

# Metric Precision Ball Screws

German-Engineered, Manufactured and Supported Ball Screws and Assemblies



# Thomson Recirculating Ball Screws

Broad range of precision products providing a “just right” solution

Thomson has manufactured ball screws and nuts for nearly 60 years in Europe. Thanks to our quality management and culture of continuous improvement, we can offer the highest levels of performance, quality and reliability. Our products are used in high-precision machines and some of the most demanding industrial applications.

## Superior Precision

Thomson ball screws are manufactured using patented, German-engineered Precision Screw Forming Technology (PST), which provides an accuracy of 23 microns/300 mm as standard and 12 microns/300 mm upon request.

## Standard and Custom Offerings

The materials used to manufacture ball screws are critical to their performance. Thomson has decades of experience working with a wide range of standard and non-standard materials. Our experts can recommend the materials or coatings best suited for your application.

## Reliability and Consistent Performance

Thomson has a background in flight-critical aerospace and defense applications that uniquely positions us to provide the highest levels of quality across all of our ball screw products. Our engineering laboratory performs qualification testing for performance against applicable DIN and ISO standards as well as a wide variety of custom configurations.

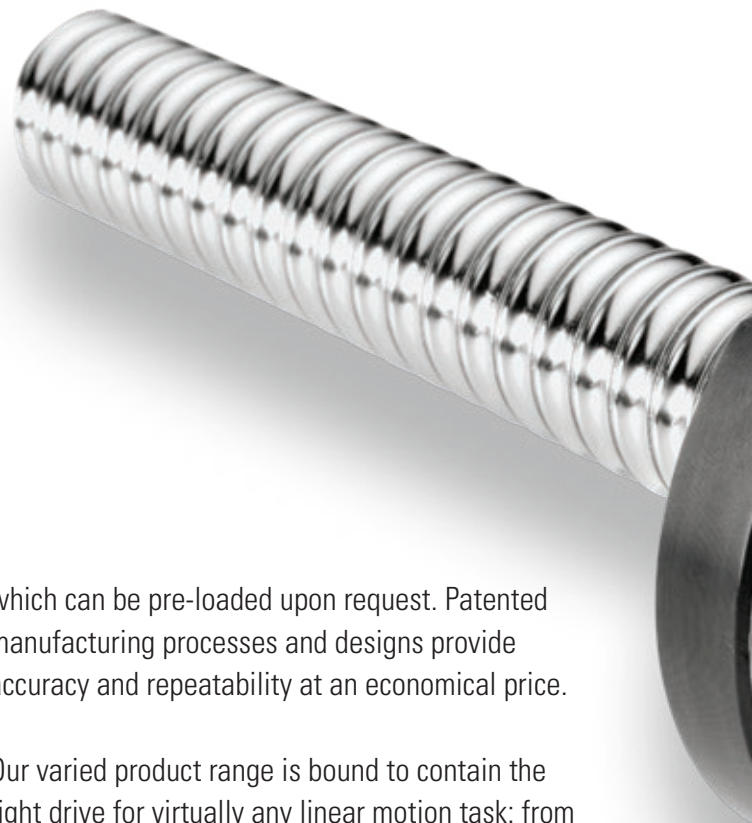
## Broad Range for Almost Any Application Needs

Our line of ball screws comes in a wide range of diameters and leads. Ball nuts are available in a variety of standard and non-standard configurations,

which can be pre-loaded upon request. Patented manufacturing processes and designs provide accuracy and repeatability at an economical price.

Our varied product range is bound to contain the right drive for virtually any linear motion task: from miniature screws for efficient medical devices to machine tool screws requiring ultra accuracy, high speed and structural stiffness.

Regardless of the technical challenge, Thomson can supply a ball screw to match the most demanding requirements for load, speed, stiffness, accuracy, and life.



### Application Support

Not all ball screws are alike. Differences in design, quality, materials, manufacturing and application support are all factors that affect their performance and extend their lives.

Thomson field sales and applications engineering personnel are skilled at evaluating your requirements and designing assemblies that fit your needs. They can also quickly and knowledgeably address application concerns and recommend solutions.

### Consistent Quality and Delivery

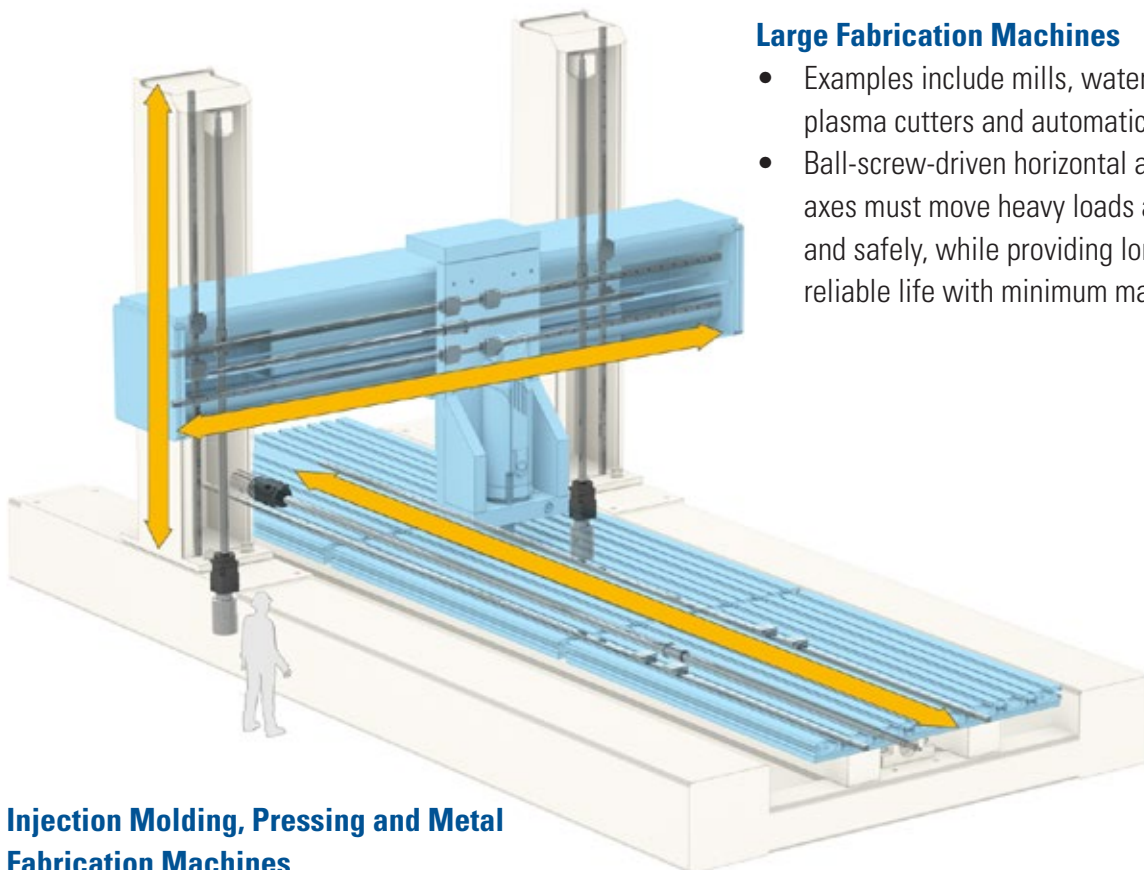
A combination of advanced engineering and proprietary manufacturing processes consistently exceed performance, precision and life versus comparable ball screws.





## Applications

With nearly 60 years in the ball screw business, Thomson can help you find the best suitable solution for your heavy duty application.

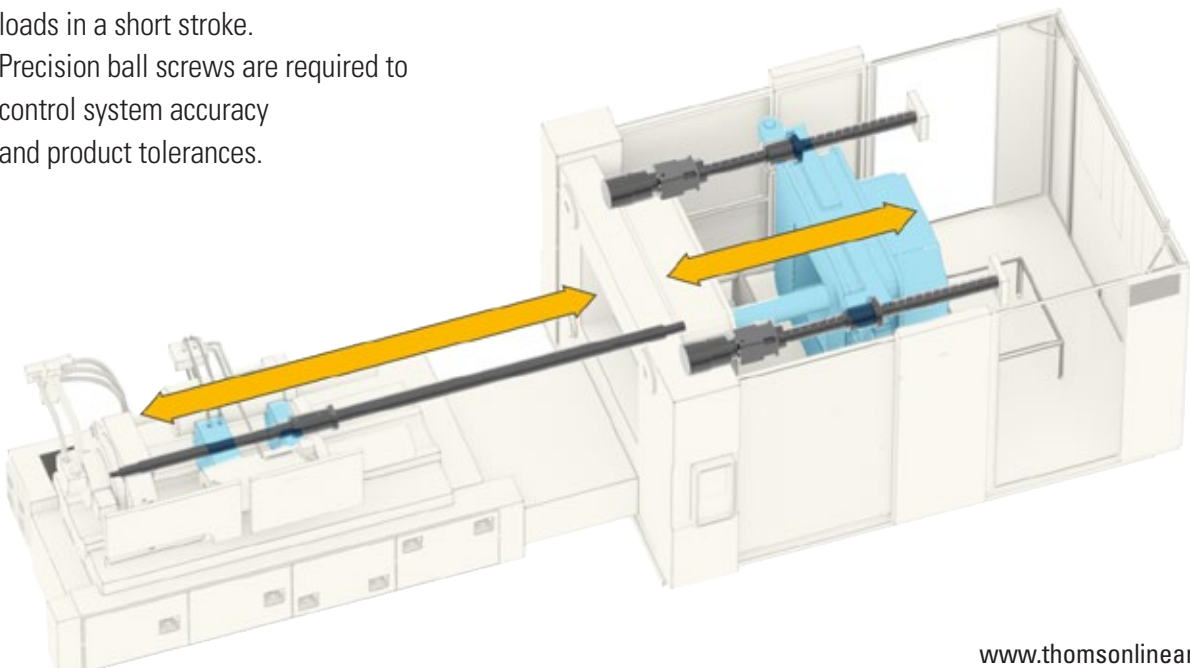


### Large Fabrication Machines

- Examples include mills, water jets, plasma cutters and automatic welders.
- Ball-screw-driven horizontal and vertical axes must move heavy loads accurately and safely, while providing long and reliable life with minimum maintenance.

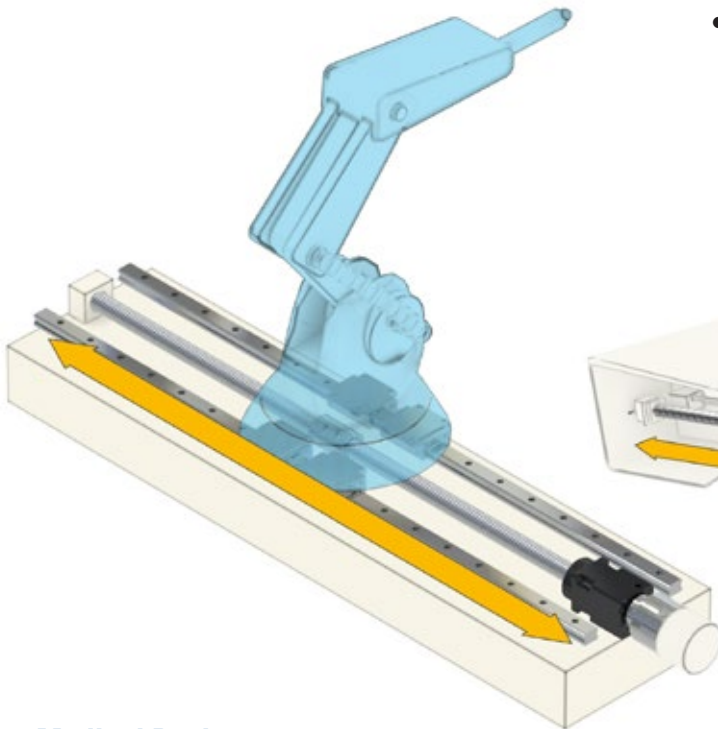
### Injection Molding, Pressing and Metal Fabrication Machines

- Ball screws are necessary to handle high loads in a short stroke.
- Precision ball screws are required to control system accuracy and product tolerances.



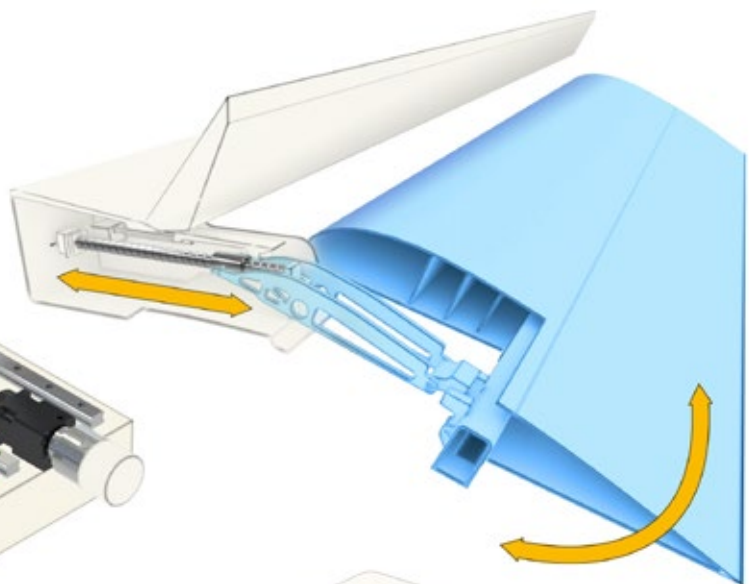
### Robotics and Factory Automation

- No matter the size, stroke or load capacity of the ball screw needed, high accuracy as well as smooth and quiet travel are important.



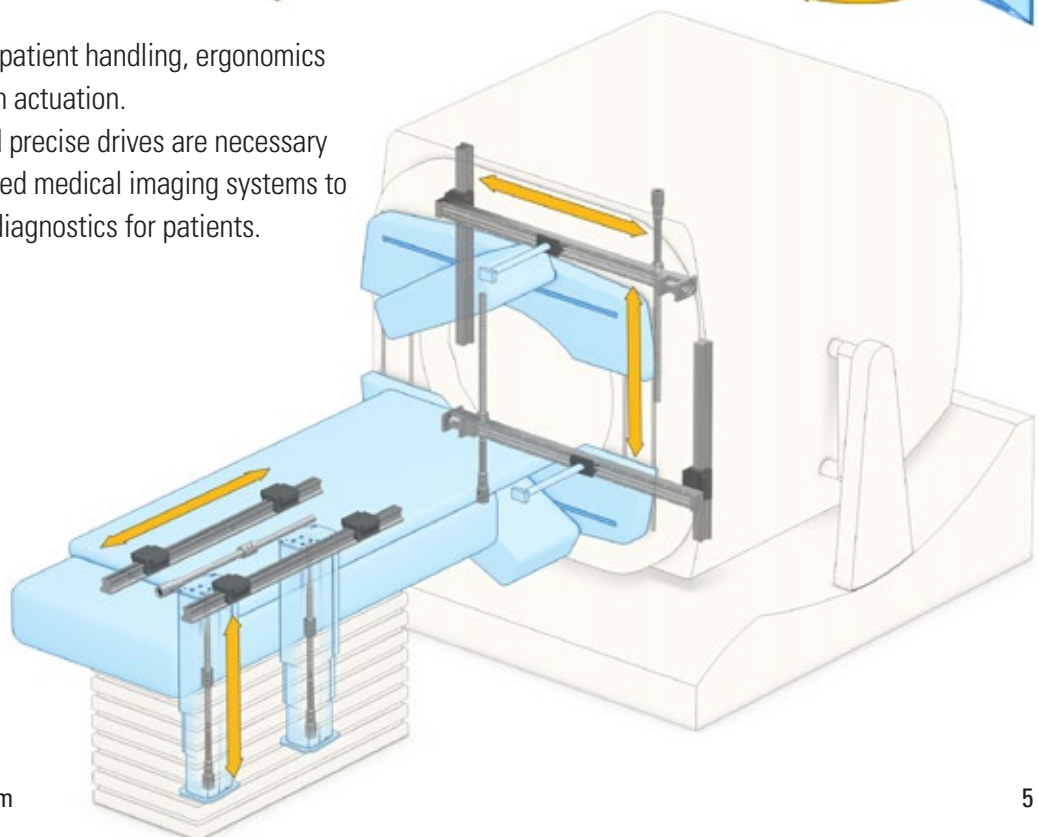
### Aircraft and Vehicle Construction

- The familiar sound we hear during air travel is the reliable operation of ball screws driving flight-critical systems such as flaps, stabilizers, landing gear, hatches and fly-by-wire systems.
- Consistent quality control, engineering expertise and product excellence are critical for these applications.



### Medical Devices

- Examples include patient handling, ergonomics and critical system actuation.
- Smooth, quiet and precise drives are necessary for today's advanced medical imaging systems to provide accurate diagnostics for patients.





## Ball Screws

Thomson precision-manufactured rolled, whirled and ground ball screws featuring a proprietary gothic arch thread profile designed to maximize load capacity and life.

### **Rolled Ball Screws**

Rolled ball screw shafts are manufactured using our patented, German-engineered Precision Screw Forming Technology (PST) manufacturing process, which provides consistent accuracy of 23  $\mu\text{m}$ /300 mm standard and 12  $\mu\text{m}$ /300 mm upon request.

### **Rolled Ball Screw Assemblies**

Thomson rolled ball screw assemblies are available in a wide range of diameters, leads and nut styles – all designed to provide quiet, smooth and efficient performance at an affordable price. They are ideal for machining centers, factory automation, packaging, injection molding, wood-working, water-jet cutting, electronic assembly and medical applications.

### **Whirled Ball Screws**

Whirling is a hard turning process that provides an affordable alternative to grinding when applications require higher precision levels than is achievable by thread rolling. Whirled ball screw shafts are available in tolerance classes up to P3.

### **Ground Ball Screws**

When your application requires the highest level of positional accuracy, Thomson can thread grind the ball form to ensure performance meets specification. Ground ball screw shafts are available in tolerance classes up to P1.



## Ball Nuts

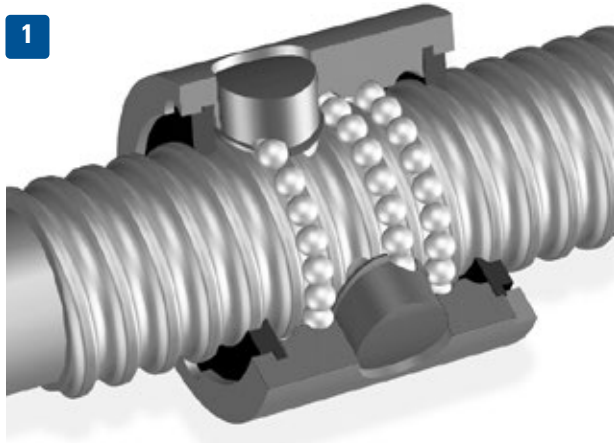
Thomson offers a wide breadth of ball nut configurations to seamlessly interface to the application. Most ball nuts have profiled wiper rings to reduce the escape of lubricant and prevent the ingress of dirt.

### Ball Nut Mounting Alternatives

Thomson offers flanged ball nuts that are attached via a set of mounting holes or cylindrical nuts that have a keyway or external thread. Custom interfaces such as trunnions and nut housings are also available.

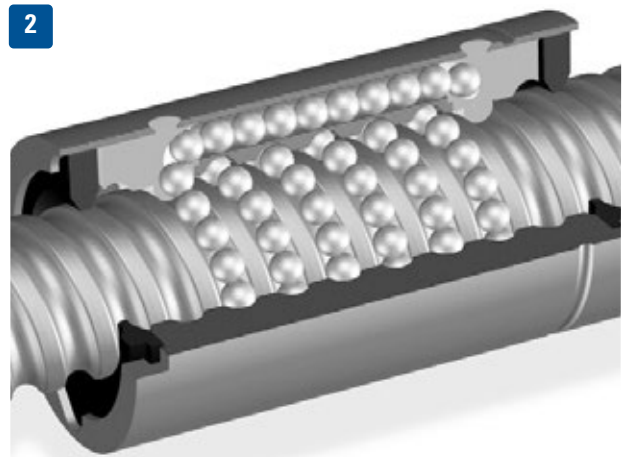
### Ball Recirculation Systems

Thomson manufactures ball nuts with three different ball recirculation systems depending on the diameter and lead of the ball screw shaft in use.



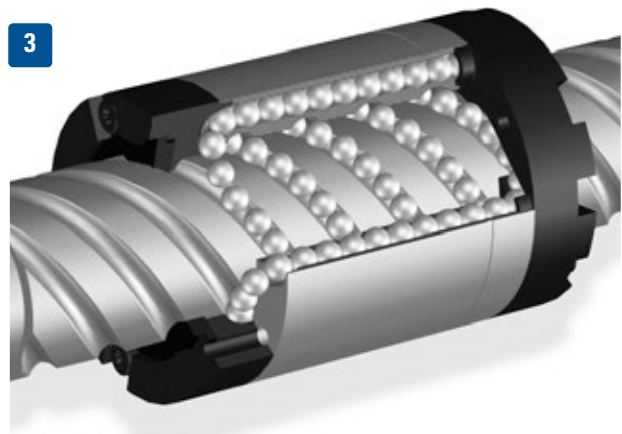
#### Single Return and Multi Liner

After each turn, the balls are lifted from the shaft raceway and set back by a single turn. Our return systems are made from glass-fiber reinforced plastic or steel to guarantee precise, gentle recirculation of the balls.



#### Channel Return

After several turns, the balls are returned either by a patented plastic recirculation system integrated into the nut or through channels also integrated into the nut using steel inserts.



#### End-Cap Return

The balls are recirculated via two special end caps and return channels integrated into the nut.



## Design Considerations and Customization

Selecting a ball screw assembly for a specific application is often about finding the smallest and most cost-effective solution that does the job. While it may seem like the same process every time, no two applications are alike, so it is important to consider the unique circumstances during the design phase.

This list shows the most common design considerations used to select a ball screw assembly:

- Compression or tension load
- Linear velocity
- Positional accuracy and repeatability
- Required life expectancy
- Mounting configuration
- Dimensional constraints
- Input power requirements
- Environmental conditions

At a minimum, the required load, linear velocity and positional accuracy should be known in order to calculate the diameter, lead and load capacity of the ball screw assembly. Individual ball screw components are then selected based on life, dimensional constraints, mounting configuration and environmental conditions.

Thomson also provides a range of accessories such as bearings, end supports and covers, making it easier to find a suitable solution for your application.

### Customization and White Paper Designs

Thomson offers the most complete line of industrial ball screws but often applications require unique solutions that cannot be solved off-the-shelf. Our engineering expertise and capabilities to manufacture custom engineered solutions, including small batches, also addresses special application requirements.

We frequently develop and ship ball screw assemblies that have been altered in one or several ways such as:

- Custom sized screws and nuts
- Custom end machining
- Custom materials
- Custom surface treatment
- Custom assemblies
- Custom services



### Support

At [www.thomsonlinear.com/bs](http://www.thomsonlinear.com/bs) you can find help and information on how to select a ball screw solution for your motion task. If you don't find what you are looking for or need application engineering support, please contact Thomson customer support.



## Sizing and Selection Process

To select the optimal ball screw solution for your application, the following application-related questions and specifications should first be analyzed.



## Ball Screw Size Chart

The Thomson ball screw range complies with ISO 3408. All ball nuts, both flanged and cylindrical, are available with connections complying with DIN specifications. Every shaft can be supplied with customized end journals, and upon request, customers can order screws with an annealed end for machining their own end journal.

Ball Screw Type vs Diameter and Lead Availability

		Nominal Diameter $d_0$ [mm]													
		8	10	12	16	20	25	32	40	50	63	80	100	125	160
Nominal Lead $P_{h0}$ [mm]	2		●	●											
	2,5	○													
	3		●												
	4			●											
	5	○		●	●	● ○	● ○	● ○	● ○	○					
	10			●	●	○	● ○	● ○	● ○	● ○	● ○	● ○			
	12								△						
	15							○	○		○				
	20					●	●	●	● ○	● ○ △	● ○ △	○ △	○ △	○ △	○ △
	25						●			△	○ △	○ △	○ △	○ △	○ △
	30											○	○	○ △	○ △
	32							●							
	40							●	●				○	○	
	50					●	●								
	100									○ △					

● Rolled

○ Ground / Whirled

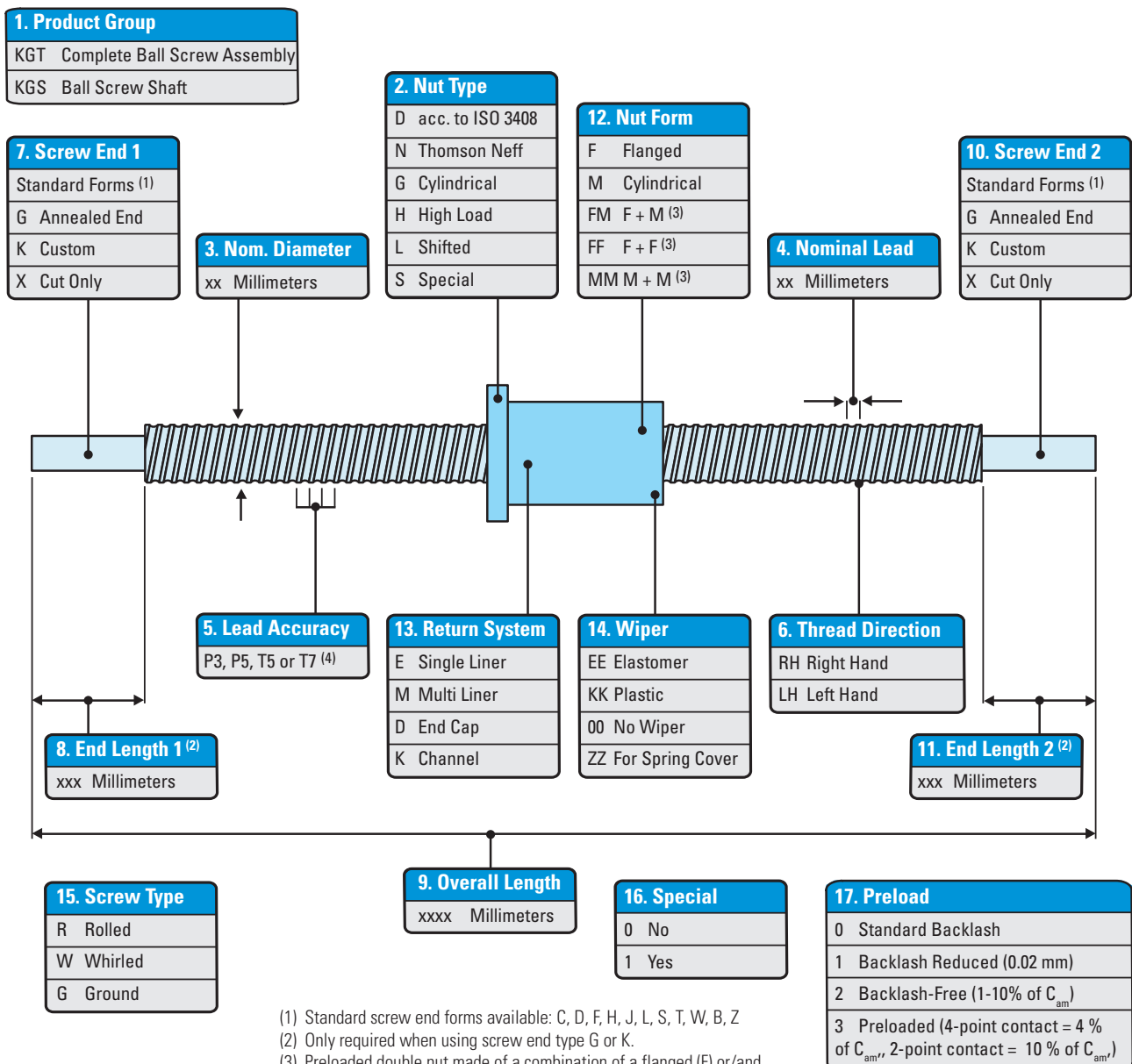
△ High load ground / whirled (Load capacity up to 1500 kN dynamic / 6000 kN static)

## How to Order

This ordering key provides an overview of available Thomson metric ball screws. To explore additional technical resources and options refer to the catalog or contact Thomson customer support at [www.thomsonlinear.com/contact](http://www.thomsonlinear.com/contact).

### Ordering Key Example

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17													
KGT	-	D	-	20	05	-	T7	-	RH	-	K	105	-	1003	-	K	025	-	F	-	E	-	EE	-	R	-	0	-	0





## **USA, CANADA and MEXICO**

Thomson  
203A West Rock Road  
Radford, VA 24141, USA  
Phone: 1-540-633-3549  
Fax: 1-540-633-0294  
E-mail: [thomson@regalrexnord.com](mailto:thomson@regalrexnord.com)  
Literature: [literature.thomsonlinear.com](http://literature.thomsonlinear.com)

## **EUROPE**

### **United Kingdom**

Thomson  
Office 9, The Barns  
Caddsdow Business Park  
Bideford, Devon, EX39 3BT  
Phone: +44 1271 334 500  
E-mail: [thomson.europe@regalrexnord.com](mailto:thomson.europe@regalrexnord.com)

### **Germany**

Thomson  
Nürtinger Straße 70  
72649 Wolfschlügen  
Phone: +49 7022 504 403  
Fax: +49 7022 504 405  
E-mail: [thomson.europe@regalrexnord.com](mailto:thomson.europe@regalrexnord.com)

### **France**

Thomson  
Phone: +33 243 50 03 30  
E-mail: [thomson.europe@regalrexnord.com](mailto:thomson.europe@regalrexnord.com)

### **Italy**

Thomson  
Via per Cinisello 95/97  
20834 Nova Milanese (MB)  
Phone: +39 0362 366406  
Fax: +39 0362 276790  
E-mail: [thomson.italy@regalrexnord.com](mailto:thomson.italy@regalrexnord.com)

### **Sweden**

Thomson  
Bredbandsvägen 12  
29162 Kristianstad  
Phone: +46 44 590 2400  
Fax: +46 44 590 2585  
E-mail: [thomson.europe@regalrexnord.com](mailto:thomson.europe@regalrexnord.com)

## **ASIA**

### **Asia Pacific**

Thomson  
E-mail: [thomson.apac@regalrexnord.com](mailto:thomson.apac@regalrexnord.com)

### **China**

Thomson  
Rm 805, Scitech Tower  
22 Jianguomen Wai Street  
Beijing 100004  
Phone: +86 400 606 1805  
Fax: +86 10 6515 0263  
E-mail: [thomson.china@regalrexnord.com](mailto:thomson.china@regalrexnord.com)

### **India**

Kollmorgen – Div. of Altra Industrial Motion  
India Private Limited  
Unit no. 304, Pride Gateway,  
Opp. D-Mart,  
Baner Road, Pune, 411045  
Maharashtra  
Phone: +91 20 67349500  
E-mail: [thomson.india@regalrexnord.com](mailto:thomson.india@regalrexnord.com)

### **South Korea**

Thomson  
3033 ASEM Tower (Samsung-dong)  
517 Yeongdong-daero  
Gangnam-gu, Seoul, South Korea (06164)  
Phone: + 82 2 6001 3223 & 3244  
E-mail: [thomson.korea@regalrexnord.com](mailto:thomson.korea@regalrexnord.com)

## **SOUTH AMERICA**

### **Brazil**

Thomson  
Av. João Paulo Ablas, 2970  
Jardim da Glória - Cotia SP - CEP: 06711-250  
Phone: +55 11 4615 6300  
E-mail: [thomson.brasil@regalrexnord.com](mailto:thomson.brasil@regalrexnord.com)