

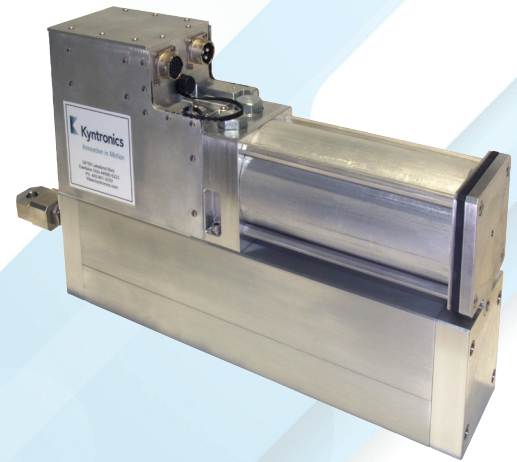
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## Kyntronics Electro-Hydraulic Actuators Comparison to Exlar Roller Screw Actuators

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Kyntronics Electro-Hydraulic Actuators offer an alternative technology to Exlar's roller screw actuators. The roller screw technology was more efficient than the existing acceptable technologies at the time of its introduction. The roller screws are susceptible to shock loads, they require a brake for holding position, the actuators are not a sealed solution and they require maintenance (grease) to avoid premature failures.

The Kyntronics EHA is a self-contained Electro-Hydraulic actuator that can be configured with or without a motor / drive solution. The EHA combines the robustness of the hydraulic cylinder along with the accuracy of a servo-controlled solution.



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**While Exlar is struggling to meet 12-14 week lead times, Kyntronics can provide a better product, at a better price at a fraction of the lead time**

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The EHA has a built in “mechanical advantage” with the simple formula: [Force = Area x PSI]. Since the Area is an exponential function, as the cylinder changes 20% (2.5” to 3”), the force increases (44%). This “mechanical advantage” provides a smaller, compact package. There is no mechanical wear which provides a quiet – efficient solution. The fluid is self-contained, there is no leaking and does not allow any ingress of any liquid providing an out of the box IP65 solution.

The EHA is designed to be very modular. With a few part replacements (motor, drive, pump), one can configure a multitude of variations to meet the customer's needs. This provides Kyntronics the ability to stock key configurations ready to be assembled delivering the ability to meet very short lead times.

While Exlar is struggling to meet 12-14 week lead times, Kyntronics can provide a better product, at a better price in a fraction of the lead time. Please see below for a cross reference of Kyntronics offering to the Exlar products.



## EHA vs. Roller Screw (RS) Technology Features Comparison

### Maintenance

- The RS technology requires maintenance and may require an external lubrication unit
- The EHA requires no maintenance

### Compact – Mechanical Advantage

- $\pi r^2 * \text{psi}$  e.g. with a 20% increase in a 2 inch diameter cylinder, the force increases 44%. This keeps the actuator compact, uses a smaller motor & drive and is more cost effective.

### Brake

- The RS technology requires a brake to hold position. The brake requires a continuous current to release (fail safe) adding to the overall current making the RS even more inefficient.
- The EHA does not require a brake. As soon as the actuator stops, it locks into position.

### Shock loads

- It is well understood that a hydraulic system can handle shock loads much better than any mechanical system. The mechanics have metal to metal components which bind and are not designed for impact or shock loads. The EHA handles the shock loads with non-compressible hydraulic oil. The more of a load, the more the valves close holding position.

### Efficiency

- The EHA is a more efficient solution converting the electrical input power compared to the output power moving a load. The hydraulic conversion of power is extremely efficient and as previously mentioned, the EHA does not require a brake eliminating the current that is required to hold the brake open during motion in an RS system.

### Back drive

- With all mechanical actuators, they are all capable of back-driving. With the EHA, once it stops, it locks into position and cannot be back driven from an external force.

### Force Feedback

- The EHA provides an integral force feedback with the simple addition of a pressure sensor
- The RS would require an expensive external load cell along with extra mounting and wiring.

### Environment

- With all mechanical designs, they are inherently subject to liquid intrusion eroding the life of the actuator. Some companies provide IP ratings only at stand still. The Kyntronics EHA has an inherent IP65 rating at stand still and during motion.



## Exlar Roller Screw vs. Kyntronics EHA Cross Reference

Exlar				Kyntronics EHA		
Series	Load (lbf)	Speed (in/sec)	Back Drive (lbf)	Description	Series	Comments
GSX/ GSM				High/Standard capacity actuator with motor		
-20	103 578	33 8	30 110	GSX/GSM	D1, D2, A1	
-30	190 1277	25 5	40 180	GSX/GSM	D1, D2, A1	High loads High speeds
-40	358 3457	37 5	50 380	GSX/GSM	A1, A2	No maintenance No back drive or backlash No brake required
-50	619 7150	40 4	60 790	GSX	A1, A2	Compact Shock resistant
-60	1481 8058	40 10	110 470	GSX	A1, A2	Motor included Drive included
Tritex II AC	3225 141	6.7 3.3		Integrated servo drive/motor	A1, A2	
Tritex II DC	872 95	5 33		Integrated servo drive/motor	D1, D2	
FT Series						
-35	5000	59		High force, high speed No motor	X1, X2	High loads High speeds No maintenance No back drive or backlash No brake required Compact Shock resistant
-45	10,000	23				
-60	20,000	39				
-80	40,000	34				
K Series						
	675	33		Medium force No motor	X1, X2	
	2500	13				

Contact Kyntronics for any of your custom needs