Roh'Lix® Linear Actuators

Zero- Max's Roh'Lix® linear actuators are threadless, mechanical, screw- type devices designed to convert rotary motion into precise linear motion and thrust using rolling element ball bearings. These adjustable automatic overload protectors will slip when overloaded, providing linear clutching without any additional clutch mechanisms.

The Roh'Lix® is intended for horizontal or vertical axial loading applications. Axial loading allows for even load distribution across all six of the device's bearings. Sideloads and twisting loads should be avoided whenever possible, as they cause uneven bearing loading and can shorten lifetime. Whenever possible, the load weight on the Roh'Lix® linear actuator should be supported by a separate linear bearing assembly.

The Roh'Lix® is available in five inch and five metric sizes, offering between 15 and 200 lbs. thrust capacity. It can be used in horizontal or vertical applications. All bearings are lubricated for life and require no additional lubrication. Hardened- and- ground shafting with a minimum hardness of 58 HRC is recommended; stainless steel shafting and hollow shafting can also be used for specific applications.

Learn More about the Roh'Lix® Linear Actuator

Roh'Lix® linear actuators provide a minimum of 90% mechanical efficiency. Springs preload the bearings against the driveshaft, reducing backlash to less than 0.001". Operational temperature range is -10°F to 180°F. Designed for maintenance- free operation, with lubricated- for- life bearings requiring no additional lubrication.

The Roh'Lix® features split- block construction for easy installation. The two block halves can be assembled around the shaft, eliminating the need for removal of pillow- block bearings, coupling, etc. This split- block design is also beneficial for removal of the Roh'Lix® linear actuator for servicing, such as bearing replacement.

Minimum life expectancy of Roh'Lix® units is 2 million inches of linear travel. Over 100 million inches of linear travel may be achieved with proper application parameters. Occasional overloads are acceptable and are a design feature of the Roh'Lix®; however, frequent overloads will lessen the working life due to resulting wear.

For more information on the Roh'Lix® linear actuator, contact Zero- Max or find your local sales representative.

The Roh'Lix® linear actuator converts rotary motion into linear motion using rolling element ball bearings that trace a helix pattern along the drive shaft. This movement produces a rolling helix, or Roh'Lix for short.

The Roh'Lix® consists of six preloaded bearings that contact the shaft at varying angles. As the shaft rotates, the bearings trace out an imaginary screw thread pattern, moving the Roh'Lix® linearly along the shaft and converting rotary motion into linear motion. The lead, or distance the Roh'Lix® moves in one shaft revolution, can vary from 0.025" to 3 times the shaft diameter. Lead is determined by the angle of the bearings in the Roh'Lix® block.

Thrust settings on Roh'Lix® linear actuators are easily adjusted via coil springs and socket- head cap screws. Thrust settings can be optimized so than no extra force is applied to the bearings, thereby maximizing performance and extending working life. The coil springs maintain a constant tension against the adjustment screws so thrust settings do not change once set.

To select the correct Roh'Lix® model for a given application, one must first determine the thrust requirements and the desired lead. Thrust requirements can be determined using the following formulas:

Horizontal Applications: $F = \mu W$
Vertical Applications: $F = W + \mu W$
F = thrust requirements (lbs.); μ = coefficient of friction; W = weight of the load being moved

Required lead can be determined based on driveshaft speed and linear speed required.

Driveshaft RPM = 60 x linear speed ÷ Roh'Lix® lead

Driveshaft RPM = speed of the shaft driving the Roh'Lix®; **Linear speed** = travel rate of Roh'Lix® (inches/ second); **Roh'Lix® lead** = lead of Roh'Lix® unit (inches/ shaft revolution)

Then, select an inch or metric Roh'Lix® model that has a thrust rating equal to or greater than the thrust requirement calculated above and a lead that is close to the calculated lead requirement.

OPERATING CHARACTERISTICS:

Efficiency
The rolling contact between the outer races of the six ball bearings and the driveshaft provides a smooth, quiet linear motion, resulting in a minimum of 90% efficiency.

Backlash
Roh'lix bearings are preloaded by the coil springs to reduce backlash to less than 0.001 inch, which help maintain consistency throughout the life of the bearings.

Positioning Accuracy
The Roh'lix is a friction drive device and as a result, will show an accumulated error that is, in general, up to 0.002 inches per shaft revolution. Where greater accuracy is required, linear encoders can be used to indicate position.

Overload Protection
The Roh'lix has the ability to slip if an obstruction is encountered in the system. This unique advantage over other types of linear actuators can prevent damage and costly downtime.

Lubrication
Roh'lix bearings are factory- lubricated for life and are designed to run on a clean, non- lubricated driveshaft.

Shafting
Recommended driveshaft material is C-1060 hardened and ground shafting with a minimum hardness of HRC 58. Its hardness will provide optimum life expectancy and its ground surface provides a uniform friction surface. Stainless steel shafting, although slightly softer, is adequate for many applications requiring corrosion protection.

Temperature
Acceptable temperature range is -10°F to +180°F. Special units available for higher or lower temperatures.

Maintenance
Unit is maintenance free, however, the shafting may require occasional wiping to clean off foreign matter that may accumulate.

Backdriving
By applying a thrust load to the Roh'lix unit, the shaft can be made to rotate. The thrust load will cause the Roh'lix and any device attached to it to travel along the shaft. Therefore, the Roh'lix should never be relied upon as the sole device to hold position.

Tandem Roh'lix
Two Roh'lix may be used on a common shaft in series, or in parallel on separate shafts, however, the combined thrust rating must be derated by 20%. When installing the Roh'lix units, be sure to tighten the thrust adjustment screws an equal number of turns so that they share the thrust load equally.

- For horizontal or vertical axial loading applications

- Designed to slip when overloaded, providing intermittent overload protection
- Easy to install
- Working lifetime expectancy of 2 million to over 100 million inches of linear travel, depending on application variables
- Easily adjustable thrust settings
- Five inch sizes and five metric sizes available, providing up to 200 lbs. of thrust capacity
- Two Roh'Lix® linear actuator units can be used in tandem to increase thrust rating
- Special shaft diameters, leads, and block sizes available
- Right- hand lead is standard; left- hand lead available upon request
- Maintenance free — bearings are lubricated for life and require no additional lubrication

Zero- Max Roh'Lix® linear actuators provide reliable performance for a wide range of applications, including:

Packaging, Printing, Converting, Materials handling, Semiconductor manufacturing, Test equipment, Inspection equipment, Core cutting equipment, Door openers and actuators, Video imaging devices, Adjustable web guides, Optical comparators, Parts feeders, Gantry robots, Medical equipment, Transfer cables, Back gauges, X- Y tables, and many others.

Product Name

Inch Model Linear Actuators

Metric Model Linear Actuators

Displaying **1** to **2** (of **2** products) Result Pages: **1**

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