ZERO-MAX

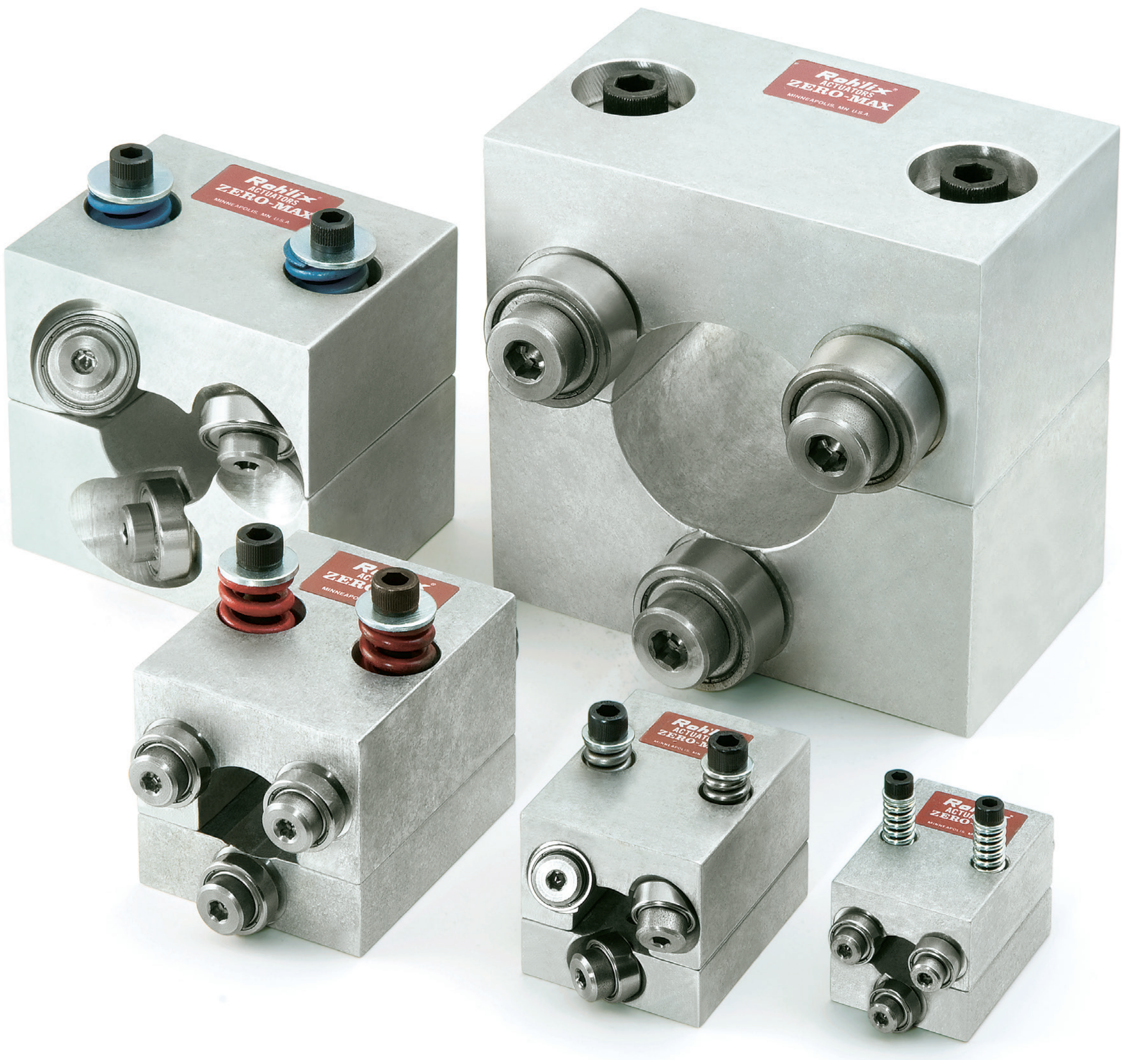
Roh'Lix® Linear Actuators

The Roh'Lix Linear Actuator is a device that converts rotary motion into linear motion. The Roh'Lix uses rolling element ball bearings that trace a helix pattern along the shaft, which produces a Rolling Helix, or Roh'Lix for short. Available sizes have thrust capacities ranging from 15 to 200 lbs (67 to 889 Newtons), shaft diameters ranging from 3/8 to 2 inches (8 to 50 mm), and leads ranging from 0.025 to 6.00 inches (0.625 to 150 mm).

The Roh'Lix Linear Actuator consists of six preloaded bearings that contact the shaft at an angle. When the shaft is rotated, the bearings trace out an imaginary screw thread, causing the Roh'Lix to travel linearly along the shaft.

The thrust of the Roh'Lix is established by spring force between the two block halves. The thrust force is adjusted by the thrust adjustment screws on the top of the block, allowing the thrust setting to be fine-tuned to individual applications. When the thrust setting is exceeded, the Roh'Lix slips on the shaft until the source of the overload is corrected. The ability to slip allows the Roh'Lix to provide overload protection for the equipment on which it is used.

The amount of linear distance the Roh'Lix travels per shaft revolution is called lead. The lead is determined by the angle of the bearings in the Roh'Lix block. The Roh'Lix can be manufactured with virtually any fixed lead up to 3 times the shaft diameter. The lead, in combination with the driveshaft speed, determines the linear travel rate. By changing either the lead or the driveshaft speed, you can change the rate of linear travel.



Roh'Lix Life Expectancy

Roh'Lix lifetime can range anywhere from 2 million to over 100 million inches of linear travel, depending on the application variables. The following factors should be considered to maximize the lifetime of Roh'Lix:

Thrust: Roh'Lix lifetime is increased when the application thrust load is a smaller percentage of the unit's thrust rating. Selecting an oversized Roh'Lix is advisable to achieve the greatest lifetime of the unit.

Lead/Shaft Speed: Higher lead units will produce longer lifetime because fewer bearing revolutions will be required to move the same linear distance as a low lead unit. Also, reductions in the driveshaft RPM will increase lifetime. For a given linear speed, a higher lead will allow a lower shaft speed, and the two factors in combination will work to yield a greater lifetime.

Overloading: Occasional slippage for short periods of time is acceptable. However, frequent or extended periods of slippage will result in reduced lifetime of the bearings.

Other: Minimize sideloads and twisting loads to gain maximum life from the Roh'Lix.

Loading

The Roh'Lix is intended for axial loading. Sideloads and twisting loads **(Figure 1)** should be avoided whenever possible, as they cause uneven bearing loading and shorten lifetime.

Whenever possible, the load weight on the Roh'Lix should be supported by a separate linear bearing assembly. Where sideloads cannot be avoided, the amount of the sideload should be subtracted from the thrust capacity of the unit. The amount of the sideload should never exceed 50% of the actuator's thrust capacity. If necessary, select an oversized Roh'Lix to handle these application conditions.

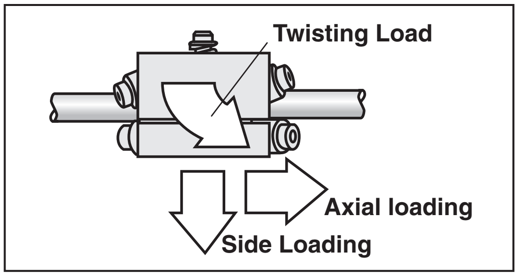


Figure 1

Installation

The Roh'Lix has a split-block for ease of installation. The two block halves can be assembled around the shaft, eliminating the need for removal of pillow-block bearings, coupling, etc. The split-block design is also a benefit for removal of the Roh'Lix for service, such as bearing replacement.

Thrust Adjustment

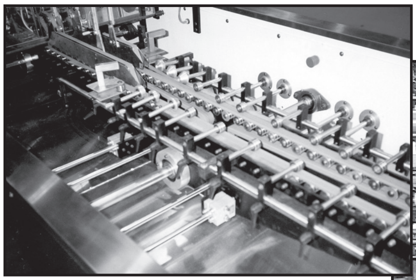
Thrust of the Roh'Lix is set by one of three methods:

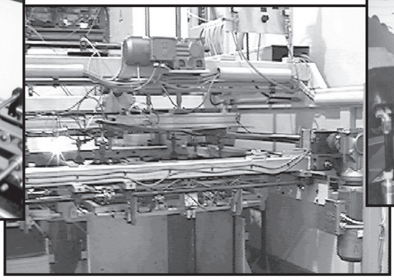
1) Adjust the thrust adjustment screws in increasing amounts until thrust setting is enough to carry load without slipping. This allows slippage before an overload builds up an unnecessary thrust load causing reduced bearing life.
2) Use a spring scale to set the amount of thrust **(Figure 1)**. This technique works where the thrust requirement is known.
3) Use the thrust per turn rating **(Figure 2)** to determine the appropriate number of turns of the thrust adjustment screws. This technique also works where the thrust requirement is known.

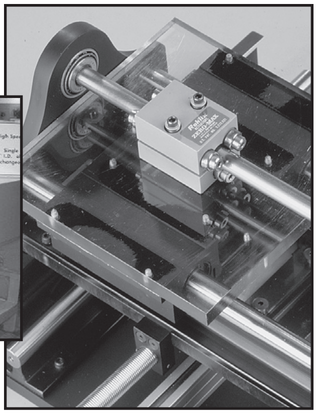
To set a given thrust on the Roh'Lix, start with the thrust adjustment screws loose then tighten by hand until the screw head lightly touches the top of the spring. Tighten both adjusting screws one full turn.This will set the thrust as shown in the thrust column of **Figure 2**. Finish the thrust adjustment by rotating the additional turns as necessary.

Model #	Screw Length	Screw Size	Thrust per Turn
1	1.25	6-32	3 lbs.
2	1.50	10-32	17 lbs.
3	2.00	1/4-20	25 lbs.
4	2.25	1/4-20	25 lbs.
5	2.50	3/8-16	35 lbs.

Figure 2







1. **Determine Thrust Requirement.**
   Horizontal Applications: **F=μW**
   Vertical Applications: **F=W+ μW**
   F= thrust requirement (Lbs.)
   μ= Coefficient of friction
   W= weight of load being moved (Lbs.)

2. **Determine Lead/ Driveshaft Speed/ Linear Speed.**

   $$\text{Driveshaft RPM} = \frac{60 \times \text{Linear Speed}}{\text{Roh'Lix Lead}}$$

   Driveshaft RPM= speed of shaft driving the Roh'Lix (RPM)
   Linear Speed= travel rate of the Roh'Lix (inches per sec.)
   Roh'Lix Lead= lead of the Roh'Lix (inches per shaft revolution)

3. **Select Roh'Lix Model.**
   Choose a Roh'Lix Model from **Figure 2a or 2b** that has a thrust equal to or exceeding the thrust requirement determined in **Step 1** and lead that fits the driveshaft RPM and linear speed needs from **Step 2.**

4. **Verify Shaft Diameter.**
   Driveshaft speed should be within the maximum recommended driveshaft speed shown in **Figure 3**.

Inch Models

Size	Model Number	Shaft dia. (In)	Lead (In)	Thrust Rating (Lb)
1	1104	3/8	0.03	15
	1111	3/8	0.10	15
2	2102	3/8	0.10	30
	2114	3/8	0.20	30
	2103	3/8	0.50	30
	2101	1/2	0.10	30
	2115	1/2	0.20	30
	2104	1/2	0.50	30
	2112	1/2	1.00	30
3	3123	1/2	0.20	60
	3109	1/2	0.50	60
	3128	1/2	1.00	60
	3110	5/8	0.10	60
	3145	5/8	0.50	60
	3103	3/4	0.10	60
	3107	3/4	0.75	60
	3133	3/4	1.00	60
4	4118	1	0.20	100
	4110	1	0.50	100
	4111	1	1.00	100
	4125	1	2.00	100
5	5106	1-1/2	1.00	200
	5109	2	0.38	200
	5112	2	3.00	200

Figure 2a

Metric Models

Size	Model Number	Shaft dia.	Lead (mm)	Thrust Rating (newton)
1	1901	8	1.3	67
	1902	8	2.5	67
2	2901	8	2.5	133
	2902	8	15.0	133
	2903	12	5.0	133
	2904	12	15.0	133
	2905	12	25.0	133
3	3901	12	2.5	266
	3902	12	10.0	266
	3913	16	2.5	266
	3914	16	15.0	266
	3915	16	25.0	266
4	4901	25	2.5	444
	4902	25	5.0	444
	4903	25	25.0	444
5	5901	40	10.0	889
	5902	50	5.0	889
	5903	50	50.0	889

Leads are available from a minimum of 0.025 inch (0.625mm) to maximum of 3 times the shaft diameter. Drive shaft diameters may be as small as 3/8 inch to as large as 2 inches. (8 to 50 mm)

Figure 2b

Maximum Recommended Drive Shaft Speed

Speed RPM

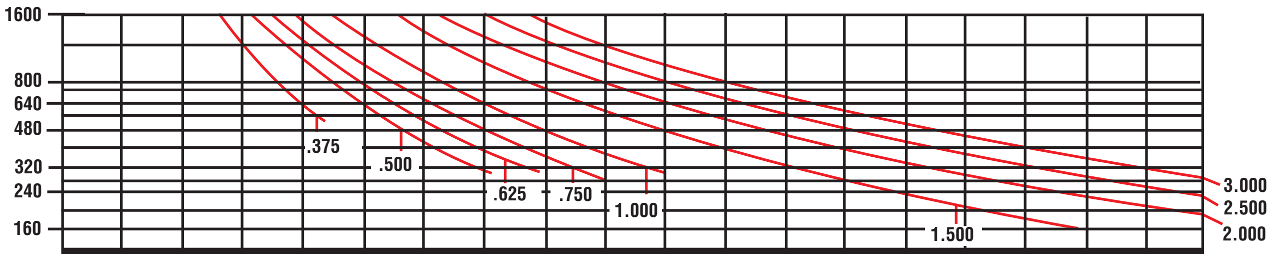


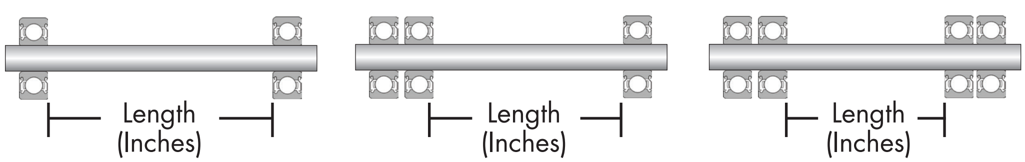
Figure 3

A	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190
B	12	25	35	50	60	70	85	100	110	120	130	145	160	170	180	195	205	220	230
C	15	30	40	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285

Length (Inches)

Bearing Mounting Method

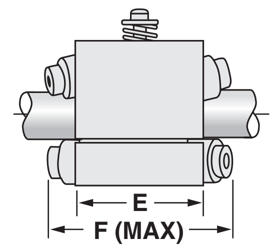
A Both ends supported — **B** One end fixed other end supported — **C** Both ends fixed

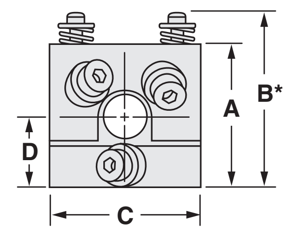


Size	units	A	B	C	D	E	F	G	H-Tapped Mounting Holes
		Dimensions							
1	inch	1.14	1.66	1.12	0.57	1.62	2.25	0.75	#6-32 UNC x 1/4 DP
	mm	29	42.2	28.6	14.5	41.3	57.2	19	M3 x 0.5 x 6.35 DP
2	inch	1.52	1.91	1.5	0.76	2	2.81	1	#10-32 UNF x 3/8 DP
	mm	38.6	48.5	38.1	19.3	50.8	71.4	25.4	M5 x 0.8 x 9.53 DP
3	inch	2.02	2.69	2	1.01	2.5	3.42	1.25	1/4-20 UNC x 1/2 DP
	mm	51.3	68.3	50.8	25.6	63.5	86.9	31.8	M6 x 1.0 x 12.7 DP
4	inch	3	3.5	3	1.5	2.5	3.56	2.5	1/4-20 UNC x 1/2 DP
	mm	76.2	88.9	76.2	38.1	63.5	90.4	63.5	M6 x 1.0 x 12.7 DP
5	inch	4.5	4.68	4.5	2.25	2.75	4.68	4	1/4-20 UNC x 1/2 DP
	mm	114.3	118.9	114.3	57.2	69.9	118.9	101.6	M6 x 1.0 x 12.7 DP

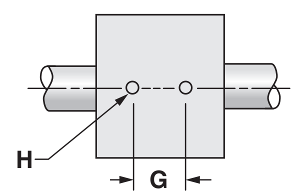
*Dimension at zero thrust setting.

Roh'Lix Sizes 1-5

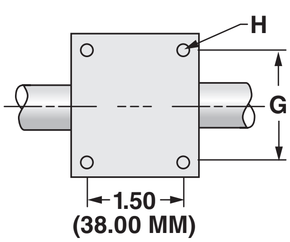




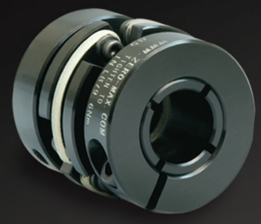
Roh'Lix Sizes 1-3



Roh'Lix Sizes 4-5



PRECISE. RELIABLE. ROBUST. AVAILABLE.



CD® Couplings

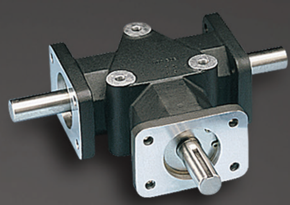
High-performance couplings that outperform and outlast bellows and steel disc designs. The unique design of the composite disc enables the CD Couplings to withstand punishing applications and deliver high precision performance. Fully Customizable.

Keyless Shaft Locking Devices

ETP® keyless connections and Posi-Lok® keyless bushings provide quick, easy and accurate assembly of mounted shaft components. Both inch and metric bore sizes are available from stock.

ServoClass® Couplings

Designed for demanding servomotor applications. Zero backlash, high torsional stiffness, high speed design. Features flexible metal discs for high misalignment capacity and keyless clamp-type mounting hubs.

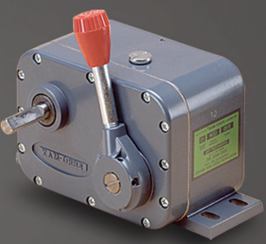


Crown Gear Drives

Available in 5-sizes, 3 configurations, and with 1:1 and 2:1 ratios. High quality AGMA class 10 spiral bevel gears. Stainless steel shafts and either black anodized or IP65-Rated nickel-plated aluminum housing.

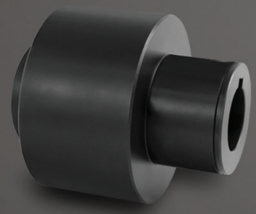
Schmidt Offset Couplings

Designed to handle high amounts (up to 17") of parallel shaft offset with constant angular velocity. Standard models with torque capacities up to 459,000 in-lbs and extensive custom capabilities.



Adjustable Speed Drives

Easy to install and maintenance free. Zero-Max® Drives offer infinitely variable speeds from 0 rpm to 1/4 of input rpm. 5 models with torque ranges from 12 in-lbs to 200 in-lbs.



Overload Safety Couplings

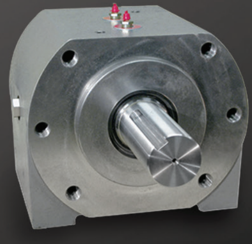
Torque Tender® Couplings provide reliable overload protection in any mechanical power transmission system. Full selection of styles and sizes with set-point torque ranges from 3 to 3,000 in-lbs.

Roh'Lix® Linear Actuators

Simple conversion of rotary motion into precise linear motion. Available in five models and multiple configurations. Roh'Lix actuators have thrust ratings from 5 to 200 lbs. All models feature built-in overload protection.

Control-Flex® Couplings

Zero backlash couplings designed for encoder and instrumentation type applications. Features high misalignment capacity, constant velocity, and an electrically isolated hub design.



OHLA® Overhung Load Adaptors

Designed to protect hydraulic motors and pumps from radial/axial loads and to provide additional seal protection. 11 models available for mounts from SAE A to SAE F. Fully customizable.

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