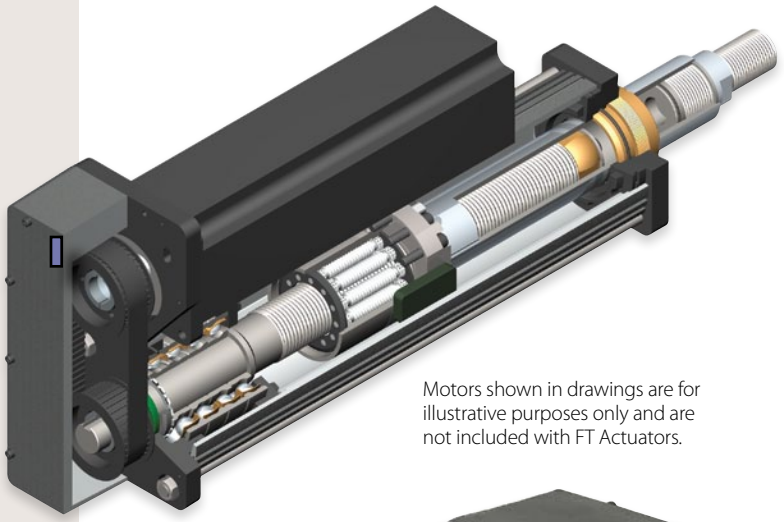
FT Series
Linear Actuators

Exlar FT Series force tube actuators use a planetary roller screw mounted inside a telescoping tube mechanism. The follower is attached to the moveable force tube, which then extends and retracts as the screw rotates. An external motor (supplied by Exlar or the customer) provides the rotational force.



Motors shown in drawings are for illustrative purposes only and are not included with FT Actuators.

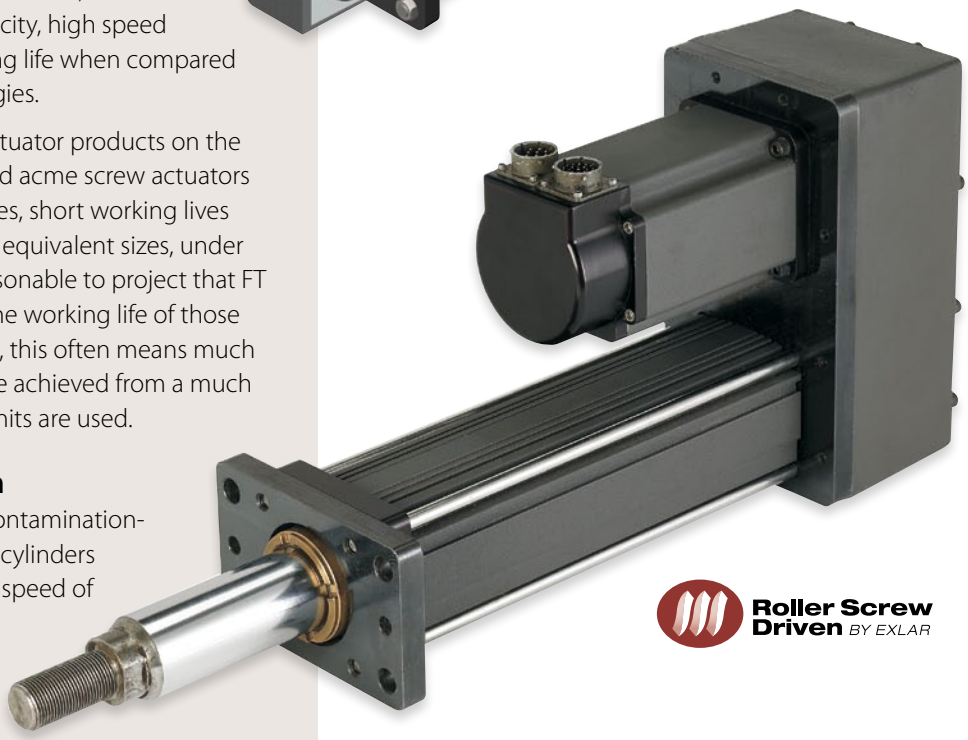
High Performance

As with all of Exlar's roller screw products, the FT Series actuators deliver heavy load capacity, high speed capabilities, and exceptionally long life when compared to other linear actuator technologies.

Other comparably-sized screw actuator products on the market - specifically ball screw and acme screw actuators - have relatively low load capacities, short working lives and limited speed capabilities. At equivalent sizes, under moderate to heavy loads, it is reasonable to project that FT units will deliver up to 15 times the working life of those other designs. For OEM designers, this often means much more power and durability can be achieved from a much smaller footprint when Exlar FT units are used.

Contamination Protection

The FT Series design has all the contamination-isolation advantages of hydraulic cylinders without the limited load, life, and speed of designs built around ball or acme screws. The bearing and roller screw components in the Exlar FT Series force tubes are mounted within the sealed housing. This prevents abrasive particles and other contaminants from entering the actuator's critical mechanisms, and assures trouble-free operation even in the most severe environments.



Roller Screw Driven BY EXLAR

FT Series actuators are provided with standard grease lubrication. Custom provisions can be made for oil filled lubrication.

Engineered Compatibility

Exlar has removed much of the end-user-engineering burden by designing the FT series to be compatible with a wide variety of standard motors. Motor mounting, actuator mounting, and gearing configurations are available to meet nearly any application's requirements.

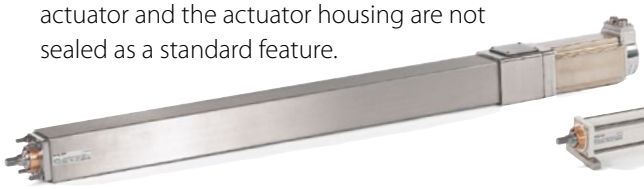
Feature	Standard	Optional
Long Strokes	6", 12", 18", 24", 36", and 48"	Intermediate Lengths up to 96"
Pre-Loaded Follower	No	Yes
External Limit Switches	No	One, two or three Adjustable Switches
Multiple Actuator Mountings	Side Mount, Side Lug, Extended Tie Rods, Rear Clevis, Front Flange, Side Trunnion, Rear Flange, Front/Rear Flange	Specials Available
Multiple Motor Mounting Configurations	Inline Direct Drive, Parallel 1:1 Drive, Parallel, 2:1 Reduction	Specials Available

Special Sealing Options

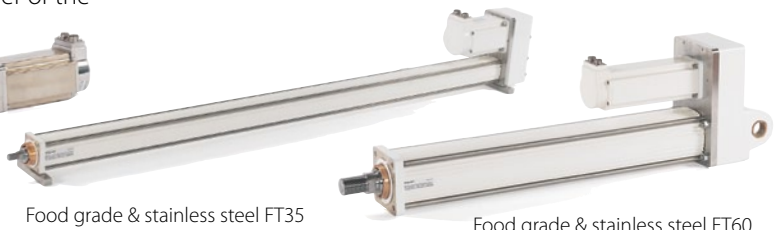
The base unit of the FT actuators are sealed at the extending rod end by a rod seal, and on the drive end by a shaft seal (see base unit drawings on pages 66, 68 and 70). These rod and shaft seals, and o-ring sealing provides IP65S sealing for the FT actuator base units.

In standard units with inline or parallel motor mounting, the mounting surface between the actuator and the motor, and between the end cover, or inline cover of the actuator and the actuator housing are not sealed as a standard feature.

These areas of the FT actuators can be sealed as a special option if the environment in which the actuator will be mounted requires the actuator to be sealed. Because of the vast differences in the design of various brands of motors that are mounted to the FT Series actuators, sealing of these two areas may alter the design of the actuator. Please contact your local sales representative for details and quotations on special sealing of this type.



Stainless steel FT35 with stainless steel SLM115 motor

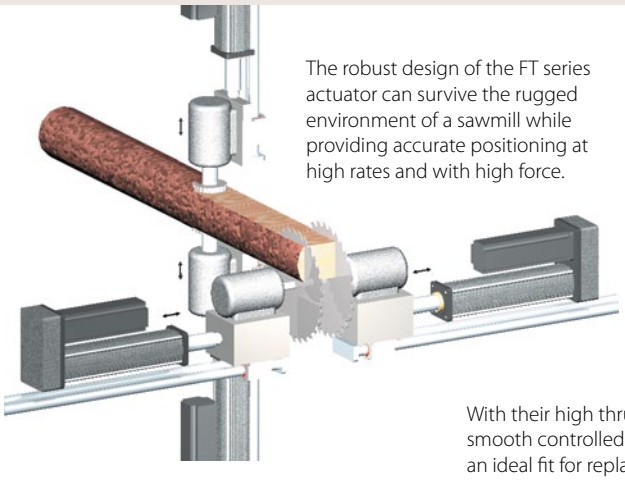


Food grade & stainless steel FT35 with food grade SLM90 motor

Food grade & stainless steel FT60 with food grade SLG90 motor

Exlar FT Series Actuators Applications Include:

- Hydraulic cylinder replacement
- Ball screw replacement
- Pneumatic cylinder replacement
- Chip and wafer handling
- Automated flexible fixturing
- Dispensers
- Machine tool
- Automated assembly
- Parts clamping
- Automatic tool changers
- Volumetric pumps
- Medical equipment
- Conveyor diverters / gates
- Plastics equipment
- Cut-offs
- Die cutters
- Packaging machinery
- Entertainment
- Sawmill equipment
- Open / close doors
- Fillers
- Formers
- Precision grinders
- Indexing stages
- Lifts
- Product sorting
- Material cutting
- Material handling
- Riveting / fastening / joining
- Molding
- Volumetric pumps
- Semiconductor
- Pick and place systems
- Robot manipulator arms
- Simulators
- Precision valve control
- Ventilation control systems
- Pressing
- Process control
- Tube bending
- Welding
- Stamping
- Test stands
- Tension control
- Web guidance
- Wire winding
- Food Processing

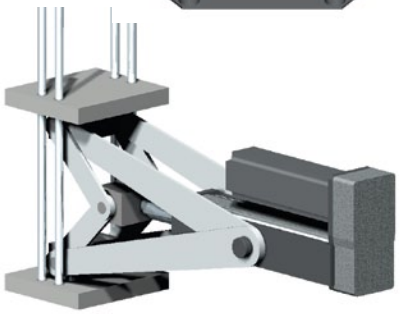


The robust design of the FT series actuator can survive the rugged environment of a sawmill while providing accurate positioning at high rates and with high force.

Motors shown in drawings are for illustrative purposes only and are not included with FT Actuators.

The smooth and accurate motion of Exlar's actuators combined with today's servo technology make multiple degree of freedom motion simulation applications easier to implement, cleaner and more efficient than hydraulic solutions.

With their high thrust capability, compact size and smooth controlled motion, FT Series actuators are an ideal fit for replacing hydraulics or pneumatics on injection mold toggles. Control improvements from an electromechanical servo system offer less abuse of valuable molds and more consistent performance.



FT Series Lifetime Curves

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. For higher than 90% reliability, the result should be multiplied 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 and these charts should be used for estimation purposes only.

The underlying formula that defines this value is:

Travel life in millions of inches, where:

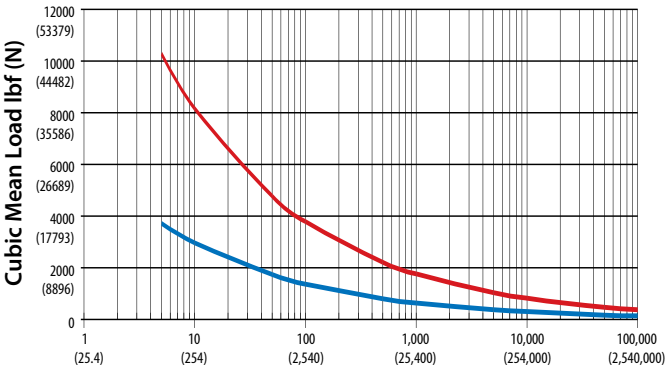
C = Dynamic load rating (lbf)
F = Cubic mean applied load (lbf)
S = Roller screw's lead (inches)

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

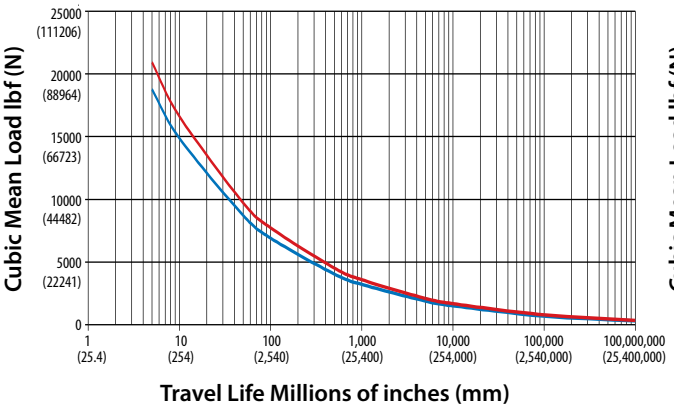
All curves represent properly lubricated and maintained actuators.

FT35, 60 & 80 High Capacity
FT35, 60 & 80 Standard Capacity

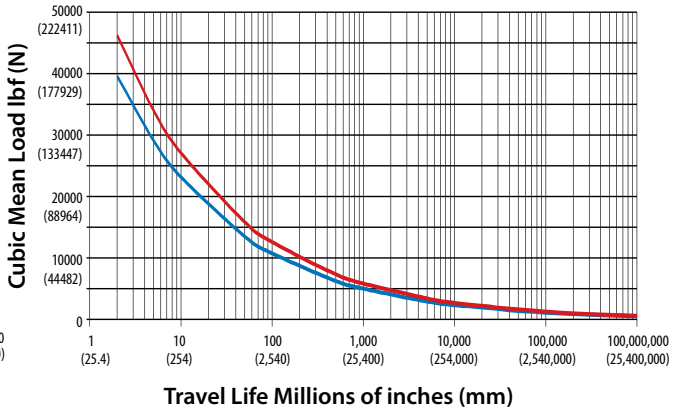
FT35 Actuator



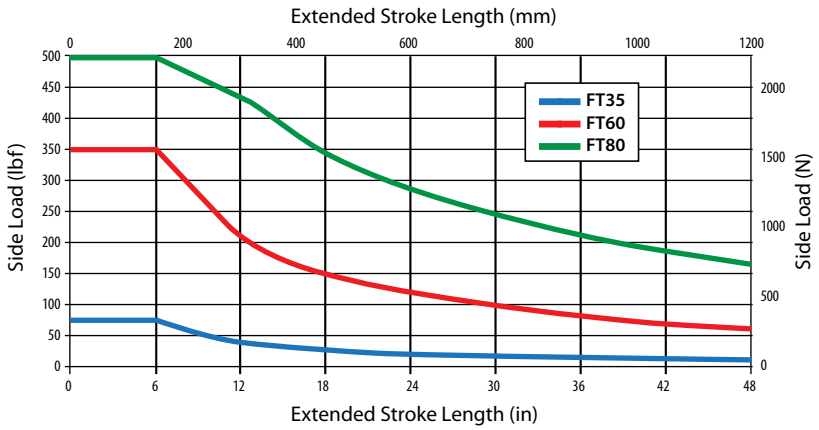
FT60 Actuator



FT80 Actuator



FT Series Maximum Allowable Side Load



FT35 Series Performance Specifications

Model No.	Nominal Frame Size in (mm)	Stroke in (mm)	Screw Lead in (mm)	Max Force lbf (kN)	Linear Speed at Max Rated RPM in/sec (mm/sec)	Dynamic Load Rating (Std capacity screw) lbf (kN)	Dynamic Load Rating (High capacity screw) lbf (kN)	Life at Max Force (Std capacity screw) 10^6in (Km)	Life at Max Force (High capacity screw) 10^6in (Km)	Max Input Torque lbf-in (Nm)	Max Rated Input rpm	Weight Base lb (kg)
FT35-0605	3.5 (89)	6 (152)	0.197 (5)	5,000 (22.2)	14.7 (373)	17,800 (79.2)	21,400 (95.2)	8.88 (225.6)	15.4 (392)	196 (22.1)	4,500	30 (14)
FT35-0610			0.394 (10)		29.5 (750)	16,500 (73.4)	19,850 (88.3)	14.15 (359.4)	24.6 (626)	392 (44.3)		
FT35-0620			0.787 (20)		59.3 (1500)	17,200 (76.5)	20,800 (92.5)	32.05 (814.2)	56.7 (1,440)	783 (88.5)		
FT35-1205	3.5 (89)	12 (305)	0.197 (5)	5,000 (22.2)	14.7 (373)	17,800 (79.2)	21,400 (95.2)	8.88 (225.6)	15.4 (392)	196 (22.1)	4,500	35 (16)
FT35-1210			0.394 (10)		29.5 (750)	16,500 (73.4)	19,850 (88.3)	14.15 (359.4)	24.6 (626)	392 (44.3)		
FT35-1220			0.787 (20)		59.3 (1500)	17,200 (76.5)	20,800 (92.5)	32.05 (814.2)	56.7 (1,440)	783 (88.5)		
FT35-1805	3.5 (89)	18 (457)	0.197 (5)	5,000 (22.2)	14.7 (373)	17,800 (79.2)	21,400 (95.2)	8.88 (225.6)	15.4 (392)	196 (22.1)	4,500	40 (18)
FT35-1810			0.394 (10)		29.5 (750)	16,500 (73.4)	19,850 (88.3)	14.15 (359.4)	24.6 (626)	392 (44.3)		
FT35-1820			0.787 (20)		59.3 (1500)	17,200 (76.5)	20,800 (92.5)	32.05 (814.2)	56.7 (1,440)	783 (88.5)		
FT35-2405	3.5 (89)	24 (610)	0.197 (5)	5,000 (22.2)	14.7 (373)	17,800 (79.2)	21,400 (95.2)	8.88 (225.6)	15.4 (392)	196 (22.1)	4,500	45 (21)
FT35-2410			0.394 (10)		29.5 (750)	16,500 (73.4)	19,850 (88.3)	14.15 (359.4)	24.6 (626)	392 (44.3)		
FT35-2420			0.787 (20)		59.3 (1500)	17,200 (76.5)	20,800 (92.5)	32.05 (814.2)	56.7 (1,440)	783 (88.5)		
FT35-3605	3.5 (89)	36 (914)	0.197 (5)	5,000 (22.2)	8.9 (226)	17,800 (79.2)	21,400 (95.2)	8.88 (225.6)	15.4 (392)	196 (22.1)	2,700	55 (25)
FT35-3610			0.394 (10)		17.8 (452)	16,500 (73.4)	19,850 (88.3)	14.15 (359.4)	24.6 (626)	392 (44.3)		
FT35-3620			0.787 (20)		35.6 (903)	17,200 (76.5)	20,800 (92.5)	32.05 (814.2)	56.7 (1,440)	783 (88.5)		
FT35-4805	3.5 (89)	48 (1219)	0.197 (5)	5,000 (22.2)	5.7 (145)	17,800 (79.2)	21,400 (95.2)	8.88 (225.6)	15.4 (392)	196 (22.1)	1,700	65 (30)
FT35-4810			0.394 (10)		11.4 (290)	16,500 (73.4)	19,850 (88.3)	14.15 (359.4)	24.6 (626)	392 (44.3)		
FT35-4820			0.787 (20)		22.4 (568)	17,200 (76.5)	20,800 (92.5)	32.05 (814.2)	56.7 (1,440)	783 (88.5)		

Intermediate and custom stroke lengths are available. Intermediate leads may also be available. Belt and pulley inertia varies with ratio & motor selection. Please contact your local sales representative. See page 64 for definition of terms.

[1] FT35 actuators with high capacity screw option are 20 mm longer. See dimensions page 66.

[2] The rated and max force on the FT series actuators are those forces derived from using typical servo motors of similar frame size to the actuator, at their rated continuous and peak torques. In many cases FT actuators can be configured with input torque sufficient to exceed these forces. Contact your local sales representative for further details.

Standard Inline Coupling Maximum Torque Ratings and Inertia

	Torque Rating	Inertia
FT35	354 lbf-in (40 N-m)	0.000104 kg-m^2 (0.000920 lbf-in s^2)

Shown below are pulley inertias reflected at motor including typical pulleys, belt and standard bushings. Because of differences in belt and pulley selection due to particular motor choices, please contact your local sales representative if these values are critical to your application.

FT35 Reflective Inertias

	5 mm Lead	10 mm Lead	20 mm Lead	
NMT Unit - J (0)	0.0004087	0.0004121	0.0004259	kg-m^2 *(at input shaft)*
NMT Unit - J (Stroke)	0.0000159	0.0000162	0.0000171	kg-m^2/inch of stroke
Inline w/ Coupler - J (0)	0.0005127	0.0005161	0.0005299	kg-m^2 *(at motor shaft)*
Inline w/ Coupler - J (Stroke)	0.0000159	0.0000162	0.0000171	kg-m^2/inch of stroke
Parallel 1:1 - J (0)	0.0011042	0.0011855	0.0014480	
Parallel 1:1 - J (Stroke)	0.0000159	0.0000162	0.0000171	
Parallel 2:1 - J (0)	0.0014029	0.0014038	0.0015345	
Parallel 2:1 - J (Stroke)	0.0000040	0.0000040	0.0000043	

*Pulleys for parallel mount match actuator max performance ratings

FT60 Series Performance Specifications

Model No.	Nominal Frame Size in (mm)	Stroke in (mm)	Screw Lead in (mm)	Max Force lbf (kN)	Linear Speed at Max Rated RPM in/sec (mm/sec)	Dynamic Load Rating (Std capacity screw) lbf (kN)	Dynamic Load Rating (High capacity screw) lbf (kN)	Life at Max Force (Std capacity screw) 10^6 in (Km)	Life at Max Force (High capacity screw) 10^6 in (Km)	Max Input Torque lbf-in (Nm)	Max Rated Input rpm	Weight Base lb (kg)
FT60-1206	6.0 (152)	12 (305)	0.236 (6)	20,000 (89.0)	7.9 (201)	51,900 (230.9)	57,933 (257.7)	4.1 (104.8)	5.7 (145.8)	940 (106)	2000	100 (45)
FT60-1212			0.472 (12)		15.8 (401)	44,600 (198.4)	49,750 (221.3)	5.2 (133.1)	7.3 (184.7)	1880 (212)		
FT60-1230			1.181 (30)		39.0 (1000)	41,700 (185.5)	63,958 (284.5)	10.7 (271.9)	38.6 (981.1)	4699 (531)		
FT60-2406	6.0 (152)	24 (610)	0.236 (6)	20,000 (89.0)	7.9 (201)	51,900 (230.9)	57,933 (257.7)	4.1 (104.8)	5.7 (145.8)	940 (106)	2000	130 (59)
FT60-2412			0.472 (12)		15.8 (401)	44,600 (198.4)	49,750 (221.3)	5.2 (133.1)	7.3 (184.7)	1880 (212)		
FT60-2430			1.181 (30)		39.0 (1000)	41,700 (185.5)	63,958 (284.5)	10.7 (271.9)	38.6 (981.1)	4699 (531)		
FT60-3606	6.0 (152)	36 (914)	0.236 (6)	20,000 (89.0)	7.9 (201)	51,900 (230.9)	57,933 (257.7)	4.1 (104.8)	5.7 (145.8)	940 (106)	2000	160 (72)
FT60-3612			0.472 (12)		15.8 (401)	44,600 (198.4)	49,750 (221.3)	5.2 (133.1)	7.3 (184.7)	1880 (212)		
FT60-3630			1.181 (30)		39.0 (1000)	41,700 (185.5)	63,958 (284.5)	10.7 (271.9)	38.6 (981.1)	4699 (531)		
FT60-4806	6.0 (152)	48 (1219)	0.236 (6)	20,000 (89.0)	7.9 (201)	51,900 (230.9)	57,933 (257.7)	4.1 (104.8)	5.7 (145.8)	940 (106)	2000	190 (86)
FT60-4812			0.472 (12)		15.8 (401)	44,600 (198.4)	49,750 (221.3)	5.2 (133.1)	7.3 (184.7)	1880 (212)		
FT60-4830			1.181 (30)		39.0 (1000)	41,700 (185.5)	63,958 (284.5)	10.7 (271.9)	38.6 (981.1)	4699 (531)		

Intermediate and custom stroke lengths are also available. Intermediate leads may also be available. Belt and pulley inertia varies with ratio and motor selection.

* The rated and max force on the FT series actuators are those forces derived from using typical servo motors of similar frame size to the actuator, at their rated continuous and peak torques. In many cases FT actuators can be configured with input sufficient to exceed these forces. Contact your local sales representative for further details.

Standard Inline Coupling Maximum Torque Ratings and Inertia

	Torque Rating	Inertia
FT60	885 lbf-in (100 N-m)	0.000330 kg-m² (0.002921 lbf-in s²)

Shown below are pulley inertias reflected at motor including typical pulleys, belt and standard bushings. Because of differences in belt and pulley selection due to particular motor choices, please contact your local sales representative if these values are critical to your application.

FT60 Reflective Inertias

	6 mm Lead	12 mm Lead	30 mm Lead	
NMT Unit - J (0)	0.0078464	0.0078709	0.0080424	kg-m² *(at input shaft)*
NMT Unit - J (Stroke)	0.0002539	0.0002547	0.0002600	kg-m²/inch of stroke
Inline w/ Coupler - J (0)	0.0081764	0.0082009	0.0083724	kg-m² *(at motor shaft)*
Inline w/ Coupler - J (Stroke)	0.0002539	0.0002547	0.0002600	kg-m²/inch of stroke
Parallel 1:1 - J (0)	0.0129357	0.0146113	0.0312682	
Parallel 1:1 - J (Stroke)	0.0002539	0.0002547	0.0002600	
Parallel 2:1 - J (0)	0.0049158	0.0057202	0.0214777	
Parallel 2:1 - J (Stroke)	0.0000635	0.0000637	0.0000650	

*Pulleys for parallel mount match actuator max performance ratings

DEFINITIONS:

Max Linear Speed: The linear speed achieved by the actuator at a screw speed equal to the max rotational speed value.

Max Force: Values are derived from the design capacity of the FT actuator and should not be exceeded or relied upon for continuous operation.

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

Torque at Rated Force: The torque required at the screw to produce the force rating.

Screw Inertia: The rotary inertia of the planetary roller screw in the actuator.

Max. Rot. Speed: The maximum allowable rotational screw speed determined by the screw length or the rotational speed limit of the roller screw nut.

FT80 Series Performance Specifications

Model No.	Nominal Frame Size in (mm)	Stroke in (mm)	Screw Lead in (mm)	Max Force lbf (kN)	Linear Speed at Max Rated RPM in/sec (mm/sec)	Dynamic Load Rating (Std capacity screw) lbf (kN)	Dynamic Load Rating (High capacity screw) lbf (kN)	Life at Max Force (Std capacity screw) 10^6 in (Km)	Life at Max Force (High capacity screw) 10^6 in (Km)	Max Input Torque lbf-in (Nm)	Max Rated Input rpm	Weight Base lb (kg)
FT80-1206	8.0 (203)	12 (305)	0.236 (6)	40,000 (177.9)	6.9 (175)	80,700 (359)	94,330 (419.6)	1.94 (49.3)	3.1 (78.7)	1,880 (212)	1750	190 (86)
FT80-1212			0.472 (12)		13.8 (351)	70,200 (312.2)	84,079 (374)	2.55 (64.9)	4.4 (111.4)	3,760 (425)		
FT80-1230			1.181 (30)		34.4 (875)	64,700 (287.8)	95,971 (426.9)	5.00 (127)	16.3 (414.3)	9,399 (1,062)		
FT80-2406	8.0 (203)	24 (610)	0.236 (6)	40,000 (177.9)	6.9 (175)	80,700 (359)	94,330 (419.6)	1.94 (49.3)	3.1 (78.7)	1,880 (212)	1750	265 (120)
FT80-2412			0.472 (12)		13.8 (351)	70,200 (312.2)	84,079 (374)	2.55 (64.9)	4.4 (111.4)	3,760 (425)		
FT80-2430			1.181 (30)		34.4 (875)	64,700 (287.8)	95,971 (426.9)	5.00 (127)	16.3 (414.3)	9,399 (1,062)		
FT80-3606	8.0 (203)	36 (914)	0.236 (6)	40,000 (177.9)	6.9 (175)	80,700 (359)	94,330 (419.6)	1.94 (49.3)	3.1 (78.7)	1,880 (212)	1750	340 (153)
FT80-3612			0.472 (12)		13.8 (351)	70,200 (312.2)	84,079 (374)	2.55 (64.9)	4.4 (111.4)	3,760 (425)		
FT80-3630			1.181 (30)		34.4 (875)	64,700 (287.8)	95,971 (426.9)	5.00 (127)	16.3 (414.3)	9,399 (1,062)		
FT80-4806	8.0 (203)	48 (1219)	0.236 (6)	40,000 (177.9)	6.9 (175)	80,700 (359)	94,330 (419.6)	1.94 (49.3)	3.1 (78.7)	1,880 (212)	1750	415 (187)
FT80-4812			0.472 (12)		13.8 (351)	70,200 (312.2)	84,079 (374)	2.55 (64.9)	4.4 (111.4)	3,760 (425)		
FT80-4830			1.181 (30)		34.4 (875)	64,700 (287.8)	95,971 (426.9)	5.00 (127)	16.3 (414.3)	9,399 (1,062)		

Intermediate and custom stroke lengths are also available. Intermediate leads may also be available. Belt and pulley inertia varies with ratio and motor selection. Please contact your local sales representative. See page 64 for definitions of terms.

* The rated and max force on the FT series actuators are those forces derived from using typical servo motors of similar frame size to the actuator, at their rated continuous and peak torques. In many cases FT actuators can be configured with input torque sufficient to exceed these forces. Contact your local sales representative for further details.

Standard Inline Coupling Maximum Torque Ratings and Inertia

	Torque Rating	Inertia
FT80	1770 lbf-in (200 N-m)	0.0001210 kg-m^2 (0.010709 lbf-in s^2)

Shown below are pulley inertias reflected at motor including typical pulleys, belt and standard bushings. Because of differences in belt and pulley selection due to particular motor choices, please contact your local sales representative if these values are critical to your application.

FT80 Reflective Inertias

	6 mm Lead	12 mm Lead	30 mm Lead	
NMT Unit - J (0)	0.0302504	0.0303275	0.0308673	kg-m^2 *(at input shaft)*
NMT Unit - J (Stroke)	0.0008022	0.0008035	0.0008124	kg-m^2/inch of stroke
Inline w/ Coupler - J (0)	0.0314604	0.0315375	0.0320773	kg-m^2 *(at motor shaft)*
Inline w/ Coupler - J (Stroke)	0.0008022	0.0008035	0.0008124	kg-m^2/inch of stroke
Parallel 1:1 - J (0)	0.0721056	0.0535533	0.1342578	
Parallel 1:1 - J (Stroke)	0.0008022	0.0008035	0.0008124	
Parallel 2:1 - J (0)	0.0198765	0.0270490	0.0753395	
Parallel 2:1 - J (Stroke)	0.0002006	0.0002009	0.0002031	

*Pulleys for parallel mount match actuator max performance ratings

FT Series Mechanical Specifications

Model No.	FT35, FT60, FT80
Roller Screw Backlash *in (mm)*	0.0004 - 0.001 (0.01 - 0.03)
System Backlash* *in (mm)*	0.002 (0.06)
Standard Lead Accuracy** *in/ft (mm/mm)*	0.001 (.025/300)
Dynamic Torque Values *lbf in/krpm (nm/krpm)*	FT35: 6.0 (0.68) FT60: 11.0 (1.24) FT80: 20.0 (2.26)
Friction Torque Values *lbf in (nm)*	FT35: 7.0 (0.79) FT60: 14.0 (1.58) FT80: 35.0 (3.95)
Maximum Radial Load	See chart p 62
Environmental Rating *(Base Unit Only)****	IP65S Standard
Case: *Standard Optional*	Epoxy-coated aluminum Food Grade Coating

* System backlash will be different with various types of motor mounting arrangements and couplings. Please discuss your particular configuration with your local sales representative.

** Optional lead accuracy – from 0.0002 in/ft (6 µm/300 mm) to 0.002 in/ft (200 µm/10000 mm) – are also available.

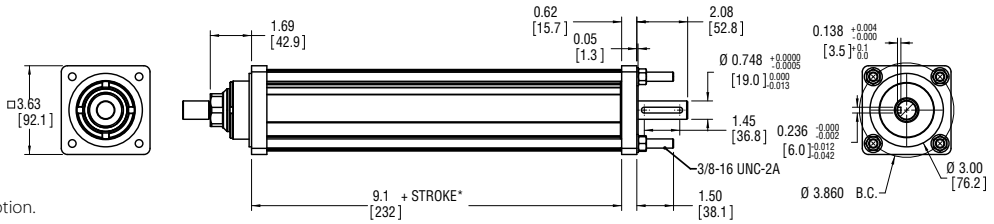
*** For IP65S scaling of unit with motor mounted, Please contact your local sales representative.

Base Unit

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

*Add 20mm if choosing high capacity option.



Clevis Mount Unit

Parallel motor mount shown.

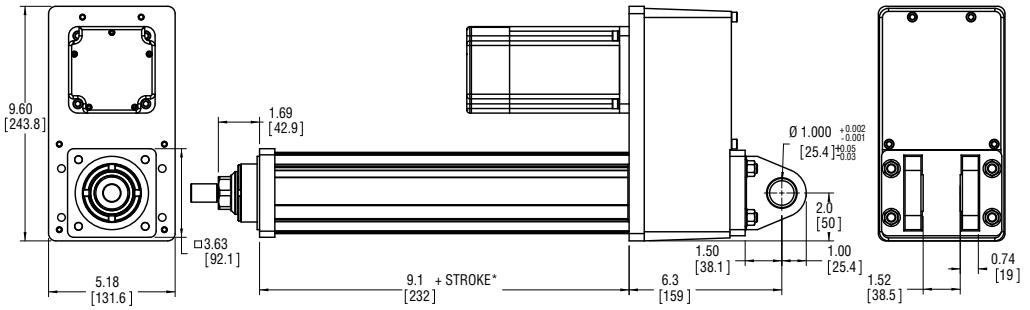
All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

*Add 20mm if choosing high capacity option.

* If "G" metric clevis option, Ø 27 mm + 0.00 / - 0.06



Front Flange Unit

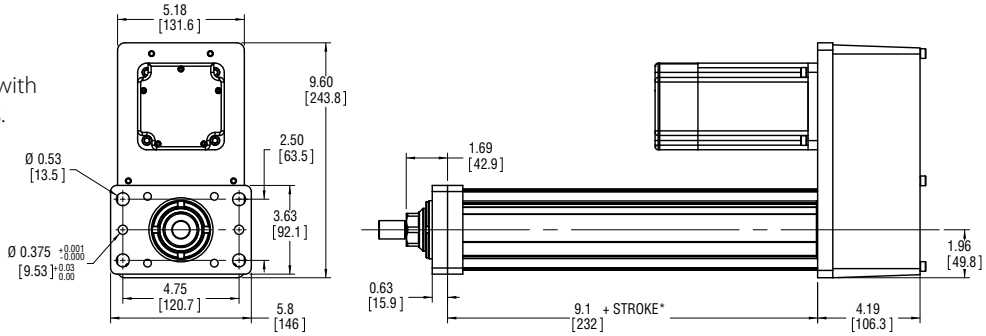
Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

*Add 20mm if choosing high capacity option.



Rear Flange Unit

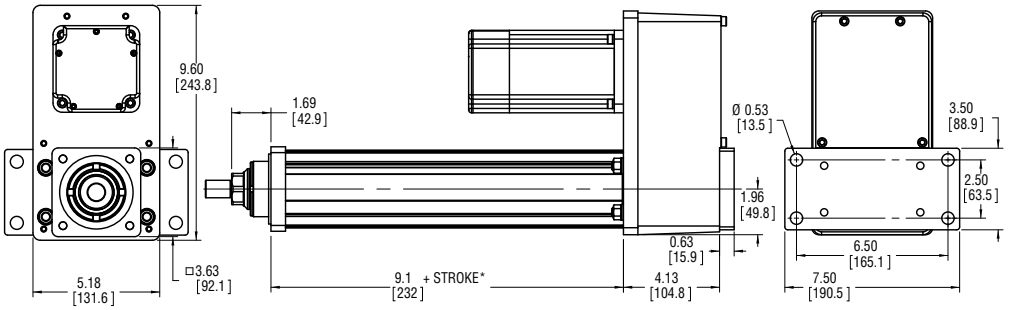
Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

*Add 20mm if choosing high capacity option.



Drawings subject to change. Consult Exlar for certified drawings.

Trunnion Unit

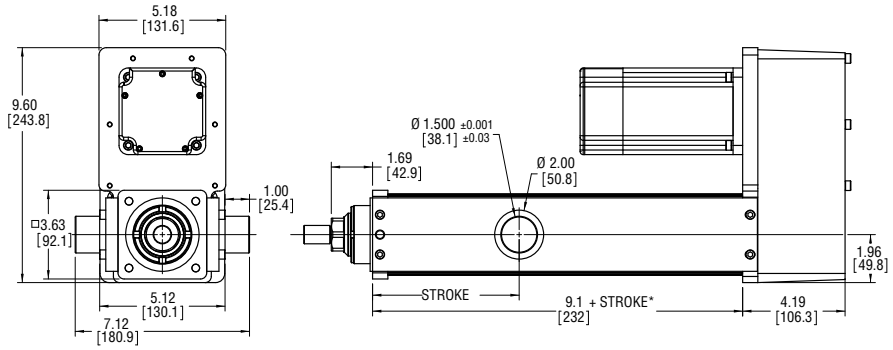
Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

*Add 20mm if choosing high capacity option.
** If "Q" metric side trunnion option, Ø 35 mm h7



Extended Tie Rod Unit

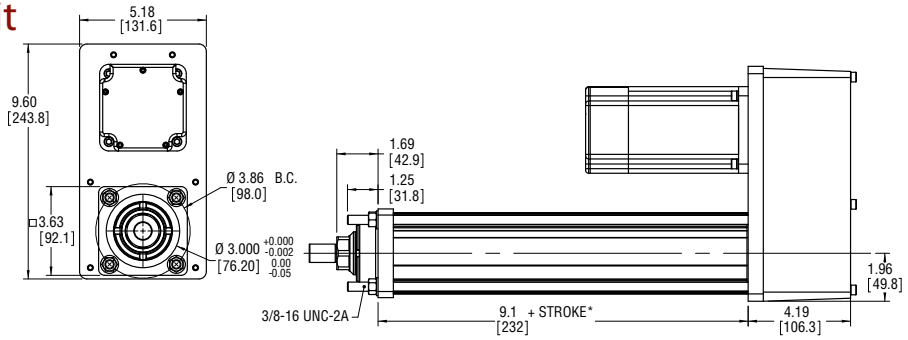
Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

*Add 20mm if choosing high capacity option.



Side Lug Unit

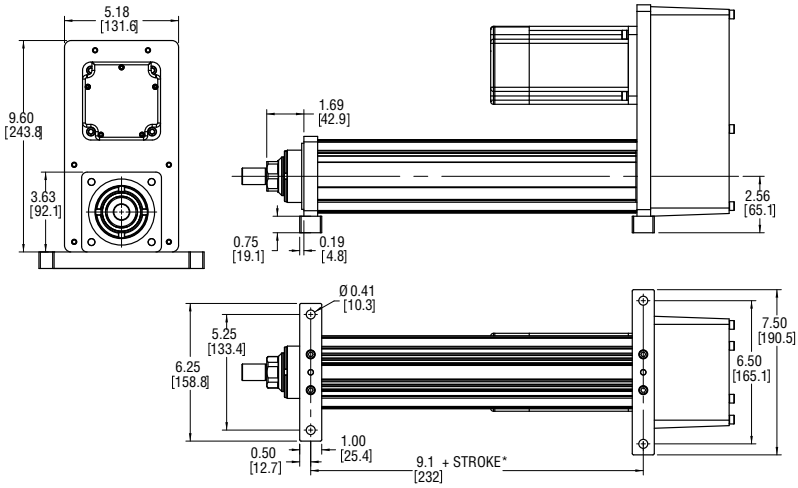
Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

*Add 20mm if choosing high capacity option.



Side Mount Unit

Parallel motor mount shown.

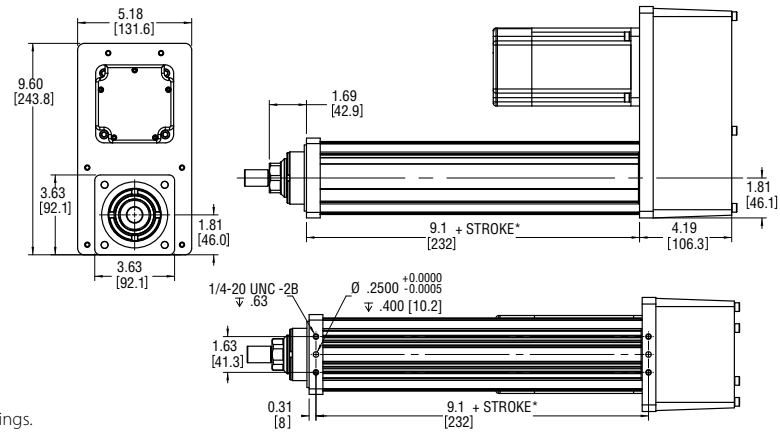
All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

*Add 20mm if choosing high capacity option.
* If "J" or "K" metric side mount options, M6 x 1.0 ↧ 9 mm with Ø 6 mm M7 ↧ 9 mm Dowel Hole

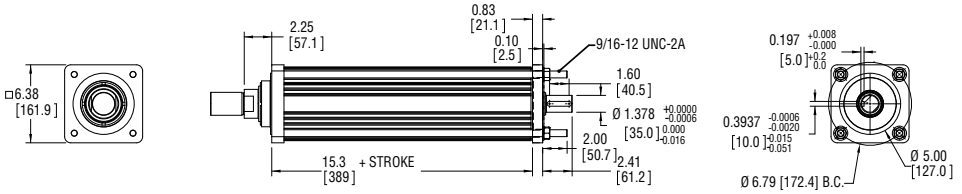
Drawings subject to change. Consult Exlar for certified drawings.



Base Unit

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.



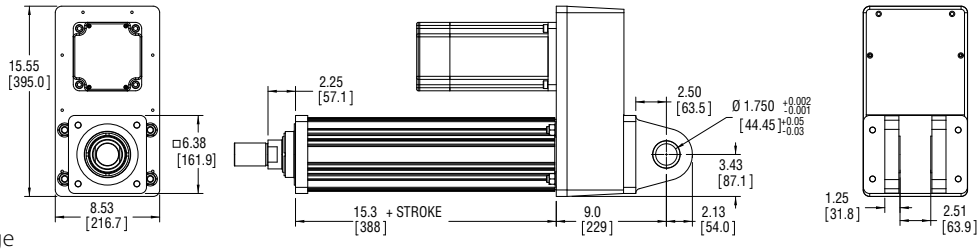
Clevis Mount Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



** If "G" metric clevis option, Ø 45 mm + 0.00 / - 0.08

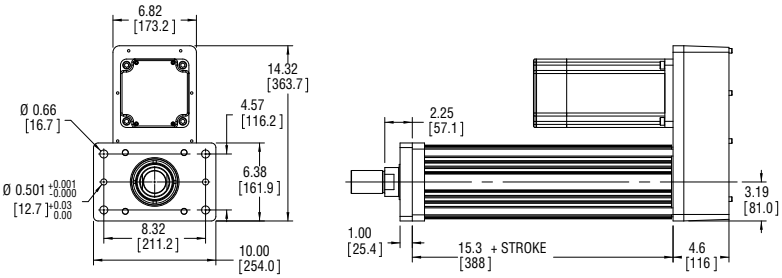
Front Flange Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



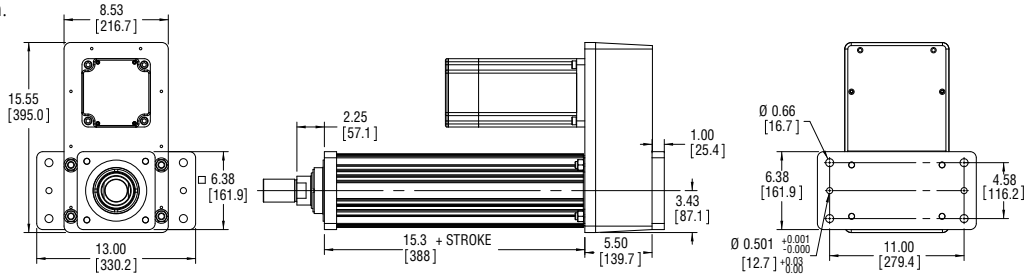
Rear Flange Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



Drawings subject to change. Consult Exlar for certified drawings.

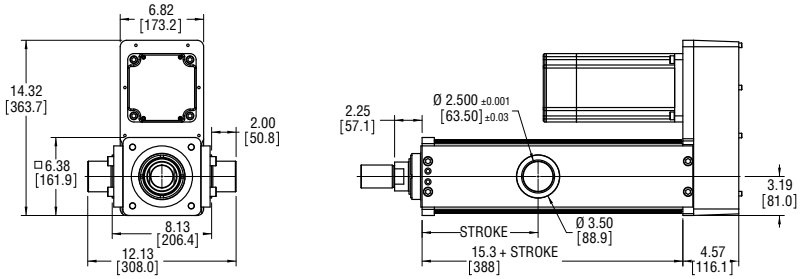
Trunnion Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



* If "Q" metric side trunnion option, Ø 60 mm h9

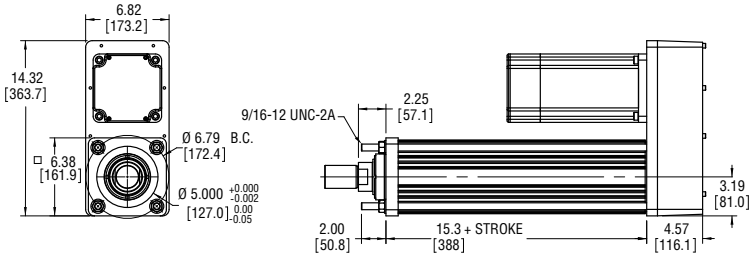
Extended Tie Rod Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



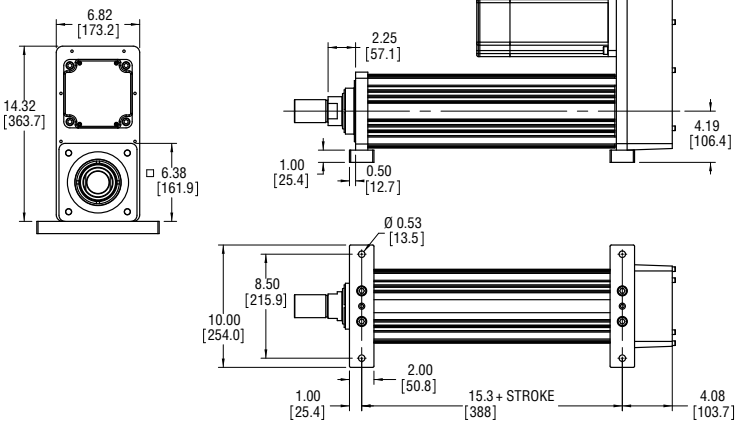
Side Lug Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



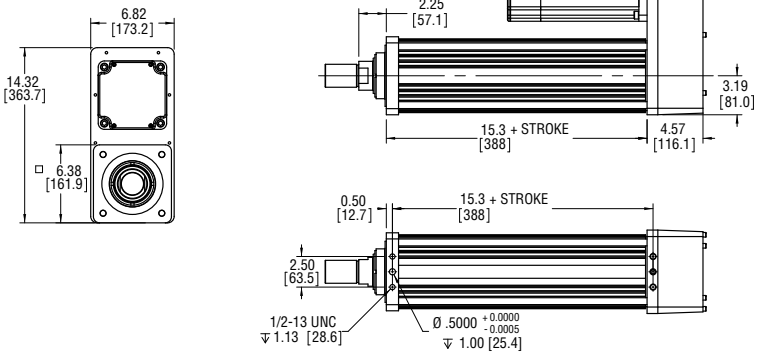
Side Mount Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



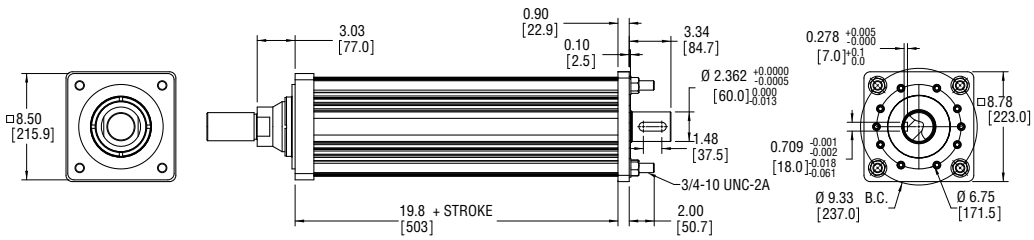
* If "J" or "K" metric side mount options, M12 x 1.75 ↧ 19 mm with Ø 12 mm M7 ↧ 12 mm Dowel Hole

Drawings subject to change. Consult Exlar for certified drawings.

Base Unit

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.



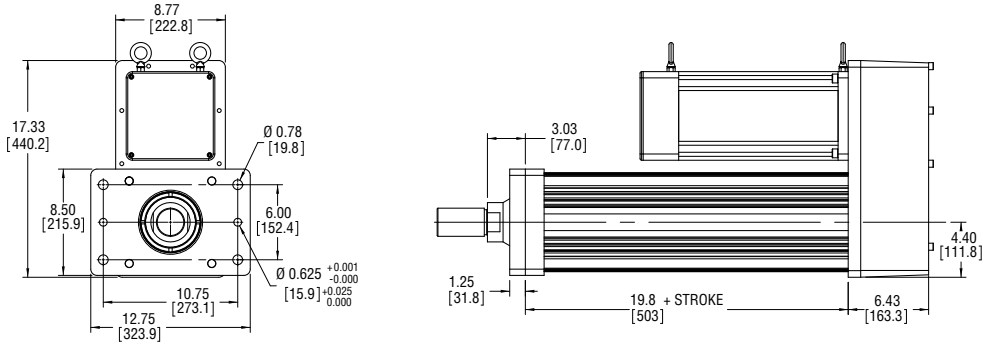
Front Flange Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



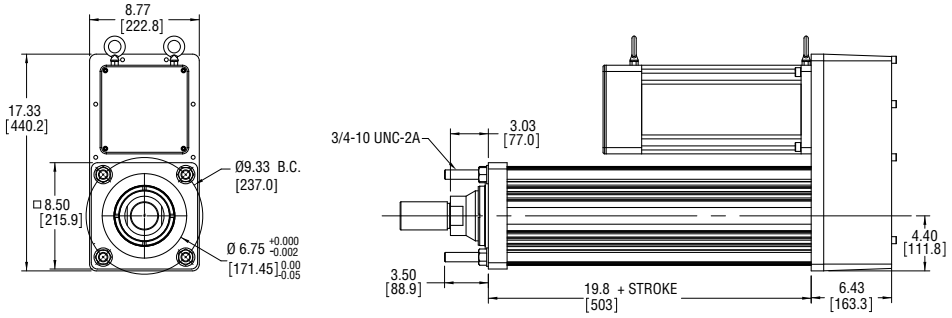
Extended Tie Rod Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



Drawings subject to change. Consult Exlar for certified drawings.

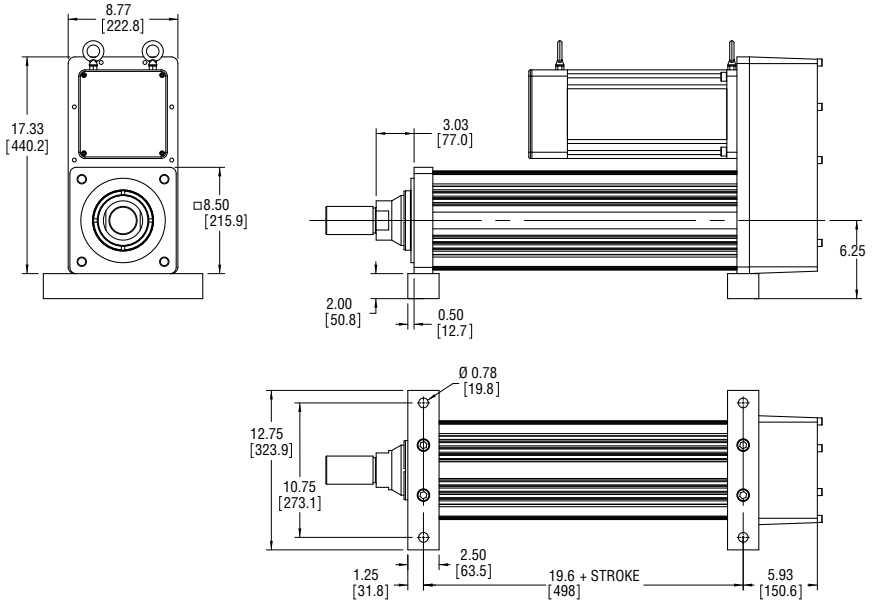
Side Lug Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.



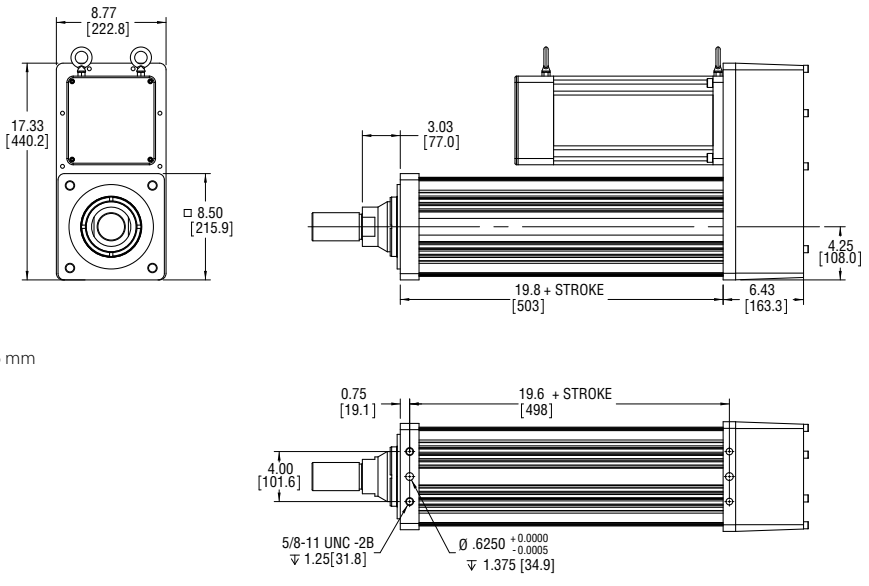
Side Mount Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeters equivalents in brackets.

See rod ends for rod end thread details.

Motor plate and cover dimensions are subject to change depending on the motor and ratio selection.

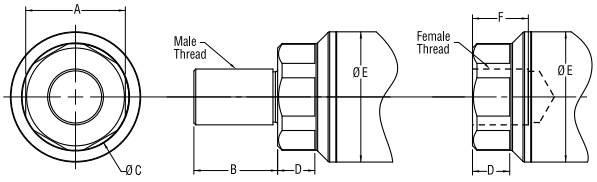


* If "J" or "K" metric side mount options, M16 x 2.0 ↧ 16 mm with Ø 12 mm M7 ↧ 12 mm Dowel Hole

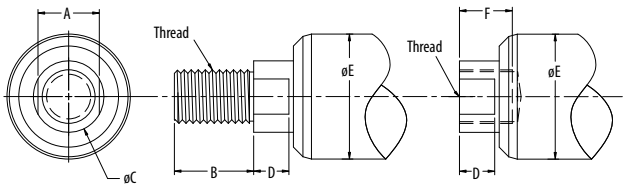
NOTE: For Clevis, Trunnion or Rear Flange, Consult Exlar

Drawings subject to change. Consult Exlar for certified drawings.

Rod Ends



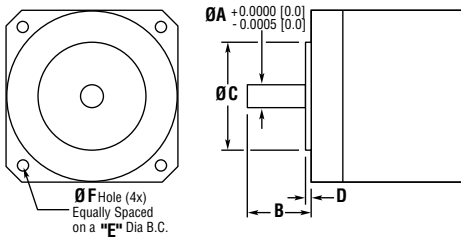
	A in (mm)	B in (mm)	ØC in (mm)	D in (mm)	ØE in (mm)	F in (mm)	Male U.S.	Male Metric	Female U.S.	Female Metric
FT35	1.34 (34)	1.125 (28.6)	1.434 (36.4)	0.50 (12.7)	1.750 (44.5)	0.750 (19.1)	3/4-16 UNF-2A	M16x1.5 6g	3/4-16 UNF-2B	M16x1.5 6h



	A in (mm)	B in (mm)	ØC in (mm)	D in (mm)	ØE in (mm)	F in (mm)	Male U.S.	Male Metric	Female U.S.	Female Metric
FT60	2.00 (50.8)	2.750 (69.9)	2.360 (59.9)	0.750 (19.1)	3.000 (76.2)	2.000 (50.8)	1 7/8-12 UN-2A	M42x4.5 6g	1 7/8-12 UN-2B	M42x4.5 6h
FT80	2.75 (69.9)	4.019 (102.1)	3.143 (79.8)	1.000 (25.4)	4.000 (101.6)	2.250 (57.2)	2 1/2-12 UN-2A	M56x5.5 6g	2 1/2-12 UN-2B	M56x5.5 6h

NEMA Standard Motor Dimensions

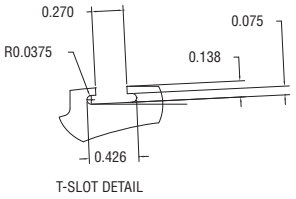
The FT Series actuators offer the selection for motor mounting provisions to be the various NEMA motor sizes. Because there are variations from brand to brand of motor as to what is called NEMA dimensions, we publish this table of NEMA dimensions that we use as the standards for the product line. If the motor that you choose differs from these dimensions, it would not be called out by the N23, N34, N42, N56 call outs but rather by the A## alpha numeric callout for specific motors.

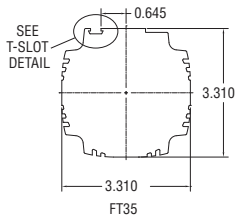


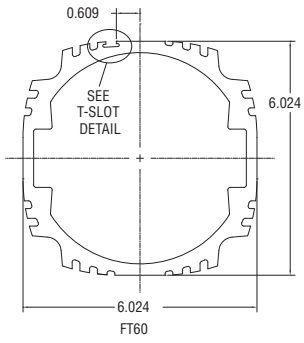
Dimension (in)	NEMA 23	NEMA 34	NEMA 42	NEMA 56
"A" Motor Shaft Diameter	0.25	0.5	0.75	0.625
"B" Motor Shaft Length	0.81	1.19	2.19	2.0625
"C" Motor Pilot Diameter	1.5	2.875	2.186	4.5
"D" Pilot Depth	0.05	0.0625	0.0625	0.1 - 0.16
"E" Mounting Bolt Circle	2.625	3.875	4.95	5.875
"F" Mounting Bolt Hole Dia.	0.205	0.223	0.328	3/8-16 UNC tap

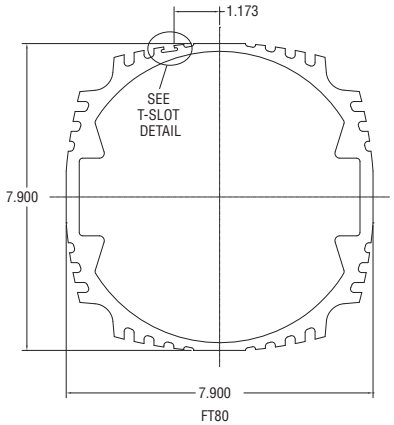
Drawings subject to change. Consult Exlar for certified drawings.

Case Dimensions









GGG = Motor Mount Provisions [3, 4]

A## = Alpha numeric motor call out – Contact your local sales representative. Motor not included.
NMT = No motor mount – keyed shaft on base unit only
N23 = Nema 23 standard dimension
N34 = Nema 34 standard dimension
N42 = Nema 42 standard dimension
N56 = Nema 56 standard demension
M60 = Exlar 60 mm SLM. Motor not included.
M90 = Exlar 90 mm SLM. Motor not included.
M11 = Exlar 115 mm SLM and ER. Motor not included.
M14 = Exlar 142 mm SLM. Motor not included.
M18 = Exlar 180 mm SLM. Motor not included.
G60 = Exlar 60 mm SLG. Motor not included.
G90 = Exlar 90 mm SLG. Motor not included.
G11 = Exlar 115 mm SLG and ER. Motor not included.
AB3, 4, 6, 8 = Allen Bradley Ultra 3, 4, 6 and 8 inch motors
BD3, 4, 6, 8 = Baldor 3, 4, 6 & 8 inch motors
CM3, 4, 6, 8 = Parker (Custom Servo Motors) Metric 3, 4, 6 & 8 inch motors
EE3, 4 = Emerson EMC Imperial 3 & 4 inch
EM3, 4, 6, 8 = Emerson EMC Metric 3, 4, 6 & 8 inch
FA 4, 6, 8 = Fanuc 4, 6 & 8 inch motors
IN3, 4, 6, 8 = Bosch-Rexroth (Indramat) 3, 4, 6 and 8 inch motors
KM2, 4, 6, 8 = Kollmorgen B & M 20, 40, 60 and 80 Series
MT3, 4, 6, 8 = Mitsubishi 3, 4, 6 & 8 inch motors
PS3, 4, 6, 8 = Pacific Scientific PMA/PMB Series
PC2, 3, 4, 6 = Parker Compumotor Apex 2.7, 3.6, 4.5 and 5.6 inch
SM2 = Siemens 2 inch motor
SM3 = Siemens 3 inch motor
YS3, 4, 6, 8 = Yaskawa 3, 4, 6 and 8 inch motors
MXX = Unlisted or special motor mounting provisions

XX .. XX = Options

Housing Options

XH = Special housing options
HC = Type III hard coat anodized, class I[2]
XT = High capacity roller screw
SS = Stainless steel[2]
FG = Smooth white epoxy[2]
(IP65S sealing of unit with motor mounted requires "XH" option.)[2]

Special Follower

PF = Preloaded follower. 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 non-preloaded screw for the same application.
FX = Special follower

End Switches (adjustable position throughout stroke)

L1 = One adjustable switch, (10-30 VDC, PNP, N.C., 1m. 3 wire embedded cable)
L2 = Two adjustable switches, (10-30 VDC, PNP, N.C., 1m. 3 wire embedded cable)
L3 = Three adjustable switches, (10-30 VDC, PNP, N.C., 1m. 3 wire embedded cable)

Please provide a drawing of motor dimensions with all orders to insure proper mounting compatibility.

= Part No. Designator for Specials Optional 5 digit assigned part number to designate unique model numbers for specials.

Note:

1. Mounting face size, shaft length and other details of particular motors may require special adapters or provisions for mounting. Always discuss your motor selection with your local sales representative.
2. These housing options may also indicate the need for special material main rods, faceplate and motor mounting provisions. Internal anti-rotate is not available with stainless steel options. Please contact your local sales representative.
3. NEMA callout must meet specifications on page 72 or use alpha-numberic callout.
4. MAX Std. motor size FT35: 4 inch/115 mm, FT60 & 80: 8 inch/200 mm. For oversized motors, contact your local sales representative.
5. Not available with inline motor mount, contact your local sales representative.

Contact your local sales representative regarding all special actuator components.

AA = FT Frame Size

35 = 3.5 inch (90 mm)
60 = 6.0 inch (150 mm)
80 = 8.0 inch (200 mm)

BB = Stroke Length

06 = 6 inch (152 mm) FT35
12 = 12 inch (305 mm) FT35, 60, 80
18 = 18 inch (457 mm) FT35
24 = 24 inch (610 mm) FT35, 60, 80
36 = 36 inch (914 mm) FT35, 60, 80
48 = 48 inch (1219 mm) FT35, 60, 80

CC = Screw Lead

05 = 0.2 inch, FT35
06 = 0.23 inch, FT60, 80
10 = 0.39 inch, FT35
12 = 0.47 inch, FT60, 80
20 = 0.79 inch, FT35
30 = 1.18 inch, FT60, 80

D = Mounting Style[1]

L = Side lugs
B = Front/rear flange (5)
C = Rear clevis (5)
F = Front flange
R = Rear flange (5)
S = Side mount
D = Double side mount
T = Side trunnion mount (5)
E = Extended tie rods
J = Metric side mount
K = Metric double side mount
Q = Metric side trunnion
M = Metric extended tie rods
G = Metric rear clevis (5)
X = Special (please specify)

E = Motor Mounting Configurations

N = None
I = Inline direct drive (includes Exlar standard coupling)
P = Parallel, 1:1 belt reduction
Q = Parallel, 2:1 belt reduction
X = Special

F = Rod End

M = Male, US std. thread
A = Male, metric thread
F = Female, US std. thread
B = Female, metric thread
W = Male, US std. thread SS, rod end only
R = Male metric thread SS, rod end only
V = Female, US std. thread SS, rod end only
L = Female, metric thread SS, rod end only
X = Special (please specify)