



Helping you build a better machine, *faster.*

# Mechanical Motion Solutions





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## Danaher Motion -

Helping you build a better machine, faster

Danaher Corporation combined over 30 industry-leading brands such as Kollmorgen, Thomson, Dover, Pacific Scientific, Portescap, Neff, Seidel and Bautz to establish a customer-focused motion control manufacturing company called Danaher Motion. We offer this powerful set of integrated motion control technologies under the Danaher Motion and Thomson brand names. We are a \$1B+ global motion control leader, unique in our ability to marshal decades of application experience and technical innovation to help you build better machines, faster.

Danaher Motion defines high standards of quality, innovation and technology. We enable improved machine performance and reliability while controlling costs. Our global manufacturing footprint, rapid customization and prototyping capabilities drive quick lead times. Unmatched application experience and design expertise empowers you to commission machines faster.

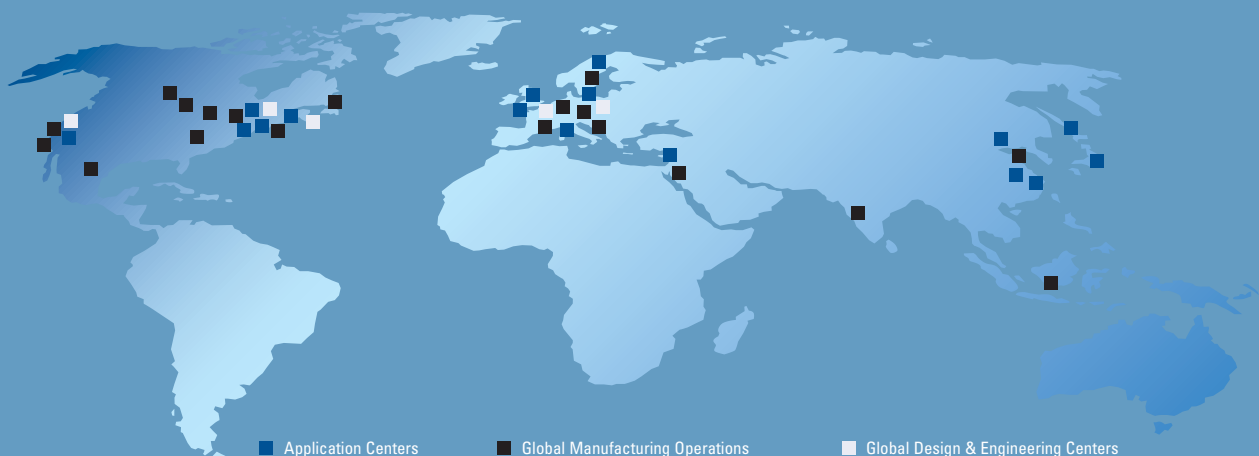
Consider your options in today's market for a motion control partner. Select Danaher Motion and join a team with over 6000 employees, over 60 years of application experience and 2000+ distributor locations around the globe. Danaher Motion serves industries as diverse as semiconductor, aerospace and defense, electric vehicle systems, packaging, printing, medical and robotics. We offer an unparalleled depth and breadth of motion control product solutions through a worldwide service and support infrastructure, field service engineers and support teams available when and where you need them.

## The Danaher Business System -

Building sustainable competitive advantage into your business

The Danaher Business System (DBS) was established to increase the value we bring to customers. It is a mature and successful set of tools we use daily to continually improve manufacturing operations and product development processes. DBS is based on the principles of Kaizen which continuously and aggressively eliminate waste in every aspect of our business. DBS focuses the entire organization on achieving breakthrough results that create competitive advantages in quality, delivery and performance – advantages that are passed on to you. Through these advantages Danaher Motion is able to provide you faster times to market as well as unsurpassed product selection, service, reliability and productivity.

## Local Support Around the Globe



## New Name, Established Brands

Thomson invented anti-friction linear technology over 60 years ago and has continued to lead the industry ever since. The Thomson brand is recognized and trusted as the global leader in linear motion technology.

Since 2002 when Thomson was acquired by Danaher Motion, the product range has grown significantly. Our family of linear and mechanical motion products also includes BSA, Neff, Tollo, Deltran & Micron - all now part of Danaher Motion and the Thomson brand name.

**THOMSON™**

**THOMSON BSA**

**DELTRAN**

**MICRON**

**THOMSON NEFF™**

**TOLLO™**

With a world-wide service and support infrastructure, our field service engineers and support teams are available to assist whenever they are needed. It is part of our unrelenting focus on its customer. That's why more and more design engineers are turning to Thomson products to meet their motion control requirements.

From standard products to "white paper" designs, we have the expertise and manufacturing capabilities to optimize the balance between performance and cost to suit your specific application. Our engineered, custom-designs for proprietary equipment set us apart in the industry.



Textile



Packaging



Medical



Mobile-Off-Highway

## Linear Ball Bushing® Bearings and 60 Case™ Shafting

Thomson invented the ball bushing bearing over 60 years ago and has since been the recognized leader in this field. Our linear products provide low friction, smooth, accurate, straight-line motion. Offering the widest range of bearings and accessories, we easily satisfy the widest range of requirements with the best performing product for the application.

### RoundRail™ Linear Ball Bushing® Bearings

- Most extensive product offering in the industry
- Cutting-edge segmented technology
- Over 60 years of product innovation & unparalleled service

### 60 Case™ Shafting

- 60 Case™ Shafting service life extends as much as 50% over the competition, when used with Thomson Ball Bushing Bearings
- Available in a number of proprietary materials and coatings
- Diameters from 1/8 inch to 4 inches and 5 mm to 80 mm
- Lengths to 25 feet (7.6 m)
- Custom machining capabilities – drive shafts, spindles, guide rods, rolls, etc.



\* The most popular Thomson Ball Bushing Bearings and 60 Case Shafting are in stock and ready for same and next day shipment. Contact Danaher Motion or your local distributor for more information.

## Profile Rail Linear Guides

We are a “one-stop shop” for all your profile rail needs with our high-performance profile rail linear guides, ranging from the ultra-lightweight T-Series (Transport Profile Rail) and compact stainless steel MicroGuide to the ultra-rigid 500 Series Roller (machine tool grade). These guides provide long life and are produced from high quality bearing steel.

- Metric sizes ranging from 5 to 65mm (.2 to 2.5 inch)
- Load capacities up to 530 kN (119,000 lb)
- Exceptional straightness and high rigidity
- High dynamic, static and moment load capacities
- Simple installation and greater accuracy with joint-free rails up to 6 m (20 ft)
- Smooth, quiet movement & on site field modifications



## Industrial Ball Screws

Thomson offers the most complete line of industrial ball screws in the industry - offering rolled and ground assemblies in both inch and metric diameters and leads. Our broad product offering combined with years of application expertise allows us to provide the right solution to meet your unique application requirements.

### Inch Series Ball Screws:

- Diameters from 0.187" to 4.000"
- Leads from 0.050" to 2.0"
- Rolled screw accuracy to +/- 0.004"/ft
- Ground screw accuracy to +/- 0.0005"/ft

### Metric Series Ball Screws:

- Diameters from 4mm to 200mm
- Leads from 1mm to 50mm
- Rolled screw accuracy to +/- 23 microns / 300mm
- Ground screw accuracy to +/- 12 microns / 300mm

### Worm Gear Screw Jacks:

- Lifting capacities from 1,100 to 110,000 lb (5 kN to 500 kN)
- Ball screw or lead screw driven; up to 57% efficiency



## Aerospace and Defense Ball Screws and Components

Thomson ball screw products for the aerospace and defense industry benefit from 70+ years of research and development and over 100 ball screw technology patents. Core strengths in ball screw design are energized with our global infrastructure and systematic excellence in manufacturing. Application history and expertise stretches from the first ball screw in an aviation application, Boeing B29, to seeker gimbal stabilization in modern missiles.

- Unmatched engineering capabilities available for your specific application
- Redundant load systems and patented wiper designs promote maximum reliability
- Certified manufacturing, inspection, and testing procedures ensure the highest levels of quality



## Lead Screws

The “just right” solution for many linear positioning applications, our lead screws are available in standard and precision grades to meet your requirements. Patented zero-backlash nut technology provides excellent repeatability with high stiffness and extremely low drag torque.

- Polymer anti-backlash nut technology
- Precision stainless steel screws, Imperial diameters from 0.1875 to 3 inch (5 to 76mm), Metric diameter from 6 to 24mm (0.25 to 0.75 inch)
- Leads from .01 to 2 inch (0.25 to 50mm)
- Load ratings from 5 to 400 lb (22 to 1,800N) for polymer nuts
- Lead accuracies to 0.003”/ft (76 micron/300mm)



## Linear Units

Linear Units are the best choice for material handling and other factory automation applications that require high speed and/or long stroke capabilities. Modular, self-contained and self-supporting, they are easily assembled into X-Y and gantry configurations. Numerous combinations of linear actuator, motor and control are available to enhance the versatility of these actuators.

- Designed for machining, packaging, assembly and material handling applications
- Ball screw or belt driven with ball guide, wheel guide and prism guide linear bearing
- Speed up to 10m/s (33 ft/s)
- Load up to 40kN (9,000 lb)
- Stroke up to 12m (39 ft)
- Available with stepper, servo, AC or DC motor and control packages
- Complete turnkey systems available



## Positioning Slides

Our positioning slides can be used virtually anywhere. They can support and move a range of loads and provide high precision and tight tolerances.

- Pre-engineered, pre-assembled, ready to install
- Load bearing support with either RoundRail or ProfileRail linear guides
- Actuation with either ball screw, lead screw or belt drive
- Support 2D or 3D move profiles with multi-axis configurations
- Loads from 20N to 30kN (5 to 6,700 lb)
- Speeds up to 3m/s (10 ft/s)
- Both inch and metric dimensions
- Available with stepper or servo motor and control packages
- Complete turnkey systems available
- RediMount System allows Thomson slides to be easily mounted to a variety of motors, not just NEMA standards.



## Precision Linear Actuators

The compact design and higher load capacities of our precision linear actuators make them ideal for flexible integration in tight areas. These programmable precision linear actuators are available in a wide range of voltage, thrust, stroke and mounting configurations.

- Designed for high speed, high load, continuous operation
- Stroke up to 2m (6.5 ft)
- Load up to 40 kN (9,000 lb)
- Speed up to 2 m/s (6.5 ft/s)
- Compact design for small envelope
- Available with stepper, servo or DC motor
- Controls available for all units
- Complete turnkey systems available



## Linear Actuators

Our linear actuators are designed for rugged, reliable linear motion applications. Numerous choices in stroke, load, motor type, feedback, limits, and control options make these linear actuators very versatile.

And if you can't find the actuator to meet your application needs, call us for an actuator built to your needs. We build more custom actuators than anyone.

- Strokes from 25 to 1500 mm (1 to 59 inch)
- Loads from 110 to 9000 N (25 to 2,000 lb)
- Speeds from 5 to 75 mm/s (0.2 to 3 in/s)
- Voltages - 12, 24, 36 Vdc and 1 × 230 / 3 × 400 Va
- More power in a smaller envelope
- Outdoor and indoor applications, IP67
- Maintenance free
- Holds load with power off
- Available with overload clutches, limit switches, feedback and a whole range of other options and features



## True Planetary™ Gearheads

We offer a complete line of True Planetary™ gearheads to complement all of our servo and step motor products.

- UltraTRUE Helical Crowned True Planetary Gearheads, smoothest operating on the market
- ValueTRUE Helical Crowned True Planetary Gearhead, High performance at a low cost
- DuraTRUE Planetary Gearheads, ideal alternative to hybrid parallel-shaft spur gearheads
- NemaTRUE Planetary Gearheads, optional front faces
- EverTRUE continuous duty, higher speeds and lower temperature



## Clutches & Brakes

Our friction brakes and clutches are available for a wide range of applications from specialty automotive power closure actuators to integrated servo motor brakes. Power on and power off models are offered in a variety of mechanical and electrical configurations.

- Spring set brakes for static holding and dynamic stopping are available for a variety of applications including motors, actuators, and Z axis applications
- Product families include power on and power off friction, multiple disc, tooth, spring set, and other electro-mechanical technologies.
- Torque ranges from less than 0.1 Nm to over 500 Nm (1 in-lb to 370 ft-lb)
- ISO9000:2001 and AS9100 certified





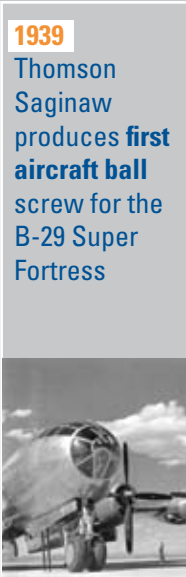

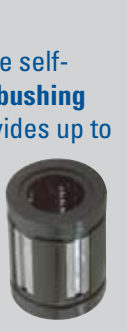
## Precision Balls

Our precision balls offer sphericity within 5 millionths of an inch, 100% quality inspection and are guaranteed to meet or exceed the standards of the American Bearing Manufacturing Association.

- Most complete variety of materials & technologies
- Over 27 high performance materials
- Ceramic, hollow and specialty balls
- ISO9001:2000 registered
- A2LA Certified measuring Lab



# Over 60 Years of Innovation, Quality and Trust in Linear Motion

1940	1950	1960	1970
<p><b>1936</b> First ball screw application developed for recirculating ball steering systems</p>	<p><b>1945</b> Thomson invents <b>world's first anti-friction linear ball bushing bearing</b></p> 	<p><b>1951</b> <b>60 Case LinearRace</b> shafts developed as ground inner raceway for ball bushing bearing</p> 	<p><b>1960</b> <b>Ball screws</b> are introduced into machine tools</p>
<p><b>1939</b> Thomson Saginaw produces <b>first aircraft ball screw</b> for the B-29 Super Fortress</p> 	<p><b>1947</b> <b>Multiple circuit ball screws</b> introduced at Saginaw</p>	<p><b>1953</b> <b>Precision "A" Bearing</b> invented with better ball circulation manufacture. Still in use today</p>	<p><b>1962</b> <b>Roundway bearing</b> patented, offers 20 times greater load capacity than Ball Bushing bearings</p> 
<p><b>1947</b> Significantly <b>improved linear ball bushing bearing</b> patented</p>	<p><b>1955</b> <b>First re-circulating ball screw</b> introduced on 1955 Chevy</p>	<p><b>1965</b> Thomson <b>Performance Pak</b> electromechanical actuators are developed</p>	<p><b>1967</b> The first generation of actuators <b>for use in garden tractors and farm equipment</b> is released</p>
<p><b>1948</b> <b>Subminiature clutches and brakes</b> are released</p>	<p><b>1955</b> Thomson develops <b>thread rolling process for ball screws</b></p>	<p><b>1969</b> Thomson invents the self-aligning <b>super ball bushing bearing</b>, which provides up to 27X more life and up to 3X greater load capacity than Ball Bushing bearings</p> 	

1980

**1970**  
Stainless steel rolled lead screws and Supernut® introduced

**1974**  
First line of actuators with parallel motors and both acme and ball screw drive is released

**1974**  
Self-aligning twin pillow block is invented

**1980**  
Launched anti-backlash Supernut® products such as the SNAB, ASAB, TSAB, and TAB

**1981**  
First Wiesel linear unit presented at Fameta show in Stuttgart



**1981**  
Extra-rigid 10X more accurate XR ball bushing bearing patented



**1982**  
The Tiger line actuators are released for OEMs

**1987**  
Electrak 205 and the first line of MCS controls are released

**1989**  
Production starts on first high volume ABS IV ball screw at 40,000 units per day

1990

**1993**  
Super Smart Ball Bushing Bearing is invented. 216x the life or 6x the load capacity of a conventional Bearing

**1995**  
Lightweight titanium screw developed for space flight

**1996**  
Micron develops the RediMount, the most flexible mounting system in the world



**1997**  
Micron develops the first helical crowned true planetary gearhead in the UltraTRUE

**1998**  
Released the XC advanced anti-backlash nut with ActiveCAM®

**1998**  
First IDC precision positioning tables are released

2000

**2000**  
The first LM80 rodless actuator is released

**2002**  
Over 50% of new aerospace ball screw designs now produced in stainless steel

**2004**  
Gen IV wipers developed for maximum environmental conditions

**2004**  
500 Series Introduced



**2004**  
MLSM and MLSH product line released



**2007**  
The Electrak Pro actuator line and the DCG control line are released



**2007**  
AKB Series Spring Set Brakes are released

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