Miniature Components and Systems
Thomson performance, precision and reliability – in miniature form
Thomson - Your Source for Miniature Machine Components
A single source for miniature components engineered to work together

Thomson produces the widest selection of miniature linear and rotary components that are engineered to work together. This equates to faster design times, less installation problems, and higher performance and reliability.

The Thomson family of miniature products provide linear thrust and guidance or rotary motion control in the smallest packages available. They all benefit from Thomson's long experience in motion control engineering and have all the advantages and features offered for standard size products.

Thomson also provides customized solutions. Whether you need alternative materials, customized nut geometry, custom configured bearings, special end machining or mounting features, Thomson has the solution.

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**Miniature Metric Linear Bearings**
Compact and cost competitive, these new bearings can help bring high performance linear guidance to miniature equipment.

**Miniature Metric Rolled Ball Screws**
The new line of rolled ball screws from Thomson are designed to offer industry leading capacity, smoothness and quiet operation. The design allows for simple customization and cost effectiveness.

**Glide Screw™**
By combining a lead screw and a linear bearing, the GlideScrew allows designers to reduce the footprint of their equipment, improve uptime and reduce cost of ownership of the end product.
The Thomson Advantage

Smaller components enable designers to reduce the size and weight of their end product, resulting in products that are smaller, lighter, and less expensive to produce. A smaller product will also reduce packaging and transportation cost, while lessening the overall environmental impact of the equipment. Choosing Thomson as your supplier brings some additional advantages as well.

<table>
<thead>
<tr>
<th>Thomson Advantages</th>
<th>Benefits</th>
</tr>
</thead>
</table>
| Widest variety of miniature linear products on the market | • Expedited design time  
• Single source of engineering support  
• Consolidated supply base |
| Products designed to work together                          | • Online sizing and selection tools for easy design  
• Fewer installation problems  
• Higher performance equipment |
| Easy customization                                           | • Custom sizes, finishes, materials and more  
• Optimized cost, size and performance |
| Genuine Thomson quality                                      | • Fewer defects and field failures  
• Lower overall cost of ownership |
| Global company                                               | • Sales and support around the globe  
• Safe partner with proven track record  
• Knowledge about local standards and preferences |

**Miniature Lead Screws**

Thomson is a global leader in lead screw technology. Our broad offering, high quality and ability to customize set Thomson apart.

**Miniature Brakes**

Thomson Deltran Power-off brakes have been providing low cost, high performance solutions in small diameters for over 45 years. We offer brakes with the highest torque to diameter ratios on the market.

**Miniature Linear Motion Systems**

Thomson was the first company in the world to present a linear motion system. Today we offer a large range of different models including miniature sizes.

**Customization**

Thomson offers customized solutions for all our products. The customization can be anything from a minor adjustment to a completely new design. See page 15 or contact us for more information!
## Linear Motion Miniature Products Overview*

<table>
<thead>
<tr>
<th>Product Image</th>
<th>Product Group</th>
<th>Product Line Name (Product Suffix)</th>
<th>See Page</th>
<th>Basic Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lead Screws</td>
<td>Thomson BSA Lead Screw and MTS Flange Mount Supernut (MTS)</td>
<td>8</td>
<td>6 – 20 mm 3/16 – 3/4 in.</td>
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<tr>
<td></td>
<td></td>
<td>Thomson BSA Lead Screw and AFT Anti-Backlash Supernut (AFT)</td>
<td>8</td>
<td>10 mm 3/8 – 1/2 in.</td>
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<tr>
<td></td>
<td></td>
<td>Thomson BSA Lead Screw and XC Anti-Backlash Supernut (XC)</td>
<td>8</td>
<td>6 – 24 mm 3/16 – 1 in.</td>
</tr>
<tr>
<td></td>
<td>Ball Screws</td>
<td>Miniature Metric Rolled (TSI)</td>
<td>9</td>
<td>6 – 14 mm</td>
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<td></td>
<td>Linear Bearings</td>
<td>60 Casa™ Linear Race Shafting and Miniature Instrument Bearing (INST)</td>
<td>10</td>
<td>1/8 – 1/4 in.</td>
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<tr>
<td></td>
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<td>60 Casa™ Linear Race Shafting and Miniature Metric Bearing (MM)</td>
<td>10</td>
<td>3 – 12 mm</td>
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<tr>
<td></td>
<td></td>
<td>60 Casa™ Linear Race Shafting and Super Ball Bushing Bearing (SP)</td>
<td>10</td>
<td>12 – 40 mm 1/2 – 1-1/2 in.</td>
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<tr>
<td></td>
<td>Profile Rail Guides</td>
<td>Microguide™ (TSR)</td>
<td>11</td>
<td>5 – 15 mm</td>
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<tr>
<td></td>
<td>Glide Screws</td>
<td>GlideScrew™ (GS)</td>
<td>12</td>
<td>4 – 10 mm 3/16 – 3/8 in.</td>
</tr>
<tr>
<td></td>
<td>Linear Motion Systems</td>
<td>MicroStage® (MS)</td>
<td>13</td>
<td>MS25: 50 x 25 MS33: 60 x 33</td>
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</table>

## Rotary Motion Miniature Products Overview*

<table>
<thead>
<tr>
<th>Product Group</th>
<th>Product Line Name (Product Suffix)</th>
<th>See Page</th>
<th>Basic Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brakes</td>
<td>Metric Power-off Brake (MBRP)</td>
<td>14</td>
<td>37 – 75 mm</td>
</tr>
<tr>
<td></td>
<td>Spring-set Power-off Brake (FSB)</td>
<td>14</td>
<td>34.8 – 44.5 mm</td>
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</table>

*Products providing thrust | Products providing both thrust and guidance | Products providing guidance | Products providing rotary motion motion control
### Linear Motion Miniature Products Overview

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Basic Specifications</strong></td>
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</tr>
<tr>
<td>Metric</td>
<td>Inch</td>
<td>Anti-backlash or Preload Feature</td>
<td>No or Low Maintenance Required</td>
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<td></td>
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</tbody>
</table>

**Unit of Measure**
- **Metric**
- **Inch**

**Basic Specifications**
- **Unit of Measure**
- **Anti-backlash or Preload Feature**
- **No or Low Maintenance Required**
- **Noise Level**
- **Product Cost Level**
- **Stiffness Properties**
- **Accuracy Properties**
- **Corrosion Resistance Properties**
- **Thrust Capacity Level**
- **Guidance Capacity Level**

### Rotary Motion Miniature Products Overview

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<thead>
<tr>
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<tbody>
<tr>
<td><strong>Manual Release Function</strong></td>
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<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Unit of Measure**
- **Metric**
- **Inch**

**Manual Release Function**
- **No Maintenance Required**
- **Noise Level**
- **Product Cost Level**
- **Torque to Size Ratio**
- **Energy Efficiency Level**
- **Corrosion Resistance Properties**
- **Backlash Level**
- **Expected Life**

**Good**
- ✔

**Better**
- ★★

**Best**
- ★★★

*These are a small selection from our standard product ranges. More product ranges are available and most products also come in additional sizes and versions. Thomson specializes in making customized products to meet your exact specifications. See page 15 for more information.*
Applications

Miniature linear motion components are ideal for applications where precise movement of small loads is critical. In particular, they add value in instruments for medical diagnostics, test and measurement equipment and engraving and printing, as well as a broad range of fluid pumping and pick-and-place applications.

Fluid Pumping

- Medical infusion pumps
- Industrial fluid pumps
- Lubrication pumps
- Syringe pumps

Fluid pumps benefit from the smooth, precise motion of Thomson miniature components.

Diagnostic and Life Science Instruments

- Chemistry analyzers
- Hematology instruments
- Histology and microscopy instruments
- Molecular biology instruments
- Lab automation

Fluid handling machines can rely on Thomson miniature components for every axis of motion.
Applications

Test and Measurement Equipment
- Torque testers
- Load and pull testers

Cap tightening/inspection machines utilize a system of miniature Thomson components that have been engineered to work together, thereby reducing design time and overall time to market.

Robotics and Pick & Place Equipment
- Engraving, scanning, and printing machines
- Electronics manufacturing equipment
- Medical surgery manipulators/robots
- Manipulators for use in hazardous areas
- Camera inspection equipment

Other Applications
- Portable installations (e.g. bedside scanner)
- Portable ventilators
- Dosage equipment
- Electronics manufacturing equipment
- Inspection, scanning, and printing equipment
- Packaging and dispensing equipment
- Aerospace and defence applications
- Vending machines
Lead Screws
Thomson BSA Lead Screw and Supernut MTS, AFT, and XC

Main Features

Thomson BSA Lead Screw
- Lead accuracy up to 0.003 in/ft
- Highly customizable solutions for OEM applications
- Precision screw machining
- Optional materials and coatings available

Supernut MTS
- Excellent lubricity and dimensional stability
- Cost effective manufacturing including integral flange

Supernut AFT
- Designed for light load applications
- Offers smooth movement and low drag torque
- Anti-backlash adjusts for wear for the life of the nut

Supernut XC
- Utilizes Thomson BSA patented ActiveCAM technology
- Offers low drag torque and high axial stiffness
- Anti-backlash insures consistent performance and repeatability

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Website: www.thomsonlinear.com
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Performance Specifications

<table>
<thead>
<tr>
<th>Product Line</th>
<th>MTS</th>
<th>AFT</th>
<th>XC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw diameter range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>metric version</td>
<td>[mm]</td>
<td>6 – 20</td>
<td>10</td>
</tr>
<tr>
<td>Lead range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>metric version</td>
<td>[mm]</td>
<td>2 – 45</td>
<td>2 – 35</td>
</tr>
<tr>
<td>inch version</td>
<td>[in.]</td>
<td>0.05 – 2</td>
<td>0.063 – 1.2</td>
</tr>
<tr>
<td>Backlash</td>
<td>[mm]</td>
<td>&lt; 0.254</td>
<td>0</td>
</tr>
<tr>
<td>Axial design load, maximum</td>
<td>[N]</td>
<td>1225</td>
<td>110</td>
</tr>
<tr>
<td>Accuracy, standard rolled (precision rolled)</td>
<td>[µm/300 mm]</td>
<td>250 (75)</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td>designed to minimize preventative maintenance</td>
<td></td>
</tr>
</tbody>
</table>
Ball Screws
Miniature Metric Rolled Ball Screw TSI

Main Features

- Design maximizes load capacity
- Quiet and smooth performance
- Flexible ball nut mounting configurations and rapid prototyping
- Exceeding 100% more capacity than competition in most size
- Higher load capacity equates to longer life
- Precision rolled screws to T7 accuracy class

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NEW PRODUCT!

Performance Specifications

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Miniature Metric Rolled Ball Screws TSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screw diameter, nominal [mm]</td>
<td>6</td>
</tr>
<tr>
<td>Lead [mm]</td>
<td>2</td>
</tr>
<tr>
<td>Nut size (ø diam. × length) [mm]</td>
<td>16 x 22</td>
</tr>
<tr>
<td>Dynamic load capacity (kN)</td>
<td>1.6</td>
</tr>
<tr>
<td>Static load capacity [kN]</td>
<td>2.1</td>
</tr>
<tr>
<td>Length of screw, maximum [mm]</td>
<td>1000</td>
</tr>
<tr>
<td>Axial backlash, maximum [mm]</td>
<td>0.15 (0.05 on request)</td>
</tr>
<tr>
<td>Material</td>
<td>carbon steel (stainless on request)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>high load density insures maximum life</td>
</tr>
</tbody>
</table>

(1) L10 life is based on one million revolutions.
Linear Bearings
60 Case™ Linear Race Shafting and Linear Bearing INST, MM, and SP

Main Features

60 Case Linear Race Shafting
• Manufactured to the highest quality standards
• Different materials, surface treatments, and special machining available

Miniature Instrument Bearing (INST)
• Very high accuracy and responsiveness
• For smaller loads

Miniature Metric Bearing (MM)
• Light and compact
• Up to 27 times longer life than conventional linear bearings

Super Ball Bushing Bearing (SP)
• Low cost, easy to install and long life
• Industry standard for self-aligning linear bearings

Performance Specifications

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Miniature Instrument INST</th>
<th>Miniature Metric MM</th>
<th>Super Ball Bushing SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of measure version</td>
<td>Inch</td>
<td>Metric</td>
<td>Metric</td>
</tr>
<tr>
<td>Shafting size range</td>
<td></td>
<td></td>
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<tr>
<td>metric version</td>
<td>[mm]</td>
<td>1/8 – 1/4</td>
<td>3 – 12</td>
</tr>
<tr>
<td>inch version</td>
<td>[in.]</td>
<td></td>
<td></td>
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<tr>
<td>Dynamic bearing load, maximum</td>
<td>[N]</td>
<td>84</td>
<td>650</td>
</tr>
<tr>
<td>metric version</td>
<td>[lbf]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>inch version</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Linear speed, maximum</td>
<td>[m/s]</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Friction coefficient</td>
<td></td>
<td>0.001 - 0.004</td>
<td></td>
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<tr>
<td>Bearing material (standard configuration)</td>
<td>440 stainless steel</td>
<td>carbon steel and delrin</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td>light lubrication</td>
<td></td>
</tr>
</tbody>
</table>
Profile Rail Guides
MicroGuide™ TSR

Main Features
- Low profile
- Comes in two profile styles - standard and wide
- Available in two accuracy classes - H and P
- Very quiet and smooth operation
- Low weight
- Industry standard, drop-in replacement
- High moment load capacity
- Two track gothic arch ball groove geometry enables single rail application

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Performance Specifications

<table>
<thead>
<tr>
<th>Product Line</th>
<th>TSR5Z</th>
<th>TSR7Z</th>
<th>TSR7ZW</th>
<th>TSR9Z</th>
<th>TSR9ZW</th>
<th>TSR12Z</th>
<th>TSR12ZW</th>
<th>TSR15Z</th>
<th>TSR15ZW</th>
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<td>Size of carriage and rail (w x h) [mm]</td>
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<td>8 x 17</td>
<td>9 x 25</td>
<td>10 x 20</td>
<td>12 x 30</td>
<td>13 x 27</td>
<td>14 x 40</td>
<td>16 x 32</td>
<td>16 x 60</td>
</tr>
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<td>Rail length, minimum/maximum [mm]</td>
<td>40/160</td>
<td>40/1000</td>
<td>50/1010</td>
<td>55/1015</td>
<td>50/1010</td>
<td>70/1020</td>
<td>70/1030</td>
<td>150/1030</td>
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<td>Dynamic load, maximum [N]</td>
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<td>924</td>
<td>1370</td>
<td>1544</td>
<td>2450</td>
<td>2780</td>
<td>4020</td>
<td>4410</td>
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<tr>
<td>Linear speed, maximum [m/s]</td>
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<td>924</td>
<td>1370</td>
<td>1544</td>
<td>2450</td>
<td>2780</td>
<td>4020</td>
<td>4410</td>
<td>6660</td>
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<tr>
<td>Accuracy [± mm]</td>
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<td>up to 0.01</td>
<td>up to 0.01</td>
<td>up to 0.01</td>
<td>up to 0.01</td>
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<td>up to 0.01</td>
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<td>440 stainless steel</td>
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<tr>
<td>Maintenance</td>
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<td>little or no lubrication</td>
<td>little or no lubrication</td>
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<td>little or no lubrication</td>
<td>little or no lubrication</td>
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<td>little or no lubrication</td>
<td>little or no lubrication</td>
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</tbody>
</table>
Glide Screws
Glide Screw™ GS

Main Features

- Lead screw and linear bearing combined
- Aligned from factory
- Side load and moment load capable
- Integrated lubrication block - no maintenance required
- Smooth and quiet motion
- Cylindrical or flanged nuts available
- Versions for high temperature, clean room and food grade applications available

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Performance Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Glide Screw™</th>
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<tr>
<td>Screw diameter</td>
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<tr>
<td>metric version</td>
<td>[mm]</td>
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<tr>
<td>inch version</td>
<td>[in.</td>
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<tr>
<td>Screw lead</td>
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<tr>
<td>metric version</td>
<td>[mm]</td>
</tr>
<tr>
<td>inch version</td>
<td>[in.</td>
</tr>
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<td>Screw length, maximum</td>
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<tr>
<td>metric version</td>
<td>[mm]</td>
</tr>
<tr>
<td>inch version</td>
<td>[in.</td>
</tr>
<tr>
<td>Axial load, maximum</td>
<td></td>
</tr>
<tr>
<td>metric version</td>
<td>[N]</td>
</tr>
<tr>
<td>inch version</td>
<td>[lbs]</td>
</tr>
<tr>
<td>Moment load, maximum</td>
<td></td>
</tr>
<tr>
<td>metric version</td>
<td>[N\text{m}]</td>
</tr>
<tr>
<td>inch version</td>
<td>[in-lbs]</td>
</tr>
<tr>
<td>Maintenance</td>
<td>maintenance free</td>
</tr>
</tbody>
</table>

NEW PRODUCT!
Linear Motion Systems
MicroStage® MS25 and MS33

Main Features
- Ultra compact
- Low cost
- Low weight
- High accuracy and repeatability
- Smooth motion
- Corrosion resistant options available
- RediMount motor mounting kit included

Microsite: www.thomsonlinear.com/mini
Please visit our microsite for more information on our miniature products offering.

Website: www.thomsonlinear.com
Please visit the linear motion systems section on our website. Here you can see our complete range of linear motion systems and also find useful resources such as:
- Product selector
- Linear Motioneering sizing and selection software
- CAD models
- Webinars
- Literature and technical articles

Performance Specifications

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Microstage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>MS25</td>
</tr>
<tr>
<td>Profile size (width x height) [mm]</td>
<td>50 x 25</td>
</tr>
<tr>
<td>Dynamic carriage load, maximum [N]</td>
<td>100</td>
</tr>
<tr>
<td>Stroke length, maximum [mm]</td>
<td>705.5</td>
</tr>
<tr>
<td>Linear speed, maximum [m/s]</td>
<td>0.85</td>
</tr>
<tr>
<td>Accuracy [± mm]</td>
<td>0.18 / 300 mm</td>
</tr>
<tr>
<td>Repeatability [± mm]</td>
<td>0.005</td>
</tr>
<tr>
<td>Type of screw</td>
<td>lead screw</td>
</tr>
<tr>
<td>Maintenance</td>
<td>lubrication of screws and guides</td>
</tr>
</tbody>
</table>
## Brakes

### Power-off Brakes, MBPR, and FSB

#### Main Features

**MBRP series**
- Spring-set electromagnetic power-off brake
- Five frame sizes
- Low cost
- Simple installation
- Superior torque to size ratio
- Energy efficient
- Optional manual release lever available
- UL recognized component

**FSB series**
- Spring-set electromagnetic power-off brake
- Two frame sizes
- Low cost
- Simple installation
- Superior torque to size ratio
- Energy efficient

#### Performance Specifications

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Metric Power-off Brake</th>
<th>Power-off Brake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>MBRP15</td>
<td>MBRP19</td>
</tr>
<tr>
<td>Body diameter [mm]</td>
<td>37</td>
<td>47</td>
</tr>
<tr>
<td>Body length [mm]</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Mounting hole bolt circle diameter [mm]</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>Hub bore sizes [mm]</td>
<td>5, 6</td>
<td>6, 7</td>
</tr>
<tr>
<td>Static torque [Nm]</td>
<td>0.24</td>
<td>0.5</td>
</tr>
<tr>
<td>Power [W]</td>
<td>5</td>
<td>6.5</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Supply voltages (standard) [VDC]</td>
<td>12, 24, 90</td>
<td></td>
</tr>
</tbody>
</table>

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#### Website: www.thomsonlinear.com

Please visit the clutches and brakes section on our website. Here you can see our complete range of clutches and brakes and also find useful resources such as:

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- Webinars
- Literature and technical articles
Customization

Applications often have unique challenges that cannot always be solved by an off-the-shelf solution. Thomson specializes in providing custom engineered solutions quickly and cost effectively to address these requirements.

Thomson has proven that custom designs can offer the optimum performance and overall cost. 3D CAD design, rapid prototyping and flexible manufacturing have made customization a faster process, once the product is ready and approved it will be manufactured and shipped as quickly as a standard product.

## Selection of Customization Possibilities

<table>
<thead>
<tr>
<th>Type of customization</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Custom materials</td>
<td>• Stainless steel bearings or an aluminium/plastic housing</td>
</tr>
<tr>
<td></td>
<td>• Nuts or bushings made in a special metal, plastic, composite or ceramic material</td>
</tr>
<tr>
<td></td>
<td>• Replacement of hardware to meet demands in special environments</td>
</tr>
<tr>
<td>Custom surface treatment</td>
<td>• Paint of different quality or/and color</td>
</tr>
<tr>
<td></td>
<td>• Thicker anodization on aluminum parts</td>
</tr>
<tr>
<td></td>
<td>• Specially coated screws or sliding surfaces (PTFE, chrome, black oxide, etc.)</td>
</tr>
<tr>
<td>Custom size or geometry</td>
<td>• Non standard stroke lengths</td>
</tr>
<tr>
<td></td>
<td>• Custom end machining or motor/mounting interfaces</td>
</tr>
<tr>
<td></td>
<td>• Special nut, carriage or flange designs</td>
</tr>
<tr>
<td>Custom assemblies</td>
<td>• Product shipped with mounting brackets, gearboxes or/and motors mounted</td>
</tr>
<tr>
<td></td>
<td>• Product shipped in parts or sub assemblies for the customer to assemble</td>
</tr>
<tr>
<td></td>
<td>• Product shipped mounted to the customers equipment</td>
</tr>
<tr>
<td>Custom services</td>
<td>• Special lubrication</td>
</tr>
<tr>
<td></td>
<td>• Special stocking or transportation program</td>
</tr>
<tr>
<td></td>
<td>• Training of engineers, maintenance or other personnel</td>
</tr>
<tr>
<td></td>
<td>• Special service, repair or/and maintenance program</td>
</tr>
<tr>
<td></td>
<td>• Special packaging, testing, certification or quality control procedures</td>
</tr>
<tr>
<td></td>
<td>• Engineering evaluation</td>
</tr>
<tr>
<td>New designs</td>
<td>• Change or combine one or several products in to a new product</td>
</tr>
<tr>
<td></td>
<td>• Clean sheet designs</td>
</tr>
</tbody>
</table>
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