

Advanced Electromechanical  
Actuation – Components to Solutions

# Systems



# EXLAR





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## Components to Solutions



For over 25 years, Exlar has been providing advanced and robust electromechanical actuators for applications spanning factory automation, defense, process control, medical, entertainment, test & simulation, marine, and mobile equipment. When precision, speed and reliability are required — Exlar actuators have been the first choice for discerning engineers.

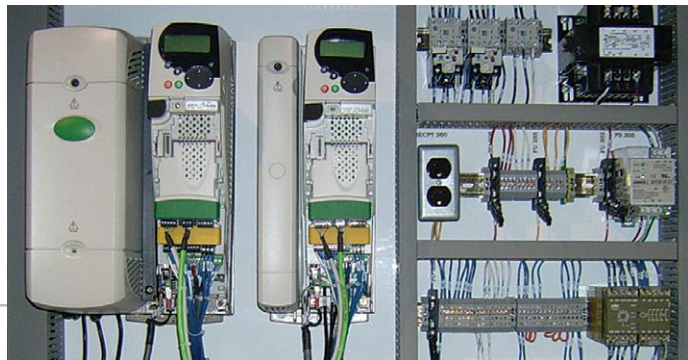
With Exlar's Systems group, integrated actuation systems and application-specific actuator solutions can be provided with the same quality and engineering expertise Exlar is known for. Whether you are looking for a complete actuation system with integrated controls, products tested to specific criteria, or having an actuator solution with a unique design, Exlar's Systems group can offer the engineering services and program management to meet your needs.

### Precision Actuation - Precision Control

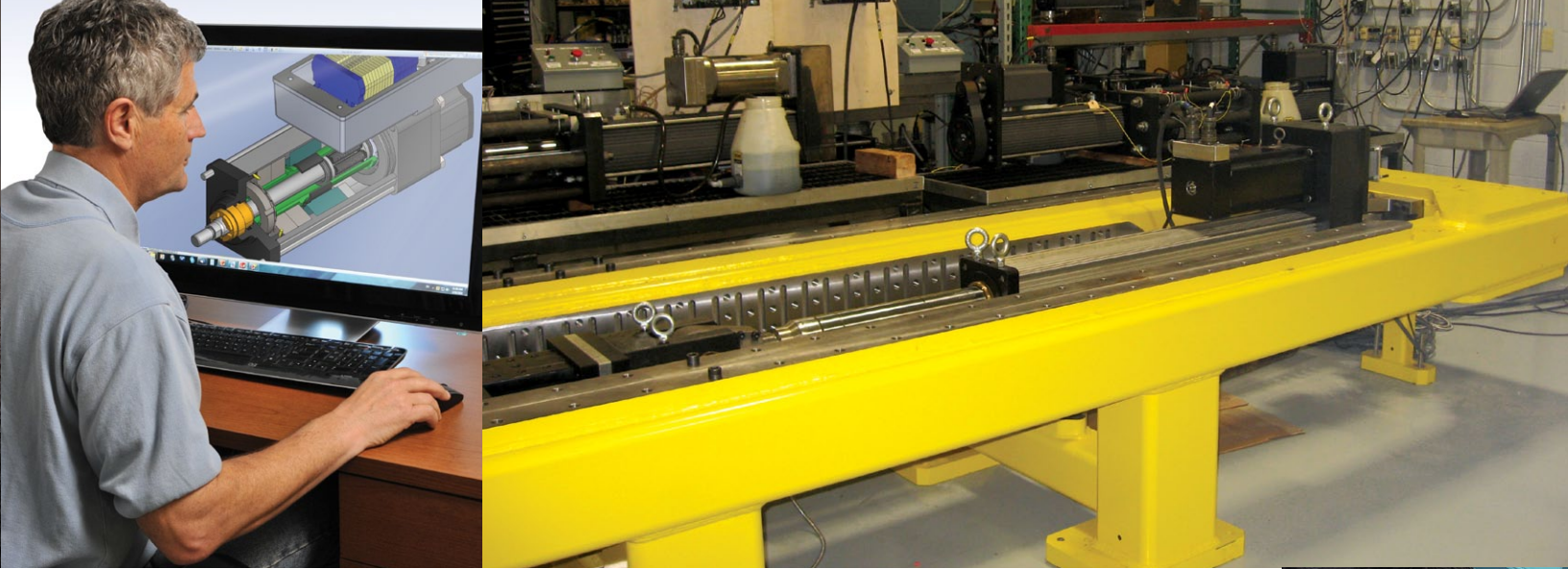
Exlar's actuators are designed to work with a wide range of servo drives, motion controllers and automation equipment. This multi-vendor control capability allows Exlar to work with you to engineer the optimum solution. Combining Exlar's actuation experience and ability to integrate controls can help provide a solution that offers the full benefit of Exlar's advanced electromechanical actuation technology.

### Energy Efficiency Today – Not Tomorrow

Industries today are focusing on more sustainable energy solutions. Converting from fluid power actuation to Exlar's more efficient electromechanical technology can provide immediate benefits and cost savings in operating and maintaining your equipment. In today's economy, reduced engineering staffs and access to the right technical expertise may be a constraint. Partnering with Exlar's systems team can help accelerate your transition to a more sustainable energy efficient solution sooner, not later.







*“The move to integrated all-electric designs will significantly improve efficiency, effectiveness and survivability while simultaneously increasing the design flexibility, reducing costs, and enhancing... quality of service.”*

– Office of Naval Research



### Custom Systems to Custom Products

Exlar offers a very broad range of standard robust electro-mechanical actuation products. If your needs go beyond even these options, Exlar’s Systems group can work with you to assess your application-specific needs to design, engineer, test, and deliver custom actuators. This service can include industry or application-specific testing of a standard Exlar actuator or integrating customized features within an actuator that is unique to your application. Exlar’s Systems group can also provide specialized product documentation and certifications.

### Systematic Approach to Quality

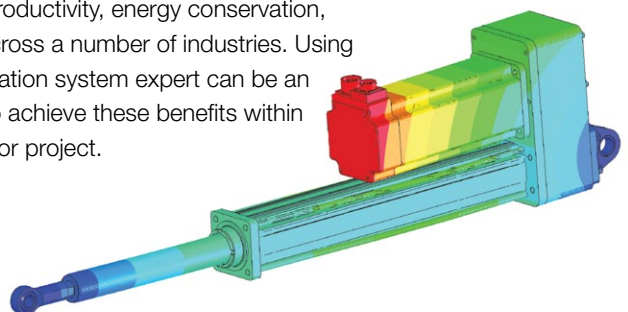
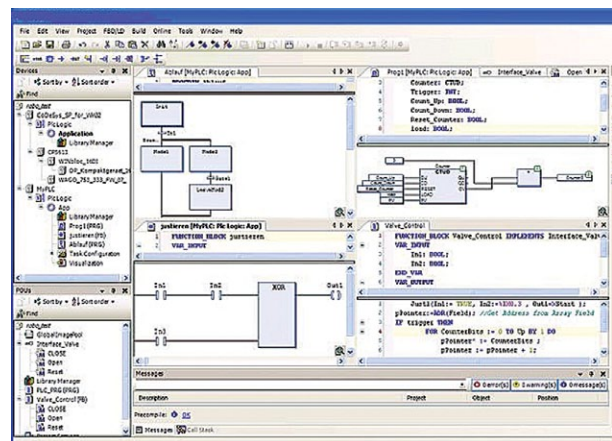
With Exlar’s heritage for innovative engineering, experience in defense and government applications and adherence to standards like ISO 9001-2008, Exlar’s Systems group follows rigorous processes to ensure customer satisfaction. We start with detailed proposals and Statements of Work during the quoting and specification stages of engagement. These details are followed by the development of comprehensive Customer Acceptance Test plans and system documentation prior to final delivery. In the end, Exlar’s systems approach results in quality solutions, on-time and on-budget.

### The Skills to Get the Job Done

Exlar understands the complexities involved when integrating electromechanical systems. Beyond the automation skills to deliver a complete solution, Exlar’s Systems group can provide:

- Linear Dynamic Analysis
- Non-linear Static & Dynamic Analysis
- Thermal Analysis
- Finite Element Analysis
- Structured Programming Methodologies
- Customized Test Fixtures & Programming

Mechatronics – or the integration of mechanics, electronics, control theory, and computer science within product design and manufacturing – is helping drive benefits in productivity, energy conservation, and profitability across a number of industries. Using Exlar as your actuation system expert can be an effective means to achieve these benefits within your organization or project.







## Partnering for Success, Agility & Capacity

By working with pre-qualified partners for control programming, panel assembly, and specialized testing needs, Exlar's Systems group is a convenient "one-stop" provider for your actuation system or custom solution. Exlar ensures the right partner is used for the scope of project and application, while overseeing and managing all the deliverables to meet Exlar's quality and technical requirements.



### Project Experience – High Value to High Volume

Exlar's system experience ranges from multiple actuation systems used in high-value defense applications to developing optimized actuators for high-volume off-road and marine equipment. In addition to Exlar's superior actuation technology, coordinating your project through Exlar's Systems group ensures your actuation solution takes full advantage of Exlar's experience in developing high performance systems and testing to harsh environments.

### Military/Defense/Government Project Experience

Beyond meeting the demanding environmental and performance requirements, doing business for government programs requires dealing with a multitude of terms, conditions, and regulations such as the US Federal Acquisition Regulations (e.g. FAR & DFAR). Exlar's experience working with these commercial and regulatory requirements can help with compliance when these regulations are required.

Our experience in sourcing materials, assembling and testing to MIL-SPEC standards helps assure a program is on-time, on-budget and on-spec. Just some of the MIL specifications Exlar's Systems Group has experience with:

- MIL-S-167 Mechanical Vibration of Shipboard Equipment
- MIL-S-901 High Impact Shock Testing for Shipboard Equipment
- MIL-STD-108 Environmental Capability for Electronic Equipment
- MIL-STD-461 Control of Electromagnetic Interference
- MIL-STD-810 Environmental Compatibility, Ground Vehicle Shock & Vibration

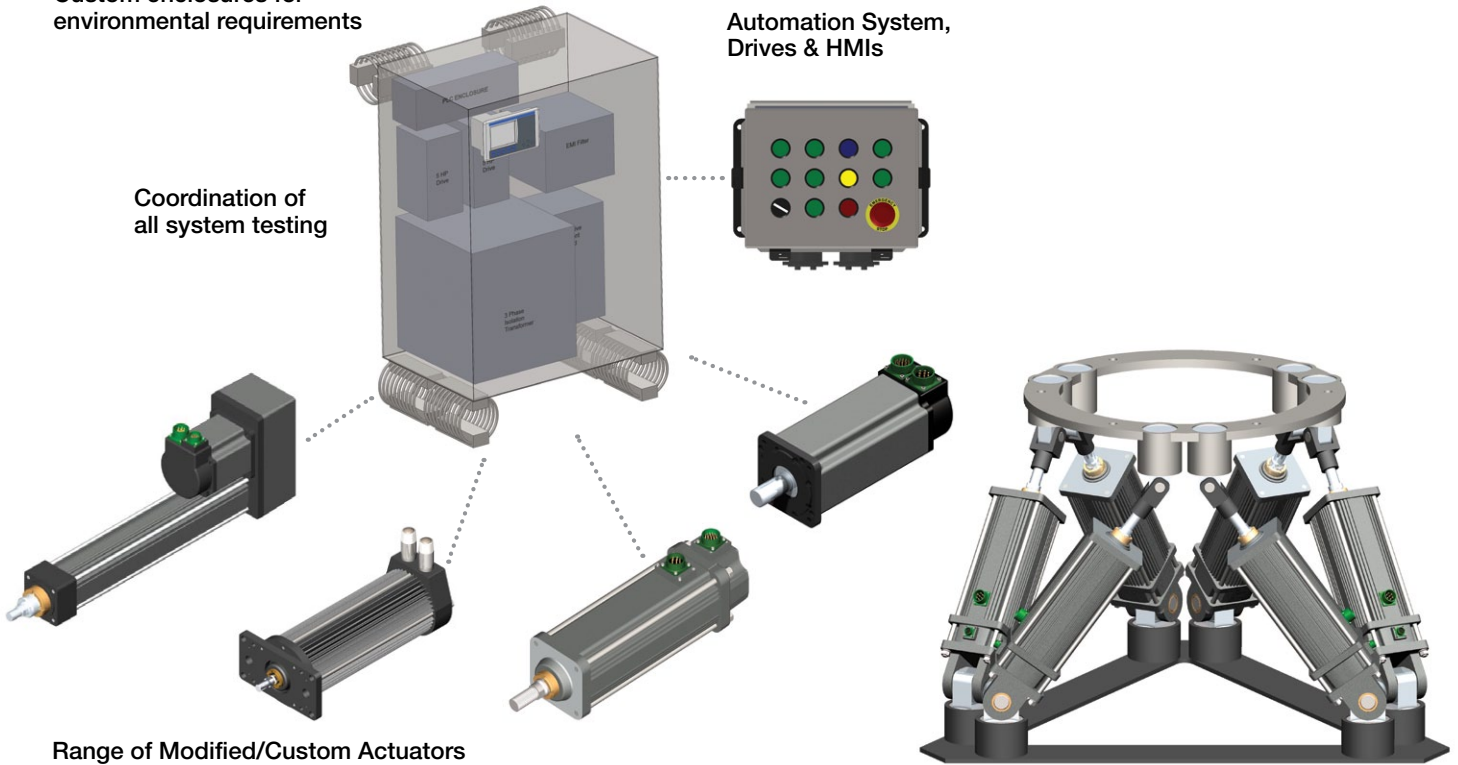
And, as a registered USA-based small business, Exlar can be an excellent partner in helping meet small business procurement mandates set by many US government contracts.



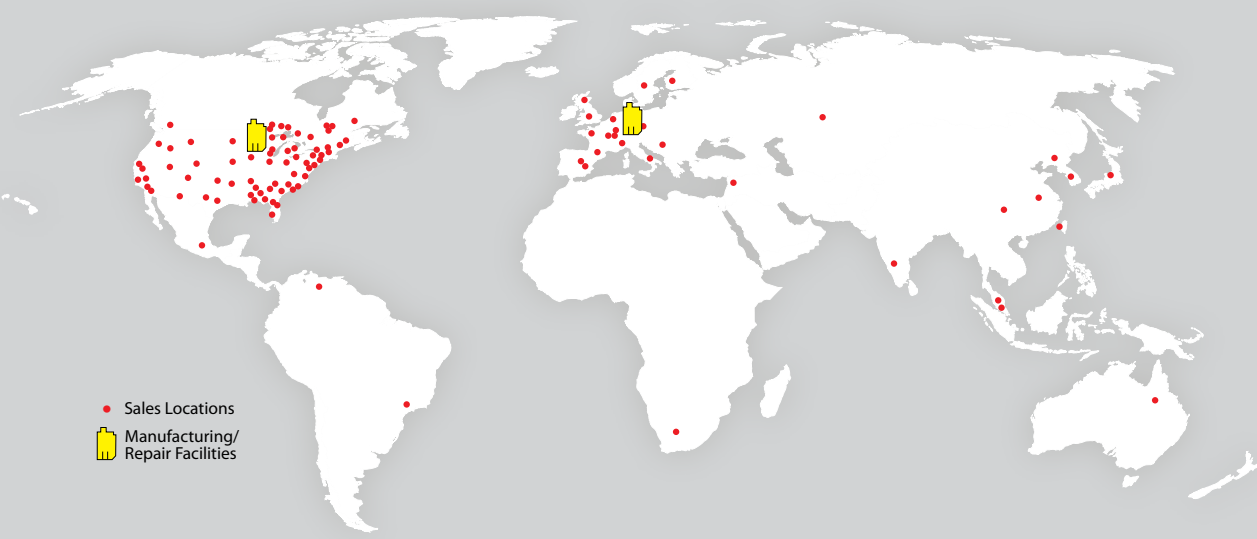
Custom enclosures for environmental requirements

Automation System, Drives & HMIs

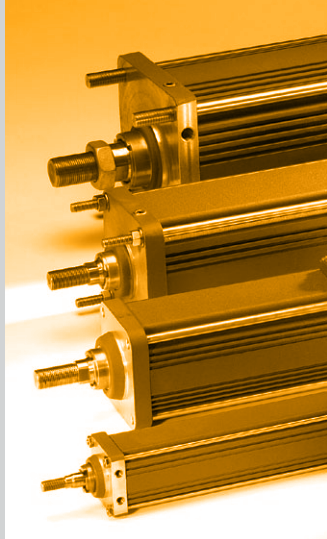
Coordination of all system testing



Range of Modified/Custom Actuators



• Sales Locations  
 ■ Manufacturing/Repair Facilities



**Benefits in Partnering with the Exlar System Business Group**

Building on Exlar’s 25+ years of experience in designing, developing and manufacturing advanced industrial-grade electromechanical actuators, Exlar’s Systems group provides another level of service to help deliver a market-leading, quality electro-mechanical solution. Some of the key benefits in working with Exlar’s Systems Group include:

- ISO 9001-2008 Certified operations
- Actuator customization services beyond “catalog-based” options
- “One-Stop” provider for complete actuation systems and customized product

- Advanced analysis and modeling capabilities for mechanical, thermal and structural validation
- Standardized approach to program management, system development and delivery
- USA-based Small Business Status (helps satisfy many US government small business purchase mandates)

Exlar’s Systems group complements Exlar’s overall capabilities and standard actuator products, — In addition, Exlar’s global sales channel works with local distributors and system integrators that can accommodate a broad range of support and engineering requirements as well.





## Delivering superior systems starts with a superior technology...

### Mission Statement

To be the world's best and most competitive supplier of electro-mechanical actuators for use in the markets we choose to serve. Our performance is measured by:

- Product range and performance
- Application expertise and availability as viewed by the customer
- Ability to meet our customers' schedules
- Quality of design and manufacturing
- Product's ability to tolerate extreme and sometimes unforeseen conditions
- Company's ability to respond to unforeseen opportunities or customer circumstances
- Ability to support customers after the product is purchased

We recognize that our employees, our suppliers, and our sales partners acting as a team committed to serving customers, are required to achieve our mission... to be the best.

### Technology

Exlar's patented linear actuator is based on a unique design for integrating a robust and efficient rotary to linear mechanism into the center of a high performance brushless servo motor.

Exlar's use of roller screw technology provides advantages not found in the other linear motion technologies. Roller screws can carry heavy loads for thousands of hours without the complex support system of valves, pumps, hoses and sensors. With their higher stiffness, smaller size, and higher speed capabilities, actuators incorporating roller screw technology provide an attractive alternative to hydraulic, pneumatic or ball screw options.

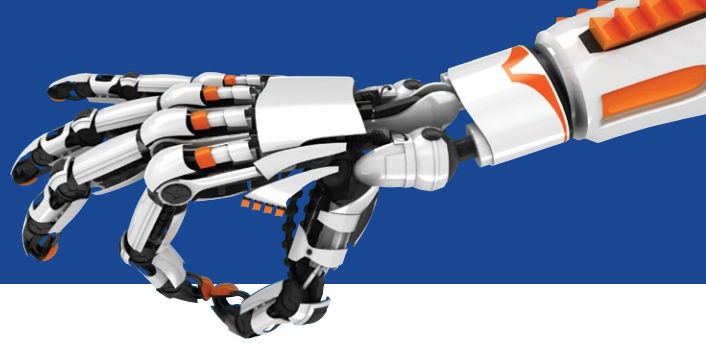
Additionally, Exlar's T-LAM™ segmented lamination stator technology delivers higher continuous motor torque than available in traditionally wound motors. Limited heat generation is key to improved energy efficiencies and motor performance.

Integrating both roller screw technology and high density motor stator technology in one compact package delivers an actuator with a very long working life, minimal maintenance, energy efficiency and servo control.



Exlar's latest technological advancement offers the Tritex product line which integrates an AC or DC powered servo drive, digital position controller, brushless motor and linear or rotary actuator in one compact, sealed product.



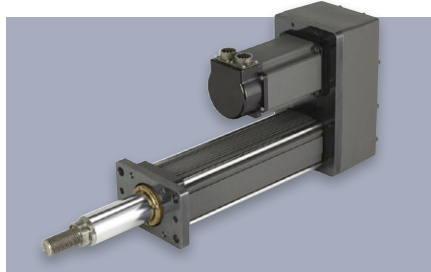


## and a leading line of products.



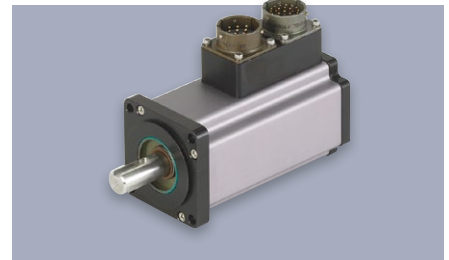
### **GSX/GSM Series Integrated Linear Actuators**

Exlar's GS Series actuators combine our patented roller screw technology and T-LAM motor technology— yielding the highest performance, longest life and most compact linear actuator on the market. GSX/M Series linear actuators provide forces to 12,000 continuous with speeds to 40 inches per second.



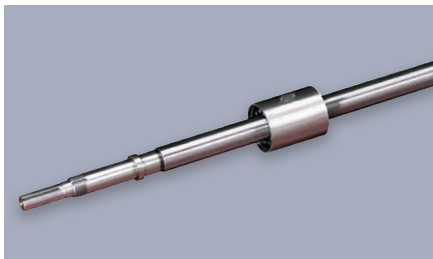
### **FT, K and I Series Actuators**

Utilizing our roller screw technology and an external motor, FT, K, and I Series linear actuators provide continuous force ratings in excess of 20,000 pounds, stroke lengths up to 8 feet and speeds up to 60 inches per second. Our K-series products provide industry leading flexibility in stroke length, rod end options, case options, and motor mounting.



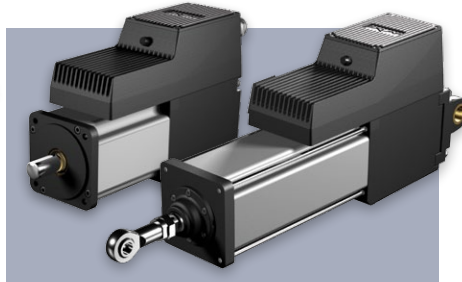
### **SLM Series Brushless Motors and SLG Series Brushless Servo Gear-motors**

Designed with Exlar's T-LAM technology, SLM brushless servomotors and SLG gearmotors deliver high efficiency and power in a compact package. The SL Series design yields 35-70 percent more torque than traditionally wound motors of the same size. The SLM Series motors offer up to 600 lbf-in continuous torque and speeds to 5000 rpm.



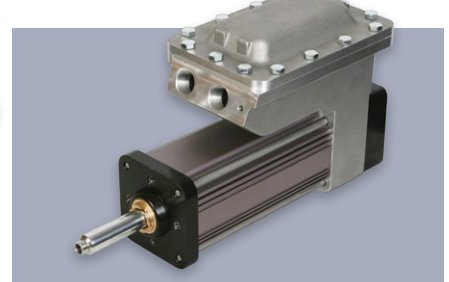
### **PRS/PRR Roller Screw Components**

Available in diameters from 8 to 80mm, Exlar roller screws provide solutions to a wide range of applications - from the most compact and precise to the largest and extremely high load requirements. Exlar's roller screw technology can handle large static loads - up to 218,000 lbf. With up to 15 times longer life than comparably sized ball screws, Exlar roller screws are ideally suited for continuous duty applications. Available tolerance classes include G5 (PRS) and G9 (PRR).



### **Tritex II Linear & Rotary Actuator**

Combining the latest electronic power technology with advanced thermal management, Exlar has set a new benchmark for electric actuator performance versus size. The new Tritex Series actuators integrate a servo drive, digital position controller, brushless motor and linear actuator in one compact, sealed package. Now you can distribute motion control and solve your application with one integrated device. Simply connect power, I/O, communications and solve your application with one integrated device.



### **Hazardous Duty Motors and Actuators**

Exlar offers a wide range of explosion-proof motors and actuators offering Class I Div 2, Class I Div 1, or ATEX ratings for hazardous duty environments.

### **Exlar Actuator Controls**

Exlar's SV Series Positioner is designed for use with Exlar rotary and linear actuators to control valve and damper applications. The EXP-24 Positioner can be used to drive most three phase linear actuators and rotary motors and conforms to CSA and the EU ATEX Directive 94/9/EC for explosion-proof applications.







*Headquartered at our manufacturing and motion control research center in suburban Minneapolis, MN, Exlar serves a global customer base with an extensive standard product line and complete engineering support for systems capabilities.*

*Exlar provides sales and support world-wide. To find your local representative, visit our website at [www.exlar.com](http://www.exlar.com) or call our headquarters at 952-500-6200.*

**Request a free copy of our literature** by calling **952-500-6200** or download the pdf at **[www.exlar.com](http://www.exlar.com)**. In addition to the Exlar Product Catalog, brochures are available on Exlar's component roller screws and Tritex or Tritex II Actuators with Embedded Electronics. Process control and defense industry brochures are also available.

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