

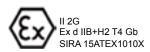
EL120

ATEX Rated Explosion-Proof Linear Actuators

Perfect for valve control or other hazardous environment applications, the EL120 is a high performance electric actuator offered as a direct replacement for hydraulics. EL120 actuators feature longer life, linear speeds up to 37 inches per second, closed loop feedback, 90% efficiency and 100% duty cycle.

For gas turbines with variable guide vanes, EL120 actuators provide precise positioning and feedback for fine tuning injector airflow to effectively manage CO and NOx emissions. In Oil & Gas applications, the EL120 is well suited for position-based drilling choke valves.







Forces up to 4000 lbs

Speeds up to 37.5 ips

Strokes up to 18 inches

8 pole brushless motors

Feedback configurations for nearly any servo amplifier

Several mounting configurations

Windings available from 24 VDC to 460 Vrms

CSA Class I, Div 1 Group B, C, D, and T4 hazardous environment rating

ATEX, Ex d II B +H2 T4 Gb IP66S, Type 4

IECEx CSA 14.0014

Completely sealed motor assures trouble-free operation

EL120 explosion-proof actuators meet ATEX requirements for use in potentially explosive atmospheres and are in conformity with the EU ATEX Directive 94/9/EC. Additionally, these actuators are rated for Class 1, Division 1, Groups B, C, D, and T4 hazardous environments.

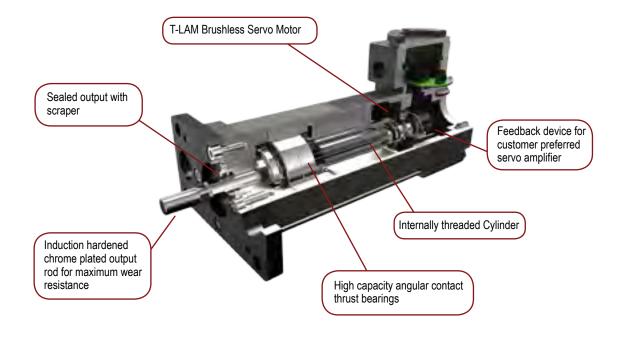
The EL Series integrates a highly efficient planetary roller screw mechanism with a high torque servomotor in a single self-contained package. This highly robust design is engineered to provide reliable and precise operation over thousands of hours, handling heavy loads—even under very arduous conditions.

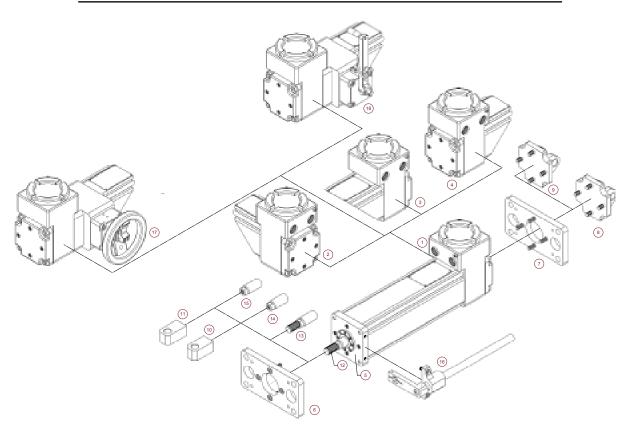
The EL120 Actuator is compatible with nearly any manufacturer's servo amplifier.

Technical Characteristics							
Frame Sizes in (mm)	4.7 (120)						
Screw Leads in (mm)	0.1 (2.54), 0.2 (5.08), 0.5 (12.7), 0.8 (20.3)						
Standard Stroke Lengths in (mm)	4 (100), 6 (150), 8 (200), 10 (250), 12 (300), 18 (450)						
Force Range	up to 4081 lbf-in (18 kN)						
Maximum Speed	up to 37.5 in/sec (953 mm/s)						

Operating Conditions and Usage								
Accuracy:								
Screw Lead Error	in/ft	0.001 (0.025)						
Screw Lead Variations	in (mm)	0.0012 (0.030)						
Screw Lead Backlash	in (mm)	0.004 maximum						
Ambient Conditions:								
Ambient Temperature	°C	-29 to 93						
Storage Temperature	°C	-54 to 93						
IP Rating		IP66S						
Rel. Humidity	%	5 to 100 at 60° C						
Vibration		3.5 grms, 5 to 520 hz						

Product Features





- 1- Two 0.75 in NPT Ports, Front Facing (as viewed from rod end)
 3 Two 0.75 in NPT Ports, Right Facing (as viewed from rod end)
 4 Two 0.75 in NPT Ports, Left Facing (as viewed from rod end)
 5 Threaded Front & Rear Face, Metric and Threaded Front & Rear Face, English
 6 Standard Front Flange
 7 Standard Rear Flange
 8 Metric Rear Clevis
 9 English Rear Clevis
 10 Metric Rear Eye
 11 English Rear Eye
 12 Male, US Standard Thread
 13 Male, Metric Thread
 14 Female, US Standard Ti
 15 Female, Metric Thread
 16 External anti-rotate assembly
 17 Handwheel Drive Standard
 18 Crank Drive
- 14 Female, US Standard Thread

EL120 Explosion-Proof Actuators

Industries and Applications

Process Control

Valve control Damper control

Turbine control

Choke valves Fuel control

Plunger pumps

Automotive

Paint booths Fuel control

Engine test stands

Defense

Weapons room

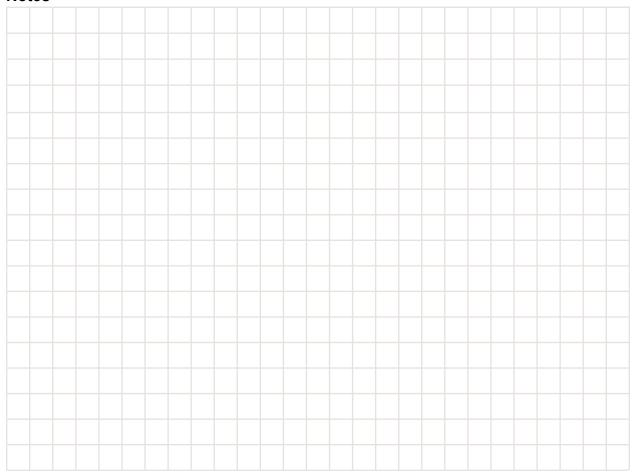
Material Handling

Printing presses

The EL Series of explosion proof actuators is ideal for valve control, as well as many other applications in hazardous environments. These all-electric actuators easily outperform hydraulics and other competing technologies offering long life, high speeds, closed loop feedback, 90% efficiency and 100% duty cycle.



Notes



Mechanical Specifications

Motor Stacks			1 St	ack			2 St	ack		3 Stack		
Screw Lead Designat	tor	01	02	05	08	01	02	05	08	02	05	08
Caroutland	in	0.1	0.2	0.5	0.75	0.1	0.2	0.5	0.75	0.1	0.2	0.5
Screw Lead	mm	2.54	5.08	12.7	19.05	2.54	5.08	12.7	19.05	2.54	5.08	12.7
Continuous Force**	lbf	2,984	1,748	839	559	NA	2,865	1,375	917	4,081	1,959	1,306
(Motor Limited)	N	13,272	7,776	3,733	2,488	NA	12,744	6,117	4,078	18,152	8,713	5,809
Screw Lead Designs Screw Lead Continuous Force** (Motor Limited) Max Velocity Friction Torque (preloaded screw) Back Drive Force 1 Min Stroke Max Stroke Ca (Dynamic Load Rating) Inertia (zero stroke) Inertia (per inch of stroke) Weight	in/sec	5	10	25	37.5	5	10	25	37.5	5	10	25
IVIAX VEIOCILY	mm/sec	127	254	635	953	127	254	635	953	127	254	635
Friction Torque	in-lbf		2.	.7			3	.0			3.5	
	N-m		0.3	31			0.	34			0.40	
	in-lbf		7.2				7	.5			8.0	
(preloaded screw)	N-m		0.8	82			0.	85			0.91	
Back Drive Force ¹	lbf	380	150	60	50	380	150	60	50	150	60	50
Dack Drive Force	in 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.5 0.75 0.1 0.2 0.	670	270	220								
Min Stroke	in	4				NA	6			<u> </u>		
WIIII Otroke	mm		10	00		NA		150			200	
May Stroke	in		18		12	NA	1	8	12	1	8	12
Wax Olloke	mm		450		300	NA	4	50	300	02 05 0.1 0.2 2.54 5.08 4,081 1,959 18,152 8,713 5 10 127 254 3.5 0.40 8.0 0.91 150 60 670 270 8 200 18 450 7900 8300 35,141 36,920 0.01332	300	
C _a (Dynamic Load	lbf	7900	8300	7030	6335	7900	8300	7030	6335	7900	8300	7030
Rating)	N	35,141	36,920	31,271	28,179	35,141	36,920	31,271	28,179	35,141	36,920	31,271
Inertia	lb-in-s ²		0.01	132			0.01	232			0.01332	
(zero stroke)	Kg-m ²		0.0000	12790			0.000	01392		(.0000150	5
Inertia	lb-in-s²/in						0.0005640					
(per inch of stroke)	Kg-m²/mm					0.	00000063	72				
Weight	lb		8	.0		11.3					14.6	
(zero stroke)	Kg		3.0	63			5.	13		7 4,081 1,959 1,3 8 18,152 8,713 5,8 5 5 10 2 8 127 254 63 8 127 254 63 9 0,91 150 60 50 0 670 270 22 8 8 200 18 11 150 450 30 150 450 30 150 0,01332 0,00001505		
Weight Adder	lb/in						2.0					
(per inch of stroke)	Kg/mm						0.91					

^{*} Please note that stroke mm are Nominal dimensions.

DEFINITIONS:

Continuous Force: 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.

Friction Torque (standard screw): Amount of torque required to move the actuator when not coupled to a load.

Friction Torque (preloaded screw): Amount of torque required to move the actuator when not coupled to a load.

Back Drive Force: Amount of axial force applied to the rod end of the actuator that will produce motion with no power applied to the actuator.

Min Stroke: Shortest available stroke length.

Max Stroke: Longest available stroke length.

C_a (Dynamic Load Rating): A design constant used when calculating the estimated travel life of the roller screw.

Inertia (zero stroke): Base inertia of an actuator with zero available stroke length.

Inertia Adder (per unit of stroke): Inertia per inch of stroke that must be added to the base (zero stroke) inertia to determine the total actuator inertia.

Weight (zero stroke): Base weight of an actuator with zero available stroke length.

Weight Adder (per unit of stroke): Weight adder per inch of stroke that must be added to the base (zero stroke) weight to determine the total actuator weight.

[&]quot; Force ratings at 25°C.

[&]quot; Inertia +/-5%

¹ Back drive force is a nominal value only. Operating conditions can cause wide variations in back drive force. Exlar cannot assure that an actuator will or will not back drive.

EL120 Explosion-Proof Actuators

Electrical Specifications

	118	138	158	168	238	258	268	338	358	368
ATION DATA										
lbf-in	74.1	74.1	74.3	74.1	123.6	121.4	123.6	172.3	168.9	176.9
N-m	8.37	8.37	8.39	8.37	13.96	13.72	13.96	19.46	19.09	19.98
lbf-in	148.20	148.20	148.60	148.10	247.20	242.80	247.20	344.50	337.80	353.70
N-m	16.74	16.74	16.79	16.74	27.93	27.43	27.93	38.93	38.17	39.96
										17.50
N-m/A										2.00
А	19.10	9.50	5.30	4.80	15.90	8.60	8.00	22.70	11.90	11.30
Α	38.20	19.10	10.60	9.50	31.80	17.10	15.90	45.40	23.80	22.50
IUTATION										
lbf-in	74.1	74.1	74.3	74.1	123.6	121.4	123.6	172.3	168.9	176.9
N-m	8.37	8.37	8.39	8.37	13.96	13.72	13.96	19.46	19.09	19.98
lbf-in	148.20	148.20	148.60	148.10	247.20	242.80	247.20	344.50	337.80	353.70
N-m	16.74	16.74	16.79	16.74	27.93	27.43	27.93	38.93	38.17	39.96
lbf-in/A	3.10	6.10	11.10	12.30	6.10	11.20	12.30	6.00	11.20	12.40
N-m/A	0.35	0.70	1.30	1.40	0.70	1.30	1.40	0.70	1.30	1.40
Α	27.00	13.50	7.50	6.70	22.50	12.10	11.30	32.10	16.90	15.90
Α	54.00	27.00	15.00	13.50	45.00	24.20	22.50	64.20	33.70	31.90
			'							
Vrms	29.6	59.2	106.9	118.5	59.2	108.2	118.5	58.0	108.2	119.8
Krpm	41.9	83.8	151.2	167.6	83.8	153.0	167.6	82.0	153.0	169.4
	8	8	8	8	8	8	8	8	8	8
Ohms	0.20	0.80	2.60	3.21	0.34	1.17	1.35	0.20	0.72	0.81
mH	3.30	11.90	42.40	48.30	5.90	21.10	25.30	3.70	11.60	17.10
lbf-in-sec ²	0.00146									
kg-cm ²	1.66									
А					1.0	0				
lbf-in					17	7				
Nm/A					20)				
ms					13/	50				
ms	0.79	0.79	0.79	0.79	0.60	0.63	0.60	0.54	0.56	0.51
ms	16.26	14.88	16.34	15.06	17.60	18.06	18.72	18.51	16.06	21.16
lbf-in	1.43	1.43	1.43	1.43	1.81	1.81	1.81	2.32	2.32	2.32
N-m	0.16	0.16	0.16	0.16	0.20	0.20	0.20	0.26	0.26	0.26
Vrms	115	230	400	460	230	400	460	230	400	460
rpm	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
					180	(H)				
	-29°C to 93°C T4. 135°C Maximum Allowable Surface Temperature									
	N-m Ibf-in N-m/A A A A IUTATION Ibf-in N-m Ibf-in N-m Ibf-in/A N-m/A A A Vrms Krpm Ohms mH Ibf-in-sec² kg-cm² A Ibf-in Nm/A ms ms ms	N-m 16.74 19.10 N-m 8.37 N-m 16.74 N-m 16.26 N-m 16.26 N-m 16.26 N-m 16.26 N-m 115 N-m	STORY STOR	Ibf-in 74.1 74.1 74.3 N-m 8.37 8.37 8.39 Ibf-in 148.20 148.20 148.60 N-m 16.74 16.74 16.79 Ibf-in 4.30 8.70 15.70 N-m/A 0.49 1.00 1.80 A 19.10 9.50 5.30 A 38.20 19.10 10.60 N-m 8.37 8.37 8.39 Ibf-in 148.20 148.20 148.60 N-m 16.74 16.74 16.79 Ibf-in/A 3.10 6.10 11.10 N-m/A 0.35 0.70 1.30 A 27.00 13.50 7.50 A 54.00 27.00 15.00 N-m 41.9 83.8 151.2 8 8 8 N-m 3.30 11.90 42.40 Ibf-in-sec² kg-cm² A Ibf-in N-m/A N-m 0.79 0.79 0.79 ms 16.26 14.88 16.34 Ibf-in 1.43 1.43 1.43 N-m 0.16	Ibf-in 74.1 74.3 74.1 N-m 8.37 8.37 8.39 8.37 Ibf-in 148.20 148.20 148.60 148.10 N-m 16.74 16.74 16.79 16.74 Ibf-in 4.30 8.70 15.70 17.30 N-m/A 0.49 1.00 1.80 2.00 A 19.10 9.50 5.30 4.80 A 38.20 19.10 10.60 9.50 IUTATION Ibf-in 74.1 74.1 74.3 74.1 N-m 8.37 8.37 8.39 8.37 Ibf-in 148.20 148.20 148.60 148.10 N-m 16.74 16.74 16.79 16.74 Ibf-in/A 3.10 6.10 11.10 12.30 N-m/A 0.35 0.70 1.30 1.40 A 27.00 13.50 7.50 6.70 A 54.00 27.00 15.00 13.50 Ibf-in-sec² kg-cm² A Ibf-in N-m/A 3.30 11.90 42.40 48.30 Ibf-in-sec² kg-cm² A Ibf-in N-m/A N-m 16.26 14.88 16.34 15.06 Ibf-in 1.43 1.43 1.43 1.43 N-m 0.16 0.1	Ibf-in 74.1 74.1 74.3 74.1 123.6 N-m 8.37 8.37 8.39 8.37 13.96 Ibf-in 148.20 148.20 148.60 148.10 247.20 N-m 16.74 16.74 16.79 16.74 27.93 Ibf-in 4.30 8.70 15.70 17.30 8.70 N-m/A 0.49 1.00 1.80 2.00 1.00 A 19.10 9.50 5.30 4.80 15.90 A 38.20 19.10 10.60 9.50 31.80 IUTATION Ibf-in 74.1 74.1 74.3 74.1 123.6 N-m 8.37 8.37 8.39 8.37 13.96 Ibf-in 148.20 148.20 148.60 148.10 247.20 N-m 16.74 16.74 16.79 16.74 27.93 Ibf-in/A 3.10 6.10 11.10 12.30 6.10 N-m/A 0.35 0.70 1.30 1.40 0.70 A 27.00 13.50 7.50 6.70 22.50 A 54.00 27.00 15.00 13.50 45.00 Ibf-in see See	Ibf-in 74.1 74.1 74.3 74.1 123.6 121.4 N-m 8.37 8.37 8.39 8.37 13.96 13.72 Ibf-in 148.20 148.20 148.60 148.10 247.20 242.80 N-m 16.74 16.74 16.79 16.74 27.93 27.43 Ibf-in 4.30 8.70 15.70 17.30 8.70 15.80 N-m/A 0.49 1.00 1.80 2.00 1.00 1.80 A 19.10 9.50 5.30 4.80 15.90 8.60 A 38.20 19.10 10.60 9.50 31.80 17.10 IUTATION	Ibf-in 74.1 74.1 74.3 74.1 123.6 121.4 123.6 121.4 123.6 Ibf-in 148.20 148.20 148.60 148.10 247.20 242.80 247.20 148.60 148.10 247.20 242.80 247.20 148.60 Ibf-in 148.20 148.60 148.10 247.20 242.80 247.20 16.74 16.74 16.74 16.75 17.30 8.70 15.80 17.30 Ibf-in 4.30 8.70 15.70 17.30 8.70 15.80 17.30 Ibf-in 4.30 8.70 15.70 17.30 8.70 15.80 17.30 Ibf-in 4.30 8.70 15.70 17.30 Ibf-in 4.30 8.70 15.70 17.30 Ibf-in 4.30 8.70 15.70 17.30 Ibf-in 4.30 19.10 10.60 9.50 31.80 17.10 15.90 IDF-in 148.20 148.20 148.60 148.10 247.20 242.80 247.20 IDF-in 148.20 148.60 148.10 147.29 242.80 247.20 IDF-in 148.20 148.60 148.10 147.29 12.30 IDF-in 148.20 148.60 148.10 147.29 12.30 IDF-in 148.20 148.60 148.10 147.20 12.30 IDF-in 148.20 148.50 148.60 148.10 247.20 242.80 247.20 IDF-in 148.20 148.50 1	IbFin 74.1 74.1 74.3 74.1 123.6 121.4 123.6 172.3 N-m 8.37 8.37 8.39 8.37 13.96 13.72 13.96 19.46 IbFin 148.20 148.20 148.60 148.10 247.20 242.80 247.20 344.50 N-m 16.74 16.74 16.79 16.74 27.93 27.43 27.93 38.93 IbFin 4.30 8.70 15.70 17.30 8.70 15.80 17.30 8.50 N-m/A 0.49 1.00 1.80 2.00 1.00 1.80 2.00 1.00 A 19.10 9.50 5.30 4.80 15.90 8.60 8.00 22.70 A 38.20 19.10 10.60 9.50 31.80 17.10 15.90 45.40 IUTATION IbFin 74.1 74.1 74.3 74.1 123.6 121.4 123.6 172.3 N-m 8.37 8.37 8.39 8.37 13.96 13.72 13.96 19.46 IbFin 148.20 148.20 148.60 148.10 247.20 242.80 247.20 344.50 N-m 16.74 16.74 16.79 16.74 27.93 27.43 27.93 38.93 IbFin/A 3.10 6.10 11.10 12.30 6.10 11.20 12.30 6.00 N-m/A 0.35 0.70 13.50 13.50 45.00 24.20 22.50 64.20 Vms 29.6 59.2 106.9 118.5 59.2 108.2 118.5 58.0 Krpm 41.9 83.8 151.2 167.6 83.8 153.0 167.6 82.0 M 3.30 11.90 42.40 48.30 5.90 21.10 25.30 3.70 IbFin 50.79 0.79 0.79 0.60 0.63 0.60 0.54 Ms 0.79 0.79 0.79 0.60 0.63 0.60 0.54 ms 16.26 14.88 16.34 15.06 17.60 18.06 18.72 18.51 IbFin 1.43 1.43 1.43 1.43 1.81 1.81 1.81 2.32 N-m 0.16 0.16 0.16 0.16 0.20 0.20 0.20 0.20 0.26 Vms 115 230 400 460 230 400 460 230 rpm 3.000 3.000 3.000 3.000 3.000 3.000 3.000 3.000 3.000	Ibf-in 74.1 74.1 74.3 74.1 123.6 121.4 123.6 172.3 168.9 N-m 8.37 8.37 8.39 8.37 13.96 13.72 13.96 19.46 19.09 Ibf-in 148.20 148.20 148.60 148.10 247.20 242.80 247.20 243.80 344.50 337.80 N-m 16.74 16.74 16.79 16.74 27.93 27.43 27.93 38.93 38.17 Ibf-in 43.0 8.70 15.70 17.30 8.70 15.80 17.30 8.50 15.80 N-m/A 0.49 1.00 1.80 2.00 1.00 1.80 2.00 1.00 1.80 A 19.10 9.50 5.30 4.80 15.90 8.60 8.60 22.70 11.90 A 38.20 19.10 10.60 9.50 31.80 17.10 15.90 45.40 23.80 IUTATION Ibf-in 74.1 74.1 74.3 74.1 123.6 121.4 123.6 172.3 168.9 N-m 8.37 8.37 8.39 8.37 13.96 13.72 13.96 19.46 19.09 Ibf-in 148.20 148.60 148.10 247.20 242.80 247.20 344.50 337.80 N-m 16.74 16.74 16.79 16.74 27.93 27.43 27.93 38.93 38.17 Ibf-in/A 3.10 6.10 11.10 12.30 6.10 11.20 12.30 6.00 11.20 N-m/A 0.35 0.70 1.30 1.40 0.70 1.30 1.40 0.70 1.30 A 54.00 27.00 13.50 7.50 6.70 22.50 12.10 11.30 32.10 16.90 V/rms 29.6 59.2 106.9 118.5 59.2 108.2 118.5 58.0 108.2 Krpm 41.9 83.8 151.2 167.6 83.8 153.0 167.6 82.0 153.0 Brin-resec 1.66 14.88 16.34 15.06 17.60 18.06 18.72 18.51 16.06 Ibf-in 1.43 1.43 1.43 1.43 1.43 1.43 1.81 1.81 1.81 2.32 2.32 N-m 16.26 14.88 16.34 15.06 17.60 18.06 18.72 18.51 16.06 Ibf-in 1.43 1.43 1.43 1.43 1.43 1.43 1.81 1.81 1.81 2.32 2.32 N-m 0.16 0.16 0.16 0.16 0.16 0.20 0.20 0.20 0.20 0.26 0.26 Vrms 17 17 17 17 17 17 17 1

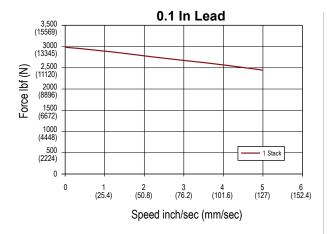
Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" at 25°C ambient.

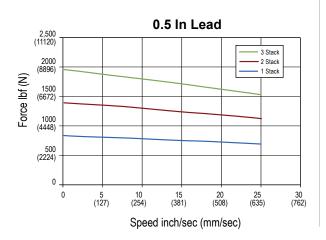
Speed vs. Force Curves

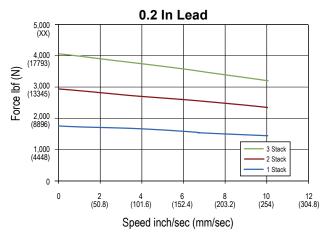
The speed vs. force curves (below) represent approximate continuous thrust ratings at the indicated linear speed.

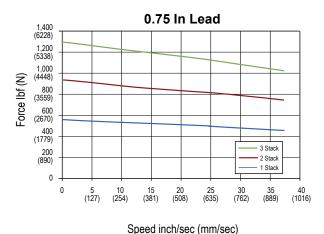
Different types of servo amplifiers offer varying motor torque

and, thus, varying actuator thrust. These values are at constant velocity and do not account for motor torque required for acceleration.









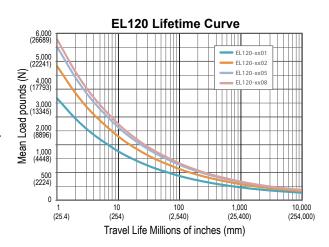
Estimated Service Life

The L $_{10}$ expected life of a roller screw linear actuator is expressed as the linear travel distance that 90% of properly maintained roller screws are expected to meet or exceed. For higher than 90% reliability, multiply the result by the following factors: 95% x 0.62; 96% x 0.53; 97% x 0.44; 98% x 0.33; 99% x 0.21. This is not a guarantee; these charts should be used for estimation purposes only.

The underlying formula that defines this value is: Travel life in millions of inches, where:

$$C_a$$
 = Dynamic load rating (lbf)
 F_{cml} = Cubic mean applied load (lbf)
 $L_{10} = \begin{pmatrix} C_a \\ F_{cml} \end{pmatrix}^3 \times \ell$
 ℓ = Roller screws lead (inches)

All curves represent properly lubricated and maintained actuators. Ratings may vary, depending on the application.

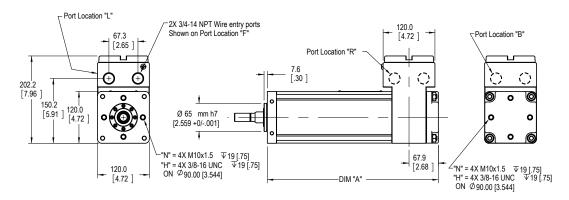


EL120 Explosion-Proof Actuators

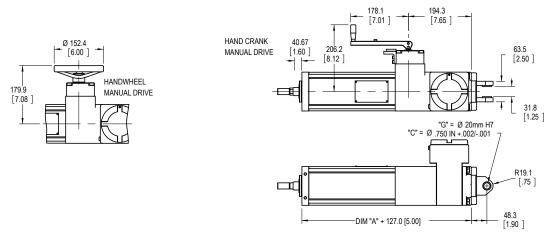
Dimensions

Base Actuator

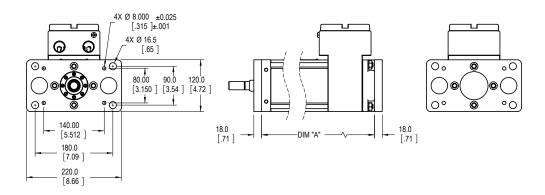
All dimensions shown in mm (inches)



Clevis Mount and Manual Drive Options



Front and Rear Flange Mount

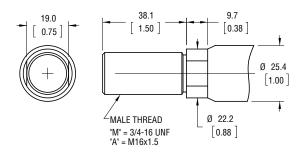


Dim	4" (102 mm)	6" (152 mm)	8" (203 mm)	10" (254 mm)	12" (305 mm)	18" (457 mm)
	Stroke in (mm)					
Α	345 (13.6)	396 (15.6)	447 (17.6)	498 (19.6)	549 (21.6)	701 (27.6)

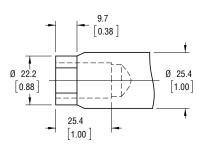
Note: Add 1.63 Inches (41.4 mm) to Dims "A" if ordering a brake without a manual drive.

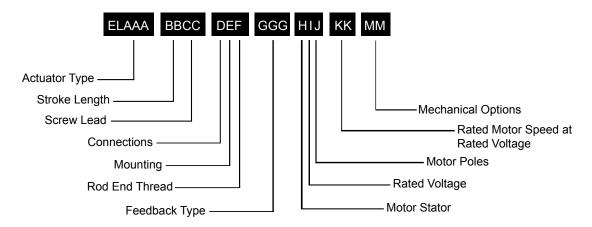
Pre-sale drawings and models are representative and are subject to change. Certified drawings and models are available for a fee. Consult your local Exlar representative for details.

Rod End Options









EL = Model Series

EL = Explosion proof linear actuator

AAA = Frame Size

120 = 120 mm

BB = Stroke Length

04 = 4 in

06 = 6 in

08 = 8 in

10 = 10 in

12 = 12 in

18 = 18 in

CC= Screw Lead (linear travel per screw revolution)

01 = 0.1 in/rev (2.54 mm/rev)

02 = 0.2 in/rev (5.08 mm/rev)

05 = 0.5 in/rev (12.7 mm/rev)

08 = 0.8 in/rev (20.3 mm/rev)

D = Connections

F = Two 0.75 in NPT Ports, Front Facing (as viewed from rod end)

B = Two 0.75 in NPT Ports, Back Facing (as viewed from rod end)

R = Two 0.75 in NPT Ports, Right Facing (as viewed from rod end)

L= Two 0.75 in NPT Ports, Left Facing (as viewed from rod end)

E = Mounting

F = Standard Front Flange

R = Standard Rear Flange

G = Metric Rear Clevis

C = English Rear Clevis

J = Metric Rear Eye

K = English Rear Eye

F = Rod End Thread

M = Male, US Standard Thread

A = Male, Metric Thread

F = Female, US Standard Thread

B = Female, Metric Thread

GGG = Feedback Type

See page 207 for detailed information

H = Motor Stator

1 = 1 stack motor

2 = 2 stack motor

3 = 3 stack motor

I = Rated Voltage

1 = 115 Volt RMS

3 = 230 Volt RMS

5 = 400 Volt RMS

6 = 460 Volt RMS

J = Motor Poles

8 = 8 pole motor

KK = Rated Motor Speed at Rated Voltage

01 - 45 Two digit number x 100 = rated RPM

MM = Mechanical Option³

PF = Preloaded follower1

AR = External anti-rotate assembly

RB = Rear brake

HW = Manual drive, handwheel with interlock switch

CD = Crank drive with interlock switch

NOTES

- 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 same size and lead of a non-preloaded screw.
- 2. Not compatible with Kinetix 300 Drives.
- 3. For extended temperature operation consult factory for model number.

For options or specials not listed above or for extended temperature operation, please contact Exlar

EL100

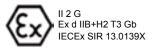
Explosion-Proof Linear Actuators

This electromechanical system provides process engineers with a clean, fast, simple, and cost effective replacement for hydraulic actuation and a longer life alternative to pneumatic actuation. The roller screw technology manufactured by Exlar offer 15 times the travel life of rival ball screws and can carry higher loads. The compact design allows users to effectively replace hydraulic or air cylinders with an electromechanical actuator, while meeting all required capabilities of the application. Servo electric actuation reduces emissions, lowers energy consumption (80% system energy efficiency), and increases position control and accuracy—all leading to reduced cost.

The EL100 explosion-proof linear actuator offers a Class 1, Division 1, Groups B, C, D, and T3 rating. Additionally, it meets ATEX essential requirements and are in conformance with the EU ATEX Directive 94/9/EC.

The EL Series linear actuators are compatible with nearly any manufacturer's resolver-based amplifier.







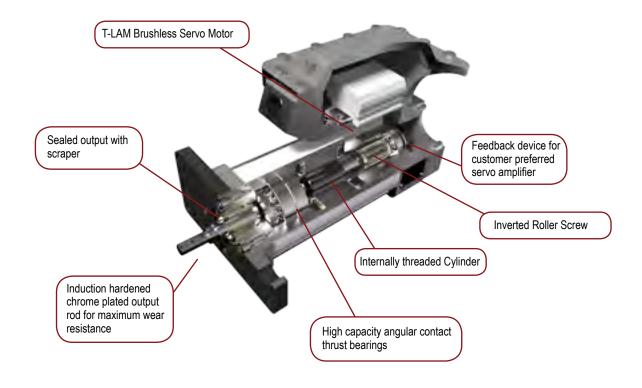
Features
T-LAM technology yielding 35% increase in continuous motor torque over traditional windings
Forces up to 2000 lbs
Speeds up to 25 ips
Resolver feedback
Strokes up to 6 inches
8 pole motors
Rod end options
Several mounting configurations
Potted NPT connectors
Windings available from 24 VDC to 460 VAC rms
Class 180H insulation, IP66S Standard

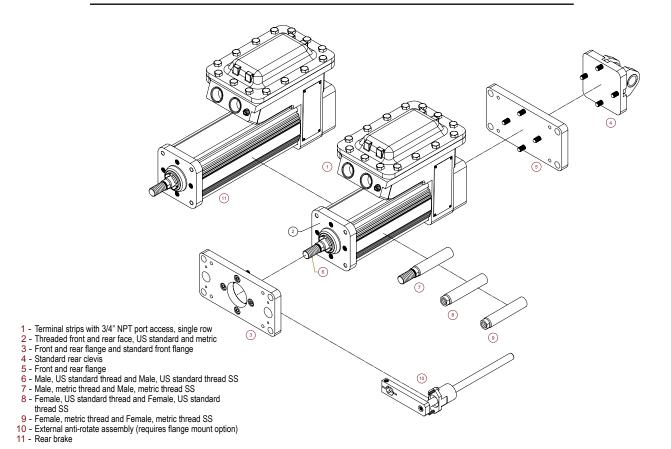
* "Class I" means that flammable gases or vapors may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. "Division 1" means that hazardous concentrations in the air may exist continuously, intermittently, or periodically under normal operating conditions. "Group B" allows for atmospheres containing hydrogen, gases, or vapors of equivalent hazard, such as manufactured gas. "Group C" allows for atmospheres containing ethyl-ether vapors, ethylene or cyclo propane. "Group D" allows for atmospheres containing gasoline, hexane, naphtha, benzene, butane, alcohol, acetone, benzol, lacquer solvent vapors or natural gas. EL Series actuators are not rated for operation in atmospheres containing acetylene. Temperature classification defines the maximum surface temperature the product will reach at full load. T3 = 200° C, T3A =180° C, T4 = 135° C.

Technical Characteristics							
Frame Sizes in (mm)	4 (100)						
Screw Leads in (mm)	0.1 (2.54), 0.2 (5.08), 0.5 (12.7)						
Standard Stroke Lengths in (mm)	5.9 (150)						
Force Range	up to 4081 lbf-in (18 kN)						
Maximum Speed	up to 37.5 in/sec (953 mm/s)						

Operating Conditions and Usage								
Accuracy:								
Screw Lead Error	in/ft	0.001 (0.025)						
Screw Lead Variation	in (mm)	0.0012 (0.030)						
Screw Lead Backlash	in (mm)	0.004 maximum						
Ambient Conditions:								
Ambient Temperature	°C	-29 to 93						
Storage Temperature	°C	-54 to 93						
IP Rating		IP66S						
Shock		10g						
Vibration		5 grms, 5 to 2000 hz						

Product Features





Industries and Applications

Process Control

Turbine fuel flow

Chemical process plants

Fuel distribution systems

Shipbound fuel management

Valve control

Damper control

Fuel Skids

Silos

Defense

Weapons room

Material Handling

Printing presses

Automotive

Engine test stands
Paint booths



The EL100 actuator is another simple, clean, and cost effective replacement for hydraulics meeting Class 1, Division 1, Group B, C, D, and T3 as well as ATEX requirements.

Mechanical Specifications

Motor Stacks	2 Stacks				
Screw Lead Designator		01	02	05	
Committee	in	0.1	0.2	0.5	
crew Lead Designator crew Lead continuous Force (Motor Limited) cax Velocity ciction Torque (standard screw) ciction Torque (preloaded screw) cack Drive Force can Stroke	mm	2.54	5.08	12.7	
Continuous Force (Motor Limited) Max Velocity Friction Torque (standard screw) Friction Torque (preloaded screw) Back Drive Force Max Stroke	lbf	2011	1005	402	
	N	8943	4472	1789	
Max Valority	in/sec	6.66	13.33	33.33	
Continuous Force (Motor Limited) Max Velocity Friction Torque (standard screw) Friction Torque (preloaded screw) Back Drive Force Min Stroke Max Stroke Ca (Dynamic Load Rating)	mm/sec	169.33	338.58	846.58	
Friction Torque (standard carew)	in-lbf		1.7		
Friction Torque (Standard Screw)	N-m	0.19			
Friction Torque (prolonded percur)	in-lbf	3.5			
Friction Torque (preioaded screw)	N-m		5.08 12. 1005 40: 4472 178 13.33 33.3 338.58 846. 1.7 0.19 3.5 0.39 80 40: 360 18: 3 75 18 450 5800 490: 25,798 21,7		
Book Drive Force	lbf	180	80	40	
Back Drive Force	N	800	360	180	
Min Stroko	in	3			
Will Stroke	mm	in 0.1 0.2 0.5 m 2.54 5.08 12.5 bf 2011 1005 402 N 8943 4472 178 gc 6.66 13.33 33.3 gc 169.33 338.58 846.5 bf 1.7 m 0.19 bf 3.5 m 0.39 bf 180 80 40 N 800 360 180 in 3 m 75 in 18 m 450 bf 5516 5800 490 N 24,536 25,798 21,79 g² 0.002829 n² 0.000003196 lb 7.65			
	Ibf				
Max Stroke	mm		02 05 0.2 0.5 5.08 12.7 1005 402 4472 1789 13.33 338.58 846.5 1.7 0.19 3.5 0.39 80 40 360 180 3 75 18 450 5800 4900 25,798 21,79 0.002829 000003196 7.65 40		
C. (Dynamia Load Rating)	lbf	5516	5800	4900	
C _a (Dynamic Load Rating)	N	24,536	25,798	21,795	
Inortio	lb-in-s ²		0.002829		
IIIcilia	Kg-m ²	0.000003196			
Woight	lb		7.65		
Weight	Kg		3.47		

^{*}Please note that stroke mm are nominal dimensions.

**Inertia +/- 5%

Specifications subject to change without notice.

See definitions on page 190.

Electrical Specifications

Motor Stator	2A8-10	2B8-25	2C8-40	218-40	238-40	258-40	268-40			
RMS SINUSOIDAL COMMUTATIO	N DATA									
Continuous Motor Torque	lbf-in	35.2/24.3	35.9/24.8	36.5/25.2	39.6/27.3	40.0/27.6	39.5/27.3	39.9/27.6		
(25°/80°C)	N-m	3.98/2.75	4.06/2.80	4.12/2.85	4.47/3.09	4.52/3.12	4.46/3.08	4.51/3.11		
Continuous Motor Torque (25°/80°C) Torque Constant Continuous Current Rating (25°/80°C) Peak Current Rating (25°/80°C) O-PEAK SMUSOIDAL COMMUTAT Continuous Motor Torque (25°/80°C) Torque Constant Continuous Current Rating (25°/80°C)	lbf-in	1.7	1.7	2.6	3.2	6.6	11.6	13.2		
	N-m/A	0.19	0.19	0.30	0.37	0.75	1.31	1.50		
	А	23.1/15.9	23.6/16.3	15.6/10.7	13.6/9.4	6.8/4.7	3.8/2.6	3.4/2.3		
Peak Current Rating (25°/80°C)	А	46.2/31.9	47.1/32.5	31.1/21.5	27.3/18.8	13.5/9.3	7.6/5.3	6.7/4.7		
O-PEAK SMUSOIDAL COMMUTAT	TION DATA									
Continuous Motor Torque	lbf-in	35.2/24.3	35.9/24.8	36.5/25.2	39.6/27.3	40.0/27.6	39.5/27.3	39.9/27.6		
	N-m	3.98/2.75	4.06/2.80	4.12/2.85	4.47/3.09	4.52/3.12	(4.46/3.08)	(4.51/3.11)		
	lbf-in/A	1.2	1.2	1.9	2.3	4.7	8.2	9.4		
Torque Constant	N-m/A	0.14	0.14	0.21	0.26	0.53	0.92	1.06		
	А	32.7/22.6	33.3/23.0	22.0/15.2	19.3/13.3	9.5/6.6	5.4/3.7	4.8/3.3		
Peak Current Rating (25°/80°C)	А	65.4/45.1	66.7/46.0	44.0/30.4	38.6/26.6	19.1/13.2	10.8/7.5	9.5/6.6		
MOTOR STATOR DATA				'		'	'			
N/ II	Vrms/Krpm	11.6	11.6	17.9	22.1	45.2	78.9	90.4		
Voltage Constant @ 25°C (Ke)	Vpk/Krpm	16.5	16.5	25.3	31.3	64.0	111.6	127.9		
Pole Configuration		8	8	8	8	8	8	8		
Resistance (L-L)	Ohms	0.10	0.1	0.2	0.30	1.2	3.8	4.86		
Inductance (L-L)	mH	0.75	0.8	1.9	2.93	12.2	37.2	48.9		
	lbf-in-sec ²			1	0.00047	1				
Brake Inertia	kg-cm ²	0.53								
Brake Current @24 VDC +/- 10%	А	0.5								
	lbf-in	70								
Brake Holding Torque - Dry	Nm/A				8					
Brake Engage/Disengage Time	ms	25/50								
Mechanical Time Constant (tm)	ms	1.4	1.3	1.3	1.1	1.1	1.1	1.1		
Electrical Time Constant (te)	ms	7.2	7.9	8.2	9.9	10.1	9.9	10.1		
Frictional Torque	lbf-in	2.22	2.22	2.22	2.22	2.22	2.22	2.22		
Frictional Torque	N-m	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
Bus Voltage	Vrms	24 VDC	48 VDC	120 VDC	115 VAC	230 VAC	400 VAC	460 VAC		
Speed @ Bus Voltage	rpm	1,000	2,500	4,000	4,000	4,000	4,000	4,000		
Insulation Class		180 (H)								
Ambient Temperature Rating		-29° C to 93° C								
CSA/ATEX Temperature Class		T3, 200° C Maximum Allowable Surface Temperature								

For amplifiers using peak sinusoidal ratings, multiply RMS sinusoidal Kt by 0.707, and peak current by 1.414. Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" at 25° / 80°C ambient.

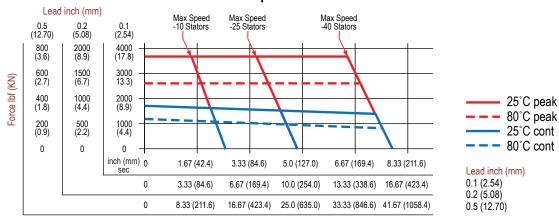
Specifications subject to change without notice.

Performance Curves

The below speed vs. force curves represent approximate continuous thrust ratings at indicated linear speed. Different types of servo amplifiers offer varying motor torque and, thus,

varying actuator thrust. These values are at constant velocity and do not account for motor torque required for acceleration.

EL100 Speed Force



Speed inch/sec (mm/sec)

DEFINITIONS:

Continuous Force: 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.

Friction Torque (standard screw): Amount of torque required to move the actuator when not coupled to a load.

Friction Torque (preloaded screw): Amount of torque required to move the actuator when not coupled to a load.

Back Drive Force: Amount of axial force applied to the rod end of the actuator that will produce motion with no power applied to the actuator.

Min Stroke: Shortest available stroke length.

Max Stroke: Longest available stroke length.

C_a (**Dynamic Load Rating**): A design constant used when calculating the estimated travel life of the roller screw.

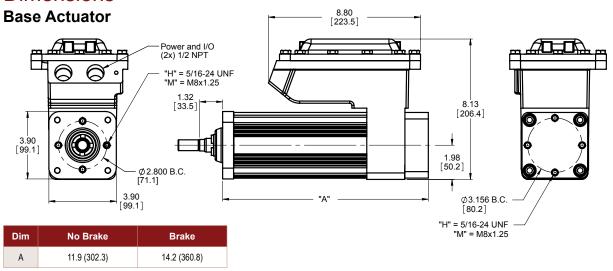
Inertia (zero stroke): Base inertia of an actuator with zero available stroke length.

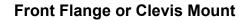
Inertia Adder (per unit of stroke): Inertia per inch of stroke that must be added to the base (zero stroke) inertia to determine the total actuator inertia.

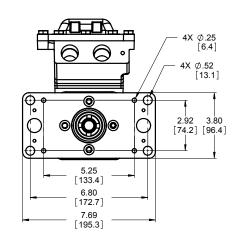
Weight (zero stroke): Base weight of an actuator with zero available stroke length.

Weight Adder (per unit of stroke): Weight adder inch unit of stroke that must be added to the base (zero stroke) weight to determine the total actuator weight.

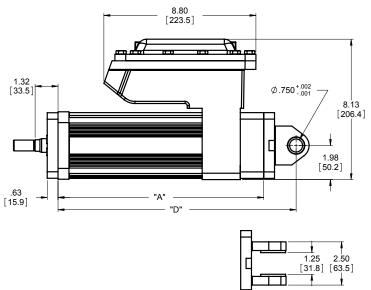
Dimensions



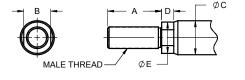


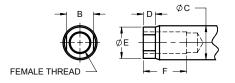


Dim	No Brake	Brake
Α	11.9 (302.3)	14.2 (360.8)
D	13.77 (349.9)	16.7 (408.2)



Rod End Options

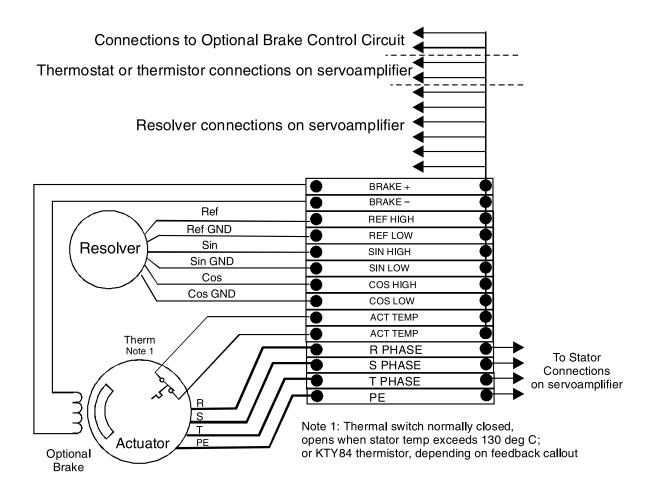


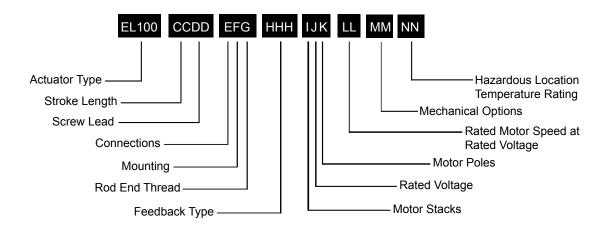


	Α	В	ØС	D	ØE	F	Male "M" Inch	Male "A" Metric	Female "F" Inch	Female "B" Metric
EL100 in (mm)	1.250 (31.8)	0.625 (17.0)	0.787 (20.0)	0.281 (7.1)	0.725 (18.4)	1.000 (25.4)	1/2 - 20 UNF – 2A	M16 x 1.5 6g	1/2 - 20 UNF – 2B	M16 x 1.5 6h

Pre-sale drawings and models are representative and are subject to change. Certified drawings and models are available for a fee. Consult your local Exlar representative for details.

Terminal Box Wiring





EL100 = Model Series

CC= Stroke Length

06 = 5.9 inch (150 mm)

DD = Roller Screw Lead (Linear Travel per Screw Revolution)

01 = 0.1 in/rev (2.54 mm/rev) 02 = 0.2 in/rev (5.08 mm/rev) 05 = 0.5 in/rev (12.7 mm/rev)

E = Connections

S = Terminal strips with 3/4" NPT port access, single row

F = Mounting

H = Threaded front and rear face, US standard thread

N = Threaded front and rear face, metric thread

B = Front and rear flange
F = Standard front flange
C = Standard rear clevis
R = Rear flange

G = Rod End

M = Male, US standard thread

A = Male, metric thread F = Female, US standard thread

B = Female, metric thread

W = Male, US standard thread SS

R = Male, metric thread SS V = Female, US standard thread SS

L = Female, metric thread SS

HHH = Controller Feedback Option

XX1 = Custom Feedback. Resolver only.
Consult Exlar

AB6 = Allen-Bradley/Rockwell - standard resolver

AM3 = Advanced Motion Control - standard resolver

AP1 = API Controls - standard resolver

BD2 = Baldor - standard resolver

BM2 = Baumueller - standard resolver

BR1 = B&R Automation

CT5 = Control Techniques - standard resolver

CO2 = Copely Controls - standard resolver

DT2 = Delta Tau Data Systems - standard resolver

EL1 = Elmo Motion Control - standard resolver

EX4 = Exlar - standard resolver

IF1 = Infranor - standard resolver

IN6 = Indramat/Bosch-Rexroth - standard resolver

JT1 = Jetter Technologies - standard resolver

KM5 = Kollmorgen/Danaher - standard resolver

LZ5 = Lenze/AC Tech - standard resolver

MD1 = Modicon - standard resolver

MG1 = Moog - standard resolver

MN4 = Momentum - Standard Resolver

MX1 = Metronix - standard resolver

OR1 = Ormec - standard resolver

PC7 = Parker - standard resolver - European only

PC0 = Parker - standard resolver - US only

PS3 = Pacific Scientific - standard resolver

SM2 = Siemens - standard resolver

SW1 = SEW/Eurodrive - standard resolver

WD1 = Whedco/Fanuc - standard resolver

I = Motor Stacks

2 = 2 stack motor

J = Rated Voltage

A = 24 VDC

B = 48 VDC

C = 120 VDC

1 = 115 Volt RMS

3 = 230 Volt RMS 5 = 400 Volt RMS

6 = 460 Volt RMS

K = Motor Poles

8 = 8 Pole Motor

LL = Rated Motor Speed at Rated Voltage

01 - 99 = Two digit number x 100 = rated

MM = Mechanical Options ²

PF = Pre-loaded roller screw follower¹

AR = External anti-rotate assembly (requires flange mount option)

RB = Rear brake

NN = Haz Loc Temp Rating

T3 = 200° C max allowable surface temperature

NOTES:

- 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.
- 2. For extended temperature operation consult factory for model number.



For options or specials not listed above or for extended temperature operation, please contact Exlar

ER120 Series

Explosion-Proof Rotary Motor and Gearmotor

For hazardous duty environments with constant exposure to flammable gasses or vapors* Exlar's ER Series rotary explosion-proof motors and gearmotors provide an excellent solution. Exlar's motors utilizing T-LAM technology, an innovative segmented winding, have been designed for efficiency, power and durability and provide a very high torque-to-size ratio when compared to other suppliers' motors.

The gearmotor comprises a brushless permanent magnet motor optimized for use with an integral planetary gear set. Through the uniform load sharing of several gears acting in concert, planetary gear heads are a very compact, reliable solution providing high torque, low backlash and low maintenance.

The ER Series motors are compatible with nearly any manufacturers' resolver-based amplifier.

The ER Series actuators are ideal for operating quarter turn or multi turn valves or shaft driven dampers in hazardous environments. These actuators are directly coupled shaft-to-shaft, eliminating ungainly mechanisms needed by the linear motion of pneumatics. Our compact T-LAM servo motors outperform any standard motor, providing excellent continuous modulating service.

* ER Series motors are rated for Class I, Division 1, Groups B, C and D. "Class I" means that flammable gasses or vapors may be present in the air in quantities sufficient to produce explosive or ignitable mixtures. "Division 1" means that hazardous concentrations in the air may exist continuously, intermittently, or periodically under normal operating conditions. "Group B" allows for atmospheres containing hydrogen, or gasses (or vapors) of equivalent hazard, such as manufactured gas. "Group C" allows for atmospheres containing ethyl-ether vapors, ethylene or cyclo propane. "Group D" allows for atmospheres containing gasoline, hexane, naphtha, benzene, butane, alcohol, acetone, benzol, lacquer solvent vapors or natural gas. ER Series motors are not rated for operation in atmospheres containing acetylene.

Technical Characteristics				
Frame Sizes	4.72 in (120 mm)			
Torque Range	up to 4696 lbf-in (530 Nm)			
Maximum Speed	3000 rpm			



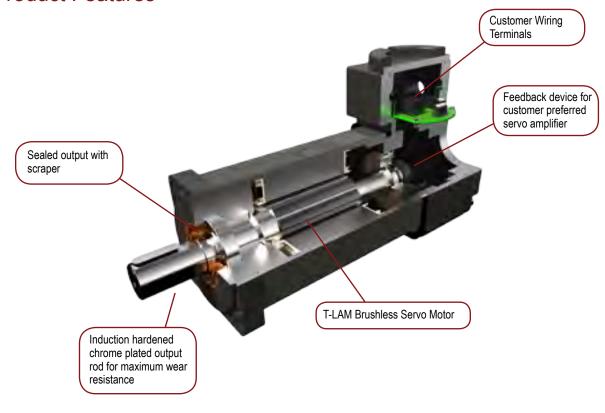


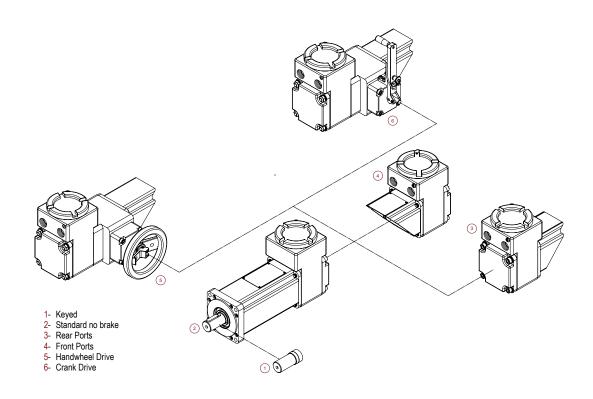


Operating Conditions and Usage					
Ambient Conditions:					
Ambient Operating °C -29 to 93 Temperature °F -20 to 199					
Storage Temperature	°C	-54 to 93			
IP Rating IP65S					

Features
T-LAM technology yielding 35% increase in continuous motor torque over traditional windings
Resolver feedback
8 pole motors
Rod end options
1, 2, or 3 stack motor availability compatible with nearly any resolver based servo amplifier
Several mounting configurations
Potted NPT leads
Windings from 24 VDC to 460 VAC rms
Class 180H insulation system

Product Features





ER120 Explosion-Proof Motors

Industries and Applications

Process Control

Valve control
Damper control
Turbine control
Choke valves
Fuel control

Plunger pumps

Automotive

Paint booths
Fuel control
Engine test stands

Defense

Weapons room

Material Handling

Printing presses

In hazardous duty environments where exposure to flammable gasses or vapors may be ever present, ER Series explosion proof motors and gear motors stand up to the challenge making them perfect for paint booths and printing presses.





With life counts in the hundreds of millions of cycles, response times in milliseconds and accuracy of 0.10%, Exlar offers superior electric control valve actuation replacing other traditional electric, pneumatic, and hydraulic actuators.

Electrical and Mechanical Specifications

Motor Stator		1A8	1B8	118	138	158	168	2A8	2B8	238	258	268	338	358	368
RMS SINUSOIDAL COM	IMUTATION D	ATA													
Continuous Motor	lbf-in	71.8	71.8	74.1	74.1	74.3	74.1	120.5	120.5	123.6	121.4	123.8	172.3	168.9	176.9
Torque	N-m	8.11	8.11	8.37	8.37	8.39	8.37	13.61	13.61	13.96	13.72	13.96	19.46	19.09	19.98
D 144 - T	lbf-in	143.6	143.6	148.2	148.2	148.6	148.2	241.0	241.0	247.2	242.8	247.2	344.5	337.8	353.7
Peak Motor Torque	N-m	16.22	16.22	16.74	16.74	16.79	16.74	27.23	27.23	27.93	27.43	27.93	38.93	38.17	39.96
Torque Constant (Kt)	lbf-in/A	5.3	5.3	4.3	8.7	15.7	17.3	5.3	5.3	8.7	15.8	17.3	8.5	15.8	17.5
(+/- 10% @ 25°C)	N-m/A	0.60	0.60	0.49	1.00	1.80	2.00	0.60	0.60	1.00	1.80	2.00	1.00	1.80	2.00
Continuous Current Ratio	ng A	15.2	15.2	19.1	9.5	5.3	4.8	25.5	25.5	15.9	8.6	8.0	22.7	11.9	11.3
Peak Current Rating	A	30.4	30.4	38.2	19.1	10.6	9.5	51.0	51.0	31.8	17.1	15.9	45.4	23.8	22.5
O-PEAK SINUSOIDAL C															
	lbf-in	71.8	71.8	74.1	74.1	74.3	74.1	120.5	120.5	123.6	121.4	123.6	74.1	74.1	74.1
Continuous Motor Torque															
10.400	N-m	8.11	8.11	8.37	8.37	8.39	8.37	13.61	13.61	13.96	13.72	13.96	8.37	8.37	8.37
Peak Motor Torque	lbf-in	143.6	143.6	148.2	148.2	148.6	148.2	241.0	241.0	247.2	242.8	247.2	344.5	337.8	353.7
	N-m	16.22	16.22	16.74	16.74	16.79	16.74	27.23	27.23	27.93	27.43	27.93	38.93	38.17	39.96
Torque Constant (Kt)	lbf-in/A	3.7	3.7	3.1	6.1	11.1	12.3	3.7	3.7	6.1	11.2	12.3	6.0	11.2	12.4
(+/- 10% @ 25°C)	N-m/A	0.42	0.42	0.35	0.70	1.25	1.39	0.42	0.42	0.70	1.27	1.39	0.68	1.27	1.40
Continuous Current Ratir	ng A	21.5	21.5	27.0	13.5	7.5	6.7	36.1	36.1	22.5	12.1	11.3	32.1	16.9	15.9
Peak Current Rating	Α	43.0	43.0	54.0	27.0	15.0	13.5	72.1	72.1	45.0	24.2	22.5	64.2	33.7	31.9
MOTOR DATA															
Voltage Constant (Ke)	Vrms/Krpm	36.1	36.1	29.6	59.2	106.9	118.5	36.1	36.1	59.2	108.2	118.5	58.0	108.2	119.8
(+/- 10% @ 25°C)	Vpk/Krpm	51.0	51.0	41.9	83.8	151.2	167.6	51.0	51.0	83.8	153.0	167.6	82.0	153.0	169.4
Pole Configuration									3				•		
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	0.31	0.31	0.20	0.80	2.60	3.21	0.13	0.13	0.34	1.17	1.35	0.20	0.72	0.81
Inductance (L-L) (+/- 15%)	mH	4.8	4.8	3.3	13.0	42.4	52.1	2.3	2.3	6.3	21.1	25.3	4.0	13.1	17.1
Armature Inertia	lbf-in-sec ²			0.00	0538			0.00818			0.01097				
(+/- 5%)	Kg-cm ²			6.0	082			9.242			12.400				
	lbf-in-sec ²							0.00	0030						
Brake Inertia	Kg-cm ²							0.3	339						
Brake Current @ 24VDC (+/- 10%)	А							1	.0						
Brake Holding Torque	lbf-in							1	77						
- Dry	(N-m)							2	20						
Brake Engage/ Disengage Time	ms							13	/50						
Mechanical Time Constant ™	ms	0.94	0.94	0.91	0.91	0.9	0.91	0.58	0.58	0.57	0.59	0.57	0.47	0.47	0.45
Electrical Time Constant (te)	ms	15.73	15.73	16.26	16.26	16.34	16.25	18.41	18.41	18.72	18.06	18.72	20.08	20.19	21.16
Eriction Torque	lbf-in	1.39	1.39	1.39	1.39	1.39	1.39	1.75	1.75	1.75	1.75	1.75	2.25	2.25	2.25
Friction Torque	N-m	0.157	0.157	0.157	0.157	0.157	0.157	0.197	0.197	0.197	0.197	0.197	0.254	0.254	0.254
Bus Voltage	Vrms	24 VDC	48 VDC	115	230	400	460	24 VDC	48 VDC	230	400	460	230	400	460
Speed @ Bus Voltage	rpm	300	750		30	00		300 750 3000 3000							
Insulation Class								180	(H)				-		
Ambient Temperature Rating -29°C to 93°C															
Insulation System Voltage	e Rating					T4. 1:	35°C Maxi		vable Surfa	ice Tempe	rature				
Tost data dariyad usina N					40" 4/0"						•				

Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" at 25°C ambient

Gearmotor Data

	1 Stack Motor		2 Stack Motor		3 Stack Motor	
SLG Armature Inertia* Ibf-in-sec² (Kg-cm²)	0.00538 (6.085)		0.00820 (9.274)		0.01102 (12.464)	
GEARING REFLECTED INERTIA	SINGLE REDUCTION			DOUBLE REDUCTION		
	Gear Stages	lbf-in-sec ²	(Kg-cm ²)	Gear Stages	lbf-in-sec ²	(Kg-cm ²)
	4:1	0.000851	(0.961)	16:1	0.000510	(0.576)
	5:1	0.000557	(0.629)	20:1, 25:1	0.000344	(0.389)
	10:1	0.000145	(0.164)	40:1, 50:1, 100:1	0.000092	(0.104)
Backlash at 1% rated torque:	10 Arc minutes (Efficiency: Single reduction 91%)			13 Arc minutes	(Efficiency: Double F	Reduction: 86%)

^{*} Add armature inertia to gearing inertia for total ER geared system inertia

Gearmotor General Performance Specifications

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

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

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

Output Torque Ratings - Mechanical

	<u> </u>					
ER120	Maximum Allowable Output	Output Torque @ Speed for 10,000 Hour Life - lbf-in (Nm)				
Ratio	Torque Ibf-in (Nm)	1000 RPM	2000 RPM	3000 RPM		
4:1	4696 (530.4)	1392 (157.3)	1132 (127.9)	1000 (112.9)		
5:1	4066 (459.4)	1445 (163.3)	1175 (132.8)	1040 (117.5)		
10:1	2545 (287.5)	1660 (187.6)	1350 (152.6)	1200 (135.6)		
16:1	4696 (530.4)	2112 (238.6)	1714 (193.0)	1518 (171.0)		
20:1	4696 (530.4)	2240 (253.1)	1840 (207.9)	1620 (183.0)		
25:1	4066 (459.4)	2350 (265.5)	1900 (214.7)	1675 (189.2)		
40:1	4696 (530.4)	2800 (316.4)	2240 (253.1)	2000 (225.9)		
50:1	4066 (459.4)	2900 (327.7)	2350 (265.5)	2100 (237.3)		
100:1	2545 (287.5)	2500 (282.5)	2500 (282.5)	2400 (271.2)		

Radial Load and Bearing Life

RPM	ER120 lbf (N)	RPM	ER120 (Gear) lbf (N)
50	579 (2576)	50	1223 (5440)
100	460 (2046)	100	971 (4318)
250	339 (1508)	250	715 (3181)
500	269 (1197)	500	568 (2525)
1000	214 (952)	1000	451 (2004)
3000	148 (658)	3000	218 (970)

Side load ratings shown below are for 10,000 hour bearing life at 25 mm from motor face at given rpm.

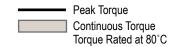
Visit www.exlar.com for full details on radial load and bearing life.

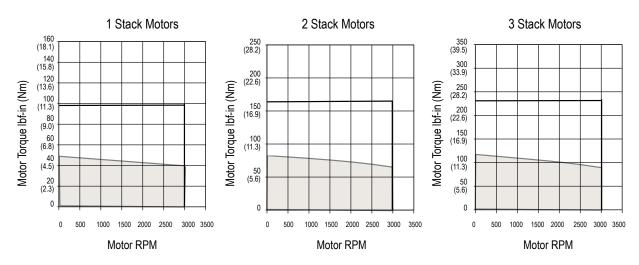
Motor and Gearmotor Weight

	Motor	Gearmotor		
ER120	Motor Weight Ib (kg)	1 Stage lb (kg)	2 Stage lb (kg)	
1 Stack	29.9 (13.56)	37.7 (17.10)	43.2 (19.60)	
2 Stack	37.4 (16.96)	45.2 (20.50)	50.7 (23.00)	
3 Stack	44.8 (20.32)	52.7 (23.90)	58.3 (26.45)	

^{*} For brake option add 0.9 lb (0.408 kg) mass.

Speed/Torque Curves





For gearmotors, divide speed by gear ratio; multiply torque by gear ratio and effciency. Efficencies: 1 Stage = 0.91, 2 Stage = 0.86 Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" at 25°C ambient.

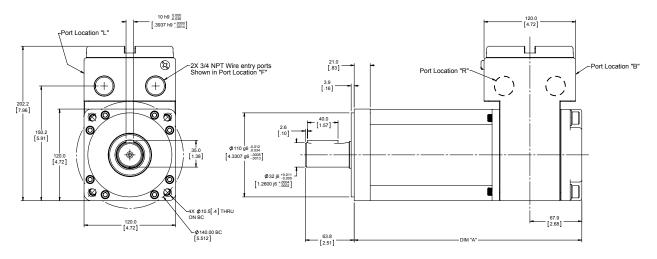
Notes



ER120 Explosion-Proof Motors

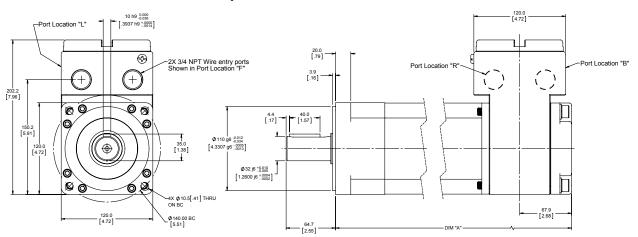
Dimensions

Base Actuator



Gear Reduction		Dimension "A"
Stages	Stacks	Length mm (in)
	1	297.9 (11.73)
0	2	348.7 (13.73)
	3	399.5 (15.73)

ER120 with Gear Reduction Option



Gear Reduction		Dimension "A"		
Stages Stacks		Length mm (in)		
1	1	389.8 (15.35)		
	2	440.7 (17.35)		
	3	491.5 (19.35)		

Gear Reduction		Dimension "A"
Stages Stacks		Length mm (in)
2	1	429.9 (16.93)
	2	480.8 (18.93)
	3	531.6 (20.93)

Pre-sale drawings and models are representative and are subject to change. Certified drawings and models are available for a fee. Consult your local Exlar representative for details.

ER = Model Series

ER = Explosion proof rotary actuator

AAA = Frame Size

120 = 120 mm

BBB = Gear Reduction Ratio

Single reduction ratio

004 = 4:1 005 = 5:1

010 = 10:1

Double reduction ratio (N/A on 075 mm)

016 = 16:1

020 = 20:1

025 = 25:1

040 = 40:1

050 = 50:1

100 = 100:1

C = Shaft Type

K = Keved

R = Smooth/round

D = Connections

F = Two 0.75 in NPT Ports, Front Facing (as viewed from rod end)

= Two 0.75 in NPT Ports, Back Facing (as viewed from rod end)

R = Two 0.75 in NPT Ports, Right Facing (as viewed from rod end)

L = Two 0.75 in NPT Ports, Left Facing (as viewed from rod end)

F = Brake Options

S = Standard no brake

B = Brake

GGG = Feedback Type

See page 207 for detailed information

HHH = Motor Stator, All 8 Pole

		•	
118=1 Stack	115 Vrms	158 = 1 Stack	
138 = 1 Stack		258 = 2 Stack	400 Vrms
238 = 2 Stack	230 Vrms	358 = 3 Stack	
338 = 3 Stack		168 = 1 Stack	
		268 = 2 Stack	460 Vrms
		368 = 3 Stack	

II = Speed Designations

30 = 3000 rpm

MM = Mechanical Options 1

HW = Manual drive, handwheel with Interlock switch

CD = Crank drive with interlock switch

NOTES:

1. For extended temperature operation consult factory for model number.

Contact your local sales representative regarding all special actuator components.



For options or specials not listed above or for extended temperature operation, please contact Exlar