CURTISS-WRIGHT

Exlar® FTX Catalog

High-Force Electric Actuator

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CURTISS-WRIGHT

Exlar® FTX

The Perfect Hydraulic Actuator Replacement

Key Features

- Durable roller screw for extended life
- Minimal maintenance
- Rugged and reliable

Applications

- Automotive
  - Lift station, automated assembly, riviting, fastening, and joining
- Food Processing
  - Packaging machinery and pick and place systems
- Machining
  - Automated flexible fixturing, machine tooling, parts clamping, and precision grinders
- Entertainment / Simulation
  - Motion simulators and ride automation
- Process Control
  - Conveyor diverters / gates, precision valve control, and tension control
- Plastics
  - Cut-offs, die cutters, molding, and formers
- Material Handling
  - Stamping, indexing stages, product sorting, material cutting, web guidance, wire winding, pressing, and tube bending

Exlar FTX High-Force Electric Actuators, the Perfect Hydraulic Actuator Replacement

Hydraulic Cylinder Replacement

Hydraulic cylinders provide long life and high force in a small package. When replacing hydraulic actuators with electric, roller screws are a superior alternative to ball screws. The Exlar FTX high force electric actuators were designed specifically to allow easy migration from traditional hydraulic actuation to electric.

- Based on planetary roller screw technology, the Exlar FTX offers 15X the life and 2X the force density, not attainable with more common ball screw based electric actuators, making the Exlar FTX the right choice when migrating from hydraulic to electric actuation.

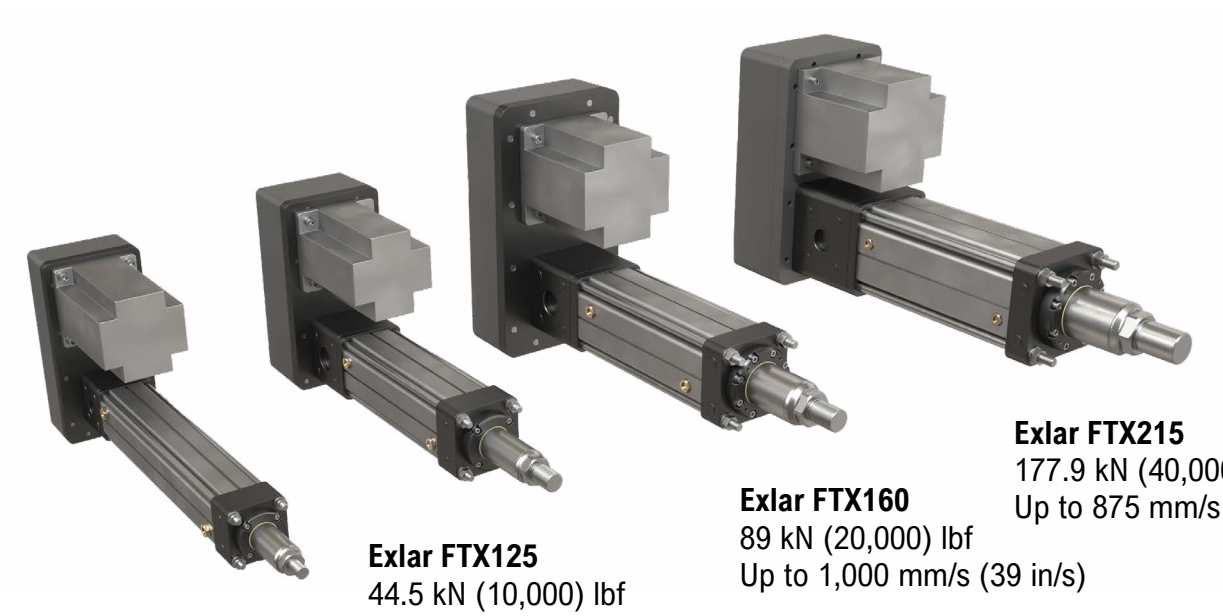
Rugged and Reliable

Hydraulic cylinders are commonly installed in harsh industrial settings. Therefore, all Exlar FTX models are environmentally sealed to IP65S. In addition, its planetary roller screw mechanism withstands significantly higher shock loads than weaker ball screw alternatives. Migrate to electric with confidence knowing the Exlar FTX is every bit as rugged and reliable as the hydraulics they are designed to replace.

Minimal Maintenance

More and more machine builders are looking to eliminate the mess and downtime associated with hydraulic fluid leaks. Electric actuation not only eliminates the problems associated with fluid leaks, it offers significantly higher levels of performance and flexibility than is possible even with servo-hydraulic solutions. Exlar FTX roller screw actuators allow machine builders to meet the ever-increasing performance demands of their customers while minimizing or eliminating the maintenance issues associated with traditional hydraulic solutions.

Four Frame Sizes Spanning from 95 mm to 215 mm



Exlar FTX095
22.2 kN (5,000) lbf
Up to 1500 mm/s (59.3 in/s)

Exlar FTX125
44.5 kN (10,000) lbf
Up to 1,166 mm/s (46 in/s)

Exlar FTX160
89 kN (20,000) lbf
Up to 1,000 mm/s (39 in/s)

Exlar FTX215
177.9 kN (40,000) lbf
Up to 875 mm/s (34.4 in/s)

Figure 1: Four Frame Sizes

Product Features

The Exlar FTX actuators are designed with features that deliver exceptional reliability and life with 100% duty cycle, enabling continuous operation without downtime. The robust design ensures durability and high performance in demanding environments. Low maintenance requirements reduce operational costs and simplify upkeep. These features make it ideal for heavy-duty industrial applications.

Figure 2: Product Features

Configure Options Online with our 3D Model Builder

You can easily configure and download a model from our 3D model builder, available on our website in the product pages.

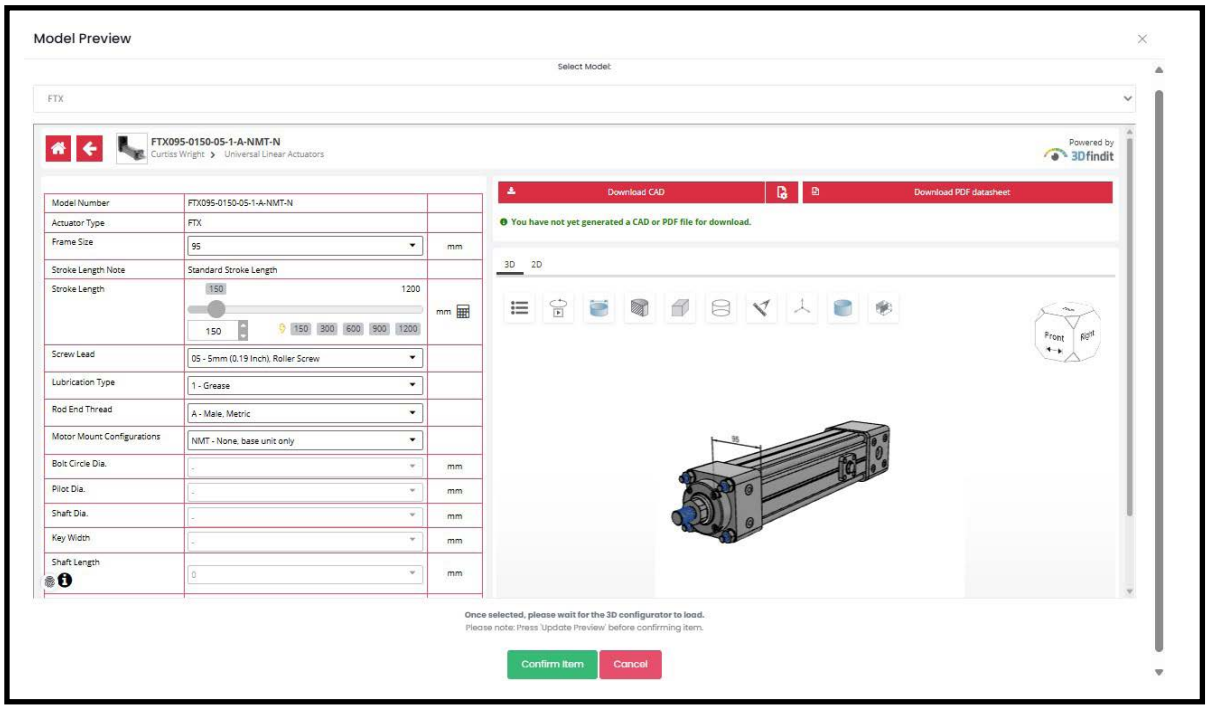
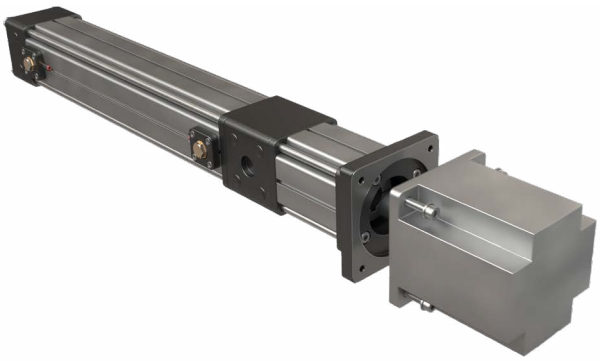
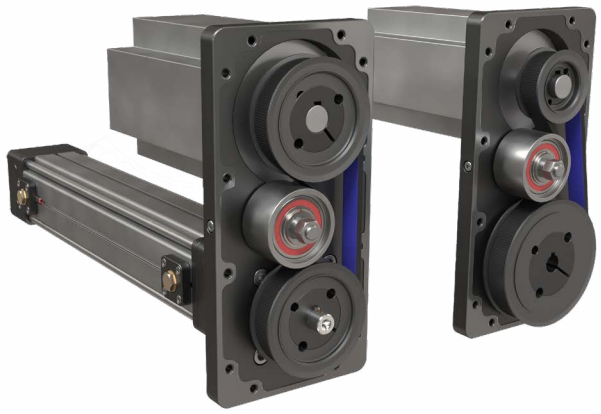


Figure 3: 3D Model Configurator

Flexible Motor or Gearbox Mounting Options

Wide range of motor mounts — inline or parallel — for the most common servo motor and gearheads





Inline

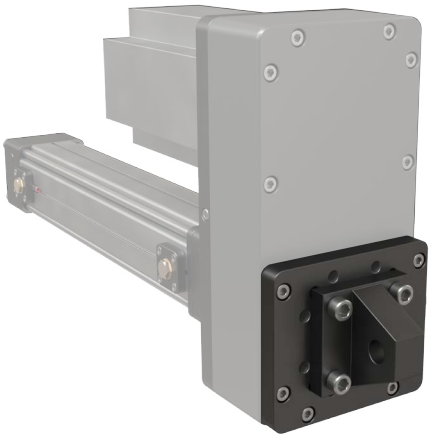
Easy motor installation with no key required

Parallel 1:1 **Parallel 2:1**

Parallel mounting offered in 1:1 or 2:1

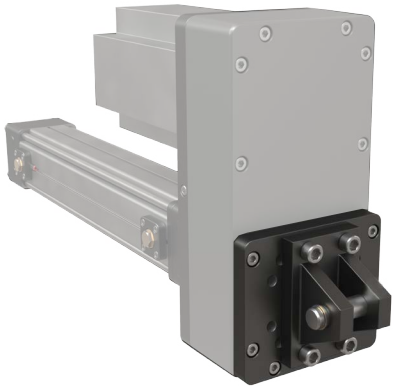
Flexible Mounting Options

Enables seamless integration into diverse applications, enhancing installation versatility and alignment precision; robust designs ensure stability under high loads, extending actuator life with minimal maintenance.



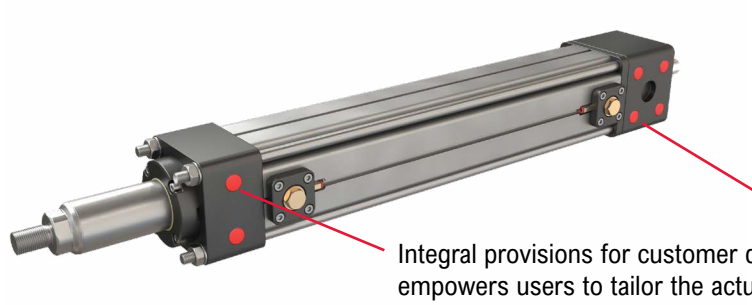
Rear Eye

Rear Trunion



Rear Clevis

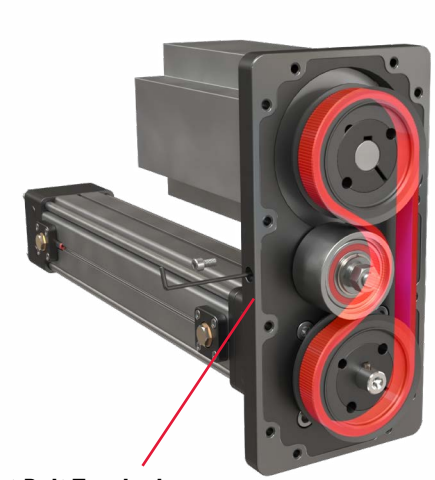
Front Flange



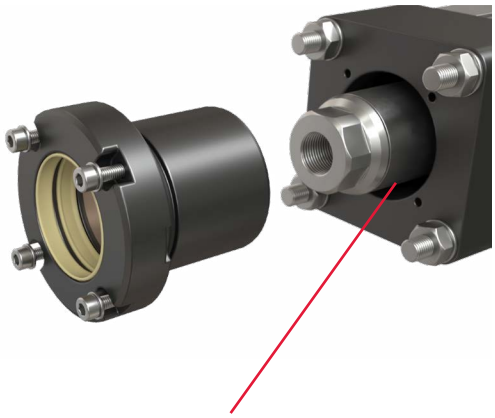
Integral provisions for customer designed mounting empowers users to tailor the actuator to the unique system requirements, increasing compatibility with specialized setups and enhancing design flexibility

Easy Maintenance & Installation

Innovative idler pulley tensioning system: simplifies belt tension adjustment with a hex wrench, ensuring precise repeatable tensioning for optimal performance enhances reliability and reduces maintenance time compared to t-slot base tensioning motor mount adjustments.



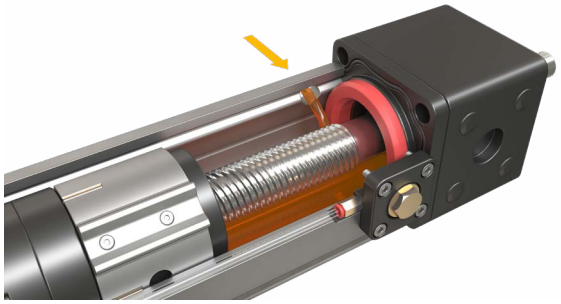
Easy to Adjust Belt Tensioning



IP65S field replaceable front seal bushing (FSB) kit to easily replace the seal, scrapper, and main rod bearing with four accessible bolts. Kit ships as an assembly to reduce maintenance time.

Multiple Lubrication Options

- Easily accessible ports for maintenance and inspections
- Regrease point directly to roller screw nut for grease-filled units
- Low-temperature grease options suitable down to -40 °C



Mechanical Specifications

Exlar FTX095

		05	10	20
Screw Lead	mm	5	10	20
	in	0.197	0.394	0.787
Maximum Force	kN	22.2	22.2	22.2
	lbf	5,000	5,000	5,000
Life at Maximum Force	km	392	626	1440
	in x 10^6	15.4	24.6	56.7
C_a (Dynamic Load Rating)	kN	95.2	88.3	92.5
	lbf	21,400	19,850	20,800
Maximum Input Torque	Nm	22.1	44.3	88.5
	lbf-in	196	392	783
Max Rated rpm @ Input Shaft	rpm	4,500	4,500	4,500
Maximum Linear Speed @ Maximum Rated rpm	mm/s	373	750	1,500
	in/s	14.7	29.5	59.3
Friction Torque (Typical)	Nm	1.12	1.12	1.12
	lbf-in	10	10	10

Weights kg (lbs)		
Base Actuator Weight (Zero Stroke)	kg	10
	lb	21
Actuator Weight Adder (Per 25 mm of stroke)	kg	0.39
	lb	0.87
Adder for Inline (excluding motor)	kg	2.9
	lb	6.5
Adder for Parallel Drive (excluding motor)	kg	13.1
	lb	28.9
Adder for Front Flange	kg	1.9
	lb	4.2
Adder for Rear Clevis	kg	5.3
	lb	11.7
Adder for Rear Eye	kg	5.1
	lb	11.3
Adder for Rear Trunnion	kg	1.9
	lb	4.3

Operating Conditions and Usage		
Accuracy:		
Screw Travel Variation	mm (in)	0.030 (0.0012)
Screw Lead Error	mm/300 mm (in/ft)	0.025 (0.001)
Screw Lead Backlash	mm (in)	0.060 (0.002)
Ambient Conditions:		
Standard Ambient Temperature	°C	0 to 85
Low Temperature Grease Option		-40
IP Rating		IP65S

Long Stroke Dynamic Load Rating (C_a)				
Exlar FTX095		**05**	**10**	**20**
*C_a (Dynamic Load Rating) Greater than 900 mm Stroke	kN	95.2	88.3	92.5
	lbf	21,400	19,850	20,800

Actuator Inertia			
Base Unit Inertia		**Zero Stroke [kg-m² (lbf-in-sec²)]**	**Add per 25 mm [kg-m² (lbf-in-sec²)]**
5 mm Lead		8.27×10^{-4} (7.32×10^{-3})	2.19×10^{-6} (1.94×10^{-5})
10 mm Lead		8.33×10^{-4} (7.37×10^{-3})	2.42×10^{-6} (2.14×10^{-5})
20 mm Lead		8.57×10^{-4} (7.58×10^{-3})	3.31×10^{-6} (2.93×10^{-5})
Inline Drive Inertia	**Inline Unit - w/Motor Coupling**	**Inline Unit - w/Motor Coupling - For Gearbox Mount**	**Add per 25 mm**
5 mm Lead	9.27×10^{-4} (8.20×10^{-3})	1.09×10^{-3} (9.62×10^{-3})	2.19×10^{-6} (1.94×10^{-5})
10 mm Lead	9.33×10^{-4} (8.26×10^{-3})	1.09×10^{-3} (9.67×10^{-3})	2.42×10^{-6} (2.14×10^{-5})
20 mm Lead	9.57×10^{-4} (8.47×10^{-3})	1.12×10^{-3} (9.89×10^{-3})	3.31×10^{-6} (2.93×10^{-5})
Parallel Drive Inertia		**1:1 Reduction**	**2:1 Reduction**
5 mm Lead (zero stroke)		4.90×10^{-3} (4.34×10^{-2})	2.22×10^{-3} (1.97×10^{-2})
Add per 25 mm stroke		2.19×10^{-6} (1.94×10^{-5})	5.48×10^{-7} (4.85×10^{-6})
10 mm Lead (zero stroke)		4.91×10^{-3} (4.34×10^{-2})	2.23×10^{-3} (1.97×10^{-2})
Add per 25 mm stroke		2.42×10^{-6} (2.14×10^{-5})	6.04×10^{-7} (5.34×10^{-6})
20 mm Lead (zero stroke)		4.93×10^{-3} (4.37×10^{-2})	2.23×10^{-3} (1.98×10^{-2})
Add per 25 mm stroke		3.31×10^{-6} (2.93×10^{-5})	8.28×10^{-7} (7.33×10^{-6})

Standard Motor/Gearbox Mount Codes for the Exlar FTX095

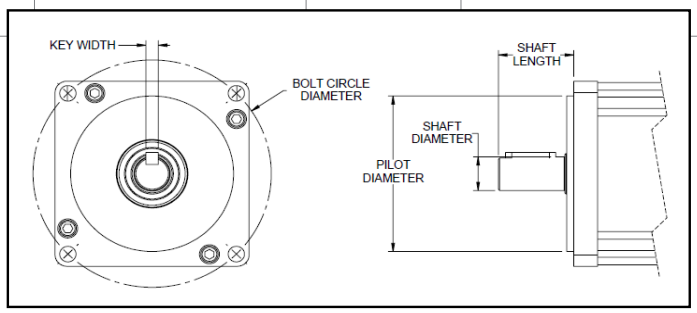
Exlar FTX095 Motor / Gearbox Mounts

None	Inline					Parallel 1:1					Parallel 2:1				
			Dimension in mm					Dimension in mm					Dimension in mm		
Motor Flange Code	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length
NMT- 00	N10-	02	68	60	30	P10-	02	68	60	46	P20-	02	68	60	44
	N10-	04	75	60	30	P10-	04	75	60	46	P20-	04	75	60	44
	N10-	05	85	70	37	P10-	05	85	70	46	P20-	05	85	70	44
	N10-	10	100	80	30	P10-	10	100	80	35	P20-	10	100	80	37
	N10-	11	115	95	30	P10-	11	115	95	39	P20-	11	115	95	37
	N10-	12	130	110	30	P10-	12	130	110	46	P20-	12	130	110	44
	N10-	13	130	95	30	P10-	13	130	95	46	P20-	13	130	95	44
	N10-	14	145	110	30	P10-	14	145	110	46	P20-	14	145	110	44
	N10-	19	165	130	30	P10-	19	165	130	46	P20-	19	165	130	44

Motor Shaft Code	Motor Shaft Code	Shaft Diam.	Key Width*	Motor Shaft Code	Shaft Diam.	Key Width*	Motor Shaft Code	Shaft Diam.	Key Width*
00	AA	24	8	AA	24	8	AA	24	8
	BA	22	6	BA	22	6	BA	22	6
	CA	22	8	CA	22	8	CA	22	8
	DA	20	6	DA	20	6	DA	20	6
	EA	19	6	EA	19	6	EA	19	6
	FA	16	5	FA	16	5	FA	16	5
	GA	14	5	GA	14	5	GA	14	5
	LA	28	8	LA	28	8	LA	28	8
	MA	32	10	MA	32	10			

Shaft Length	Shaft Length		Shaft Length		Shaft Length	
000	030, 032, 040, 048, 050, 055, 058, 060, 063, 065, 070, 080	Pick closest shaft length within 2 mm if your exact length is not listed	035-084	Allowable shaft length range in 1 mm increments	037-084	Allowable shaft length range in 1 mm increments

*Key not required for operation



NOTE: Motor/gearbox key not required to interface with Exlar FTX Series actuators

Exlar FTX125

		05	10	20
Screw Lead	mm	5	10	20
	in	0.197	0.394	0.787
Maximum Force	kN	44.5	44.5	44.5
	lbf	10,000	10,000	10,000
Life at Maximum Force	km	249.2	486.3	719.6
	in x 10^6	9.81	19.14	28.33
C_a (Dynamic Load Rating)	kN	163.7	162.4	146.9
	lbf	36,800	36,500	33,014
Maximum Input Torque	Nm	46.5	82.3	177.0
	lbf-in	412	728	1,566
Max Rated rpm @ Input Shaft	rpm	3,500	3,500	3,500
Maximum Linear Speed @ Maximum Rated rpm	mm/s	292	583	1,166
	in/s	11.5	23	46
Friction Torque (Typical)	Nm	2.23	2.23	2.23
	lbf-in	20	20	20

Weights kg (lbs)		
Base Actuator Weight (Zero Stroke)	kg	21
	lb	47
Actuator Weight Adder (Per 25 mm of stroke)	kg	0.84
	lb	1.85
Adder for Inline (excluding motor)	kg	6.8
	lb	15.0
Adder for Parallel Drive (excluding motor)	kg	25.6
	lb	56.5
Adder for Front Flange	kg	3.6
	lb	7.9
Adder for Rear Clevis	kg	6.5
	lb	14.3
Adder for Rear Eye	kg	6.3
	lb	13.8
Adder for Rear Trunnion	kg	3.1
	lb	6.8

Operating Conditions and Usage		
Accuracy:		
Screw Travel Variation	mm (in)	0.030 (0.0012)
Screw Lead Error	mm/300 mm (in/ft)	0.025 (0.001)
Screw Lead Backlash	mm (in)	0.060 (0.002)
Ambient Conditions:		
Standard Ambient Temperature	°C	0 to 85
Low Temperature Grease Option		-40
IP Rating		IP65S

Long Stroke Dynamic Load Rating (C_a)				
Exlar FTX125		**05**	**10**	**20**
*C_a (Dynamic Load Rating) Greater than 900 mm Stroke	kN	143.4	162.4	146.9
	lbf	32,240	36,500	33,014

Actuator Inertia			
Base Unit Inertia		**Zero Stroke [kg-m² (lbf-in-sec²)]**	**Add per 25 mm [kg-m² (lbf-in-sec²)]**
5 mm Lead		2.55×10^{-3} (2.26×10^{-2})	4.62×10^{-5} (4.09×10^{-4})
10 mm Lead		2.56×10^{-3} (2.27×10^{-2})	4.65×10^{-5} (4.12×10^{-4})
20 mm Lead		2.61×10^{-3} (2.31×10^{-2})	4.81×10^{-5} (4.26×10^{-4})
Inline Drive Inertia	**< 32 mm Motor - Shaft Diameter**	**> 32 mm Motor - Shaft Diameter**	**Add per 25 mm**
5 mm Lead	2.81×10^{-3} (2.49×10^{-2})	3.35×10^{-3} (2.97×10^{-2})	4.62×10^{-5} (4.09×10^{-4})
10 mm Lead	2.82×10^{-3} (2.50×10^{-2})	3.36×10^{-3} (2.98×10^{-2})	4.65×10^{-5} (4.12×10^{-4})
20 mm Lead	2.87×10^{-3} (2.54×10^{-2})	3.41×10^{-3} (3.02×10^{-2})	4.81×10^{-5} (4.26×10^{-4})
Parallel Drive Inertia		**1:1 Reduction**	**2:1 Reduction**
5 mm Lead (zero stroke)		9.43×10^{-3} (8.34×10^{-2})	4.66×10^{-3} (4.12×10^{-2})
Add per 25 mm stroke		4.62×10^{-5} (4.09×10^{-4})	1.15×10^{-5} (1.02×10^{-4})
10 mm Lead (zero stroke)		9.44×10^{-3} (8.35×10^{-2})	4.66×10^{-3} (4.13×10^{-2})
Add per 25 mm stroke		4.65×10^{-5} (4.12×10^{-4})	1.16×10^{-5} (1.03×10^{-4})
20 mm Lead (zero stroke)		9.49×10^{-3} (8.39×10^{-2})	4.81×10^{-5} (4.26×10^{-4})
Add per 25 mm stroke		4.67×10^{-3} (4.14×10^{-2})	1.20×10^{-5} (1.06×10^{-4})

Standard Motor/Gearbox Mount Codes for the Exlar FTX125

Exlar FTX125 Motor / Gearbox Mounts

None		Inline				Parallel 1:1				
				Dimension in mm				Dimension in mm		
Motor Flange Code		Motor Flange Code		Bolt Circle	Pilot Diam.	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length
NMT-	00	N10-	05	85	70	P10-	05	85	70	50
		N10-	10	100	80	P10-	10	100	80	50
		N10-	12	130	110	P10-	12	130	110	55
		N10-	14	145	110	P10-	14	145	110	55
		N10-	18	120	90	P10-	18	120	90	55
		N10-	19	165	130	P10-	19	165	130	55
		N10-	20	200	114.3	P10-	20	200	114.3	55
		N10-	21	215	130	P10-	21	215	130	55
		N10-	23	215	180	P10-	23	215	180	65

Motor Shaft	Motor Shaft Code	Shaft Diam.	Key Width*	Min. Shaft Length	Motor Shaft Code	Shaft Diam.	Key Width*
00	AA	24	8	40	AA	24	8
	AB	28	10	40	AB	28	10
	BA	22	6	40	BA	22	6
	DA	20	6	40	DA	20	6
	EA	19	6	40	EA	19	6
	LA	28	8	40	LA	28	8
	MA	32	10	40	MA	32	10
	NA	35	10	40	NA	35	10
	PA	38	10	80	PA	38	10
	RA	42	12	80	RA	42	12
	SA	42	10	80	SA	42	10
	YA	24	10	40	YA	24	10

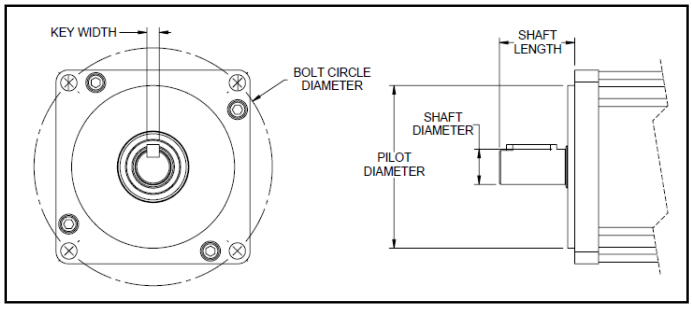
Shaft Length	Shaft Length		Shaft Length	
000	040, 046, 049, 050, 055, 058, 060, 063, 065, 068, 072, 080, 082, 088, 097, 100, 102, 105, 112, 113	Pick closest shaft length within 2 mm if your exact length is not listed	050-122	Allowable shaft length range in 1 mm increments

*Key not required for operation

Parallel 2:1															
Motor Flange Code		Dimension in mm		Min shaft length - Per Motor Shaft Code									Motor Shaft Code	Shaft Diam.	Key Width*
		Bolt Circle	Pilot Diam.	AA	AB = LA	BA	DA	EA	LA	MA	NA	YA = AA	AA	24	8
P20-	05	85	70	45	59	42	42	45	59	59	59	45	AB	28	10
P20-	10	100	80	45	59	42	42	45	59	59	59	45	BA	22	6
P20-	12	130	110	38	52	35	35	38	52	52	52	38	DA	20	6
P20-	14	145	110	50	64	47	47	50	64	64	64	50	EA	19	6
P20-	19	165	130	50	64	47	47	50	64	64	64	50	LA	28	8
P20-	20	200	114.3	50	64	47	47	50	64	64	64	50	MA	32	10
P20-	21	215	130	50	64	47	47	50	64	64	64	50	NA	35	10
P20-	23	215	180	53	67	50	50	53	67	67	67	53	YA	24	10

Shaft Length	
045-122	Allowable shaft length range in 1 mm increments

*Key not required for operation



NOTE: Motor/gearbox key not required to interface with Exlar FTX Series actuators

Exlar FTX160

		06	12	30
Screw Lead	mm	6	12	30
	in	0.236	0.472	1.181
Maximum Force	kN	89.0	89.0	89.0
	lbf	20,000	20,000	20,000
Life at Maximum Force	km	154.9	416.6	358.9
	in x 10^6	6.1	16.4	21.2
C_a (Dynamic Load Rating)	kN	263.7	290.0	233.0
	lbf	59,275	65,200	52,400
Maximum Input Torque	Nm	106	212	531
	lbf-in	940	1,880	4,699
Max Rated rpm @ Input Shaft	rpm	2,000	2,000	2,000
Maximum Linear Speed @ Maximum Rated rpm	mm/s	201	401	1000
	in/s	7.9	15.8	39.0
Friction Torque (Typical)	Nm	4.54	4.54	4.54
	lbf-in	40	40	40

Weights kg (lbs)		
Base Actuator Weight (Zero Stroke)	kg	49
	lb	108
Actuator Weight Adder (Per 25 mm of stroke)	kg	1.62
	lb	3.6
Adder for Inline (excluding motor)	kg	14.2
	lb	31.5
Adder for Parallel Drive (excluding motor)	kg	53.1
	lb	117.8
Adder for Front Flange	kg	7.4
	lb	16.4
Adder for Rear Clevis	kg	21.2
	lb	48.8
Adder for Rear Eye	kg	22.4
	lb	49.7
Adder for Rear Trunnion	kg	10.9
	lb	24.2

Operating Conditions and Usage		
Accuracy:		
Screw Travel Variation	mm (in)	0.030 (0.0012)
Screw Lead Error	mm/300 mm (in/ft)	0.025 (0.001)
Screw Lead Backlash	mm (in)	0.060 (0.002)
Ambient Conditions:		
Standard Ambient Temperature	°C	0 to 85
Low Temperature Grease Option		-40
IP Rating		IP65S

Long Stroke Dynamic Load Rating (C_a)				
Exlar FTX160		**06**	**12**	**30**
*C_a (Dynamic Load Rating) Greater than 900 mm Stroke	kN	223.6	261.2	233
	lbf	50,270	58,720	52,400

Actuator Inertia			
Base Unit Inertia		**Zero Stroke [kg-m² (lbf-in-sec²)]**	**Add per 25 mm [kg-m² (lbf-in-sec²)]**
6 mm Lead		1.35×10^{-2} (1.19×10^{-1})	2.57×10^{-4} (2.27×10^{-3})
12 mm Lead		1.35×10^{-2} (1.20×10^{-1})	2.58×10^{-4} (2.28×10^{-3})
30 mm Lead		1.38×10^{-2} (1.22×10^{-1})	2.66×10^{-4} (2.36×10^{-3})
Inline Drive Inertia	**< 32 mm Motor - Shaft Diameter**	**> 32 mm Motor - Shaft Diameter**	**Add per 25 mm**
6 mm Lead	1.47×10^{-2} (1.30×10^{-1})	1.67×10^{-2} (1.48×10^{-1})	$2.57x\ 10^{-4}$ (2.27×10^{-3})
12 mm Lead	1.47×10^{-2} (1.30×10^{-1})	1.68×10^{-2} (1.49×10^{-1})	2.58×10^{-4} (2.28×10^{-3})
30 mm Lead	1.50×10^{-2} (1.33×10^{-1})	1.71×10^{-2} (1.51×10^{-1})	2.66×10^{-4} (2.36×10^{-3})
Parallel Drive Inertia		**1:1 Reduction**	**2:1 Reduction**
6 mm Lead (zero stroke)		5.27×10^{-2} (4.67×10^{-1})	2.30×10^{-2} (2.04×10^{-1})
Add per 25 mm stroke		2.57×10^{-4} (2.27×10^{-3})	6.42×10^{-5} (5.68×10^{-4})
12 mm Lead (zero stroke)		5.28×10^{-2} (4.67×10^{-1})	2.30×10^{-2} (2.04×10^{-1})
Add per 25 mm stroke		2.58×10^{-4} (2.28×10^{-3})	6.45×10^{-5} (5.71×10^{-4})
30 mm Lead (zero stroke)		5.30×10^{-2} (4.69×10^{-1})	2.31×10^{-2} (2.05×10^{-1})
Add per 25 mm stroke		2.66×10^{-4} (2.36×10^{-3})	6.66×10^{-5} (5.89×10^{-4})

Standard Motor/Gearbox Mount Codes for the Exlar FTX160

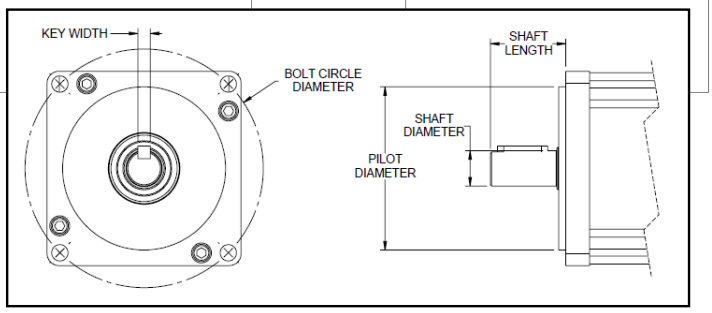
Exlar FTX160 Motor / Gearbox Mounts

None		Inline				Parallel 1:1					Parallel 2:1				
				Dimension in mm				Dimension in mm					Dimension in mm		
Motor Flange Code		Motor Flange Code		Bolt Circle	Pilot Diam.	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length
NMT-	00	N10-	10	100	80	P10-	10	100	80	59	P20-	10	100	80	46
		N10-	12	130	110	P10-	12	130	110	59	P20-	12	130	110	58
		N10-	18	120	90	P10-	18	120	90	69	P20-	18	120	90	58
		N10-	19	165	130	P10-	19	165	130	69	P20-	19	165	130	44
		N10-	20	200	114.3	P10-	20	200	114.3	69	P20-	20	200	114.3	58
		N10-	21	215	130	P10-	21	215	130	69	P20-	21	215	130	55
		N10-	22	215	160	P10-	22	215	160	69	P20-	23	215	180	58
		N10-	23	215	180	P10-	23	215	180	69	P20-	24	235	200	58
		N10-	24	235	200	P10-	24	235	200	69	P20-	25	265	230	58
		N10-	25	265	230	P10-	25	265	230	69					

Motor Shaft Code	Motor Shaft Code	Shaft Diam.	Key Width*	Min. Shaft Length	Motor Shaft Code	Shaft Diam.	Key Width*	Motor Shaft Code	Shaft Diam.	Key Width*
00	AA	24	8	48	AA	24	8	AA	24	8
	BA	22	6	48	BA	22	6	BA	22	6
	LA	28	8	48	LA	28	8	LA	28	8
	MA	32	10	48	MA	32	10	MA	32	10
	NA	35	10	48	NA	35	10	NA	35	10
	PA	38	10	80	PA	38	10	PA	38	10
	QA	40	12	80	QA	40	12	QA	40	12
	RA	42	12	80	RA	42	12	RA	42	12
	SA	42	10	80	SA	42	10	SA	42	10
	UA	55	16	80	UA	55	16	ZA	25	8
	ZA	25	8	48	ZA	25	8			

Shaft Length	Shaft Length		Shaft Length		Shaft Length	
000	040, 048, 050, 055, 058, 060, 065, 070, 072, 080, 082, 085, 088, 097, 100, 105, 110, 112, 113, 116	Pick closest shaft length within 2 mm if your exact length is not listed	059-124	Allowable shaft length range in 1 mm increments	046-124	Allowable shaft length range in 1 mm increments

*Key not required for operation



NOTE: Motor/gearbox key not required to interface with Exlar FTX Series actuators

Exlar FTX215

		06	12	30
Screw Lead	mm	6	12	30
	in	0.236	0.472	1.181
Maximum Force	kN	177.9	177.9	177.9
	lbf	40,000	40,000	40,000
Life at Maximum Force	km	78.7	161.8	414.3
	in x 10^6	3.1	6.4	16.3
C_a (Dynamic Load Rating)	kN	398	423	376
	lbf	89,500	95,200	84,700
Maximum Input Torque	Nm	243	425	976
	lbf-in	2,148	3,760	8,642
Max Rated rpm @ Input Shaft	rpm	1,750	1,750	1,750
Maximum Linear Speed @ Maximum Rated rpm	mm/s	175	351	875
	in/s	6.9	13.8	34.4
Friction Torque (Typical)	Nm	5.65	5.65	5.65
	lbf-in	50	50	50

Weights kg (lbs)		
Base Actuator Weight (Zero Stroke)	kg	103
	lb	227
Actuator Weight Adder (Per 25 mm of stroke)	kg	2.70
	lb	5.96
Adder for Inline (excluding motor)	kg	38.6
	lb	85.1
Adder for Parallel Drive (excluding motor)	kg	62.3
	lb	137.3
Adder for Front Flange	kg	26.7
	lb	58.8
Adder for Rear Clevis	kg	32.5
	lb	71.6
Adder for Rear Eye	kg	32.5
	lb	71.6
Adder for Rear Trunnion	kg	9.6
	lb	21.2

Operating Conditions and Usage		
Accuracy:		
Screw Travel Variation	mm (in)	0.030 (0.0012)
Screw Lead Error	mm/300 mm (in/ft)	0.025 (0.001)
Screw Lead Backlash	mm (in)	0.060 (0.002)
Ambient Conditions:		
Standard Ambient Temperature	°C	0 to 85
Low Temperature Grease Option		-40
IP Rating		IP65S

Long Stroke Dynamic Load Rating (C_a)				
Exlar FTX215		**06**	**12**	**30**
*C_a (Dynamic Load Rating) Greater than 900 mm Stroke	kN	359.8	346.7	376
	lbf	80,900	77,950	84,700

Actuator Inertia			
Base Unit Inertia		**Zero Stroke [kg-m² (lbf-in-sec²)]**	**Add per 25 mm [kg-m² (lbf-in-sec²)]**
6 mm Lead		4.25×10^{-2} (3.76×10^{-1})	8.00×10^{-4} (7.08×10^{-3})
12 mm Lead		4.26×10^{-2} (3.77×10^{-1})	8.02×10^{-4} (7.10×10^{-3})
30 mm Lead		4.31×10^{-2} (3.82×10^{-1})	8.15×10^{-4} (7.21×10^{-3})
Inline Drive Inertia	**< 55 mm Motor - Shaft Diameter**	**> 55 mm Motor - Shaft Diameter**	**Add per 25 mm**
6 mm Lead	4.43×10^{-2} (3.92×10^{-1})	6.15×10^{-2} (5.44×10^{-1})	8.00×10^{-4} (7.08×10^{-3})
12 mm Lead	4.44×10^{-2} (3.93×10^{-1})	6.16×10^{-2} (5.45×10^{-1})	8.02×10^{-4} (7.10×10^{-3})
30 mm Lead	4.49×10^{-2} (3.98×10^{-1})	6.21×10^{-2} (5.50×10^{-1})	8.15×10^{-4} (7.21×10^{-3})
Parallel Drive Inertia		**1:1 Reduction**	**2:1 Reduction**
6 mm Lead (zero stroke)		9.42×10^{-2} (8.34×10^{-1})	3.50×10^{-2} (3.10×10^{-1})
Add per 25 mm stroke		8.00×10^{-4} (7.08×10^{-3})	2.00×10^{-4} (1.77×10^{-3})
12 mm Lead (zero stroke)		9.43×10^{-2} (8.34×10^{-1})	3.50×10^{-2} (3.10×10^{-1})
Add per 25 mm stroke		8.02×10^{-4} (7.10×10^{-3})	2.01×10^{-4} (1.78×10^{-3})
30 mm Lead (zero stroke)		9.48×10^{-2} (8.39×10^{-1})	3.52×10^{-2} (3.11×10^{-1})
Add per 25 mm stroke		8.15×10^{-4} (7.21×10^{-3})	2.04×10^{-4} (1.80×10^{-3})

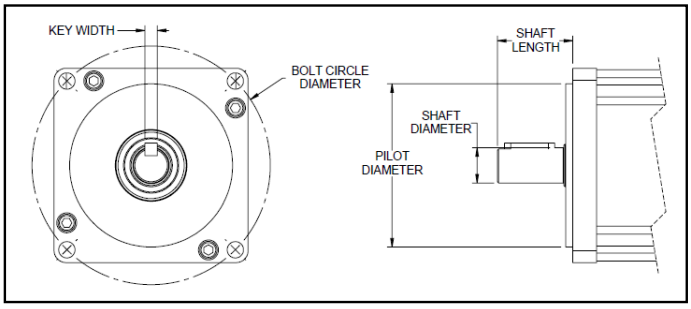
Standard Motor/Gearbox Mount Codes for the Exlar FTX215

Exlar FTX215 Motor / Gearbox Mounts

None		Inline				Parallel 1:1					Parallel 2:1				
				Dimension in mm				Dimension in mm					Dimension in mm		
Motor Flange Code		Motor Flange Code		Bolt Circle	Pilot Diam.	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length	Motor Flange Code		Bolt Circle	Pilot Diam.	Min. Shaft Length
NMT-	00	N10-	19	165	130	P10-	19	165	130	74	P20-	19	165	130	55
		N10-	22	215	160	P10-	22	215	160	74	P20-	23	215	180	65
		N10-	23	215	180	P10-	23	215	180	74	P20-	25	265	230	65
		N10-	24	235	200	P10-	24	235	200	73	P20-	26	300	250	65
		N10-	25	265	230	P10-	25	265	230	80					
		N10-	26	300	250	P10-	26	300	250	80					
Motor Shaft Code		Motor Shaft Code		Shaft Diam.	Key Width*	Min. Shaft Length	Motor Shaft Code		Shaft Diam.	Key Width*		Motor Shaft Code		Shaft Diam.	Key Width*
00		PA		38	10	80	PA		38	10		PA		38	10
		QA		40	12	80	QA		40	12		QA		40	12
		RA		42	12	80	RA		42	12		RA		42	12
		TA		48	14	80	TA		48	14		TA		48	14
		UA		55	16	105	UA		55	16					
		VA		60	18	105	VA		60	18					
		WA		65	18	105	WA		65	18					

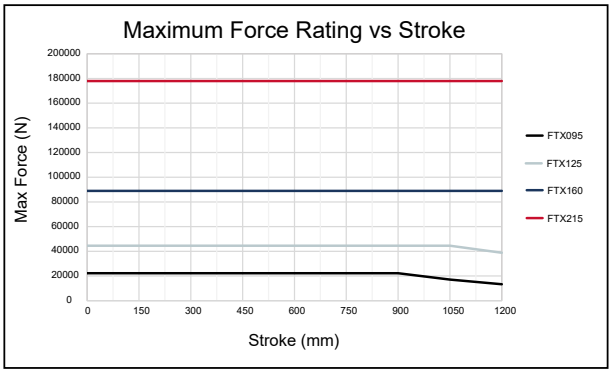
Shaft Length	Shaft Diameter Codes	Shaft Length	Shaft Length		Shaft Length	
000	PA QA RA TA UA VA WA	80-112 80-112 80-112 80-112 105-140 105-140 105-140	073-155	Allowable shaft length range in 1 mm increments	055-155	Allowable shaft length range in 1 mm increments

*Key not required for operation

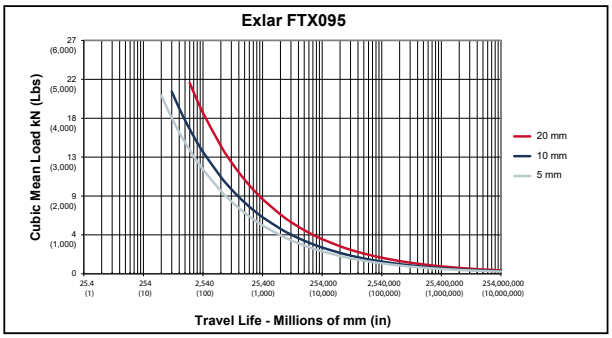


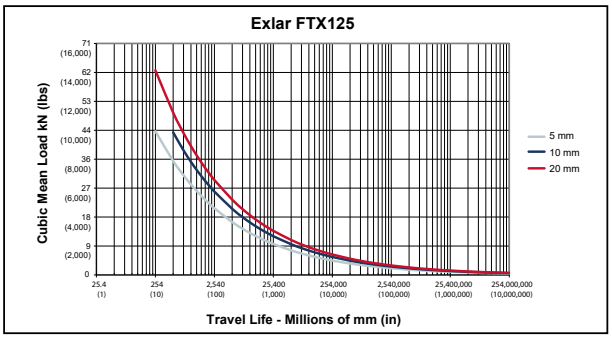
NOTE: Motor/gearbox key not required to interface with Exlar FTX Series actuators

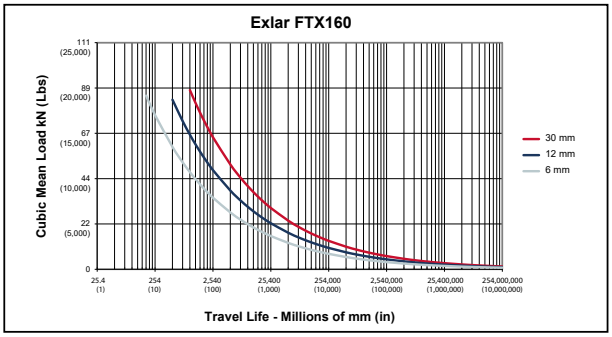
Performance to Stroke

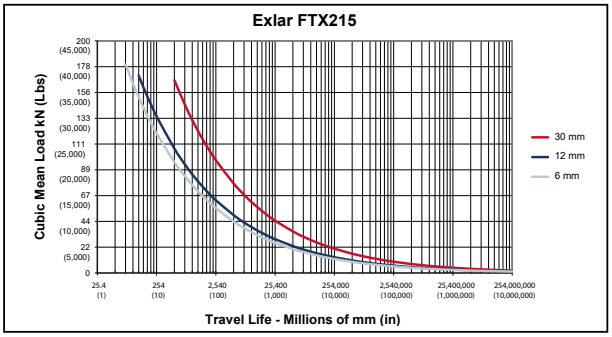


Estimated Service Life









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 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_a = Dynamic load rating (lbf)
F_{cml} = Cubic mean applied load (lbf)
l = Roller screw lead (inches)

$$L_{10} = \left(\frac{C_a}{F_{cml}}\right)^3 \times l$$

.

Service Life Estimate Assumptions:

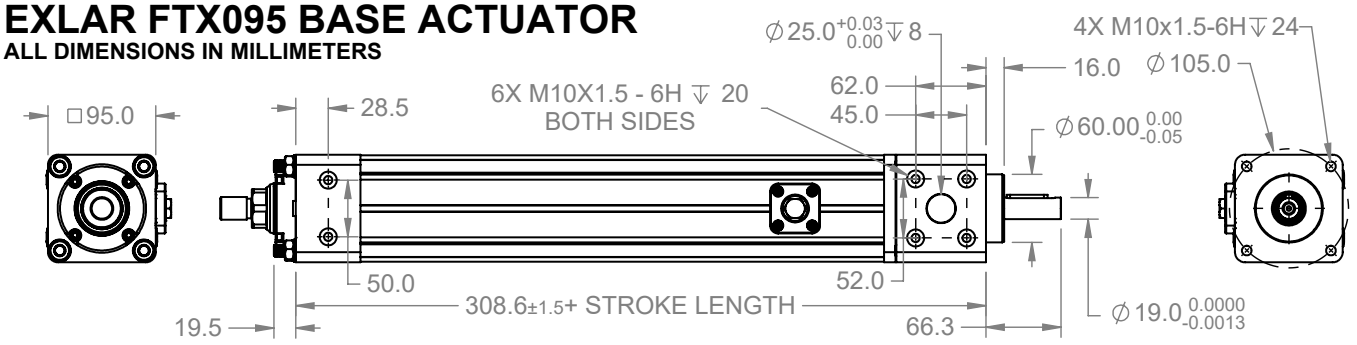
- Sufficient quality and quantity of lubrication is maintained throughout service life
- Bearing and screw temperature between 20 °C and 40 °C
- No mechanical hard stops (external or internal) or impact loads
- No external side loads
- Does not apply to short stroke, high frequency applications such as fatigue testing or short stroke, high force applications such as pressing.

Dimensions

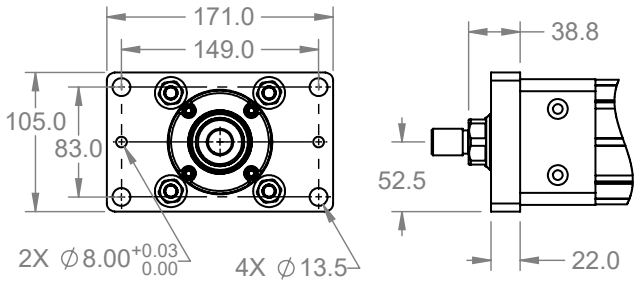
EXLAR FTX095

EXLAR FTX095 BASE ACTUATOR

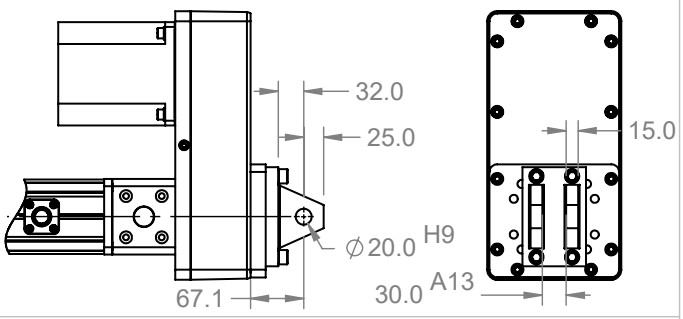
ALL DIMENSIONS IN MILLIMETERS



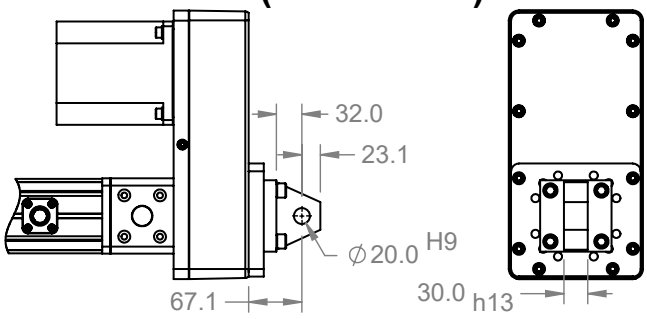
1 (FRONT FLANGE, METRIC)



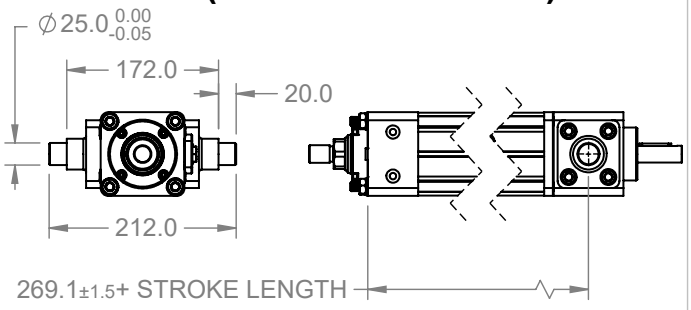
5 (REAR CLEVIS, METRIC)



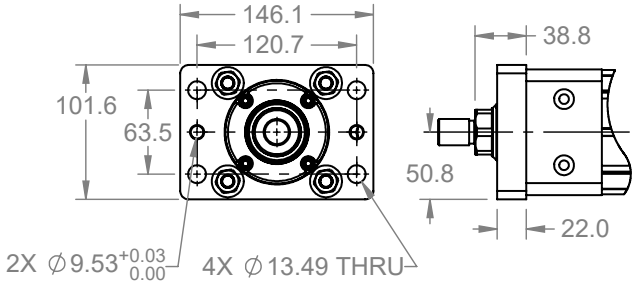
7 (REAR EYE)



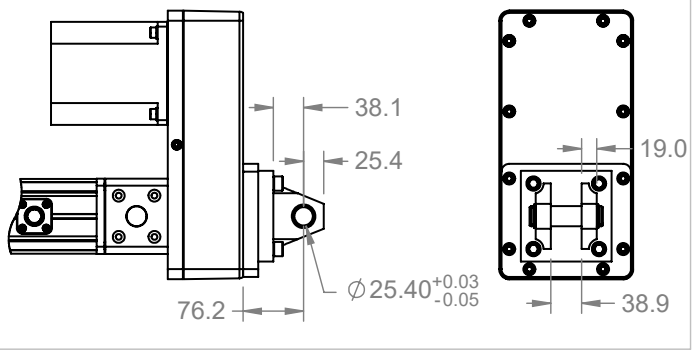
9 (REAR TRUNNION)



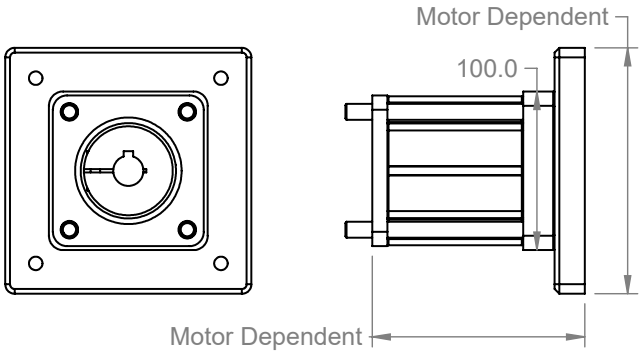
F (FRONT FLANGE, ENGLISH)



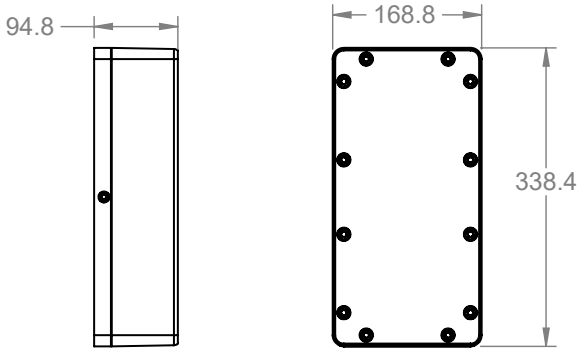
C (REAR CLEVIS, ENGLISH)



N10 (INLINE MOUNT)

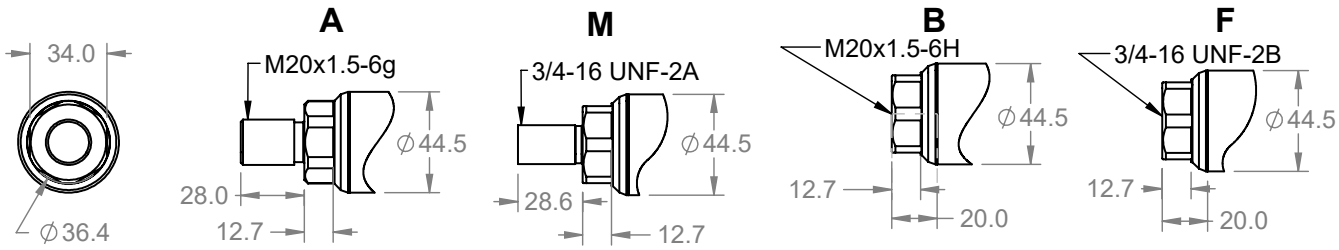


P10/P20 (PARALLEL MOUNT)



Motor/gearbox key not required to interface with Exlar FTX Series actuators

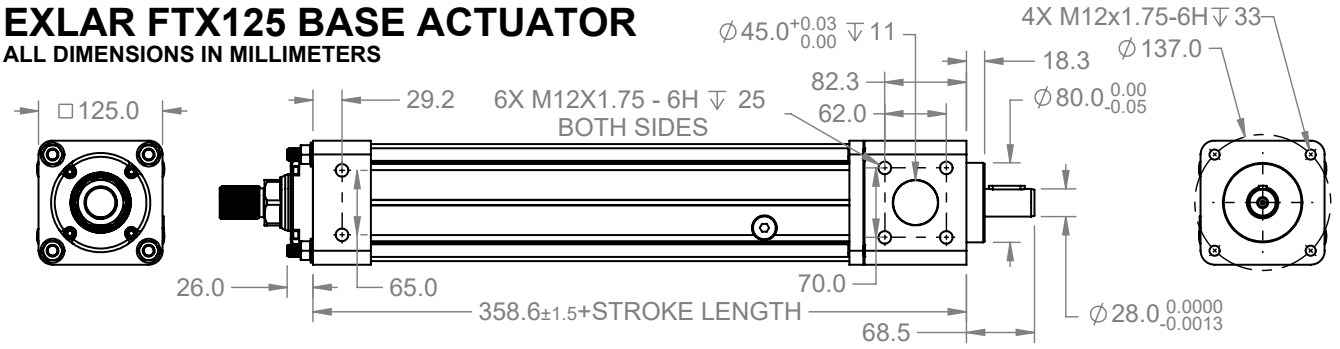
ROD ENDS



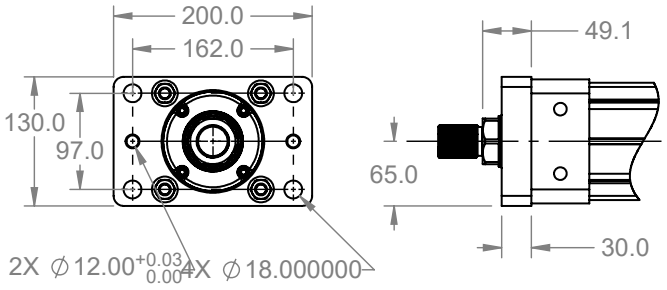
EXLAR FTX125

EXLAR FTX125 BASE ACTUATOR

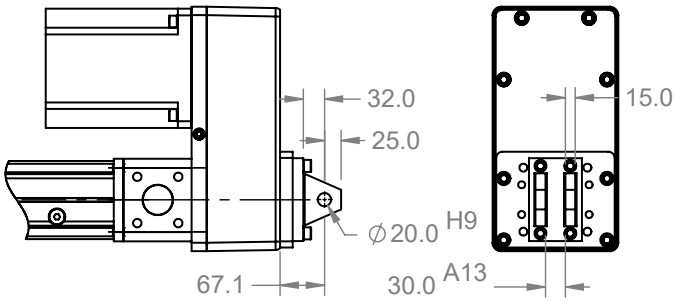
ALL DIMENSIONS IN MILLIMETERS



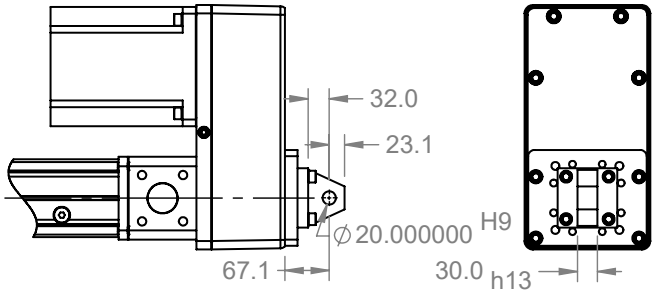
1 (FRONT FLANGE, METRIC)



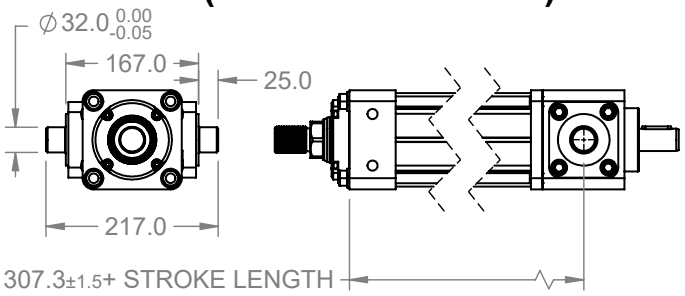
5 (REAR CLEVIS, METRIC)



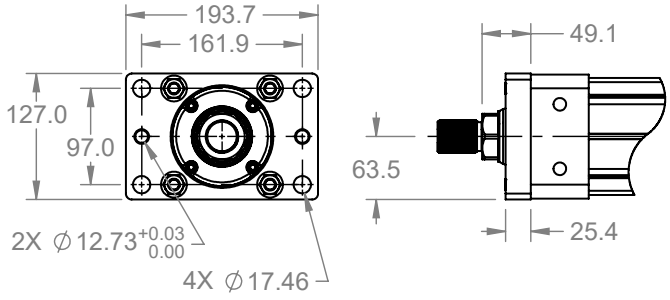
7 (REAR EYE)



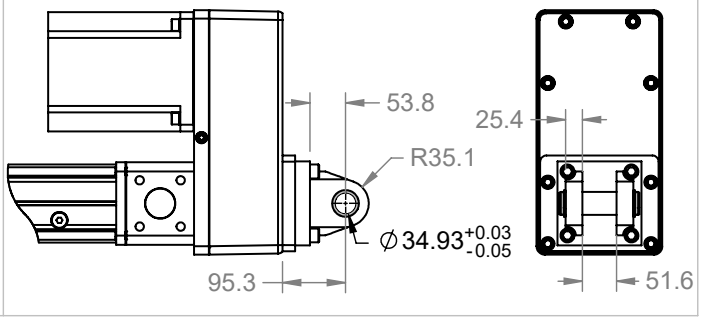
9 (REAR TRUNNION)



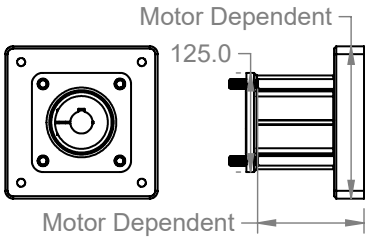
F (FRONT FLANGE, ENGLISH)



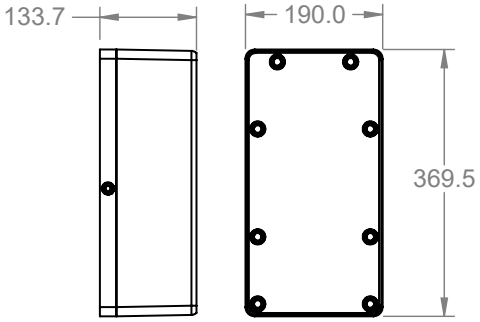
C (REAR CLEVIS, ENGLISH)



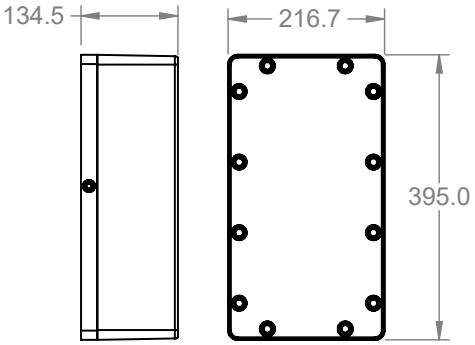
N10 (INLINE MOUNT)



P10 (PARALLEL MOUNT)

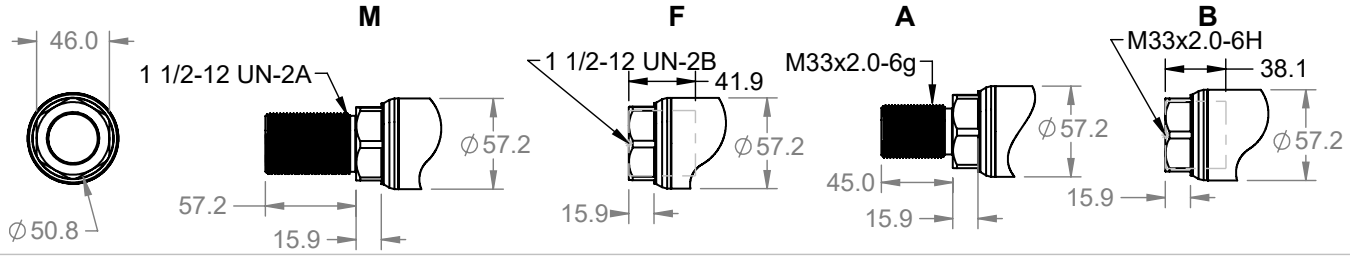


P20 (PARALLEL MOUNT)



Motor/gearbox key not required to interface with Exlar FTX Series actuators

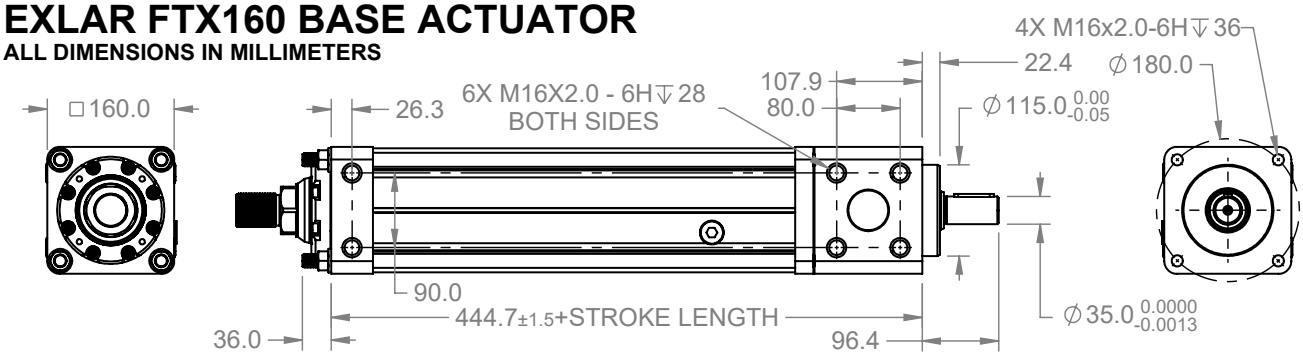
ROD ENDS



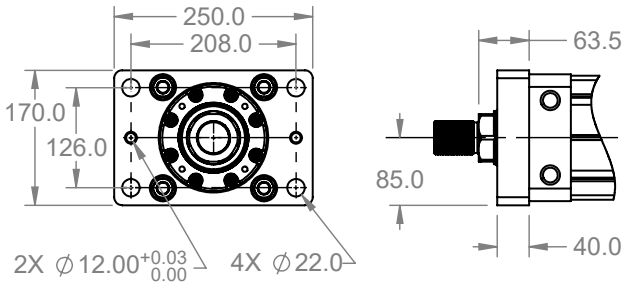
Exlar FTX160

EXLAR FTX160 BASE ACTUATOR

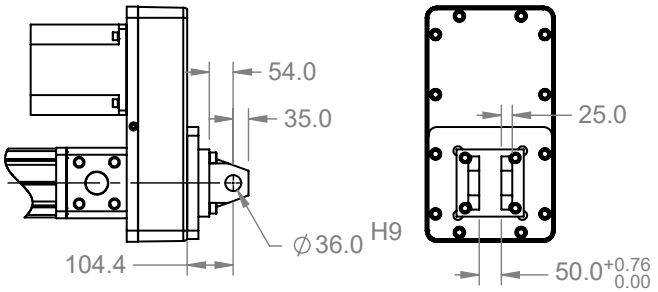
ALL DIMENSIONS IN MILLIMETERS



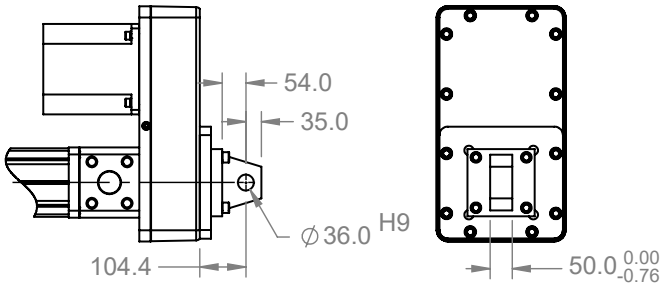
1 (FRONT FLANGE, METRIC)



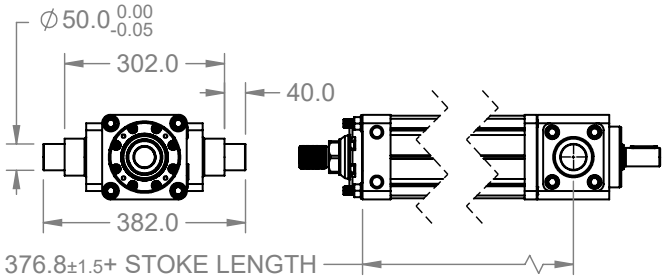
5 (REAR CLEVIS, METRIC)



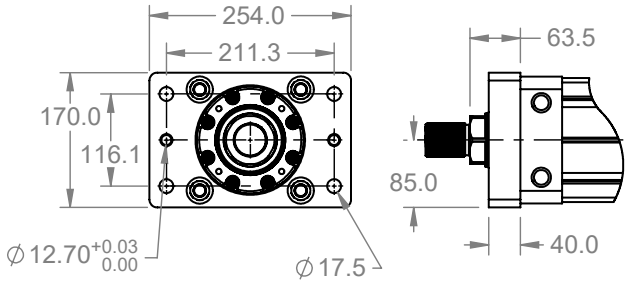
7 (REAR EYE)



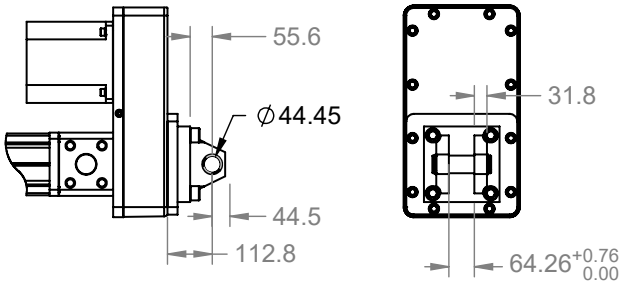
9 (REAR TRUNNION)



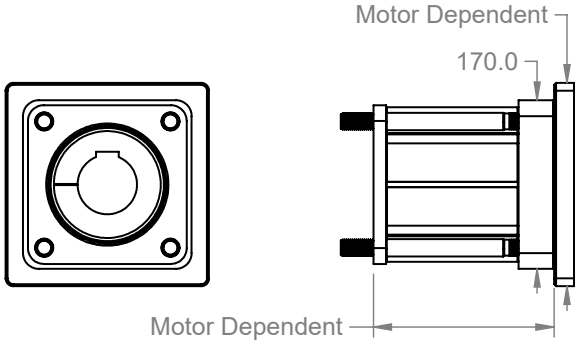
F (FRONT FLANGE, ENGLISH)



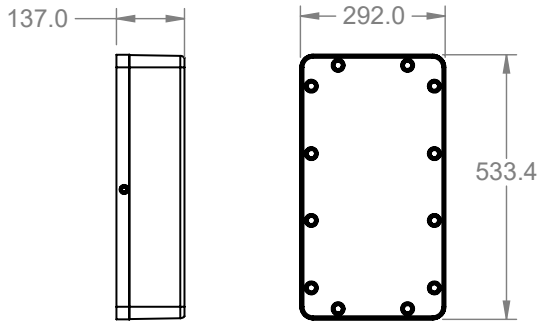
C (REAR CLEVIS, ENGLISH)



N10 (INLINE MOUNT)

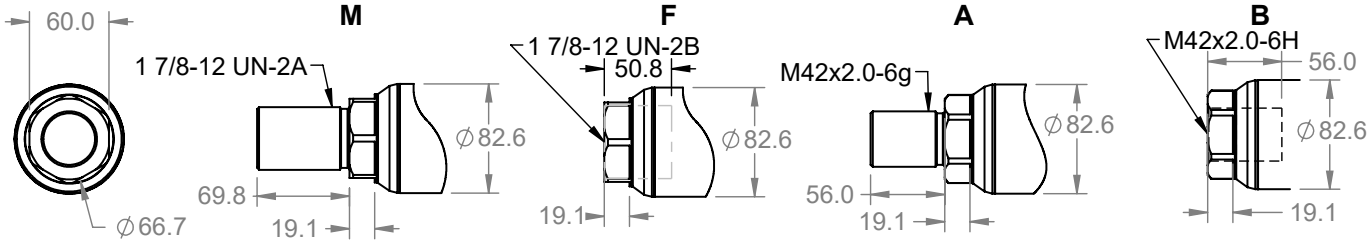


P10/P20 (PARALLEL MOUNT)



Motor/gearbox key not required to interface with Exlar FTX Series actuators

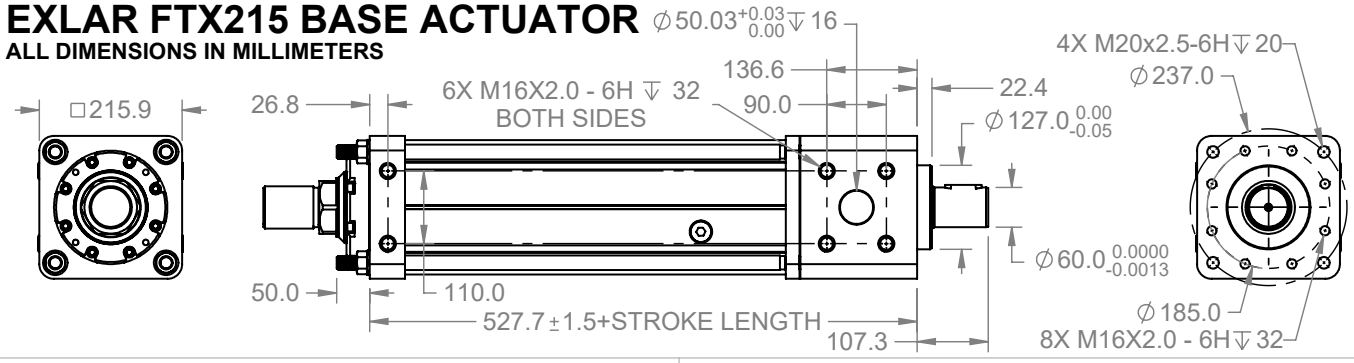
ROD ENDS



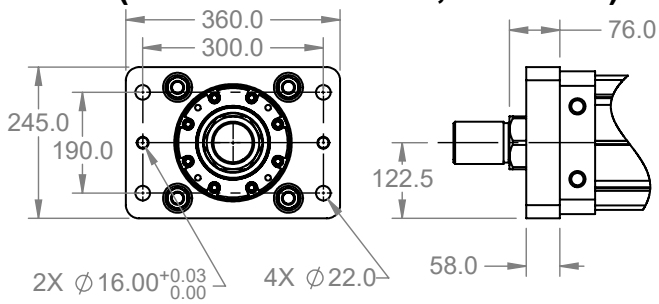
Exlar FTX215

EXLAR FTX215 BASE ACTUATOR

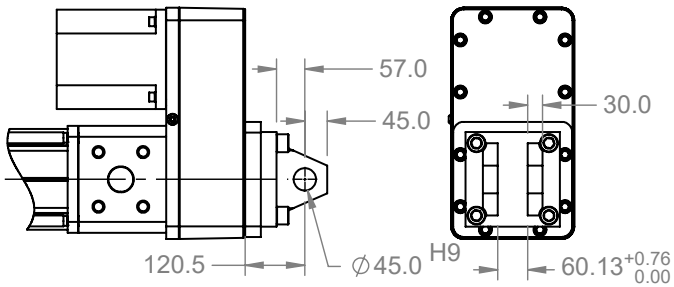
ALL DIMENSIONS IN MILLIMETERS



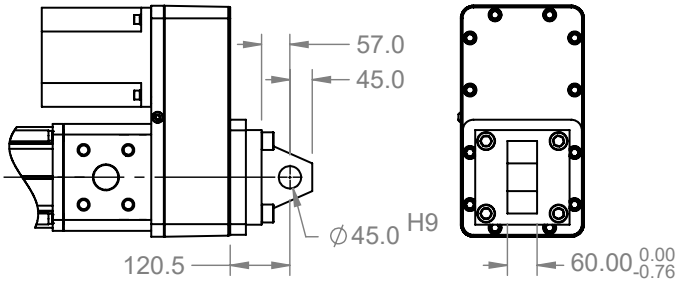
1 (FRONT FLANGE, METRIC)



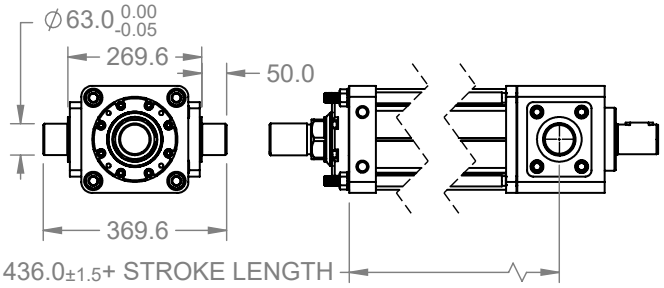
5 (REAR CLEVIS, METRIC)



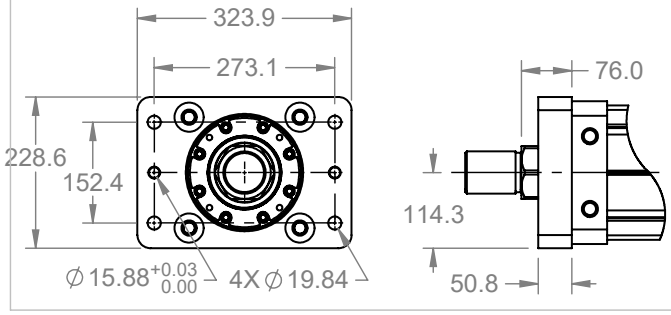
7 (REAR EYE)



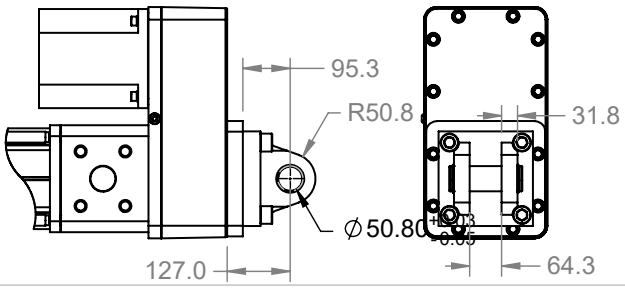
9 (REAR TRUNNION)



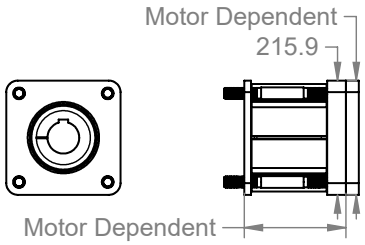
1 (FRONT FLANGE, ENGLISH)



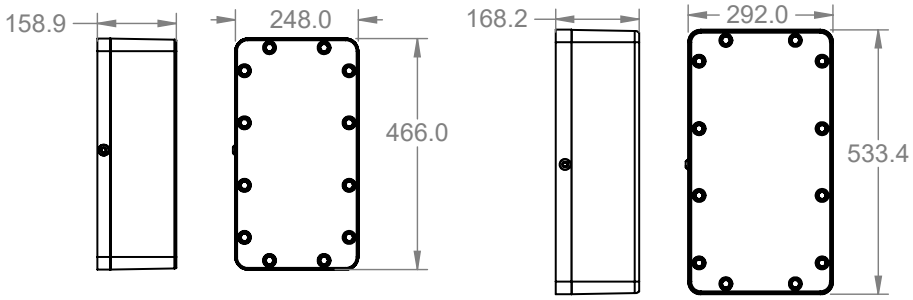
C (REAR CLEVIS, ENGLISH)



N10 (INLINE MOUNT)



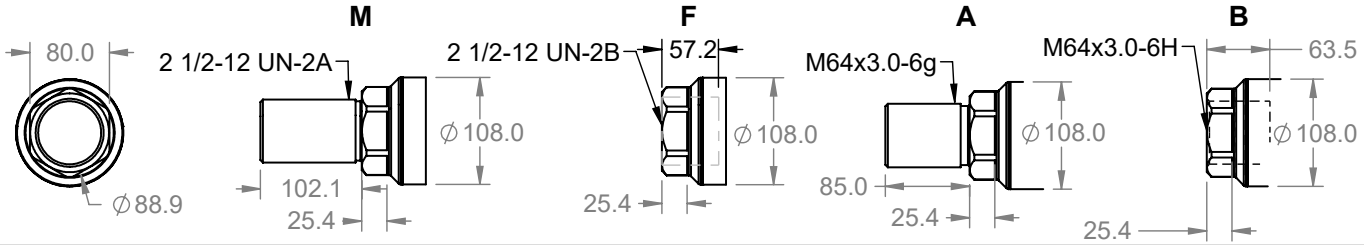
P10/P20 (PARALLEL MOUNT)



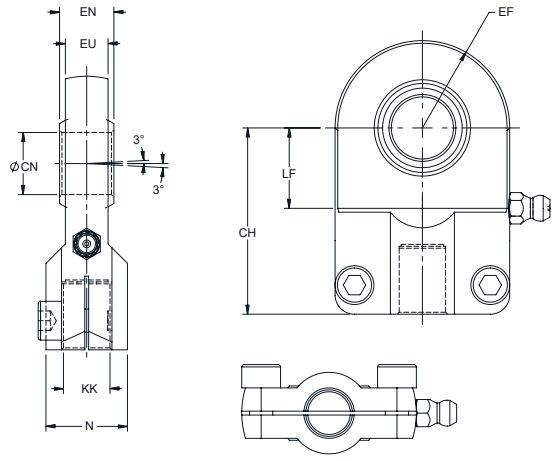
NOTE: 248mm WIDE HOUSING USED FOR MOTORS WITH 215mm MOUNTING B.C AND SMALLER, 1:1 292mm WIDE HOUSING USED FOR ALL 2:1 DRIVE MOTORS

Motor/gearbox key not required to interface with Exlar FTX Series actuators

ROD ENDS

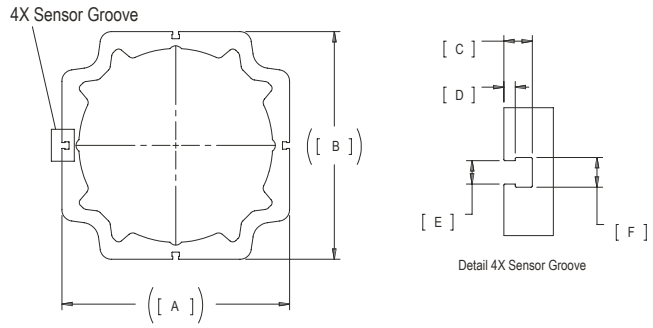


Rod Eye, Spherical



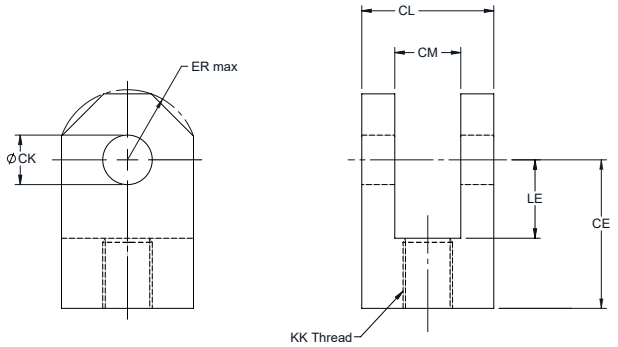
Frame Size		095	125	160	215
AV	mm	29.0	46.0	55.0	86.0
	in	1.14	1.81	2.17	3.39
CH	mm	85.0	130.0	150.0	240.0
	in	3.35	5.12	5.91	9.45
CN	mm	30.0	50.0	60.0	100.0
	in	1.18	1.97	2.36	3.94
EF (max)	mm	41.0	61.0	80.0	120.0
	in	1.61	2.40	3.15	4.72
EN	mm	22.0	35.0	44.0	70.0
	in	0.87	1.38	1.73	2.76
EU (max)	mm	20.0	31.0	39.0	57.0
	in	0.79	1.22	1.54	2.24
KK		M20X1.5 6H	M33X2.0 6H	M42X2.0 6H	M64X3.0 6H
LF (min)	mm	35.0	58.0	68.0	116.0
	in	1.38	2.28	2.68	4.57
N (max)	mm	37.0	57.0	69.0	110.0
	in	1.46	2.24	2.72	4.33

Case Dimensions



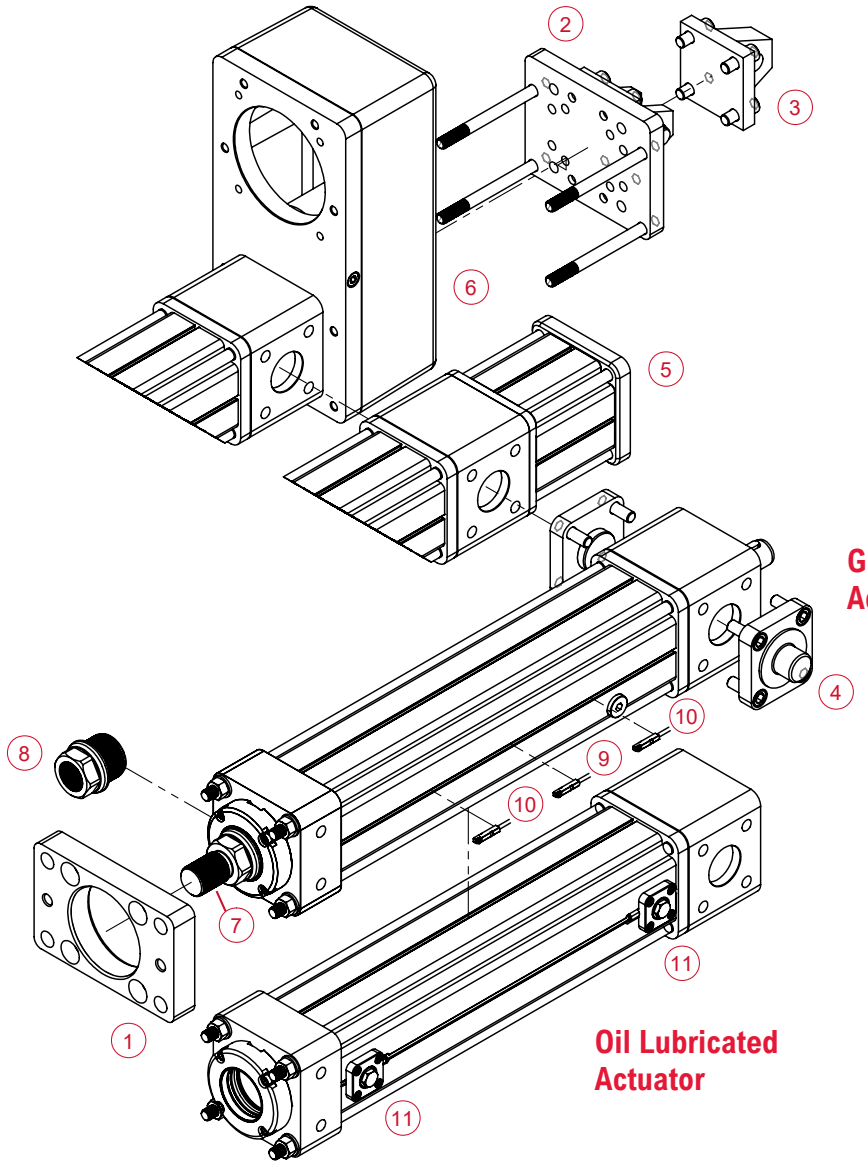
Frame Size		095	125	160	215
A	mm	94	118	156	203
	in	3.7	4.6	6.1	8.0
B	mm	94	118	156	203
	in	3.7	4.6	6.1	8.0
C	mm	4.9	5.6	5.5	6.4
	in	0.19	0.22	0.22	0.25
D	mm	1.1	1.8	1.7	2.5
	in	0.4	0.07	0.07	0.10
E	mm	5.2	5.2	5.3	5.2
	in	0.21	0.21	0.21	0.21
F	mm	6.6	6.6	6.6	6.6
	in	0.26	0.26	0.26	0.26

Rod Clevis



Frame Size		095	125	160	215
CE	mm	60.0	99.0	113.0	168.0
	in	2.36	3.90	4.45	6.61
Ø CK	mm	20.0 h9	36.0 h9	45.0 h9	70.0 h9
	in	0.79	1.42	1.77	2.76
CL	mm	62.0	103.0	123.0	163.0
	in	2.44	4.06	4.84	6.42
CM	mm	30.0	50.0	60.0	80.0
	in	1.18	1.97	2.36	3.15
Ø ER (max)	mm	29.0	50.0	53.0	78.0
	in	1.14	1.97	2.09	3.07
LE (min)	mm	32.0	54.0	57.0	83.0
	in	1.26	2.13	2.24	3.27
KK		M20X1.5 6H	M33X2.0 6H	M42X2.0 6H	M64X3.0 6H

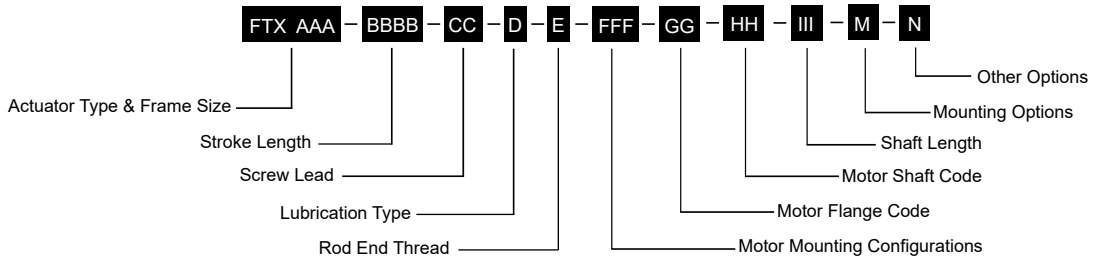
Exlar FTX Exploded View



1 - Front flange
2 - Rear clevis
3 - Rear eye
4 - Rear trunnion
5 - Inline direct drive
6 - Parallel, 1:1 belt reduction
Parallel, 2:1 belt reduction
7 - Male, metric thread
8 - Female, metric thread
9 - External limit switch - N.O., PNP or NPN*
10 - External limit switch - N.C., PNP or NPN*
11 - Oil ports

*Ordered Separately

Exlar FTX Actuator Ordering Information



AAA = Actuator Frame Size
095 = 95 mm
125 = 125 mm
160 = 160 mm
215 = 215 mm

BBBB = Stroke Length
0150 = 150 mm
0300 = 300 mm
0600 = 600 mm
0900 = 900 mm
1200 = 1200 mm

CC = Screw Lead
05 = 5 mm (FTX095, FTX125)
06 = 6 mm (FTX160, FTX215)
10 = 10 mm (FTX095, FTX125)
12 = 12 mm (FTX160, FTX215)
20 = 20 mm (FTX095, FTX125)
30 = 30 mm (FTX160, FTX215)

D = Lubrication Type
1 = Grease
2 = Prepared for Oil fill
3 = Low Temperature Grease (to -40 ºC)

E = Rod End Thread
A = Male, Metric
B = Female, Metric
M = Male, English[3]
F = Female, English[3]

FFF = Motor Mounting Configurations[1]
NMT = None, base unit only
N10 = Inline, includes shaft coupling
P10 = Parallel, 1:1 belt reduction
P20 = Parallel, 2:1 belt reduction

GG = Motor/Gearbox Flange Code
See standard motor/gearbox mounting code dimensions

HH = Motor Shaft Code
See standard motor/gearbox mounting code dimensions

III = Shaft Length
See standard motor/gearbox mounting code dimensions

M = Mounting Options
N = None
1 = Front Flange, Metric
5 = Rear Clevis, Metric[2]
7 = Rear Eye, Metric[2]
9 = Rear Trunnion, Metric
F = Front Flange, English[3]
C = Rear Clevis, English[3] - FT Equivalent (Not available on Exlar FTX215)
G = Rear Clevis, Metric[3] - FT Equivalent (Not available on Exlar FTX125 or Exlar FTX215)

N = Other Options
N = None

For Exlar FTX options or specials not listed above, please contact:
cha_applications@curtisswright.com

NOTES:
1. Always discuss your motor selection with your local sales representative.
2. Not available with inline or NMT motor mount, contact your local sales representative.
3. Available option. May add lead time

Exlar FTX Accessories

Rod End Attachments	Actuator Option Code	Order Part No.
Rod Clevis, Metric - (Includes jam nut)	N/A	FTXxxx-RC1-KIT
Spherical Rod Eye, Metric - (Includes jam nut)	N/A	FTXxxx-RE1-KIT
Mounting Options		
Front Flange, Metric - (Includes fasteners)	1	FTxxx-ME5-KIT
Rear Clevis, Metric - (Includes fasteners & pin)	5	FTXxxx-MP1-KIT
Rear Clevis, Metric (Clevis Only)	N/A	71674
Clevis Pin, Metric (Req'd w/ 71674) - (Includes retaining rings)	N/A	74472
Rear Eye, Metric - (Includes fasteners)	7	FTXxxx-MP3-KIT
Rear Eye, Metric (Eye Only)	N/A	71675
Rear Trunnion, Metric - (Includes fasteners)	9	FTXxxx-MT2-KIT
Front Flange, English (FT Equivalent) - (Includes fasteners)	F	FTXxxx-FTF-KIT
Rear Clevis, English (FTEquivalent) - (Includes fasteners & pin)	C	FTXxxx-FTC-KIT
Rear Clevis, Metric (FT Equivalent) - (Includes fasteners & pin)	G	FTXxxx-FTG-KIT
Limit Switches		
Normally Open PNP Limit Switch (10-30 Vdc, 1 m. 3 wire embedded cable)	N/A	43403
Normally Closed PNP Limit Switch (10-30 Vdc, 1 m. 3 wire embedded cable)	N/A	43404
Normally Open NPN Limit Switch (10-30 Vdc, 1 m. 3 wire embedded cable)	N/A	67634
Normally Closed NPN Limit Switch (10-30 Vdc, 1 m. 3 wire embedded cable)	N/A	67635
Replacement Parts		
Front Seal Bushing Assembly - (Includes fasteners)	N/A	FTXxxx-FSB-KIT

Warranty and Limitations of Liability

Please see our warranty on our website here: https://www.cw-actuation.com/en-gb/about/terms-conditions for details.

SENSORS & ACTUATION
18400 W. 77th Street
Chanhassen, MN 55317

T: (+1) 952.500.6200
E: cha_applications@curtisswright.com
W: actuation.curtisswright.com