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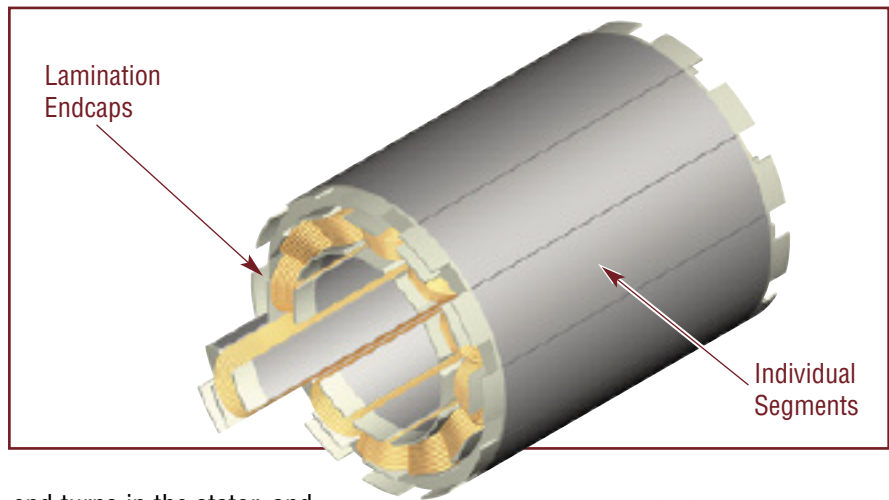
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Servicing USA and Canada

GSX Series – The Highest Performance, Longest Life and Most Compact Linear Actuators!

GSX Series linear actuators combine the advantages of Exlar’s roller screw technology and T-LAM™ technology to create the next generation of linear actuators. Exlar uses a specially designed roller screw mechanism for converting electric motor power into linear motion within the actuator. Planetary rollers assembled around the actuator’s extending rod follow threads which are precisely machined on the inside surface of the actuator’s hollow armature. Linear motion is produced in precise synchronization with the armature rotation. Because this roller screw mechanism has an inherently larger cumulative contact surface, these actuators have a much longer working life, and can handle heavier loads at higher speeds than is possible from a similarly sized unit built around a ball screw system.

Exlar’s T-LAM segmented lamination stator technology delivers higher continuous motor torque than is available in traditionally wound motors. T-LAM technology consists of stator segments, each containing individual phase wiring for maximum motor performance. The improved efficiencies of the GSX Series are a result of the limited heat generation qualities inherent in the segmented stator design as seen above. The elimination of

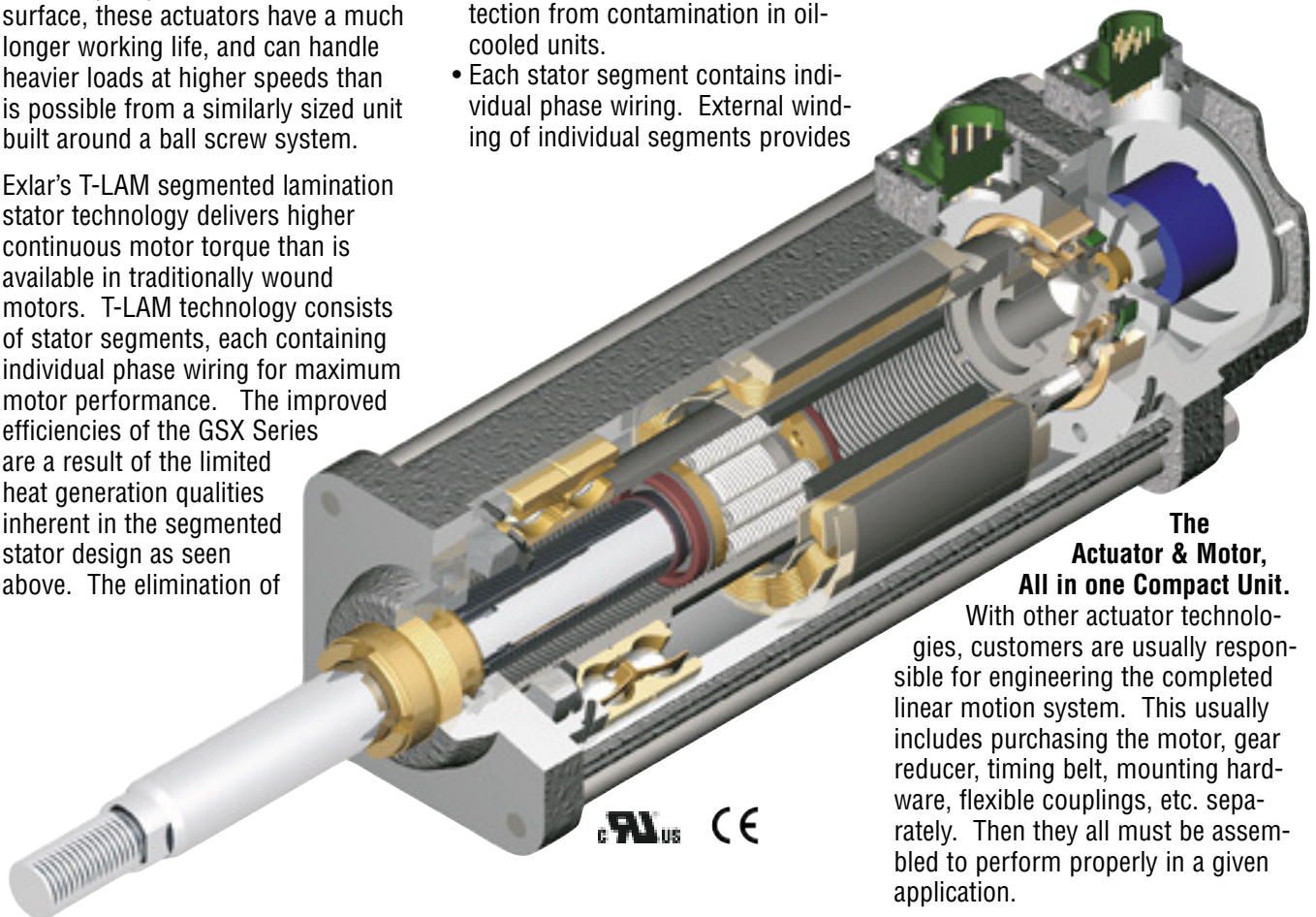


end turns in the stator, and use of thermally conductive potting removes the parts most susceptible to failure in a traditional stator. Other design advantages include:

- 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 180 H insulation systems compliant with UL requirements.
- UL recognized component.
- Motors with T-LAM technology are CE compliant



The Actuator & Motor, All in one Compact Unit.

With other actuator technologies, customers are usually responsible for engineering the completed linear motion system. This usually includes purchasing the motor, gear reducer, timing belt, mounting hardware, flexible couplings, etc. separately. Then they all must be assembled to perform properly in a given application.

GSX Series actuators eliminate all this systems engineering. These units are single, fully integrated component packages – much smaller than traditional rotary-to-linear conversion mechanisms.

Designed for Closed Loop Servo Systems

Their brushless servo design means GSX Series units can be used in advanced closed-loop servo systems when velocity and positioning is required. Position feedback can be delivered in a number of different forms. These include resolvers, encoders or internally mounted linear position feedback sensors.

Sealed for Long Life with Minimum Maintenance

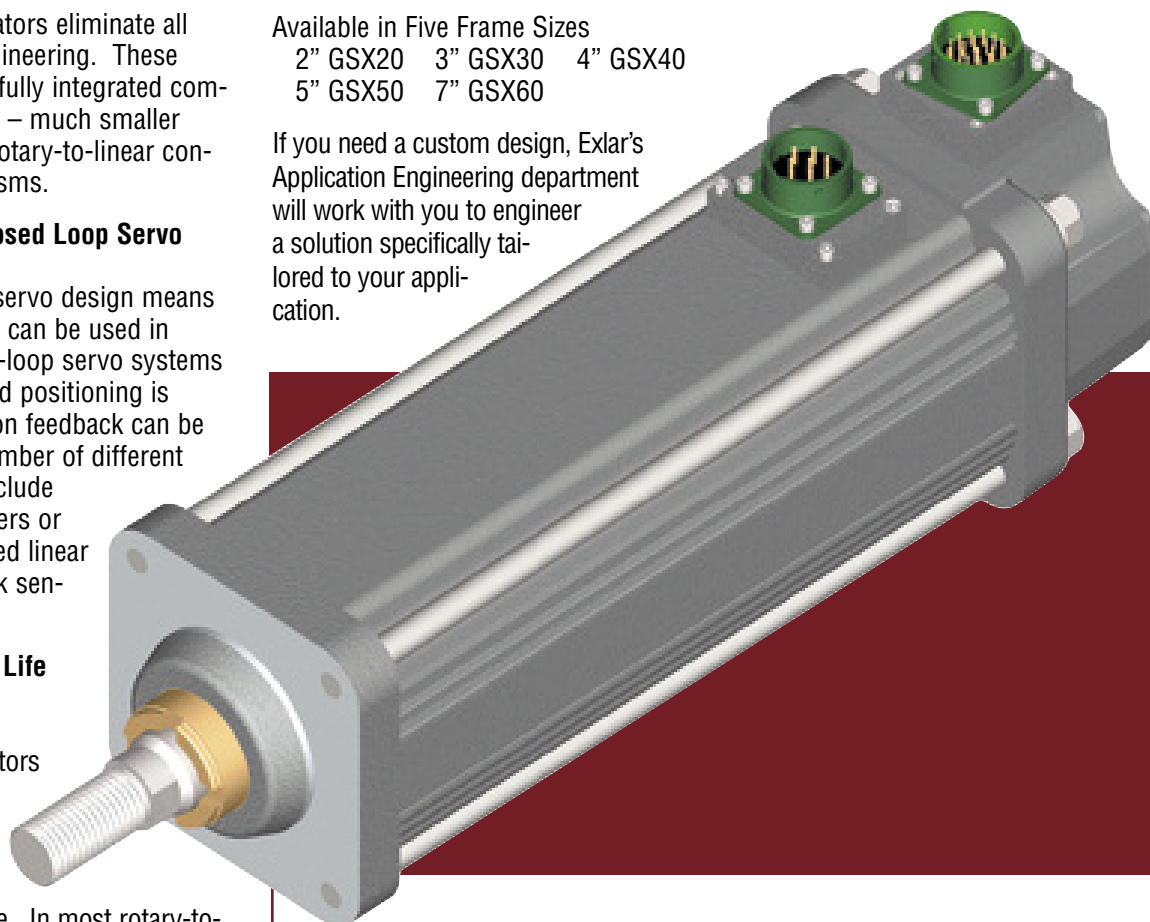
GSX Series actuators have strong advantages whenever outside contaminants are an issue. In most rotary-to-linear devices, critical mechanisms are exposed to the environment. Thus, they must be frequently inspected, cleaned and lubricated.

In contrast, the converting components in all Exlar GSX units are mounted within the sealed motor housing. With a simple bushing and seal arrangement on the smooth extending rod, abrasive particles or other contaminants are prevented from reaching the actuator's critical mechanisms. This assures trouble-free operation even in the most harsh environments.

Lubrication requirements are minimal. GSX actuators can be lubricated with either grease or recirculated oil. Grease lubricated units will run up to 10,000 hours without re-greasing. Recirculated oil systems eliminate this type of maintenance altogether. A GSX Series actuator with a properly operating recirculating oil system will operate indefinitely without any other lubrication requirements.

Available in Five Frame Sizes
 2" GSX20 3" GSX30 4" GSX40
 5" GSX50 7" GSX60

If you need a custom design, Exlar's Application Engineering department will work with you to engineer a solution specifically tailored to your application.



GSX Series

Feature	Standard	Optional
External anti-rotate mechanism	No	Yes
Pre-loaded follower	No	Yes
Electric brake	No	Yes
Internal End switches	No	Yes
Connectors	Two MS Style Connectors (3 if brake and/or Switches are Ordered)	Electroless Nickel Connectors/Male NPT with Potted Leads/Manufacturers Connectors
Mounting Style	Extended Tie Rods, Side Tapped Mounting Holes, Trunnion, Rear Clevis, or Front Flange	Custom Mountings
Rod End	Male or Female: U.S. Standard or Metric	Specials Available To Meet OEM Requirements
Lubrication	Greased, Oil Connection Ports are Built-in for Customer Supplied Recirculated Oil Lubrication	Specials Available To Meet OEM Requirements
Primary Feedback	Standard Encoders or Resolvers to Meet Most Amplifier Requirements	Custom Feedback
Absolute Linear Feedback	No	VRVT, including signal conditioner

**EXLAR
GSX Series Linear Actuators**

EXLAR GSX SERIES ACTUATORS APPLICATIONS INCLUDE:

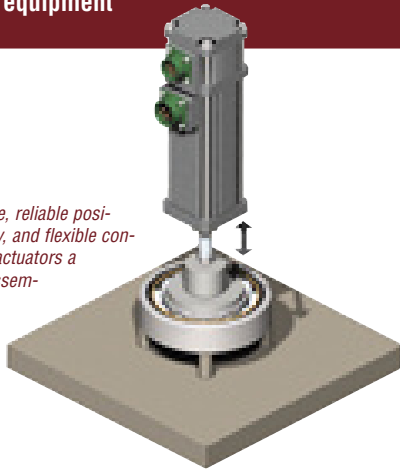
Hydraulic cylinder replacement
Ball screw replacement
Pneumatic cylinder replacement
Chip and wafer handling
Automated flexible fixturing
Dispensers
Machine tool
Automated assembly
Parts clamping
Automatic tool changers
Volumetric pumps
Medical equipment

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

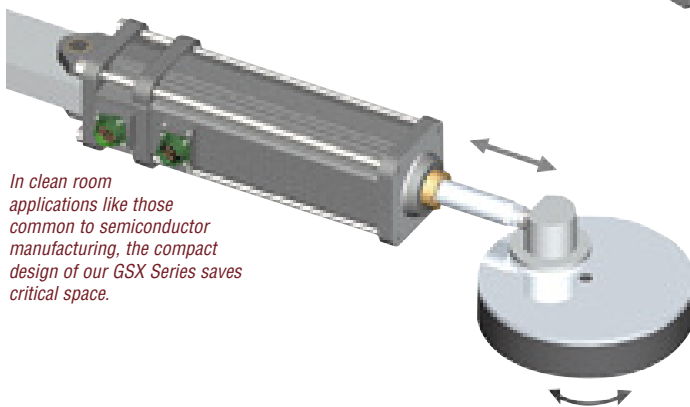
Repeatable force, reliable positioning accuracy, and flexible control make GSX actuators a perfect fit for assembly presses or test stands.



Because they cycle quickly and can be synchronized to line speeds, Exlar actuators produce dramatic improvements in web control applications.



In clean room applications like those common to semiconductor manufacturing, the compact design of our GSX Series saves critical space.



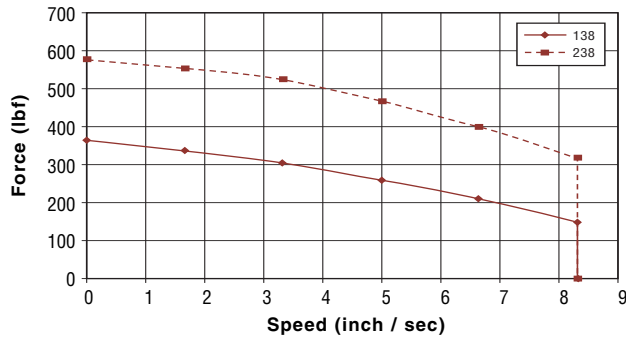
Repeatable force control plus positioning accuracy extends the life of costly tools when Exlar linear actuators are used in precision clamping applications.



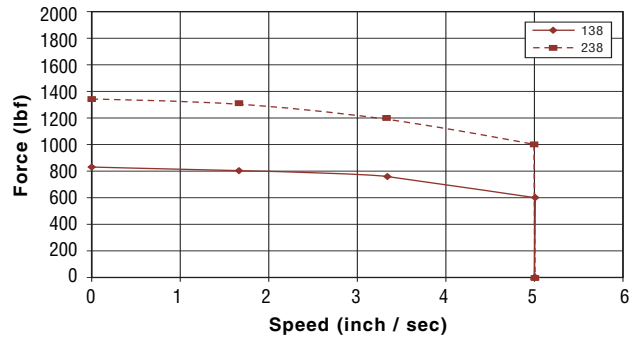
GSX Series Speed vs. Force Curves

These charts represent typical linear speed versus linear force curves for the GSX actuators using common brushless motor amplifiers. The GSX Series are compatible with many different brushless motor amplifiers, and differences in the performance ratings of these amplifiers can alter the actuator's performance. Thus, the curves below should be used for estimation only. (Further information is available by contacting Exlar Application Engineering.)

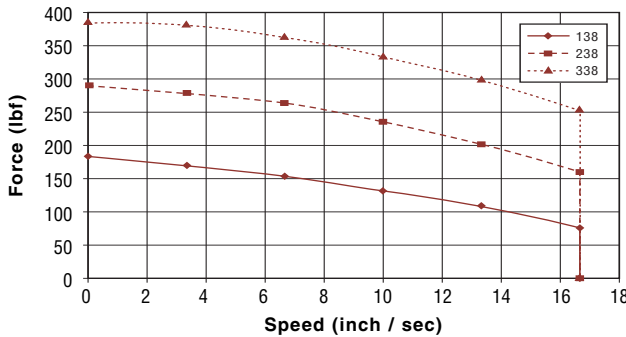
GSX20-.1 Inch Lead



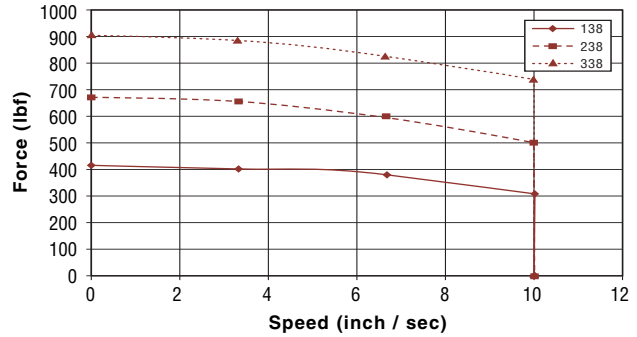
GSX30-.1 Inch Lead



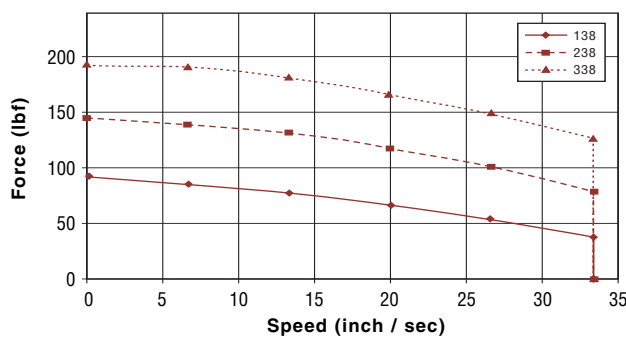
GSX20-.2 Inch Lead



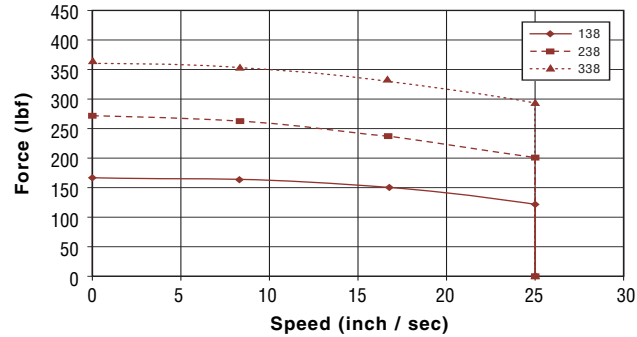
GSX30-.2 Inch Lead



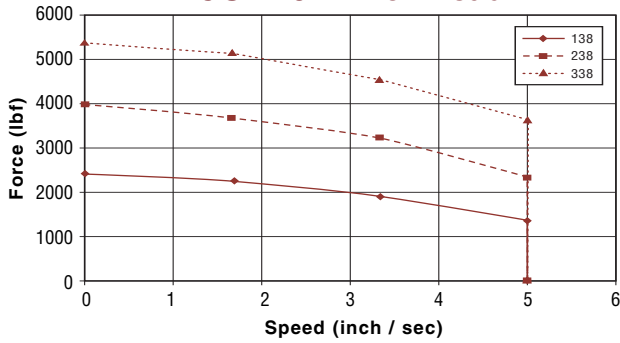
GSX20-.4 Inch Lead



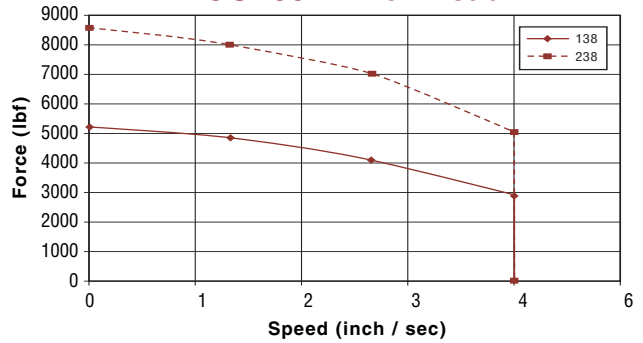
GSX30-.5 Inch Lead



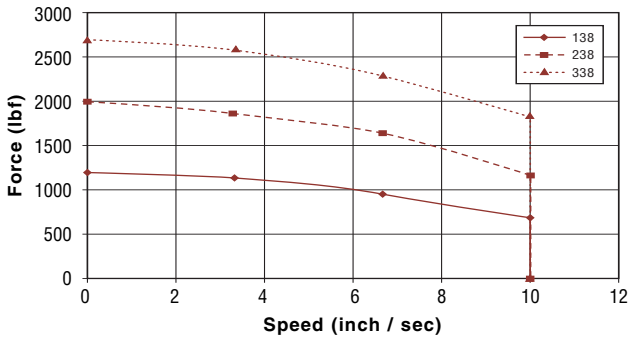
GSX.40-.1 Inch Lead



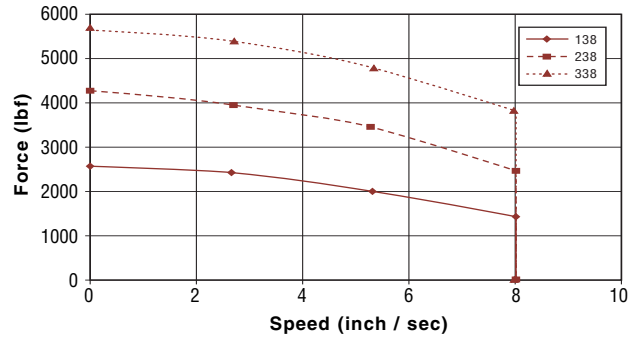
GSX50-.1 Inch Lead



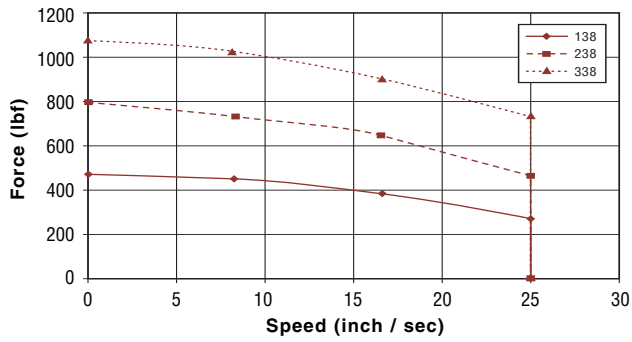
GSX40-.2 Inch Lead



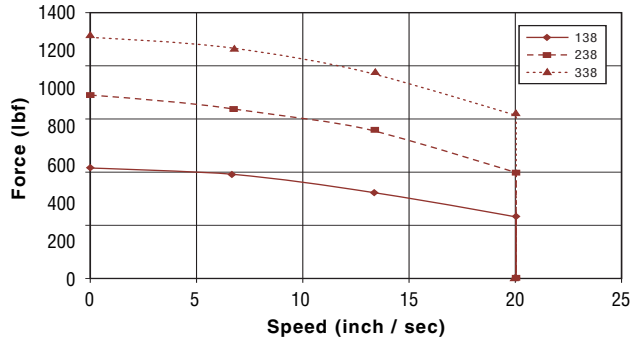
GSX50-.2 Inch Lead



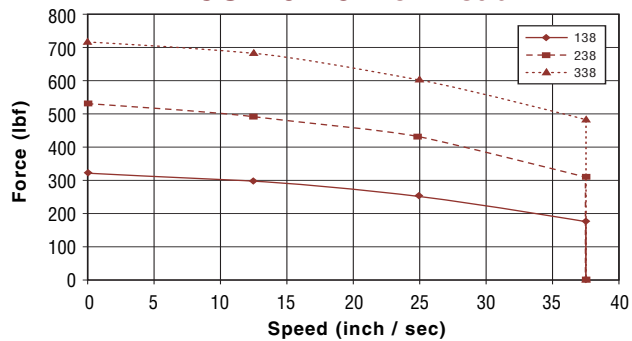
GSX40-.5 Inch Lead



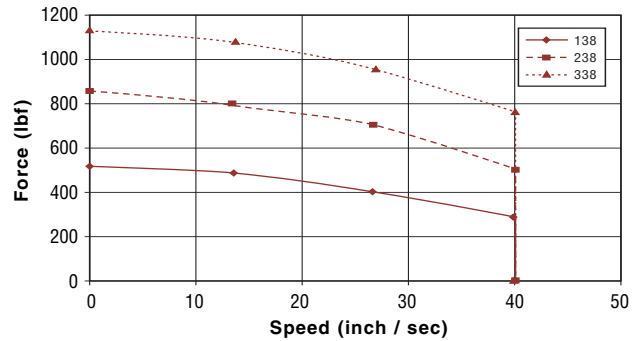
GSX50-.5 Inch Lead



GSX40-.75 Inch Lead



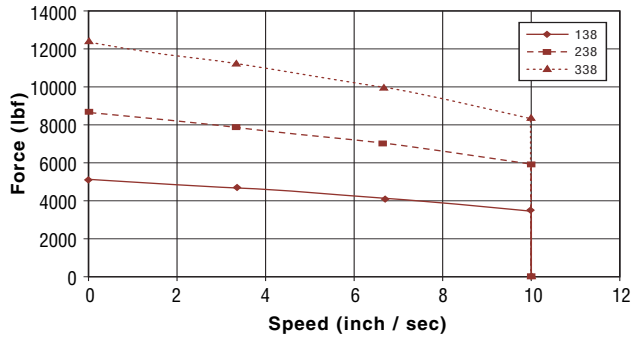
GSX50-1.0 Inch Lead



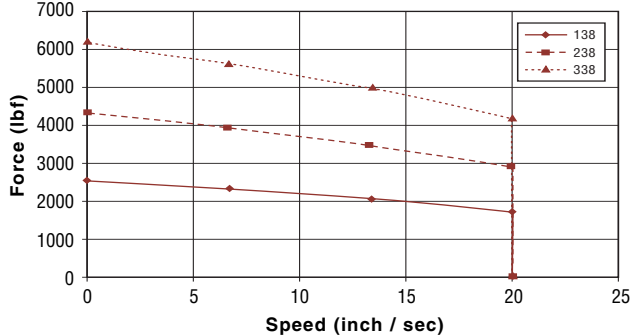
GSX Series Speed vs. Force Curves

These charts represent typical linear speed versus linear force curves for GSX actuators using common brushless motor amplifiers. The GSX Series are compatible with many different brushless motor amplifiers, and differences in the performance ratings of these amplifiers can alter the actuator's performance. Thus, the curves below should be used for estimation only. (Further information is available by contacting Exlar Application Engineering.)

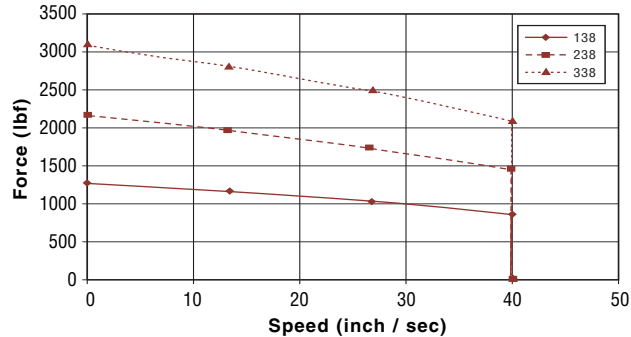
GSX60-.25 Inch Lead



GSX60-.5 Inch Lead



GSX60-1.0 Inch Lead



GSX Series Lifetime Curves

The L₁₀ expected life of a roller screw linear actuator is expressed as the linear travel distance that 90% of properly maintained roller screws manufactured are expected to meet or exceed. This is not a guarantee and these charts should be used for estimation purposes only.

The underlying formula that defines this value is:

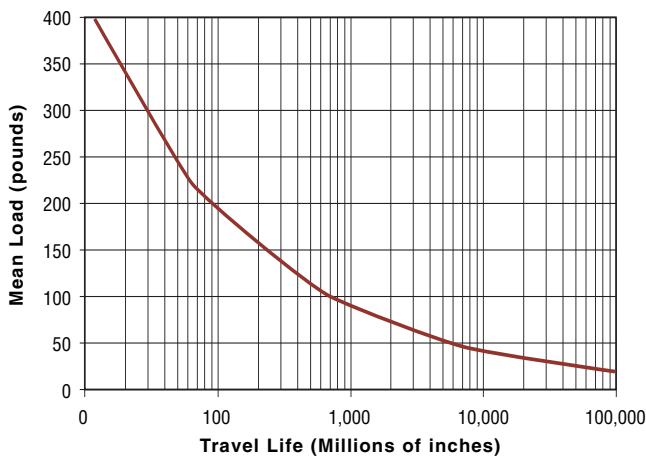
Travel life in millions of inches, where:

- C** = Dynamic load rating (lbf)
- F** = Cubic mean applied load (lbf)
- S** = Roller screws lead (inches)

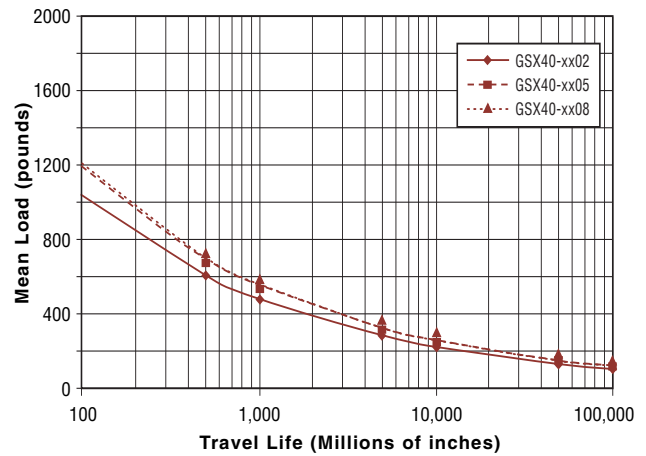
$$L_{10} = \left(\frac{C}{F}\right)^3 \times S \equiv$$

All curves represent properly lubricated and maintained actuators.

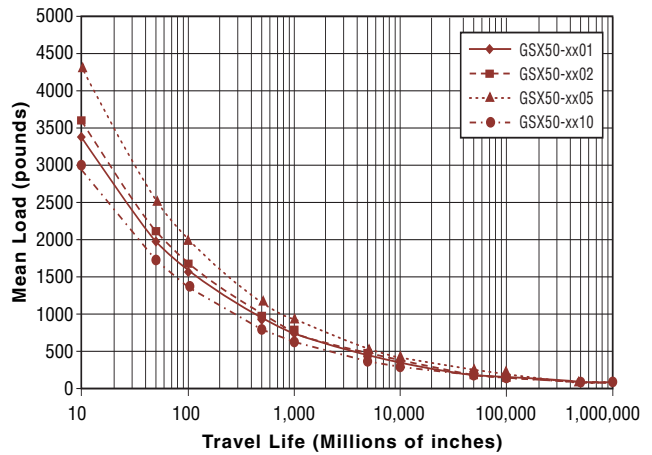
GSX20



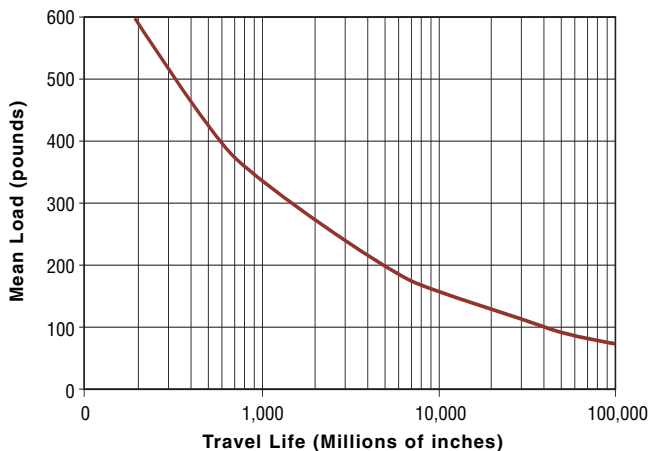
GSX40



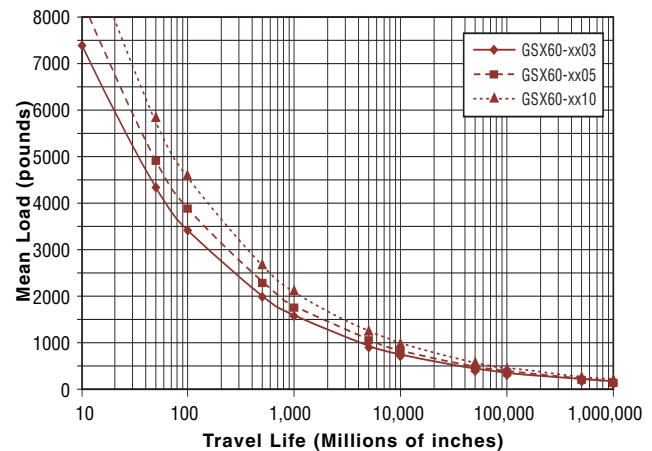
GSX50



GSX30



GSX60



GSX20 & GSX30 Performance Specifications

Model	Frame Size in (mm)	Stroke (nominal) in (mm)*	Screw Lead in (mm)	Force* Rating lb (N) 1/2/3 stack	Max Velocity in/sec (mm/sec)	Continuous Motor Torque lb-in (N-m)	Maximum Static Load lb (N)	Armature Inertia** lb-in-s ² (Kg-m ²)	Dynamic Load Rating lb (N)	Weight (approx.) lb (Kg)
GSX20-0301	2.25 (57)	3 (75)	0.1 (2.54)	367/578/NA (1632/2571/NA)	8.33 (211.67)	7.3/11.5/NA (0.82/1.30/NA)	1250 (5560)	0.00101 (0.000114)	2075 (9230)	6.5 (2.9)
GSX20-0302	2.25 (57)	3 (75)	0.2 (5.08)	183/289/NA (814/1286/NA)	16.77 (423.33)	7.3/11.5/NA (0.82/1.30/NA)	1250 (5560)	0.00101 (0.000114)	1540 (6850)	6.5 (2.9)
GSX20-0304	2.25 (57)	3 (75)	0.4 (10.16)	92/145/NA (409/645/NA)	33.33 (846.67)	7.3/11.5/NA (0.82/1.30/NA)	1250 (5560)	0.00101 (0.000114)	1230 (5471)	6.5 (2.9)
GSX20-0601	2.25 (57)	6 (150)	0.1 (2.54)	367/578/NA (1632/2571/NA)	8.33 (211.67)	7.3/11.5/NA (0.82/1.30/NA)	1250 (5560)	0.00114 (0.000129)	2075 (9230)	7.0 (3.2)
GSX20-0602	2.25 (57)	6 (150)	0.2 (5.08)	183/289/385 (814/1286/1713)	16.67 (423.33)	7.3/11.5/15.3 (0.82/1.30/1.73)	1250 (5560)	0.00114 (0.000129)	1540 (6850)	7.0 (3.2)
GSX20-0604	2.25 (57)	6 (150)	0.4 (10.16)	92/145/192 (409/645/854)	33.33 (846.67)	7.3/11.5/15.3 (0.82/1.30/1.73)	1250 (5560)	0.00114 (0.000129)	1230 (5471)	7.0 (3.2)
GSX20-1001	2.25 (57)	10 (250)	0.1 (2.54)	367/578/NA (1632/2571/NA)	8.33 (211.67)	7.3/11.5/NA (0.82/1.30/NA)	1250 (5560)	0.00133 (0.000150)	2075 (9230)	7.5 (3.4)
GSX20-1002	2.25 (57)	10 (250)	0.2 (5.08)	183/289/385 (814/1286/1713)	16.67 (423.33)	7.3/11.5/15.3 (0.82/1.30/1.73)	1250 (5560)	0.00133 (0.000150)	1540 (6850)	7.5 (3.4)
GSX20-1004	2.25 (57)	10 (250)	0.4 (10.16)	92/145/192 (409/645/854)	33.33 (846.67)	7.3/11.5/15.3 (0.82/1.30/1.73)	1250 (5560)	0.00133 (0.000150)	1230 (5471)	7.5 (3.4)
GSX20-1201	2.25 (57)	12 (300)	0.1 (2.54)	367/578/NA (1632/2571/NA)	8.33 (211.67)	7.3/11.5/NA (0.82/1.30/NA)	1250 (5560)	0.00143 (0.000162)	2075 (9230)	8.0 (3.6)
GSX20-1202	2.25 (57)	12 (300)	0.2 (5.08)	183/289/385 (814/1286/1713)	16.67 (423.33)	7.3/11.5/15.3 (0.82/1.30/1.73)	1250 (5560)	0.00143 (0.000162)	1540 (6850)	8.0 (3.6)
GSX20-1204	2.25 (57)	12 (300)	0.4 (10.16)	92/145/192 (409/645/854)	33.33 (846.67)	7.3/11.5/15.3 (0.82/1.30/1.73)	1250 (5560)	0.00143 (0.000162)	1230 (5471)	8.0 (3.6)
GSX30-0301	3.125 (79)	3 (75)	0.1 (2.54)	829/1347/NA (3688/5992/NA)	5 (127)	16.5/26.8/NA (1.86/3.03/NA)	2700 (12010)	0.00319 (0.000360)	5516 (24536)	9.5 (4.3)
GSX30-0302	3.125 (79)	3 (75)	0.2 (5.08)	415/674/NA (1846/2998/NA)	10 (254)	16.5/26.8/NA (1.86/3.03/NA)	2700 (12010)	0.00319 (0.000360)	5800 (25798)	9.5 (4.3)
GSX30-0305	3.125 (79)	3 (75)	0.5 (12.7)	166/269/NA (738/1197/NA)	25 (635)	16.5/26.8/NA (1.86/3.03/NA)	2700 (12010)	0.00319 (0.000360)	4900 (21795)	9.5 (4.3)
GSX30-0601	3.125 (79)	5.9 (150)	0.1 (2.54)	829/1347/NA (3688/5992/NA)	5 (127)	16.5/26.8/NA (1.86/3.03/NA)	2700 (12010)	0.00361 (0.000408)	5516 (24536)	11.5 (5.2)
GSX30-0602	3.125 (79)	5.9 (150)	0.2 (5.08)	415/674/905 (1846/2998/4026)	10 (254)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00361 (0.000408)	5800 (25798)	11.5 (5.2)
GSX30-0605	3.125 (79)	5.9 (150)	0.5 (12.7)	166/269/362 (738/1197/1610)	25 (635)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00361 (0.000408)	4900 (21795)	11.5 (5.2)
GSX30-1001	3.125 (79)	10 (250)	0.1 (2.54)	829/1347/NA (3688/5992/NA)	5 (127)	16.5/26.8/NA (1.86/3.03/NA)	2700 (12010)	0.00416 (0.00047)	5516 (24536)	19 (8.6)
GSX30-1002	3.125 (79)	10 (250)	0.2 (5.08)	415/674/905 (1846/2998/4026)	10 (254)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00416 (0.00047)	5800 (25798)	19 (8.6)
GSX30-1005	3.125 (79)	10 (250)	0.5 (12.7)	166/269/362 (738/1197/1610)	25 (635)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00416 (0.00047)	4900 (21795)	19 (8.6)
GSX30-1201	3.125 (79)	12 (305)	0.1 (2.54)	829/1347/NA (3688/5992/NA)	5 (127)	16.5/26.8/NA (1.86/3.03/NA)	2700 (12010)	0.00443 (0.000501)	5516 (24536)	22 (10)
GSX30-1202	3.125 (79)	12 (305)	0.2 (5.08)	415/674/905 (1846/2998/4026)	10 (254)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00443 (0.000501)	5800 (25798)	22 (10)
GSX30-1205	3.125 (79)	12 (305)	0.5 (12.7)	166/269/362 (738/1197/1610)	25 (635)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00443 (0.000501)	4900 (21795)	22 (10)
GSX30-1402	3.125 (79)	14 (355)	0.2 (5.08)	415/674/905 (1846/2998/4026)	10 (254)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00473 (0.000534)	5800 (25798)	22 (10)
GSX30-1405	3.125 (79)	14 (355)	0.5 (12.7)	166/269/362 (738/1197/1610)	25 (635)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00473 (0.000534)	4900 (21795)	22 (10)
GSX30-1802	3.125 (79)	18 (455)	0.2 (5.08)	415/674/905 (1846/2998/4026)	10 (254)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00533 (0.000602)	5800 (25798)	25 (11.3)
GSX30-1805	3.125 (79)	18 (455)	0.5 (12.7)	166/269/362 (738/1197/1610)	25 (635)	16.5/26.8/36 (1.86/3.03/4.07)	2700 (12010)	0.00533 (0.000602)	4900 (21795)	25 (11.3)

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

Specifications subject to change without notice.

GSX40 Performance Specifications

Model	Frame Size in (mm)	Stroke (nominal)* in (mm)*	Screw Lead in (mm)	Force* Rating lb (N) 1/2/3 stack	Max Velocity in/sec (mm/sec)	Continuous Motor Torque lb-in (N-m)	Maximum Static Load lb (N)	Armature Inertia** lb-in-s ² (Kg-m ²)	Dynamic Load Rating lb (N)	Weight (approx.) lb (Kg)
GSX40-0601	3.9 (99)	6 (150)	0.1 (2.54)	2393/3966/NA (10645/17642/NA)	5 (127)	47.6/78.9/NA (5.38/8.91/NA)	5400 (24020)	0.0152 (0.001717)	7900 (35141)	20 (9.1)
GSX40-0602	3.9 (99)	6 (150)	0.2 (5.08)	1196/1983/NA (5320/8821/NA)	10 (254)	47.6/78.9/NA (5.38/8.91/NA)	5400 (24020)	0.0152 (0.001717)	8300 (36920)	20 (9.1)
GSX40-0605	3.9 (99)	6 (150)	0.5 (12.7)	479/793/NA (2131/3527/NA)	25 (635)	47.6/78.9/NA (5.38/8.91/NA)	5400 (24020)	0.0152 (0.001717)	7030 (31271)	20 (9.1)
GSX40-0608	3.9 (99)	6 (150)	0.75 (19.05)	319/529/NA (1419/2353/NA)	37.5 (953)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0152 (0.001717)	6335 (28179)	20 (9.1)
GSX40-0801	3.9 (99)	8 (200)	0.1 (2.54)	2393/3966/NA (10645/17642/NA)	5 (127)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0163 (0.001842)	7900 (35141)	24 (10.9)
GSX40-0802	3.9 (99)	8 (200)	0.2 (5.08)	1196/1983/2692 (5320/8821/11975)	10 (254)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0163 (0.001842)	8300 (36920)	24 (10.9)
GSX40-0805	3.9 (99)	8 (200)	0.5 (12.7)	479/793/1077 (2131/3527/4791)	25 (635)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0163 (0.001842)	7030 (31271)	24 (10.9)
GSX40-0808	3.9 (99)	8 (200)	0.75 (19.05)	319/529/718 (1419/2353/3194)	37.5 (953)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0163 (0.001842)	6335 (28179)	24 (10.9)
GSX40-1001	3.9 (99)	10 (250)	0.1 (2.54)	2393/3966/NA (10645/17642/NA)	5 (127)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0175 (0.001977)	7900 (35141)	28 (12.7)
GSX40-1002	3.9 (99)	10 (250)	0.2 (5.08)	1196/1983/2692 (5320/8821/11975)	10 (254)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0175 (0.001977)	8300 (36920)	28 (12.7)
GSX40-1005	3.9 (99)	10 (250)	0.5 (12.7)	479/793/1077 (2131/3527/4791)	25 (635)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0175 (0.001977)	7030 (31271)	28 (12.7)
GSX40-1008	3.9 (99)	10 (250)	0.75 (19.05)	319/529/718 (1419/2353/3194)	37.5 (953)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0175 (0.001977)	6335 (28179)	28 (12.7)
GSX40-1201	3.9 (99)	12 (305)	0.1 (2.54)	2393/3966/NA (10645/17642/NA)	5 (127)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0186 (0.002102)	7900 (35141)	32 (14.5)
GSX40-1202	3.9 (99)	12 (305)	0.2 (5.08)	1196/1983/2692 (5320/8821/11975)	10 (254)	47.6/8.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0186 (0.002102)	8300 (36920)	32 (14.5)
GSX40-1205	3.9 (99)	12 (305)	0.5 (12.7)	479/793/1077 (2131/3527/4791)	25 (635)	47.6/8.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0186 (0.002102)	7030 (31271)	32 (14.5)
GSX40-1208	3.9 (99)	12 (305)	0.75 (19.05)	319/529/718 (1419/2353/3194)	37.5 (953)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0186 (0.002102)	6335 (28179)	32 (14.5)
GSX40-1802	3.9 (99)	18 (455)	0.2 (5.08)	1196/1983/2692 (5320/8821/11975)	10 (254)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0220 (0.002486)	8300 (36920)	44 (20)
GSX40-1805	3.9 (99)	18 (455)	0.5 (12.7)	479/793/1077 (2131/3527/4791)	25 (635)	47.6/78.9/107.1 (5.38/8.91/12.1)	5400 (24020)	0.0220 (0.002486)	7030 (31271)	44 (20)

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

Specifications subject to change without notice.

GSX50 & GSX60 Performance Specifications

Model	Frame Size in (mm)	Stroke (nominal)* in (mm)*	Screw Lead in (mm)	Continuous Force* Rating lb 1/2/3 stack	Max Velocity in/sec (mm/sec)	Continuous Motor Torque lb-in (N-m)	Maximum Static Load lb (N)	Armature Inertia** lb-in-s ² (Kg-m ²)	Dynamic Load Rating lb (N)	Weight (approx.) lb (Kg)
GSX50-0601	5.0 (127)	6 (150)	0.1 (2.54)	5127/8544/NA (22806/38006/NA)	4 (101.6)	102/170/NA (11.5/19.2/NA)	13200 (58717)	0.03241 (0.003662)	15693 (69806)	54 (24)
GSX50-0602	5.0 (127)	6 (150)	0.2 (5.08)	2564/4272/NA (11405/19003/NA)	8 (203)	102/170/NA (11.5/19.2/NA)	13200 (58717)	0.03241 (0.003662)	13197 (58703)	54 (24)
GSX50-0605	5.0 (127)	6 (150)	0.5 (12.7)	1026/1709/NA (4564/7602/NA)	20 (508)	102/170/NA (11.5/19.2/NA)	13200 (58717)	0.03241 (0.003662)	11656 (51848)	54 (24)
GSX50-0610	5.0 (127)	6 (150)	1.0 (25.4)	513/855/NA (2282/3803/NA)	40 (1016)	102/170/NA (11.5/19.2/NA)	13200 (58717)	0.03241 (0.003662)	6363 (28304)	54 (24)
GSX50-1001	5.0 (127)	10 (250)	0.1 (2.54)	5127/8544/NA (22806/38006/NA)	4 (101.6)	102/170/NA (11.5/19.2/NA)	13200 (58717)	0.03725 (0.004209)	15693 (69806)	62 (28)
GSX50-1002	5.0 (127)	10 (250)	0.2 (5.08)	2564/4272/NA (11405/19003/NA)	8 (203)	102/170/NA (11.5/19.2/NA)	13200 (58717)	0.03725 (0.004209)	13197 (58703)	62 (28)
GSX50-1005	5.0 (127)	10 (250)	0.5 (12.7)	1026/1709/2261 (4564/7602/10057)	20 (508)	102/170/226 (11.5/19.2/25.5)	13200 (58717)	0.03725 (0.004209)	11656 (51848)	62 (28)
GSX50-1010	5.0 (127)	10 (250)	1.0 (25.4)	513/855/1131 (2349/3803/5031)	40 (1016)	102/170/226 (11.5/19.2/25.5)	13200 (58717)	0.03725 (0.004209)	6363 (28304)	62 (28)
GSX50-1402	5.0 (127)	14 (355)	0.2 (5.08)	2564/4272/5655 (11405/19003/25155)	8 (203)	102/170/226 (11.5/19.2/25.5)	13200 (58717)	0.04208 (0.004756)	13197 (58703)	70 (32)
GSX50-1405	5.0 (127)	14 (355)	0.5 (12.7)	1026/1709/2261 (4564/7602/10057)	20 (508)	102/170/226 (11.5/19.2/25.5)	13200 (58717)	0.04208 (0.004756)	11656 (51848)	70 (32)
GSX60-0603	7.0 (178)	6 (150)	0.25 (6.35)	5098/NA/NA (22677/NA/NA)	10 (254)	241/NA/NA (27/NA/NA)	25000 (111200)	0.1736 (0.019614)	25300 (112540)	69 (31)
GSX60-0605	7.0 (178)	6 (150)	0.5 (12.7)	2549/NA/NA (11339/NA/NA)	20 (508)	241/NA/NA (27/NA/NA)	25000 (111200)	0.1736 (0.019614)	22800 (101420)	69 (31)
GSX60-0610	7.0 (178)	6 (150)	1.0 (25.4)	1275/NA/NA (5671/NA/NA)	40 (1018)	241/NA/NA (27/NA/NA)	25000 (111200)	0.1736 (0.019614)	21200 (94302)	69 (31)
GSX60-1003	7.0 (178)	10 (250)	0.25 (6.35)	5098/8656/12389 (22677/38504/55109)	10 (254)	241/409/585 (27/46/66)	25000 (111200)	0.1943 (0.021953)	25300 (112540)	101 (46)
GSX60-1005	7.0 (178)	10 (250)	0.5 (12.7)	2549/4328/6195 (11339/19252/27557)	20 (508)	241/409/585 (27/46/66)	25000 (111200)	0.1943 (0.021953)	22800 (101420)	101 (46)
GSX60-1010	7.0 (178)	10 (250)	1.0 (25.4)	1275/2164/3097 (5671/9626/13776)	40 (1018)	241/409/585 (27/46/66)	25000 (111200)	0.1943 (0.021953)	21200 (94302)	101 (46)

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 GSX Series actuators. For calculation purposes, this value includes the screw inertia in a GSX 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.

* GSX offers 1, 2, or 3 stack stators providing 3 torque force levels.

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

Specifications subject to change without notice.

GSX20 Mechanical and Electrical Specifications

		GSX20											
Nominal Backlash	in (mm)	0.004 (.10)											
Maximum Backlash (pre-loaded)	in (mm)	0.0											
Lead Accuracy	in/ft (mm/300 mm)	0.001 (.025)											
Maximum Radial Load	lb (N)	20 (90)											
Environmental Rating: Standard / Optional		IP65/67											
Motor Stator		118	138	158	168	218	238	258	268	318*	338*	358*	368*
RMS Sinusoidal Commutation													
Continuous Motor Torque	lbf-in (Nm)	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)	15.3 (1.73)	15.3 (1.73)	14.8 (1.67)	15.0 (1.69)
Torque Constant (Kt)	lbf-in/A (Nm/A)	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)	2.3 (0.26)	5.3 (0.60)	8.8 (0.99)	10.2 (1.15)
Continuous Current Rating:	Greased (IG) A	3.4	1.6	0.9	0.8	5.4	2.5	1.4	1.2	7.3	3.2	1.9	1.6
	Oiled (IL) A	6.9	3.1	1.9	1.6	10.8	4.9	2.8	2.5	14.6	6.5	3.8	3.3
Peak Current Rating	Amps	6.9	3.1	1.9	1.6	10.8	4.9	2.8	2.5	14.6	6.5	3.8	3.3
Trapezoidal Commutation													
Continuous Motor Torque	lbf-in (Nm)	7.3 (0.82)	7.0 (0.79)	6.7 (0.76)	6.7 (0.76)	11.4 (1.29)	11.0 (1.24)	10.7 (1.21)	10.8 (1.22)	14.7 (1.66)	14.6 (1.65)	14.1 (1.60)	14.3 (1.61)
Torque Constant (Kt)	lbf-in/A (Nm/A)	1.9 (0.22)	4.1 (0.46)	7.4 (0.73)	7.4 (0.84)	1.9 (0.22)	4.1 (0.46)	6.9 (0.78)	7.9 (0.89)	1.8 (0.21)	4.1 (0.46)	6.9 (0.77)	7.9 (0.89)
Continuous Current Rating:	Greased (IG) A	4.2	1.9	1.1	1.0	6.6	3.0	1.7	1.5	9.0	4.0	2.3	2.0
	Oiled (IL) A	8.4	3.9	2.3	2.0	13.2	6.0	3.5	3.0	17.9	8.0	4.6	4.0
Peak Current Rating	Amps	8.4	3.9	2.3	2.0	13.2	6.0	3.5	3.0	17.9	8.0	4.6	4.0
Motor Stator Data													
Voltage Constant (Ke)	Vrms/krpm (Vpk/krpm)	16.9 (23.9)	35.6 (50.3)	56.9 (80.9)	64.9 (91.8)	16.9 (23.9)	35.6 (50.3)	60.5 (85.5)	69.4 (98.1)	16.0 (22.6)	36.0 (50.9)	60.0 (84.9)	69.4 (98.1)
Pole Configuration		8	8	8	8	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	0.62	3.1	9.4	12.2
Inductance (L-L)(+/- 15%)	mH	5.1	22.8	58.3	75.8	2.5	11.0	31.7	41.7	1.5	7.4	20.5	27.4
Brake Inertia	lbf-in-sec ² (Kg-cm ²)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)	.000025 (0.028)
Brake Current @ 24 Vdc	A	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21	.21
Brake Holding Torque - Dry	lbf-in (Nm)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)	24 (2.71)
Brake Holding Torque - Oil Lubricated	lbf-in (Nm)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)	8 (0.90)
Brake Engage/Disengage Time	ms	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50
Mechanical Time Constant (tm),ms	min	6.0	6.5	7.1	7.1	2.5	2.7	2.9	2.8	1.6	1.6	1.7	1.7
	max	8.5	9.2	10.1	10.1	3.6	3.9	4.0	4.0	2.2	2.2	2.4	2.4
Electrical Time Constant (te)	ms	2.0	1.8	1.7	1.7	2.2	2.1	2.0	2.0	2.4	2.4	2.2	2.2
Damping Constant	lbf-in/krpm (Nm/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)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)	0.55 (0.06)
Friction Torque	lbf-in (Nm)	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)	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	115	230	400	460
Speed @ Bus Voltage	rpm	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
Motor Wire Insulation		Class 180 H											
Motor Stator Rating		Class 180 H											
Thermal Switch Case Temperature	°C	100											
Standard Connectors (O-option)	Motor	MS-3112-E16-8P											
	Feedback	MS-3112-E14-18P											
	Brake/Limit Sw.	MS-3112-E12-8P											

All ratings at 25 degrees Celsius
 For amplifiers with peak sinusoidal commutation $K_t = K_{trms}(0.707)$, $I_c = I_{crms}(0.707)$, $I_{pk} = I_{pkrms}(0.707)$
 *The 3 stack motor is not available with the .1 inch lead GSX20. The 3 stack lamination fits only the 6 inch and longer GSX20. The GSX20-03 can only accommodate the 1 or 2 stack.

Specifications subject to change without notice.

GSX30 Mechanical and Electrical Specifications

		GSX30											
Nominal Backlash	in (mm)	0.004 (.10)											
Maximum Backlash (pre-loaded)	in (mm)	0.0											
Lead Accuracy	in/ft (mm/300 mm)	0.001 (.025)											
Maximum Radial Load	lb (N)	30 (134)											
Environmental Rating: Standard / Optional		IP65/67											
Motor Stator		118	138	158	168	218	238	258	268	318*	338*	358**	368*
RMS Sinusoidal Commutation													
Continuous Motor Torque	lbf-in (Nm)	16.6 (1.88)	16.5 (1.87)	15.7 (1.77)	15.7 (1.78)	26.8 (3.03)	26.8 (3.03)	26.7 (3.02)	26.7 (3.01)	38.7 (4.38)	38.3 (4.33)	36.3 (4.10)	36.3 (4.10)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C) (Nm/A)	4.4 (0.49)	8.7 (0.99)	15.5 (1.75)	17.5 (1.98)	4.4 (0.49)	8.7 (0.99)	15.5 (1.75)	17.5 (1.98)	4.4 (0.50)	8.7 (0.98)	15.7 (1.77)	17.6 (1.98)
Continuous Current Rating:	Greased (IG) A Oiled (IL) A	4.2 8.5	2.1 4.2	1.1 2.3	1.0 2.0	6.9 13.7	3.4 6.8	1.9 3.8	1.7 3.4	9.7 19.5	4.9 9.9	2.6 5.2	2.3 4.6
Peak Current Rating	Amps	8.5	4.2	2.3	2.0	13.7	6.8	3.8	3.4	19.5	9.9	5.2	4.6
Trapezoidal Commutation													
Continuous Motor Torque	lbf-in (Nm)	15.9 (1.79)	15.8 (1.78)	14.9 (1.69)	15.0 (1.70)	25.6 (2.89)	25.6 (2.89)	25.5 (2.88)	25.5 (2.88)	37.0 (4.18)	36.6 (4.13)	34.8 (3.91)	34.7 (3.92)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C) (Nm/A)	3.4 (0.39)	6.8 (0.77)	12.1 (1.37)	13.6 (1.54)	3.4 (0.39)	6.8 (0.77)	12.1 (1.37)	13.6 (1.54)	3.5 (0.39)	6.8 (0.76)	12.2 (1.38)	13.7 (1.55)
Continuous Current Rating:	Greased (IG) A Oiled (IL) A	5.2 10.4	2.6 5.2	1.4 2.8	1.2 2.5	8.4 16.8	4.2 8.4	2.4 4.7	2.1 4.2	11.9 23.9	6.0 12.1	3.2 6.3	2.8 5.7
Peak Current Rating	Amps	10.4	5.2	2.8	2.5	16.8	8.4	4.7	4.2	23.9	12.1	6.3	5.7
Motor Stator Data													
Voltage Constant (Ke)	Vrms/krpm (+/- 10% @ 25°C) Vpk/krpm	29.9 42.2	59.7 84.5	106.0 149.9	119.5 169.0	29.9 42.2	59.7 84.5	106.7 149.9	119.5 168.9	30.3 42.9	59.2 83.8	106.9 151.2	119.9 169.6
Pole Configuration		8	8	8	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	0.65	2.6	9.3	11.6
Inductance (L-L)(+/- 15%)	mH	7.7	30.7	96.8	123.0	3.7	14.7	46.2	58.7	2.5	9.5	30.9	38.8
Brake Inertia	lbf-in-sec ² (Kg-cm ²)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)	.00012 (0.136)
Brake Current @ 24 Vdc	A	.72	.72	.72	.72	.72	.72	.72	.72	.72	.72	.72	.72
Brake Holding Torque - Dry	lbf-in (Nm)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)	78 (8.81)
Brake Holding Torque - Oil Lubricated	lbf-in (Nm)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)	26 (2.94)
Brake Engage/Disengage Time	ms	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50
Mechanical Time Constant (tm),ms	min	6.5	6.5	7.3	7.2	2.6	2.6	2.6	2.6	1.5	1.5	1.7	1.7
	max	10.8	10.9	12.2	12.0	4.3	4.3	4.4	4.4	2.5	2.5	2.8	2.8
Electrical Time Constant (te)	ms	2.8	2.7	2.5	2.5	3.3	3.3	3.3	3.3	3.8	3.7	3.3	3.3
Damping Constant	lbf-in/krpm (Nm/krpm)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)	1.23 (.14)
Friction Torque	lbf-in (Nm)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)	2.00 (0.23)
Bus Voltage	Vrms	115	230	400	460	115	230	400	460	115	230	400	460
Speed @ Bus Voltage	rpm	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Motor Wire Insulation		Class 180 H											
Motor Stator Rating		Class 180 H											
Thermal Switch Case Temperature	C	100											
Standard Connectors (O-option)	Motor	MS-3112-E16-8P											
	Feedback	MS-3112-E14-18P											
	Brake/Limit Sw.	MS-3112-E12-8P											

All ratings at 25 degrees Celsius

For amplifiers with peak sinusoidal commutation $K_t = K_{trms}/(0.707)$, $I_c = I_{crms}/(0.707)$, $I_{pk} = I_{pkrms}/(0.707)$

*The 3 stack lamination fits only the 6 inch and longer GSX30. The GSX30-03 can only accommodate the 1 or 2 stack.

**The 3X8 option is not available in the 3" stroke GSX30 actuator.

Specifications subject to change without notice.

EXLAR
GSX Series Linear Actuators

GSX40 Mechanical and Electrical Specifications

		GSX40									
Nominal Backlash	in (mm)	0.004 (.10)									
Maximum Backlash (pre-loaded)	in (mm)	0.0									
Lead Accuracy	in/ft (mm/300 mm)	0.001 (.025)									
Maximum Radial Load	lb (N)	40 (179)									
Environmental Rating: Standard / Optional		IP65/67									
Motor Stator		118	138	158	168	238	258	268	338*	358*	368*
RMS Sinusoidal Commutation											
Continuous Motor Torque	lbf-in (Nm)	47.6 (5.38)	47.6 (5.37)	44.7 (5.05)	45.5 (5.14)	78.9 (8.91)	78.8 (8.91)	79.7 (9.00)	107.1 (12.10)	105.5 (11.92)	107.1 (12.10)
Torque Constant (Kt)	lbf-in/A (Nm/A)	4.1 (0.46)	8.2 (0.93)	14.6 (1.65)	16.8 (1.90)	8.2 (0.93)	14.6 (1.65)	16.8 (1.90)	8.4 (0.95)	14.8 (1.65)	16.8 (1.90)
Continuous Current Rating:	Greased (IG) A	12.9	6.5	3.4	3.0	10.7	6.0	5.3	14.2	8.1	7.1
	Oiled (IL) A	25.9	12.9	6.9	6.0	21.4	12.1	10.6	28.5	16.2	14.2
Peak Current Rating	Amps	25.9	12.9	6.9	6.0	21.4	12.1	10.6	28.5	16.2	14.2
Trapezoidal Commutation											
Continuous Motor Torque	lbf-in (Nm)	45.5 (5.14)	45.4 (5.13)	42.7 (4.83)	43.5 (4.91)	75.3 (8.51)	75.3 (8.50)	76.1 (8.60)	102.3 (11.56)	100.7 (11.38)	102.3 (11.56)
Torque Constant (Kt)	lbf-in/A (Nm/A)	3.2 (0.36)	6.4 (0.72)	11.4 (1.28)	13.1 (1.48)	6.4 (0.72)	11.4 (1.28)	13.1 (1.48)	6.6 (0.74)	11.4 (1.28)	13.1 (1.48)
Continuous Current Rating:	Greased (IG) A	15.9	7.9	4.2	3.7	13.1	7.4	6.5	17.4	9.9	8.7
	Oiled (IL) A	31.7	15.8	8.4	7.4	26.3	14.8	13.0	34.9	19.8	17.4
Peak Current Rating	Amps	31.7	15.8	8.4	7.4	26.3	14.8	13.0	34.9	19.8	17.4
Motor Stator Data											
Voltage Constant (Ke)	Vrms/krpm	28.1	56.1	96.5	114.8	56.1	99.5	114.8	57.4	99.5	114.8
(+/- 10% @ 25°C)	Vpk/krpm	39.7	79.4	140.7	162.4	79.4	140.7	162.4	81.2	140.7	162.4
Pole Configuration		8	8	8	8	8	8	8	8	8	
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	0.4	1.7	6.0	7.8	0.7	2.26	3.0	0.5	1.52	1.9
Inductance (L-L) (+/- 15%)	mH	3.0	11.9	37.5	49.9	5.8	18.2	24.2	4.0	12.0	16.0
Brake Inertia	lbf-in-sec ² (Kg-cm ²)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)	.00186 (2.102)
Brake Current @ 24 Vdc	A	.88	.88	.88	.88	.88	.88	.88	.88	.88	.88
Brake Holding Torque - Dry	lbf-in (Nm)	120 (13.56)	120 (13.56)	120 (13.56)	120 (13.56)	120 (13.56)	120 (13.56)	120 (13.56)	120 (13.56)	120 (13.56)	120 (13.56)
Brake Holding Torque - Oil Lubricated	lbf-in (Nm)	40 (4.52)	40 (4.52)	40 (4.52)	40 (4.52)	40 (4.52)	40 (4.52)	40 (4.52)	40 (4.52)	40 (4.52)	40 (4.52)
Brake Engage/Disengage Time	ms	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50
Mechanical Time Constant (tm),ms	min	5.3	5.3	6.0	5.8	2.3	2.3	2.2	1.5	1.5	1.5
	max	7.7	7.7	8.7	8.4	3.3	3.3	3.2	2.1	2.2	2.1
Electrical Time Constant (te)	ms	7.0	7.0	8.2	6.4	8.0	8.0	8.2	8.2	7.9	8.2
Damping Constant	lbf-in/krpm	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
	(Nm/krpm)	(0.37)	(0.37)	(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	4.50	4.50
	(Nm)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)	(0.51)
Bus Voltage	Vrms	115	230	400	460	230	400	460	230	400	460
Speed @ Bus Voltage	rpm	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Motor Wire Insulation		Class 180 H									
Motor Stator Rating		Class 180 H									
Thermal Switch Case Temperature	°C	100									
Standard Connectors (O-option)	Motor	MS-3102-E20-15P									
	Feedback	MS-3112-E14-18P									
Brake/Limit Sw.		MS-3112-E12-8P									

All ratings at 25 degrees Celsius
 For amplifiers with peak sinusoidal commutation $K_t = K_{trms}/(0.707)$, $I_c = I_{c rms}/(0.707)$, $I_{pk} = I_{pk rms}/(0.707)$
 *The 3 stack lamination fits only the 8 inch and longer GSX40.

The shortest length of each actuator can only accommodate the 1 or 2 stack.

Specifications subject to change without notice.

GSX50 Mechanical and Electrical Specifications

		GSX50							
Nominal Backlash	in (mm)	0.004 (.10)							
Maximum Backlash (preloaded)	in mm	0.0							
Lead Accuracy	in/ft (m/300 mm)	0.001 (.025)							
Maximum Radial Load	lb (N)	100 (445)							
Environmental Rating: Standard		IP65							
Motor Stator		138	158	168	238	258	268	358*	368*
RMS Sinusoidal Commutation									
Continuous Motor Torque	lbf-in (Nm)	106.9 (12.07)	104.4 (11.80)	106.2 (12.00)	179.2 (20.25)	178.2 (20.13)	177.2 (20.02)	236.4 (26.71)	237.5 (26.83)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C) (Nm/A)	11.8 (1.33)	20.1 (2.28)	23.5 (2.66)	11.8 (1.33)	20.1 (2.28)	23.5 (2.66)	20.1 (2.28)	23.9 (2.70)
Continuous Current Rating: Greased	(IG) A	10.2	5.8	5.0	17.0	9.9	8.4	13.1	11.1
	Oiled (IL) A	20.3	11.6	10.1	34.1	19.8	16.8	26.2	22.2
Peak Current Rating	Amps	20.3	11.6	10.1	34.1	19.8	16.8	26.2	22.2
Trapezoidal Commutation									
Continuous Motor Torque	lbf-in (Nm)	102.0 (11.53)	99.7 (11.26)	101.5 (11.46)	171.1 (19.34)	170.1 (19.22)	169.2 (19.12)	225.8 (25.51)	226.8 (25.62)
Torque Constant (Kt)	lbf-in/A (+/- 10% @ 25°C) (Nm/A)	9.2 (1.04)	15.7 (1.77)	18.3 (2.07)	9.2 (1.04)	15.7 (1.77)	18.3 (2.07)	15.7 (1.77)	18.7 (2.11)
Continuous Current Rating: Greased	(IG) A	12.4	7.1	6.2	20.9	12.1	10.3	16.1	13.6
	Oiled (IL) A	24.9	14.2	12.4	41.7	24.2	20.6	32.1	27.2
Peak Current Rating	Amps	24.9	14.2	12.4	41.7	24.2	20.6	32.1	27.2
Motor Stator Data									
Voltage Constant (Ke)	Vrms/krpm (+/- 10% @ 25°C) Vpk/krpm	80.3 113.5	137.6 194.6	160.6 227.1	80.3 113.5	137.6 194.6	160.6 227.1	137.6 194.6	163.4 231.1
Pole Configuration		8	8	8	8	8	8	8	
Resistance (L-L) (+/- 5% @ 25°C)	Ohm	1.00	3.09	4.06	0.37	1.11	1.52	0.66	0.92
Inductance (L-L) (+/- 15%)	mH	23.7	69.6	94.8	10.7	31.6	43.0	20.3	28.7
Brake Inertia	lbf-in-sec ² (Kg-cm ²)	.008408 (9.5)	.008408 (9.5)	.008408 (9.5)	.008408 (9.5)	.008408 (9.5)	.008408 (9.5)	.008408 (9.5)	.008408 (9.5)
Brake Current at 24 VDC	A	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Brake Holding Torque - Dry	lbf-in (Nm)	354 (39.99)	354 (39.99)	354 (39.99)	354 (39.99)	354 (39.99)	354 (39.99)	354 (39.99)	354 (39.99)
Brake Engage/Disengage Time	ms	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Mechanical Time Constant (tm)	ms min Max	3.3 4.7	3.4 5.0	3.3 4.8	1.2 1.8	1.2 1.8	1.2 1.8	0.7 1.1	0.7 1.0
Electrical Time Constant (te)	ms	23.6	22.6	23.4	28.9	28.5	28.2	31.0	31.2
Damping Constant	lbf-in/krpm (Nm/krpm)	7.00 (0.79)	7.00 (0.79)	7.00 (0.79)	7.00 (0.79)	7.00 (0.79)	7.00 (0.79)	7.00 (0.79)	7.00 (0.79)
Friction Torque	lbf-in (Nm)	8.00 (0.90)	8.00 (0.90)	8.00 (0.90)	8.00 (0.90)	8.00 (0.90)	8.00 (0.90)	8.00 (0.90)	8.00 (0.90)
Bus Voltage	Vrms	230	400	460	230	400	460	400	460
Speed @ Bus Voltage	rpm	2400	2400	2400	2400	2400	2400	2400	2400
Motor Wire Insulation		Class 180 H							
Motor Stator Rating		Class 180 H							
Thermal Switch Case Temperature	°C	100							
Standard Connectors (O-option)	Motor	MS-3102-E20-8P							
	Feedback	MS-3112_E14-18P							
	Brake/Limit Sw	MS-3112-E12-8P							

For amplifiers with peak sinusoidal commutation $K_t = K_{trms}(0.707)$, $I_c = I_{crms}(0.707)$, $I_{pk} = I_{pkrms}(0.707)$

*The 3 stack lamination fits only the 10 inch or longer GSX50

Specifications subject to change without notice.

EXLAR
GSX Series Linear Actuators

GSX60 Mechanical and Electrical Specifications

		GSX60							
Nominal Backlash	in (mm)	0.004 (.10)							
Maximum Backlash (pre-loaded)	in (mm)	0.0							
Lead Accuracy	in/ft (mm/300 mm)	0.001 (.025)							
Maximum Radial Load	lb (N)	75 (337)							
Environmental Rating: Standard / Optional		IP65							
Motor Stator		138	158	168	238	258	268	358	368
RMS Sinusoidal Commutation									
Continuous Motor Torque	lbf-in	252.6	249.9	252.6	424.8	423.0	427.5	604.2	615.0
	(Nm)	(28.53)	(28.23)	(28.53)	(47.99)	(47.79)	(48.30)	(68.26)	(69.49)
Torque Constant (Kt)	lbf-in/A	12.6	21.8	25.2	12.6	21.8	25.2	21.4	25.2
(+/- 10% @ 25°C)	(Nm/A)	(1.42)	(2.46)	(2.84)	(1.42)	(2.46)	(2.84)	(2.42)	(2.84)
Continuous Current Rating: Greased	(IG) A	22.4	12.8	11.2	37.7	21.7	19.0	31.6	27.3
	Oiled (IL) A	44.9	25.6	22.4	75.5	43.4	38.0	63.1	54.6
Peak Current Rating	Amps	44.9	25.6	22.4	75.5	43.4	38.0	63.1	54.6
Trapezoidal Commutation									
Continuous Motor Torque	lbf-in	241.2	238.6	241.2	405.7	404.0	408.3	577.0	587.3
	(Nm)	(27.25)	(26.96)	(27.25)	(45.83)	(45.69)	(46.13)	(65.19)	(66.35)
Torque Constant (Kt)	lbf-in/A	9.8	17	19.6	9.8	17.0	19.6	16.7	19.6
(+/- 10% @ 25°C)	(Nm/A)	(1.11)	(1.92)	(2.22)	(1.11)	(1.92)	(2.22)	(1.88)	(2.22)
Continuous Current Rating: Greased	(IG) A	27.5	15.7	13.7	46.2	26.5	23.3	38.7	33.4
	Oiled (IL) A	54.9	31.4	27.5	92.4	53.0	46.5	77.3	66.9
Peak Current Rating	Amps	54.9	31.4	27.5	92.4	53.0	46.5	77.3	66.9
Motor Stator									
Voltage Constant (Ke)	Vrms/krpm	85.9	148.9	171.8	85.9	149.9	171.8	146.1	171.8
(+/- 10% @ 25°C)	Vpk/krpm	121.5	210.6	243.0	121.5	210.6	243.0	206.6	243.0
Pole Configuration		8	8	8	8	8	8	8	8
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	0.33	1.0	1.3	0.13	0.41	0.53	0.23	0.30
Inductance (L-L) (+/- 15%)	mH	8.3	24.8	33.0	3.9	11.8	15.8	7.5	10.3
Brake Inertia	lbf-in-sec ²	.0167	.0167	.0167	.0167	.0167	.0167	.0167	.0167
	(Kg-cm ²)	(18.86)	(18.86)	(18.86)	(18.86)	(18.86)	(18.86)	(18.86)	(18.86)
Brake Current at 24 VDC	Amps	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
Brake Holding Torque - Dry	lbf-in (Nm)	600 (67.8)	600 (67.8)	600 (67.8)	600 (67.8)	600 (67.8)	600 (67.8)	600 (67.8)	600 (67.8)
Brake Holding Torque - Oil Lubricated	lbf-in (Nm)	375 (42.38)	375 (42.38)	375 (42.38)	375 (42.38)	375 (42.38)	375 (42.38)	375 (42.38)	375 (42.38)
Brake Engage/Disengage Time	ms	250/50	250/50	250/50	250/50	250/50	250/50	250/50	250/50
Mechanical Time Constant (tm), ms	min	5.0	5.1	5.0	2.0	2.1	2.0	1.2	1.2
	max	5.6	5.7	5.6	2.3	2.3	2.3	1.3	1.3
Electrical Time Constant (te), ms		25.4	24.6	25.1	29.4	29.1	29.8	33.0	34.2
Damping Constant	lbf-in/krpm	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
	(Nm/krpm)	(3.16)	(3.16)	(3.16)	(3.16)	(3.16)	(3.16)	(3.16)	(3.16)
Friction Torque	lbf-in/krpm	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
	(Nm/krpm)	(4.52)	(4.52)	(4.52)	(4.52)	(4.52)	(4.52)	(4.52)	(4.52)
Bus Voltage	Vrms	230	400	460	230	400	460	400	460
Speed @ Bus Voltage	rpm	2400	2400	2400	2400	2400	2400	2400	2400
Motor Wire Insulation		Class 180 H							
Motor Stator Rating		Class 180 H							
Thermal Switch Case Temperature	°C	100							
Standard Connectors (O-option)	Motor	MS-3102-E24-10P							
	Feedback	MS-3112_E14-18P							
	Brake/Limit Sw	MS-3112-E12-8P							

For amplifiers with peak sinusoidal commutation Kt = Ktrms/(0.707), Ic = Icrms/(0.707), Ipk = Ipkrms/(0.707)

Specifications subject to change without notice.

GSX Series – System Configuration

GSX Series actuators include an integrated brushless servo motor. Exlar's unique design gives users a variety of the feedback configuration options so

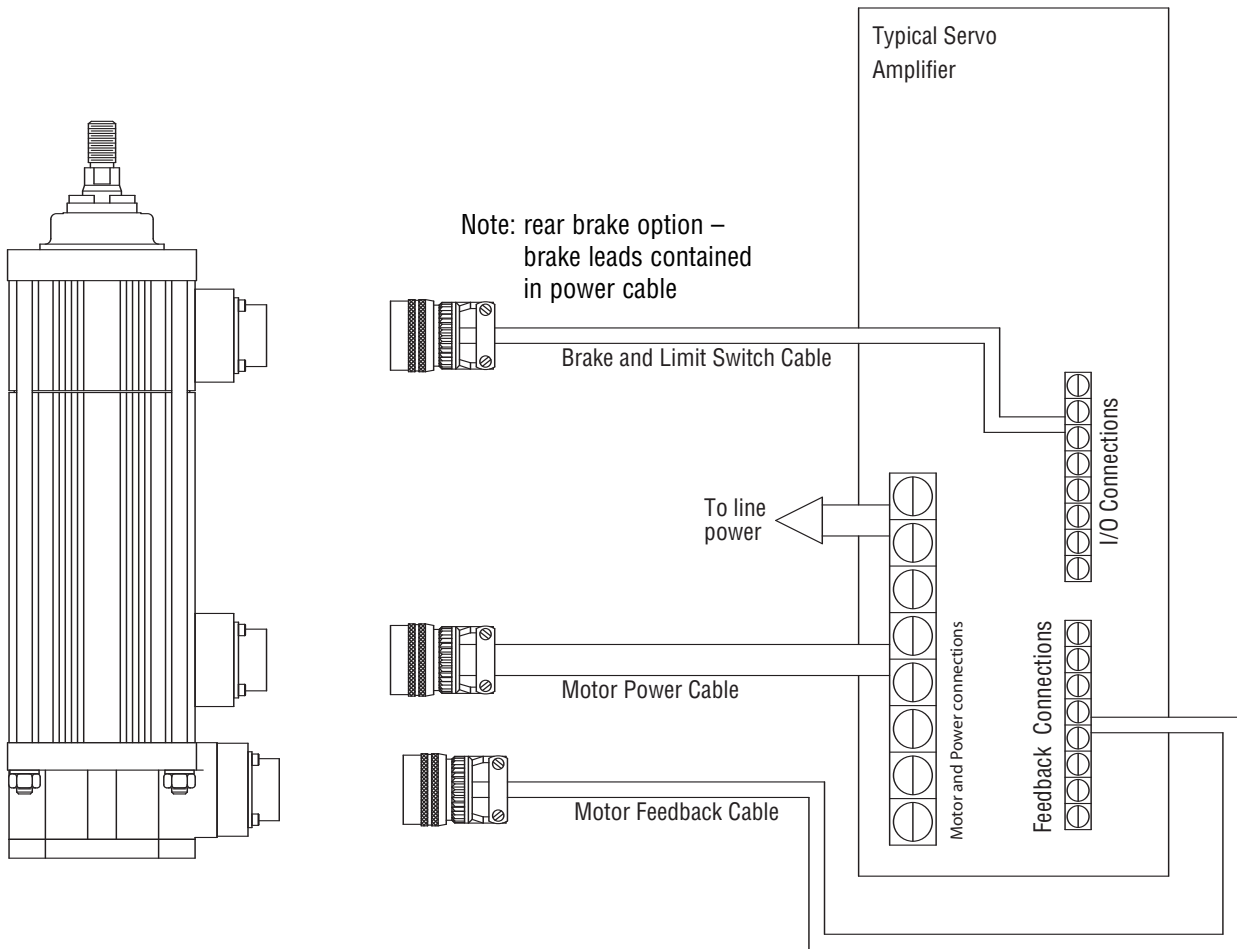
GSX units can be powered by almost any brushless motor amplifier on the market.

This flexibility means GSX actuators can be incorporated into today's highest performance single and multi-axis motion control systems. In anything from food and beverage

packaging, to multi-axis turning centers, to aircraft assembly, GSX Series units show incredible performance and durability.

The schematic below shows the typical connections for a single axis system with actuator and servo amplifier.

The Brake and Limit Switch Options for the GSX actuators are mutually exclusive. Only one of the two options is available on a GSX series actuator. They utilize the same cable, so connections need be made only for the option being used.



Drawings subject to change. Consult Exlar for certified drawings.

GSX Series Cable and Connector Selection

This section provides you with cable part numbers for operation of your GSX Series actuators with both Exlar's and other manufacturers' servo drives.

The "O" connector option on the GSX Series of actuators provides for an actuator with Exlar's standard MS style connectors, compatible with Exlar's standard cables.

The "M" connector option on the GSX series of actuators provides for an actuator configured with connectors that allow the end user to purchase the feedback cable or power and feedback cables from the manufacturer of their servo amplifier, thus eliminating the headaches and confusion that can arise from power and feedback wiring.

Depending on actuator size, voltage, and cable availability from the amplifier manufacturer, some cables must be obtained from Exlar.

For amplifier manufacturers who use standard style military connectors, with molded and shielded

cables, the feedback cable can be purchased from the amplifier manufacturer, and the power cable purchased from Exlar. The Exlar power cables with the PCx-MC-xxx model numbers are molded and shielded and provide a good match with the cables provided by the amplifier manufacturer.

For some amplifier manufacturers who utilize a different style of connector, when the "M" option is available from Exlar, both the connectors will be configured to allow the feedback and power cables to be purchased from the amplifier manufacturer. Consult Exlar for details on all connector configurations.

Cables For Actuators With Exlar Standard "O" Connections			
Power Cables	Connector-ization	Description	Standard Exlar Power Cable
GSX20 GSX30	O	Standard Power, Molded, Shielded	PC6-MC-xxx
	O	Standard Power, Anodized	PC1-AC-xxx
	E	Standard Power, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	PC1-EC-xxx
GSX40 GSX50	O	Standard Power, Molded, Shielded	PC7-MC-xxx
	O	Standard Power, Anodized	PC7-AC-xxx
	E	Standard Power, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	PC7-EC-xxx
GSX60	O	Standard Power, Anodized	PC3-AC-xxx
	E	Standard Power, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	PC3-EC-xxx
Feedback Cables			Standard Exlar Feedback Cable
GSX20 GSX30	O	Standard Resolver Feedback, Anodized	RC1-AC-xxx
	O	Standard Encoder Feedback, Anodized	EC1-AC-xxx
	E	Standard Resolver Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	RC1-EC-xxx
	E	Standard Encoder Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	EC1-EC-xxx
GSX40 GSX50	O	Standard Resolver Feedback, Anodized	RC1-AC-xxx
	O	Standard Encoder Feedback, Anodized	EC1-AC-xxx
	E	Standard Resolver Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	RC1-EC-xxx
	E	Standard Encoder Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	EC1-EC-xxx
GSX60	O	Standard Resolver Feedback, Anodized	RC1-AC-xxx
	O	Standard Encoder Feedback, Anodized	EC1-AC-xxx
	E	Standard Resolver Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	RC1-EC-xxx
	E	Standard Encoder Feedback, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	EC1-EC-xxx
Brake Cables			Standard Exlar Brake Cable
GSX20 GSX30	O	Standard Brake Cable, Anodized	BC1-AC-xxx
	E	Standard Brake Cable, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	BC1-EC-xxx
GSX40 GSX50	O	Standard Brake Cable, Anodized	BC1-AC-xxx
	E	Standard Brake Cable, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	BC1-EC-xxx
GSX60	O	Standard Brake Cable, Anodized	BC1-AC-xxx
	E	Standard Brake Cable, Electroless Nickel, Environmentally Sealed, EMI/RFI Shielded	BC1-EC-xxx

Specifications subject to change without notice.

Cables For Actuators With “M” Connectors (standard lengths of 15’, 25’ and 50’)

Exlar Actuator	Amplifier Manufacturer and Type	Exlar Feedback Callout	Power Cable Manufacturer	Power Cable Part Number	Feedback Cable Manufacturer	Feedback Cable Part Number
GSX20 GSX30	Allen Bradley Ultra 100/200	AB1	Exlar	PC6-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	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 DIA Series	IN1	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIA Series	IN2	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIA 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)
	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)	
GSX40 GSX50	Allen Bradley Ultra 100/200	AB1	Exlar	2090-UXNPAMP-14Sxx – GSX40 only 2090-UXNPAMP-10Sxx – GSX50 only	Allen Bradley	9101-1366-xxx
	Allen Bradley Ultra 3000/5000	AB7*	Allen Bradley	2090-UXNPAMP-14Sxx – GSX40 only 2090-UXNPAMP-10Sxx – GSX50 only	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 DIA Series	IN1	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIA Series	IN2	Bosch/Rexroth Indramat	IKG4077	Bosch/Rexroth Indramat	IKS4001
	Bosch/Rexroth Indramat DIA 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 (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)
	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)	
GSX60	As in tables above for GSX40/GSX50	As in tables above for GSX40/GSX50	Exlar	PC3-AC-xxx	As in tables above for GSX40/GSX50	As in tables above for GSX40/GSX50
	Allen Bradley Ultra 3000/5000	AB4/AB5/AB7*	Allen Bradley	2090-UXNPAMP-10Sxx	Allen Bradley	2090-UXNFBMP-Sxx

* Brake Cable AB4/AB5 and AB7, 2090-UXNPAMP-18Sxx

** 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.

High Power/Minimal Maintenance Operation Guidelines

Exlar GSX series actuators can be lubricated with either grease or oil. All are shipped from the factory fully greased and are capable of functioning for many thousands of hours between re-greasing. Typically, greased lubrication is preferred for lower speed or intermittent duty applications. In these situations, you simply mount the actuator, connect the servo amplifier, and run.

However, many GSX Series actuators are deployed into applications

involving high speed, high force, or both. To provide the cooling required when operating at these high power levels and/or to eliminate periodic re-greasing, all GSX units have another built-in feature. They are designed with an internal circulation path and the portings necessary for customers to convert from grease by connecting a recirculation oil system. This feature makes GSX units the only all-electric actuators on the market capable of true continuous-duty performance in moderate and high power applications when heat is an issue.

The conversion to externally supplied oil is simple. Identify which port will be lowest when the actuator is mounted. That will become the oil supply side. *(For optimum cooling it is important that GSX*

actuators are mounted so the high-side port is at least above the unit's centerline, preferably in the top quarter region. This assures that the stator windings receive the oil's cooling benefits.) Just connect your oil lines and you're done. Residual grease will be flushed out and filtered during initial operation.

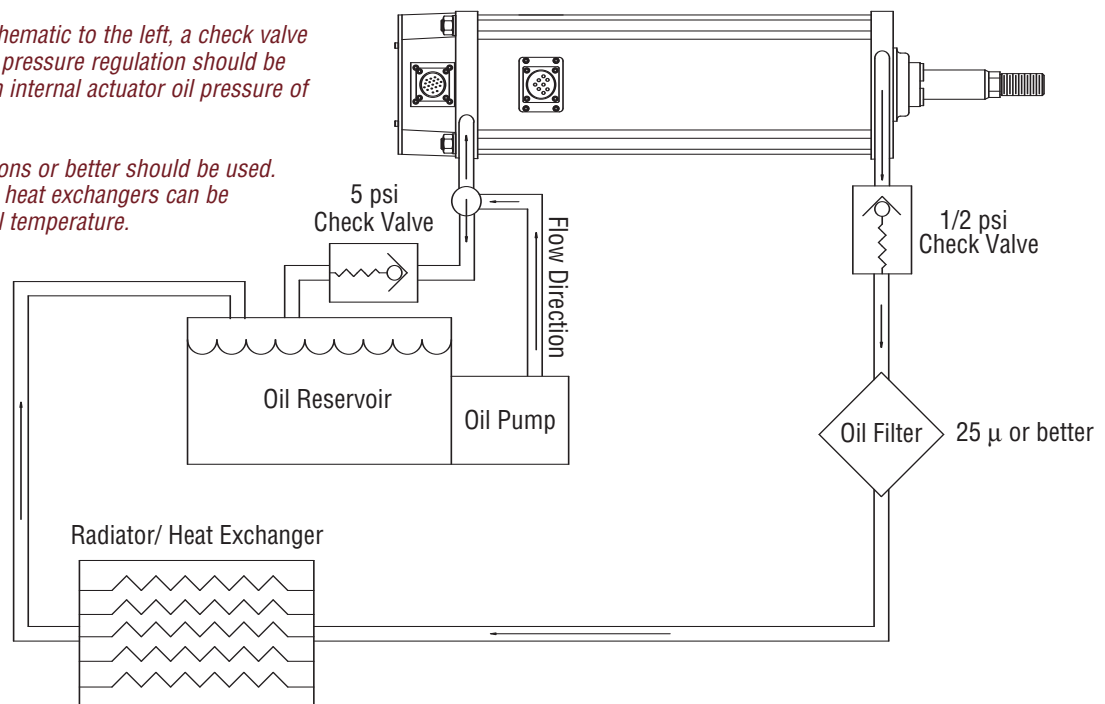
A typical oil cooling system is shown below. Whenever application requirements are such that the RMS current requirement exceeds the continuous current rating of the GSX motor, oil cooling should be used to keep case temperatures below their 85°C maximum specification. For very high speed applications, consult Exlar for oil routing recommendations.

Simple Oil System Schematic

As shown in the schematic to the left, a check valve or other method of pressure regulation should be used to maintain an internal actuator oil pressure of 5 psi.

Filtering of 25 microns or better should be used. Simple radiators or heat exchangers can be used to maintain oil temperature.

Locate oil system as close to actuator as possible. Use as large as possible oil line to minimize any possibility of flow restriction.



Exlar recommends the use of petroleum based gear oils with EP additive. An ISO 100 grade is suitable for most applications. Examples of this type of oil are: Mobil Mobilgear, Exxon Spartan EP, Shell Omala and Texaco Meropa. Oils meeting the FDA's food grade specifications are also available such as Mobil DTE FM 32.

Oil Cooling and Lubrication

Oil lubrication will extend the life of the actuator and improve its efficiency. More importantly, oil is required in high power applications

for cooling. In applications where the RMS current exceeds I_G (see electrical specs on pages 13-17), oil lubrication is required in order to maintain the case temperature

below its maximum of 85°C¹. When such oil lubrication is required, you can determine oil flow rates and case temperatures from this information:

Actuator Load Constants: $K_L = \left(\frac{^\circ\text{C} \times \text{Gal}}{\text{Hour}} \right)$

K_L GSX20	=	40
K_L GSX30	=	70
K_L GSX40	=	95
K_L GSX50	=	125
K_L GSX60	=	260

Application Load Factor: F_L

$$F_L = \left(\frac{I_{\text{rms}}}{I_G} \right)^2$$

Where:
 I_{rms} = actual application current
 I_G = actuator current rating from specifications (see pages 13-17)

Use this relationship to determine oil flow requirements: W

$$W = K_L \frac{F_L}{\Delta T} \quad \text{Where} \quad \Delta T = T_{\text{CASE}} - T_{\text{OIL}}$$

Consider The Following Examples:

CASE 1:

A GSX30-238 requires 4 amps of RMS current to perform the required application. The incoming oil temperature is 45°C, and we desire to maintain the actuator at it's maximum case temperature of 85°C.

$$F_L = (4/3.4)^2 = 1.38 \quad W = [(1.38 \times 70)/(85 - 45)] = 2.415 \text{ GAL / HOUR}$$

CASE 2:

A GS45 requires 12 amps of RMS current to perform the required application. The incoming oil temperature is 45°C, and we desire to maintain the actuator at it's maximum case temperature of 85°C.

$$F_L = (12/8)^2 = 2.25 \quad W = [(2.25 \times 125) / (85 - 45)] = 7.0 \text{ GAL / HOUR}$$

1. GSX Series actuators can be ordered with features that allow them to achieve case temperatures of 150°C. Inquire with Exlar's application engineers or local representative for details.

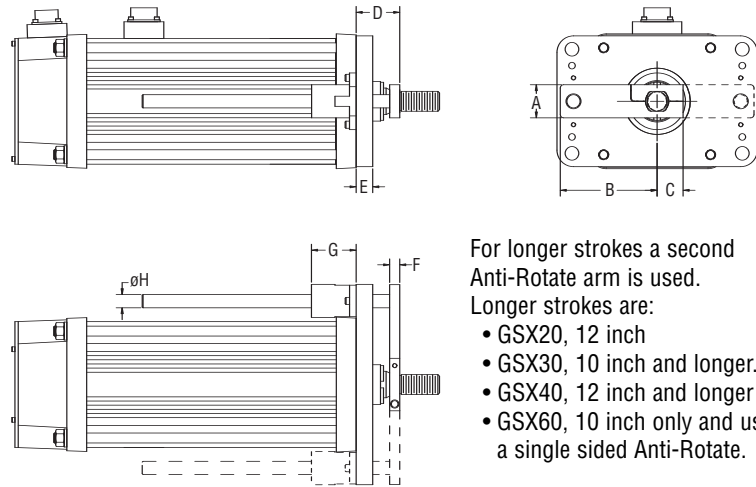
GSX Series Linear Actuator Anti-rotation Option

The unique design of the GSX Series of linear actuators permits the extending rod to rotate. This simplifies actuator setup by allowing the user to rotate the rod and thread it in and out of the actuator for mechanical attachment or system testing.

However, this feature also requires that once setup and testing are completed, the rod be kept from rotating so proper linear motion will be maintained. In most applications the actuator's load is coupled to linear bearings, or some other support device. In these cases the load cannot rotate, and a separate anti-rotation system is not needed.

For applications in which the load is free to rotate, Exlar offers the anti-rotation systems shown below. Shorter GSX units use an anti-rotation arm on one side of the actuator. Longer strokes (defined above right) use rods on both sides.

Anti-rotation Option GSX20, GSX30, GSX40 and GSX60

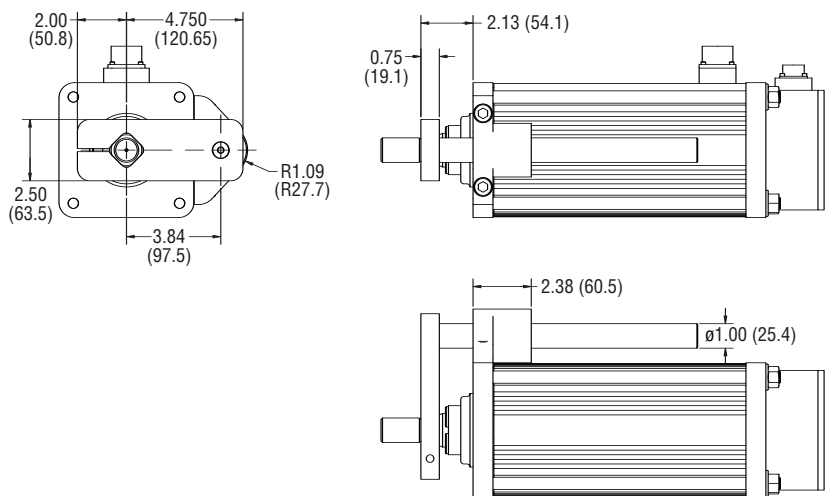


For longer strokes a second Anti-Rotate arm is used.
 Longer strokes are:

- GSX20, 12 inch
- GSX30, 10 inch and longer.
- GSX40, 12 inch and longer
- GSX60, 10 inch only and uses a single sided Anti-Rotate.

Dims in inches (mm)	GSX20	GSX30	GSX40	GSX60
A	0.60 (15.2)	0.79 (20.1)	1.25 (31.8)	1.75 (44.5)
B	1.81 (46.0)	2.54 (64.5)	3.78 (96.0)	5.79 (147)
C	0.54 (13.7)	0.71 (18.0)	0.98 (24.9)	1.55 (39.4)
D	1.00 (25.4)	1.30 (33.0)	1.64 (41.7)	1.94 (49.3)
E	0.44 (11.2)	0.44 (11.2)	0.63 (16.0)	0.75 (19.1)
F	0.28 (7.11)	0.32 (8.13)	0.38 (9.65)	0.50 (12.7)
G	0.31 (7.87)	1.69 (42.9)	1.69 (42.9)	2.81 (71.4)
øH	0.37 (9.40)	0.50 (12.7)	0.50 (12.7)	1.00 (25.4)

Anti-rotation Option GSX50



Drawings subject to change. Consult Exlar for certified drawings.

GSX Series Travel Options

PF = Preloaded Follower

This option offers a true zero backlash follower for the GSX 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.

EB = Electric Brake

This option provides an internal holding brake for the GSX20, 30, 40 & 60 actuators. The brake is spring activated and electrically released.

RB = Rear Electric Brake

This option provides an internal holding brake for the GSX50 actuator. The brake is spring activated and electrically released.

ES = Internal End of Travel Switches

This option allows for two internal end of travel switches to be included with the GSX Series actuator. These switches provide end of travel indication to the controller and are not adjustable. See page 31 for details.

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

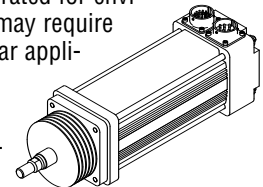
The XT Option can be used to specify various special travel options on the GSX Series of Linear Actuators. Because this option can be used to specify many things, it is important that an order including the -XT option spell out in detail, the exact options being selected by the including of the -XT in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

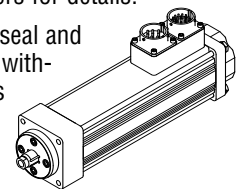
High Temp Protective Bellows

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.



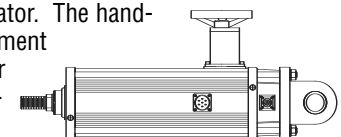
Splined Main Rod

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.



Manual Drive Handwheel

This option provides for a manual drive handwheel on the side of the actuator. The handwheel has an engagement/disengagement lever which allows for disengagement of the handwheel during operation. This engagement/disengagement lever is not tied to the operation of the motor and requires that the user guarantee its disengagement before operating the motor. Not available on GSX20.



L1, L2, L3 = Adjustable External Travel Switches

This option allows up to 3 external switches to be included with the GSX Series Actuator. These switches provide travel indication to the controller and are adjustable (must purchase anti-rotate for this option). See page 32 for details.

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	GSX20
-30	3000 rpm	GSX30, GSX40
-24	2400 rpm	GSX50, GSX60
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 GSX-30-03-01-OSM-AD1-118-30 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.

Absolute Linear 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.

Motor Options

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

- 118** = 1 stack, 115 Vrms, 8 Pole, Class 180 H
- 138** = 1 stack, 230 Vrms, 8 Pole, Class 180 H
- 158** = 1 stack, 400 Vrms, 8 Pole, Class 180 H
- 168** = 1 stack, 460 Vrms, 8 Pole, Class 180 H
- 218** = 2 stack, 115 Vrms, 8 Pole, Class 180 H
- 238** = 2 stack, 230 Vrms, 8 Pole, Class 180 H
- 258** = 2 stack, 400 Vrms, 8 Pole, Class 180 H
- 268** = 2 stack, 460 Vrms, 8 Pole, Class 180 H
- 318** = 3 stack, 115 Vrms, 8 Pole, Class 180 H
- 338** = 3 stack, 230 Vrms, 8 Pole, Class 180 H
- 358** = 3 stack, 400 Vrms, 8 Pole, Class 180 H
- 368** = 3 stack, 460 Vrms, 8 Pole, Class 180 H

Rod End Attachments

- Rear Clevis Pin**
- Spherical Rod Eye**
- Rod Eye**
- Rod Clevis**

See drawings on pages 33-36.

Attachments ordered separate from actuator.

Housing Options

FG = Food Grade Epoxy

This option provides for an actuator coated with FDA approved white epoxy.

EN = Electroless Nickel Plating

This option provides for an actuator with electroless nickel plating.

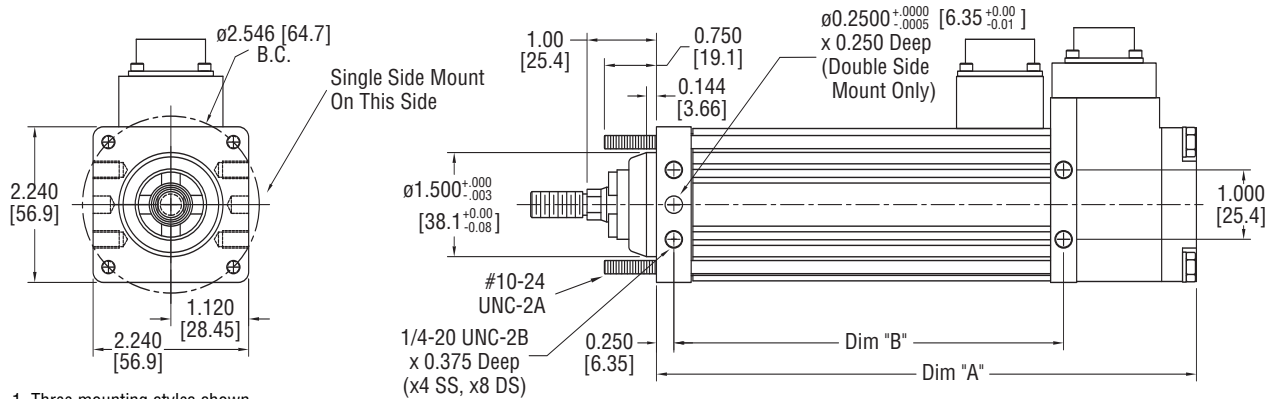
SS = Stainless Steel Housing

This option provides an actuator with all stainless steel construction. Housing dimensions for this option are not equal to the standard housing. Please inquire with Exlar for dimensions.

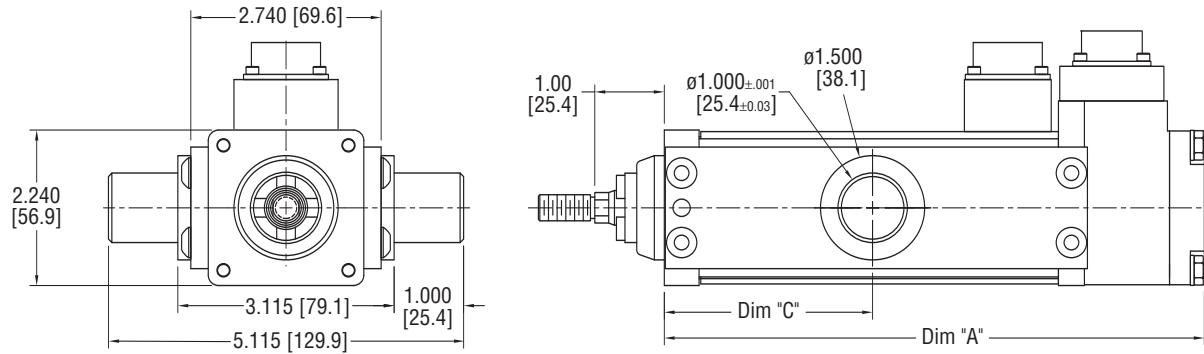
XH = Special Housing Option

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.

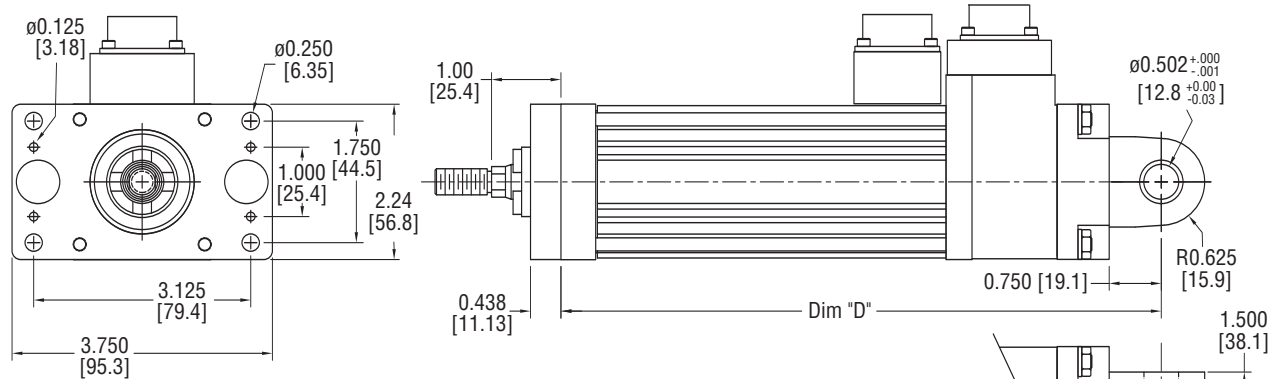
GSX20 Single, Double Side Mounts or Extended Tie Rod Mount



GSX20 Side Trunnion Mount



GSX20 Rear Clevis Mount or Front Flange Mount



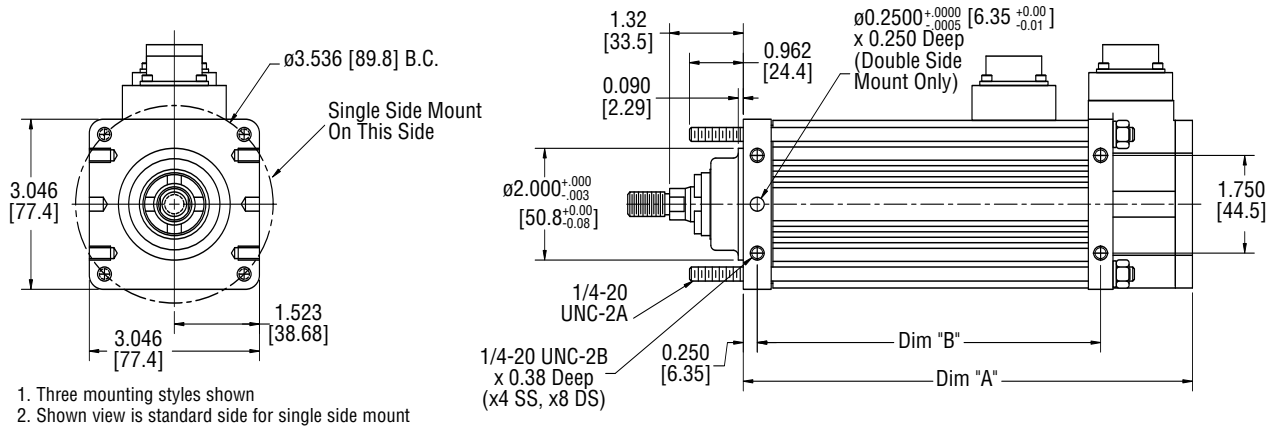
Dim	3 inch (mm) stroke	6 inch (mm) stroke	10 inch (mm) stroke	12 inch (mm) stroke
A	7.775 (197.5)	10.775 (273.7)	14.775 (375.3)	16.775 (426.1)
B	5.613 (142.6)	8.613 (218.8)	12.613 (320.4)	14.613 (371.2)
C	3.000 (76.2)	6.000 (152.4)	10.000 (254.4)	12.000 (304.8)
D	8.775 (222.9)	11.775 (299.1)	15.775 (400.7)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

Note: Add 1.784 Inches to Dims "A,B,& D" if ordering an Electric Brake or Internal End of Travel Switches.

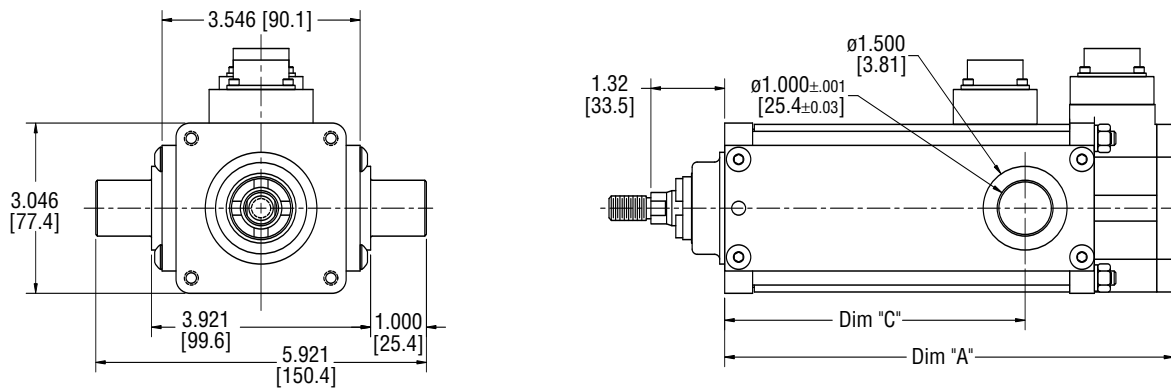
- Two mounting styles shown
- With flange mount, dimension A is equivalent to top two drawings

Drawings subject to change. Consult Exlar for certified drawings.

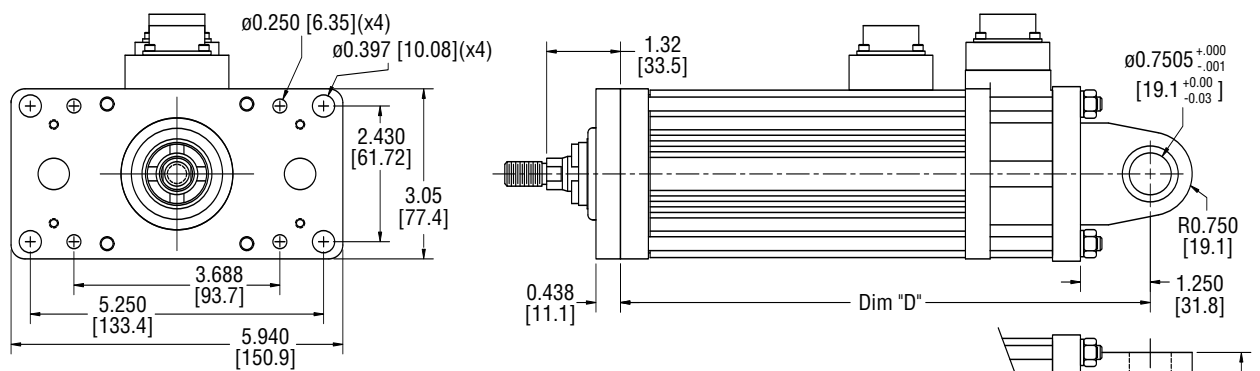
GSX30 Single, Double Side Mounts or Extended Tie Rod Mount



GSX30 Side Trunnion Mount



GSX30 Rear Clevis Mount or Front Flange Mount



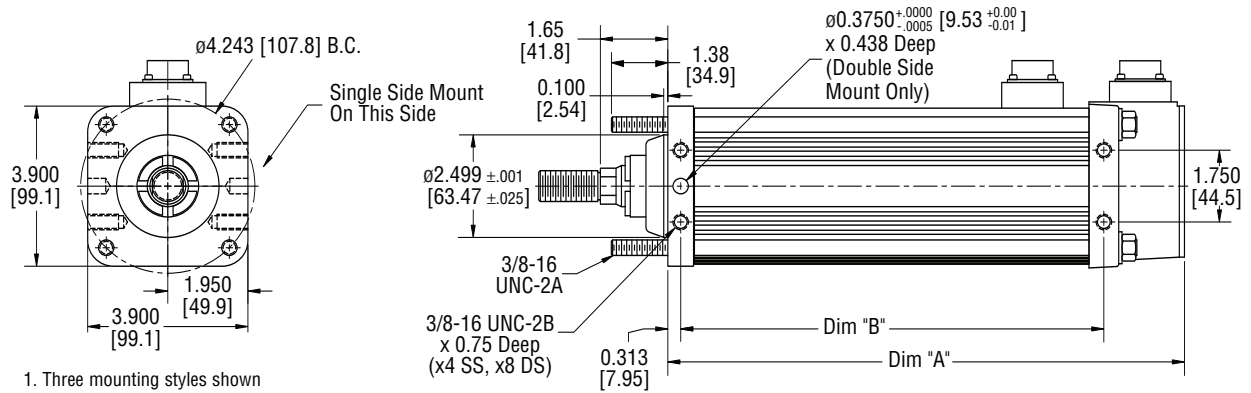
Dim	3 inch (mm) stroke	6 inch (mm) stroke	10 inch (mm) stroke	14 inch (mm) stroke	18 inch (mm) stroke
A	8.041 (204.2)	10.514 (267.1)	15.013 (381.3)	19.013 (482.9)	23.013 (584.5)
B	6.147 (156.1)	8.620 (218.9)	13.119 (333.3)	17.119 (434.8)	21.119 (536.4)
C	5.380 (136.7)	8.006 (203.4)	10.000 (254.0)	14.000 (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 1.773 Inches to Dims "A,B,&D" if ordering an Electric Brake or Internal End of Travel Switches.

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.

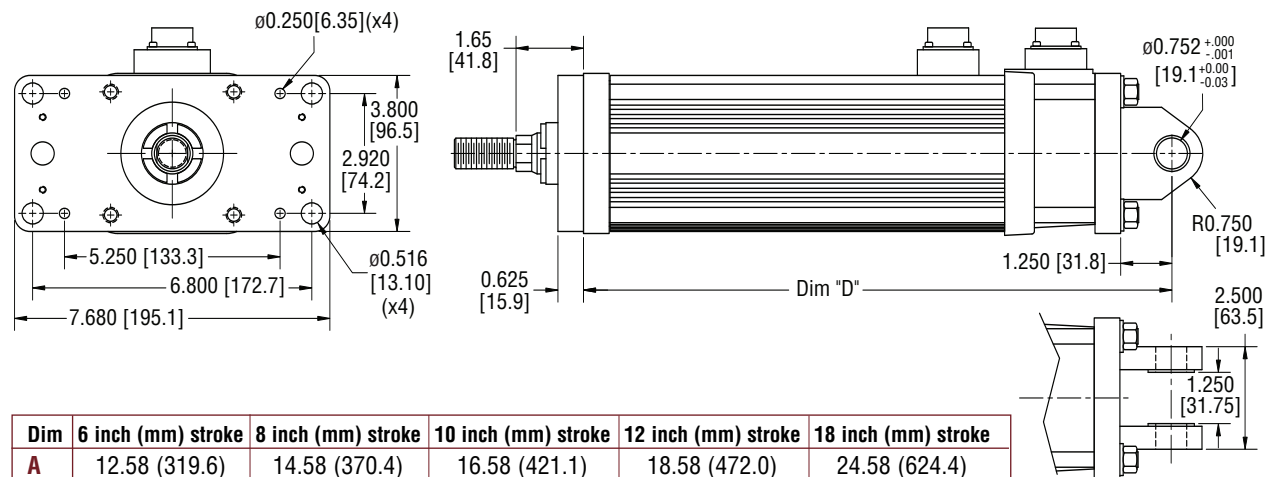
GSX40 Single, Double Side Mounts or Extended Tie Rod Mount



GSX40 Side Trunnion Mount



GSX40 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)

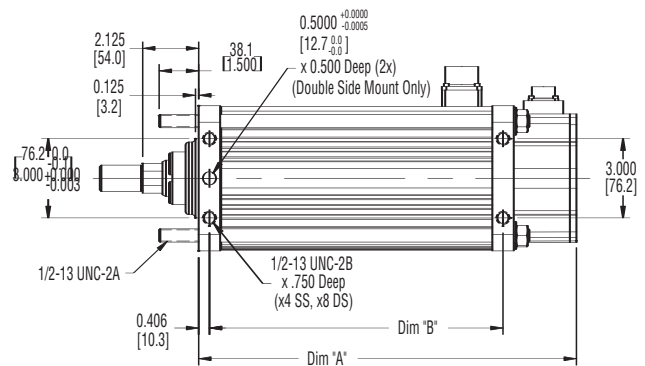
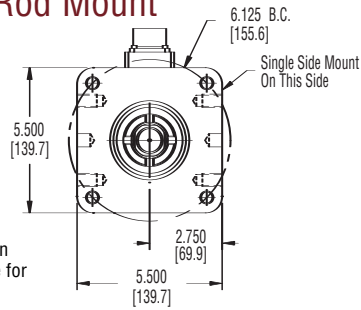
Note: Add 2.330 Inches to Dims "A,B,&D" if ordering an Electric Brake or Internal End of Travel Switches.

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

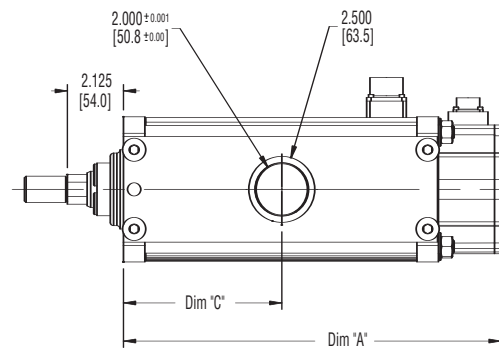
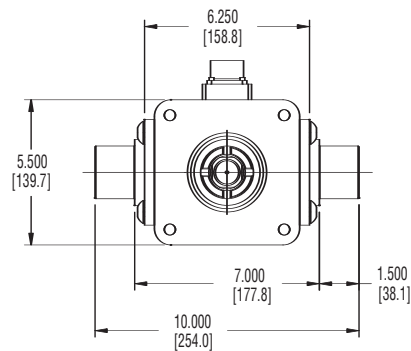
Drawings subject to change. Consult Exlar for certified drawings.

GSX50 Single, Double Side Mounts or Extended Tie Rod Mount

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

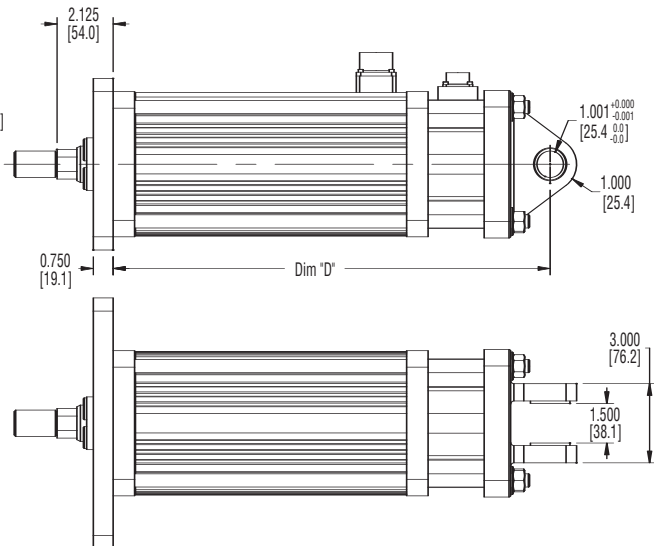
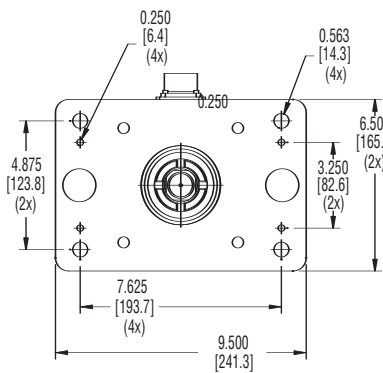


GSX50 Side Trunnion Mount



GSX50 Rear Clevis Mount or Front Flange Mount

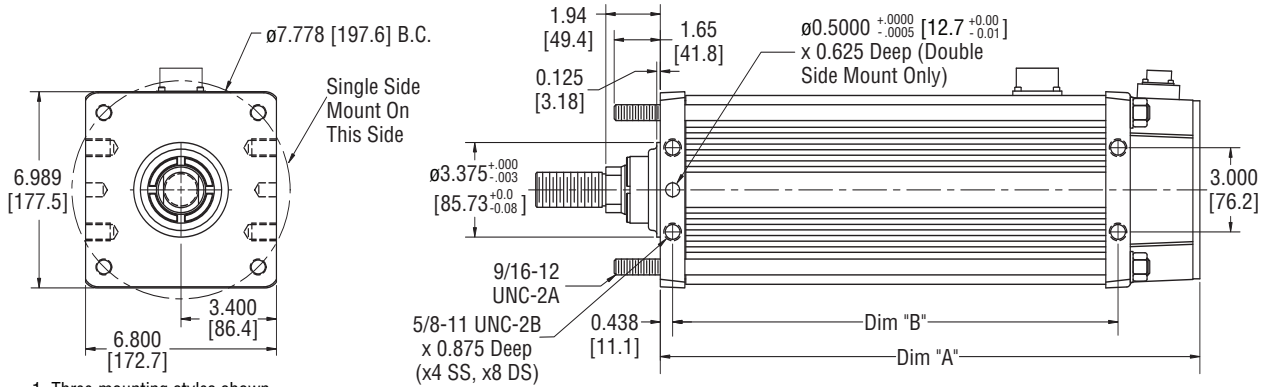
1. Two mounting styles shown
2. With flange mount, dimension A is equivalent to top two drawings



Dim	6 inch (mm) stroke	10 inch (mm) stroke	14 inch (mm) stroke
A	14.31 (363.5)	18.31 (465.1)	22.31 (566.7)
B	11.12 (282.4)	15.12 (384.0)	19.12 (485.6)
C	6.00 (152.4)	10.00 (254.0)	14.00 (355.6)
D	16.56 (420.6)	20.56 (522.2)	24.56 (623.8)

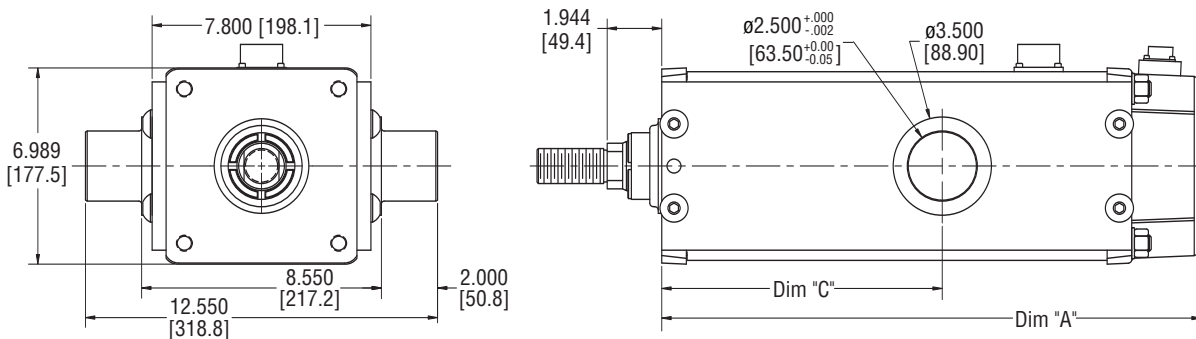
Note: Add 2.498 Inches to Dims "A,B,&D" if ordering an Electric Brake or Internal End of Travel Switches.

GSX60 Single, Double Side Mounts or Extended Tie Rod Mount

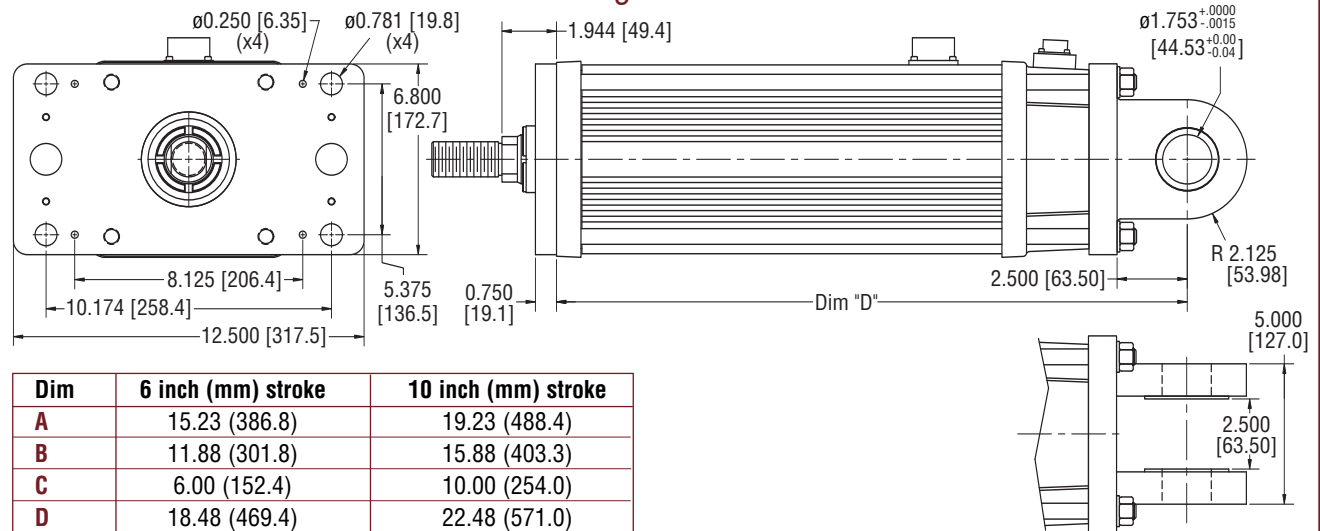


1. Three mounting styles shown
2. Shown view is standard side for single side mount

GSX60 Side Trunnion Mount



GSX60 Rear Clevis Mount or Front Flange Mount



Dim	6 inch (mm) stroke	10 inch (mm) stroke
A	15.23 (386.8)	19.23 (488.4)
B	11.88 (301.8)	15.88 (403.3)
C	6.00 (152.4)	10.00 (254.0)
D	18.48 (469.4)	22.48 (571.0)

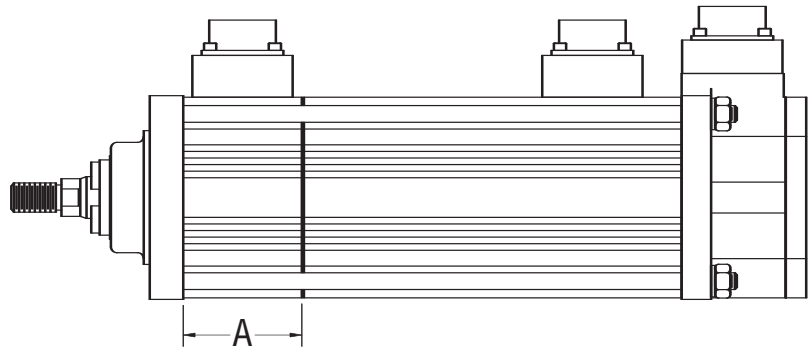
Note: Add 3.575 Inches to Dimensions "A,B,&D" if ordering an Electric Brake or Internal End of Travel Switches.

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.

GSX20, GSX30, GSX40 & GSX60 Brake and Internal Limit Switch Extension Options

Note: The stroke limitation from the limit switch option IS NOT MECHANICAL. It represents the position at which the switches will activate. The stroke limitation for the brake is a mechanical limitation. The brake and limit switch options are mutually exclusive and thus are not available in the same unit. Drawing and specifications subject to change without notice.

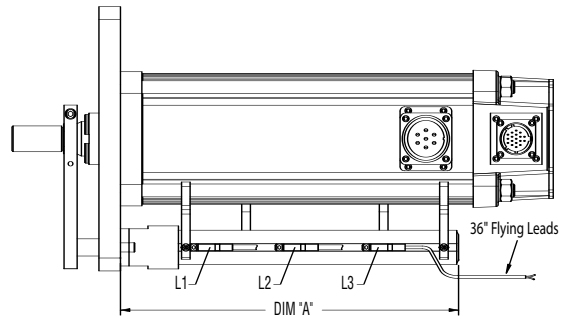
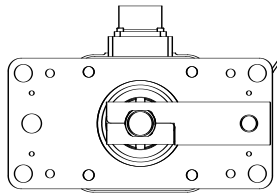
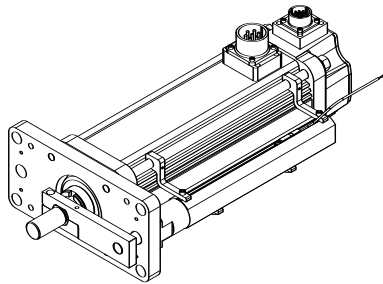
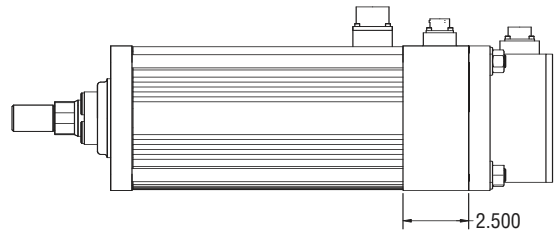


Actuator	A - Limit Switch Extension Length	Stroke Length Reduction
GSX20	1.784" (45.21 mm)	0.4" (10.1 mm)
GSX30	1.773" (44.96 mm)	0.4" (10.1 mm)
GSX40	No internal limit switch	
GSX60	3.575" (90.81 mm)	0.4" (10.1 mm)
Actuator	A - Brake Extension Length	Stroke Length Reduction
GSX20	1.784" (45.21 mm)	NA
GSX30	1.773" (44.96 mm)	NA
GSX40	2.330" (59.18 mm)	NA
GSX60	3.575" (90.81 mm)	NA

GSX20, GSX30, GSX40, GSX50 & GSX60 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
GSX20	5.515 (140.1)	8.515 (216.3)	NA NA	14.515 (368.7)	NA NA	NA NA
GSX30	6.932 (176.1)	9.832 (249.7)	13.832 (351.3)	15.832 (402.1)	17.832 (452.9)	21.832 (554.5)
GSX40	NA NA	9.832 (249.7)	13.832 (351.3)	15.832 (402.1)	17.832 (452.9)	21.832 (554.5)
GSX50	NA NA	11.667 (296.3)	NA NA	NA NA	19.667 (499.5)	23.667 (601.1)
GSX60	NA NA	NA NA	14.461 (367.3)	NA NA	NA NA	NA NA

GSX50 Brake Extension Option



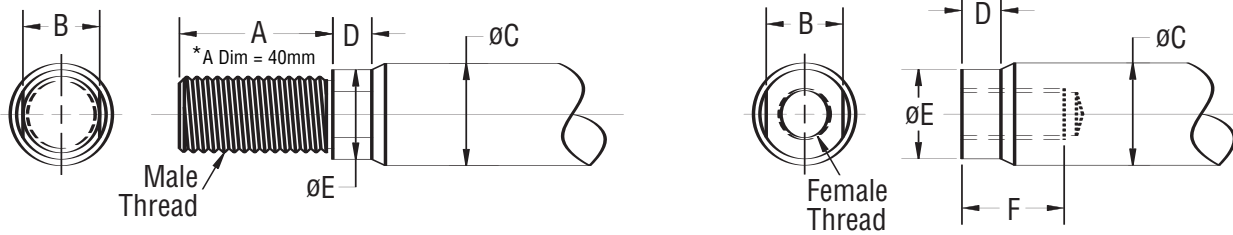
The external limit switch option for the GSX Series of linear actuators provides the user with 1, 2 or 3 externally mounted adjustable switches for use as the end of travel limit switches or home position sensors.

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

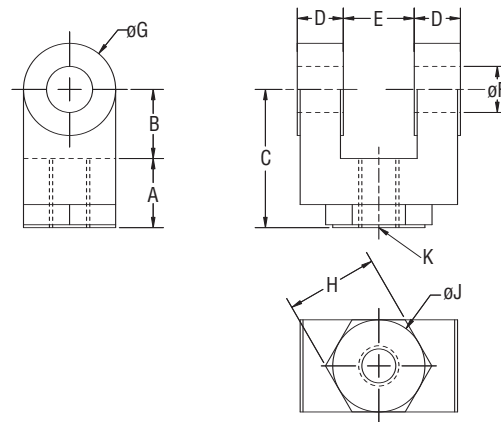
Actuator Rod End Options



	A	B	øC	D	øE	F	Male U.S.	Male Metric	Female U.S.	Female Metric
GSX20	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
GSX30	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
GSX40	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
GSX50	1.500 (38.1)	0.750 (19.05)	1.000 (25.4)	0.381 (9.7)	0.875 (22.2)	1.000 (25.4)	1 - 14 UNS - 2A	M27X2	1 - 14 UNS - 2B	M24X2
GSX60	2.500 (63.5)	1.250 (31.8)	1.750 (44.5)	0.550 (14.0)	1.625 (41.3)	1.750 (44.5)	1 1/4 - 12 UNF - 2A	M30X2	7/8 - 14 UNF - 2B	M25X1.5

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

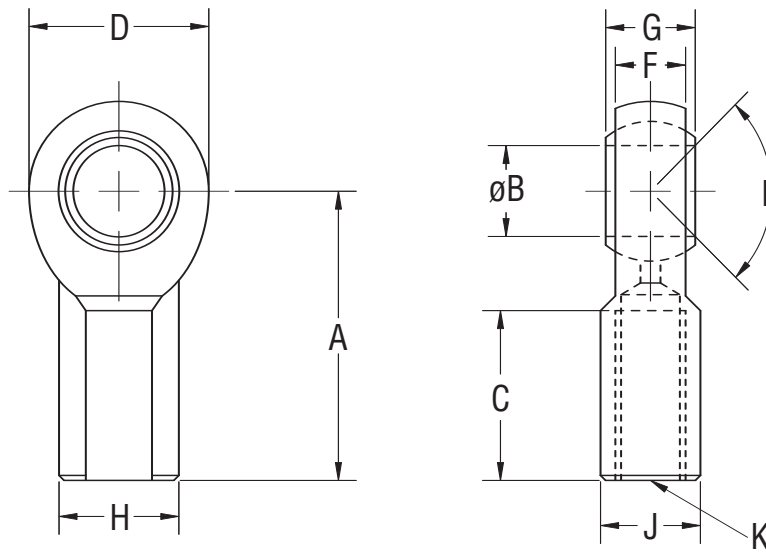
Rod Clevis Dimensions



	GSX20	GSX30	GSX40	GSX50	GSX60
	RC038	RC050	RC075	RC100	RC138
A	0.787" (20 mm)	0.75" (19.1 mm)	1.125" (28.58 mm)	1.625" (41.2mm)	2.00" (50.8 mm)
B	0.787" (20 mm)	0.75" (19.1 mm)	1.25" (31.75 mm)	1.500" (38.1 mm)	2.125" (53.98 mm)
C	1.574" (40 mm)	1.50" (38.1 mm)	2.375" (60.3 mm)	3.125" (79.4 mm)	4.125" (104.78 mm)
D	.575" (14.6 mm)	0.50" (12.7 mm)	0.625" (15.88 mm)	.750" (19.1 mm)	1.00"(25.4 mm)
E	0.375" (9.5 mm)	0.765" (19.43 mm)	1.265" (32.13 mm)	1.515" (38.5 mm)	2.032" (51.6 mm)
øF	0.375" (9.5 mm)	0.50" (12.7 mm)	0.75" (19.1 mm)	1.000" (25.4 mm)	1.375" (34.93 mm)
øG	0.75" (19.1 mm)	1.00" (25.4 mm)	1.50" (38.1 mm)	2.000" (50.8 mm)	2.75" (69.85 mm)
H	NA	1.00" (25.4 mm)	1.25" (31.75 mm)	1.500" (38.1 mm)	2.00" (50.8 mm)
øJ	NA	1.00" (25.4 mm)	1.25" (31.75 mm)	1.500" (38.1 mm)	2.00" (50.8 mm)
K	3/8-24	7/16-20	3/4-16	1-14	1-1/4 - 12

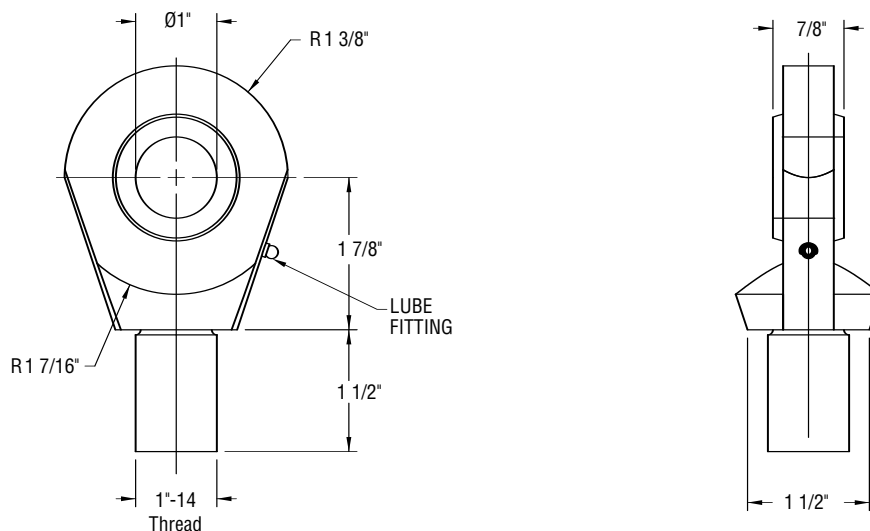
Drawings subject to change. Consult Exlar for certified drawings.

Spherical Rod Eye Dimensions



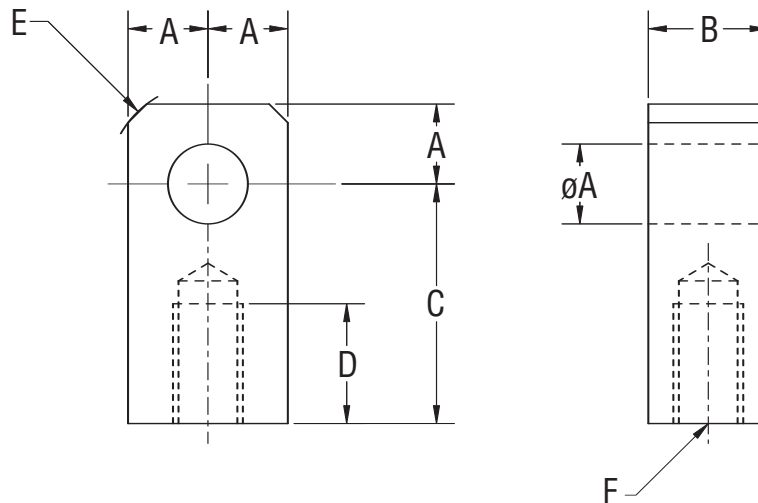
	GSX20	GSX30	GSX40	GSX50
	SRM038	SRM044	SRM075	SRF100
A	1.625" (41.3mm)	1.81" (46.0 mm)	2.88" (73.2 mm)	
ØB	.375" (9.525mm)	0.438" (11.13 mm)	0.75" (19.1 mm)	
C	.906" (23.0mm)	1.06" (26.9 mm)	1.72" (43.7 mm)	
D	1.0" (25.6mm)	1.13" (28.7 mm)	1.75" (44.5 mm)	
E	12 deg	14 deg	14 deg	
F	.406" (10.3mm)	0.44" (11.1 mm)	0.69" (17.5 mm)	
G	.500" (12.7mm)	0.56" (14.2 mm)	0.88" (22.3 mm)	
H	.688" (17.7mm)	0.75" (19.1 mm)	1.13" (28.7 mm)	
J	.562" (14.3mm)	0.63" (16.0 mm)	1.00" (25.4 mm)	
K	3/8-24	7/16-20	3/4-16	

See GSX50 Spherical Rod Eye drawing below. Requires female rod end.



Drawings subject to change. Consult Exlar for certified drawings.

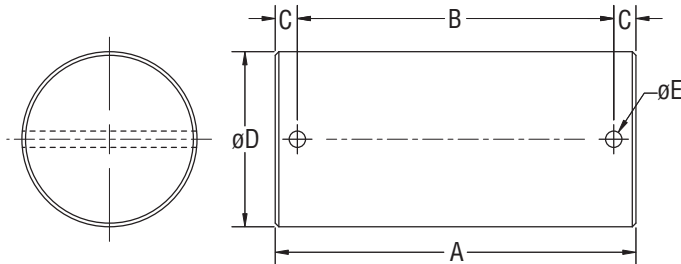
Rod Eye Dimensions



	GSX30	GSX40	GSX50	GSX60
	RE050	RE075	RE100	RE138
∅A	0.50" (12.7 mm)	0.75" (19.1 mm)	1.00" (25.4 mm)	1.375" (34.93 mm)
B	0.75" (19.1 mm)	1.25" (31.8 mm)	1.50" (38.1 mm)	2.0" (50.8 mm)
C	1.50" (38.1 mm)	2.06" (52.3 mm)	2.81" (71.4 mm)	3.44" (87.3 mm)
D	0.75" (19.1 mm)	1.13" (28.7 mm)	1.63" (41.4 mm)	2.0" (50.8 mm)
E	0.63" (15.9 mm)	0.88" (22.3 mm)	1.19" (30.2 mm)	1.837" (46.67 mm)
F	7/16-20	3/4-16	1 - 14	1-1/4 - 12

Drawings subject to change. Consult Exlar for certified drawings.

Clevis Pin Dimensions



	A	B	C	øD	øE
GSX20 CP050-Rear Clevis	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)
GSX30 CP050-Rod eye, Rod Clevis	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)
CP075-Rear Clevis	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)
GSX40 CP075-Rod eye, Rod Clevis Spherical Eye, Rear Clevis	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)
GSX50 CP100-Rod eye, Rod Clevis Spherical Eye, Rear Clevis	3.59" (91.2 mm)	3.22" (81.8 mm)	0.19" (4.82 mm)	1.00" (25.4 mm)	0.14" (3.56 mm)
GSX60 CP138-Rod eye, Rod Clevis	4.66" (118.3 mm)	4.25" (108 mm)	0.20" (5.08 mm)	1.375" (34.93 mm)	0.173" (4.39 mm)
CP175-Rear Clevis	5.656" (143.6 mm)	5.25" (133.3 mm)	0.203" (5.15 mm)	1.750" (4.44 mm)	0.173" (4.39 mm)

Drawings subject to change. Consult Exlar for certified drawings.



**GSX Series
Ordering Information**

AA = GSX Actuator Size

- 20 = 2 inch frame
- 30 = 3 inch frame
- 40 = 4 inch frame
- 50 = 5 inch frame
- 60 = 7 inch frame

BB = Stroke Length

- 03 = 3 inches (GSX20, GSX30)
- 06 = 5.9 inches (GSX30)
 - 6 inches (GSX20, GSX40, GSX50, GSX60)
- 08 = 8 inches (GSX40)
- 10 = 10 inches (all models)
- 12 = 12 inches (GSX20, GSX30, GSX40)
- 14 = 14 inches (GSX30, GSX50)
- 18 = 18 inches (GSX30, GSX40)

CC = Lead

- 01 = 0.1 inch (GSX20, GSX30, GSX40, GSX50)⁹
- 02 = 0.2 inch (GSX20, GSX30, GSX40, GSX50)
- 03 = 0.25 inch (GSX60)
- 04 = 0.4 inch (GSX20 only)
- 05 = 0.5 inch (GSX30, GSX40, GSX50, GSX60)
- 08 = 0.75 inch (GSX40)¹⁰
- 10 = 1.0 inch (GSX50, GSX60)¹¹

D = Connections

- O = MS style (anodized)
- E = MS style (electroless nickel)
- M = Manufacturer's Connector⁷
- I = Intercontec style (Exlar standard style connector)
- X = Special (please specify)

E = Mounting

- S = Side tapped mounting holes
- D = Double side tapped mounting
- E = Extended tie rods
- F = Front flange
- T = Trunnion
- C = Rear clevis
- X = Special (please specify)

F = Rod End

- M = Male, US std. Thread
- A = Male, Metric std. Thread
- F = Female, US std. Thread
- B = Female, Metric Thread
- X = Special (please specify)

- 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 100/200⁴ (std encoder, 2048 line, with commutation, 5 VDC)
- AB4 = Allen Bradley Ultra 3000 or 5000⁴ with single-turn (absolute encoder)
- AB5 = Allen Bradley Ultra 3000 or 5000⁴ with multi-turn (absolute encoder)
- AB6 = Allen Bradley 1394⁸ (resolver, type 2)(replaces AB2)
- AB7 = Allen Bradley Ultra 3000 or 5000⁴ (std encoder, 2048 line, with commutation, 5 VDC)
- AD1 = Advanced Digital "Simple Servo" (std encoder, 2048 line, with commutation, 5 VDC)
- AP1 = API resolver based (resolver, type 2)
- AP2 = API encoder based (std encoder, 2048 line, with commutation, 5 VDC)
- AM1 = Advanced Motion Controls (std encoder, 2048 line, with commutation, 5 VDC)
- AM2 = Advanced Motion Controls (std encoder, 1000 line, with commutation, 5 VDC)
- AM3 = Advanced Motion Controls (resolver, type 1)
- AM4 = Advanced Motion Controls BX Series default settings (std encoder, 2048 line, with commutation, 5 VDC)
- BD2 = Baldor Flex Series (resolver, type 1)(replaces BD1)
- BD3 = Baldor Flex Series (std encoder, 2048 line, with commutation, 5 VDC)
- BO1 = Bosch (resolver, type 2)
- CC1 = Cleveland Machine Controls (resolver, type 1)
- CM1 = Comau (resolver, type 1)
- CO1 = Copley Controls (std encoder, 2048 line, with commutation, 5 VDC)
- CS1 = Parker (Custom Servo Motors) MPA, MPPL (resolver, type 1)
- CS2 = Parker (Custom Servo Motors) Servo Flex (std encoder, 2048 line, with commutation, 5 VDC)
- EL1 = Elmo Motion Control (resolver, type 1)
- EL2 = Elmo CLA, SBA, FLU Series, (std encoder, 2048 line, with commutation, 5 VDC)
- EM2 = Emerson En, Epsilon, MDS Series and Uni-Drive⁴ (std encoder, 2048 line, with commutation, 5 VDC)
- EM3 = Emerson MX Series (resolver, type 2)
- EM4 = Emerson UniDrive SP (resolver, type 1)
- EU1 = Elau (absolute encoder, multi-turn, type 2)
- EX4 = Exlar SV Series (resolver, type 1) (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, type 2)
- IN2 = Bosch-Rexroth (Indramat) ECO Drive (absolute, single-turn Heidenhain encoder)
- IN4 = Bosch-Rexroth (Indramat) ECO Drive, Standard resolver (resolver, type 1)(replaces IN3)
- KM1 = Kollmorgen ServoStar Series⁴ 230V (resolver, type 2)
- KM3 = Kollmorgen ServoStar600 Series⁴ (Absolute encoder, single turn, type 1)
- KM4 = Kollmorgen ServoStar600 Series⁴ (Absolute encoder, multi-turn, type 2)
- KM5 = Kollmorgen ServoStar600 Series⁴ and ServoStar CD (resolver, type 2)(replaces KM2)
- KM6 = Kollmorgen ServoStar300 Series⁴ (std encoder, 2048 line, with commutation, 5 VDC)
- LZ1 = Lenze 9300 Series (Multi-turn Absolute Encoder, type 2)
- LZ2 = Lenze 9300 Series (resolver, type 2)
- MD1 = Modicon (resolver, type 1)
- MX1 = Metronix ARS Series, Resolver type 1
- OR1 = Ormec (resolver, type 2)
- PC1 = Parker Compumotor Apex & Z Series (resolver, type 1)
- PC2 = Parker Compumotor TQ Series (std encoder, 2048 line, with commutation, 5 VDC)
- PC3 = Parker Compumotor Gemini Series (std encoder, 2048 line, with commutation, 5 VDC)
- PS2 = Pacific Scientific (std encoder, 2048 line, with commutation, 5 VDC)
- PS3 = Pacific Scientific SC900, 700 Series (resolver, type 1)(replaces PS1)
- SM2 = Siemens (resolver, type 1)
- SP2 = In Motion, PAM Series (resolver, type 1)
- WD1 = Whedco (GE-Fanuc)(resolver, type 1)
- YS2 = Yaskawa Sigma II Series for 4 inch and larger Exlar motors (multi-turn absolute encoder, type 1)
- YS3 = Yaskawa Sigma II Series for 3 inch and smaller Exlar actuators (multi-turn absolute encoder, type 1)

GSX Series Ordering Information

HHH = Motor Stator² – All 8 Pole

118 = 1 stack, 115 Vrms
 218 = 2 stack, 115 Vrms
 318 = 3 stack, 115 Vrms
 138 = 1 stack, 230 Vrms
 238 = 2 stack, 230 Vrms
 338 = 3 stack, 230 Vrms
 158 = 1 stack, 400 Vrms
 258 = 2 stack, 400 Vrms
 358 = 3 stack, 400 Vrms
 168 = 1 stack, 460 Vrms
 268 = 2 stack, 460 Vrms
 368 = 3 stack, 460 Vrms

II = Motor Speed

24 = 2400 rpm, GSX50, GSX60
 30 = 3000 rpm, GSX30, GSX40
 50 = 5000 rpm, GSX20
 01-99 = Customer specified base speed

XX .. XX = Options

Travel Options

PF = Preloaded follower¹
 ES = Internal end of travel switches⁵
 AR = External Anti-rotate assembly
 EB = Electric Brake⁵
 RB = Rear Electric Brake⁵ (GSX50)
 XT = Special Travel Option (see pg. 24)
 L1/L2/L3 = External Limit Switches

Motor Options

XM = Special motor option
 XL = Special lubrication

Housing Options

FG = Food grade paint⁶
 EN = Electroless nickel plating⁶
 SS = Stainless steel housing⁶
 XH = Special housing option

Absolute Linear Feedback

LT = VRVT, including signal conditioner³

1. 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 internal feedback option.
2. Stator voltage and pole options allow for catalog rated performance at varying amplifier bus voltages and pole configuration requirements.
3. Linear feedback is not available in the GSX20.
4. Emerson EN and Epsilon Series, AB Ultra Series, Kollmorgen ServoStar and other amps require motor data files for operation with GSX Series actuators. These files can be downloaded from our website at www.exlar.com. Contact Exlar for details.
5. The internal limit switch or brake options require a third cable. Internal limit switches and brake together are not available.
6. These housing options would typically be accompanied by the choice of the electroless nickel connectors if a connectorized unit were selected. This choice may also indicate the need for special material main rods or flanges.
7. Available with AB1, AB4/5, AB7, EM2, KM1, KM3, KM4, KM5, KM6, IN1, IN2, IN4, LZ1, LZ2, PC3, PS3, YS2 and YS3 feedback. This option allows the customer to use the standard cables supplied by their amplifier manufacturers.
8. Use of the A-B 1394 requires assistance from Allen-Bradley to configure the axis for a custom motor.
9. .1 lead not available above 12" stroke in GSX40.
10. .75 lead not available above 12".
11. 1.0 lead not available above 10" stroke.