44” (11.1 mm)	0.69” (17.5 mm)
G	.500” (12.7 mm)	0.56” (14.2 mm)	0.88” (22.3 mm)
H	.688” (17.4 mm)	0.75” (19.1 mm)	1.13” (28.7 mm)
J	.562” (14.3 mm)	0.63” (16.0 mm)	1.00” (25.4 mm)
K	3/8-24	7/16-20	3/4-1

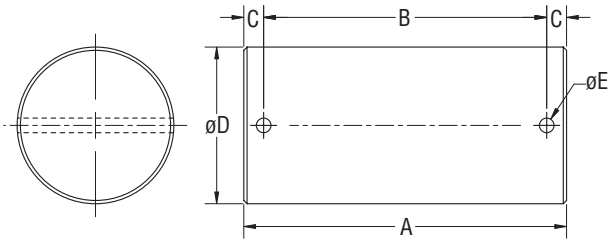
Rod Eye Dimensions



	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

Drawings subject to change. Consult Exlar for certified drawings.

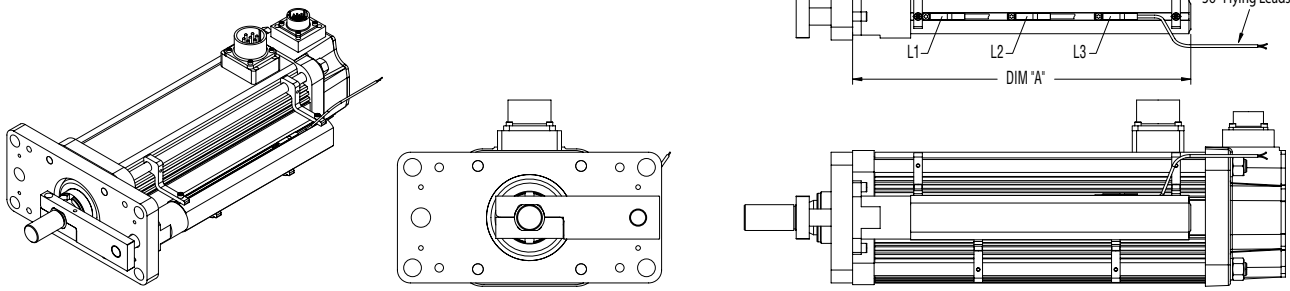
Rear Clevis Pin Dimensions



	A	B	C	øD	øE
GSM20/GSM30 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/GSM40 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	14 inch (mm) stroke	18 inch (mm) stroke
GSM20	5.515 (140.1)	8.515 (216.3)	NA NA	14.515 (368.7)	NA NA	NA NA
GSM30	6.932 (176.1)	9.832 (249.7)	13.832 (351.3)	15.832 (402.1)	17.832 (452.9)	21.832 (554.5)
GSM40	NA NA	9.832 (249.7)	13.832 (351.3)	15.832 (402.1)	17.832 (452.9)	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
L1	Not Supplied	Normally Open	Not Supplied
L2	Normally Closed	Not Supplied	Normally Closed
L3	Normally Closed	Normally Open	Normally Closed

Switch Type	Exlar Part Number	Turck Part Number
Normally Closed Switch	24631	BIM-INT-RP6X
Normally Open Switch	22303	BIM-INT-AP6X

Drawings subject to change. Consult Exlar for certified drawings.

GSM Series Ordering Information

GSM AA - BB CC - D E F - GGG - HHH - II - {XX..XX}

AA = GSM Actuator Size
21 = 2.25 inch frame actuator
31 = 3.3 inch frame actuator
41 = 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 (GSM20, GSM30 and GSM40)
02 = 0.2 inch (All)
04 = 0.4 inch (GSM20)
05 = 0.5 inch (GSM30 and GSM40)
08 = 0.75 inch (GSM40)[5]

D = Connections
B = Embedded leads
S = Exlar standard, 23 pin feedback, 8 pin power
I = Intercontec style (Exlar standard European style connector)
M = Manufacturer's Connectors[1]
P = Embedded leads with plug
E = MS style, electroless nickel
X = Special (please specify)

E = Mounting
S = Side Mount
D = Double Mount
F = Front 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

Note:
1. Available with AB1, AB4/5, AB7, CT1, CT2, EM2, KM4, KM5, KM6, IN1, IN2, IN4, LZ1, LZ5, PC3, PS3, YS2 and YS3 feedback. This option allows the customer to use the standard cables supplied by their amplifier manufacturers.
2. Use of the Allen-Bradley 1394 requires assistance from Allen-Bradley to configure the axis for a custom motor.
3. Stator voltage and pole options allow for catalog rated performance at varying amplifier bus voltages and pole configuration requirements.
4. Emerson EN and Epsilon Series, A-B Ultra Series, and Kollmorgen ServoStar Series amps require motor data files for operation with GSM Series actuators. These files can be downloaded from our website at www.exlar.com. Inquire with Exlar applications engineers for details.
5. 0.75 lead not available in 12˝ stroke

GGG = Brushless Amplifier (Please indicate the amplifier to be used to power the actuator)
XX1 = Custom Feedback - purchaser must supply drawing of feedback device and desired wiring drawings
001 = Standard Feedback Mount - actuator is supplied ready for size 15 resolver or encoder, includes .375 mm shaft
002 = Same as above with 8mm shaft

If the Rockwell Allen-Bradley system that you are using is the Kinetix platform or SERCOS based, additional software and data files are required from Allen-Bradley. Please contact your Rockwell Allen-Bradley representative for support.

AB1 = Allen-Bradley Ultra 100/200[4] (incremental encoder, 2048 line, with commutation, 5 VDC)
AB5 = Allen Bradley Ultra 3000 or 5000[4] (multi-turn, absolute encoder)
AB6 = Allen Bradley 1394[2] (resolver)(replaces AB2)
AB7 = Allen Bradley Ultra 3000 or 5000[4] (incremental encoder, 2048 line, with commutation, 5 VDC)
AD1 = Advanced Digital "Simple Servo" (incremental encoder, 2048 line, with commutation, 5 VDC)
AP1 = API resolver based (resolver)
AP2 = API encoder based (incremental encoder, 2048 line, with commutation, 5 VDC)
AM1 = Advanced Motion Controls (incremental encoder, 2048 line, with commutation, 5 VDC)
AM2 = Advanced Motion Controls (incremental encoder, 1000 line, with commutation, 5 VDC)
AM3 = Advanced Motion Controls (resolver)
AM4 = Advanced Motion Controls BX Series default settings (incremental encoder, 2048 line, with commutation, 5 VDC)
BD2 = Baldor Flex Series (resolver)(replaces BD1)
BD3 = Baldor Flex Series (incremental encoder, 2048 line, with commutation, 5 VDC)
BM2 = Baumueller bmaXX & BUM series (resolver)
BO1 = Bosch (resolver)
CC1 = Cleveland Machine Controls (resolver)
CM1 = Comau (resolver)
CO1 = Copley Controls (incremental encoder, 2048 line, with commutation, 5 VDC)
CT1 = Control Techniques Unidrive SP (Stegmann SRM 050 multi-turn absolute encoder)
CT3 = Control Techniques Unidrive SP (Stegmann SKM 036 multi-turn absolute encoder)
CT4 = Control Techniques Unidrive SP (incremental encoder, 2048 line, with commutation, 5 VDC)
CS1 = Parker (Custom Servo Motors) MPA, MPSL (resolver)
CS2 = Parker (Custom Servo Motors) Servo Flex (incremental encoder, 2048 line, with commutation, 5 VDC)
EL1 = Elmo Motion Control (resolver)
EL2 = Elmo CLA, SBA, FLU Series, (incremental encoder, 2048 line, with commutation, 5 VDC)
EM2 = Emerson En, Epsilon, MDS Series and Uni-Drive[4] (std encoder, 2048 line, with commutation, 5 VDC)
EM3 = Emerson MX Series (resolver)
EM4 = Emerson UniDrive SP (resolver)
EU1 = Elau (multi-turn, absolute encoder)
EX4 = Exlar SV Series (resolver) (replaces EX3)
GL1 = Sheffield Automation (G&L) Smart Drive (standard encoder, 2048 line, with commutation, 5 VDC) If selecting the "M" connector option with GL1, the motor power and encoder connector configuration will be equivalent to that used on the Sheffield Automation HSM Series motors.
GL2 = Sheffield Automation (G&L) Smart Drive (standard encoder, 2048 line, with commutation, 5 VDC) If selecting the "M" connector option with GL2, the motor power and encoder connector configuration will be equivalent to that used on the Sheffield Automation LSM/MSM Series motors.
IN1 = Bosch-Rexroth (Indramat) ECO Drive, (absolute, multi-turn Heidenhain encoder)
IN2 = Bosch-Rexroth (Indramat) ECO Drive, (absolute, single-turn Heidenhain encoder)
IN4 = Bosch-Rexroth (Indramat) ECO Drive, standard resolver (resolver)(replaces IN3)
KM4 = Kollmorgen ServoStar600 Series[4] (multi-turn, absolute encoder)
KM5 = Kollmorgen ServoStar600 Series[4] and ServoStar CD(resolver)(replaces KM2)
KM6 = Kollmorgen ServoStar300 Series[4] (std encoder, 2048 line, with commutation, 5 VDC)
LZ1 = Lenze 9300 Series (multi-turn absolute encoder)
LZ5 = Lenze 9300 Series (resolver)
MD1 = Modicon (resolver)
MX1 = Metronix ARS Series (resolver)
OR1 = Ormec (resolver)
PC1 = Parker Compumotor Apex & Z Series (resolver)
PC2 = Parker Compumotor TQ Series (incremental encoder, 2048 line, with commutation, 5 VDC)
PC3 = Parker Compumotor Gemini Series (incremental encoder, 2048 line, with commutation, 5 VDC)
PC6 = Parker Incremental Encoder, Euro Connectors
PC7 = Parker Compax 3 (resolver)
PC8 = Parker Compumotor with incremental encoder, Parker PS connectors (std encoder, 2048 line, 5 VDC)
PC9 = Parker Compumotor with multi-turn absolute (Stegmann) encoder. Parker PS connectors
PC0 = Parker Compumotor with resolver, Parker PS connectors (resolver)
PS2 = Pacific Scientific (incremental encoder, 2048 line, with commutation, 5 VDC)
PS3 = Pacific Scientific SC900, 700 Series (resolver)(replaces PS1)
SM2 = Siemens (resolver)
SM3 = Siemens (multi-turn, absolute encoder)
SP2 = In Motion, PAM Series (resolver)
WD1 = Whedco (GE Fanuc) (resolver)
YS2 = Yaskawa Sigma II Series for 4 inch and larger Exlar motors (multi-turn absolute encoder)
YS3 = Yaskawa Sigma II Series for 3 inch and smaller Exlar actuators (multi-turn absolute encoder, type 1)

HHH = Motor Stator[3]

118 = 1 stack, 115 Vrms, 8 pole	158 = 1 stack, 400 Vrms, 8 pole	218 = 2 stack, 115 Vrms, 8 pole	258 = 2 stack, 400 Vrms, 8 pole
138 = 1 stack, 230 Vrms, 8 pole	168 = 1 stack, 460 Vrms, 8 pole	238 = 2 stack, 230 Vrms, 8 pole	268 = 2 stack, 460 Vrms, 8 pole

II = Motor Speed
30 = 3000 rpm, SR31, GSM41 50 = 5000 rpm, GSM21 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
L1/2/3 = External Limit Switch
XT = Special travel options

Housing Options
P5 = IP65 Sealing Option
HC = Type III Hard Coat Anodized
XL = Special Lubrication
XM = Special Motor Options