



Lead Screws

High-Quality Lead Screws for Smooth, Precise and Reliable Positioning





*Linear Motion. **Optimized.***[™]

Thomson – the Choice for Optimized Motion Solutions

Often the ideal design solution is not about finding the fastest, sturdiest, most accurate or even the least expensive option. Rather, the ideal solution is the optimal balance of performance, life and cost.

The Best Positioned Supplier of Linear Motion Technology

Thomson has several advantages that make us the supplier of choice for motion control technology.

- Thomson provides the broadest standard product offering of linear motion technologies in the industry.
- Modified versions of standard product or white sheet design solutions are routine for us.
- Choose Thomson and gain access to more than 70 years of global application experience in industries including packaging, factory automation, material handling, medical, clean energy, printing, automotive, machine tool, aerospace and defense.
- As part of Altra, we are financially strong and unique in our ability to bring together control, drive, motor, power transmission and precision linear motion technologies.

A Name You Can Trust

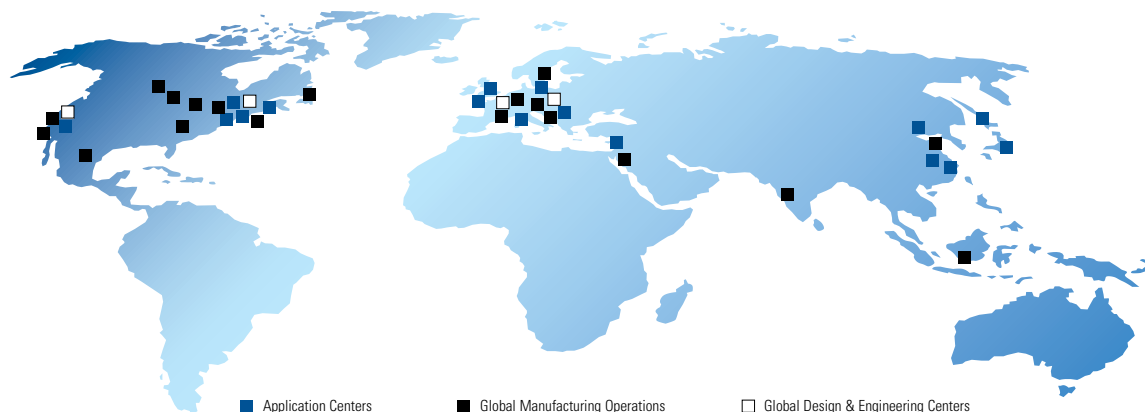
A wealth of product and application information as well as 3D models, software tools, our distributor locator and global contact information is available at www.thomsonlinear.com. For assistance, contact your local sales office (contact information listed on the back of catalog).

Talk to us early in the design process to see how Thomson can help identify the optimal balance of performance, life and cost for your next application. And call us or any of our 2000+ distribution partners around the world for fast delivery of replacement parts.

The Altra Business System

The Altra Business System (ABS) 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. ABS is based on the principles of Kaizen, which continuously and aggressively eliminate waste in every aspect of our business. ABS 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, Thomson is able to provide you faster times to market as well as unsurpassed product selection, service, reliability and productivity.

Local Support Around the Globe



Company Overview	4
Technology Comparison	5
Product Overview	7
Glide Screw	10
Advanced Anti-Backlash Supernuts	12
Flange Mount Supernuts	23
Thread Mount Supernuts	26
Metric Thread Mount Supernuts	29
Thread Mount Bronze Nuts	30
Standard Mounting Flanges	32
Lead Screws	33
V-Thread Screws	36
Screw Assemblies	37
TriGEL Grease	44
PTFE Coating	45
Engineering	46

Company Overview

The very best of the Thomson, Warner, BSA and Neff ball and lead screw lines are now combined to form the most complete product offering in the industry

Thomson has a long history of manufacturing quality lead screws. Our roots are planted in four separate companies that held strong and definitive footholds in the market. Those companies — **Ball Screws & Actuators Co, Warner Linear, Thomson Industries, and Neff Automation** — now form the nucleus of the Thomson lead screw business.

Founded in 1971, the **Ball Screws & Actuators Co. (BSA)** was a pioneer and leader in precision plastic nut, lead screw and ball screw technologies for linear motion applications. Their custom and off-the-shelf solutions featured many patented products, including their ActiveCAM technology for eliminating backlash while increasing performance and wear life.

Tollo Linear was founded in 1982 and manufactured linear actuators, linear drive units and handling components under a variety of trademarked product names. Its products were sold to direct customers, OEM manufacturers, and system houses throughout the world. In 1989, Tollo Linear was purchased by Warner Electric and the new division became known as **Warner Linear**.

Thomson Industries was the leading U.S. producer of linear motion control products, including linear actuators, ball screws, linear bearings and rails, and precision gearboxes. Its products were found in a range of precision motion applications in the medical, industrial, aerospace and mobile off-highway markets.

Neff Automation was founded in 1905 and has since been a leading manufacturer of industrial products for linear motion applications. In the past four decades Neff has become a market leader in high precision rolled ball screws, providing solutions for customers all across the globe.

The current lead screw offering combines the quality, strength and expertise of the distinct products and professionals at these four companies under the **Thomson** name. The products set the solid foundation for the broad range of standard and custom lead screws available today. If past history and experience are an indication of what the future holds, Thomson is significantly poised to remain a prominent leader and pioneer in the lead screw industry.

**Thomson Industries
Warner Linear
Neff Automation
Ball Screws and Actuators (BSA)**



Linear Motion. Optimized.™

Technology Comparison

Thomson Lead and Ball Screws Are Your Best Choice for Linear Motion

Thomson's comprehensive range of lead and ball screws outperform other linear motion methods and allows you to find the optimal solution for your positioning needs.

Compared to bulky, noisy and expensive hydraulic or pneumatic systems, Thomson lead and ball screws are compact, quiet and affordable. In addition, there's no need for pumps, hoses, fluids or shop air. This eliminates fire, safety and health hazards due to leaking fluid or other contaminants typically associated with these types of solutions.

Belt, cable and chain-drive mechanisms are relatively inexpensive. However, they aren't as precise, repeatable or as safe to use as lead and ball screws. Their failure mode is either excessive wear or stretching, resulting in positioning inaccuracies during operation. These types of systems also have low load capacities.

Rack and pinion gear systems can be made to close tolerances but lose precision as they wear and don't function as smoothly as lead and ball screws, even when new. Because the force is supported by a few pinion teeth at any given time, the system also is limited in terms of load capacity.

Offset cam rollers rely on the tractive force between the rollers and the shaft to create linear motion, and therefore can handle only moderate loads. The higher the load, the more likely it is that the system will slip, reducing repeatability. In summary, when compared to other types of linear motion solutions, Thomson lead and ball screws provide the superior combination of speed, accuracy, efficiency, repeatability, quiet operation, lubrication retention, load capacity and compactness.

Thomson lead and ball screws excel in applications which require the "just-right" solution. They are easily customized to provide compact, quiet and accurate positioning in light-to-medium load applications. Materials are inert as a standard and allow use in applications ranging from clean rooms to marine. Best of all, the value is high as you don't pay for processes and features not required in your application.

The table below illustrates how Thomson lead and ball screws stacks up against other linear motion positioning solutions. On the next page, you can see a more detailed comparison between Thomson lead and ball screws to help you choose between the two. You can also contact Thomson customer support to let our application engineers help you select the optimal screw for your application.

Thomson Lead and Ball Screws vs. Other Linear Motion Positioning Solutions

	Thomson Lead & Ball Screws (lead / ball)	Fluid Power	Belt, Cable and Chain-Drive Mechanisms	Rack & Pinion	Offset Cam Rollers	Pneumatic Cylinders
Inexpensive	● / ●	○	●		●	
Low Power Consumption	/ ●		●	●	●	
Low Maintenance	● / ●		○	○	○	●
High Accuracy	/ ●					
High Repeatability	○ / ●					
High Efficiency	/ ●			○	○	
High Load Capacity	/ ●	●				○
Compact Size	● / ●			●		○
Speed	● / ●		●	●		●
Low Noise	● / ○		○		○	
Design Flexibility	● / ●			○		
Contamination Tolerance	● / ○	●				

● = always
○ = in most cases

Technology Comparison

Design Considerations for Choosing Between Lead and Ball Screws

Design Considerations	Thomson Lead Screws	Thomson Ball Screws
Load	Typically light (<100 lbs.)	Usually heavy (>100 lbs.)
Cost	Low cost \$\$	Higher cost \$\$\$
Anti-backlash	Available — but has low stiffness	Available
Self-locking	Yes — but depends on lead and lubrication	Fail safe brake locking option
Efficiency	Generally ranges from 30 to 70%	Generally ranges from 85 to 95%
Duty Cycle	Limited to plastic heat transfer properties	Unlimited
Corrosion Resistance	Available in stainless steel as a standard	Wide range of available sizes in stainless steel, as well as coating and plating options
Lubrication	Can operate with or without lubrication depending on application	Must have lubrication Wide range of lubricants
Operating Temperature	Limited to expansion differences between the screw and the nut	Wide temperature range
Travel Speed	Available in wide range of leads	Typically mid-range leads
Vibration and Noise	Typically quiet, high leads are best	Ball re-circulation
Custom Availability	Great flexibility in customizing materials and geometry	Great flexibility in customizing materials and geometry — limited by ball path envelope
Catalog Page	7	See separate catalog

Product Overview

Lead Screws

Thomson precision lead screws are an excellent economical solution for your linear motion requirements. For more than 30 years, Thomson has designed and manufactured the highest-quality lead screw assemblies in the industry. Our precision rolling machines ensure accurate positioning to 0.003 in/ft, and our PTFE coating process produces assemblies that have less drag torque and last longer.

Thomson provides a large array of standard plastic nut assemblies in anti-backlash or standard Supernut® designs. All of our standard plastic nut assemblies use an internally lubricated Acetal, providing excellent lubricity and wear resistance with or without additional lubrication. With our unique zero-backlash designs, Thomson provides assemblies with high axial stiffness and the absolute minimum drag torque to reduce motor requirements. These designs produce products that cost less, perform better and last longer. Both designs automatically adjust for wear, ensuring zero backlash for the life of the nut.

For significantly higher loads, standard bronze nuts are available. Thomson uses SAE 660 bearing bronze, which provides high load capacity with good PV performance. We also offer end machining to your specification or can provide you with stock bearing mounts or motor mounts. Thomson bronze nuts are available from more than 1800 distributors worldwide.

Thomson also provides engineering design services to aid in your design requirements and produces lead screw assemblies to your specifications. Contact customer support for more information.



Product Overview

Lead Screw Product Summary

Series	Thomson Precision Lead Screw	
	Inch	Metric
Lead accuracy	0.010"/ft. for standard 0.003"/ft. for precision	250 micron/300mm for standard 75 micron/300mm for precision
Diameter	0.187" - 1.500"	6 - 24 mm
Lead	0.013" - 2.00"	0.5 - 50.0 mm
Backlash	0.010" (max)	0.25 mm (max)
Dynamic Load	Up to 400 lbs*	Up to 1.3 kN*
Max. Static Load	Up to 2,000 lbs*	Up to 6.6 kN*
Catalog Pages	11 - 39	11 - 39

* Plastic nut ratings. Does not include bronze nut specifications.

Lead Screw Product Availability

	Inch	Lead (in.)																		
		0.031	0.050	0.063	0.083	0.100	0.125	0.167	0.200	0.250	0.300	0.375	0.400	0.500	0.750	0.800	1.000	1.200	1.500	2.000
Dia. (in.)	3/16		●			●	●		●			●	●	●						
	1/4	●	●	●			●		●	●				●	●					
	5/16				●			●		●				●			●			
	3/8		●	●	●	●	●	●	●	●	●	●		●	●		●	●		
	7/16						●			●				●						
	1/2			●		●			●	●				●		●	●		●	
	5/8					●	●		●	●				●						
	3/4					●	●	●	●					●			●		●	●
	1					●	●		●	●				●			●			
	1-1/4								●	●										
	1-1/2								●	●		●		●						

	Metric	Lead (mm)															
		1	2	3	4	5	6	8	10	12	15	16	20	25	35	45	50
Dia. (mm)	4	●			●			●									
	6	●	●	●			●			●							
	10		●	●	●	●	●		●	●			●				
	12			●	●	●	●		●		●			●		●	
	16				●	●		●				●		●	●		
	20				●			●		●		●	●			●	●
	24					●											

Availability charts do not include V-thread screw leads.

Product Overview

Glide Screw™

What is a Glide Screw? Part linear bearing and part lead screw, it is combination of two favorites to create something better than both. The Glide Screw brings high performance, fast installation and less complexity in a small package. Inch and metric sizes are standard, and custom sizes are available quickly and to your specification.

Standard Sizes and Configurations Stocked

- Metric Series includes 4, 6 and 10 mm nominal diameters
- Inch Series includes 3/16", 1/4" and 3/8" nominal diameters
- Flanged and cylindrical nut bodies standard

Optional Configurations for Harsh Environments Available

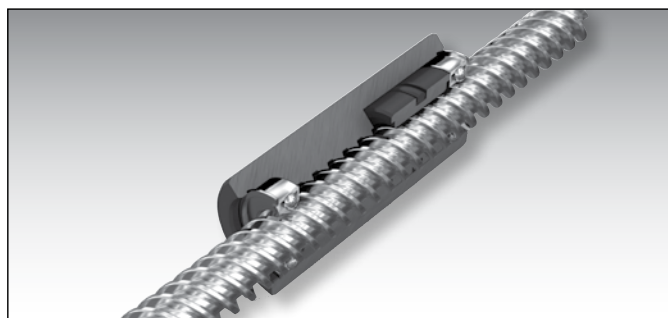
- High temperature resistant – inside ovens or autoclaves to up to 175 °C (347 °F)
- Clean room – in robot vacuum chambers, laboratories or medical equipment (ISO 6)
- Food grade – in packaging and food processing equipment

Easy to Install and Maintenance Free

- All required is a Glide Screw and an anti-rotation feature
- No need for reference surfaces or the pain of "floating" your system into alignment
- Plug and play means you can install it and forget it
- Integrated Thomson's Lube for Life technology
- Bearing-grade plastic and stainless steel construction standard

Reduced Footprint

- Integrated lead screw / linear bearing
- Side load / moment load capable



Improved Equipment Uptime

- Screw and linear bearing are already aligned
- Component alignment is not critical – smooth and quiet motion
- Integrated lubrication block – Thomson Lube for Life standard

Lower Cost of Ownership

- Less complexity – faster installation
- Less components – simpler bill of material
- Maintenance free – no lubrication required

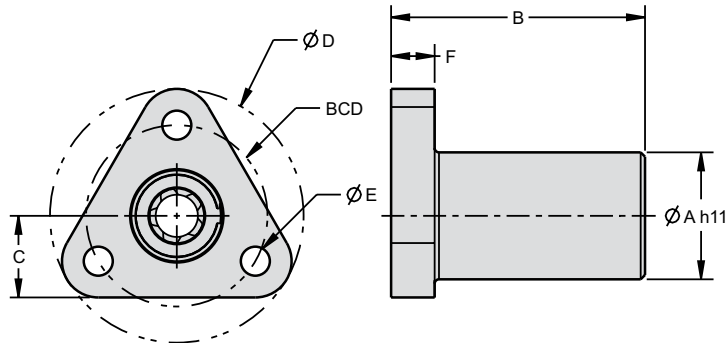
Custom Nut Configurations, Screw Diameters and Thread Leads Available

- If you can't find your ideal configuration, contact us. We can customize to your specifications.

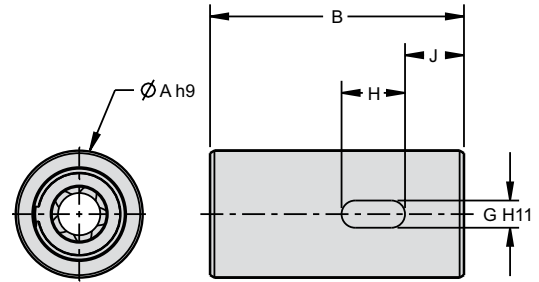


Glide Screw™

GSF - screw and flanged nut assembly



GSC - screw and cylindrical nut assembly



Part number example: GSC25x0500 = glide screw assembly, cylindrical nut, 0.250 inch diameter by 0.500 inch lead

Inch Series Dimensions

Screw Diam. [in]	Screw Lead [in]	Screw and Nut Assembly Part No.	Max Axial Load [lbs]	Max Moment Load [in-lbs]	Max Screw Length [in]	Dimensions [in]										Effic.* [%]
						A	B	C	D	E	F	G	H	J	BCD	
0.188	0.050	GS_18x0050	30.0	20.5	6.000	0.375	0.750	0.281	0.875	0.140	0.125	0.094	0.188	0.177	0.625	46
	0.125	GS_18x0125														68
0.250	0.050	GS_25x0050	45.0	47.5	10.000	0.500	1.000	0.313	1.000	0.140	0.150	0.125	0.250	0.237	0.750	40
	0.500	GS_25x0500														82
0.375	0.063	GS_37x0063	70.0	137.5	18.000	0.875	1.750	0.563	1.750	0.200	0.300	0.188	0.438	0.406	1.188	36
	0.500	GS_37x0500														78
	1.000	GS_37x1000														83

Metric Series Dimensions

Screw Diam. [mm]	Screw Lead [mm]	Screw and Nut Assembly Part No.	Max Axial Load [N]	Max Moment Load [Nm]	Max Screw Length [mm]	Dimensions [mm]										Effic.* [%]
						A	B	C	D	E	F	G	H	J	BCD	
4	1	GS_4x1M	89.0	2.3	150	10	20	6.5	20	2.5	3	2	5	5	15	45
	4	GS_4x4M														75
	8	GS_4x8M														82
6	1	GS_6x1M	133.4	5.4	250	13	26	7.75	25	3.5	4	3	7	5.75	19	36
	6	GS_6x6M														75
	12	GS_6x12M														82
10	2	GS_10x2M	311.4	15.5	450	22	44	14	44	5	7	4	10	9.85	30	40
	6	GS_10x6M														66
	12	GS_10x12M														77

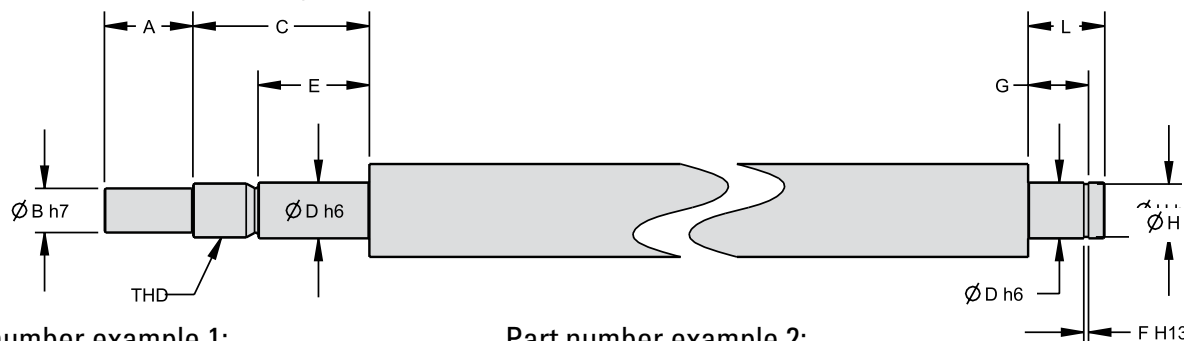
Standard Products

- Acetal nut body with all stainless steel internal components
- 303 stainless steel screw
- Integrated Lube for Life lubrication block
- Temperature Rating: 0° to 65° C (32° to 150° F)

* Efficiency stated for applied axial load only. Moment load reduces efficiency proportional to the magnitude applied. Reduction of up to 50% of the efficiency stated here are possible.

Glide Screw™

Recommended end machining



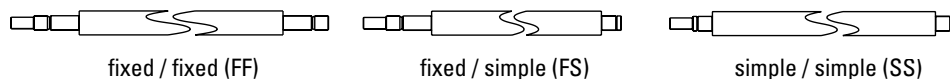
Part number example 1:

Glide screw with flanged nut: GSF
 Diam. 6 mm, lead 12 mm, metric: 6X12M
 Fixed / fixed end support type: FF
 Overall length 200 mm: -200
 Complete part number: GSF6X12MFF-200

Part number example 2:

Glide screw with cylindrical nut: GSC
 Diam. 3/8", lead 0.500" 37X0500M
 Fixed / simple end support type: FS
 Overall length 12.0": -12.0
 Complete part number: GSC37X0500MFS-12.0

End support type



Inch Series End Machining Dimensions																	
Screw Diam. [in]	Screw Lead [in]	Screw Part No.	Root Diameter [in]	Recommended Bearing				Dimensions [in]									
				OD [mm]	ID [mm]	W [mm]	Bearing Trade No.	A	B	C	D	E	F	G	H	L	THD
0.188	0.050	GS18x0050	0.12	7	2.5	2.5	692X	0.197	0.098	N/A	0.098	N/A	0.022	0.120	0.075	0.157	N/A
	0.125	GS18x0125	0.13														
0.250	0.050	GS25x0050	0.19	13	4	5	624	0.295	0.118	0.610	0.157	0.374	0.020	0.217	0.150	0.256	M4×x0.5
	0.500	GS25x0500	0.16														
0.375	0.063	GS37x0063	0.30	19	6	6	626	0.394	0.197	0.728	0.236	0.453	0.030	0.266	0.220	0.315	M6×0.75
	0.500	GS37x0500	0.27														
	1.000	GS37x1000	0.24														

Metric Series End Machining Dimensions																	
Screw Diam. [mm]	Screw Lead [mm]	Screw Part No.	Root Diameter [mm]	Recommended Bearing				Dimensions [mm]									
				OD [mm]	ID [mm]	W [mm]	Bearing Trade No.	A	B	C	D	E	F	G	H	L	THD
4	1	GS4x1M	2.8	7	2.5	2.5	692X	5.00	2.50	N/A	2.50	N/A	0.55	3.05	1.90	4.00	N/A
	4	GS4x4M	2.8														
	8	GS4x8M	2.8														
6	1	GS6x1M	4.6	13	4	5	624	7.50	3.00	15.50	4.00	9.50	0.51	5.51	3.81	6.50	M4×x0.5
	6	GS6x6M	4.4														
	12	GS6x12M	4.4														
10	2	GS10x2M	7.3	13	6	6	626	10.00	5.00	18.50	6.00	11.50	0.76	6.76	5.59	8.00	M6×0.75
	6	GS10x6M	8.4														
	12	GS10x12M	8.4														

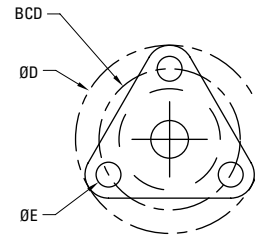
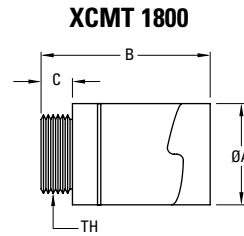
Advanced Anti-Backlash Supernuts®

XCM 1800

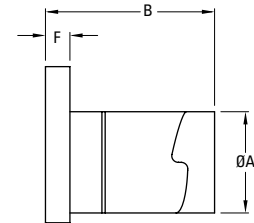


Our smallest anti-backlash nut design ever. The XCM 1800 uses the same patented† ActiveCAM™ mechanism as its larger siblings in a miniaturized package. This allows backlash free operation in space critical applications requiring high accuracy and low drag torque. This cost effective solution is available in either flanged or threaded versions. TriCoat® PTFE dry film lubricant is available as an option on most screws.

Note: See Screw Section on page 33. Specify XCMT or XCMF when ordering, see drawings at right.



XCMF 1800



Dia.	Lead	Part No.	Supernut® Dimensions								Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	BCD	TH			
3/16"	0.050	XCM_1820	0.50	0.90 (max)	0.200	1.00	0.143	0.18	0.750	7/16"-20	5 lbs	49	< 1
	0.100	XCM_2-1820										66	
	0.125	XCM_3-1824										70	
	0.200	XCM_4-1820										77	
	0.375	XCM_8-1821										81	
	0.400	XCM_8-1820										82	
	0.500	XCM_10-1820										82	
6mm*	1mm	XCM_6x1M	0.50	0.90 (max)	0.200	1.00	0.143	0.18	0.750	7/16"-20	5 lbs	29	< 1
1/4"*	0.0125	XCM_2580	0.50	0.90 (max)	0.200	1.00	0.143	0.18	0.750	7/16"-20	5 lbs	13	< 1
	0.0208	XCM_2548										20	
	0.0250	XCM_2540										23	
	0.0278	XCM_2536										25	
	0.0313	XCM_2532										28	
	0.0357	XCM_2528										30	
	0.0417	XCM_2524										34	
1/4"	0.050	XCM_2520	0.50	0.90 (max)	0.200	1.00	0.143	0.18	0.750	7/16"-20	5 lbs	41	< 1
	0.063	XCM_2516										48	
	2mm	XCM_2-25x1M										53	
	3mm	XCM_3-25x1M										62	
	0.125	XCM_2-2516										64	
	0.200	XCM_4-2520										72	
	0.250	XCM_4-2516										76	
	0.500	XCM_7-2514										81	

* V-Thread screws, see page 36.

† Patent No. 5839321

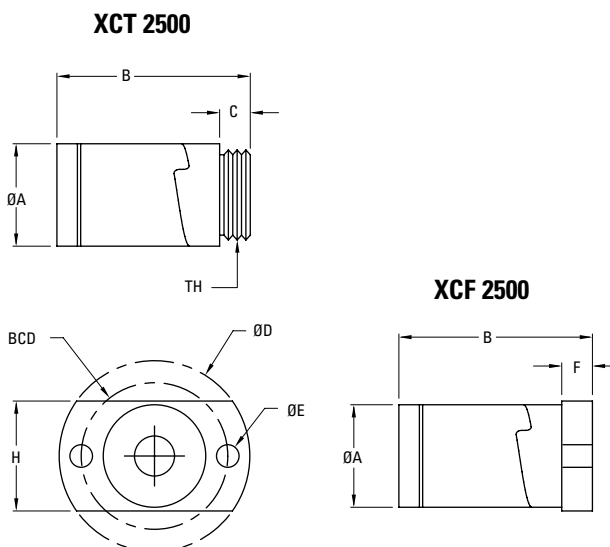
Advanced Anti-Backlash Supernuts®

XC 2500



The XC Mode assembly is the most advanced anti-backlash nut design. The unique patented† ActiveCAM™ accomplishes high axial stiffness and the absolute minimum drag torque. This advantage produces assemblies that cost less, perform better and last longer. The ActiveCAM automatically adjusts for wear, ensuring zero backlash for the life of the nut.

Note: See Screw Section on page 33. Specify XCT or XCF when ordering, see drawings at right.



Dia.	Lead	Part No.	Supernut® Dimensions									Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	H	BCD	TH			
6 mm	1 mm	XC_6x1M	0.64	1.18 (max)	0.187	1.19	0.141	0.16	0.66	0.900	9/16" -18	10lbs	29	<1
1/4"	0.0125	XC_2580	0.64	1.18 (max)	0.187	1.19	0.141	0.16	0.66	0.900	9/16" -18	10lbs	13	<1
	0.0208	XC_2548											20	
	0.0250	XC_2540											23	
	0.0278	XC_2536											25	
	0.0313	XC_2532											28	
	0.0357	XC_2528											30	
	0.0417	XC_2524											34	
1/4"	0.050	XC_2520	0.64	1.18 (max)	0.187	1.19	0.141	0.16	0.66	0.900	9/16" -18	10lbs	41	<1
	0.063	XC_2516											48	
	2 mm	XC_2-25x1M											53	
	3 mm	XC_3-25x1M											62	
	0.125	XC_2-2516											64	
	0.200	XC_4-2520											72	
	0.250	XC_4-2516											76	
	0.500	XC_7-2514											81	

* V-Thread screws, see page 36.

† Patent No. 5839321

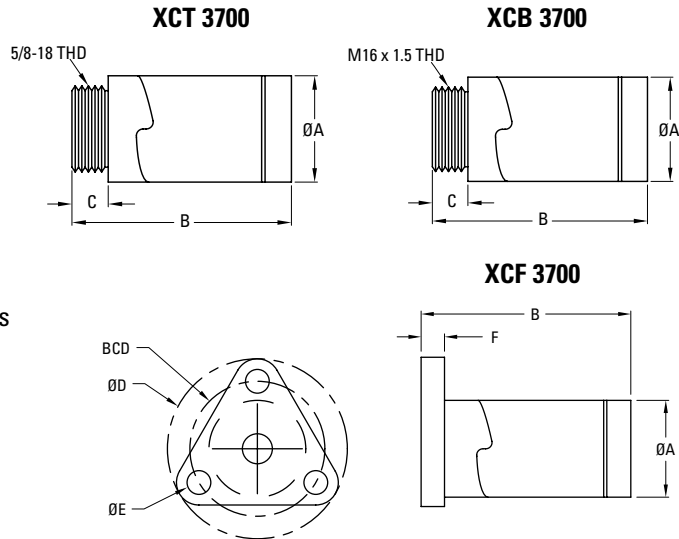
Advanced Anti-Backlash Supernuts®

XC 3700



The XC Model Anti-Backlash assembly is the most advanced anti-backlash nut design. The unique patented† ActiveCAM™ accomplishes high axial stiffness and the absolute minimum drag torque. This advantage produces assemblies that cost less, perform better and last longer. The ActiveCAM automatically adjusts for wear ensuring zero backlash for the life of the nut.

Note: See Screw Section on page 33. Specify XCT, XCB or XCF when ordering, see drawings at right.



Dia.	Lead	Part No.	Supernut® Dimensions							Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	BCD			
5/16"	0.083	XC_3112	0.82	1.875 (max)	0.25	1.5	0.2	0.2	1.125	25 lbs	49	1 - 3
	0.167	XC_2-3112									65	
	0.250	XC_2-3108									72	
	0.500	XC_4-3108									80	
3/8"	0.050	XC_3720	0.82	1.875 (max)	0.25	1.5	0.2	0.2	1.125	25 lbs	32	1 - 3
	0.063	XC_3716									36	
	2mm	XC_37x2M									42	
	0.083	XC_3712									44	
	0.100	XC_3710									49	
	0.125	XC_3708									53	
	0.167	XC_2-3712									60	
	0.200	XC_2-3710									65	
	0.250	XC_2-3708									68	
	0.300	XC_3-3710									73	
	0.375	XC_4-3711									75	
	0.500	XC_4-3708									79	
	0.750	XC_6-3708									82	
10mm	2 mm	XC_10x2M	0.82	1.875 (max)	0.25	1.5	0.2	0.2	1.125	25 lbs	41	1 - 3
	3 mm	XC_10x3M									53	
	4 mm	XC_2-10x2M									59	
	5 mm	XC_2-10x2.5M									64	
	6 mm	XC_4-10x1.5M									67	
	10 mm	XC_5-10x2M									76	
	12 mm	XC_5-10x2-4M									78	
	20 mm	XC_6-10x3.3M									81	

† Patent No. 5839321

Advanced Anti-Backlash Supernuts®

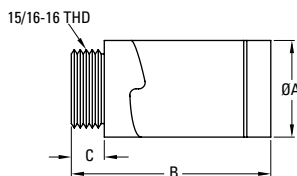
XC 5000



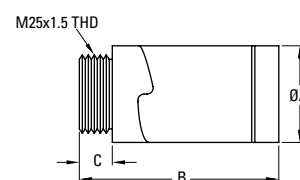
The XC 5000 utilizes the same patented† ActiveCAM™ as found in the XC 3700 model. Along with the very low drag torque and high axial stiffness advantages, the XC 5000 has greater load capacity.

Note: See Screw Section on page 33. Specify XCT, XCB or XCF when ordering, see drawings at right.

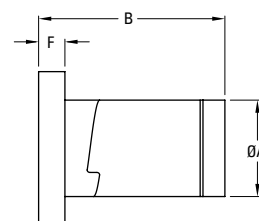
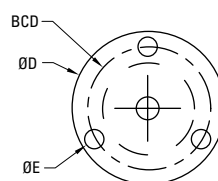
XCT 5000



XCB 5000



XCF 5000



Dia.	Lead	Part No.	Supernut® Dimensions							Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	BCD			
7/16"	0.125	XC_2-4316	1.12	2.25 (max)	0.375	1.75	0.2	0.3	1.406	125 lbs	55	1 - 3
	0.250	XC_2-4308									65	
	0.500	XC_4-4308									76	
12mm	3 mm	XC_12x3M	1.12	2.25 (max)	0.375	1.75	0.2	0.3	1.406	125 lbs	48	1 - 3
	4 mm	XC_2-12x2M									54	
	5 mm	XC_2-12x2.5M									59	
	6 mm	XC_3-12x2M									63	
	10mm	XC_4-12x2.5M									73	
	15mm	XC_6-12x2.5M									78	
	25 mm	XC_10-12x2.5M									82	
1/2"	0.0625	XC_5016	1.12	2.25 (max)	0.375	1.75	0.2	0.3	1.406	125 lbs	30	1 - 3
	0.100	XC_5010									41	
	4mm	XC_2-50x2M									52	
	0.200	XC_2-5010									57	
	0.250	XC_2-5008									62	
	0.500	XC_4-5008									75	
	0.800	XC_8-5010									80	
	1.000	XC_8-5008									81	

† Patent No. 5839321

Advanced Anti-Backlash Supernuts®

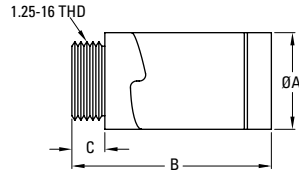
XC 6200



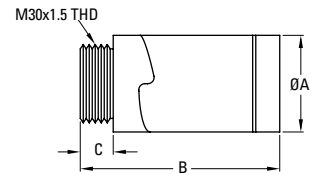
The XC 6200 utilizes the same patented† ActiveCAM™ as found in the XC 5000 model. Along with the very low drag torque and high axial stiffness advantages, the XC 6200 has greater load capacity.

Note: See Screw Section on page 33. Specify XCT, XCB or XCF when ordering, see drawings at right.

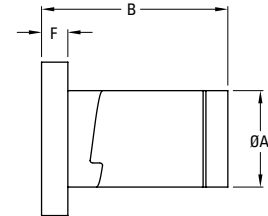
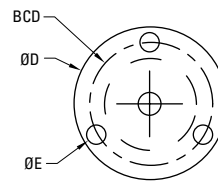
XCT 6200



XCB 6200



XCF 6200



Dia.	Lead	Part No.	Supernut® Dimensions							Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	BCD			
5/8"	0.100	XC_6210	1.40	2.60 (max)	0.5	2.13	0.22	0.5	1.688	175 lbs	35	2 - 6
	0.125	XC_6208									40	
	0.200	XC_2-6210									51	
	0.250	XC_2-6208									57	
	0.500	XC_4-6208									71	
16mm	4 mm	XC_16x4M	1.40	2.60 (max)	0.5	2.13	0.22	0.5	1.688	175 lbs	47	2 - 6
	5 mm	XC_2-16x2.5M									52	
	8 mm	XC_4-16x2M									63	
	16 mm	XC_7-16x2.3M									75	
	25 mm	XC_5-16x5M									80	
	35 mm	XC_7-16x5M									82	

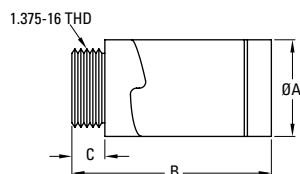
† Patent No. 5839321

Advanced Anti-Backlash Supernuts®

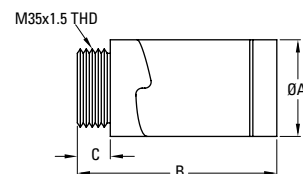
XC 7500



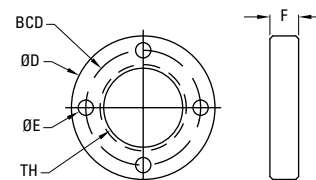
XCT 7500



XCB 7500



Flange F75



The XC 7500 utilizes the same patented† ActiveCAM™ as found in the XC 5000 model. Along with the very low drag torque and high axial stiffness advantages, the XC 7500 has greater load capacity.

Note: See Screw Section on page 33. Specify XCT, XCB or XCF when ordering, see drawings at right.

Dia.	Lead	Part No.	Nut Dimensions			Flange Dimensions (Optional)				Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	BCD			
3/4"	0.100	XC_7510	1.63	2.9 (max)	0.5	2.5	0.27	0.50	2.00	250 lbs	31	3 - 10
	0.125	XC_7508									36	
	0.167	XC_7506									44	
	0.200	XC_7505									49	
	0.500	XC_5-7510									69	
	1.000	XC_8-7508									79	
	1.500	XC_12-7508									81	
	2.000	XC_10-7505									82	
20mm	4 mm	XC_20x4M	1.63	2.9 (max)	0.5	2.5	0.27	0.50	2.00	250 lbs	41	3 - 10
	8 mm	XC_2-20x4M									59	
	12 mm	XC_3-20x4M									67	
	16 mm	XC_4-20x4M									72	
	20 mm	XC_5-20x4M									76	
	45 mm	XC_9-20x5M									82	
	50 mm	XC_10-20x5M									82	

† Patent No. 5839321

Advanced Anti-Backlash Supernuts®

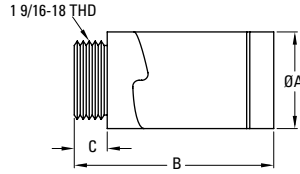
XC 10000



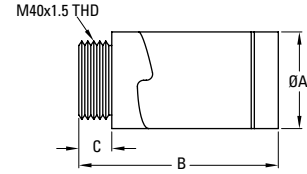
The XC 10000 utilizes Thomson BSA's patented[†] ActiveCAM™ technology to provide very low drag torque, high axial stiffness and maximum wear life. This self compensating design produces excellent positional repeatability while insuring consistent performance for the long run.

Note: See Screw Section on page 33. Specify XCT, XCB or XCF when ordering, see drawings at right.

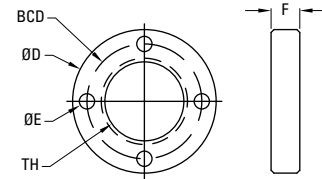
XCT 1000



XCB 1000



Flange F100



Dia.	Lead	Part No.	Nut Dimensions			Flange Dimensions (Optional)				Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	BCD			
24mm	5mm	XC_24x5M	1.88	3.0 (max)	0.60	3.0	0.27	0.60	2.37	350 lbs	42	5-15
1"	0.100	XC_1010	1.88	3.0 (max)	0.60	3.0	0.27	0.60	2.37	350 lbs	25	5-15
	0.125	XC_1008									29	
	0.200	XC_1005									41	
	0.250	XC_2-1008									46	
	0.250	XC_1004									47	
	0.500	XC_5-1010									61	
	1.000	XC_10-1010									74	

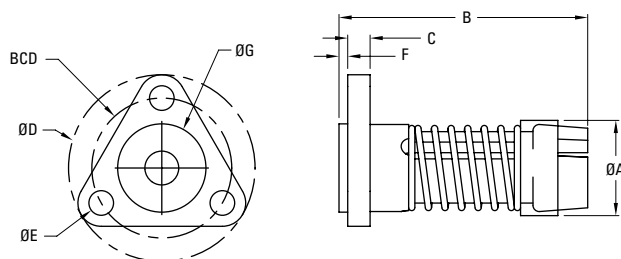
[†] Patent No. 5839321

Advanced Anti-Backlash Supernuts®

AFT



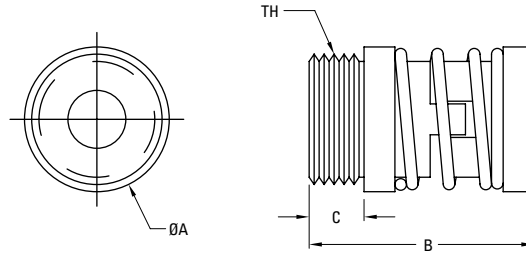
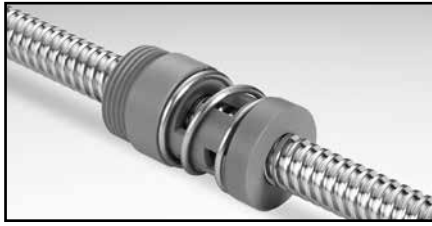
The low-cost AFT Supernut is designed for light-load OEM applications and offers smooth movement and low drag torque for axial loads up to 10 pounds. The AFT anti-backlash collar automatically adjusts for wear for the life of the nut.



Dia.	Lead	Part No.	Supernut® Dimensions								Design Load	Efficiency %	Drag Torque oz-in
			A	B	C	D	E	F	G	BCD			
3/8"	0.050	AFT3720	0.77	2.00	0.20	1.50	0.20	0.06	0.71	1.125	10 lbs	32	2 - 5
	0.063	AFT3716										36	
	2mm	AFT37x2M										42	
	0.083	AFT3712										44	
	0.100	AFT3710										49	
	0.125	AFT3708										53	
	0.167	AFT2-3712										60	
	0.200	AFT2-3710										65	
	0.250	AFT2-3708										68	
	0.300	AFT3-3710										73	
	0.375	AFT4-3711										75	
	0.500	AFT4-3708										79	
	0.750	AFT6-3708										82	
	1.000	AFT5-3705										82	
	1.200	AFT5-3704										82	
10 mm	2 mm	AFT10x2M	0.77	2.00	0.20	1.50	0.20	0.06	0.71	1.125	10 lbs	41	2 - 5
	3 mm	AFT10x3M										53	
	4 mm	AFT2-10x2M										59	
	5 mm	AFT2-10x2.5M										64	
	6 mm	AFT4-10x1.5M										67	
	10 mm	AFT5-10x2M										76	
	12 mm	AFT5-10x2.4M										78	
	20 mm	AFT6-10x3.3M										81	
7/16"	0.125	AFT2-4316	0.77	2.00	0.20	1.50	0.20	0.06	0.71	1.125	10 lbs	55	2 - 5
	0.250	AFT2-4308										65	
	0.500	AFT4-4308										76	
1/2"	0.063	AFT5016	0.88	2.03	0.25	1.62	0.20	-	-	1.250	25 lbs	30	3 - 7
	0.100	AFT5010										41	
	4mm	AFT2-50x2M										52	
	0.200	AFT2-5010										57	
	0.250	AFT2-5008										62	
	0.500	AFT4-5008										75	
	0.800	AFT8-5010										80	
	1.000	AFT8-5008										81	

Anti-Backlash Supernuts®

SNAB Thread Mount Style



Our SNAB Model has the greatest design flexibility allowing anti-backlash assemblies through 1" diameters. All SNABs are made from our internally lubricated Acetal providing excellent lubricity and very low wear.

Flanges

3/16" to 1/4"	F25
5/16" to 3/8" (10 mm)	F37

Dimensions available on page 32.

SNAB* - 3/16" to 3/8" (10 mm) Diameter

Dia.	Lead	Part No.	Supernut® Dimensions					Preload Force (lbs)	Design Load	Max Static Load	Efficiency %	Drag Torque oz-in
			A	B (min)	B (max)	C	TH					
3/16"	0.050	SNAB1820X	0.625	1.125	1.250	0.187	9/16-18	1-3	10 lbs	150 lbs	49	2 - 4
	0.100	SNAB2-1820X									66	
	0.125	SNAB3-1824X									70	
	0.200	SNAB4-1820X									77	
	0.375	SNAB8-1821X									81	
	0.400	SNAB8-1820X									82	
	0.500	SNAB10-1820X									82	
6 mm	1 mm	SNAB6x1M	0.625	1.125	1.250	0.187	9/16-18	1-3	10 lbs	150 lbs	37	2 - 4
1/4"	0.031	SNAB2532X	0.625	1.125	1.250	0.187	9/16-18	1-3	25 lbs	225 lbs	30	2 - 4
	0.050	SNAB2520X									41	
	0.063	SNAB2516X									48	
	2mm	SNAB2-25x1M									53	
	3mm	SNAB3-25x1M									62	
	0.125	SNAB2-2516X									64	
	0.200	SNAB4-2520X									72	
	0.250	SNAB4-2516X									76	
	0.500	SNAB7-2514X									81	
	0.750	SNAB12-2516X									82	
5/16"	0.083	SNAB3112X	0.750	1.160	1.340	0.250	5/8-18	2-5	50 lbs	350 lbs	49	2 - 4
	0.167	SNAB2-3112X									65	
	0.250	SNAB2-3108X									72	
	0.500	SNAB4-3108X									80	
	1.000	SNAB8-3108X									81	
3/8"	0.050	SNAB3720X	0.750	1.160	1.340	0.250	5/8-18	2-5	70 lbs	350 lbs	32	2 - 4
	0.063	SNAB3716X									36	
	2mm	SNAB37x2M									42	
	0.083	SNAB3712X									44	
	0.100	SNAB3710X									49	
	0.125	SNAB3708X									53	
	0.167	SNAB2-3712X									60	
	0.200	SNAB2-3710X									65	
	0.250	SNAB2-3708X									68	
	0.300	SNAB3-3710X									73	
	0.375	SNAB4-3711X									75	
	0.500	SNAB4-3708X									79	
	0.750	SNAB6-3708X									82	
	1.000	SNAB5-3705X									82	
	1.200	SNAB5-3704X									82	
10 mm	2 mm	SNAB10x2M	0.750	1.160	1.340	0.250	5/8-18	2-5	70 lbs	350 lbs	41	2 - 4
	3 mm	SNAB10x3M									53	
	4 mm	SNAB2-10x2M									59	
	5 mm	SNAB2-10x2.5M									64	
	6 mm	SNAB4-10x1.5M									67	
	10 mm	SNAB5-10x2M									76	
	12 mm	SNAB5-10x2.4M									78	
	20 mm	SNAB6-10x3.3M									81	

* SNAB nuts are only as axially stiff as the spring force in one direction.

Anti-Backlash Supernuts®

SNAB Thread Mount Style



Flanges

7/16" to 5/8" (16 mm)	F50
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Dimensions available on page 32.

SNAB*

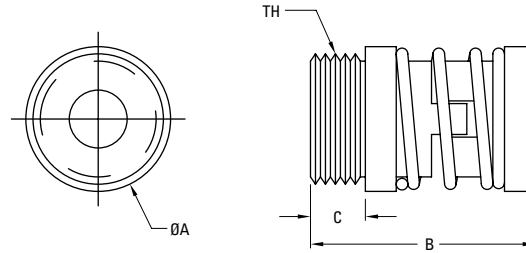
7/16" to 5/8" (16 mm) Diameter

Dia.	Lead	Part No.	Supernut® Dimensions					Preload Force (lbs)	Design Load	Max Static Load	Efficiency %	Drag Torque oz-in
			A	B (min)	B (max)	C	TH					
7/16"	0.125	SNAB2-4316X	1.000	1.700	2.000	0.375	15/16-16	4-9	100 lbs	500 lbs	55	3 - 5
	0.250	SNAB2-4308X									65	
	0.500	SNAB4-4308X									76	
12 mm	3 mm	SNAB12x3M	1.000	1.700	2.000	0.375	15/16-16	4-9	100 lbs	500 lbs	48	3 - 5
	4 mm	SNAB2-12x2M									54	
	5 mm	SNAB2-12x2.5M									59	
	6 mm	SNAB3-12x2M									63	
	10 mm	SNAB4-12x2.5M									73	
	15 mm	SNAB6-12x2.5M									78	
	25 mm	SNAB10-12x2.5M									82	
1/2"	0.0625	SNAB5016X	1.000	1.700	2.000	0.375	15/16-16	4-9	150 lbs	750 lbs	30	5 - 8
	0.100	SNAB5010X									41	
	4 mm	SNAB2-50x2M									52	
	0.200	SNAB2-5010X									57	
	0.250	SNAB2-5008X									62	
	0.500	SNAB4-5008X									75	
	0.800	SNAB8-5010X									80	
	1.000	SNAB8-5008X									81	
	1.500	SNAB12-5008X									82	
5/8"	0.100	SNAB6210X	1.000	1.700	2.000	0.375	15/16-16	4-9	160 lbs	800 lbs	35	7 - 10
	0.125	SNAB6208X									40	
	0.200	SNAB2-6210X									51	
	0.250	SNAB2-6208X									57	
	0.500	SNAB4-6208X									71	
16 mm	4 mm	SNAB16x4M	1.000	1.700	2.000	0.375	15/16-16	4-9	160 lbs	800 lbs	47	7 - 10
	5 mm	SNAB2-16x2.5M									52	
	8 mm	SNAB4-16x2M									63	
	16 mm	SNAB7-16x2.3M									75	
	25 mm	SNAB5-16x5M									80	
	35 mm	SNAB7-16x5M									82	

* SNAB nuts are only as axially stiff as the spring force in one direction.

Anti-Backlash Supernuts®

SNAB Thread Mount Style



Flanges

3/4" to 1"	F100
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Dimensions available on page 32.

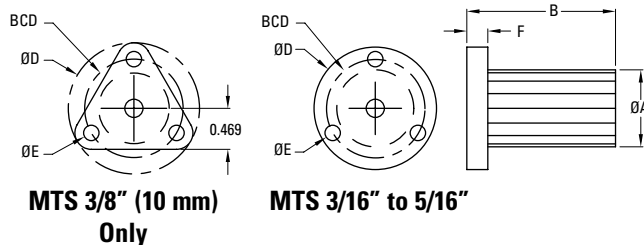
SNAB* 3/4" to 1" Diameter

Dia.	Lead	Part No.	Supernut® Dimensions					Preload Force (lbs)	Design Load	Max Static Load	Efficiency %	Drag Torque oz-in
			A	B (min)	B (max)	C	TH					
3/4"	0.100	SNAB7510X	1.750	2.500	3.000	0.600	1-9/16 - 18	10-20	300 lbs	1500 lbs	31	15 - 20
	0.125	SNAB7508X									36	
	0.167	SNAB7506X									44	
	0.200	SNAB7505X									49	
	0.500	SNAB5-7510X									69	
	1.000	SNAB8-7508X									79	
	1.500	SNAB12-7508X									81	
	2.000	SNAB10-7505X									82	
20 mm	4 mm	SNAB20x4M	1.750	2.500	3.000	0.600	1-9/16 - 18	10-20	300 lbs	1500 lbs	41	15 - 20
	8 mm	SNAB2-20x4M									59	
	12 mm	SNAB3-20x4M									67	
	16 mm	SNAB4-20x4M									72	
	20 mm	SNAB5-20x4M									76	
	45 mm	SNAB9-20x5M									82	
	50 mm	SNAB10-20x5M									82	
24 mm	5 mm	SNAB24x5M	1.750	2.500	3.000	0.600	1-9/16 - 18	10-20	300 lbs	1500 lbs	42	15 - 20
1"	0.100	SNAB1010X	1.750	2.500	3.000	0.600	1-9/16 - 18	10-20	400 lbs	2000 lbs	25	15 - 20
	0.125	SNAB1008X									29	
	0.200	SNAB1005X									41	
	0.250	SNAB2-1008X									46	
	0.250	SNAB1004X									47	
	0.500	SNAB5-1010X									61	
	1.000	SNAB10-1010X									74	

* SNAB nuts are only as axially stiff as the spring force in one direction.

Flange Mount Supernuts®

MTS



Integral Flange Mount

The MTS models provide the excellent lubricity and dimensional stability of our proprietary Acetal with the convenience of an integral flange.

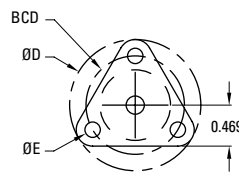
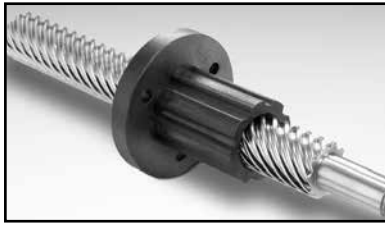
MTS - 3/16" to 3/8" (10 mm) Diameter

Dia.	Lead	Part No.	Supernut® Dimensions						Design Load	Efficiency %	Drag Torque oz-in
			A	B	D	E	F	BCD			
3/16"	0.050	MTS1820	0.50	0.75	1.00	0.14	0.15	0.75	10 lbs	49	Free Wheeling
	0.100	MTS2-1820								66	
	0.125	MTS3-1824								70	
	0.200	MTS4-1820								77	
	0.375	MTS8-1821								81	
	0.400	MTS8-1820								82	
	0.500	MTS10-1820								82	
6mm	1 mm	MTS6x1M	0.50	0.75	1.00	0.14	0.15	0.75	10 lbs	37	Free Wheeling
1/4"	0.031	MTS2532	0.50	0.75	1.00	0.14	0.15	0.75	25 lbs	30	Free Wheeling
	0.050	MTS2520								41	
	0.063	MTS2516								48	
	2 mm	MTS2-25x1M								53	
	3 mm	MTS3-25x1M								62	
	0.125	MTS2-2516								64	
	0.200	MTS4-2520								72	
	0.250	MTS4-2516								76	
	0.500	MTS7-2514								81	
	0.750	MTS12-2516								82	
5/16"	0.083	MTS3112	0.50	0.75	1.00	0.14	0.15	0.75	50 lbs	49	Free Wheeling
	0.167	MTS2-3112								65	
	0.250	MTS2-3108								72	
	0.500	MTS4-3108								80	
	1.000	MTS8-3108								81	
3/8"*	0.050	MTS3720	0.71	1.50	1.5	0.20	0.20	1.125	60 lbs	32	Free Wheeling
	0.063	MTS3716								36	
	2mm	MTS37x2M								42	
	0.083	MTS3712								44	
	0.100	MTS3710								49	
	0.125	MTS3708								53	
	0.167	MTS2-3712								60	
	0.200	MTS2-3710								65	
	0.250	MTS2-3708								68	
	0.300	MTS3-3710								73	
	0.375	MTS4-3711								75	
	0.500	MTS4-3708								79	
	0.750	MTS6-3708								82	
	1.000	MTS5-3705								82	
	1.200	MTS5-3704								82	
10 mm*	2 mm	MTS10x2M	0.71	1.50	1.5	0.2	0.200	1.125	75 lbs	41	Free Wheeling
	3 mm	MTS10x3M								53	
	4 mm	MTS2-10x2M								59	
	5 mm	MTS2-10x2.5M								64	
	6 mm	MTS4-10x1.5M								67	
	10 mm	MTS5-10x2M								76	
	12 mm	MTS5-10x2.4M								78	
	20 mm	MTS6-10x3.3M								81	

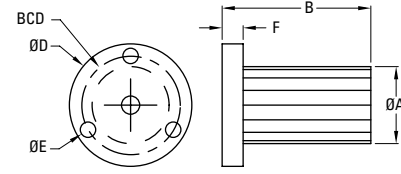
* 3/8" and 10mm with tri-flange

Flange Mount Supernuts®

MTS



MTS 7/16" Only



**MTS 12 mm to
5/8" (16 mm)**

MTS

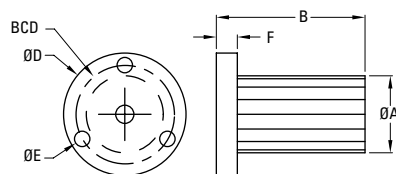
7/16" to 5/8" (16 mm) Diameter

Dia.	Lead	Part No.	Supernut® Dimensions						Design Load	Efficiency %	Drag Torque oz-in
			A	B	D	E	F	BCD			
7/16"*	0.125	MTS2-4316	0.71	1.50	1.5	0.20	0.200	1.125	75 lbs	55	Free Wheeling
	0.250	MTS2-4308								65	
	0.500	MTS4-4308								76	
12mm	3 mm	MTS12x3M	0.75	1.50	1.5	0.20	0.250	1.125	125 lbs	48	Free Wheeling
	4 mm	MTS2-12x2M								54	
	5 mm	MTS2-12x2.5M								59	
	6 mm	MTS3-12x2M								63	
	10 mm	MTS4-12x2.5M								73	
	15 mm	MTS6-12x2.5M								78	
	25 mm	MTS10-12x2.5M								82	
1/2"	0.0625	MTS5016	0.75	1.50	1.5	0.20	0.250	1.125	125 lbs	30	Free Wheeling
	0.100	MTS5010								41	
	4mm	MTS2-50x2M								52	
	0.200	MTS2-5010								57	
	0.250	MTS2-5008								62	
	0.500	MTS4-5008								75	
	0.800	MTS8-5010								80	
	1.000	MTS8-5008								81	
	1.500	MTS12-5008								82	
5/8"	0.100	MTS6210	0.88	1.63	1.5	0.20	0.300	1.188	175 lbs	35	Free Wheeling
	0.125	MTS6208								40	
	0.200	MTS2-6210								51	
	0.250	MTS2-6208								57	
	0.500	MTS4-6208								71	
16 mm	4 mm	MTS16x4M	0.88	1.63	1.5	0.20	0.300	1.188	175 lbs	47	Free Wheeling
	5 mm	MTS2-16x2.5M								52	
	8 mm	MTS4-16x2M								63	
	16 mm	MTS7-16x2.3M								75	
	25 mm	MTS5-16x5M								80	
	35 mm	MTS7-16x5M								82	

* 7/16" with tri-flange

Flange Mount Supernuts®

MTS



MTS 3/4" (20 mm)

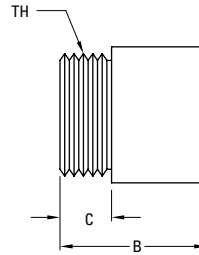
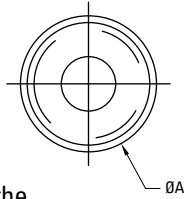
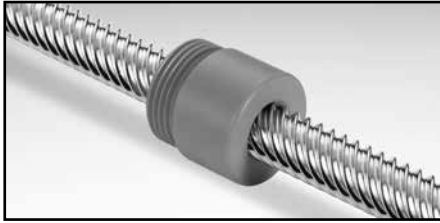
MTS

3/4" (20 mm) Diameter

Dia.	Lead	Part No.	Supernut® Dimensions						Design Load	Efficiency %	Drag Torque oz-in
			A	B	D	E	F	BCD			
3/4"	0.100	MTS7510	1.125	1.75	2.0	0.20	0.300	1.438	275 lbs	31	Free Wheeling
	0.125	MTS7508								36	
	0.167	MTS7506								44	
	0.200	MTS7505								49	
	0.500	MTS5-7510								69	
	1.000	MTS8-7508								79	
	1.500	MTS12-7508								81	
	2.000	MTS10-7505								82	
20 mm	4 mm	MTS20x4M	1.125	1.75	2.0	0.20	0.300	1.438	275 lbs	42	Free Wheeling
	8 mm	MTS2-20x4M								59	
	12 mm	MTS3-20x4M								67	
	16 mm	MTS4-20x4M								72	
	20 mm	MTS5-20x4M								76	
	45 mm	MTS9-20x5M								82	
	50 mm	MTS10-20x5M								82	

Thread Mount Supernuts®

SN



Flanges

3/16" to 1/4"	F25
5/16" to 10 mm	F37
7/16" to 16 mm	F50
3/4" to 1"	F75
1-1/4"	F100
1-1/2"	R54-3

Dimensions available on page 35 or online.

Our standard SN nuts have proven themselves for the past twenty years. Available in sizes from 3/16" to 1-1/2" with or without mounting flanges.

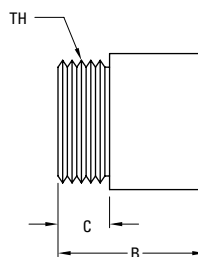
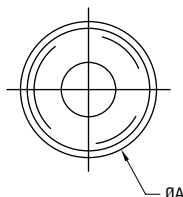
SN - 3/16" to 7/16" Diameter*

Dia.	Lead	Part No.	Supernut® Dimensions				Design Load	Max. Static Load	Efficiency %	Flange
			A	B	C	TH				
3/16"	0.050	SN1820X	0.625	0.500	0.187	9/16-18	30 lbs	150 lbs	49	F25
	0.100	SN2-1820							66	
	0.125	SN3-1824X							70	
	0.200	SN4-1820							77	
	0.375	SN8-1821							81	
	0.400	SN8-1820							82	
6 mm	1 mm	SN10-1820							82	
	1 mm	SN6x1M	0.625	0.500	0.187	9/16-18	30 lbs	150 lbs	37	F25
1/4"	0.031	SN2532X	0.625	0.500	0.187	9/16-18	45 lbs	225 lbs	30	F25
	0.050	SN2520X							41	
	0.063	SN2516X							48	
	2mm	SN2-25x1M							53	
	3mm	SN3-25x1M							62	
	0.125	SN2-2516X							64	
	0.200	SN4-2520X							72	
	0.250	SN4-2516X							76	
	0.500	SN7-2514X							81	
	0.750	SN12-2516							82	
	0.750	SN12-2516							82	
5/16"	0.083	SN3112X	0.750	0.750	0.250	5/8-18	70 lbs	350 lbs	49	F37
	0.167	SN2-3112X							65	
	0.250	SN2-3108X							72	
	0.500	SN4-3108X							80	
	1.000	SN8-3108X							81	
3/8"	0.050	SN3720X	0.750	0.750	0.250	5/8-18	70 lbs	350 lbs	32	F37
	0.063	SN3716X							36	
	2 mm	SN37x2M							42	
	0.083	SN3712X							44	
	0.100	SN3710X							49	
	0.125	SN3708X							53	
	0.167	SN2-3712X							60	
	0.200	SN2-3710X							65	
	0.250	SN2-3708X							68	
	0.300	SN3-3710X							73	
	0.375	SN4-3711X							75	
	0.500	SN4-3708X							79	
	0.750	SN6-3708							82	
	1.000	SN5-3705X							82	
	1.200	SN5-3704X							82	
10 mm	2 mm	SN10x2M	0.750	0.750	0.250	5/8-18	70 lbs	350 lbs	41	F37
	3 mm	SN10x3M							53	
	4 mm	SN2-10x2M							59	
	5 mm	SN2-10x2.5M							64	
	6 mm	SN4-10x1.5M							67	
	10 mm	SN5-10x2M							76	
	12 mm	SN5-10x2.4M							78	
	20 mm	SN6-10x3.3M							67	
7/16"	0.125	SN2-4316X	1.000	1.000	0.375	15/16-16	100 lbs	500 lbs	55	F50
	0.250	SN2-4308X							65	
	0.500	SN4-4308X							76	

* For all sizes shown on this page Drag Torque = Free Wheeling

Thread Mount Supernuts®

SN



Flanges

3/16" to 1/4"	F25
5/16" to 10 mm	F37
7/16" to 16 mm	F50
3/4" to 1"	F75
1-1/4"	F100
1-1/2"	R54-3

Dimensions available on page 35 or online.

SN

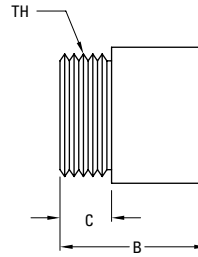
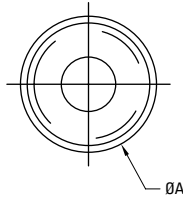
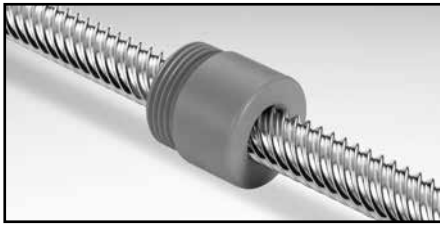
1/2" (12 mm) to 5/8" (16 mm) Diameter*

Dia.	Lead	Part No.	Supernut® Dimensions				Design Load	Max. Static Load	Efficiency %	Flange
			A	B	C	TH				
12 mm	3 mm	SN12x3M	1.000	1.000	0.375	15/16-16	100 lbs	500 lbs	48	F50
	4 mm	SN2-12x2M							54	
	5 mm	SN2-12x2.5M							59	
	6 mm	SN3-12x2M							63	
	10 mm	SN4-12x2.5M							73	
	15 mm	SN6-12x2.5M							78	
	25 mm	SN10-12x2.5M							82	
1/2"	0.0625	SN5016X	1.000	1.000	0.375	15/16-16	150 lbs	750 lbs	30	F50
	0.100	SN5010X							41	
	4mm	SN2-50x2M							52	
	0.200	SN2-5010X							57	
	0.250	SN2-5008X							62	
	0.500	SN4-5008X							75	
	0.800	SN8-5010X							80	
	1.000	SN8-5008X							81	
	1.500	SN12-5008X							82	
5/8"	0.100	SN6210X	1.000	1.000	0.375	15/16-16	160 lbs	800 lbs	35	F50
	0.125	SN6208X							40	
	0.200	SN2-6210X							51	
	0.250	SN2-6208X							57	
	0.500	SN4-6208X							71	
16 mm	4 mm	SN16x4M	1.000	1.000	0.375	15/16-16	160 lbs	800 lbs	47	F50
	5 mm	SN2-16x2.5M							52	
	8 mm	SN4-16x2M							63	
	16 mm	SN7-16x2.3M							75	
	25 mm	SN5-16x5M							80	
	35 mm	SN7-16x5M							82	

* For all sizes shown on this page Drag Torque = Free Wheeling

Thread Mount Supernuts®

SN



Flanges

3/16" to 1/4"	F25
5/16" to 10 mm	F37
7/16" to 16 mm	F50
3/4" to 1"	F75
1-1/4"	F100
1-1/2"	R54-3

Dimensions available on page 32 or online.

SN

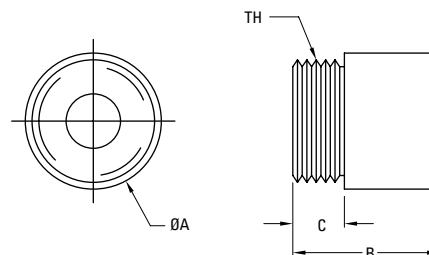
3/4" to 1 1/2" Diameter*

Dia.	Lead	Part No.	Supernut® Dimensions				Design Load	Max. Static Load	Efficiency %	Flange
			A	B	C	TH				
3/4"	0.100	SN7510X	1.500	1.500	0.500	1 3/8-16	300 lbs	1500 lbs	31	F75
	0.125	SN7508X							36	
	0.167	SN7506X							44	
	0.200	SN7505X							49	
	0.500	SN5-7510X							69	
	1.000	SN8-7508X							79	
	1.500	SN12-7508X							81	
	2.000	SN10-7505X							82	
20 mm	4 mm	SN20x4M	1.500	1.500	0.500	1 3/8-16	300 lbs	1500 lbs	41	F75
	8 mm	SN2-20x4M							59	
	12 mm	SN3-20x4M							67	
	16 mm	SN4-20x4M							72	
	20 mm	SN5-20x4M							76	
	45 mm	SN9-20x5M							82	
	50 mm	SN10-20x5M							82	
24 mm	5 mm	SN24x5M	1.500	1.500	0.500	1 3/8-16	300 lbs	1500 lbs	42	F75
1"	0.100	SN1010X	1.500	1.500	0.500	1 3/8-16	400 lbs	2000 lbs	25	F75
	0.125	SN1008X							29	
	0.200	SN1005X							41	
	0.250	SN2-1008X							46	
	0.250	SN1004X							47	
	0.500	SN5-1010X							61	
	1.000	SN10-1010X							74	
1 1/4"	0.200	SN1205X	2.000	2.000	0.600	1 9/16-18	400 lbs	2000 lbs	35	F100
	0.200	SN2-1210X							35	
	0.250	SN1204X							41	
1 1/2"	0.200	SN1505X	2.000	2.500	0.530	1.967-18	400 lbs	2000 lbs	31	R54-3
	0.250	SN1504X							36	
	0.375	SN1503X							47	
	0.500	SN2-1504X							52	

* For all sizes shown on this page Drag Torque = Free Wheeling

Metric Thread Mount Supernuts®

SB



Our classic Supernut is now available with metric mounting thread. Offered with our metric screw line sizes 10 mm through 24 mm. The nut color is black to easily differentiate it from the SN nut (see p. 26)

SB

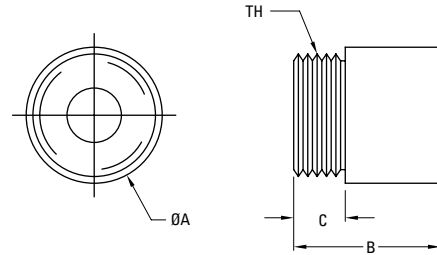
(10 to 24 mm) Diameter*

Dia.	Lead	Part No.	Supernut® Dimensions				Design Load lb (N)	Max. Static Load lb (N)	Efficiency %
			A in (mm)	B in (mm)	C in (mm)	TH			
10 mm	2 mm	SB10x2M	0.750 (19.1)	0.750 (19.1)	0.250 (6.5)	M16 x 1.5	70 (310)	350 (1550)	42
	3 mm	SB10x3M							53
	4 mm	SB2-10x2M							59
	5 mm	SB2-10x2.5M							64
	6 mm	SB4-10x1.5M							66
	10 mm	SB5-10x2M							76
	12 mm	SB5-10x2.4M							78
	20 mm	SB6-10x3.3M							81
12 mm	3 mm	SB12x3M	1.000 (25.4)	1.000 (25.4)	0.375 (9.5)	M22 x 1.5	100 (445)	500 (2225)	48
	4 mm	SB2-12x2M							54
	5 mm	SB2-12x2.5M							59
	6 mm	SB3-12x2M							63
	10 mm	SB4-12x2.5M							73
	15 mm	SB6-12x2.5M							78
	25 mm	SB10-12x2.5M							82
16 mm	4 mm	SB16x4M	1.000 (25.4)	1.000 (25.4)	0.375 (9.5)	M22 x 1.5	160 (710)	800 (3560)	48
	5 mm	SB2-16x2.5M							52
	8 mm	SB4-16x2M							63
	16 mm	SB7-16x2.3M							75
	25 mm	SB5-16x5M							80
	35 mm	SB7-16x5M							82
20 mm	4 mm	SB20x4M	1.500 (38.1)	1.500 (38.1)	0.500 (12.7)	M35 x 1.5	300 (1335)	1500 (6675)	42
	8 mm	SB2-20x4M							59
	12 mm	SB3-20x4M							67
	16 mm	SB4-20x4M							72
	20 mm	SB5-20x4M							76
	45 mm	SB9-20x5M							82
	50 mm	SB10-20x5M							82
24 mm	5 mm	SB24x5M	1.500 (38.1)	1.500 (38.1)	0.500 (12.7)	M35 x 1.5	300 (1335)	1500 (6675)	42

* For all sizes shown on this page Drag Torque = Free Wheeling

Thread Mount Bronze Nuts

For Acme Screws



For standard bronze nuts, Thomson uses SAE 660 bearing bronze which provides excellent load carrying ability, good wear resistance and is less susceptible to damage from impact and shock loading. Custom bronzes can be selected if required.

Material Properties

Maximum Temperature	Friction Coefficient	Material*	Tensile Strength
max. 250°F	0.2 to 0.3	SAE 660	35,000 psi

* Other materials available on a custom basis.

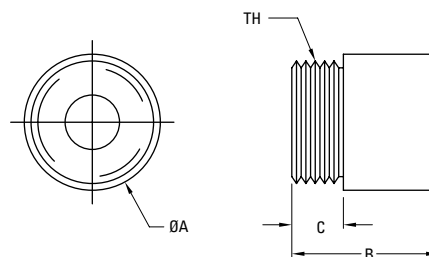
1/4" to 5/8" Diameter

Dia.	Lead	Nut Part No. for R.H. Screws	Nut Part No. for L.H. Screws	Bronze Nut Dimensions				Fits Flange No.	Design Load†	Maximum Static Load	Torque to Raise 1 Pound (in-oz)
				A	B	C	TH				
1/4"	0.050	BN2520	BN2520L	0.625	0.625	0.187	9/16-18	F25	110 lbs	550 lbs	0.41
	0.0625	BN2516	—								0.43
	0.250	BN4-2516	—								1.00
3/8"	0.0625	BN3716	—	0.750	0.750	0.250	5/8-18	F37	300 lbs	1,500 lbs	0.61
	0.083	BN3712	BN3712L								0.64
	0.100	BN3710	BN3710L								0.67
	0.125	BN3708S	—								0.76
	0.167	BN2-3712S	—								0.86
1/2"	0.100	BN5010	BN5010L	1.00	1.00	0.375	15/16-16	F50	620 lbs	3,100 lbs	0.83
	0.200	BN2-5010	—								1.10
5/8"	0.100	BN6210	BN6210L	1.00	1.00	0.375	15/16-16	F50	860 lbs	4,300 lbs	0.99
	0.125	BN6208S	—								1.06
	0.200	BN2-6210	—								1.26

† Load ratings based on using Thomson grease. See page 44.

Thread Mount Bronze Nuts

For Acme Screws



3/4" to 3" Diameter

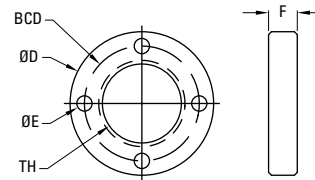
Dia.	Lead	Nut Part No. for R.H. Screws	Nut Part No. for L.H. Screws	Bronze Nut Dimensions				Fits Flange No.	Design Load [†]	Maximum Static Load	Torque to Raise 1 Pound (in-oz)
				A	B	C	TH				
3/4"	0.100	BN7510	BN7510L	1.50	1.50	0.500	1-3/8 - 16	F75	1,500 lbs	7,500 lbs	1.15
	0.125	BN7508	—								1.21
	0.167	BN7506	BN7506L								1.28
	0.200	BN7505	BN7505L								1.35
1"	0.100	BN1010	—	1.50	1.50	0.500	1-3/8 - 16	F75	1,900 lbs	9,500 lbs	1.47
	0.125	BN1008	—								1.52
	0.200	BN1005	—								1.67
	0.250	BN1004	—								1.76
	0.500	BN5-1010	—								2.55
	1.000	BN10-1010	—								3.91
1-1/4"	0.200	BN1205*	—	1.75	1.75	0.625	1-9/16 - 18	R1004-3	3,000 lbs	15,000 lbs	1.99
	0.250	BN1204*	—								2.09
1-1/2"	0.200	BN1505*	—	2.25	2.25	0.530	1.967-18	R54-3	4,600 lbs	23,000 lbs	2.31
	0.250	BN1504*	—								2.41
	0.500	BN2-1504*	—								3.08

[†] Load ratings based on using Thomson grease. See page 44.

* Non-stock item

Standard Mounting Flanges

For Bronze Nuts and Supernuts®



These mounting flanges are designed for easy mounting when fixed to a bronze nut or Supernut®.

Aluminum (6061-T6) Flanges for Bronze Nuts and Supernuts®

Part No.	Flange Dimensions				
	D	E	F	BCD	TH
F25	1.25	0.140 (4X)	0.187	1.00	9/16 - 18
F37	1.60	0.177 (4X)	0.250	1.24	5/8 - 18
F50	2.00	0.266 (4X)	0.375	1.50	15/16 - 16
F75	2.50	0.266 (4X)	0.500	2.00	1-3/8 - 16
F100	3.00	0.266 (4X)	0.600	2.37	1-9/16 - 18

Aluminum flanges do not have a set screw which could deform the Supernut® and possibly cause binding. Aluminum flanges should be pinned or bonded to Supernuts® to prevent unwanted disassembly during operation.

Lead Screws

Lead Screws — 3/16" to 3/8" Diameter



Nominal Major Diameter	Lead	Precision Prefix	Standard Prefix	BSA Part No.	Avail in Left Hand	Material	Root Diameter	Recommended Bearing
3/16"	0.050	SPR	SRA	1820	L	Stainless Steel	0.12	N/A
	0.100			2-1820			0.12	
	0.125			3-1824			0.13	
	0.200			4-1820			0.12	
	0.375	8-1821			0.13			
	0.400	8-1820			0.13			
	0.500	10-1820			0.13			
6 mm	1 mm	SPR	SRA	6x1M	L	Stainless Steel	0.18	4mm
1/4"	0.031	SPR	SRA	2532	L	Stainless Steel	0.21	4mm
	0.050			2520	L		0.19	
	0.063			2516	L		0.17	
	2mm			2-25x1M			0.19	
	3mm			3-25x1M			0.19	
	0.125			2-2516			0.17	
	0.200			4-2520			0.18	
	0.250	4-2516			0.17			
	0.500	7-2514			0.16			
	0.750	12-2516			0.18			
5/16"	0.083	SPR	SRA	3112	L	Stainless Steel	0.22	4mm
	0.167			2-3112			0.20	
	0.250			2-3108S			0.22	
	0.500			4-3108S			0.21	
	1.000	8-3108			0.23			
3/8"	0.0500	SPR	SRA	3720	L	Stainless Steel	0.30	4mm
	0.0625			3716	L		0.30	
	2 mm			37x2M	L		0.28	
	0.083			3712	L		0.28	
	0.100			3710	L		0.26	
	0.125			3708S	L		0.29	
	0.167			2-3712S			0.31	
	0.200			2-3710			0.26	
	0.250			2-3708S	L		0.29	
	0.300			3-3710			0.25	
	0.375			4-3711	L		0.27	
	0.500			4-3708S	L		0.27	
	0.750	6-3708			0.27			
	1.00	5-3705			0.24			
	1.20	5-3704			0.24			

Lead Screws

Lead Screws — 7/16" (10 mm) to 5/8" (16 mm) Diameter

Nominal Major Diameter	Lead	Precision Prefix	Standard Prefix	BSA Part No.	Avail in Left Hand	Material	Root Diameter	Recommended Bearing
10 mm	2 mm	SPT	SRT	10x2M	L	Stainless Steel	0.31	4 mm
	3 mm			10x3M	L		0.25	
	4 mm			2-10x2M			0.29	
	5 mm	SPR	SRA	2-10x2.5M			0.27	
	6 mm			4-10x1.5M			0.31	
	10 mm			5-10x2M			0.29	
	12 mm			5-10x2.4M			0.29	
	20 mm			6-10x3.3M			0.30	
7/16"	0.125	SPR	SRA	2-4316		Stainless Steel	0.35	6 mm
	0.250			2-4308S			0.36	
	0.500			4-4308S			0.33	
12 mm	3 mm	SPT	SRT	12x3M		Stainless Steel	0.31	6 mm
	4 mm	SPR	SRA	2-12x2M			0.36	
	5 mm	SPT	SRT	2-12x2.5M			0.35	
	6 mm	SPR	SRA	3-12x2M			0.35	
	10 mm	SPT	SRT	4-12x2.5M			0.35	
	15 mm	SPR	SRA	6-12x2.5M			0.34	
	25 mm	N/A	SRA	10-12x2.5M			0.36	
1/2"	0.0625	SPR	SRA	5016		Stainless Steel	0.41	6 mm
	0.100			5010	L		0.37	
	4 mm			2-50x2M			0.39	
	0.200			2-5010			0.39	
	0.250			2-5008			0.38	
	0.500			4-5008			0.36	
	0.800	N/A		8-5010			0.37	
	1.000			8-5008			0.39	
	1.500			12-5008			0.39	
5/8"	0.100	SPR	SRA	6210	L	Stainless Steel	0.52	8 to 10 mm
	0.125			6208S	L		0.52	
	0.200			2-6210	L		0.52	
	0.250			2-6208S			0.52	
	0.500			4-6208			0.48	
16 mm	4 mm	SPT	SRT	16x4M	L	Stainless Steel	0.45	8 to 10 mm
	5 mm	SPR	SRA	2-16x2.5M			0.48	
	8 mm			4-16x2M			0.51	
	16 mm			7-16x2.3M			0.49	
	25 mm	N/A		5-16x5M			0.45	
	35 mm			7-16x5M			0.48	

Lead Screws

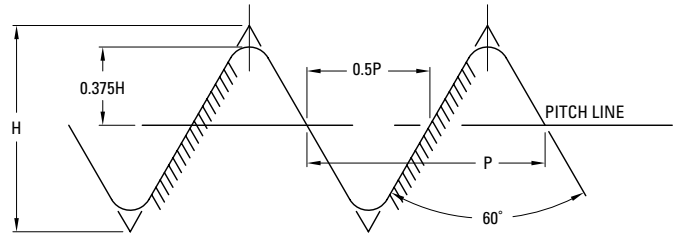
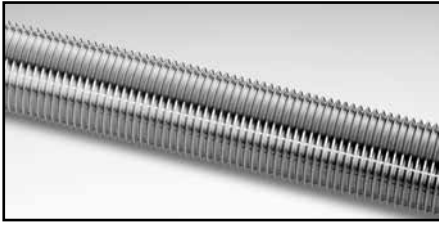
Lead Screws — 3/4" (24 mm) to 1 1/2" Diameter

Nominal Major Diameter	Lead	Precision Prefix	Standard Prefix	BSA Part No.	Avail in Left Hand	Material	Root Diameter	Recommended Bearing
3/4"	0.100	SPR	SRA	7510	L	Stainless Steel	0.63	12 mm
	0.125			7508	L		0.61	
	0.167			7506	L		0.56	
	0.200			7505	L		0.53	
	0.500	N/A		5-7510			0.62	
	1.000			8-7508			0.61	
	1.500			12-7508			0.62	
	2.000			10-7505†	L		0.59	
20 mm	4 mm	SPT	SRT	20x4M	L	Stainless Steel	0.61	12 mm
	8 mm	SPR	SRA	2-20x4M			0.58	
	12 mm			3-20x4M			0.59	
	16 mm			4-20x4M			0.59	
	20 mm	—		5-20x4M			0.59	
	45 mm	—		9-20x5M			0.62	
	50 mm			10-20x5M			0.65	
24 mm	5 mm	SPT	SRT	24x5M	L	Stainless Steel	0.73	12 to 15 mm
1"	0.100	SPR	SRA	1010	L	Stainless Steel	0.88	12 to 20 mm
	0.125			1008	L		0.86	
	0.200			1005	L		0.78	
	0.250	N/A	RA	1004	L	Carbon Steel	0.72	12 to 15 mm
	0.250	SPR	SRA	2-1008		Stainless Steel	0.84	12 to 20 mm
	0.500	N/A		5-1010			0.88	
	1.000			10-1010			0.88	
1-1/4"	0.200	N/A	RA	1205	L	Low Carbon Steel	1.03	20 mm
	0.200		SRA	1205	L	Stainless Steel	1.01	
	0.200			2-1210			1.11	
	0.250		RA	1204	L	Low Carbon Steel	0.98	
1-1/2"	0.200	N/A	RA	1505	L	Low Carbon Steel	1.28	25 mm
	0.250			1504	L		1.23	
	0.500			2-1504			1.23	

† Nominal O.D. is .734"

V-Thread Screws

Rolled 303 Stainless Steel



- Some sizes available in 1018 Steel
- Matching Supernuts and Left Hand Screws on special request
- Lead Accuracy is 0.015 in/ft

Diameter	Lead	Size	Part No.	Recommended Bearing
6 mm	1 mm	6 x 1	SV6x1	4 mm
1/4"	0.0125	1/4-80	SV2580	4 mm
	0.0208	1/4-48	SV2548	
	0.0250	1/4-40	SV2540	
	0.0278	1/4-36	SV2536	
	0.0313	1/4-32	SV2532	
	0.0357	1/4-28	SV2528	
	0.0417	1/4-24	SV2524	
	0.0500	1/4-20	SV2520	
5/16"	0.0125	5/16-80	SV3180	4 mm
	0.0420	5/16-24	SV3124	
3/8"	0.0125	3/8-80	SV3780	4 to 6 mm
	0.0250	3/8-40	SV3740	
	0.0313	3/8-32	SV3732	
	0.0400	3/8-25	SV3725	
	0.0417	3/8-24	SV3724	
	0.0500	3/8-20	SV3720	
	0.0625	3/8-16	SV3716	
	0.0833	3/8-12	SV3712	
7/16"	0.0500	7/16-20	SV4320	6 mm
1/2"	0.0125	1/2-80	SV5080	6 to 8 mm
	0.0250	1/2-40	SV5040	
	0.0333	1/2-30	SV5030	
	0.0500	1/2-20	SV5020	
	0.0625	1/2-16	SV5016	
	0.0769	1/2-13	SV5013	

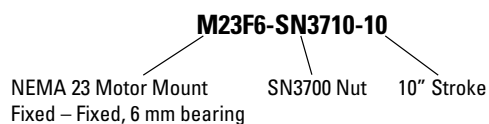
Screw Assemblies - Selection Process



Available in most screw sizes our Drive Assemblies free designers to concentrate on larger design issues. Our standard Drive Assemblies can be assembled and shipped quickly, providing the right solution when you need it.

- Step 1.** Select your screw-nut combination depending on load, cost, speed, stroke, backlash, accuracy and environmental constraints. Use critical speed and column loading charts as general guides (pages 46 to 49). Note allowable bearing sizes for your screw-nut selection before returning to this section.
- Step 2.** Determine end configuration due to load, length and rotational velocity. Refer to critical speed and column loading charts as required (pages 46 to 49). We offer fixed-fixed, fixed-simple and fixed free bearing arrangements.
- Step 3.** Noting allowable bearing size, turn to correct NEMA motor size page for assembly dimensions.
- Step 4.** Add Nut Part Number with Stroke to Drive Assembly Part Number.

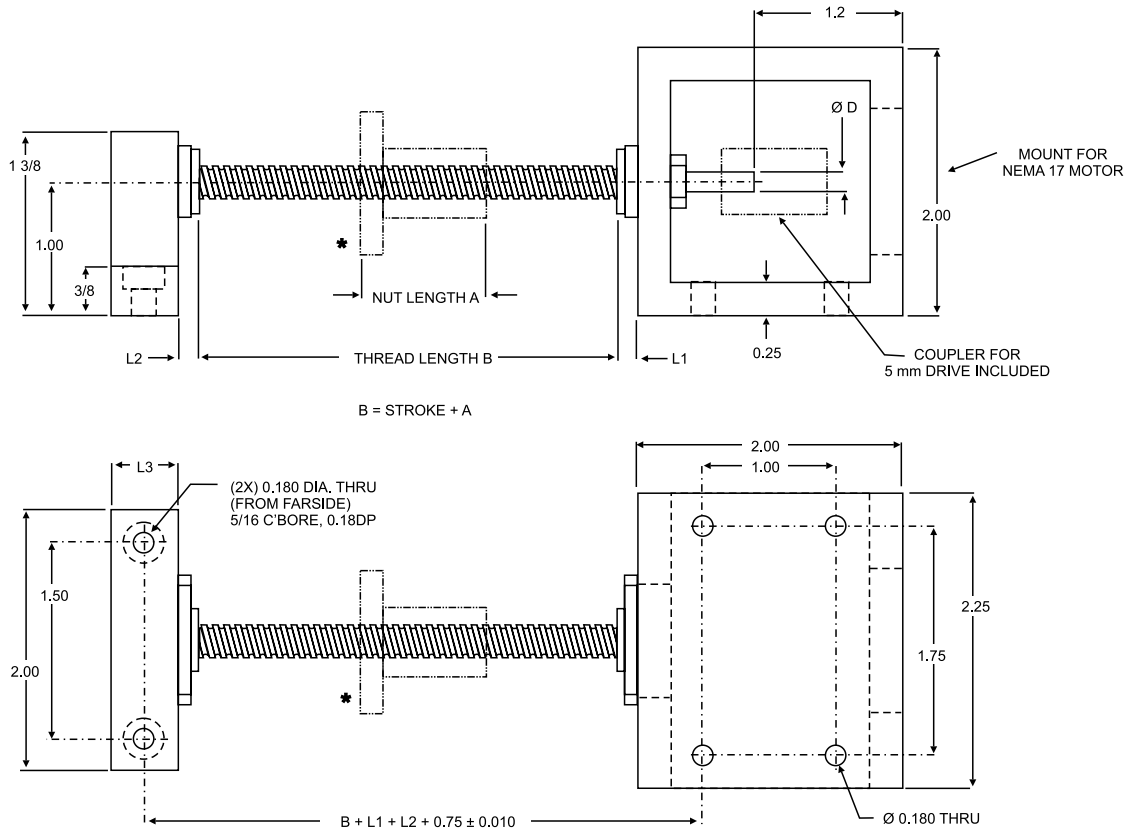
(EXAMPLE)



- Step 5.** Contact customer support.

Screw Assemblies - NEMA 17 Motor Mounts

For 1/4" to 3/8" and 6 to 10 mm Ball and Lead Screws



Part Number (See Example)	Axial* Load	Bearing Support	D	L1	L2	L3
M17F4	50 lbs	4 mm	3 mm	0.155	0.155	0.50
M17S4			3 mm	0.155	—	0.50
M17E4			3 mm	0.155	—	—

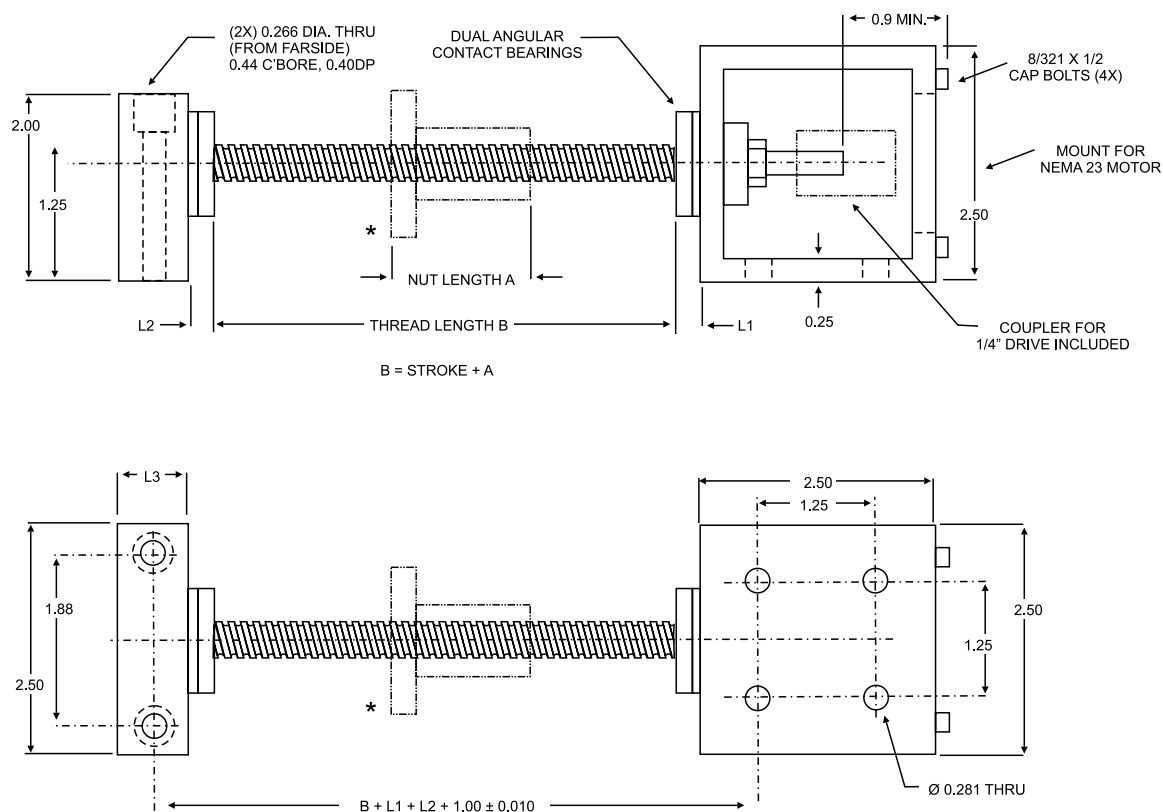
* Maximum assembly thrust load, Do Not Exceed. Do not exceed dynamic load rating of the lead nut.

Example: M17F4 M-17-F-4

Motor Mount	NEMA Motor Size	Bearing Config.	Bearing Size
	17	F = Fixed	4 mm
	23	S = Simple	6 mm
	34	E = Free	8 mm
	42		12 mm
			20 mm

Screw Assemblies - NEMA 23 Motor Mounts

For 3/8" to 5/8" and 6 to 14 mm Ball and Lead Screws



Part Number (See Example)	Axial* Load	Bearing Support	D	L1	L2	L3
M23F4	50 lbs	4 mm	3 mm	0.155	0.155	0.75
M23S4			3 mm	0.155	—	0.75
M23E4			3 mm	0.155	—	—
M23F6	230 lbs	6 mm	0.187	0.275	0.275	0.75
M23S6			0.187	0.275	—	0.75
M23E6			0.187	0.275	—	—
M23F8	326 lbs	8 mm	0.250	0.354	0.354	0.75
M23S8			0.250	0.354	—	0.75
M23E8			0.250	0.354	—	—

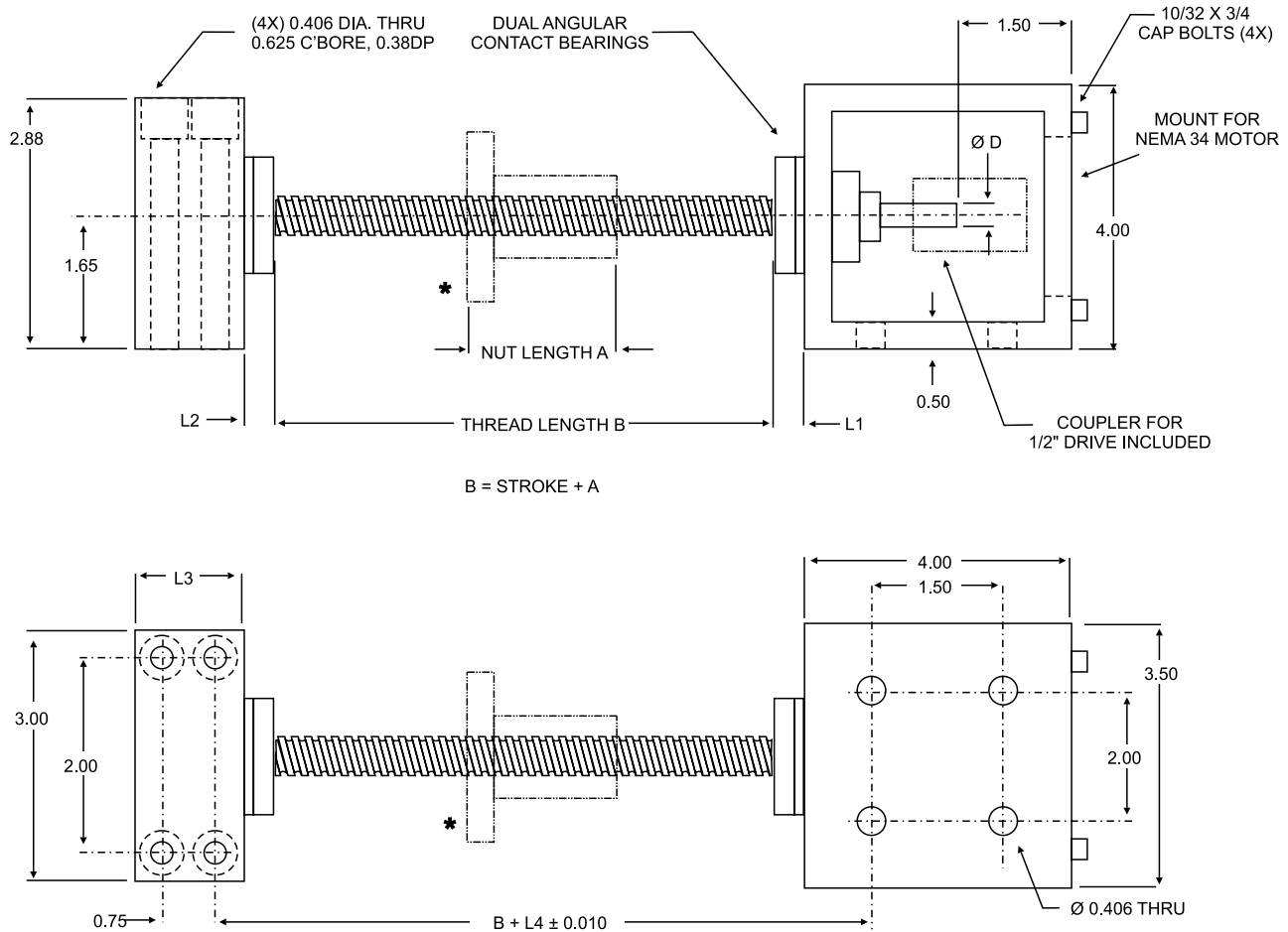
* Maximum assembly thrust load, Do Not Exceed. Do not exceed dynamic load rating of the lead nut.

Example: M23F6 M-23-F-6

Motor Mount	NEMA Motor Size	Bearing Config.	Bearing Size
	17	F = Fixed	4 mm
	23	S = Simple	6 mm
	34	E = Free	8 mm
	42		12 mm
			20 mm

Screw Assemblies - NEMA 34 Motor Mounts

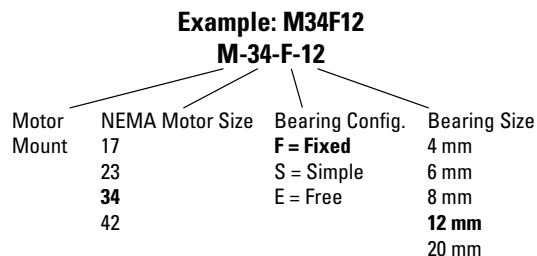
For 3/4" to 1" and 16 to 24 mm Ball and Lead Screws



Part Number (See Example)	Axial* Load	Bearing Support	D	L1	L2	L3	L4
M34F12	680 lbs	12 mm	0.375	0.395	0.395	1.50	2.42
M34S12			0.375	0.395	—	1.00	2.15
M34E12			0.375	0.395	—	—	—

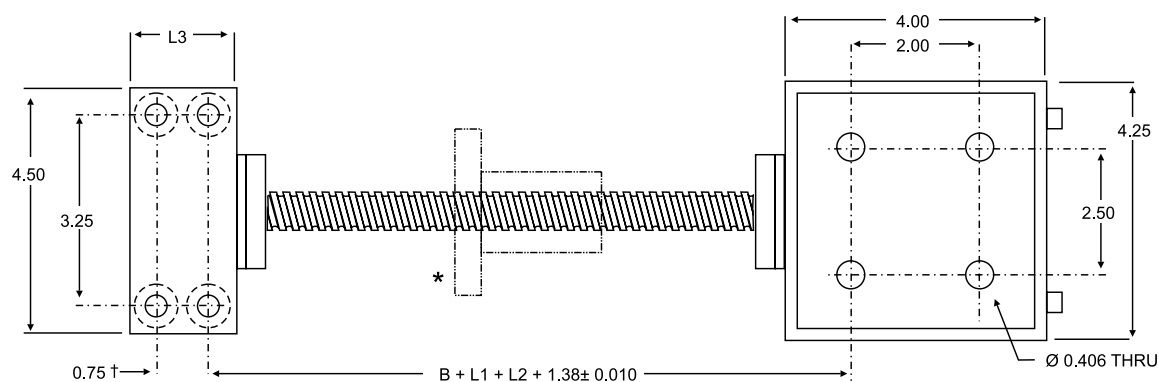
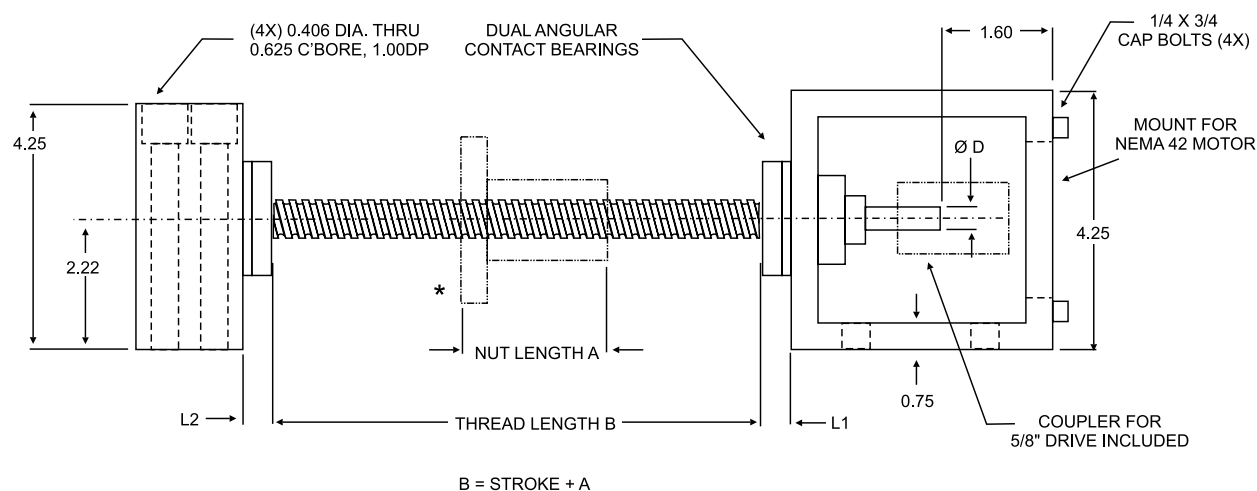
* Maximum assembly thrust load, Do Not Exceed. Do not exceed dynamic load rating of the lead nut.

† M34F12 only. M34S12 has two mounting holes centered on L3.



Screw Assemblies - NEMA 42 Motor Mounts

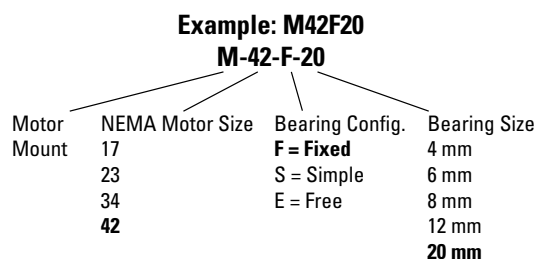
For 1" to 1-1/2" and 25 to 38 mm Ball and Lead Screws



Part Number (See Example)	Axial* Load	Bearing Support	D	L1	L2	L3
M42F20	1,850 lbs	20 mm	0.500	0.869	0.869	1.50
M42S20			0.500	0.869	—	0.75
M42E20			0.500	0.869	—	—

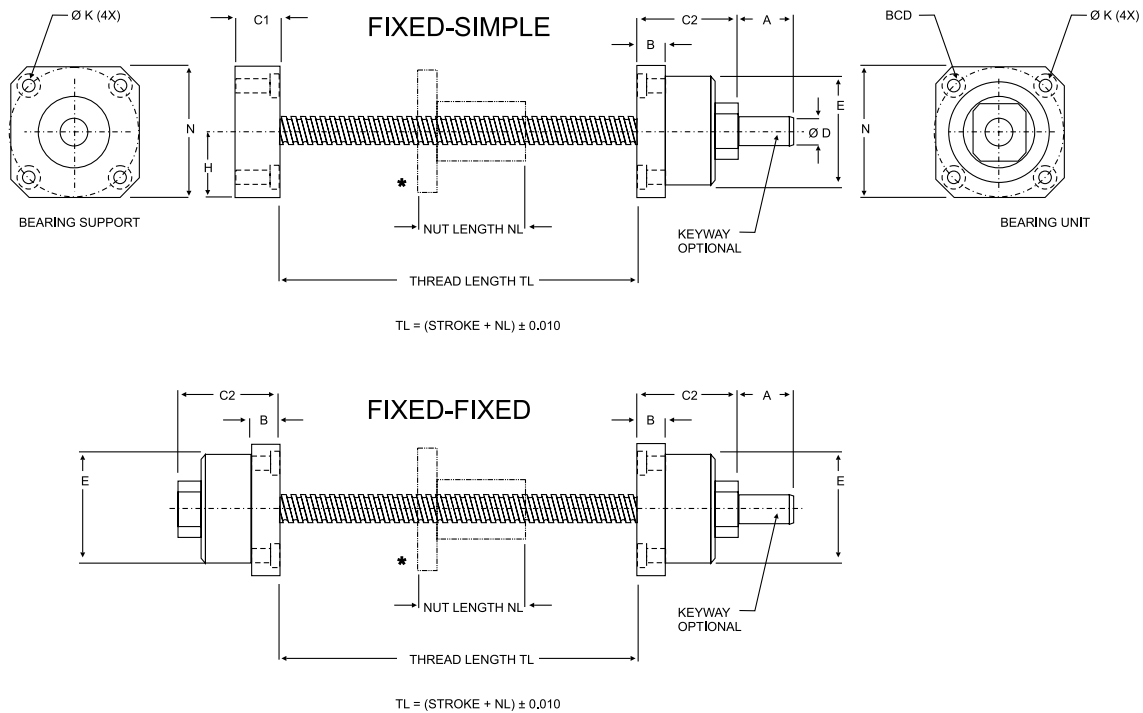
* Maximum assembly thrust load, Do Not Exceed. Do Not Exceed. Do not exceed dynamic load rating of the lead nut.

† M42F20 only. M42S20 has two mounting holes centered on L3.



Screw Assemblies - Bearing Mounts

Flange Mount

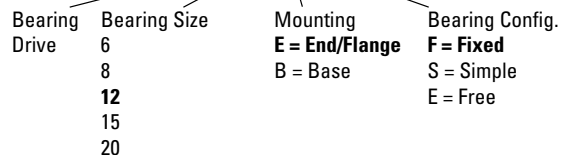


Assembly No.	Axial Load*	A	B	C1	C2	D ± 0.000 0.001	E	BCD	K	H	N
B6EF	230 lbs	0.63	0.28	—	1.04	0.187	0.866	1.10	0.114 thru 0.22 c bore 0.14 deep	0.55	1.10
B6ES				0.37							
B6EE				—							
B8EF	326 lbs	0.63	0.35	—	1.22	0.250	1.102	1.38	0.134 thru 0.26 c bore 0.16 deep	0.69	1.38
B8ES				0.50							
B8EE				—							
B12EF	680 lbs	0.75	0.40	—	1.40	0.375	1.417	1.73	0.177 thru 0.32 c bore 0.16 deep	0.67	1.73
B12ES				0.62							
B12EE				—							
B15EF	760 lbs	0.75	0.59	—	1.82	0.500	1.575	1.97	0.216 thru 0.37 c bore 0.24 deep	1.02	2.05
B15ES				0.62							
B15EE				—							
B20EF	1,852 lbs	1.00	0.87	—	2.61	0.625	2.244	2.76	0.260 thru 0.43 c bore 0.39 deep	1.34	2.67
B20ES				1.00							
B20EE				—							

* Maximum assembly thrust load, Do Not Exceed. Do not exceed the dynamic load rating of the lead nut

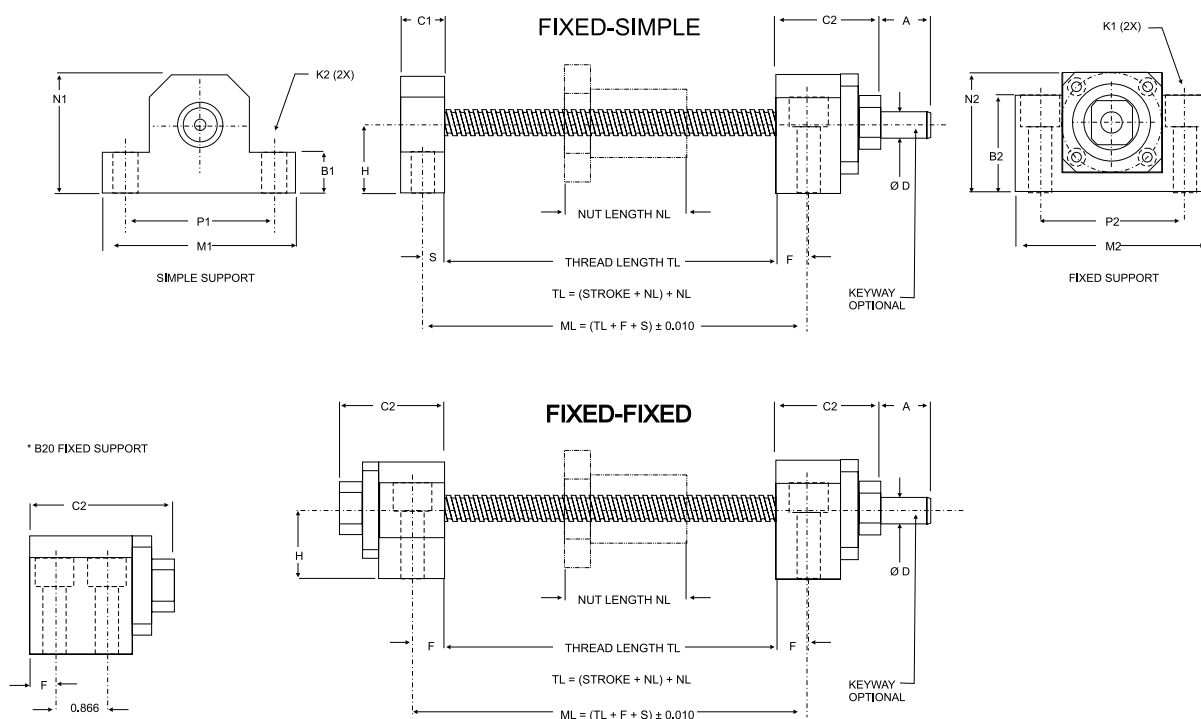
Example: B12FF

B-12-E-F



Screw Assemblies - Bearing Mounts

Base Mount[†]



Assembly No.	Axial Load*	F	S	A	C1	C2	D ± 0.000 0.001	H	K1	K2	M1	M2	N1	N2	P1	P2	B1	B2
B6BF	230 lbs	0.40	—	0.63	—	1.00	0.187	0.512	0.216 thru 0.37 cbore 0.43 deep	—	—	1.66	—	0.98	—	1.18	—	0.78
B6BS			0.19		0.37					0.22 thru	1.66		0.95		1.26		0.39	
B6BE			—		—					—	—		—		—		—	
B8BF	326 lbs	0.45	—	0.63	—	1.18	0.250	0.669	0.260 thru 0.43 cbore 0.47 deep	—	—	2.05	—	1.26	—	1.50	—	1.02
B8BS			0.25		0.50					0.26 thru	2.01		1.18		1.50		0.51	
B8BE			—		—					—	—		—		—		—	
B12BF	680 lbs	0.47	—	0.75	—	1.40	0.375	0.984	0.354 thru 0.55 cbore 0.43 deep	—	—	2.76	—	1.70	—	2.05	—	1.38
B12BS			0.31		0.62					0.35 thru	2.76		1.69		2.13		0.60	
B12BE			—		—					—	—		—		—		—	
B15BF	760 lbs	0.49	—	0.75	—	1.67	0.500	1.181	0.433 thru 0.67 cbore 0.59 deep	—	—	3.15	—	1.97	—	2.36	—	1.58
B15BS			0.31		0.62					0.35 thru	3.15		2.00		2.44		0.71	
B15BE			—		—					—	—		—		—		—	
B20BF	1,852 lbs	0.39	—	1.00	—	2.44	0.625	1.181	0.433 thru 0.67 cbore 0.59 deep	—	—	3.74	—	2.28	—	2.95	—	1.77
B20BS			0.50		1.00					0.43 thru	3.74		2.44		3.07		0.79	
B20BE			—		—					—	—		—		—		—	

[†] Note flange radius. Some flanges may interfere with the mounting surface.

* Maximum assembly load. Do not exceed the dynamic load rating of the lead nut.

Grease

Overview

We offer a full compliment of lubricants including our low vapor pressure greases for clean room and vacuum applications. The TriGel line is specifically formulated to offer a lubrication solution for a wide range of linear motion applications. Choose the appropriate gel for your requirements and get the utmost performance out of your Thomson lead screws.



Lubrication Selection Chart for Ball & Lead Screw Assemblies

BSA Gel Type	TriGel-300S	TriGel-450R	TriGel-600SM	TriGel-1200SC	TriGel-1800RC
Application	Acme Screws, Supernuts, Plastic Nuts	Ball Screws, Linear Bearings	Bronze Nuts	Acme Plastic Nuts, Clean Room, High Vacuum	Ball Screws, Linear Bearings, Bronze Nuts, Clean Room, Vacuum
Maximum Temperature	200°C (392°F)	125°C (257°F)	125°C (257°F)	250°C (482°F)	125°C (257°F)
Mechanism Materials	Plastic on Plastic or Metal	Metal on Metal	Metal on Metal Bronze on Steel	Plastics or Metals, any Combination	Metal on Metal
Mechanical Load	Light	Moderate	Moderate to Heavy	Light to Moderate	Moderate
Precision Positioning	Not recommended w/o OEM testing	Not recommended w/o OEM testing	Not recommended w/o OEM testing	Usually OK	Usually OK
Very Low Torque Variation Over Temperature	Yes	—	—	Yes	—
Very Low Starting Torque	Yes	Yes	—	Yes	Yes
Compatibility w/Reactive Chemicals	Not recommended w/o OEM testing	Not recommended w/o OEM testing	Not recommended w/o OEM testing	Usually OK	Not recommended w/o OEM testing
Compatibility w/Plastics and Elastomers	May cause silicone rubber seals to swell	May cause EPDM seals to swell	May cause EPDM seals to swell	Usually OK	May cause EPDM seals to swell
Clean Room Use	Not recommended	Not recommended	Not recommended	Usually OK	Usually OK
High Vacuum use	Not recommended	Not recommended	Not recommended	Usually OK	Usually OK
Vapor Pressuer (25°C)	Varies with lot	Varies with lot	Varies with lot	8 x 10-9 torr	4 x 10-9 torr
Lubricant Price 10cc Syringe** 1 Pound Tube	Yes Yes	Yes Yes	4 oz tube	Yes No	Yes No

* Maximum temperature for continuous exposure. Higher surge temperatures may be permissible but should be validated in the actual end use by the OEM.
Low temperature limits are -15 °C or lower. Consult customer support for specifics.

PTFE Coating



PTFE coating is a dry film which creates a lubrication barrier between a metal substrate and a polymer bushing or lead nut. It can in some cases eliminate the need for an additional gel type lubricant which must be re-applied. It is well suited for use with our SuperNut line of plastic nuts and stainless steel lead screws. Lubrication maintenance intervals can be eliminated and the coating does not attract particulate like a gel lubricant. Gel lubricants can provide lower friction coefficients than dry film lubricants but must be maintained to prevent performance degradation. PTFE coating provides an attractive and clean* alternative to gels and oils.

Typical Properties

Type:	Bonded Solid Film Lubricant
Purpose:	Increased Lubricity, Decreased Friction & Wear
Appearance:	Black Coating
Thickness:	Approx. 13 – 25 micron
Active Lubricant:	Polytetrafluoroethylene
Friction Coefficient:	0.06 to 0.12
Temperature Operating Range:	-250° to 290° C
Resistance to Acids:	Excellent
Resistance to Bases:	Very Good
Resistance to Solvents:	Excellent

*Some particulate will be generated as a result of wear between nut and screw. Screw may begin to show signs of “polishing” over time. This does not necessarily indicate failure.

Lead Screws Engineering Overview

Precision Lead Screws & Supernuts®

Features/Advantages

Low Cost

Considerable savings when compared to ball screw assemblies.

Variety

Largest range of leads and diameters 3/16" to 3" to match your requirements.

Lubrication

Internally lubricated plastic nuts will operate without lubrication. However, additional lubrication or PTFE coating of the screw is recommended to optimize efficiency and life. See page 44.

Vibration and Noise

No ball recirculating vibration and often less audible noise compared to ball screws.

Design Considerations

Load

Supernuts provide a cost effective solution for moderate to light loads. For vertical applications, anti backlash supernuts should be mounted with thread/flange on the bottom.

Cantilevered Loads

Cantilevered loads that might cause a moment on the nut will cause premature failure.

Column Loading

Refer to column loading chart on page 48.

Critical Speed

Refer to critical speed chart on page 47.

Self-Locking

Lead screws can be self locking at low leads. Generally, the lead of the screw should be more than 1/3 of the diameter to satisfactorily backdrive.

Custom

Option of custom designs to fit into your design envelope.

Non-Corrosive*

Stainless Steel and internally lubricated acetal.

Environment

Less susceptible to particulate contamination compared to ball screws.

Lightweight

Less mass to move.

Temperature

Ambient and friction generated heat are the primary causes of premature plastic nut failure. Observe the temperature limits below and discuss your design with our application engineers for continuous duty, high load and high speed applications. Thomson recommends bronze nuts for very high temperature environments or can aid in your selection of high temperature plastic for a custom assembly.

Efficiency

Except at very high leads, efficiency increases as lead increases. Although the internally lubricated acetal provides excellent lubricity, Ball Screw Assemblies remain significantly more efficient than any Acme design.

Length Limitations

3/16" to 1/4"	3'
5/16" to 10 mm	4'
7/16" to 5/8"	6'
>5/8"	12'

Lead Accuracy

Standard Grade (SRA)	0.010 in/ft
Precision Grade (SPR)	0.003 in/ft

Assembly		Screws	Nuts**			
Maximum Temperature	Friction Coefficient	Material	Material	Tensile Strength	Water Absorption (24 HRS %)	Thermal Expansion Coefficient
180°F	0.08 – 0.14	Stainless Steel*	Acetal with PTFE	8,000 psi	0.15	5.4 x 10-5 in. /in. /°F

* Other materials available on a custom basis.

** Plastic nuts only. See bronze nut section for information on our bronze nut products, page 33.

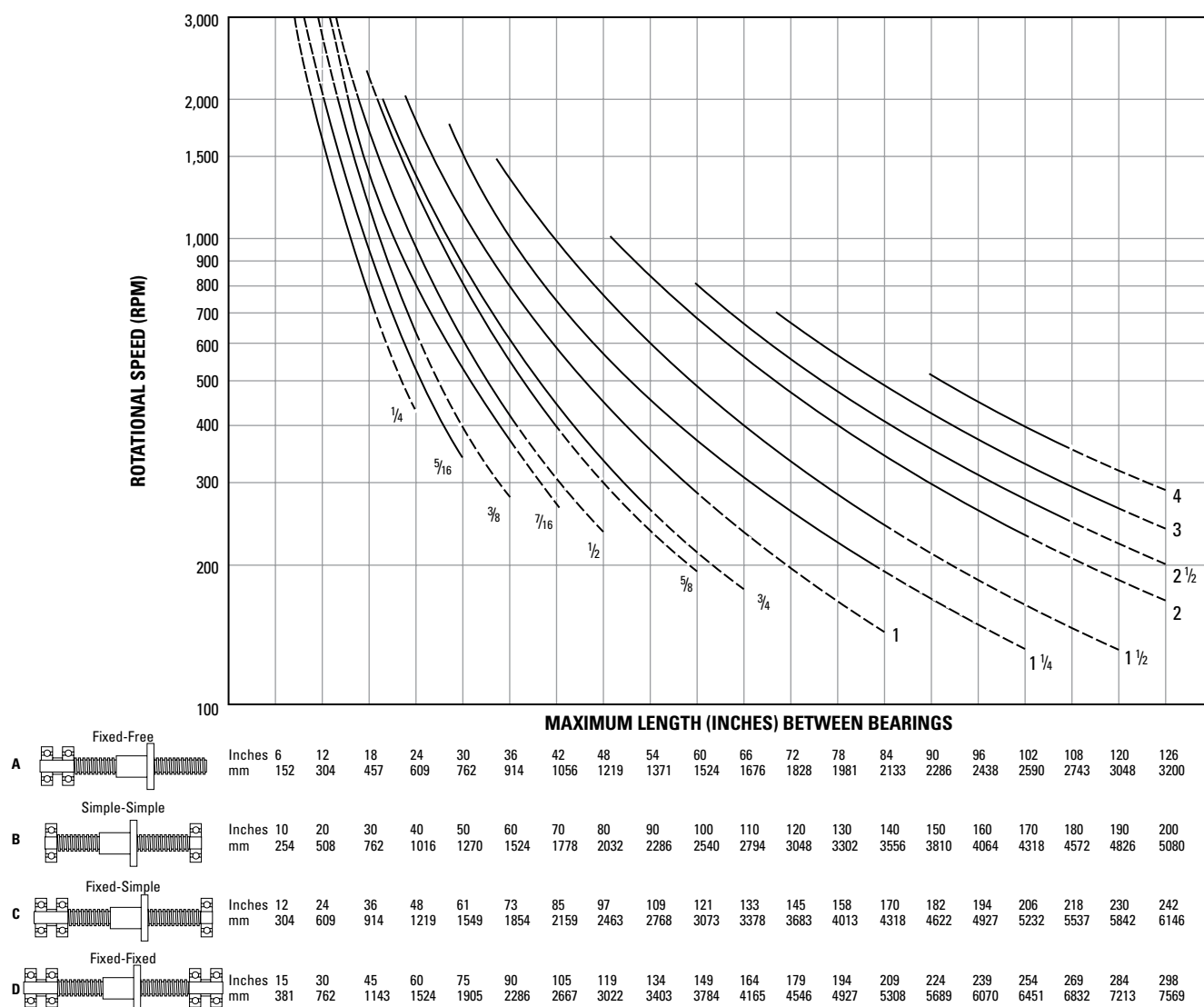
Engineering Guidelines for Lead Screws

Critical Speed Limits Chart for Lead Screws

Every screw shaft has a rotational speed limit. That is the point at which the rotational speed sets up excessive vibration. This critical point is modified by the type of end bearing support used.

To use this chart, determine the required rpm and the maximum length between bearing supports. Next, select one of the four types of end supports shown below. The critical speed limit can be found by locating the point at which rpm (horizontal lines) intersects with the unsupported screw length (vertical lines) as modified by the type of supports selected below. We recommend operating at no more than 80% of the critical speed limit to allow for misalignment and/or lack of screw straightness. If speed falls into the dotted line, consult the factory.

Warning: Curves for the screw diameters shown are based on the smallest root (minor) diameter of the standard screws within the nominal size range and truncated at the maximum ball nut rotational speed. **DO NOT EXCEED** this rpm regardless of screw length.

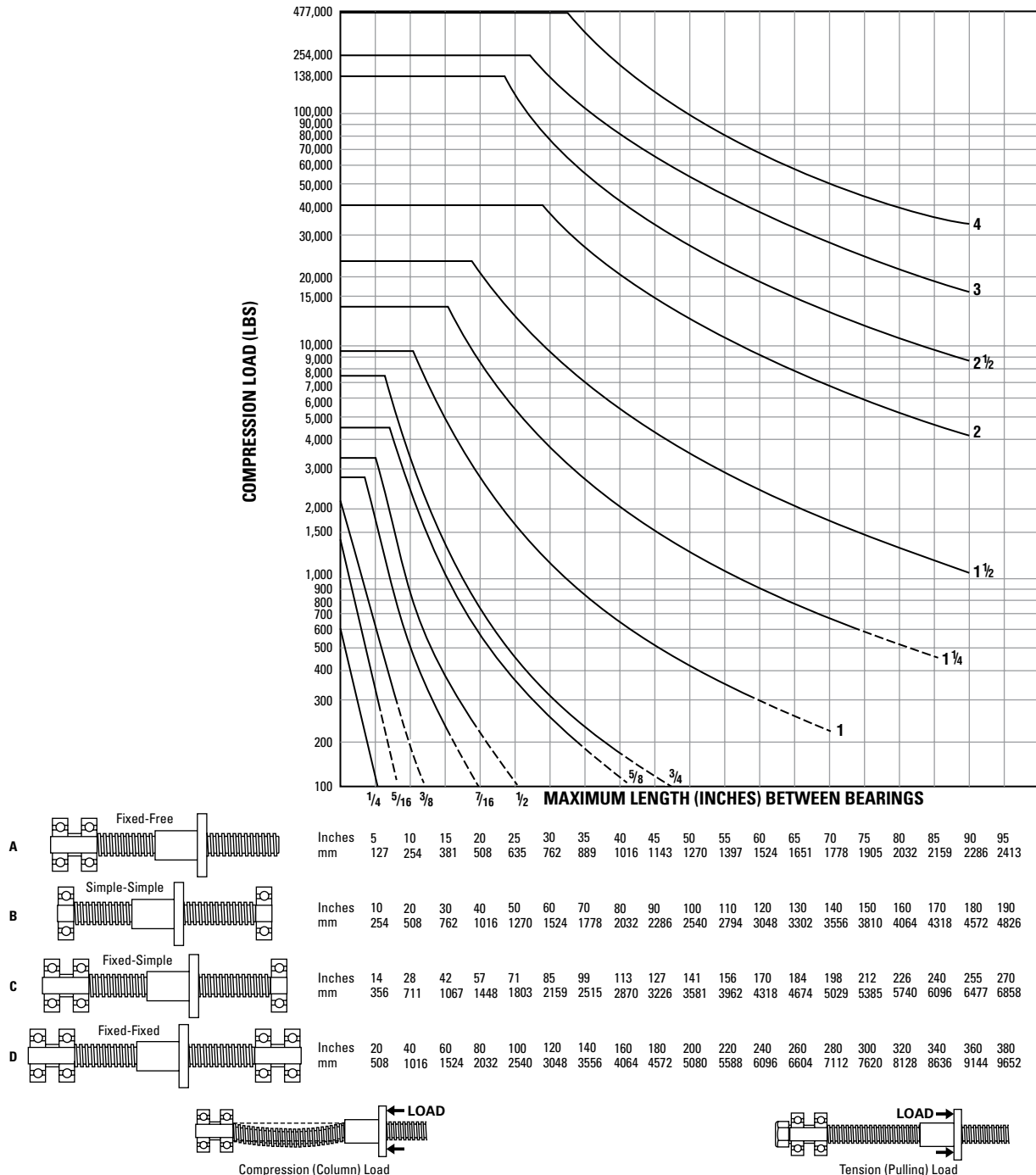


Engineering Guidelines for Lead Screws

Column Loading Capacities Chart for Lead Screws

Use the chart below to determine the Maximum Compression Load for Screw Shaft. Usually, screw operated in tension can handle loads up to the rated capacity of the nut, providing the screw length is within standard lengths. End supports have an effect on the load capacity of screws. The four standard variations are shown below with corresponding rating adjustments. Find the point of intersecting lines of load (horizontal) and length (vertical) to determine the minimum safe diameter of screw. If loads fall into dotted lines, consult factory.

Warning: DO NOT EXCEED ball nut capacity. Curves for the screw diameters shown are based on the smallest root (minor) diameter of the standard screws within the nominal size range.



Formulas

Some Useful Formulas for Lead Screw Assemblies

Torque, Rotary to Linear

Rotating the screw to translate the nut, or rotating the nut to translate the screw.

Lead Screw Assemblies

$$\text{Torque (in lbs)} = \frac{\text{Load (lbs)} \times \text{Lead (inches)}}{2\pi \times \text{efficiency}^*}$$

* Acme screw efficiency is variable with the helix angle of the threads, the friction of the material and the finish. See the efficiency formula below.

Torque, Linear to Rotary

Translating the screw to rotate the nut, or translating the nut to rotate the screw.

Lead Screw Assemblies

$$\text{Torque (in lbs)} = \frac{\text{Load} \times \text{Lead} \times \text{Efficiency}}{2\pi}$$

The higher the lead of the screw, the less effort required to backdrive either the screw or the nut.
As a rule, the lead of the screw should be more than 1/3 the diameter of the screw to satisfactorily backdrive.

Efficiency

Lead Screw Assemblies

$$\% \text{ Efficiency} = \frac{\tan(\text{helix angle})}{\tan(\text{helix angle} + \arctan f)} \times 100$$

$f = \text{coefficient of friction}$

Horsepower

Torque to Horsepower

$$\text{hp} = \frac{\text{Torque (in lbs)} \times \text{rpm}}{63000}$$

Horsepower to Torque

$$\text{Torque} = \frac{63000 \times \text{hp}}{\text{rpm}}$$

Column Load Strength*

(Based on Eulers Formula)

$$P_{Cr} = \frac{1.405 \times 10^7 \times F_c \times d^4}{L^2}$$

P_{Cr} = maximum loads (lbs)

F_c = end support factor

0.25 one end fixed, other free

1.00 both ends supported

2.00 one end fixed, other supported

4.00 both ends fixed

d = root diameter of screw (in.)

L = distance between nut and load carrying bearing (in.)

When possible, design for tension loads to eliminate the buckling factor and reduce the required screw size

Critical Screw Shaft Speed

(Maximum rotational speed of screw)

$$C_s = F_c \times 4.76 \times 10^6 \times \frac{d}{L^2}$$

C_s = critical speed (rpm)

d = root diameter of screw (in.)

L = length between supports (in.)

F_c = end support factor

0.36 one end fixed, other free

1.00 both ends supported

1.47 one end fixed, other supported

2.23 both ends fixed

Critical shaft speed should be reduced to 80% to allow for other factors such as alignment and straightness

* Formula only valid if $L/d \geq 18.25$.



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