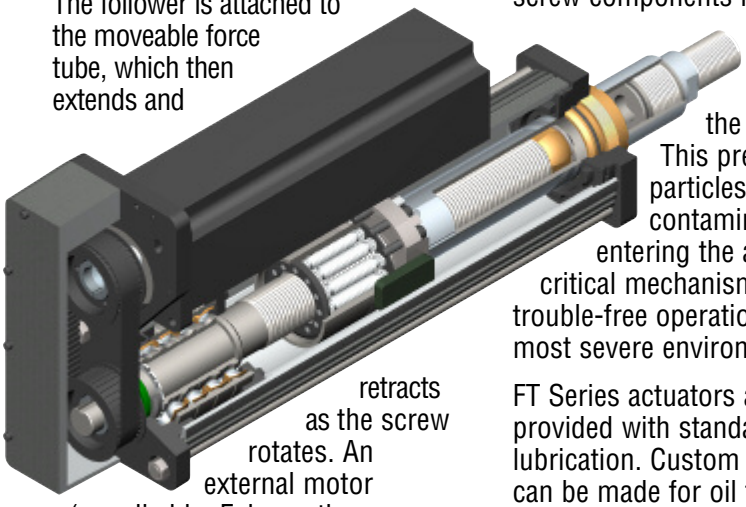
FT Series Linear Actuators

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.



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.

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

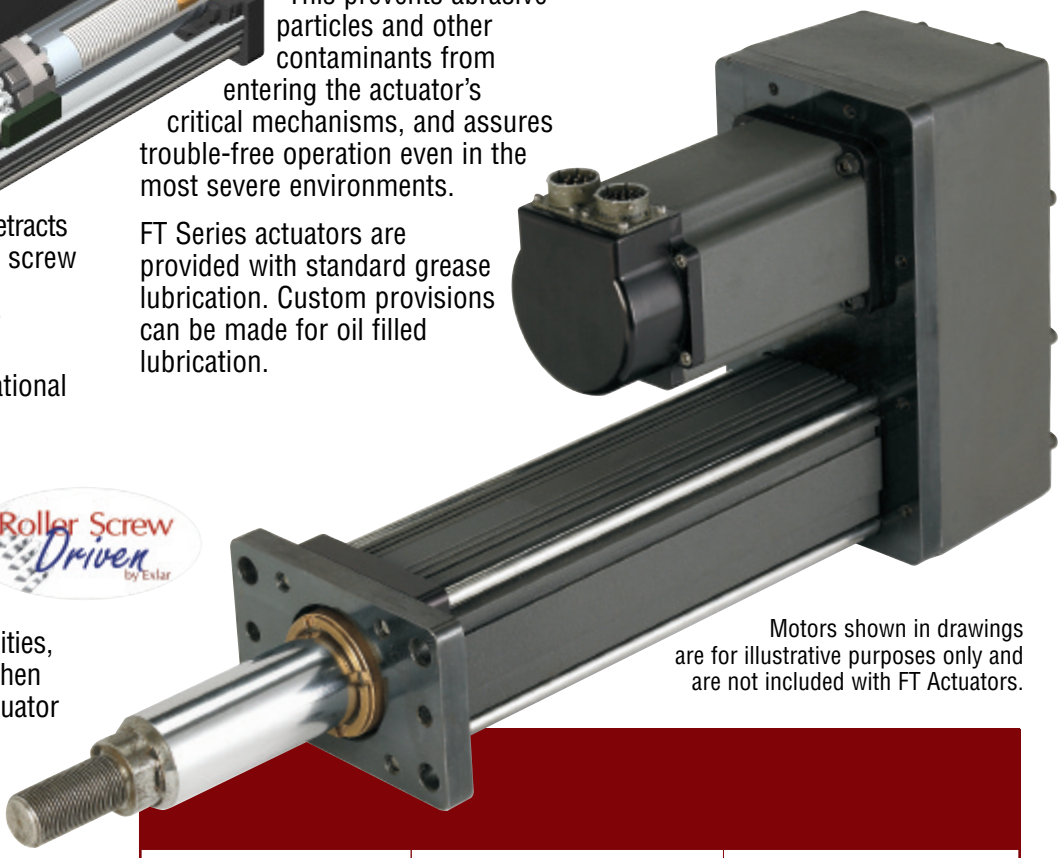
Engineered Compatibility

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.

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.



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

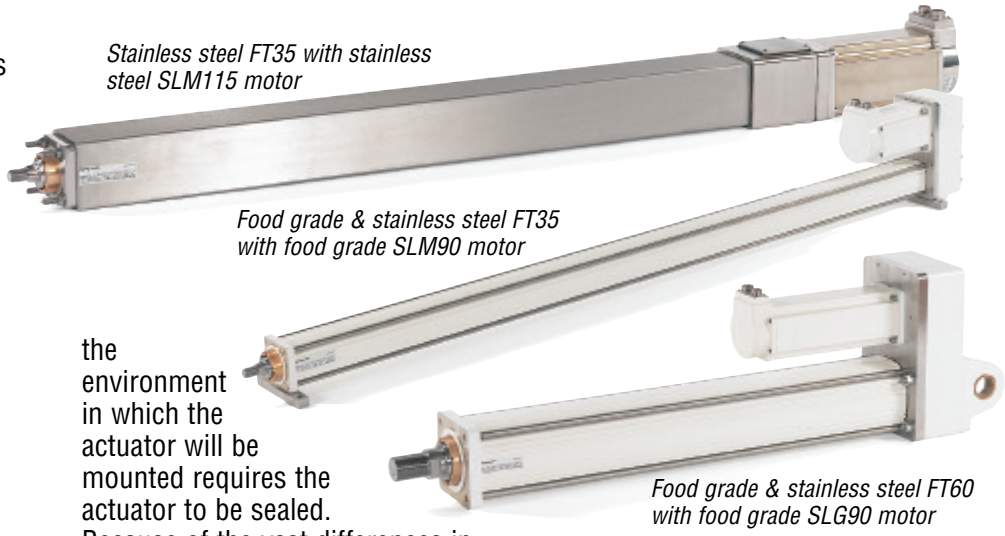
Feature	Standard	Optional
Long Strokes	12 inches to 8 feet	Intermediate & Custom Stroke Lengths
Pre-Loaded Follower	No	Yes
External End Switches	No	One, two or three Adjustable Switches
Multiple Actuator Mountings	Side Mount, Side Lug, Extended Tie Rods, Rear Clevis, Front Flange, Side Trunnion, Rear Flange, Front/Rear Flange	OEM Specials Available
Multiple Motor Mounting Configurations	Inline Direct Drive, Parallel 1:1 Drive, Parallel, 2:1Reduction	OEM 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 86, 88 and 90). These rod and shaft seals, and o-ring sealing provides IP65 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. Consult Exlar applications engineering for details and quotations on special sealing of this type.



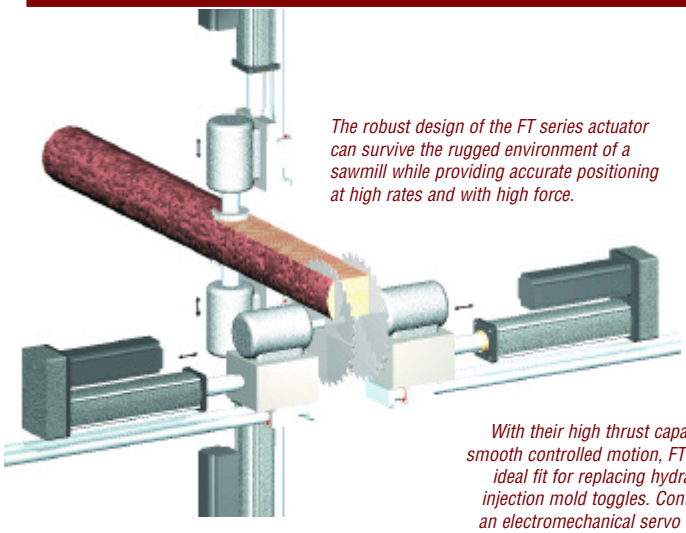
Stainless steel FT35 with stainless steel SLM115 motor

Food grade & stainless steel FT35 with food grade SLM90 motor

Food grade & stainless steel FT60 with food grade SLG90 motor

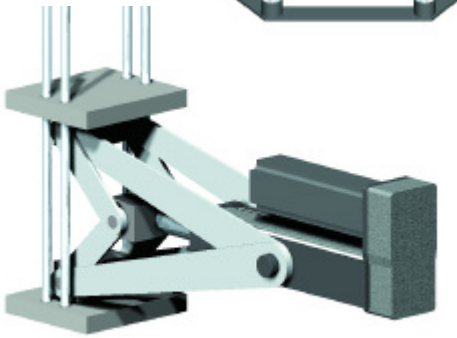
EXLAR FT SERIES ACTUATORS APPLICATIONS INCLUDE:

- 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



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.

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.

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

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:

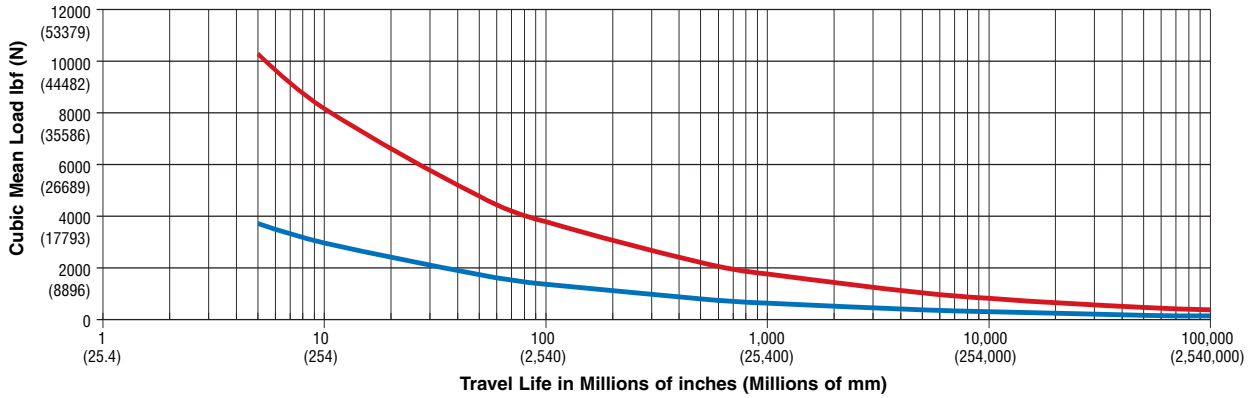
C = Dynamic load rating (lbf)
F = Cubic mean applied load (lbf)
S = Roller screws lead (inches)

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

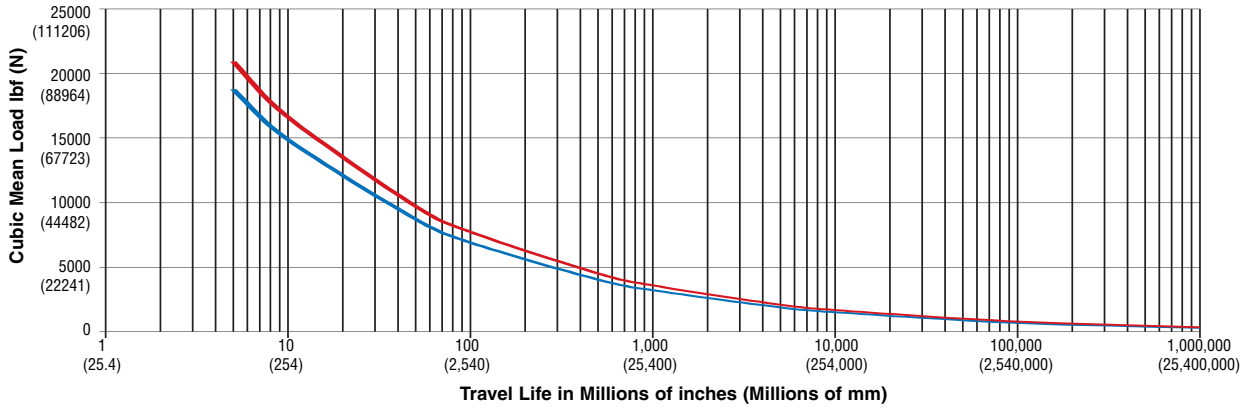
All curves represent properly lubricated and maintained actuators.

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

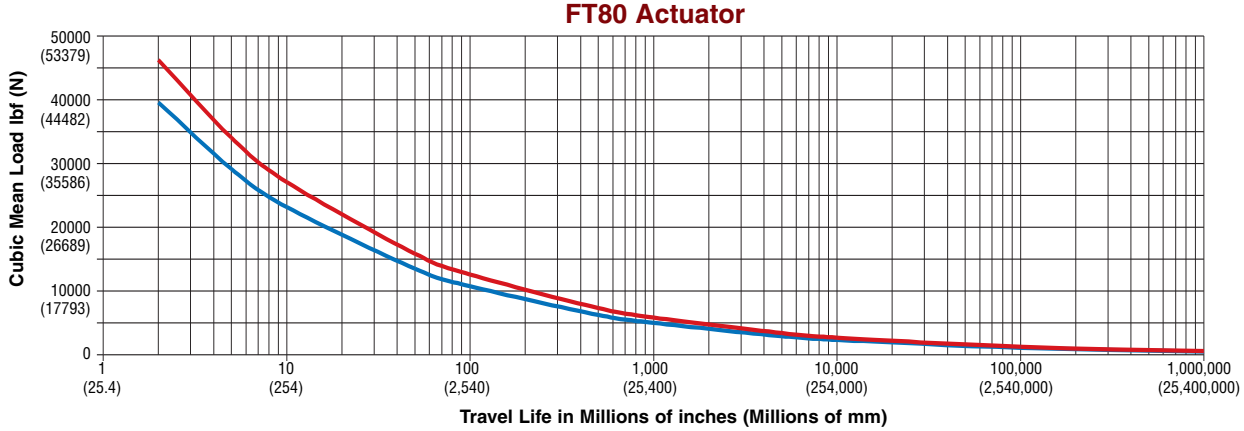
FT35 Actuator



FT60 Actuator



FT80 Actuator



FT Series Performance Specifications

Model No.	Frame Size in (mm)	Stroke in (mm)	Screw Lead in (mm)	Max. Linear Speed in/sec (mm/sec)	Dynamic Load Rating (std. capacity) lbf (kN)	Dynamic Load Rating[1] (high capacity) lbf (kN)	Torque @ Max. Force lb-in (N-m)	Screw Inertia lb-in-s^2 (kg-m^2)	Max. Force[2] lbf (kN)	Max. Rot. Speed rpm	Weight Base Unit lb (kg)
FT35-0605	3.5 (89)	6 (152)	0.2 (5)	14.7 (373)	10700 (47.5)	26168 (116.4)	150 (16.5)	0.0019 (0.00022)	4000 (17.8)	4500	30 (14)
FT35-0610	3.5 (89)	6 (152)	0.39 (10)	29.5 (750)	8700 (38.5)	21177 (94.2)	300 (33.9)	0.0019 0.00022)	4000 (17.8)	4500	30 (14)
FT35-0620	3.5 (89)	6 (152)	0.79 (20)	59.3 (1500)	7100 (31.5)	23987 (106.7)	600 (67.8)	0.0019 (0.00022)	4000 (17.8)	4500	30 (14)
FT35-1205	3.5 (89)	12 (304)	0.2 (5)	14.7 (373)	10700 (47.5)	26168 (116.4)	150 (16.5)	0.0027 (0.00031)	4000 (17.8)	4500	35 (16)
FT35-1210	3.5 (89)	12 (304)	0.39 (10)	29.5 (750)	8700 (38.5)	21177 (94.2)	300 (33.9)	0.0027 (0.00031)	4000 (17.8)	4500	35 (16)
FT35-1220	3.5 (89)	12 (304)	0.79 (20)	59.3 (1500)	7100 (31.5)	23987 (106.7)	600 (67.8)	0.0027 (0.00031)	4000 (17.8)	4500	35 (16)
FT35-1805	3.5 (89)	18 (457)	0.2 (5)	14.7 (373)	10700 (47.5)	26168 (116.4)	150 (16.5)	0.0037 (0.00042)	4000 (17.8)	4500	40 (18)
FT35-1810	3.5 (89)	18 (457)	0.39 (10)	29.5 (750)	8700 (38.5)	21177 (94.2)	300 (33.9)	0.0037) (0.00042)	4000 (17.8)	4500	40 (18)
FT35-1820	3.5 (89)	18 (457)	0.79 (20)	59.3 (1500)	7100 (31.5)	23987 (106.7)	600 (67.8)	0.0037 (0.00042)	4000 (17.8)	4500	40 (18)
FT35-2405	3.5 (89)	24 (610)	0.2 (5)	14.7 (373)	10700 (47.5)	26168 (116.4)	150 (16.5)	0.0045 (0.00051)	4000 (17.8)	4500	45 (21)
FT35-2410	3.5 (89)	24 (610)	0.39 (10)	29.5 (750)	8700 (38.5)	21177 (94.2)	300 (33.9)	0.0045 (0.00051)	4000 (17.8)	4500	45) (21)
FT35-2420	3.5 (89)	24 (610)	0.79 (20)	59.3 (1500)	7100 (31.5)	23987 (106.7)	600 (67.8)	0.0045 (0.00051)	4000 (17.8)	4500	45 (21)
FT35-3605	3.5 (89)	36 (914)	0.2 (5)	8.9 (226)	10700 (47.5)	26168 (116.4)	150 (16.5)	0.0061 (0.00069)	4000 (17.8)	2700	55 (25)
FT35-3610	3.5 (89)	36 (914)	0.39 (10)	17.8 (452)	8700 (38.5)	21177 (94.2)	300 (33.9)	0.0061 (0.00069)	4000 (17.8)	2700	55 (25)
FT35-3620	3.5 (89)	36 (914)	0.79 (20)	35.6 (903)	7100 (31.5)	23987 (106.7)	600 (67.8)	0.0061 (0.00069)	4000 (17.8)	2700	55 (25)
FT35-4805	3.5 (89)	48 (1219)	0.2 (5)	5.7 (145)	10700 (47.5)	26168 (116.4)	150 (16.5)	0.0076 (0.00086)	4000 (17.8)	1700	65 (30)
FT35-4810	3.5 (89)	48 (1219)	0.39 (10)	11.4 (290)	8700 (38.5)	21177 (94.2)	300 (33.9)	0.0076 (0.00086)	4000 (17.8)	1700	65 (30)
FT35-4820	3.5 (89)	48 (1219)	0.79 (20)	22.4 (568)	7100 (31.5)	23987 (106.7)	600 (67.8)	0.0076 (0.00086)	4000 (17.8)	1700	65 (30)

Intermediate and custom stroke lengths are available. Intermediate leads may also be available. Belt and pulley inertia varies with ratio & motor selection. Contact Exlar's Applications Engineering Department for more information. See page 84 for definition of terms.

[1] FT35 actuators with high capacity screw option are 20 mm longer. See dimensions page 86.

[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 sufficient to exceed these forces. Contact Exlar for further details.

FT Standard Inline Coupling Maximum Torque Ratings and Inertia

	Torque Rating	Inertia
FT35	40N-m (354 lbf-in)	0.30 lb-in, 0.000777 lbf-in-sec^2

Pulley inertias lbf-in-sec^2, 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 Exlar's Application Engineering Department if these values are critical to your application.

FT35 3 inch motor 1:1 = 0.004874 FT35 4 inch motor 1:1 = 0.009993
FT35 3 inch motor 2:1 = 0.002087 FT35 4 inch motor 2:1 = 0.005003

FT Series Performance Specifications

Model No.	Frame Size in (mm)	Stroke in (mm)	Screw Lead in (mm)	Max. Linear Speed in/sec (mm/sec)	Dynamic Load Rating (std. capacity) lbf (kN)	Dynamic Load Rating (high capacity) lbf (kN)	Torque @ Max. Force lb-in (N-m)	Screw Inertia lb-in-s^2 (kg-m^2)	Max. Force* Speed lbf (kN)	Max. Rot. Unit rpm	Weight Base lb (kg)
FT60-1206	6.0) (152)	12 (305)	0.23 (6)	7.9 (201)	51900 (231)	57933 (257.7)	920 (103.9)	0.0454 (0.0051)	20,000 (90.8)	2000	100 (45)
FT60-1212	6.0 (152)	12 (305)	0.47 (12)	15.8 (401)	44600 (199)	49750 (221.3)	1720 (194.3)	0.0454 (0.0051)	20,000 (90.8)	2000	100 (45)
FT60-1230	6.0 (152)	12 (305)	1.18 (30)	39.0 (1000)	41700 (186)	63958 (284.5)	4400 (497.1)	0.0454 (0.0051)	20,000 (90.8)	2000	100 (45)
FT60-2406	6.0 (152)	24 (610)	0.23 (6)	7.9 (201)	51900 (231)	57933 (257.7)	920 (103.9)	0.073 (0.0083)	20,000 (90.8)	2000	130 (59)
FT60-2412	6.0 (152)	24 (610)	0.47 (12)	15.8 (401)	44600 (199)	49750 (221.3)	1720 (194.3)	0.073 (0.0083)	20,000 (90.8)	2000	130 (59)
FT60-2430	6.0) (152)	24 (610)	1.18 (30)	39.0 (1000)	41700 (186)	63958 (284.5)	4400 (497.1)	0.073 (0.0083)	20,000 (90.8)	2000	130 (59)
FT60-3606	6.0 (152)	36 (914)	0.23 (6)	7.9 (201)	51900 (231)	57933 (257.7)	920 (103.9)	0.1 (0.0113)	20,000 (90.8)	2000	160 (72)
FT60-3612	6.0 (152)	36 (914)	0.47 (12)	15.8 (401)	44600 (199)	49750 (221.3)	1720 (194.3)	0.1 (0.0113)	20,000 (90.8)	2000	160 (72)
FT60-3630	6.0 (152)	36 (914)	1.18 (30)	39.0 (1000)	41700 (186)	63958 (284.5)	4400 (497.1)	0.1 (0.0113)	20,000 (90.8)	2000	160 (72)
FT60-4806	6.0 (152)	48 (1219)	0.23 (6)	7.9 (201)	51900 (231)	57933 (257.7)	920 (103.9)	0.126 (0.0142)	20,000 (90.8)	2000	190 (86)
FT60-4812	6.0 (152)	48 (1219)	0.47 (12)	15.8 (401)	44600 (199)	49750 (221.3)	1720 (194.3)	0.126 (0.0142)	20,000 (90.8)	2000	190 (86)
FT60-4830	6.0 (152)	48 (1219)	1.18 (30)	39.0 (1000)	41700 (186)	63958 (284.5)	4400 (497.1)	0.126 (0.0142)	20,000 (90.8)	2000	190 (86)

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 Exlar for further details.

Ft Standard Inline Coupling Maximum Torque Ratings and Inertia

	Torque Rating	Inertia
FT60	100N-m (885 lbf-in)	0.90 lb-in, 0.002331 lbf-in-sec^2

Pulley inertias lbf-in-sec^2, 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 Exlar's Application Engineering Department if these values are critical to your application.

FT60 1:1 = 0.030000 FT60 2:1 = 0.035000

Definitions:

Max Linear Speed: The linear speed achieved by the actuator at a screw speed equal to the max rotational speed value.
Rated Force: The linear force produced by the actuator at the torque at the rated force value.
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.

FT Series Performance Specifications

Model No.	Frame Size in (mm)	Stroke in (mm)	Screw Lead in (mm)	Max. Linear Speed in/sec (mm/sec)	Dynamic Load Rating (std. capacity) lbf (kN)	Dynamic Load Rating (high capacity) lbf (kN)	Torque @ Max. Force lb-in (N-m)	Screw Inertia lb-in-s^2 (kg-m^2)	Max. Force* lbf (kN)	Max. Rot. Speed rpm	Weight Base Unit lb (kg)
FT80-1206	8.0 (203)	12 (305)	0.23 (6)	6.9 (175)	80700 (358)	94330 (419.6)	1950 (220.3)	0.1630 (0.0184)	40,000 (178)	1750	190 (86)
FT80-1212	8.0 (203)	12 (305)	0.47 (12)	13.8 (351)	70200 (312)	84079 (374.0)	3550 (401.1)	0.1630 (0.0184)	40,000 (178)	1750	190 (86)
FT80-1230	8.0 (203)	12 (305)	1.18 (30)	34.4 (875)	64700 (288)	95971 (426.9)	8840 (998.8)	0.1630 (0.0184)	40,000 (178)	1750	190 (86)
FT80-2406	8.0 203)	24 (610)	0.23 (6)	6.9 (175)	80700 (358)	94330 (419.6)	1950 (220.3)	0.247 (0.0279)	40,000 (178)	1750	265 (120)
FT80-2412	8.0 (203)	24 (610)	0.47 (12)	13.8 (351)	70200 (312)	84079 (374.0)	3550 (401.1)	0.247 (0.0279)	40,000 (178)	1750	265 (120)
FT80-2430	8.0 (203)	24 (610)	1.18 (30)	34.4 (875)	64700 (288)	95971 (426.9)	8840 (998.8)	0.247 (0.0279)	40,000 (178)	1750	265 (120)
FT80-3606	8.0 203)	36 (914)	0.23 (6)	6.9 (175)	80700 (358)	94330 (419.6)	1950 (220.3)	0.331 (0.0374)	40,000 (178)	1750	340 (153)
FT80-3612	8.0 (203)	36 (914)	0.47 (12)	13.8 (351)	70200 (312)	84079 (374.0)	3550 (401.1)	0.331 (0.0374)	40,000 (178)	1750	340 (153)
FT80-3630	8.0 (203)	36 (914)	1.18 (30)	34.4 (875)	64700 (288)	95971 (426.9)	8840 (998.8)	0.331 (0.0374)	40,000 (178)	1750	340 (153)
FT80-4806	8.0 (203)	48 (1219)	0.23 (6)	6.9 (175)	80700 (358)	94330 (419.6)	1950 (220.3)	0.415 (0.0468)	40,000 (178)	1750	415 (187)
FT80-4812	8.0 (203)	48 (1219)	0.47 (12)	13.8 (351)	70200 (312)	84079 (374.0)	3550 (401.1)	0.415 (0.0468)	40,000 (178)	1750	415 (187)
FT80-4830	8.0 (203)	48 (1219)	1.18 (30)	34.4 (875)	64700 (288)	95971 (426.9)	8840 (998.8)	0.415 (0.0468)	40,000 (178)	1750	415 (187)

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 Exlar's Applications Engineering Department for more information. See page 84 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 sufficient to exceed these forces. Contact Exlar for further details.

FT Standard Inline Coupling Maximum Torque Ratings and Inertia

	Torque Rating	Inertia
FT80	200N-m (1770 lbf-in)	3.89 lb-in, 0.010075 lbf-in-sec^2

Pulley inertias lbf-in-sec^2, 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 Exlar's Application Engineering Department if these values are critical to your application.

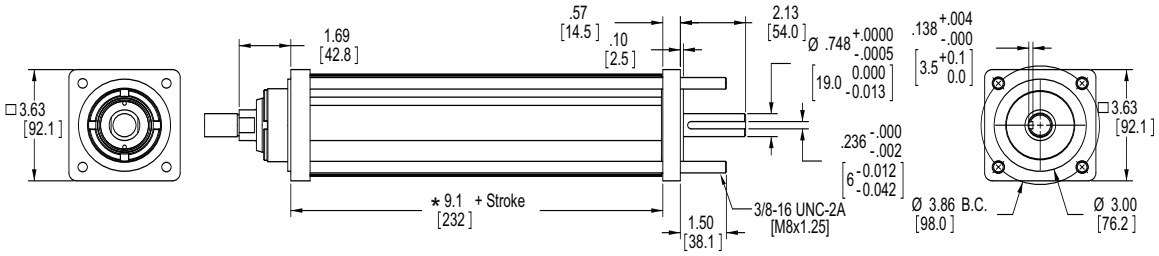
FT80 1:1 = 0.235000 FT80 2:1 = 0.157000

FT Series Mechanical Specifications

		FT35	FT60	FT80
Roller Screw Backlash	in (mm)	0.0004 - 0.001 (0.01 - 0.03)	0.0004 - 0.001 (0.01 - 0.03)	0.0004 - 0.001 (0.01 - 0.03)
Preloaded Loader Screw Backlash	0	0	0	
System Backlash:*	in (mm)	0.002 (0.06)	0.002 (0.06)	0.002 (0.06)
Standard Lead Accuracy:**	in/ft (mm/mm)	0.001 (.025/300)	0.001 (.025/300)	0.001 (.025/300)
Maximum Radial Load		0	0	0
Environmental Rating:	Standard	IP65	IP65	IP65
(Base Unit Only)***				
Case:	Standard Optional	Epoxy-coated aluminum Food Grade Coating	Epoxy-coated aluminum Food Grade Coating	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 Exlar application engineers.
** Optional lead accuracy – from 0.0002 in/ft (6µm/300mm) to 0.002 in/ft (200µm/10000mm) – are also available.
*** For IP65 scaling of unit with motor mounted, please contact Exlar's Applications Engineering Department for more information and ordering information.

FT35 Linear Actuator 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.

FT35 Linear Actuator Clevis Mount Unit

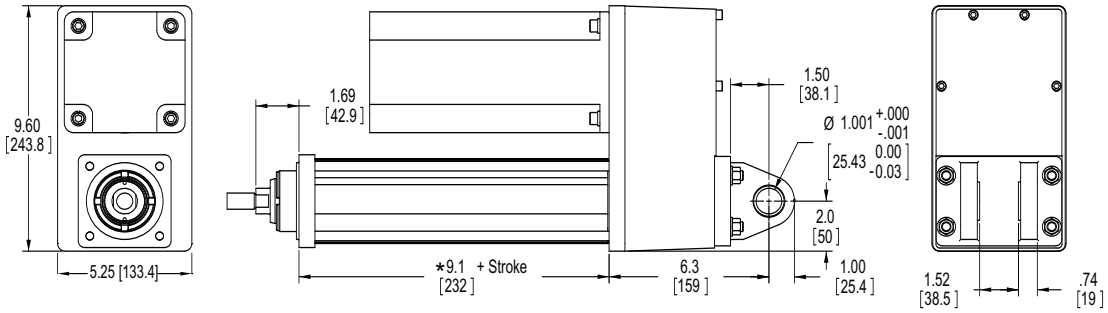
Parallel motor mount shown.

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 selection.

*Add 20mm if choosing high capacity option.



FT35 Linear Actuator Front Flange Unit

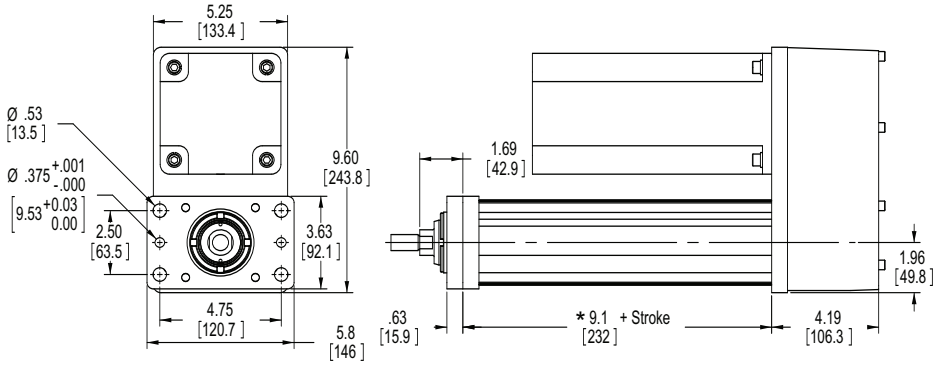
Parallel motor mount shown.

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 selection.

*Add 20mm if choosing high capacity option.



FT35 Linear Actuator Rear Flange Unit

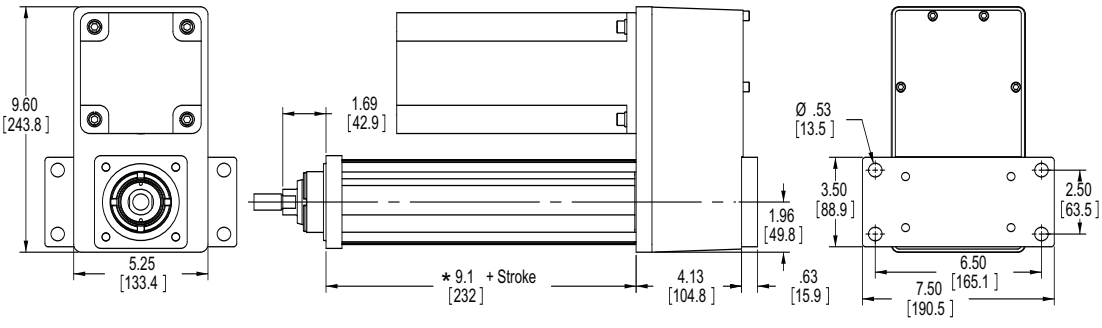
Parallel motor mount shown.

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 selection.

*Add 20mm if choosing high capacity option.



Drawings subject to change. Consult Exlar for certified drawings.

FT35 Linear Actuator Trunnion Unit

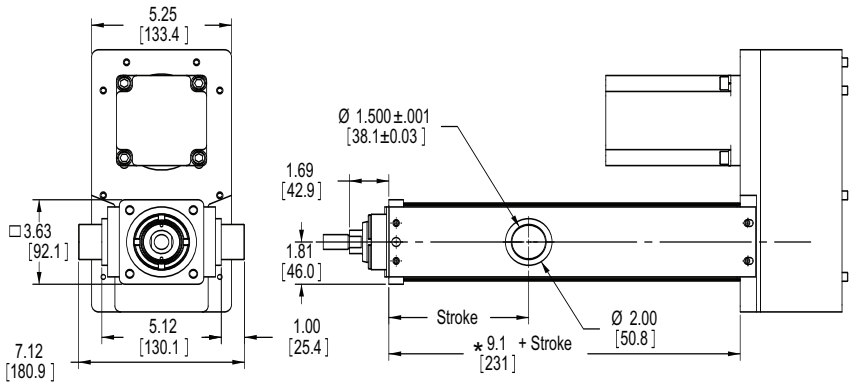
Parallel motor mount shown.

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 selection.

*Add 20mm if choosing high capacity option.



FT35 Linear Actuator Extended Tie Rod Unit

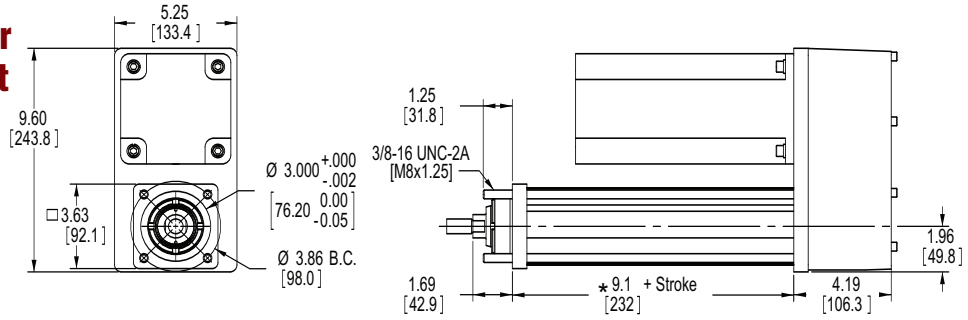
Parallel motor mount shown.

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 selection.

*Add 20mm if choosing high capacity option.



FT35 Linear Actuator Side Lug Unit

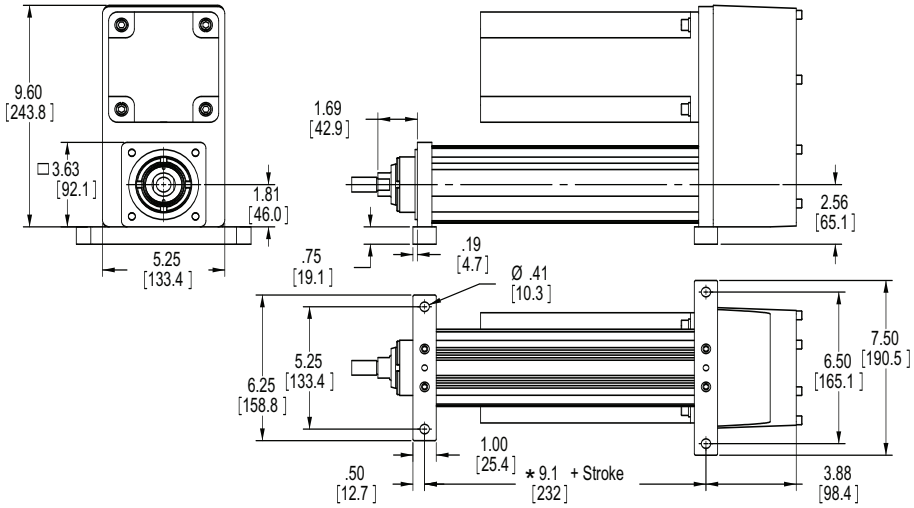
Parallel motor mount shown.

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 selection.

*Add 20mm if choosing high capacity option.



FT35 Linear Actuator Side Mount Unit

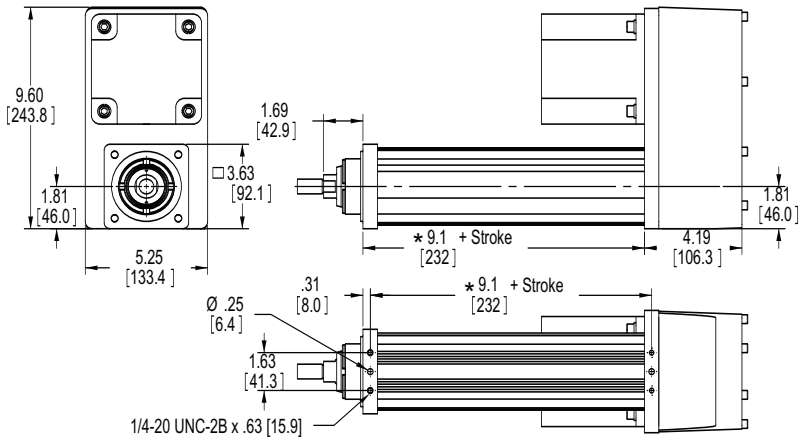
Parallel motor mount shown.

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 selection.

*Add 20mm if choosing high capacity option.



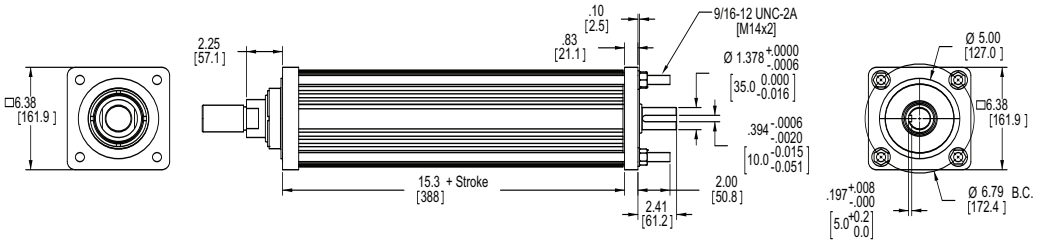
Drawings subject to change. Consult Exlar for certified drawings.

FT Series

FT60 Linear Actuator Base Unit

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.



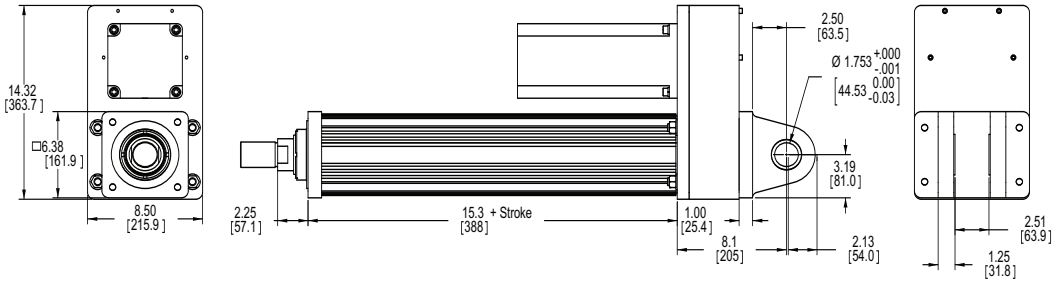
FT60 Linear Actuator Clevis Mount Unit

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 selection.



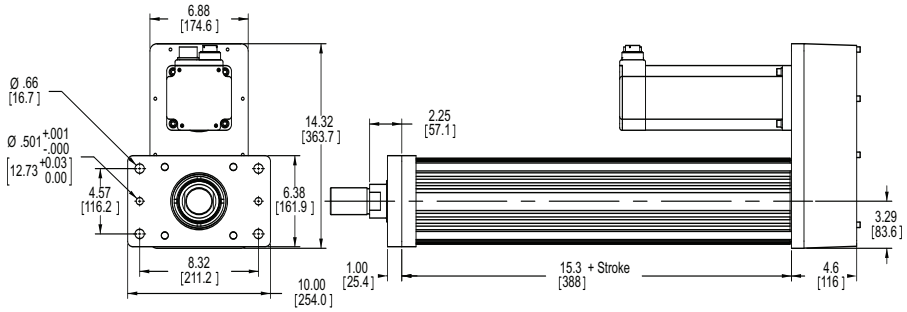
FT60 Linear Actuator Front Flange Unit

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 selection.



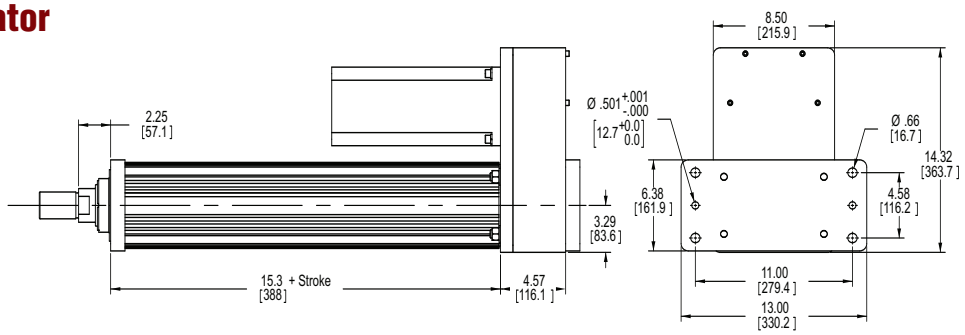
FT60 Linear Actuator Rear Flange Unit

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 selection.



Drawings subject to change. Consult Exlar for certified drawings.

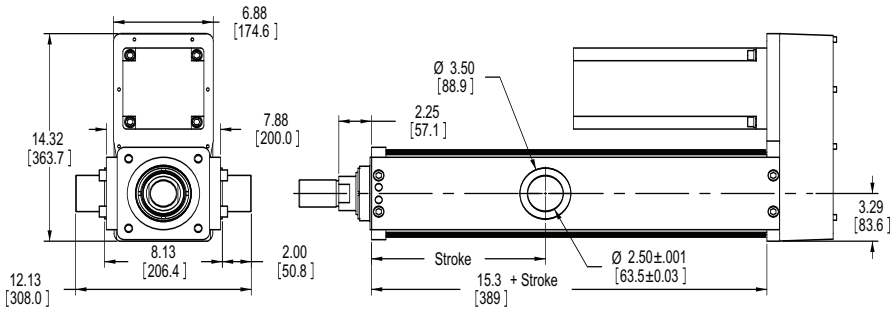
FT60 Linear Actuator Trunnion Unit

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 selection.



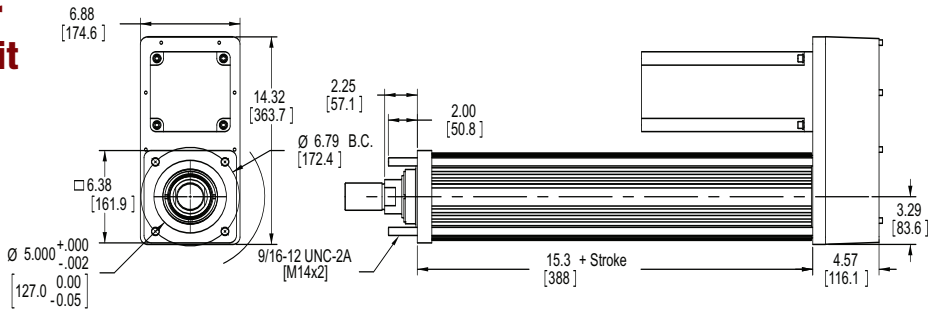
FT60 Linear Actuator Extended Tie Rod Unit

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 selection.



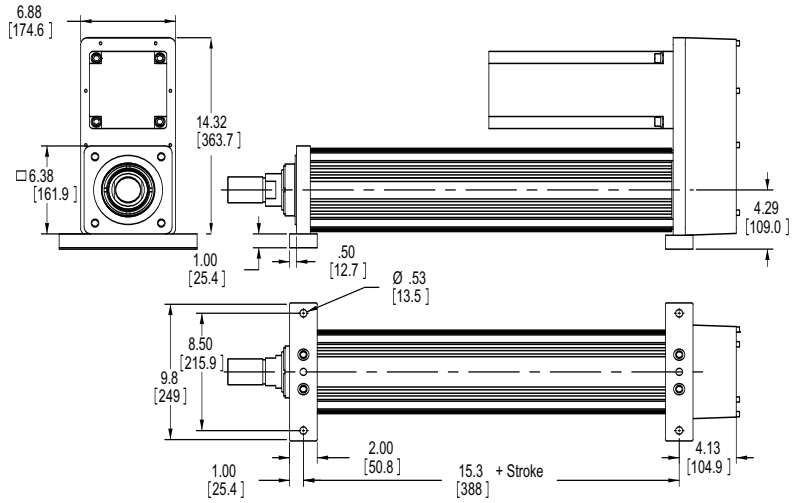
FT60 Linear Actuator Side Lug Unit

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 selection.



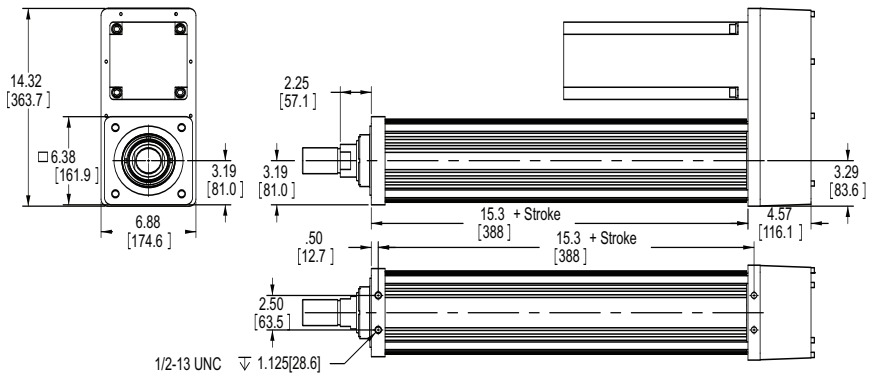
FT60 Linear Actuator Side Mount Unit

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 selection.

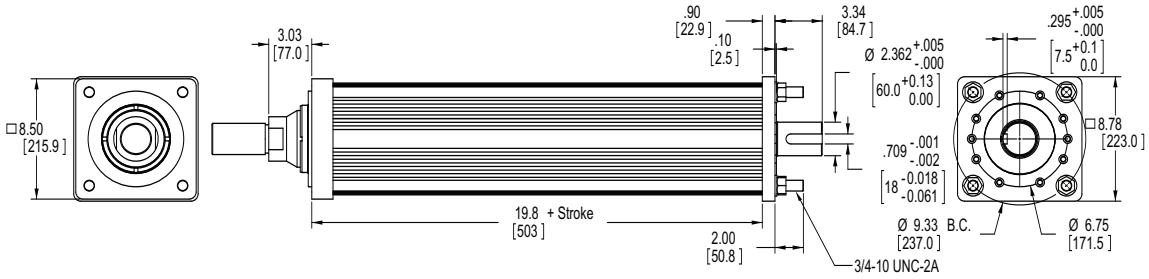


Drawings subject to change. Consult Exlar for certified drawings.

FT80 Linear Actuator Base Unit

All dimensions shown in inches with millimeter equivalent in brackets.

See rod ends for rod end thread details.



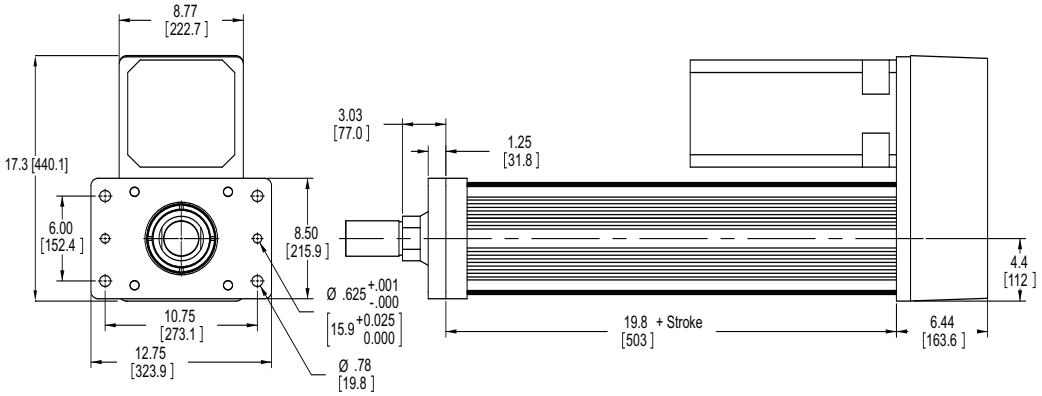
FT80 Linear Actuator Front Flange Unit

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 selection.



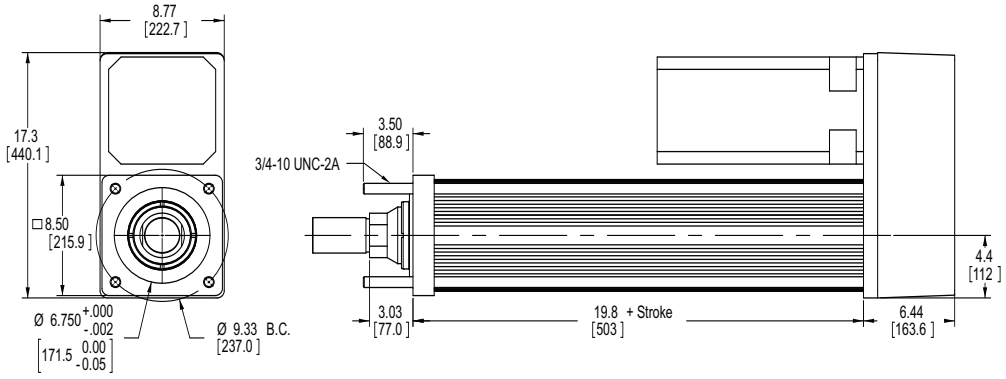
FT80 Linear Actuator Extended Tie Rod Unit

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 selection.



Drawings subject to change. Consult Exlar for certified drawings.

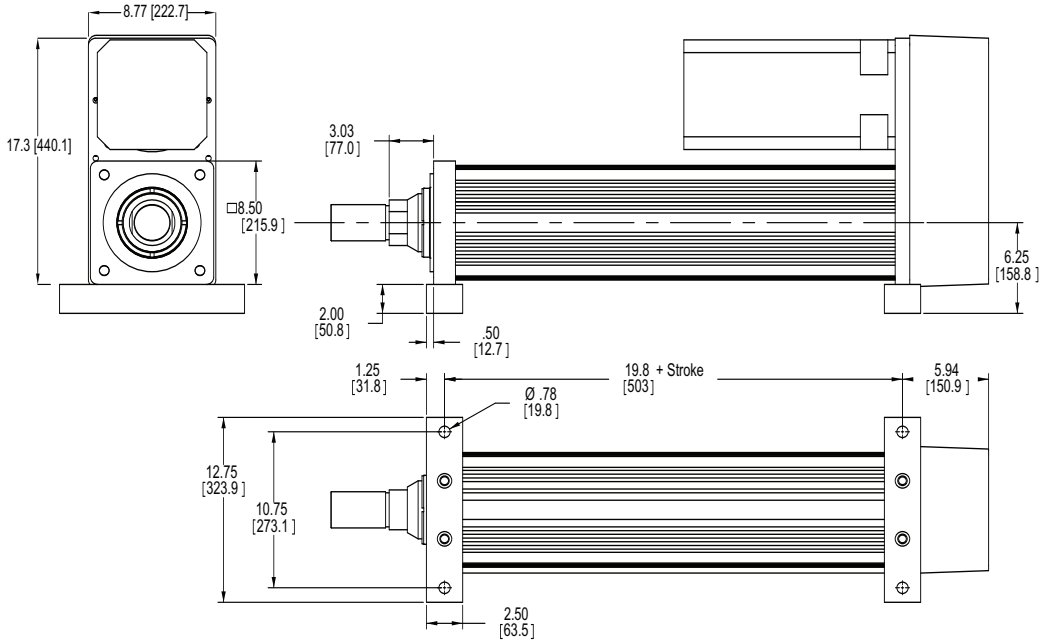
FT80 Linear Actuator Side Lug Unit

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 selection.



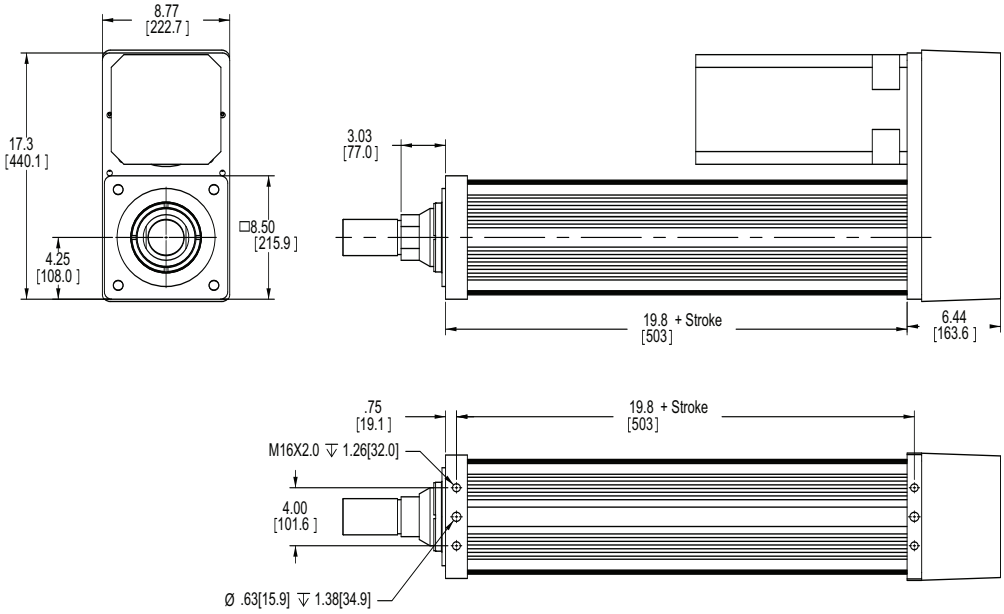
FT80 Linear Actuator Side Mount Unit

Parallel motor mount shown.

All dimensions shown in inches with millimeter equivalent in brackets.

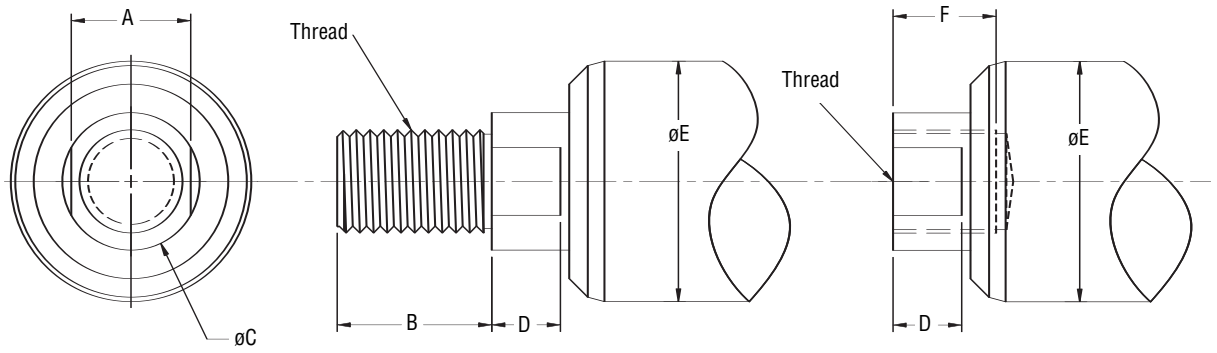
See rod ends for rod end thread details.

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



Drawings subject to change. Consult Exlar for certified drawings.

FT Linear Actuator Rod End



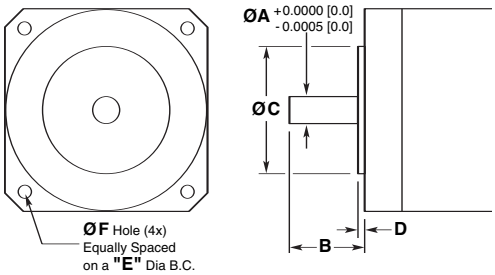
	A	B	øC	D	øE	F	Male U.S.	Male Metric	Female U.S.	Female Metric
FT35	0.87 (22.1)	1.125 (28.6)	1.000 (25.4)	0.500 (12.7)	1.750 (44.5)	0.750 (19.1)	3/4-16 UNF-2A	M16X1.5 6g	3/4-16 UNF-2B	M16X1.5 6h
FT60	2.00 (50.8)	2.750 (69.9)	2.360 (59.9)	0.750 (19.1)	3.000 (76.2)	2.000 (50.8)	1 7/8-12 UN-2A	M42X4.5 6g	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

Drawings subject to change. Consult Exlar for certified drawings.

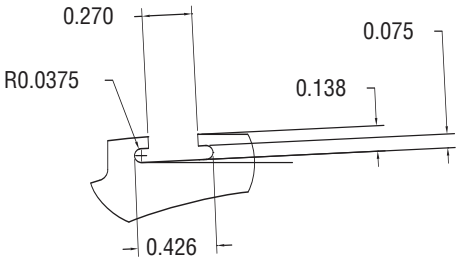
NEMA Standard Motor Dimensions

The I 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, and rather, by the A## alpha numeric callout for specific motors.

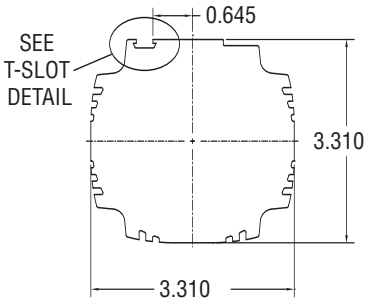
Dimension (in)	NEMA 23	NEMA 34	NEMA 42	NEMA 56
“A” Motor Shaft Diameter	0.25	0.5	0.75	0.625
“B” Motor Shaft Length	0.81	1.19	2.19	2.0625
“C” Motor Pilot Diameter	1.5	2.875	2.186	4.5
“D” Pilot Depth	0.05	0.0625	0.0625	0.1 - 0.16
“E” Mounting Bolt Circle	2.625	3.875	4.95	5.875
“F” Mounting Bolt Hole Dia.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



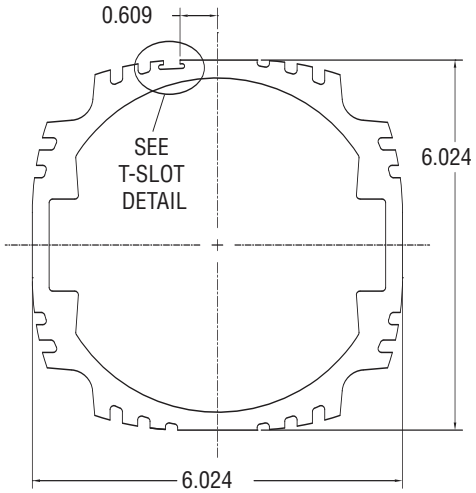
FT Case Dimensions



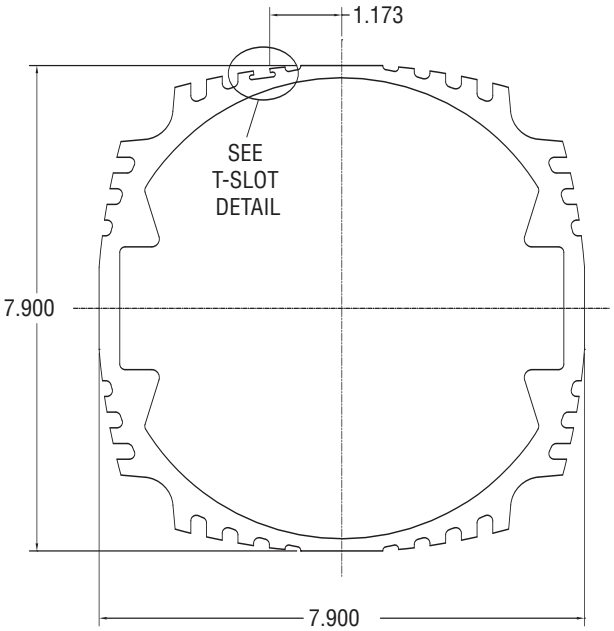
T-SLOT DETAIL



FT35



FT60



FT80

FT Series Ordering Information

FTAA - BBCC - DEF - GGG - XX XX

AA = FT Frame Size
35 = 3.5 inch frame actuator
60 = 6.0 inch frame actuator
80 = 8.0 inch frame actuator

BB = Stroke Length
06 = 6 inch (FT35)
12 = 12 inch (FT35, 60, 80)
18 = 18 inch (FT35)
24 = 24 inch (FT35, 60, 80)
36 = 36 inch (FT35, 60, 80)
48 = 48 inch (FT35, 60, 80)

CC = 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]
S = Side mount
L = Side lugs
E = Extended tie rods
M = Metric tie rods
C = Rear clevis (NA w/inline)
F = Front flange
T = Side trunnion mount
R = Rear flange (not available with inline motor mount)
B = Front / rear flange (not available with inline motor mount)
X = Special

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

F = Rod End
M = Male, U.S. standard
F = Female, U.S. standard
A = Male, metric
B = Female, metric
X = Special

GGG = Motor Mount Provisions [3, 4]
A## = Alpha numeric motor call out – contact Exlar Applications Engineering Department. 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. Motor not included.
M14 = Exlar 142 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. Motor not included.
AB3, 4, 6, 8 = Allen Bradley Ultra 3, 4, 6 & 8 inch motors
BD3, 4, 6, 8 = Baldor 3, 4, 6 & 8 inch motors
CE3, 4, 6, 8 = Parker (Custom Servo Motors) Imperial 3, 4, 6 & 8 inch motors
CM3, 4, 6, 8 = Parker (Custom Servo Motors) Metric 3, 4, 6 & 8 inch motors
EC3, 4, 6, 8 = ElectroCraft F&H 3000, 4000, 6000 and 8000 Series
EE3, 4 = Emerson EMC Imperial 3 & 4 inch
EM3, 4, 6, 8 = Emerson EMC Metric 3, 4, 6 & 8 inch
EX2, 3, 4, 6 = Exlar SLM/SLG motors
FA 4, 6, 8 = Fanuc 4, 6 & 8 inch motors
IN3, 4, 6, 8 = Bosch-Rexroth (Indramat) 3, 4, 6 & 8 inch motors
KM2, 4, 6, 8 = Kollmorgen B & M 20, 40, 60 & 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 & 5.6 inch
YS3, 4, 6, 8 = Yaskawa 3, 4, 6 & 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 1[2]
XT = High capacity roller screw
SS = Stainless steel[2]
FG = Smooth white epoxy[2]
(IP65 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.

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 Exlar engineering.
2. These housing options may also indicate the need for special material main rods, faceplate and motor mounting provisions. Consult Exlar Applications Engineering.
3. NEMA callout must meet specifications on page 92 or use alpha-numberic callout.
4. MAX Std. motor size FT35: 4 inch/115 mm, FT60 & 80: 8 inch/200 mm. For oversized motors, consult Exlar Applications Engineer.

Consult Exlar's Application Engineering Department regarding all special actuator components.