



Precision Metric Ball Screws

German-Engineered Components for Smooth and Precise Linear Guidance



Nook/Thomson - the Choice for Optimized Motion Solution

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.

Quickly Configure the Optimal Linear Motion Solutions

Nook/Thomson has several advantages that make us the supplier of choice for linear motion technology.

- Nook/Thomson owns the broadest standard product offering of mechanical motion technologies in the industry.
- Modified versions of standard product or white sheet design solutions are routine for us.
- Choose Nook/Thomson and gain access to more than 75 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 Regal Rexnord Corporation, 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/contact. Talk to us early in the design process to see how Nook/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.

Local Support Around the Globe



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Product Overview

NOOK/THOMSON METRIC BALL SCREWS

Superior performance for today's most stringent positioning requirements.

Nook/Thomson offers a full range of internal return metric ball screw products, featuring two distinct product families. Miniature Metric Rolled Ball Screw assemblies are an efficient, cost-effective solution in a small envelope. Miniature metric ball screw assemblies range from 8 to 12 mm in diameter, with standard lead accuracies of 52 microns/300 mm. Nook/Thomson Metric Rolled Ball Screw

assemblies are designed and manufactured to provide high level performance at an affordable price. Ball screws are manufactured using Nook/Thomson's patented, German-engineered Precision Screw Forming (PSF) Technology, which provides high accuracy (23 microns/300 mm standard) with the manufacturing efficiency of rolled processes. Nook/Thomson Metric Rolled Ball Screw assemblies are available in a wide range of diameters, leads and nut styles — all designed to provide quiet, smooth running, efficient performance. Ball nuts include one of three unique ball return systems providing perfect guidance, low wear, and smooth running performance.



Overview



Miniature Rolled Ball Screws												
Diam.	Lead											
	1 mm	2 mm	2.5 mm	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	15 mm	20 mm
8 mm			●			●						
10 mm		●		●								
12 mm		●			●	●			●			

Metric Rolled Ball Screws														
Diam.	Lead													
	1 mm	2 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	15 mm	20 mm	25 mm	32 mm	40 mm	50 mm
16 mm				●			●							
20 mm				●						●				●
25 mm				●			●			●	●			●
32 mm				●			●			●		●	●	
40 mm				●			●			●			●	
50 mm							●			●				
63 mm							●			●				
80 mm							●							

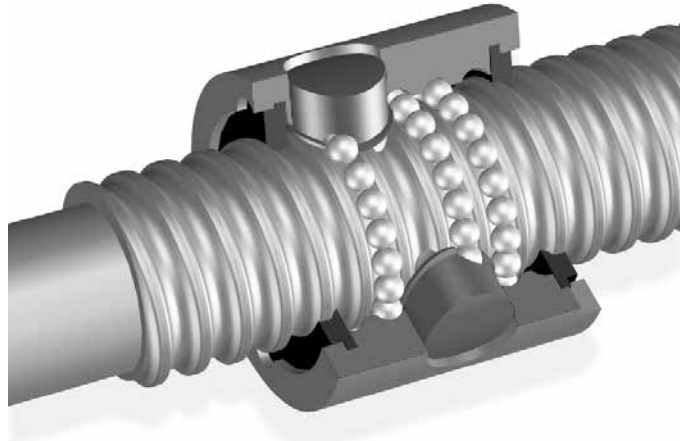


Metric Ball Screw Nuts - Return Systems Overview

All ball screws require a recirculation system for the ball nut balls. Thomson return systems are optimized for each diameter and lead combination to maximize load capacity, minimize footprint and guarantee smooth and reliable operation.

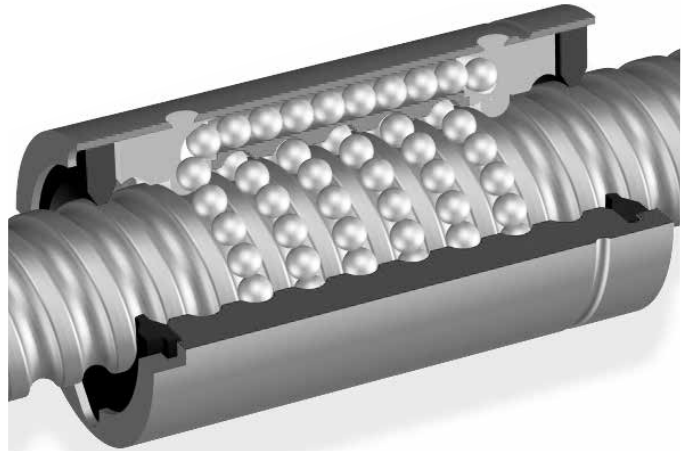
Single Circuit and Multi Circuit

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



Internal Return

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



External Return

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



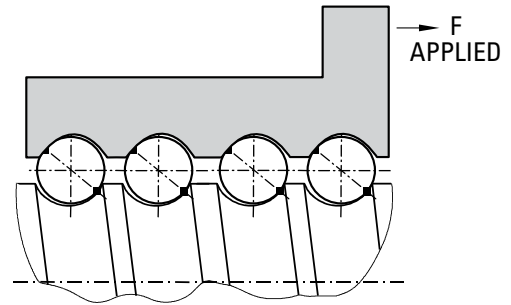
Metric Ball Screw Nuts - Pre-Loading Alternatives

Most of our metric ball nuts come standard as non-preloaded with pre-loaded available as an option on most sizes. Non-Preloaded Ball Nuts are a flexible, economical solution for use in industrial, transport grade applications. Preloaded Ball Nuts should be considered to eliminate backlash and increase system stiffness in applications where multi-directional positional accuracy and repeatability are required.

No Pre-load (Type 0)

(Standard lash)

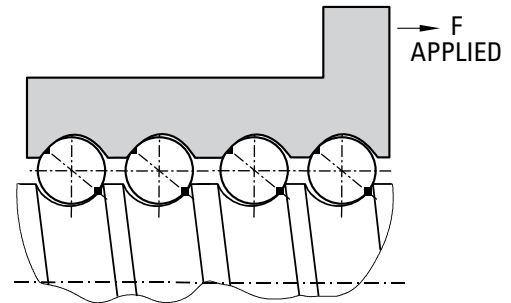
- Axial play is present between screw and nut.
- Typically used for transport or vertical applications.



Reduced Clearance (Type 1)

(Minimum lash)

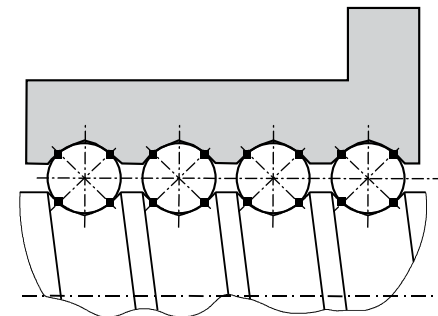
- Axial play is present between screw and nut (held to 0.05 mm maximum).
- Typically used for transport or vertical applications.



Pre-load (Type 2)

(No lash)

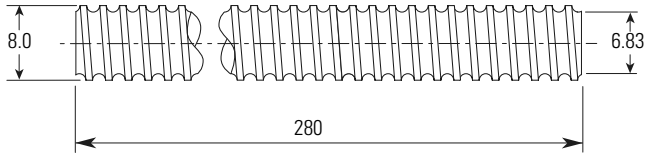
- Oversized balls slightly larger than the ball groove space are used to provide zero backlash between the screw and nut.
- The preload is approximately 1 - 5% of dynamic load capacity.
- Typically used for positioning applications where higher-level repeatability is desired.





Ø 8 x 2.5 mm Miniature Metric Ball Screws – Ground

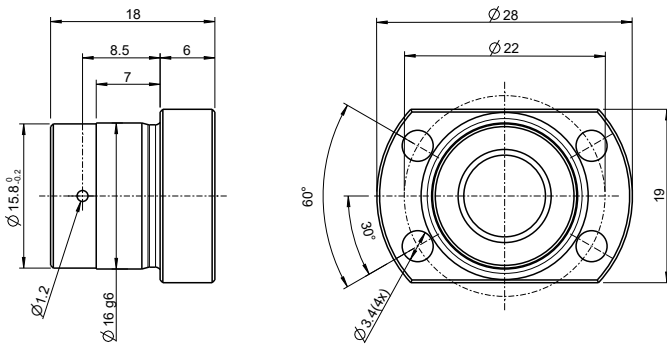
Ball Screw



Nominal Ball Screw Diameter	8 mm
Nominal Ball Screw Lead	2.5 mm
Thread Direction	Right Hand
Screw Material	AISI 1566
Screw Weight	0.39 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	SRT0825X280

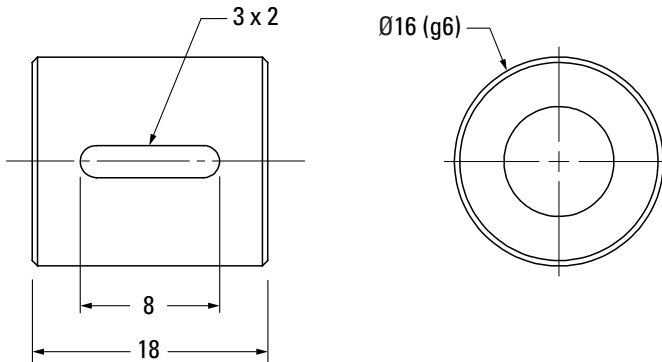
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



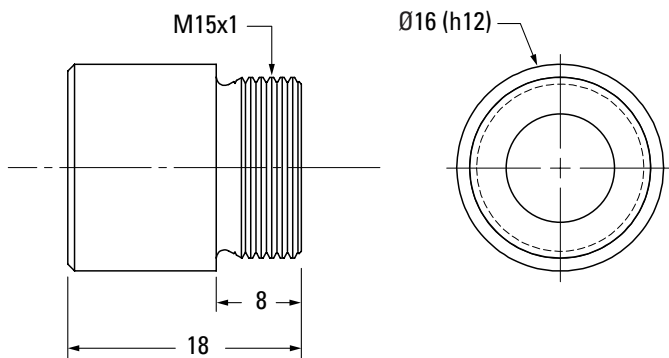
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	2.1 kN
Max. Static Load	2.2 kN
Torque to Raise 1 kN	0.82 Nm
Nut Weight	0.033 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	45
Wiper Type	Rubber
Part Number	KGF-D-0825-RH-M-EE

Cylindrical Ball Nut, KGM-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	2.1 kN
Max. Static Load	2.2 kN
Torque to Raise 1 kN	0.82 Nm
Nut Weight	0.02 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	45
Wiper Type	Rubber
Part Number	KGM-D-0825-RH-M-EE

Threaded Ball Nut, KGM-G



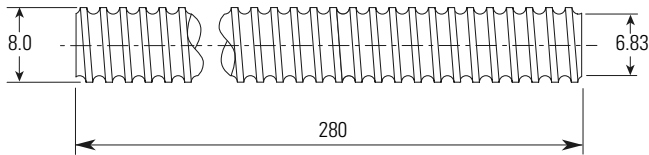
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	2.1 kN
Max. Static Load	2.2 kN
Torque to Raise 1 kN	0.82 Nm
Nut Weight	0.018 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	45
Wiper Type	N/A
Part Number	KGM-G-0825-RH-M-00

(1) P5 = 23 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%

Ø 8 x 5 mm Miniature Metric Ball Screws – Ground

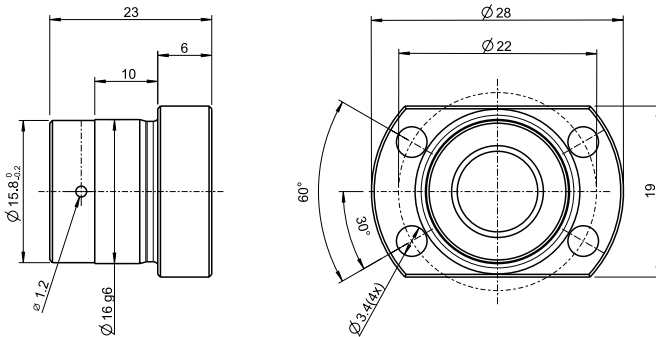
Ball Screw



Nominal Ball Screw Diameter	8 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Screw Material	AISI 1566
Screw Weight	0.39 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	SRT0805X280

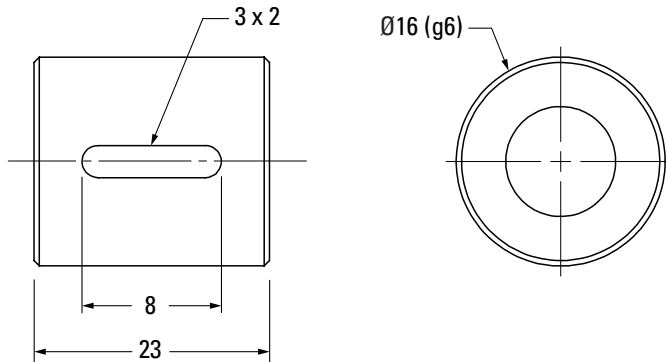
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	2.5 kN
Max. Static Load	2.8 kN
Torque to Raise 1 kN	0.42 Nm
Nut Weight	0.036 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	45
Wiper Type	Polymer
Part Number	KGF-D-0805-RH-K-KK

Cylindrical Ball Nut, KGM-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	2.5 kN
Max. Static Load	2.8 kN
Torque to Raise 1 kN	0.42 Nm
Nut Weight	0.024 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	45
Wiper Type	Polymer
Part Number	KGM-D-0805-RH-K-KK

(1) P5 = 23 µm / 300 mm

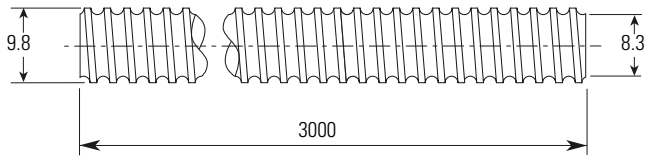
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 10 x 2 mm Miniature Metric Ball Screws – Rolled

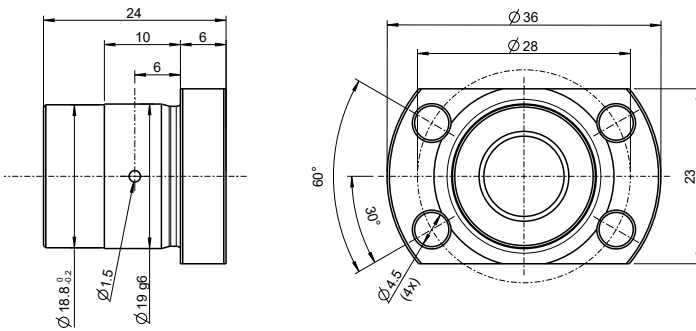
Ball Screw



Nominal Ball Screw Diameter	10 mm
Nominal Ball Screw Lead	2 mm
Thread Direction	Right Hand
Screw Material	CF53
Screw Weight	0.59 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ T7 Part Number	SRT1002X3000

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



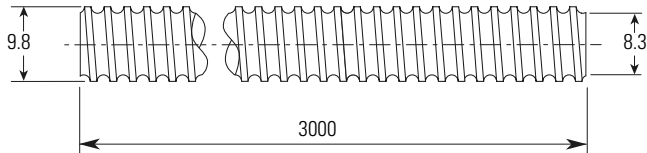
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	3.7 kN
Max. Static Load	4.6 kN
Torque to Raise 1 kN	0.35 Nm
Nut Weight	0.056 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	76
Wiper Type	Rubber
Part Number	KGF-D-1002-RH-M-EE

(1) P5 = 23 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%

Ø 10 x 2 mm Miniature Metric Ball Screws – Rolled

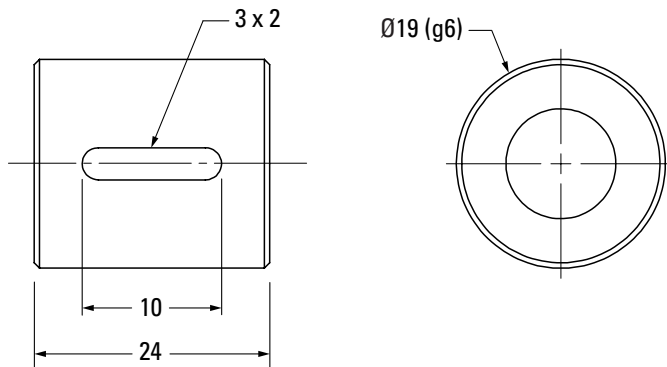
Ball Screw



Nominal Ball Screw Diameter	10 mm
Nominal Ball Screw Lead	2 mm
Thread Direction	Right Hand
Screw Material	CF53
Screw Weight	0.59 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ T7 Part Number	SRT1002X3000

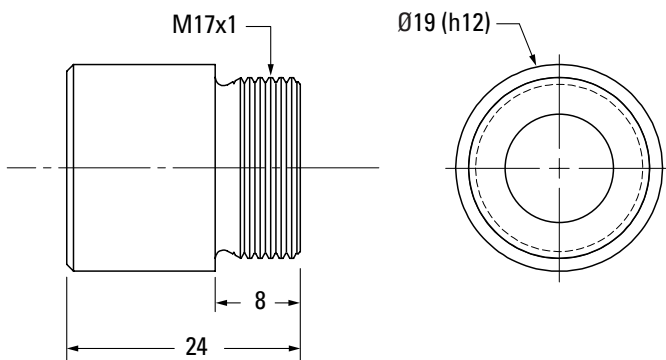
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	3.7 kN
Max. Static Load	4.6 kN
Torque to Raise 1 kN	0.35 Nm
Nut Weight	0.036 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	76
Wiper Type	Rubber
Part Number	KGM-D-1002-RH-M-EE

Threaded Ball Nut, KGM-G



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	3.7 kN
Max. Static Load	4.6 kN
Torque to Raise 1 kN	0.35 Nm
Nut Weight	0.033 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	76
Wiper Type	Rubber
Part Number	KGM-G-0825-RH-M-00

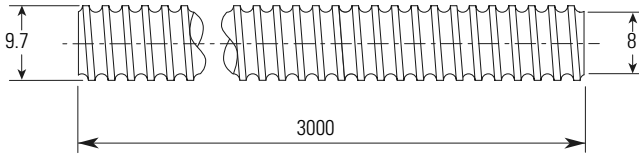
(1) P5 = 23 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%



Ø 10 x 3 mm Miniature Metric Ball Screws – Rolled

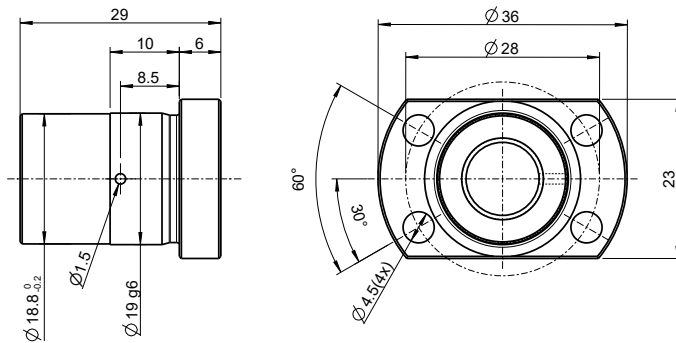
Ball Screw



Nominal Ball Screw Diameter	10 mm
Nominal Ball Screw Lead	3 mm
Thread Direction	Right Hand
Screw Material	CF53
Screw Weight	0.58 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ T7 Part Number	SRT1002X3000

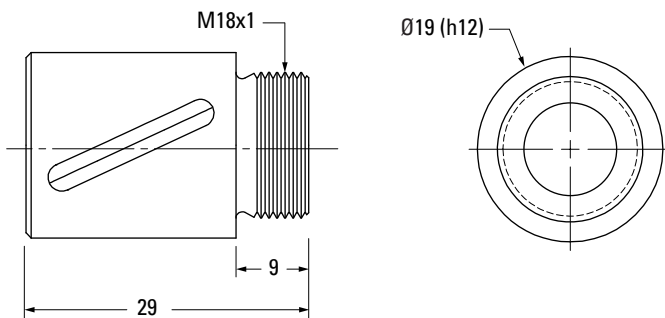
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	5.2 kN
Max. Static Load	6.9 kN
Torque to Raise 1 kN	0.5 Nm
Nut Weight	0.065 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	114
Wiper Type	Rubber
Part Number	KGF-D-1003-RH-M-EE

Threaded Ball Nut, KGM-G



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	5.2 kN
Max. Static Load	6.9 kN
Torque to Raise 1 kN	0.5 Nm
Nut Weight	0.042 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	114
Wiper Type	Rubber
Part Number	KGM-G-1003-RH-M-EE

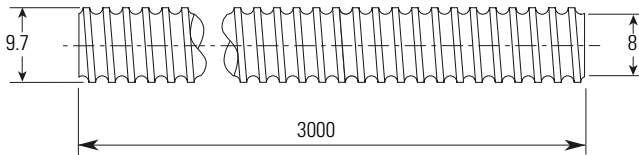
(1) P5 = 23 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

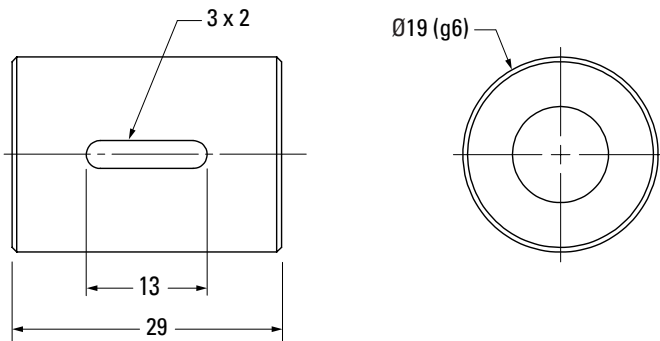
1 = Reduced Clearance, 2 = Preload 1-5%

Ø 10 x 3 mm Miniature Metric Ball Screws – Rolled

Ball Screw



Cylindrical Ball Nut, KGM-D



Nominal Ball Screw Diameter	10 mm
Nominal Ball Screw Lead	3 mm
Thread Direction	Right Hand
Screw Material	CF53
Screw Weight	0.58 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ T7 Part Number	SRT1002X3000

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	5.2 kN
Max. Static Load	6.9 kN
Torque to Raise 1 kN	0.5 Nm
Nut Weight	0.045 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	114
Wiper Type	Rubber
Part Number	KGM-D-1003-RH-M-EE

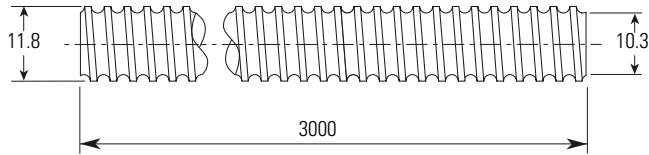
(1) P5 = 23 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%



Ø 12 x 2 mm Miniature Metric Ball Screws – Rolled

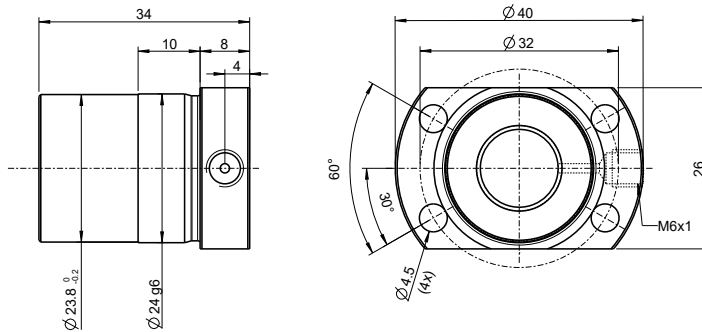
Ball Screw



Nominal Ball Screw Diameter	12 mm
Nominal Ball Screw Lead	2 mm
Thread Direction	Right Hand
Screw Material	CF53
Screw Weight	0.86 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ T7 Part Number	SRT1202X3000

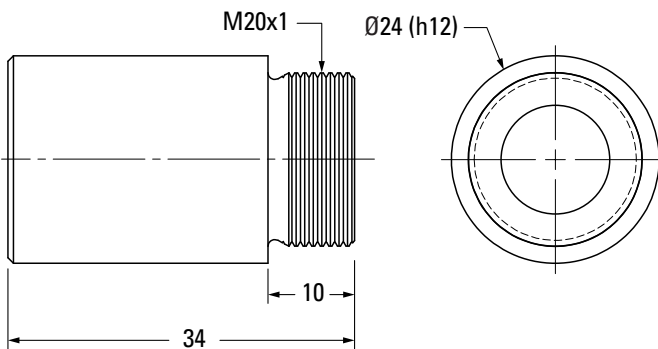
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	5.9 kN
Max. Static Load	8.9 kN
Torque to Raise 1 kN	0.35 Nm
Nut Weight	0.115 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	138
Wiper Type	Rubber
Part Number	KGF-D-1202-RH-M-EE

Threaded Ball Nut, KGM-G



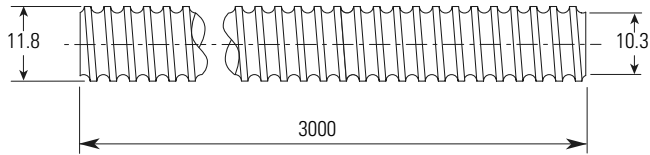
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	5.9 kN
Max. Static Load	8.9 kN
Torque to Raise 1 kN	0.35 Nm
Nut Weight	0.078 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	138
Wiper Type	Rubber
Part Number	KGM-G-1202-RH-M-EE

(1) P5 = 23 µm / 300 mm

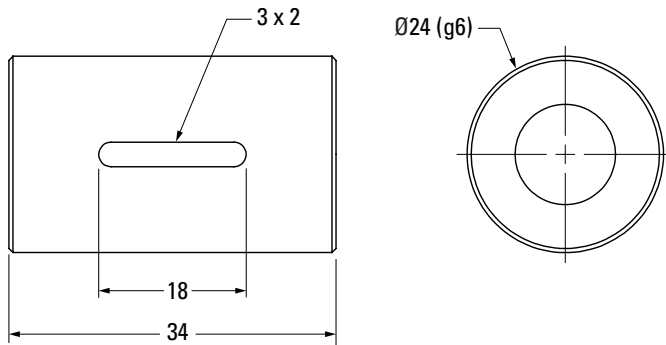
(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%

Ø 12 x 2 mm Miniature Metric Ball Screws – Rolled

Ball Screw



Cylindrical Ball Nut, KGM-D



Nominal Ball Screw Diameter	12 mm
Nominal Ball Screw Lead	2 mm
Thread Direction	Right Hand
Screw Material	CF53
Screw Weight	0.86 kg/m
Nominal Ball Diameter	1.588 mm
Lead Accuracy ⁽¹⁾ T7 Part Number	SRT1202X3000

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	5.9 kN
Max. Static Load	8.9 kN
Torque to Raise 1 kN	0.35 Nm
Nut Weight	0.088 kg
Preload Classes ⁽²⁾	0
Standard max. Backlash	0.05 mm
Ball Return Type	Multi Circuit Liner
Number of Balls	138
Wiper Type	Rubber
Part Number	KGM-D-1202-RH-M-EE

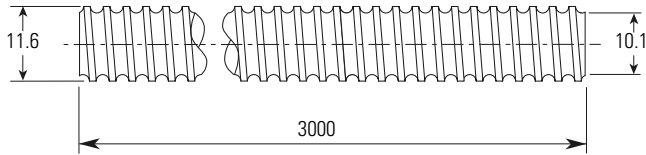
(1) P5 = 23 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%



Ø 12 x 4 mm Miniature Metric Ball Screws – Rolled

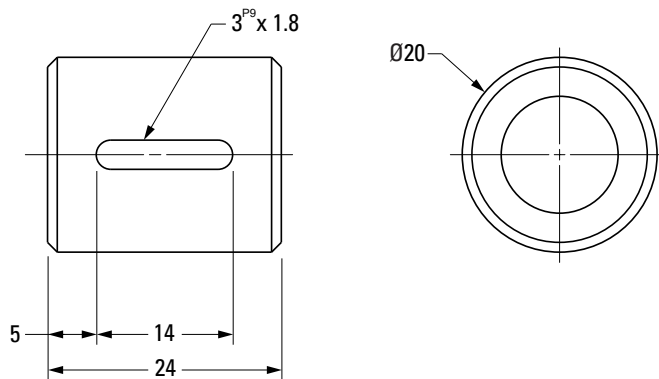
Ball Screw



Nominal Ball Screw Diameter	12 mm
Nominal Ball Screw Lead	4 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	0.76 kg/m
Nominal Ball Diameter	2.0 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9715

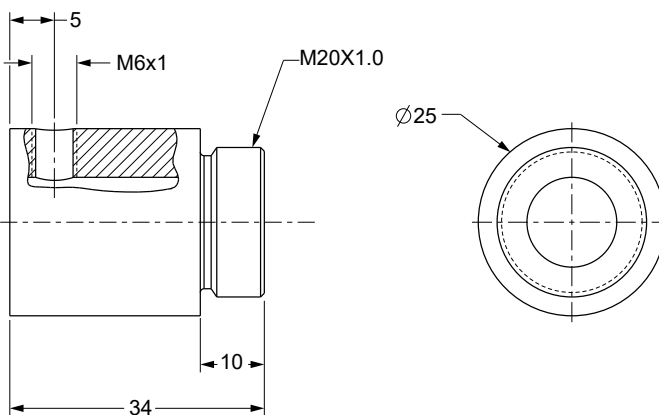
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	4.9 kN
Max. Static Load	6.6 kN
Number of Circuits	3
Torque to Raise 1 kN	0.708 Nm
Nut Weight	0.1 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.024 mm
Ball Return Type	Channel
Number of Balls	63
Wiper Type	N/A
Part Number	KGM-N-1204-RH-00

Threaded Ball Nut, KGM-G



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	3.8 kN
Max. Static Load	4.3 kN
Number of Circuits	3
Torque to Raise 1 kN	0.708 Nm
Nut Weight	0.1 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.024 mm
Ball Return Type	Single Circuit
Number of Balls	60
Wiper Type	N/A
Part Number	KGM-G-1204-RH-00

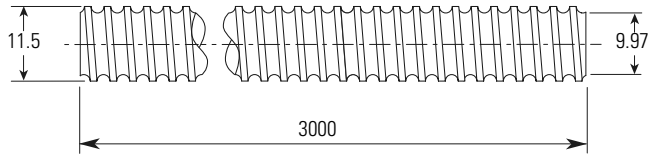
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 12 x 5 mm Miniature Metric Ball Screws – Rolled

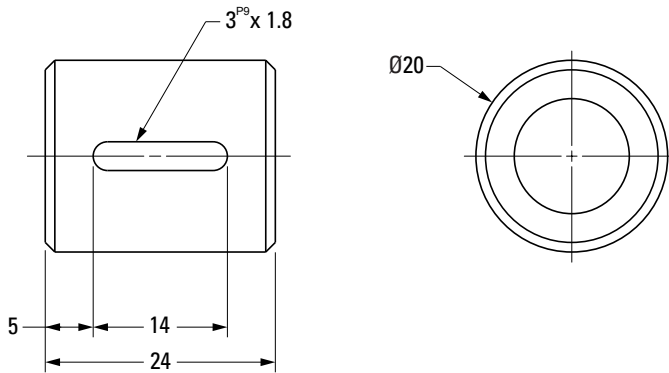
Ball Screw



Nominal Ball Screw Diameter	12 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	0.76 kg/m
Nominal Ball Diameter	5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9716

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	4.4 kN
Max. Static Load	6.8 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.1 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.024 mm
Ball Return Type	Channel
Number of Balls	63
Wiper Type	N/A
Part Number	KGM-N-1205-RH-00

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

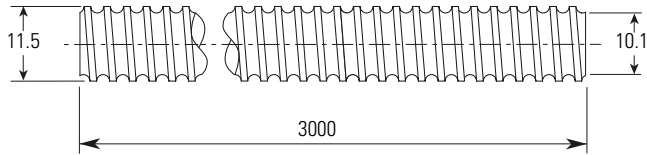
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 12 x 10 mm Miniature Metric Ball Screws – Rolled

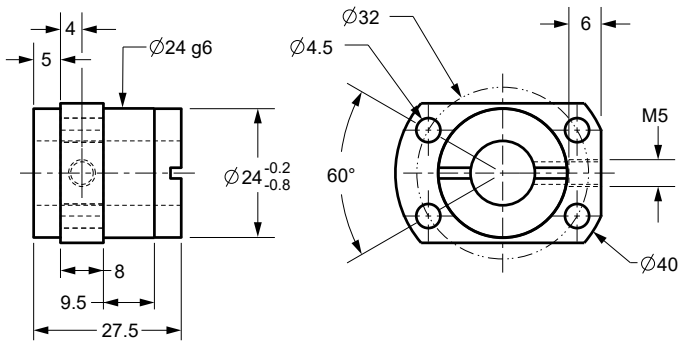
Ball Screw



Nominal Ball Screw Diameter	12 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	0.75 kg/m
Nominal Ball Diameter	2.0 mm
Lead Accuracy⁽¹⁾ P5 Part Number	195-9717

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	4.9 kN
Max. Static Load	8.0 kN
Number of Circuits	4
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.1 kg
Preload Classes⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.024 mm
Ball Return Type	End Cap
Number of Balls	63
Wiper Type	Rubber
Part Number	KGF-D-1210-RH-00

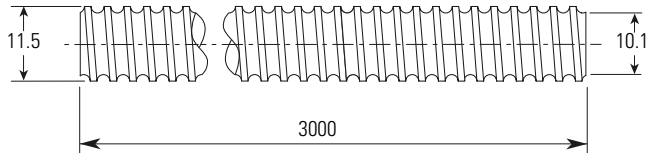
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 12 x 10 mm Miniature Metric Ball Screws – Rolled

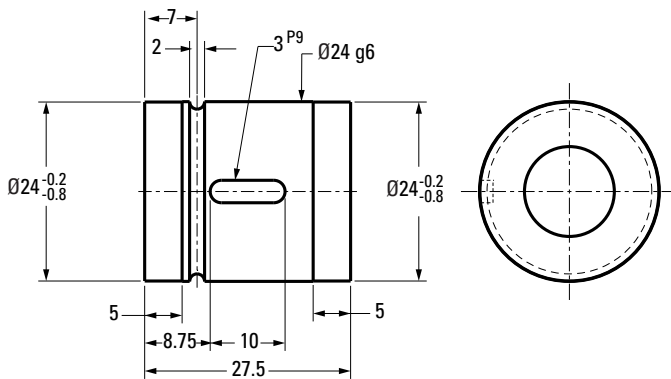
Ball Screw



Nominal Ball Screw Diameter	12 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	0.75 kg/m
Nominal Ball Diameter	2.0 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9717

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	4.49 kN
Max. Static Load	8.0 kN
Number of Circuits	4
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.1 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.024 mm
Ball Return Type	End Cap
Number of Balls	63
Wiper Type	Polymer
Part Number	KGM-D-1210-RH-00

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

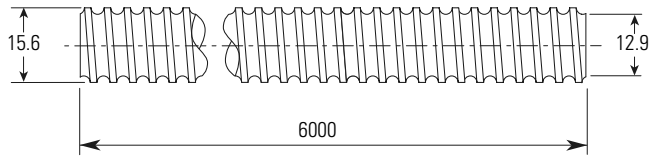
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 16 x 5 mm Metric Ball Screws – Rolled

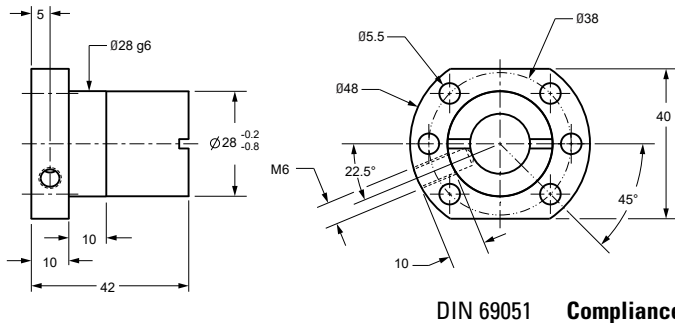
Ball Screw



Nominal Ball Screw Diameter	16 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	1.38 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9698

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

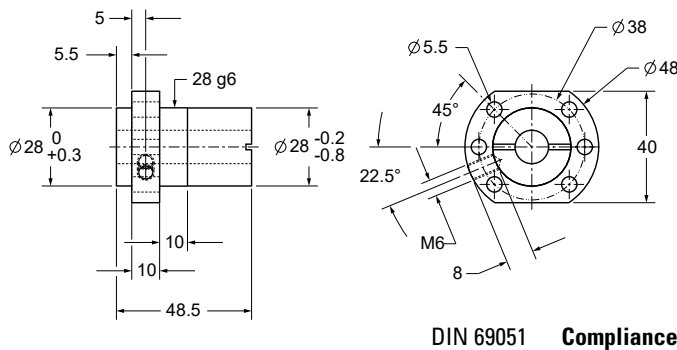
Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	9.3 kN
Max. Static Load	13.1 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Polymer
Number of Balls	45
Wiper Type	Rubber
Part Number	KGF-D-1605-RH-EE

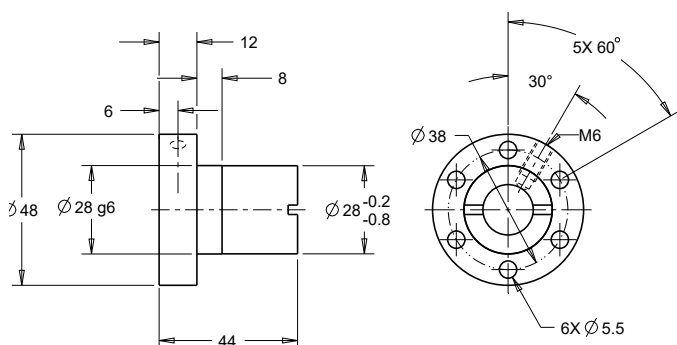
Flanged Ball Nut, KGF-D (FK)



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	9.5 kN
Max. Static Load	10.9 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	42
Wiper Type	Polymer
Part Number	KGF-D-1605-RH-KK

Flanged Ball Nut, KGF-N

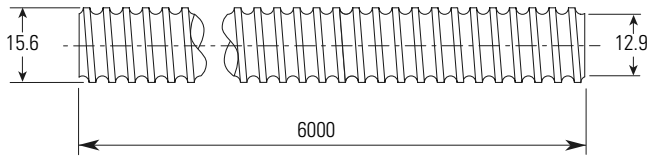


Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	9.3 kN
Max. Static Load	13.1 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	45
Wiper Type	Rubber
Part Number	KGF-N-1605-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 16 x 5 mm Metric Ball Screws – Rolled

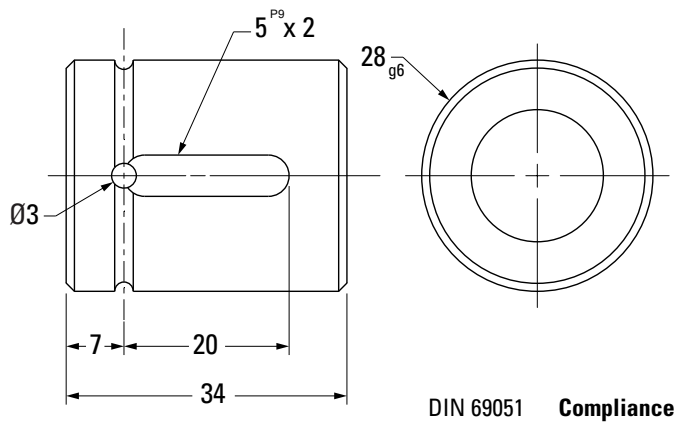
Ball Screw



Nominal Ball Screw Diameter	16 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	1.38 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9698

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

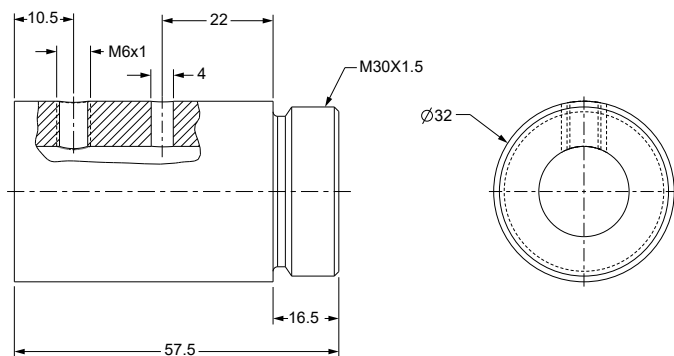
Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	9.3 kN
Max. Static Load	13.1 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.10 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	45
Wiper Type	Polymer
Part Number	KGM-D-1605-RH-EE

Threaded Ball Nut, KGM-G



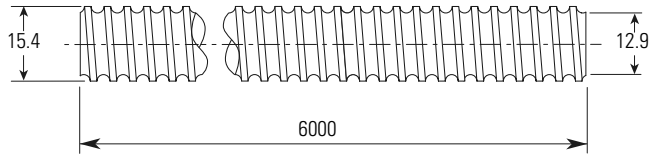
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	12.1 kN
Max. Static Load	14.5 kN
Number of Circuits	4
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.22 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	56
Wiper Type	Polymer
Part Number	KGM-G-1605-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%



Ø 16 x 10 mm Metric Ball Screws – Rolled

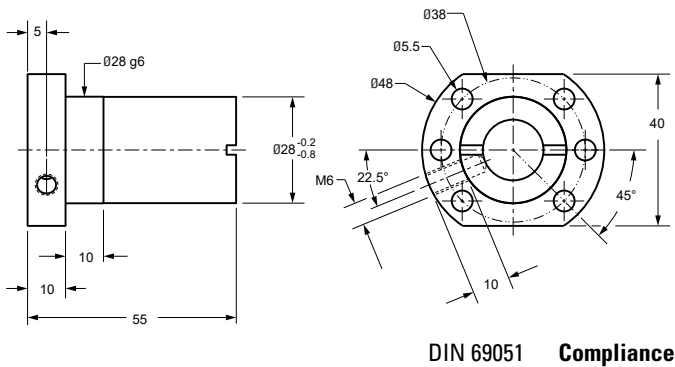
Ball Screw



Nominal Ball Screw Diameter	16 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	1.26 kg/m
Nominal Ball Diameter	3.0 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9699

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	15.4 kN
Max. Static Load	26.5 kN
Number of Circuits	6
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Channel
Number of Balls	102
Wiper Type	Rubber
Part Number	KGF-D-1610-RH-EE

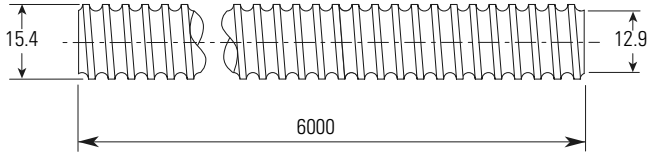
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 16 x 10 mm Metric Ball Screws – Rolled

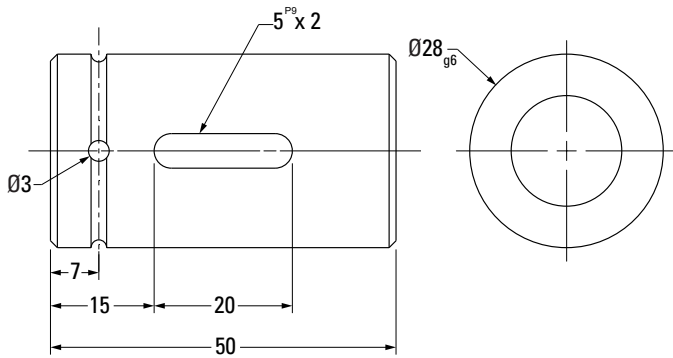
Ball Screw



Nominal Ball Screw Diameter	16 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	1.26 kg/m
Nominal Ball Diameter	3.0 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9699

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	15.4 kN
Max. Static Load	26.5 kN
Number of Circuits	6
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.035 mm
Ball Return Type	Channel
Number of Balls	102
Wiper Type	Polymer
Part Number	KGM-D-1610-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

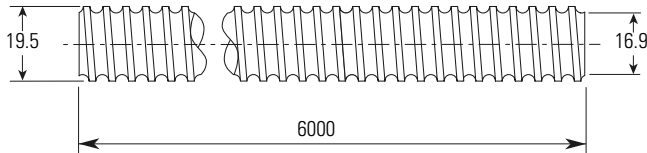
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

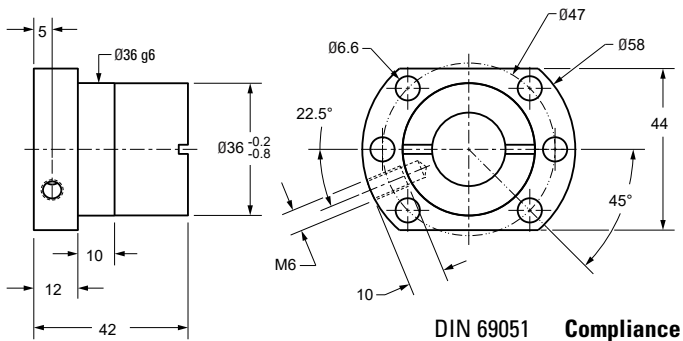


Ø 20 x 5 mm Metric Ball Screws – Rolled

Ball Screw



Flanged Ball Nut, KGF-D

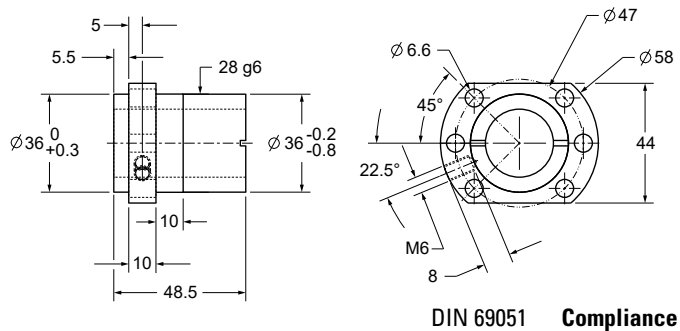


Nominal Ball Screw Diameter	20 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	2.20 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9700

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

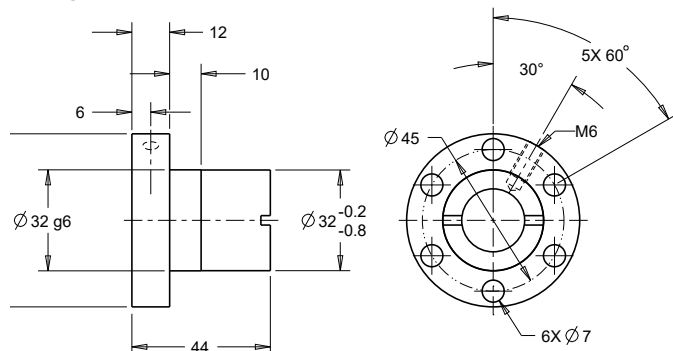
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	10.5 kN
Max. Static Load	16.6 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.25 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.035 mm
Ball Return Type	Channel
Number of Balls	48
Wiper Type	Rubber
Part Number	KGF-D-2005-RH-EE

Flanged Ball Nut, KGF-D (FK)



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	11.5 kN
Max. Static Load	15.5 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.4 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	54
Wiper Type	Polymer
Part Number	KGF-D-2005-RH-KK

Flanged Ball Nut, KGF-N

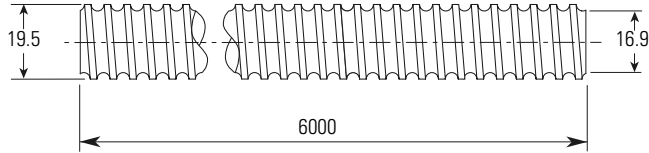


Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	10.5 kN
Max. Static Load	16.6 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.25 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	48
Wiper Type	Rubber
Part Number	KGF-N-2005-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 20 x 5 mm Metric Ball Screws – Rolled

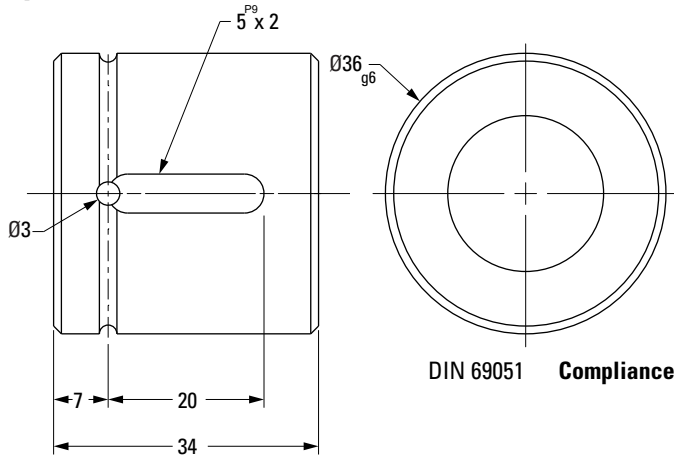
Ball Screw



Nominal Ball Screw Diameter	20 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	2.20 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9700

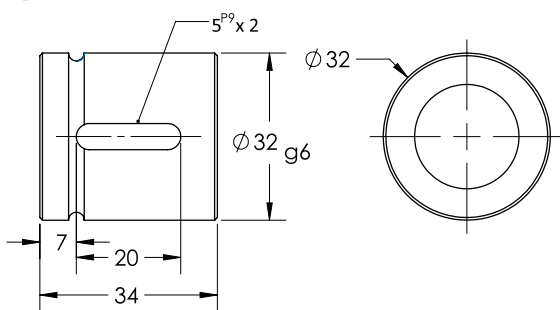
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



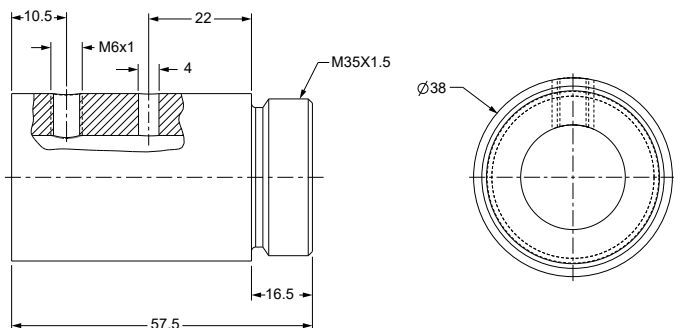
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	10.5 kN
Max. Static Load	16.6 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Channel
Number of Balls	48
Wiper Type	Polymer
Part Number	KGM-D-2005-RH-EE

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	10.5 kN
Max. Static Load	16.6 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.1 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	48
Wiper Type	Rubber
Part Number	KGM-N-2005-RH-EE

Threaded Ball Nut, KGM-G



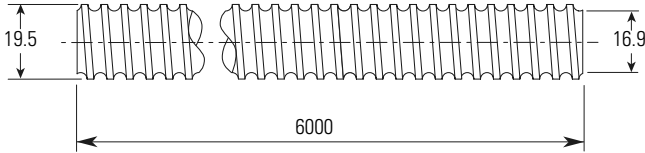
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	14.8 kN
Max. Static Load	20.7 kN
Number of Circuits	4
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	72
Wiper Type	Polymer
Part Number	KGM-G-2005-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%



Ø 20 x 20 mm Metric Ball Screws – Rolled

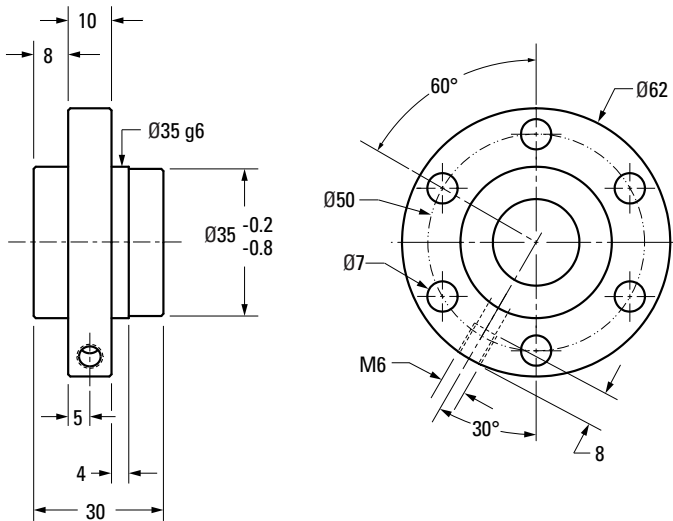
Ball Screw



Nominal Ball Screw Diameter	20 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	4
Screw Material	CF53
Screw Weight	2.23 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9718

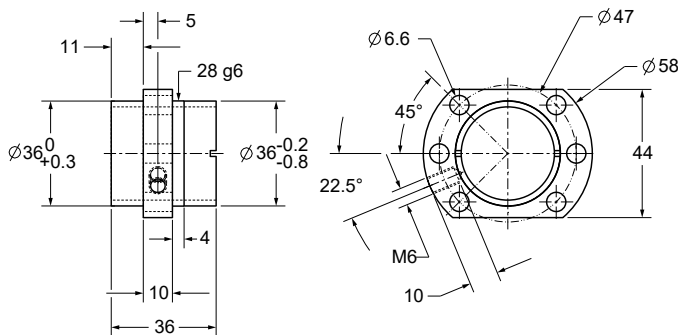
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	11.6 kN
Max. Static Load	18.4 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	0.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	100
Wiper Type	Rubber
Part Number	KGF-N-2020-RH-EE

Flanged Ball Nut, KGF-D (FH)



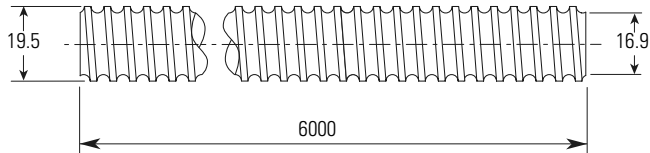
DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	10.8 kN
Max. Static Load	17.5 kN
Number of Circuits	2.8
Torque to Raise 1 kN	3.54 Nm
Nut Weight	0.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	100
Wiper Type	Polymer
Part Number	KGF-D-2020-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 20 x 20 mm Metric Ball Screws – Rolled

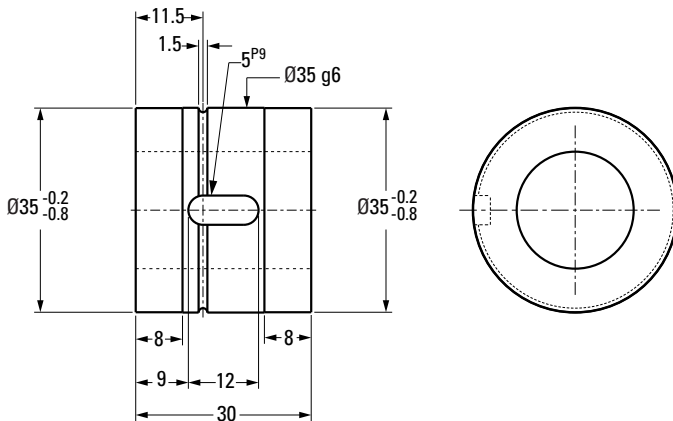
Ball Screw



Nominal Ball Screw Diameter	20 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	4
Screw Material	CF53
Screw Weight	2.23 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9718

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	11.6 kN
Max. Static Load	18.4 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	100
Wiper Type	Polymer
Part Number	KGM-N-2020-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

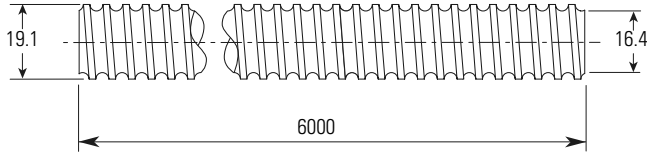
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 20 x 50 mm Metric Ball Screws – Rolled

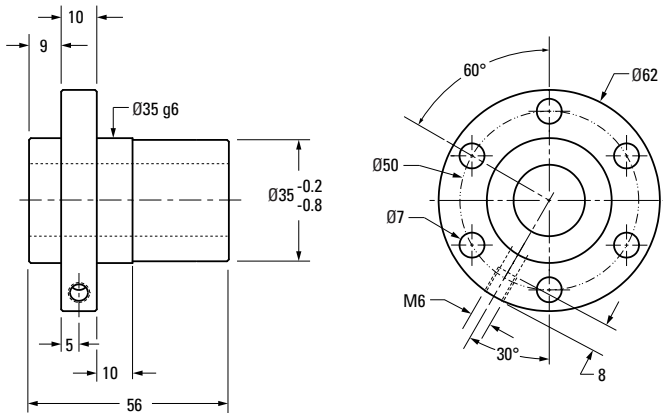
Ball Screw



Nominal Ball Screw Diameter	20 mm
Nominal Ball Screw Lead	50 mm
Thread Direction	Right Hand
Number of Thread Starts	5
Screw Material	CF53
Screw Weight	2.05 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy⁽¹⁾ P5 Part Number	195-9729

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	13.0 kN
Max. Static Load	24.6 kN
Number of Circuits	5
Torque to Raise 1 kN	8.85 Nm
Nut Weight	0.4 kg
Preload Classes⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	140
Wiper Type	Rubber
Part Number	KGF-N-2050-RH-EE

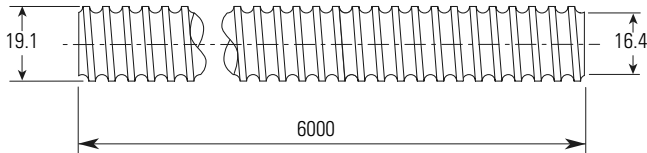
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 20 x 50 mm Metric Ball Screws – Rolled

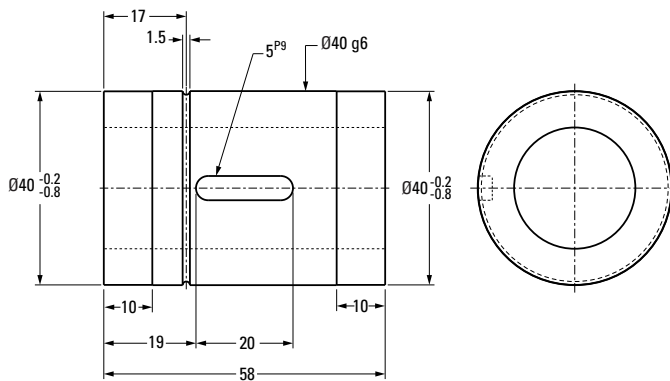
Ball Screw



Nominal Ball Screw Diameter	20 mm
Nominal Ball Screw Lead	50 mm
Thread Direction	Right Hand
Number of Thread Starts	5
Screw Material	CF53
Screw Weight	2.05 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9729

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	13.0 kN
Max. Static Load	24.6 kN
Number of Circuits	5
Torque to Raise 1 kN	8.85 Nm
Nut Weight	0.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	140
Wiper Type	Rubber
Part Number	KGM-N-2050-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

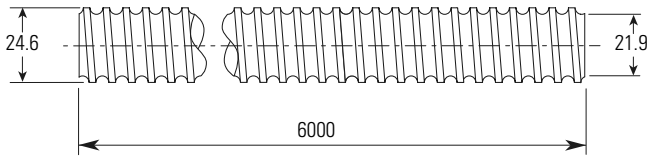
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 25 x 5 mm Metric Ball Screws – Rolled

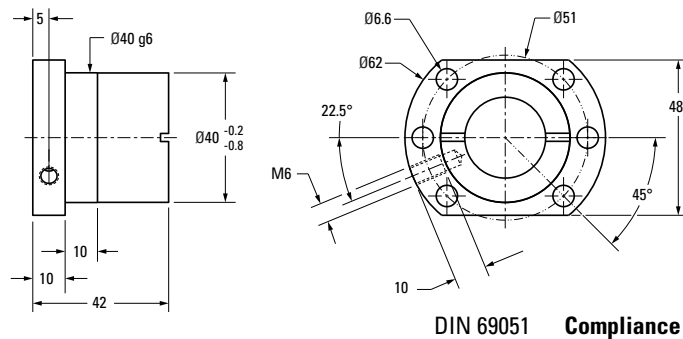
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	3.32 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9701

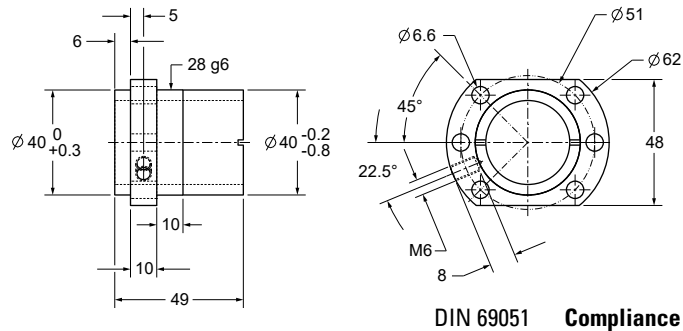
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



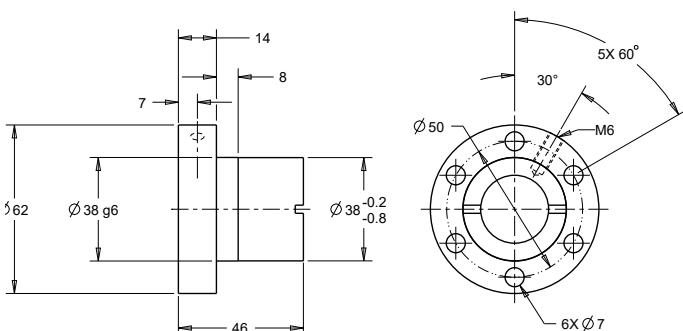
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	12.3 kN
Max. Static Load	22.5 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.4 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	63
Wiper Type	Rubber
Part Number	KGF-D-2505-RH-EE

Flanged Ball Nut, KGF-D (FK)



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	13.1 kN
Max. Static Load	20.2 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.4 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	66
Wiper Type	Polymer
Part Number	KGF-D-2505-RH-KK

Flanged Ball Nut, KGF-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	12.3 kN
Max. Static Load	22.5 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.4 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	63
Wiper Type	Rubber
Part Number	KGF-N-2505-RH-EE

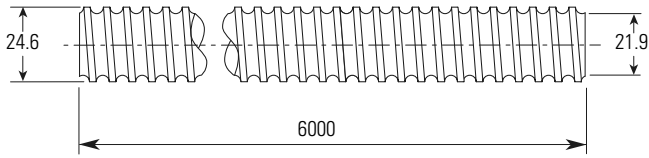
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

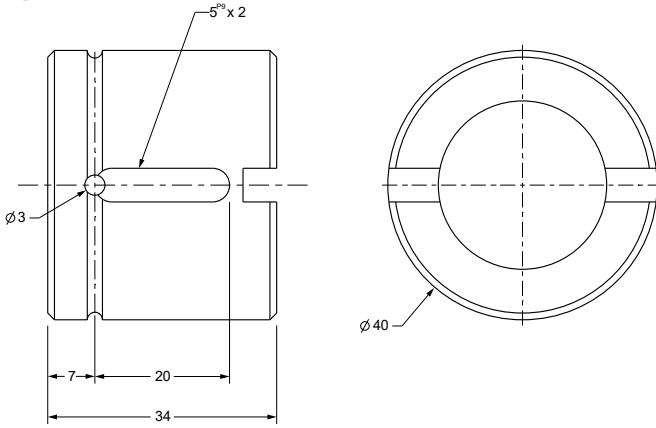
1 = Reduced Clearance, 2 = Preload 1-5%

Ø 25 x 5 mm Metric Ball Screws – Rolled

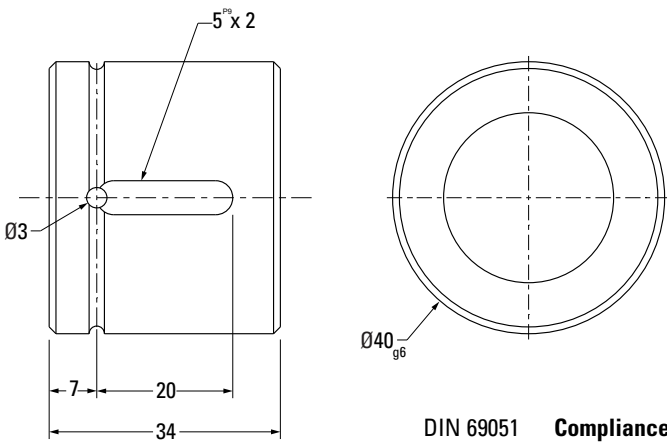
Ball Screw



Cylindrical Ball Nut, KGM-N

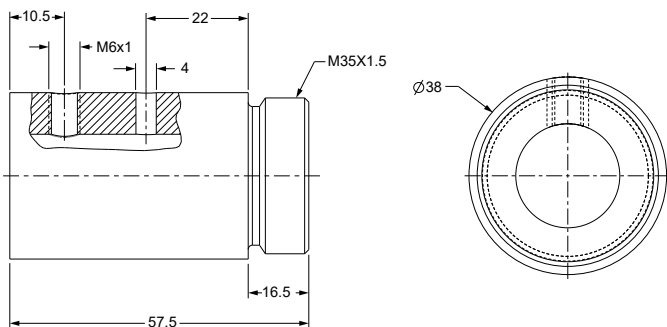


Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Threaded Ball Nut, KGM-G



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	3.32 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9701

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	12.3 kN
Max. Static Load	22.5 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.15 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	63
Wiper Type	Rubber
Part Number	KGM-N-2505-RH-EE

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	12.3 kN
Max. Static Load	22.5 kN
Number of Circuits	3
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.090 mm
Ball Return Type	Single Circuit
Number of Balls	63
Wiper Type	Rubber
Part Number	KGM-D-2505-RH-EE

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	20.4 kN
Max. Static Load	33.7 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.090 mm
Ball Return Type	Single Circuit
Number of Balls	110
Wiper Type	Polymer
Part Number	KGM-G-2505-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

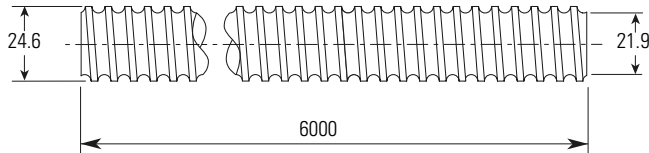
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 25 x 10 mm Metric Ball Screws – Rolled

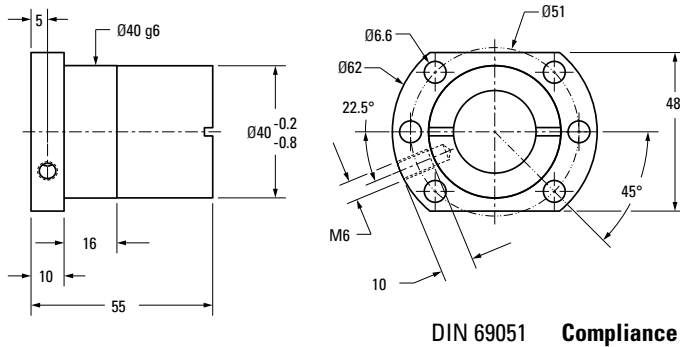
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	3.34 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9702

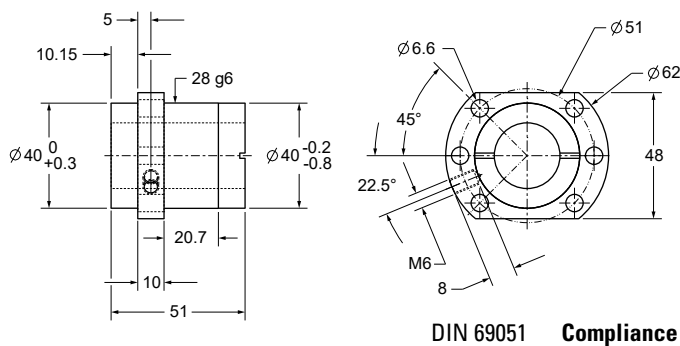
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	13.2 kN
Max. Static Load	25.3 kN
Number of Circuits	3
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Channel
Number of Balls	75
Wiper Type	Rubber
Part Number	KGF-D-2510-RH-EE

Flanged Ball Nut, KGF-D (FH)

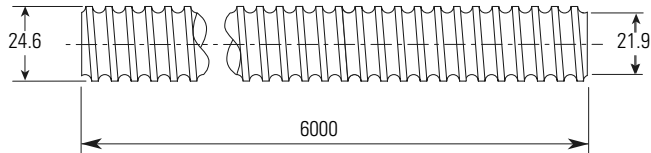


Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	24.7 kN
Max. Static Load	53.4 kN
Number of Circuits	6.1
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	164
Wiper Type	Polymer
Part Number	KGF-D-2510-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 25 x 10 mm Metric Ball Screws – Rolled

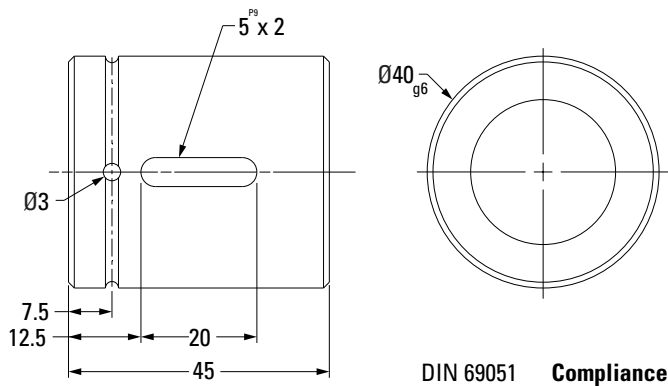
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	3.34 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9702

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

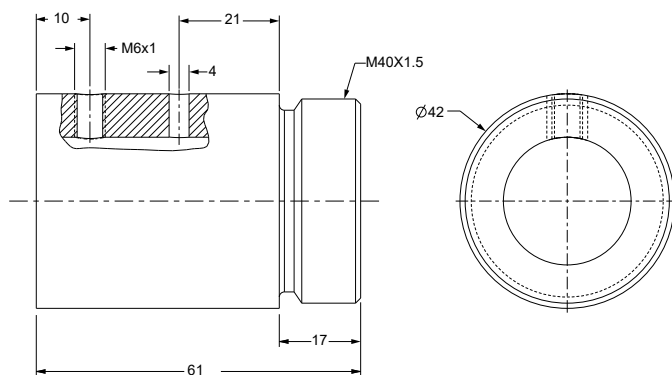
Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	13.2 kN
Max. Static Load	25.3 kN
Number of Circuits	3
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.24 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Channel
Number of Balls	75
Wiper Type	Rubber
Part Number	KGM-D-2510-RH-EE

Threaded Ball Nut, KGM-G



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	19.9 kN
Max. Static Load	31.8 kN
Number of Circuits	6
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.4 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Multi Circuit
Number of Balls	55
Wiper Type	Polymer
Part Number	KGM-G-2510-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

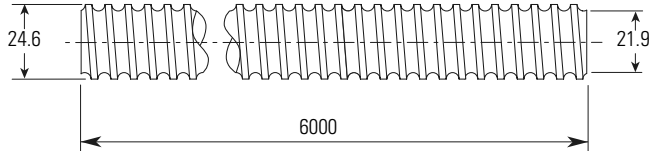
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 25 x 20 mm Metric Ball Screws – Rolled

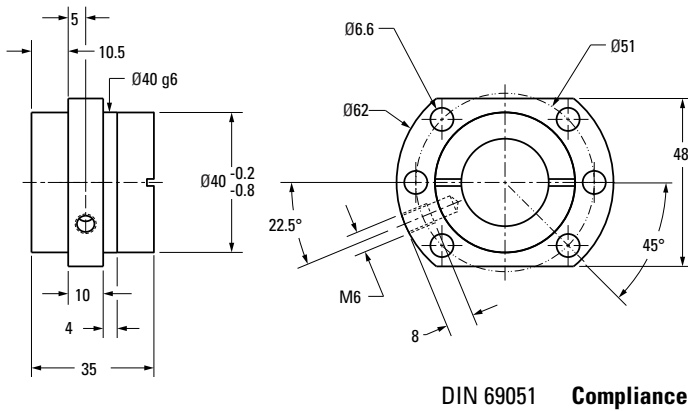
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	4
Screw Material	CF53
Screw Weight	3.32 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy⁽¹⁾ P5 Part Number	195-9703

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

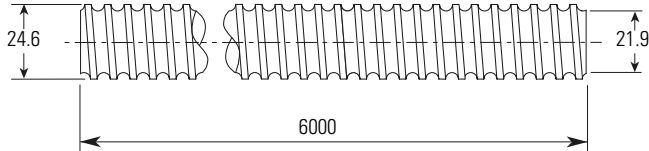
Flanged Ball Nut, KGF-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	13.0 kN
Max. Static Load	23.3 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	0.3 kg
Preload Classes⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	80
Wiper Type	Rubber
Part Number	KGF-D-2520-RH-EE

Ø 25 x 20 mm Metric Ball Screws – Rolled

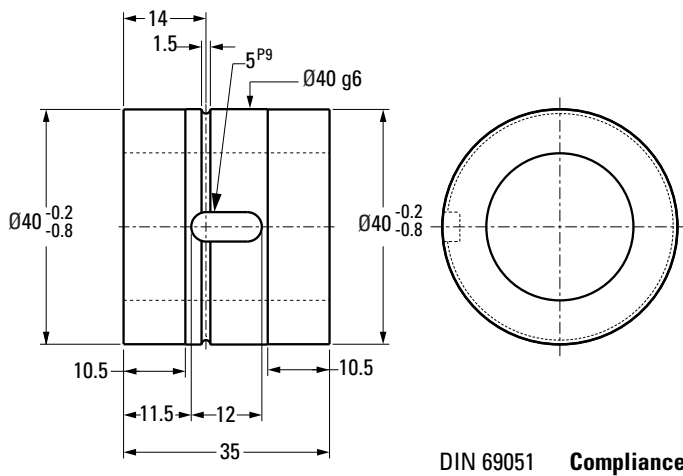
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	4
Screw Material	CF53
Screw Weight	3.32 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9703

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	13.0 kN
Max. Static Load	23.3 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	0.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	80
Wiper Type	Rubber
Part Number	KGM-D-2520-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

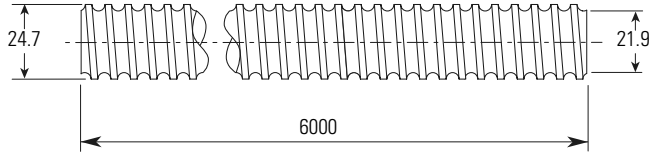
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 25 x 25 mm Metric Ball Screws – Rolled

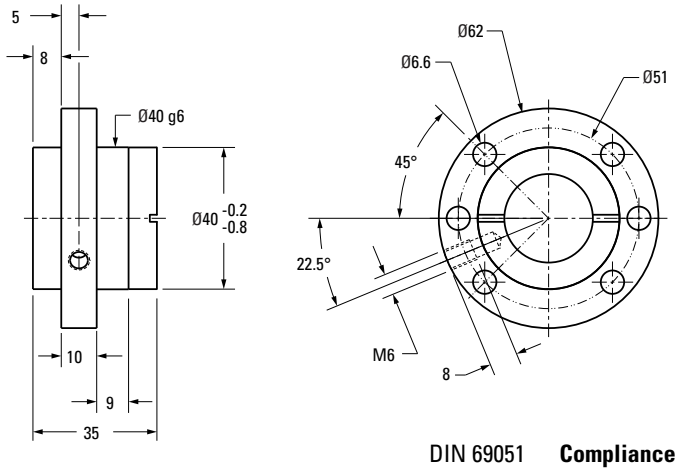
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	25 mm
Thread Direction	Right Hand
Number of Thread Starts	5
Screw Material	CF53
Screw Weight	3.4 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy⁽¹⁾ P5 Part Number	195-9704

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	16.7 kN
Max. Static Load	32.2 kN
Number of Circuits	5
Torque to Raise 1 kN	4.43 Nm
Nut Weight	0.7 kg
Preload Classes⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	130
Wiper Type	Rubber
Part Number	KGF-D-2525-RH-EE

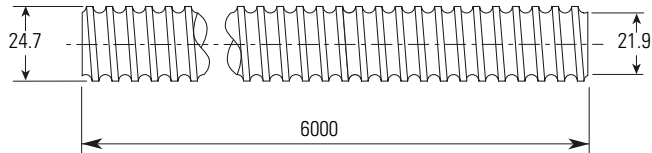
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 25 x 25 mm Metric Ball Screws – Rolled

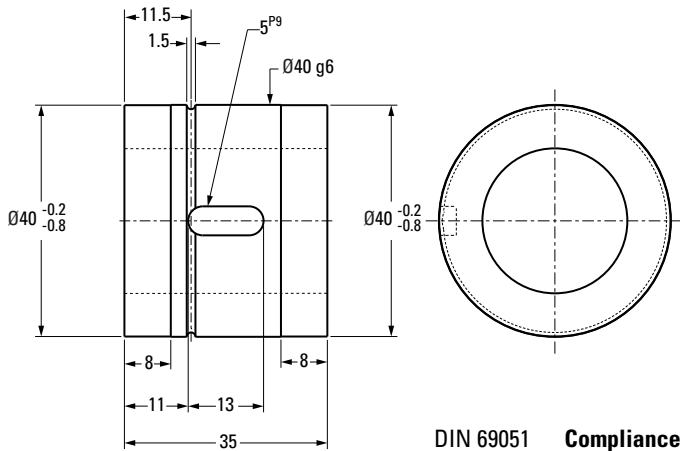
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	25 mm
Thread Direction	Right Hand
Number of Thread Starts	5
Screw Material	CF53
Screw Weight	3.4 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9704

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	16.7 kN
Max. Static Load	32.2 kN
Number of Circuits	5
Torque to Raise 1 kN	4.43 Nm
Nut Weight	0.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	130
Wiper Type	Rubber
Part Number	KGM-D-2525-RH-EE

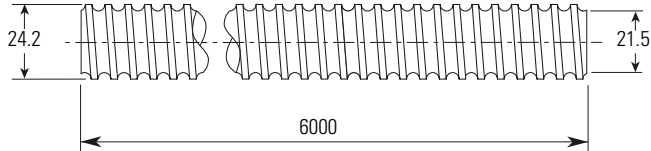
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%



Ø 25 x 50 mm Metric Ball Screws – Rolled

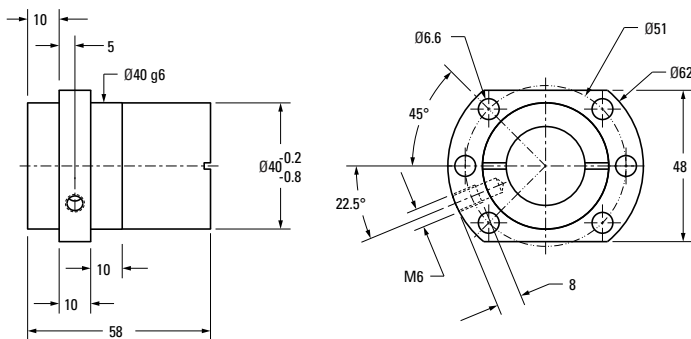
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	50 mm
Thread Direction	Right Hand
Number of Thread Starts	5
Screw Material	CF53
Screw Weight	3.37 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy⁽¹⁾ P5 Part Number	195-9730

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	15.4 kN
Max. Static Load	31.7 kN
Number of Circuits	5
Torque to Raise 1 kN	8.85 Nm
Nut Weight	0.4 kg
Preload Classes⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	130
Wiper Type	Rubber
Part Number	KGF-D-2550-RH-EE

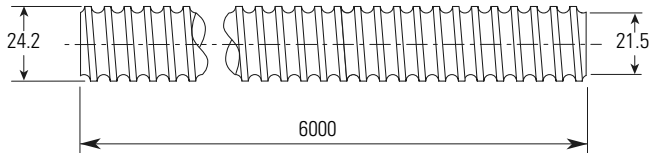
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 25 x 50 mm Metric Ball Screws – Rolled

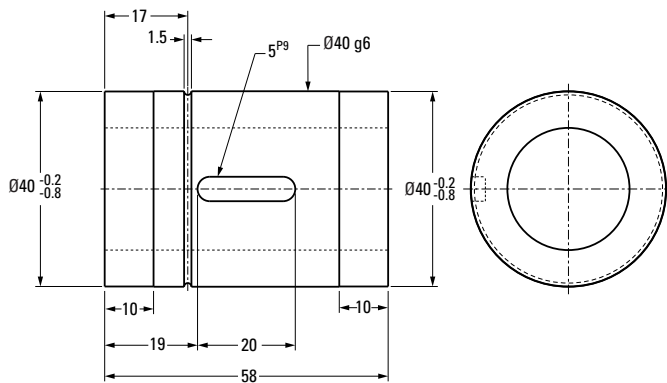
Ball Screw



Nominal Ball Screw Diameter	25 mm
Nominal Ball Screw Lead	50 mm
Thread Direction	Right Hand
Number of Thread Starts	5
Screw Material	CF53
Screw Weight	3.37 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9730

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	15.4 kN
Max. Static Load	31.7 kN
Number of Circuits	5
Torque to Raise 1 kN	8.85 Nm
Nut Weight	0.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	130
Wiper Type	Rubber
Part Number	KGM-D-2550-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

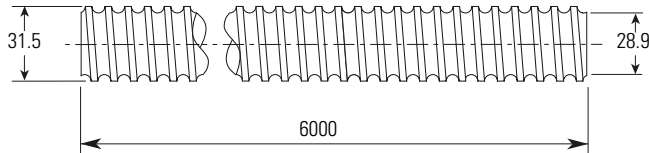
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

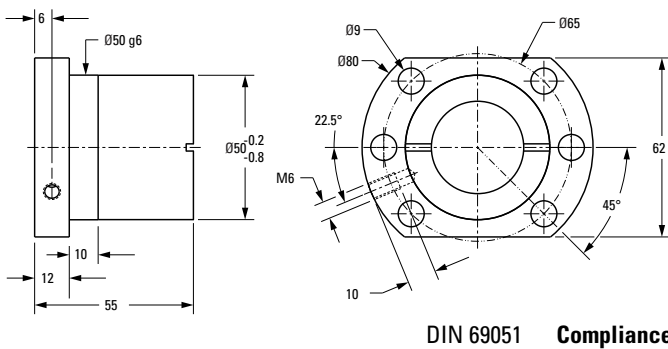


Ø 32 x 5 mm Metric Ball Screws – Rolled

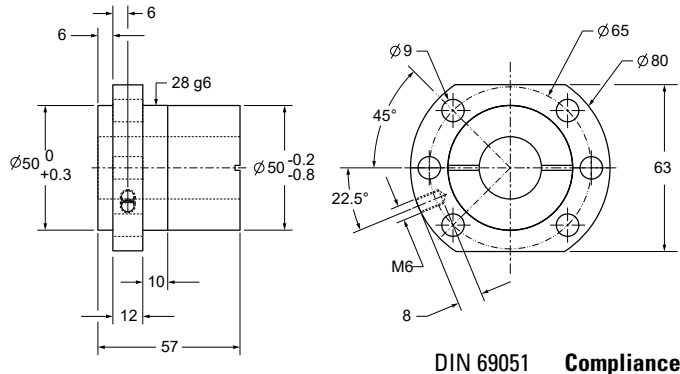
Ball Screw



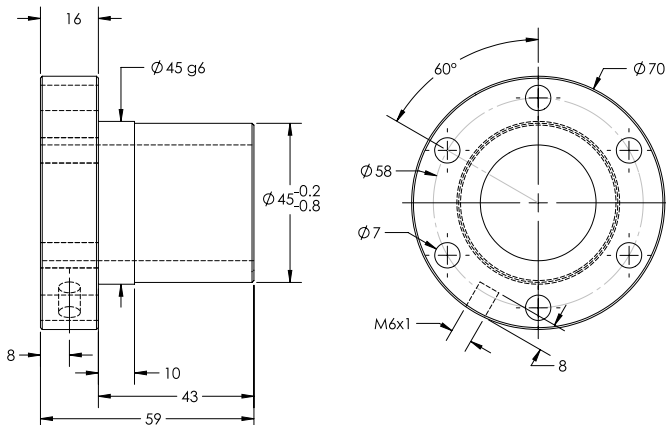
Flanged Ball Nut, KGF-D



Flanged Ball Nut, KGF-D (FK)



Flanged Ball Nut, KGF-N



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	5.9 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9706

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	21.5 kN
Max. Static Load	49.3 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.6 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	140
Wiper Type	Rubber
Part Number	KGF-D-3205-RH-EE

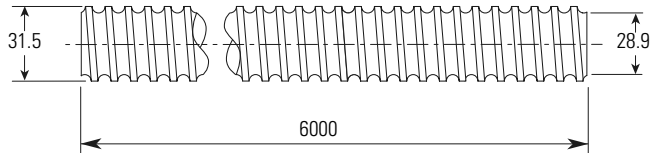
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	19.3 kN
Max. Static Load	36.3 kN
Number of Circuits	4
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.7 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	116
Wiper Type	Polymer
Part Number	KGF-D-3205-RH-KK

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	21.5 kN
Max. Static Load	49.3 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.6 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	140
Wiper Type	Rubber
Part Number	KGF-N-3205-RH-EE

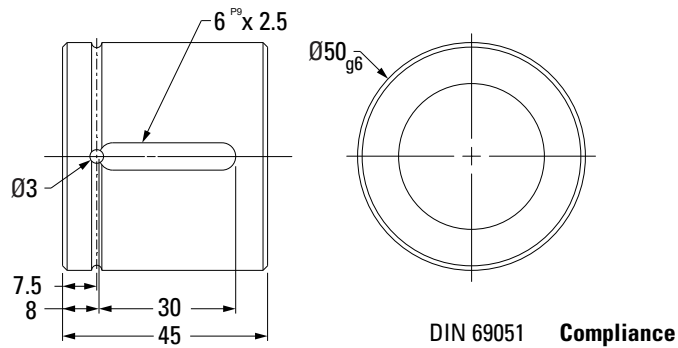
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 32 x 5 mm Metric Ball Screws – Rolled

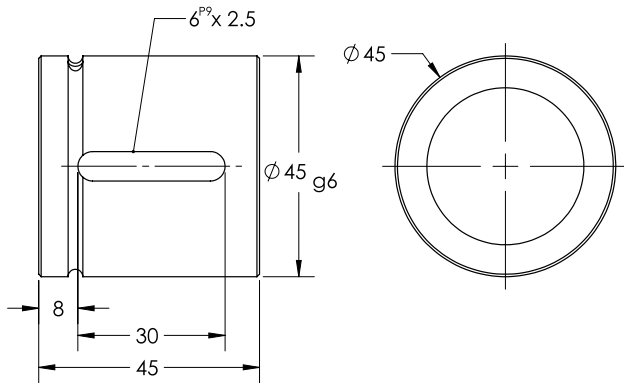
Ball Screw



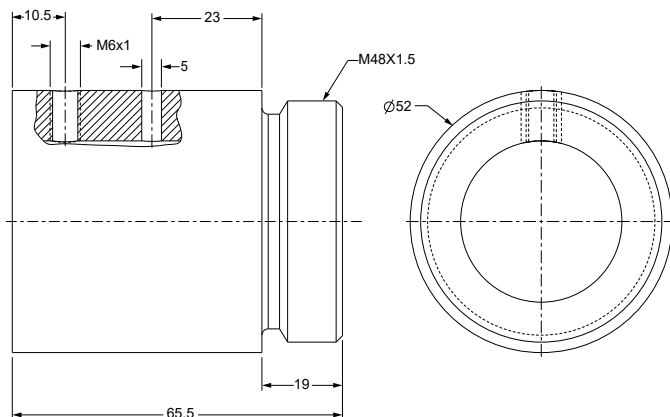
Cylindrical Ball Nut, KGM-D



Cylindrical Ball Nut, KGM-N



Threaded Ball Nut, KGM-G



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	5.9 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9706

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	21.5 kN
Max. Static Load	49.3 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	140
Wiper Type	Rubber
Part Number	KGM-D-3205-RH-EE

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	21.5 kN
Max. Static Load	49.3 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	140
Wiper Type	Rubber
Part Number	KGM-N-3205-RH-EE

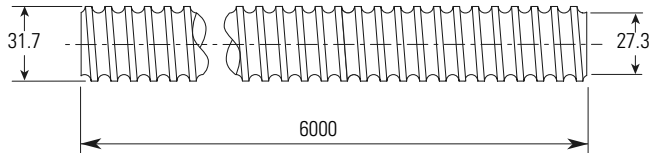
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	23.3 kN
Max. Static Load	45.5 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.6 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	145
Wiper Type	Polymer
Part Number	KGM-G-3205-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%



Ø 32 x 10 mm Metric Ball Screws – Rolled

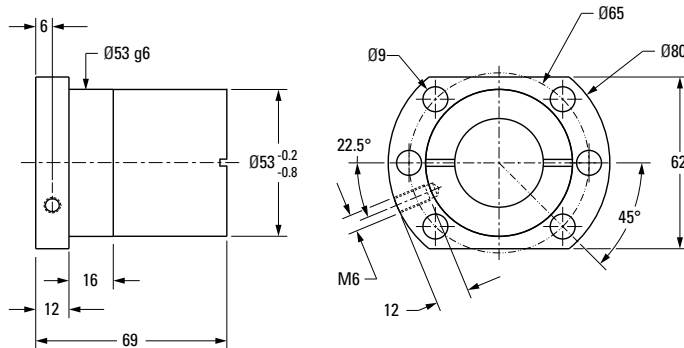
Ball Screw



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	5.56 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9707

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

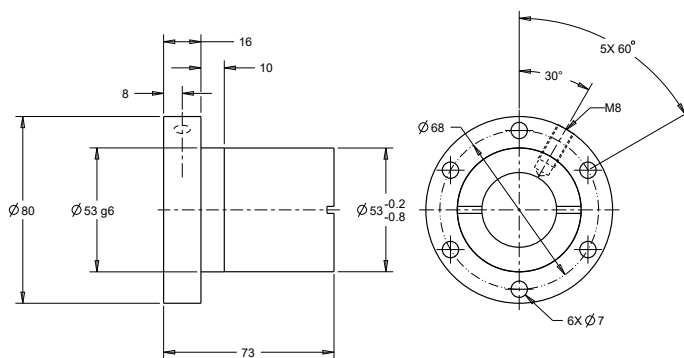
Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	33.4 kN
Max. Static Load	54.5 kN
Number of Circuits	3
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	42
Wiper Type	Rubber
Part Number	KGF-D-3210-RH-EE

Flanged Ball Nut, KGF-N



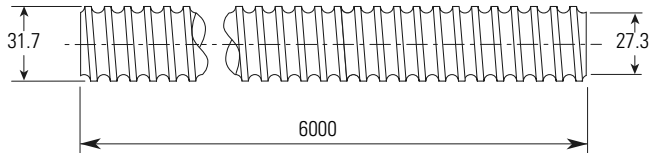
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	33.4 kN
Max. Static Load	54.5 kN
Number of Circuits	3
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Metal
Number of Balls	42
Wiper Type	Rubber
Part Number	KGF-N-3210-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%

Ø 32 x 10 mm Metric Ball Screws – Rolled

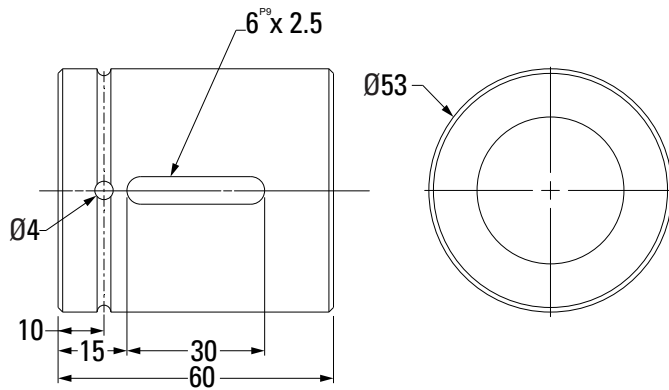
Ball Screw



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	5.56 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9707

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	33.4 kN
Max. Static Load	54.5 kN
Number of Circuits	3
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.6 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Polymer
Number of Balls	42
Wiper Type	Rubber
Part Number	KGM-N-3210-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

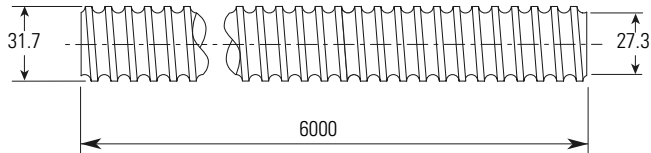
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 32 x 20 mm Metric Ball Screws – Rolled

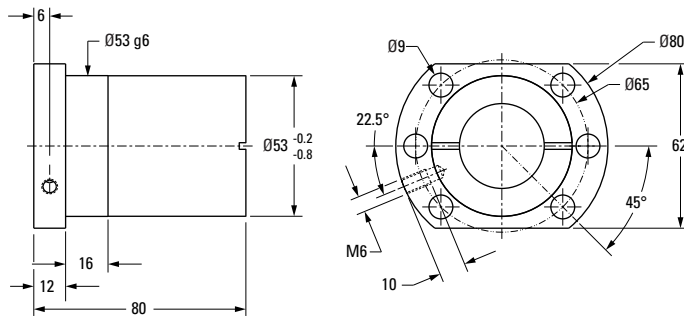
Ball Screw



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	5.60 kg/m
Nominal Ball Diameter	5.000 mm
Lead Accuracy⁽¹⁾ P5 Part Number	195-9708

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut. KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	29.7 kN
Max. Static Load	59.8 kN
Number of Circuits	4
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.9 kg
Preload Classes⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.059 mm
Ball Return Type	Channel
Number of Balls	84
Wiper Type	Rubber
Part Number	KGF-D-3220-RH-EE

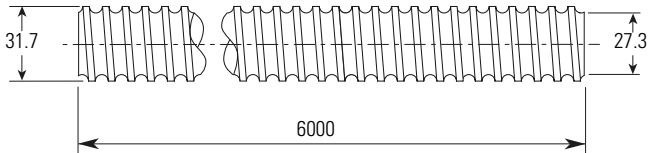
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 32 x 20 mm Metric Ball Screws – Rolled

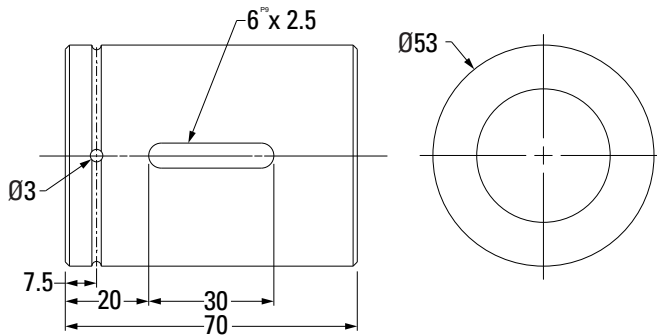
Ball Screw



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	5.60 kg/m
Nominal Ball Diameter	5.000 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9708

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	29.7 kN
Max. Static Load	59.8 kN
Number of Circuits	4
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.6 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.059 mm
Ball Return Type	Channel
Number of Balls	84
Wiper Type	Rubber
Part Number	KGM-N-3220-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

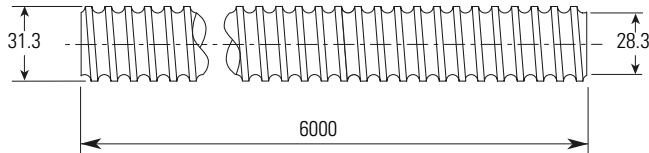
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 32 x 32 mm Metric Ball Screws – Rolled

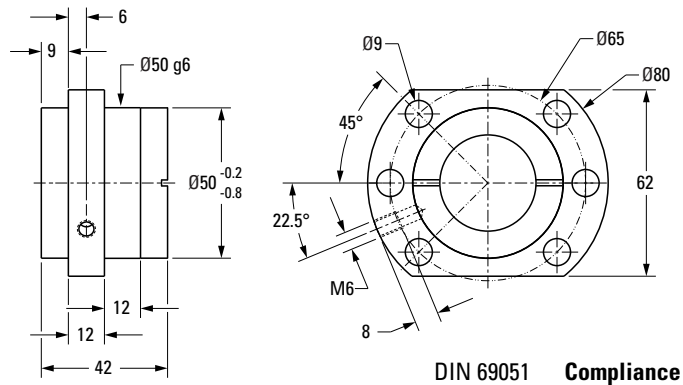
Ball Screw



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	32 mm
Thread Direction	Right Hand
Number of Thread Starts	4
Screw Material	CF53
Screw Weight	5.74 kg/m
Nominal Ball Diameter	3.969 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9722

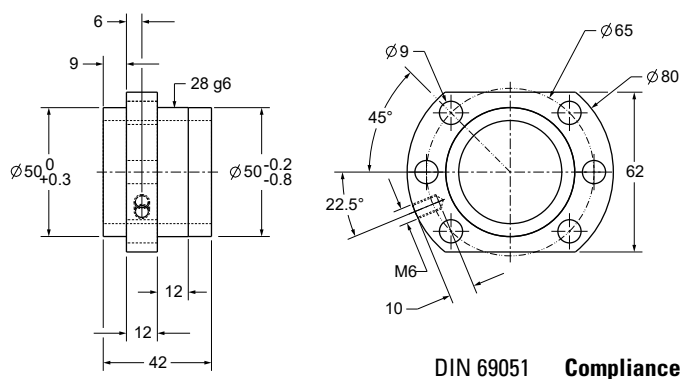
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	19.7 kN
Max. Static Load	37.4 kN
Number of Circuits	4
Torque to Raise 1 kN	5.66 Nm
Nut Weight	0.8 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.047 mm
Ball Return Type	End Cap
Number of Balls	124
Wiper Type	Rubber
Part Number	KGF-D-3232-RH-EE

Flanged Ball Nut, KGF-D (FH)



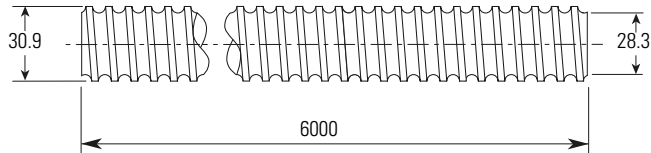
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	19.7 kN
Max. Static Load	39.0 kN
Number of Circuits	4
Torque to Raise 1 kN	5.66 Nm
Nut Weight	0.8 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.047 mm
Ball Return Type	End Cap
Number of Balls	124
Wiper Type	Polymer
Part Number	KGF-D-3232-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,
1 = Reduced Clearance, 2 = Preload 1-5%

Ø 32 x 40 mm Metric Ball Screws – Rolled

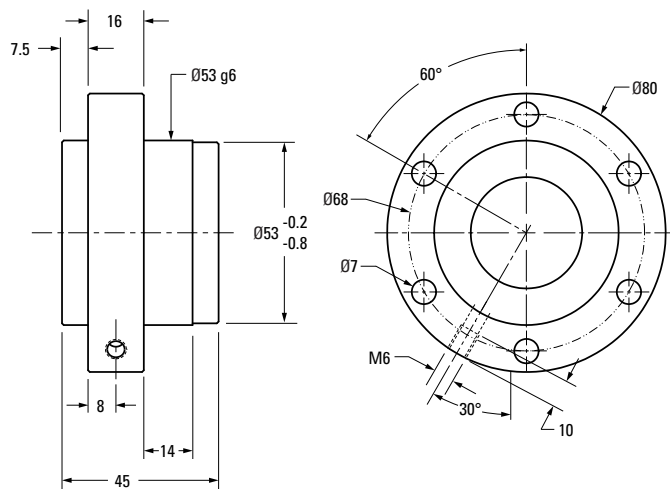
Ball Screw



Nominal Ball Screw Diameter	32 mm
Nominal Ball Screw Lead	40 mm
Thread Direction	Right Hand
Number of Thread Starts	4
Screw Material	CF53
Screw Weight	5.63 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9723

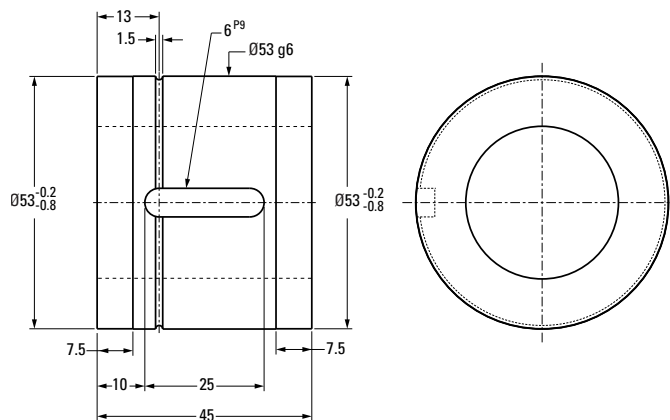
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	14.9 kN
Max. Static Load	32.4 kN
Number of Circuits	4
Torque to Raise 1 kN	7.08 Nm
Nut Weight	0.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	168
Wiper Type	Rubber
Part Number	KGF-N-3240-RH-EE

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	14.9 kN
Max. Static Load	32.4 kN
Number of Circuits	4
Torque to Raise 1 kN	7.08 Nm
Nut Weight	0.46 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	168
Wiper Type	Rubber
Part Number	KGM-N-3240-RH-EE

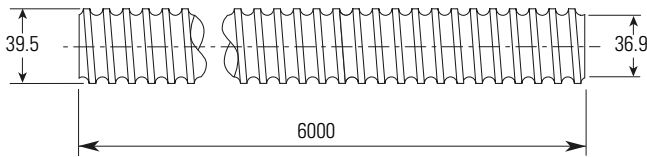
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table, 1 = Reduced Clearance, 2 = Preload 1-5%

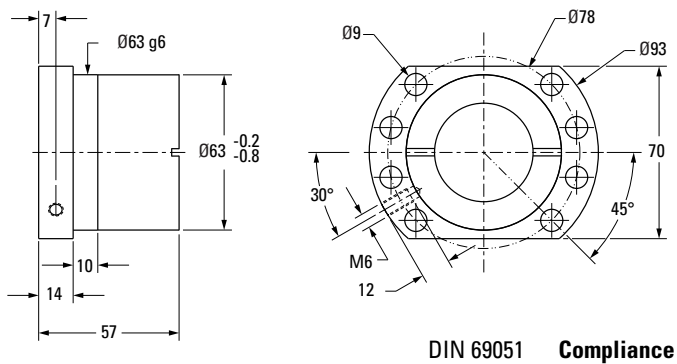


Ø 40 x 5 mm Metric Ball Screws – Rolled

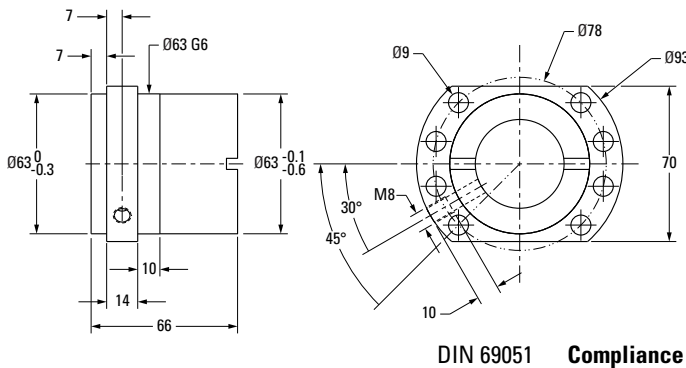
Ball Screw



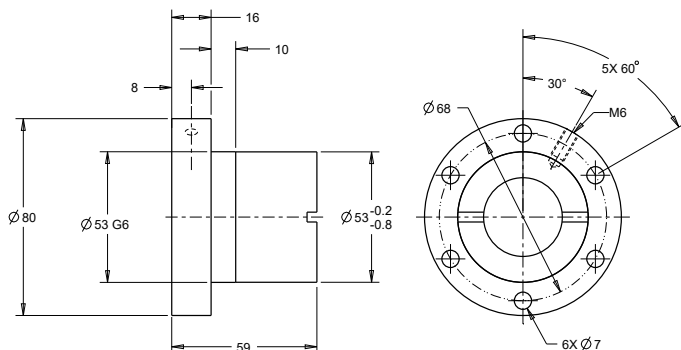
Flanged Ball Nut, KGF-D



Flanged Ball Nut, KGF-D (FK)



Flanged Ball Nut, KGF-N



Nominal Ball Screw Diameter	40 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	9.03 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9710

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	23.8 kN
Max. Static Load	63.1 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.7 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	180
Wiper Type	Rubber
Part Number	KGF-D-4005-RH-EE

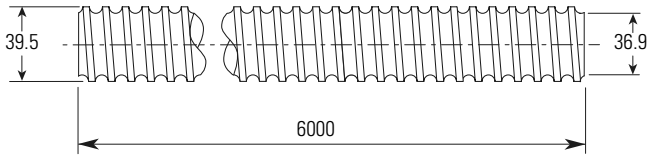
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	26.3 kN
Max. Static Load	59.2 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	1.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	EUS
Number of Balls	180
Wiper Type	Polymer
Part Number	KGF-D-4005-RH-KK

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	23.8 kN
Number of Circuits	5
Max. Static Load	63.1 kN
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.7 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	180
Wiper Type	Rubber
Part Number	KGF-N-4005-RH-EE

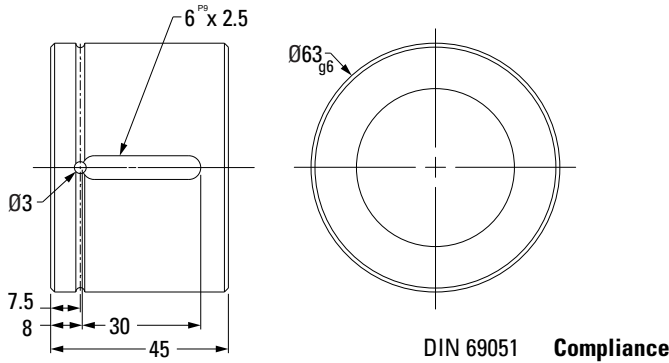
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 40 x 5 mm Metric Ball Screws – Rolled

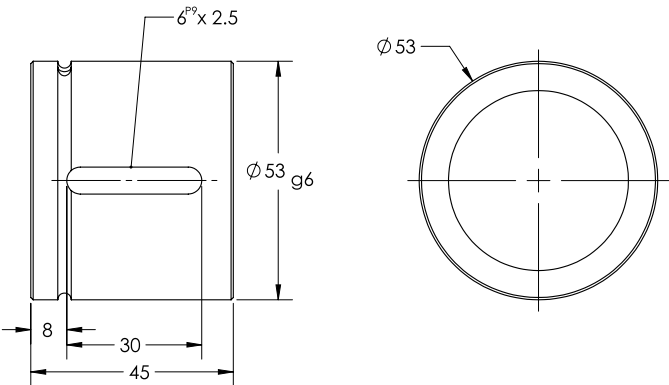
Ball Screw



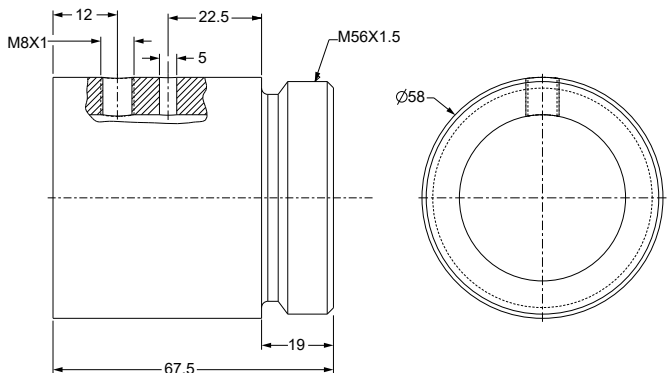
Cylindrical Ball Nut, KGM-D



Cylindrical Ball Nut, KGM-N



Threaded Ball Nut, KGM-G



Nominal Ball Screw Diameter	40 mm
Nominal Ball Screw Lead	5 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	9.03 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9710

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	21.5 kN
Max. Static Load	49.3 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.8 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	180
Wiper Type	Rubber
Part Number	KGM-D-4005-RH-EE

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	23.8 kN
Max. Static Load	63.1 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.6 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit Metal
Number of Balls	180
Wiper Type	Rubber
Part Number	KGM-N-4005-RH-EE

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	26.3 kN
Max. Static Load	59.2 kN
Number of Circuits	5
Torque to Raise 1 kN	0.885 Nm
Nut Weight	0.6 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	Single Circuit
Number of Balls	180
Wiper Type	Polymer
Part Number	KGM-G-4005-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

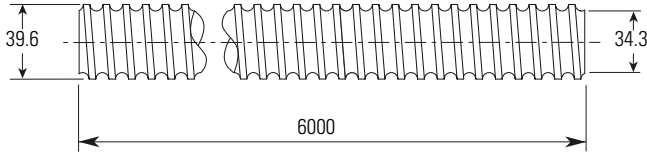
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 40 x 10 mm Metric Ball Screws – Rolled

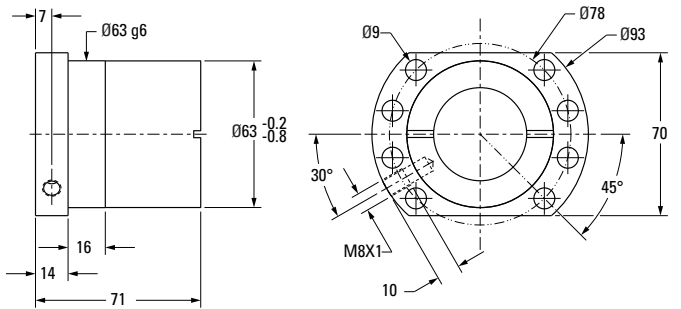
Ball Screw



Nominal Ball Screw Diameter	40 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	8.43 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9711

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

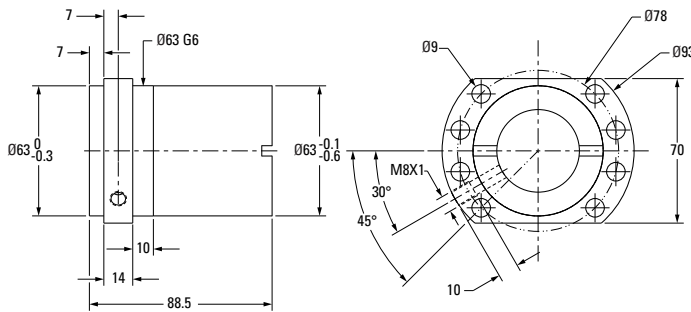
Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	38.0 kN
Max. Static Load	69.2 kN
Number of Circuits	3
Torque to Raise 1 kN	1.77 Nm
Nut Weight	1.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	54
Wiper Type	Rubber
Part Number	KGF-D-4010-RH-EE

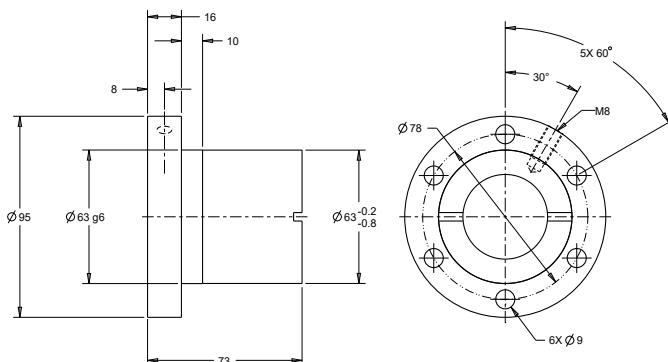
Flanged Ball Nut, KGF-D (FK)



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	64.9 kN
Max. Static Load	109.0 kN
Number of Circuits	4
Torque to Raise 1 kN	1.77 Nm
Nut Weight	1.4 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Metal
Number of Balls	72
Wiper Type	Polymer
Part Number	KGF-D-4010-RH-KK

Flanged Ball Nut, KGF-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	69.1 kN
Number of Circuits	3
Max. Static Load	109.0 kN
Torque to Raise 1 kN	1.77 Nm
Nut Weight	1.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	54
Wiper Type	Rubber
Part Number	KGF-N-4010-RH-EE

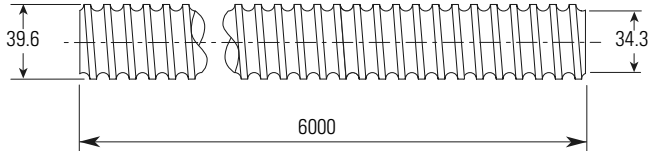
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 40 x 10 mm Metric Ball Screws – Rolled

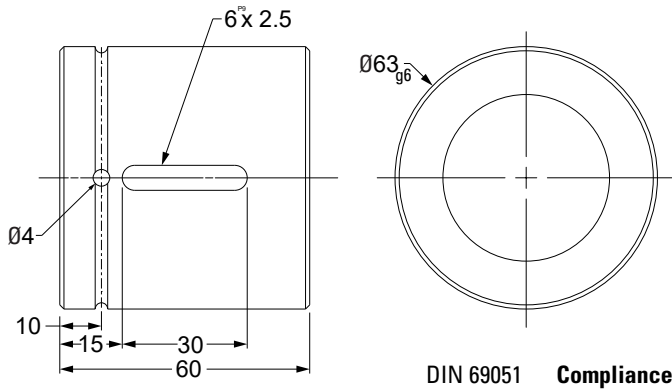
Ball Screw



Nominal Ball Screw Diameter	40 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	8.43 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9711

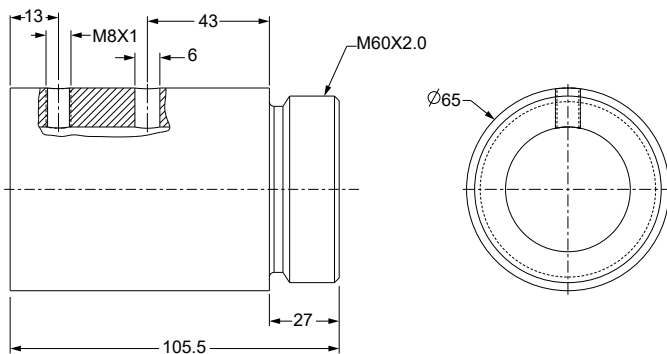
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	38.0 kN
Max. Static Load	69.1 kN
Number of Circuits	3
Torque to Raise 1 kN	1.77 Nm
Nut Weight	1.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	54
Wiper Type	Rubber
Part Number	KGM-D-4010-RH-EE

Threaded Ball Nut, KGM-G



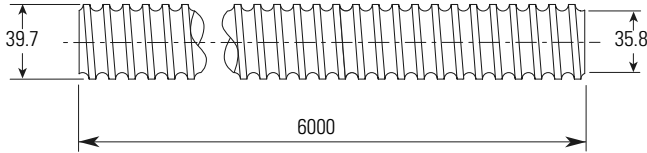
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	78.6 kN
Max. Static Load	136.2 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	1.3 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	90
Wiper Type	Polymer
Part Number	KGM-G-4010-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%



Ø 40 x 20 mm Metric Ball Screws – Rolled

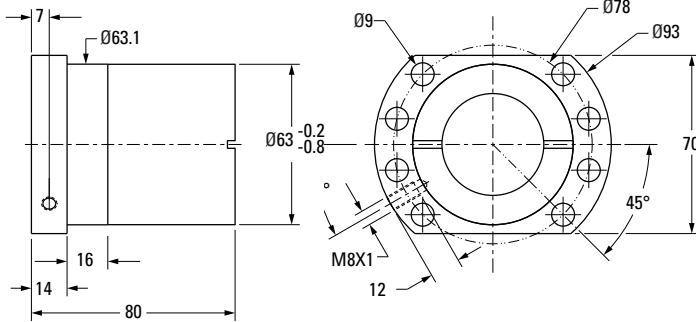
Ball Screw



Nominal Ball Screw Diameter	40 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	9.0 kg/m
Nominal Ball Diameter	5.0 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9712

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

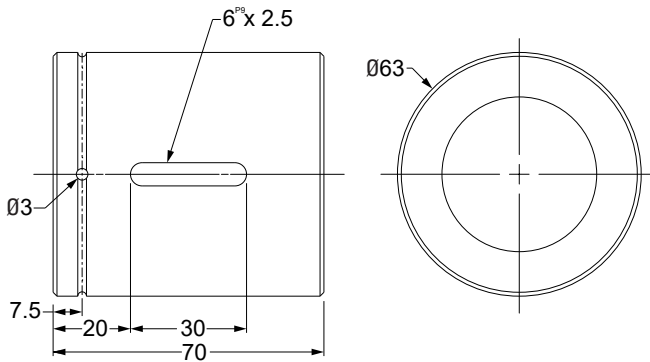
Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	33.3 kN
Max. Static Load	76.1 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	1.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.059 mm
Ball Return Type	Channel
Number of Balls	104
Wiper Type	Rubber
Part Number	KGF-D-4020-RH-EE

Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	33.3 kN
Max. Static Load	76.1 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	1.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.059 mm
Ball Return Type	Channel
Number of Balls	102
Wiper Type	Rubber
Part Number	KGM-D-4020-RH-EE

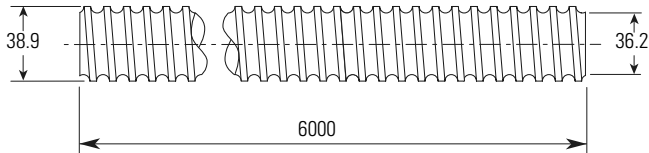
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 40 x 40 mm Metric Ball Screws – Rolled

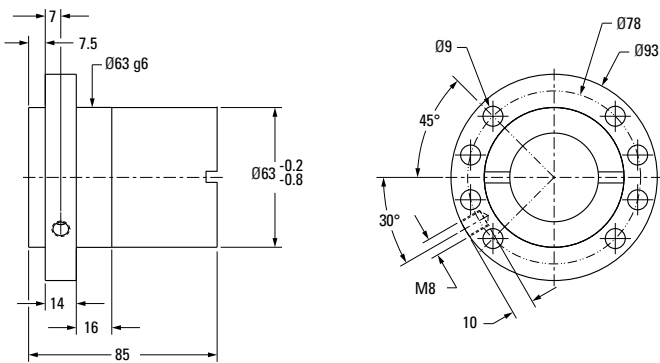
Ball Screw



Nominal Ball Screw Diameter	40 mm
Nominal Ball Screw Lead	40 mm
Thread Direction	Right Hand
Number of Thread Starts	4
Screw Material	CF53
Screw Weight	9.0 kg/m
Nominal Ball Diameter	3.5 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9713

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

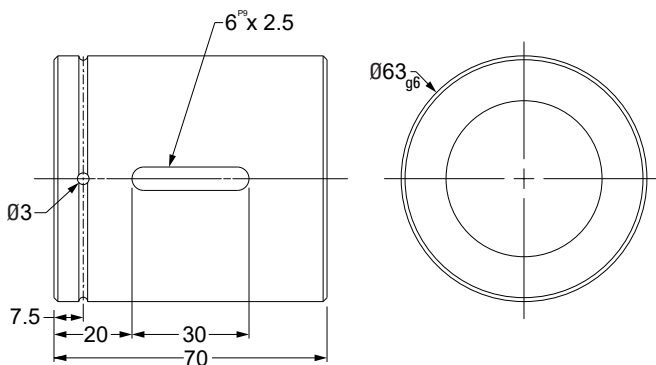
Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	35.0 kN
Max. Static Load	101.9 kN
Number of Circuits	8
Torque to Raise 1 kN	7.08 Nm
Nut Weight	1.2 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	360
Wiper Type	Rubber
Part Number	KGF-D-4040-RH-EE

Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

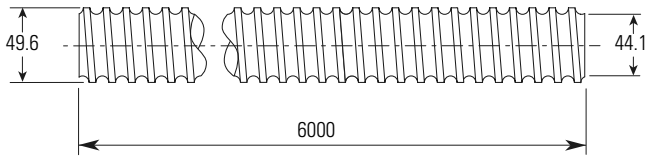
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	35.0 kN
Max. Static Load	101.9 kN
Number of Circuits	8
Torque to Raise 1 kN	7.08 Nm
Nut Weight	0.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.041 mm
Ball Return Type	End Cap
Number of Balls	380
Wiper Type	Rubber
Part Number	KGM-D-4040-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

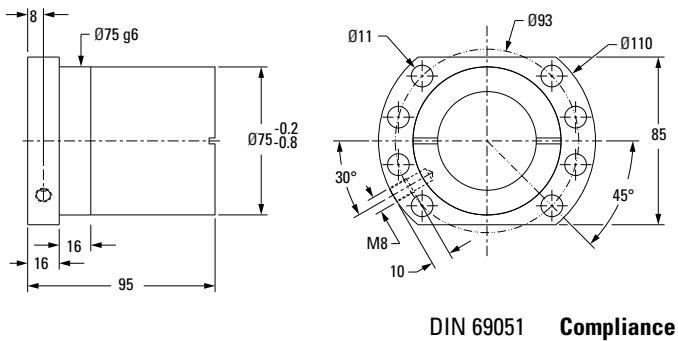


Ø 50 x 10 mm Metric Ball Screws – Rolled

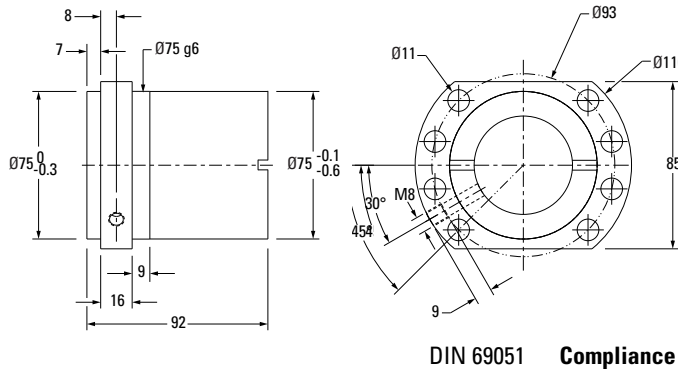
Ball Screw



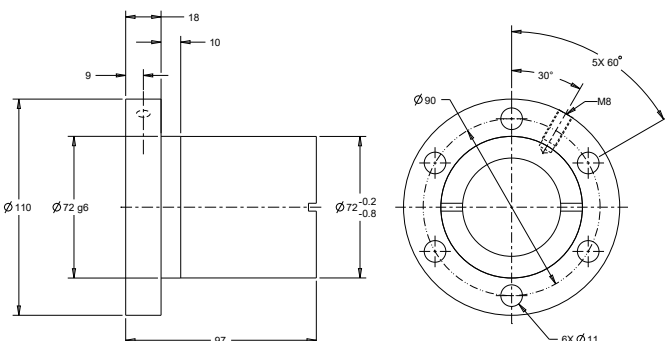
Flanged Ball Nut, KGF-D



Flanged Ball Nut, KGF-D (FK)



Flanged Ball Nut, KGF-N



Nominal Ball Screw Diameter	50 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	13.5 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9714

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	68.7 kN
Max. Static Load	155.8 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	115
Wiper Type	Rubber
Part Number	KGF-D-5010-RH-EE

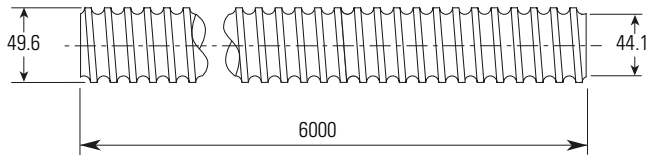
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	66.4 kN
Max. Static Load	134.3 kN
Number of Circuits	4
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Metal
Number of Balls	88
Wiper Type	Polymer
Part Number	KGF-D-5010-RH-KK

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	68.7 kN
Max. Static Load	155.8 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	115
Wiper Type	Rubber
Part Number	KGF-N-5010-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 50 x 10 mm Metric Ball Screws – Rolled

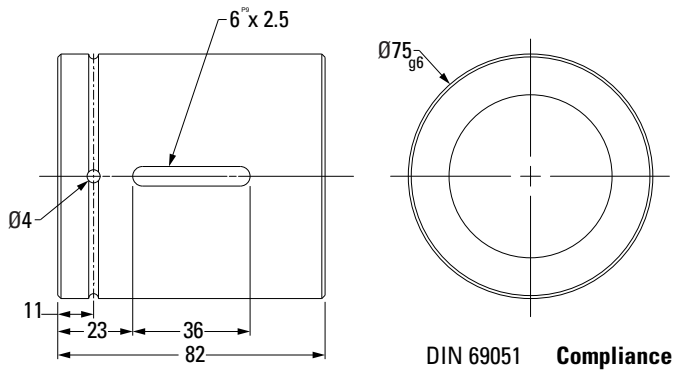
Ball Screw



Nominal Ball Screw Diameter	50 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	13.5 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9714

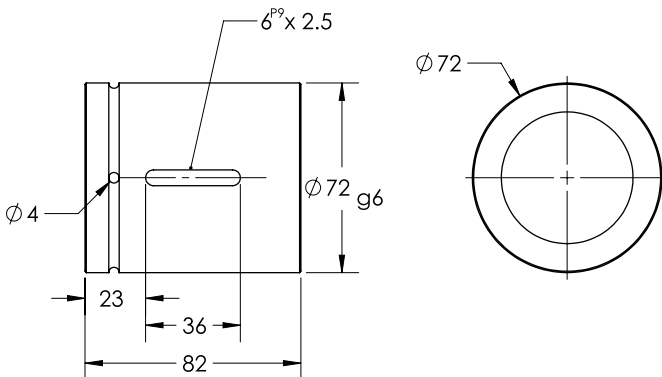
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



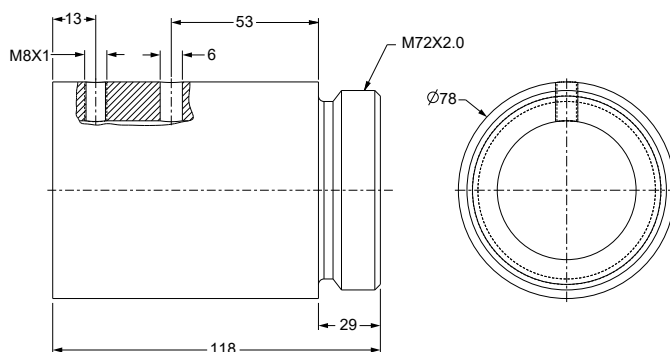
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	68.7 kN
Max. Static Load	155.8 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	155
Wiper Type	Rubber
Part Number	KGM-D-5010-RH-EE

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	68.7 kN
Max. Static Load	155.8 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	1.1 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Metal
Number of Balls	115
Wiper Type	Rubber
Part Number	KGM-N-5010-RH-EE

Threaded Ball Nut, KGM-G



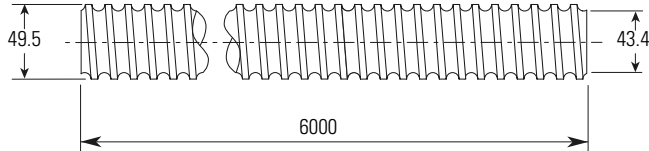
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	97.8 kN
Max. Static Load	213.2 kN
Number of Circuits	6
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	132
Wiper Type	Polymer
Part Number	KGM-G-5010-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%



Ø 50 x 20 mm Metric Ball Screws – Rolled

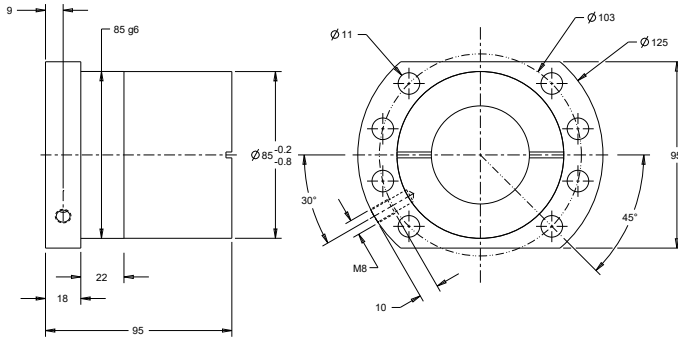
Ball Screw



Nominal Ball Screw Diameter	50 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	13.4 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy⁽¹⁾ P5 Part Number	195-9725

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	60.0 kN
Max. Static Load	136.3 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	2.5 kg
Preload Classes⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Channel
Number of Balls	100
Wiper Type	Rubber
Part Number	KGF-D-5020-RH-EE

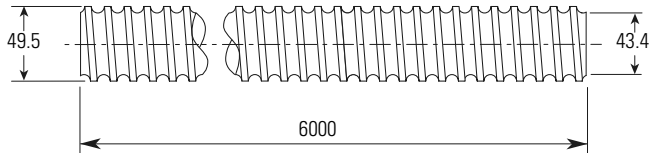
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 50 x 20 mm Metric Ball Screws – Rolled

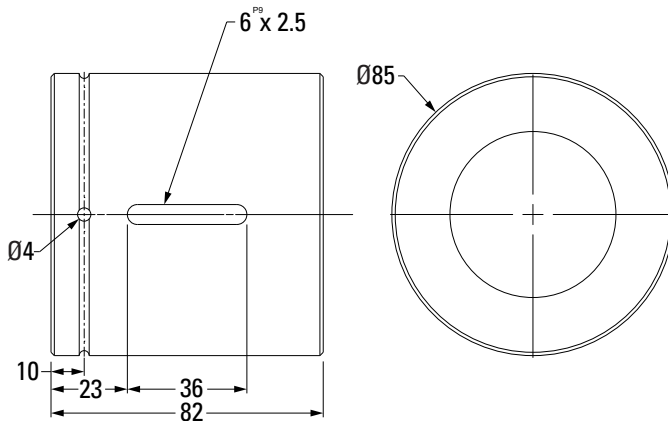
Ball Screw



Nominal Ball Screw Diameter	50 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	13.4 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9725

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	60.0 kN
Max. Static Load	136.3 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	1.4 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Channel
Number of Balls	100
Wiper Type	Rubber
Part Number	KGM-N-5020-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

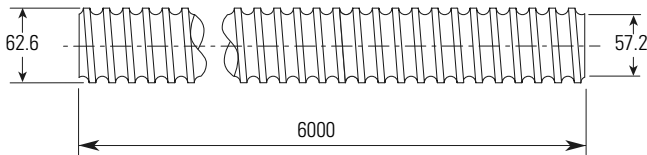
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

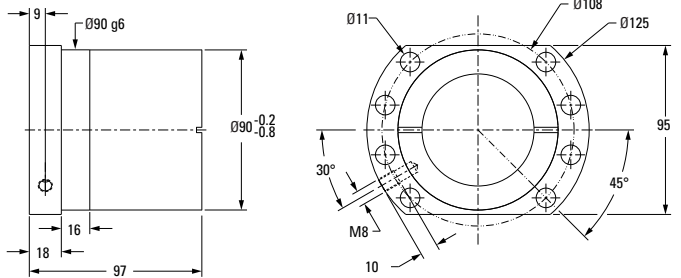


Ø 63 x 10 mm Metric Ball Screws – Rolled

Ball Screw

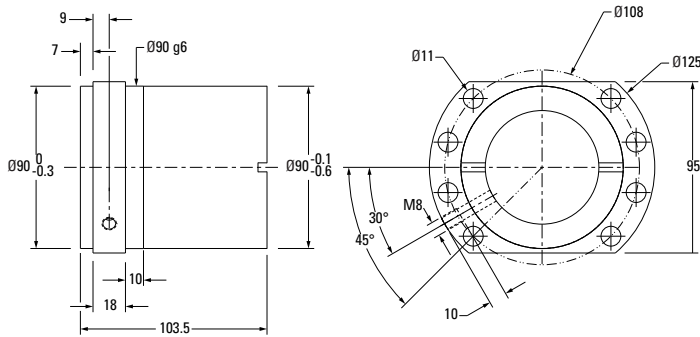


Flanged Ball Nut, KGF-D



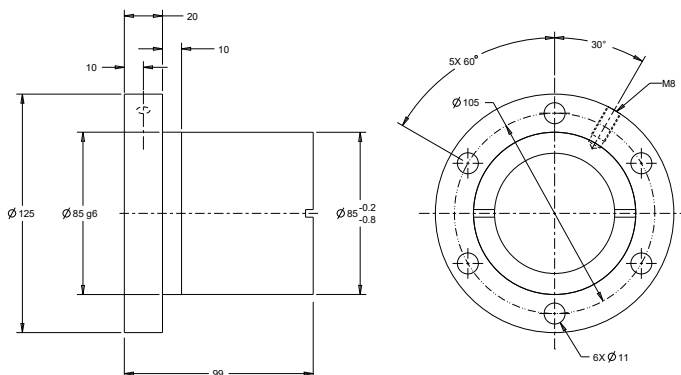
DIN 69051 Compliance

Flanged Ball Nut, KGF-D (FK)



DIN 69051 Compliance

Flanged Ball Nut, KGF-N



Nominal Ball Screw Diameter	63 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	22.0 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9726

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	76.0 kN
Max. Static Load	197.0 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	140
Wiper Type	Rubber
Part Number	KGF-D-6310-RH-EE

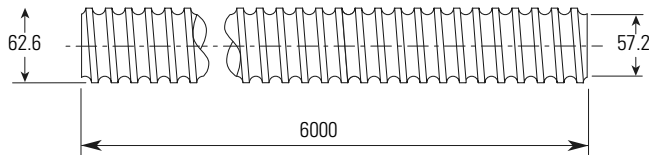
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	93.8 kN
Max. Static Load	229.7 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Metal
Number of Balls	140
Wiper Type	Polymer
Part Number	KGF-D-6310-RH-KK

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	76.0 kN
Max. Static Load	197.0 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	140
Wiper Type	Rubber
Part Number	KGF-N-6310-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 63 x 10 mm Metric Ball Screws – Rolled

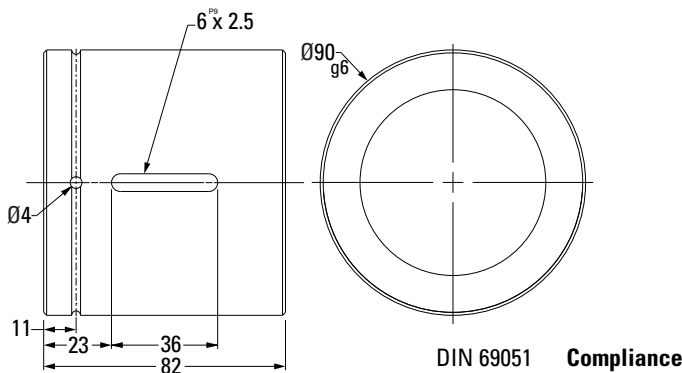
Ball Screw



Nominal Ball Screw Diameter	63 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	22.0 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9726

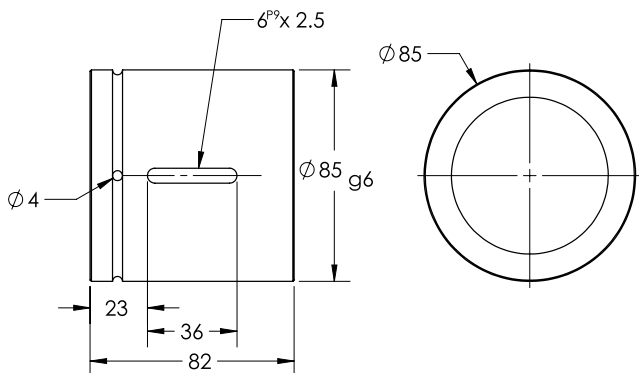
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



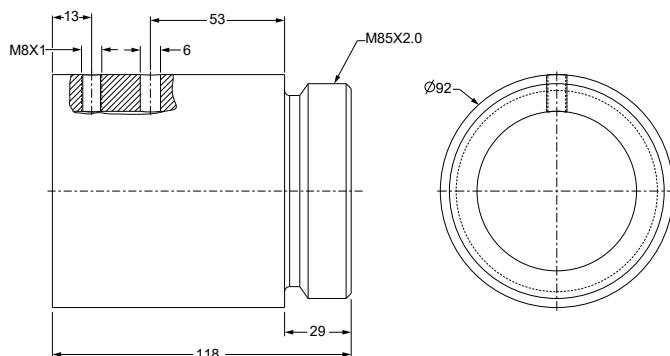
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	68.7 kN
Max. Static Load	155.8 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	0.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	140
Wiper Type	Rubber
Part Number	KGM-D-6310-RH-EE

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	76.0 kN
Max. Static Load	197.0 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	1.5 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Metal
Number of Balls	140
Wiper Type	Rubber
Part Number	KGM-N-6310-RH-EE

Threaded Ball Nut, KGM-G



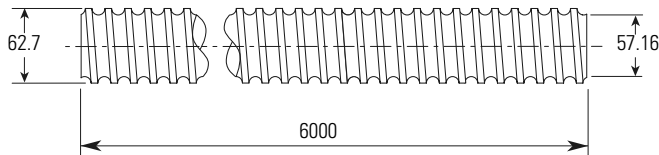
Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	109.7 kN
Max. Static Load	213.2 kN
Number of Circuits	6
Torque to Raise 1 kN	1.77 Nm
Nut Weight	2.0 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit
Number of Balls	168
Wiper Type	Polymer
Part Number	KGM-G-6310-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%



Ø 63 x 20 mm Metric Ball Screws – Rolled

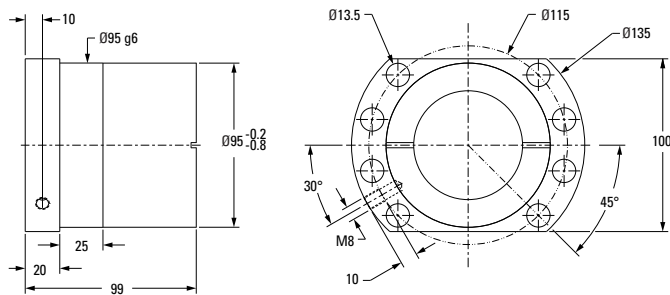
Ball Screw



Nominal Ball Screw Diameter	63 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	22 kg/m
Nominal Ball Diameter	7.14 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9727

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

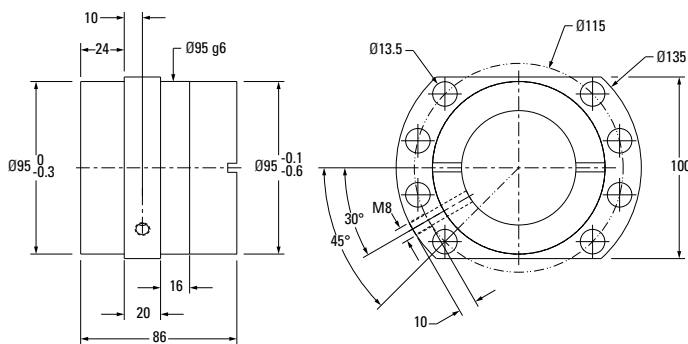
Flanged Ball Nut, KGF-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	78.4 kN
Max. Static Load	173.4 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	2.95 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Polymer
Number of Balls	96
Wiper Type	Rubber
Part Number	KGF-D-6320-RH-EE

Flanged Ball Nut, KGF-D (FH)



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	103.1 kN
Max. Static Load	270.8 kN
Number of Circuits	5.6
Torque to Raise 1 kN	3.54 Nm
Nut Weight	3.8 kg/m
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	End Cap
Number of Balls	96
Wiper Type	Polymer
Part Number	KGF-D-6320-RH-KK

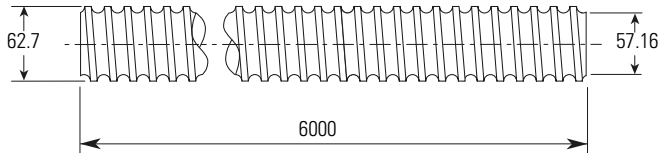
(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%

Ø 63 x 20 mm Metric Ball Screws – Rolled

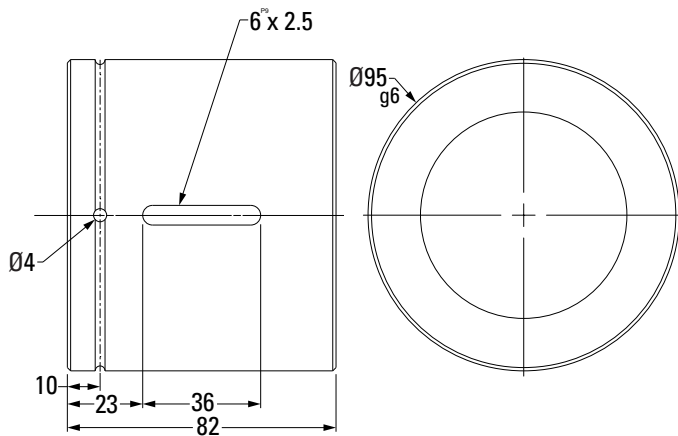
Ball Screw



Nominal Ball Screw Diameter	63 mm
Nominal Ball Screw Lead	20 mm
Thread Direction	Right Hand
Number of Thread Starts	2
Screw Material	CF53
Screw Weight	22 kg/m
Nominal Ball Diameter	7.14 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9727

Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-D



DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	78.4 kN
Max. Static Load	171.3 kN
Number of Circuits	4
Torque to Raise 1 kN	3.54 Nm
Nut Weight	1.95 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Channel
Number of Balls	96
Wiper Type	Rubber
Part Number	KGM-D-6320-RH-EE

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm

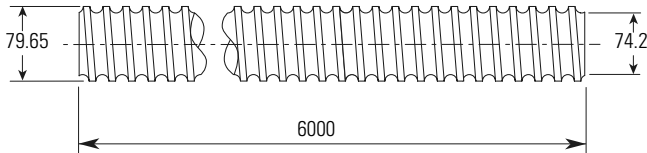
(2) 0 = Standard, no preload, clearance held to max indicated in the table,

1 = Reduced Clearance, 2 = Preload 1-5%



Ø 80 x 10 mm Metric Ball Screws – Rolled

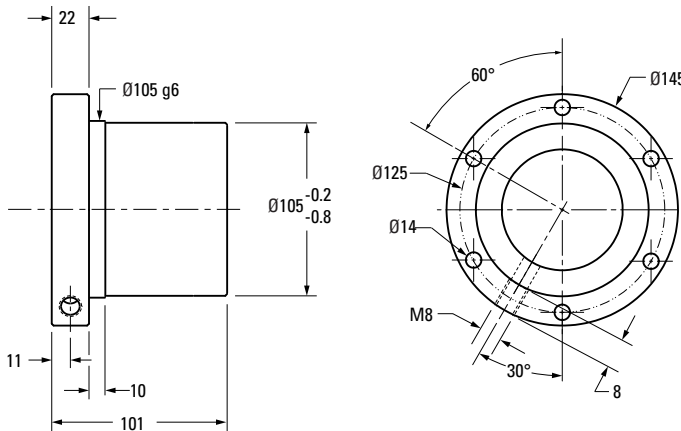
Ball Screw



Nominal Ball Screw Diameter	80 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	36.4 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9728

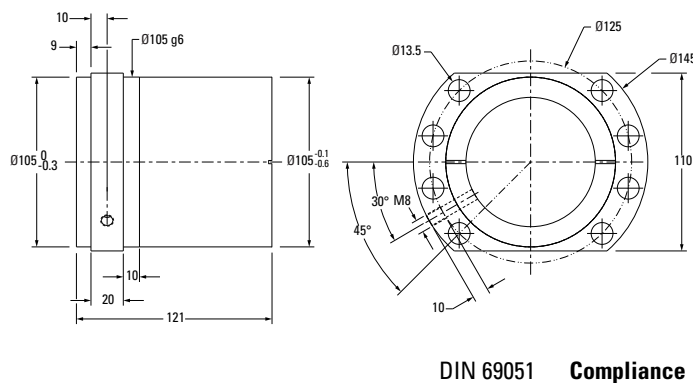
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Flanged Ball Nut, KGF-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	86.3 kN
Max. Static Load	262.4 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	3.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.08 mm
Ball Return Type	Single Circuit Polymer
Number of Balls	175
Wiper Type	Rubber
Part Number	KGF-N-8010-RH-EE

Flanged Ball Nut, KGF-D (FK)



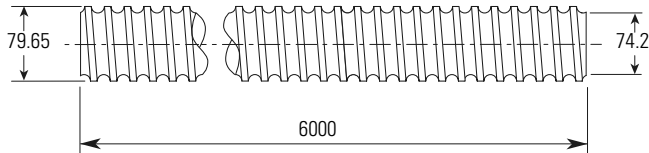
DIN 69051 Compliance

Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	121.9 kN
Max. Static Load	374.9 kN
Number of Circuits	6
Torque to Raise 1 kN	1.77 Nm
Nut Weight	3.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.084 mm
Ball Return Type	Single Circuit Metal
Number of Balls	210
Wiper Type	Polymer
Part Number	KGF-D-8010-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%

Ø 80 x 10 mm Metric Ball Screws – Rolled

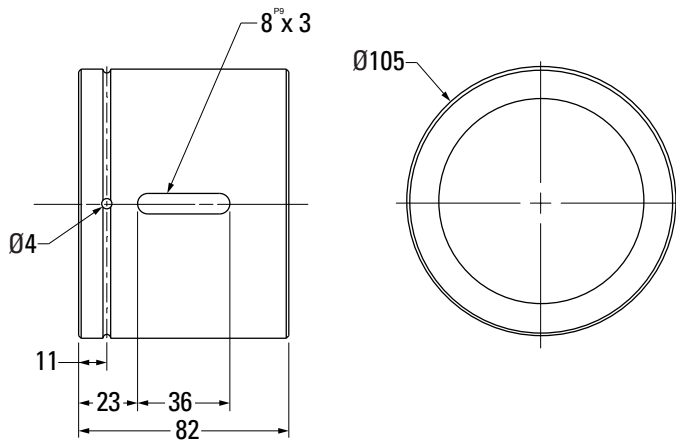
Ball Screw



Nominal Ball Screw Diameter	80 mm
Nominal Ball Screw Lead	10 mm
Thread Direction	Right Hand
Number of Thread Starts	1
Screw Material	CF53
Screw Weight	36.4 kg/m
Nominal Ball Diameter	7.144 mm
Lead Accuracy ⁽¹⁾ P5 Part Number	195-9728

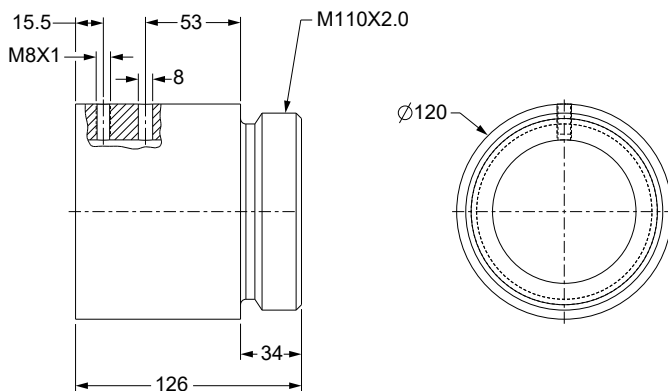
Ball screws can be cut to the length you require. Specify ball screw part number and overall length at time of order

Cylindrical Ball Nut, KGM-N



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	86.3 kN
Max. Static Load	262.4 kN
Number of Circuits	5
Torque to Raise 1 kN	1.77 Nm
Nut Weight	3.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.08 mm
Ball Return Type	Single Circuit Polymer
Number of Balls	175
Wiper Type	Rubber
Part Number	KGM-N-8010-RH-EE

Threaded Ball Nut, KGM-G



Thread Direction	Right Hand
Nut Material	1.7131 (ESP 65)
Dynamic Load	121.9 kN
Max. Static Load	375 kN
Number of Circuits	6
Torque to Raise 1 kN	1.77 Nm
Nut Weight	4.9 kg
Preload Classes ⁽²⁾	0 (standard), 1, 2
Standard max. Backlash (Z2)	0.18 mm
Ball Return Type	Single Circuit Metal
Number of Balls	210
Wiper Type	Polymer
Part Number	KGM-G-8010-RH-KK

(1) P3 = 12 µm / 300 mm, P5 = 23 µm / 300 mm, T5 = 23 µm / 300 mm, T7 = 52 µm / 300 mm
 (2) 0 = Standard, no preload, clearance held to max indicated in the table,
 1 = Reduced Clearance, 2 = Preload 1-5%



Ordering

Ordering Key - Metric Ball Screws

1	2	3	4	5	6	7a	7b	7c	8a	8b	8c	9	10	11										
KGS	-	20	-	50	-	P5	-	RH	/	0	/	E	K	S	/	0	0	X	/	350	/	KGf-N-EE	/	S

1. Nut configuration

KGS = Metric ball screw

2. Nominal thread diameter

- 08 = 8 mm
- 10 = 10 mm
- 12 = 12 mm
- 16 = 16 mm
- 20 = 20 mm
- 25 = 25 mm
- 32 = 32 mm
- 40 = 40 mm
- 50 = 50 mm
- 63 = 63 mm
- 80 = 80 mm

3. Thread lead

- 02 = 2 mm
- 2.5 = 2.5 mm
- 03 = 3 mm
- 04 = 4 mm
- 05 = 5 mm
- 10 = 10 mm
- 20 = 20 mm
- 25 = 25 mm
- 32 = 32 mm
- 40 = 40 mm
- 50 = 50 mm

4. Accuracy

- P5 = 23 µm / 300 mm
- T7 = 52 µm / 300 mm

5. Thread direction

RH = Right hand

6. Preload

- 0 = No preload
- 1 = Reduced clearance
- 2 = 1 - 5% preload

7a. First end configuration - end machining/bearing support

- 1 = Type 1
- 2 = Type 2
- 3 = Type 3
- 4 = Type 4
- 5 = Type 5
- B = Universal double bearing support end cap facing screw thread
- C = Universal single bearing support
- E = Universal double bearing support end cap facing away from screw thread
- U = Universal double bearing support with motor mount
- Y = Flanged double bearing support with motor mount
- D = Flanged single bearing support flange facing screw thread
- F = Flanged double bearing support flange facing screw thread
- G = Flanged single bearing support flange facing away from screw thread
- H = Flanged double bearing support flange facing away from screw thread
- R = Flanged fixed bearing support flange facing screw thread
- V = Flanged fixed bearing support flange facing away from screw thread
- 0 = No machining or support (screw will be cut to desired length)
- X = Custom machining

7b. First end configuration - shaft extension

- K = Shaft extension with keyway
- L = Shaft extension without keyway
- N = No shaft
- 0 = No end machining
- X = Custom shaft extension
- 1* = Nema 17
- 2* = Nema 23
- 3* = Nema 34
- 4* = Nema 42
- 5* = Nema 56
- *only applies when motor mount end bearing support is selected

7c. First end configuration - bearing mount install

- N = Bearing mount shipped loose
- S = Bearing mount installed
- X = No bearing mount

8a. Second end configuration - end machining/bearing support**

8b. Second end configuration - shaft extension**

8c. Second end configuration - bearing mount install**

** Configure the second end as the first as described in point 7a-c. Both ends must be specified

9. Overall length

xxxx = Overall screw length (mm)

10. Ball nut

- KGf-D-EE = Flanged (with flats)
- KGf-N-EE = Flanged (round)
- KGf-D-KK = Flanged (FK/FH style)
- KGM-G-KK = Threaded (ZG style)
- KGM-D-EE = Cylindrical (DIN standard)
- KGM-N-EE = Cylindrical

11. Modifier list

- S = Standard
- M = Modified (additional description required)

Engineering Guidelines





Engineering Guidelines

Selecting a Ball Screw Assembly for Your Application

Below is a list of the most common (but not complete) design considerations used to select a ball screw assembly.

- Compression and/or Tension Load
- Linear Velocity
- Positional Accuracy and Repeatability
- Required Life Expectancy
- Mounting Configuration
- Dimensional Constraints
- Input Power Requirements
- Environmental Condition

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

The following procedure will take you through the most common application-based selection of a ball screw assembly. As no two applications are the same, so the determination process is never the same.

1. Determine the required positional accuracy and repeatability that your application requires (page 70-71). Backlash is the linear independent motion between the ball screw and the ball nut and can be controlled by preloading the ball nut (page 71). The manufacturing process, rolled screws versus ground screws, dictates the accuracy (page 71).
2. Determine how you plan to mount the ball screw assembly into your machine (see page 72). The configuration of the end supports and the travel distance (Max L) will dictate the load and speed limitations of the ball screw.
3. A ball nut in tension can handle loads up to the rated capacity of the nut. For a ball nut in compression, calculate the Permissible Compression Loading (page 69) or use the Compression Loading Chart (page 74) to select a ball screw diameter that meets or exceeds your design load.
4. Calculate the lead of the ball screw that will produce the speed requirement (page 67).
5. The ball nut life can then be calculated using the Dynamic Load Rating (C_{am}) provided in the catalog detail pages. Since multiple ball nuts may be available for a given diameter and lead, use the catalog pages for specified diameter and lead to select available styles.
6. Every ball screw has a rotation speed limit, which is the point of excessive vibration/harmonics in the screw. The critical speed is dependent on the end support configuration. Calculate the Critical Screw Speed of the chosen ball screw (page 67) or use the Acceptable Speed Chart (page 73) to determine the critical speed.
7. If the load, life and speed calculations confirm that the selected ball screw assembly meets or exceeds the design requirements, then proceed to the next step. If not... Larger diameter screws will increase the load capacity and increase the speed rating. Smaller lead screws will decrease the linear speed (assuming constant input motor speed), increase the motor speed (assuming constant linear speed), and decrease the input torque required. Higher lead screws will increase the linear speed (assuming constant input motor speed), decrease the input motor speed (assuming constant linear speed), and increase the input torque required. Repeat steps 3 thru 5 until the correct solution is obtained.
8. Determine how the ball nut will interface into your application. A ball nut flange is the typical method of attaching the ball nut to the load. Threaded ball nuts and cylindrical ball nuts are alternative ways to provide the interface.
9. Additional design considerations and features are also available. Preloaded ball nuts are available to reduce system backlash and increase positional accuracy. Wiper kits to protect the assembly from contaminants and to contain lubrication are standard on some units and optional on most others. Bearing supports and end machining are also available as options for all ball screws.
10. The final considerations are system mounting and lubrication. The ball nut should be loaded axially only as any radial loading significantly reduces the performance of the assembly (page 72). The assembly should also be properly aligned with the drive system, bearing supports, and load to achieve optimal performance (page 72). The ball screw assembly should never be run without proper lubrication. Many lubricants are available depending on the application and environment (page 72).

Note: Application and customer service support is available to assist in the selection of your ball screw assembly. Please contact your local Thomson representative or the customer support center (1-540-633-3549 — TCS) for any additional assistance.

Engineering Guidelines

Ball Screw Assembly Selection Example:

Inputs:

Load: 133,440 N Compression Maximum
44,480 N dynamic

Linear Speed: 5.08 meter/min.

Input Speed: 400 rpm

Travel: 2159 mm

Life: 2.5×10^4 meters

1. Accuracy (pages 70-71)

No Preload and Standard Rolled ($\pm 50 \mu\text{m}$ per 300mm)

2. End Supports (page 69)

Fixed/Supported

3. Determine Screw Diameter

From Chart (page 74): $\varnothing 50\text{mm}$

From Equation (page 69): $133,440 / .8 = \frac{1.47 \times 9.687 \times 10^4 \times d_r^4}{(2159)^2}$

therefore, $d_r = 44.8\text{mm}$

4. Determine Lead

Lead = $\frac{5.08 \text{ meter/min.}}{400 \text{ rpm}}$ therefore, Lead = 12.7mm, Use 10mm

5. Determine Life

From Catalog (page 54): Dynamic Load = 66,400 N

Life (revolutions) = $\left[\frac{66,400}{44,480} \right]^3 \times 10^6$

therefore, Life = 3.3×10^6 revs (3.3×10^4 meters)

6. Determine Critical Speed

From Catalog (page 54): Screw Root Diameter is 43.0mm

From Equation (page 69): $.8 \times 1.47 \times 1.2 \times 10^6 \times \frac{d_r}{l^2}$

therefore, Speed = 1,301.8 rpm

Verified via Chart (page 73)

7. Design Verification

OK per load, speed and life.

8. Load Interface

Flanged connection preferred.

9. Additional Requirements

- Wipers required
- Bearing Supports required
- End Machining needed
- Right Hand Thread
- Carbon Steel

10. Mounting and Lubrication

System will require motor interface and linear rails for alignment.
E-1000SP

Product Selection:

Ball Nut: P/N KGF-D-5010-RH-KK

Engineering Guidelines

Design Formulas

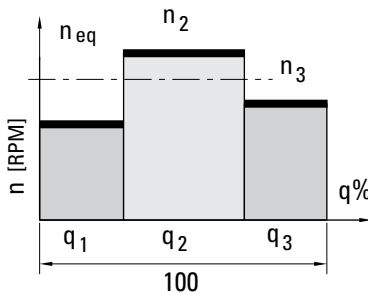
These formulas allow you to calculate a number of important factors which govern the application of Thomson ball screws.

1. Ball Screw Life (L)

The ball screw assembly's useful life will vary according to load and speed. Life is typically rated at 90% confidence, L10 (which represents time at which 90% of assemblies still perform).

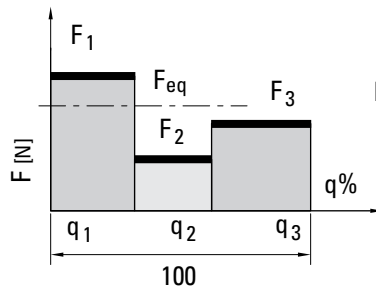
Functional life should be determined by approximating equivalent rotational speed and loading force over typical performance cycles.

Simple rotational speed profile



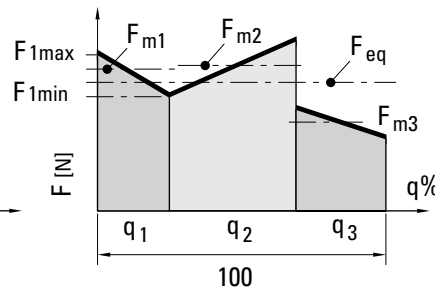
$$n_{eq} [\text{min}^{-1}] = \sum_{i=1}^n n_i \times \frac{q_i}{100}$$

Simple loading profile (1)



$$F_{eq} [N] = \left(\sum_{i=1}^n F_i^3 \times \frac{n_i}{n_{eq}} \times \frac{q_i}{100} \right)^{1/3}$$

Simple loading profile (2)



$$F_{eq} [N] = \left(\sum_{i=1}^n F_{mi}^3 \times \frac{n_i}{n_{eq}} \times \frac{q_i}{100} \right)^{1/3}$$

Modified Life

$$L_{10} [\text{revolutions}] = \left[\frac{C_{am}}{F_{eq}} \right]^3 \times 10^6$$

$$L_{h10} [\text{hours}] = \frac{L_{10}}{n_{eq} \times 60}$$

Parameters:

- n_{eq} = equivalent operating rotational speed [rpm]
- F_{eq} = equivalent operating load [N]
- C_{am} = dynamic load rating [N] (see specification tables) (Based on 1.0 million revolutions)

2. Rotational Speed Required for a Specific Linear Velocity

$$n = \frac{\text{Travel Rate (mm x min.}^{-1}\text{)}}{\text{Lead (mm)}} \quad n = \text{rpm}$$

3. Machine Service Life

After ball screw life (L) is calculated, apply it to the following formula to determine machine service life.

$$\text{Machine Service Life (in years)} = \frac{L_{h10} [\text{hours}]}{(\text{machine operating hours}) \cdot (\text{days/year}) \cdot \left(\frac{\text{ball screw operating hours}}{\text{machine operating hours}} \right)}$$

Engineering Guidelines

4. Torque

a. Driving torque: $T_d \text{ (N}\cdot\text{m)} = \frac{F_{eq} \times P}{2\pi e} = 1.77 \times 10^{-4} \times F_{eq} \times P$

b. Backdrive torque: $T_b \text{ (N}\cdot\text{m)} = \frac{F_{eq} \times P \times e}{2\pi} = 1.43 \times 10^{-4} \times F_{eq} \times P$

(conversion of linear to rotational motion)

F_{eq} = Equivalent Operating Load (N)
 P = Lead (mm)
 e = Efficiency = 0.90
 T_d = Driving Torque (N•m)
 T_b = Backdrive Torque (N•m)
 1 lb-in. = 0.113 N•m

5. Power

$P_d \text{ (W)} = \frac{F_{eq} \times P}{(2\pi) e} \times \frac{n}{9.546 \times 10^3} = \frac{F_{eq} \times P \times n}{5.398 \times 10^4}$

P_d = Power (W)
 n = rpm
 1 hp = 746 W

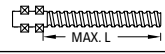
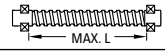
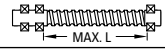

6. Permissible Rotational Speed

The permissible rotational speed depends on two factors: critical screw speed and critical nut speed.

6a. Critical Screw Speed

The critical screw speed is related to the natural frequency of the screw shaft. Exceeding this value may result in excessive vibration. The critical screw speed may be found using the following equations or the chart on page 73.

$n_c = C_s \times 1.2 \times 10^8 \times \frac{d_r}{l^2}$ n_c = Critical Speed (rpm)
 $n_s = n_c \times S$ n_s = Safe Drive Speed
 d_r = Root Diameter (mm)
 l = Length between Bearing Supports (mm)
 S = Safety Factor (0.8 maximum)
 C_s = End Fixity Factor

End Fixity Factor - Critical Screw Speed		
End Supports		C_s
A 	One end fixed, one end free	0.36
B 	Both ends supported	1.00
C 	One end fixed, one end supported	1.47
D 	Both ends fixed	2.23

6b. Critical Nut Speed

The critical nut speed is related to the velocity of the ball bearings rotating around the screw shaft. Exceeding this value may result in permanent damage to the ball recirculation components. Thomson recommends a maximum DN value of 140,000 for standard internal transfer designs, which encompass the majority of the Metric products. Higher values may be accommodated by special design (consult with applications engineering).

$DN = d_0 n$

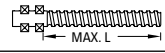
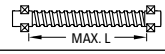
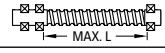
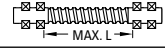
where

d_0 = nominal shaft diameter (mm)
 n = rotational speed of shaft (rpm)

7. Permissible Compression Loading

Exceeding the recommended maximum compression force may result in buckling of the screw shaft.

$F_c = \frac{C_s \times 9.687 \times 10^4 \times d_r^4}{l^2}$ F_c = Critical Buckling Force (N)
 $F_s = F_c \times S$ F_s = Safe Compression Force (N)
 d_r = Root Diameter (mm)
 l = Max Unsupported Length (mm)
 S = Safety Factor (0.8 maximum)
 C_s = End Fixity Factor

End Fixity Factor - Permissible Compression Loading		
End Supports		C_s
A 	One end fixed, one end free	0.25
B 	Both ends supported	1.00
C 	One end fixed, one end supported	2.00
D 	Both ends fixed	4.00



Engineering Guidelines

Accuracy Classes

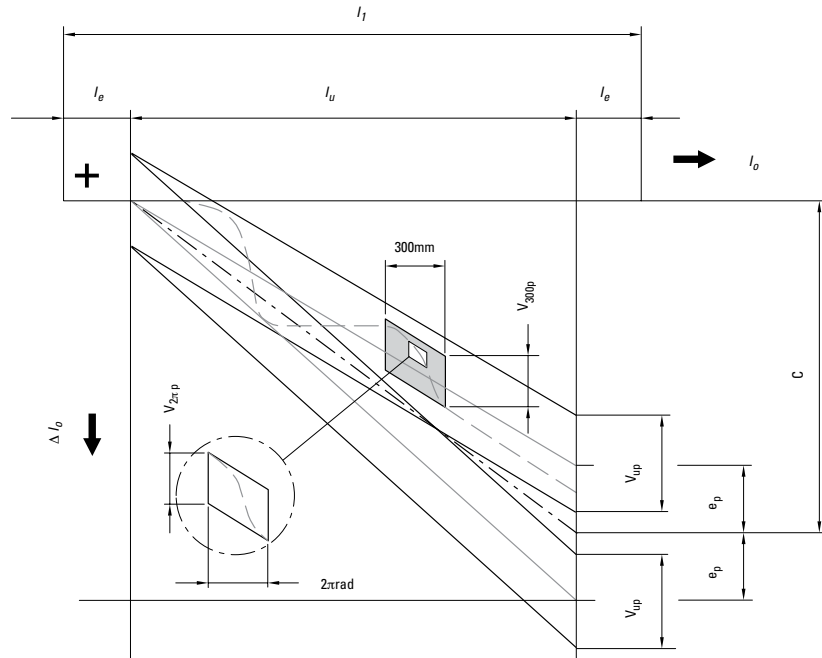
Accuracy is a measure of how closely a motion system will approach a command position. Perfect accuracy, for example, means that advancing a ball nut a precise amount from a given point on the screw always requires exactly the theoretically predicted number of revolutions.

Metric ball screws are produced in two main tolerance classes: T (transport) and P (positioning). Transport grade ball screws are used in applications requiring only coarse movement or those utilizing linear feedback for position location. As such, most transport grade screws are provided with nuts having backlash (T7 grade screws cannot be supplied with preloaded nuts). Precision grade ball screws are used where repeatable positioning within microns is critical, without the use of a linear feedback device.

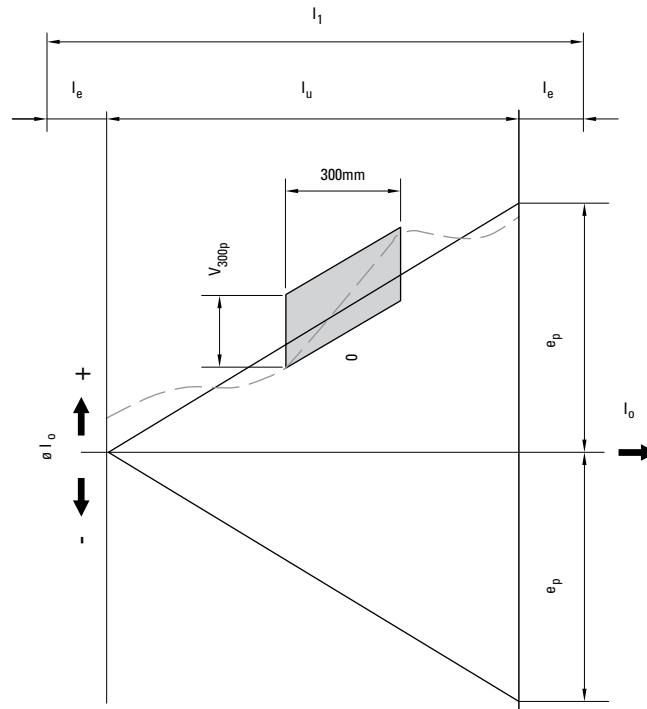
Differences between P & T grades are highlighted in the graph. T grade transport screws allow greater cumulative variation over the useful length of the screw. P grade positioning screws contain accumulation of lead error to provide precise positioning over the screw's entire useful length.

P — Positioning Class Ball Screws

$$\text{Maximum error over useful length} = e_p + 1/2V_{up} + C$$

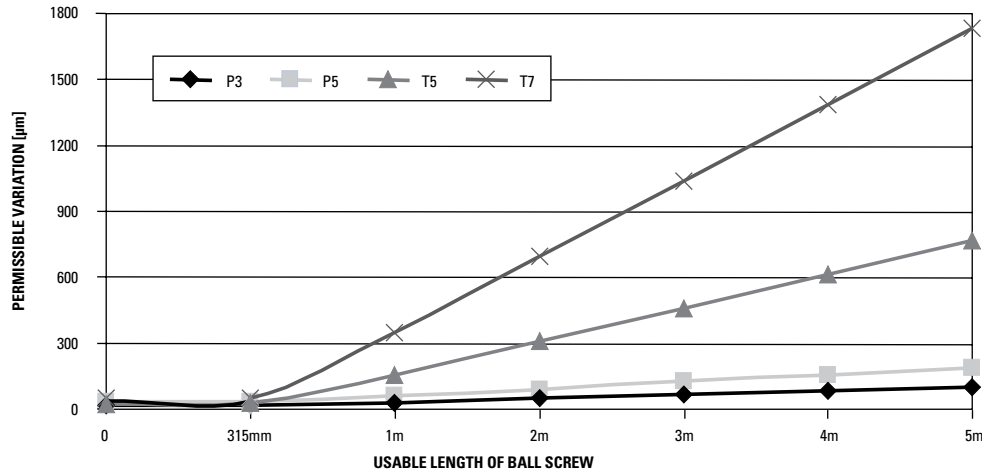


- I_o = nominal travel
- I_1 = thread length
- I_e = travel deviation
- I_u = useful travel
- I_e = excess travel
- C = travel compensation for useful travel (std. = 0)
- e_p = tolerance for actual mean travel deviation (the difference between the maximum and minimum values of the permissible actual mean travel)
- V_{up} = permissible travel variation within useful travel, I_u
- V_{300p} = permissible travel deviation within 300mm travel
- $V_{2\pi p}$ = permissible travel deviation within 1 revolution



Engineering Guidelines

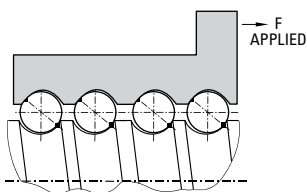
Permissible Travel Variation Over Usable Length



Tolerance Class	Lead Accuracy V_{300p}	Permissible Travel Deviation V_{up} (µm) Over Screw Length l_u (mm)																
		l_u	>		315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	
		(mm)	?	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	
P3	$\pm 12 \mu\text{m}/300 \text{ mm}$	e_p (µm)	12	13	15	16	18	21	24	29	35	41	50	62	76	—	—	
		V_{up} (µm)	12	12	13	14	16	17	19	22	25	29	34	41	49	—	—	
P5	$\pm 23 \mu\text{m}/300 \text{ mm}$	e_p (µm)	23	25	27	30	35	40	46	54	65	77	93	115	140	170	—	
		V_{up} (µm)	23	25	26	29	31	35	39	44	51	59	69	82	99	119	—	
T5	$\pm 23 \mu\text{m}/300 \text{ mm}$	e_p (µm)	23	$= 2 \times l_u / 300 \times V_{300p}$														
T7	$\pm 52 \mu\text{m}/300 \text{ mm}$	e_p (µm)	52	$= 2 \times l_u / 300 \times V_{300p}$														

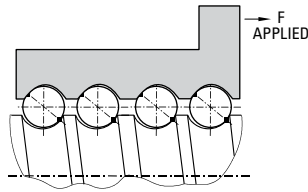
Preload Types

No Preload (Type 0)
(Standard lash)



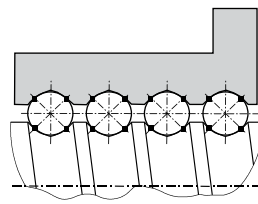
- Axial play is present between screw and nut.
- Typically used for transport or vertical applications.

No Preload (Type 1)
(Reduced Clearance)



- Axial play is present between screw and nut (held to 0.05 mm maximum).
- Typically used for transport or vertical applications.

Preload (Type 2)
(No lash)



- Oversized balls slightly larger than the ball groove space are used to provide zero backlash between the screw and nut.
- The preload is approximately 1- 5% of dynamic load capacity.
- Typically used for positioning applications where higher-level repeatability is desired.



Engineering Guidelines

Lubrication Guidelines

E-1000SP Ball Screw Supreme Performance Lubricant may be used on both rolled and precision ground thread ball screws. E-1000SP will provide outstanding protection of equipment, long oil life, and problem-free operation.

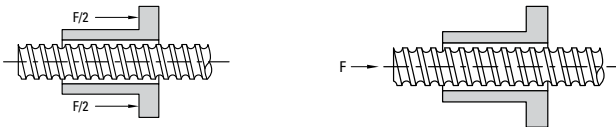
Scientifically engineered oils are formulated from base materials with an inherently high viscosity index. Additives enable E-1000SP to provide outstanding performance in extreme service at high and low temperatures and are resistant to shear in rolling bearing applications without loss of viscosity at both high and low speed.

E-1000SP SPRAY CAN	
Part Name	E-1000SP
Net Contents	12 oz. per can
NLU-1007	1 CAN - 1 lb
NLU-2007	1 CASE - with 12 cans - total weight of 14 lb
E-1000SPL LIQUID	
Part Name	E-1000SPL
NLU-1008	1 BOTTLE - weight of 32 oz.
NLU-2008	1 CASE - with 12 quarts - total weight of 32 lb oz.
VISCOSITY	
@ 40° C	97
@ 100° C	13.7

Nut Loading

Axial loading (on nut or screw) is optimal for performance and life. For applications requiring radial loads, please contact us.

Axial Loading: optimal



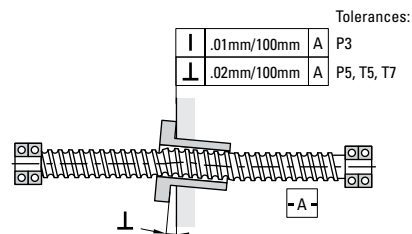
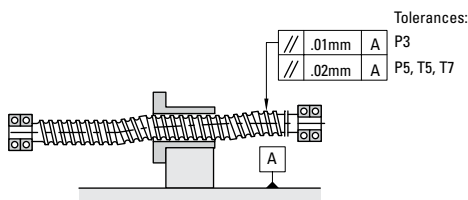
Radial Loading: detrimental*



* Minimize radial loading to less than 5% of the axial load.

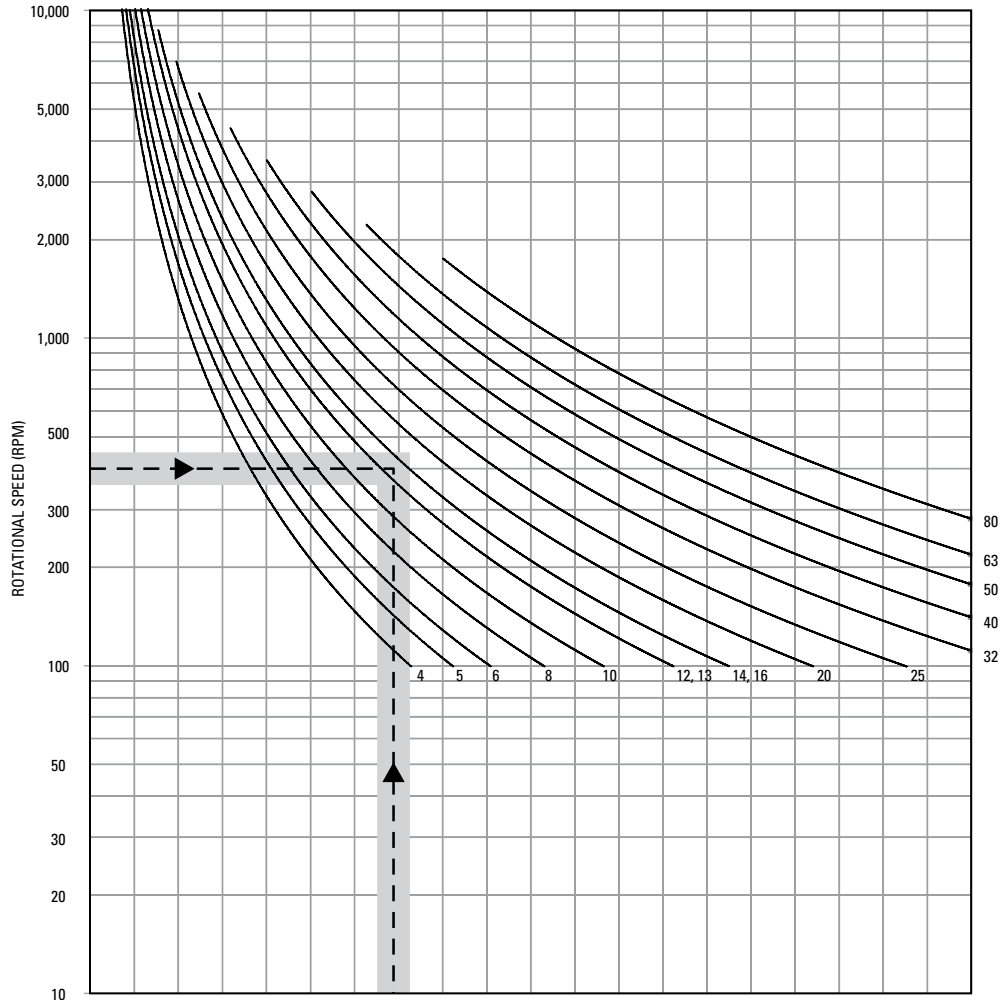
Nut Mounting

Use the following guidelines to achieve optimal performance. (All units are mm)



Engineering Guidelines

Acceptable Speed† vs. Length for Screws



END SUPPORT TYPE

Support Type	Inches	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
A: One end fixed, other end free	mm	152	304	457	609	762	914	1056	1219	1371	1524	1676	1828	1981	2133	2286	2438	2590	2743	2895	3048
B: Both ends supported	Inches	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
	mm	254	508	762	1016	1270	1524	1778	2032	2286	2540	2794	3048	3302	3556	3810	4064	4318	4572	4826	5080
C: One end fixed, other end supported	Inches	12	24	36	48	61	73	85	97	109	121	133	145	158	170	182	194	206	218	230	242
	mm	304	609	914	1219	1549	1854	2159	2463	2768	3073	3378	3683	4013	4318	4622	4927	5232	5537	5842	6146
D: Both ends fixed	Inches	15	30	45	60	75	90	105	119	134	149	164	179	194	209	224	239	254	269	284	298
	mm	381	762	1143	1524	1905	2286	2667	3022	3403	3784	4165	4546	4927	5308	5689	6070	6451	6832	7213	7594

Unsupported length of 85 in. (2159mm).

End fixity of one end fixed, other end supported.

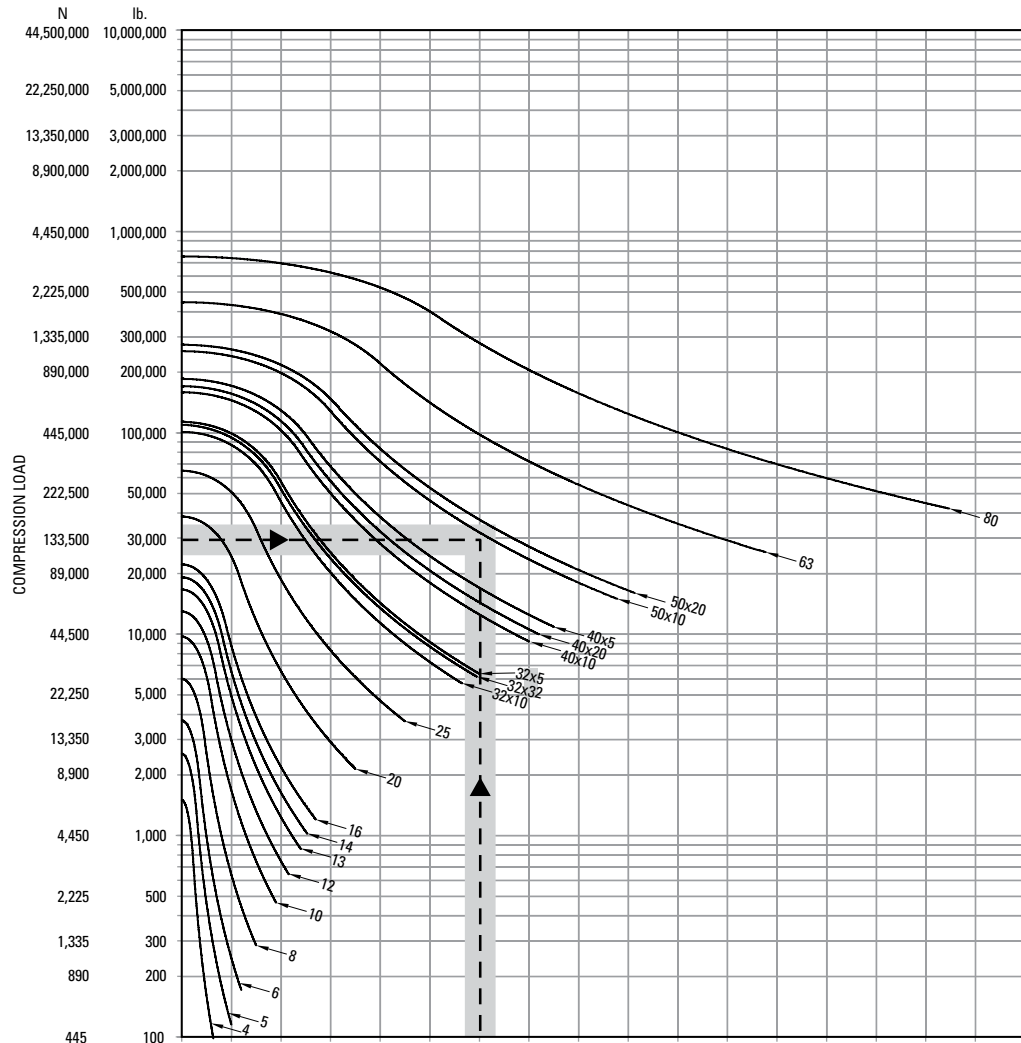
All screws with curves which pass through or above and to the right of the plotted point are suitable for the example. The acceptable velocities shown by this graph apply to the screw shaft selected and are not indicative of the velocities attainable of all of the associated ball nut assemblies. Consult Thomson engineering for high speed applications.

†80% of critical speed



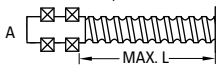
Engineering Guidelines

Compression Load vs. Length for Designated Ball Screws



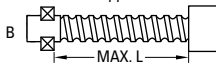
END SUPPORT TYPE

One end fixed, other end free



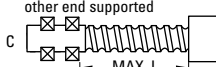
Inches	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85
mm	127	254	381	508	635	762	889	1016	1143	1270	1397	1524	1651	1778	1905	2032	2159

Both ends supported



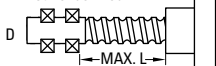
Inches	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170
mm	254	508	762	1016	1270	1524	1778	2032	2286	2540	2794	3048	3302	3556	3810	4064	4318

One end fixed, other end supported



Inches	14	28	42	57	71	85	99	113	127	141	156	170	184	198	212	226	240
mm	356	711	1067	1448	1803	2159	2515	2870	3226	3581	3962	4318	4674	5029	5385	5740	6096

Both ends fixed



Inches	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340
mm	508	1016	1524	2032	2540	3048	3556	4064	4572	5080	5588	6096	6604	7112	7620	8128	8636

Example: Maximum system load is 30,000 lb. (133,500 N).

Length of 85 in. (2159mm).

End fixity of one end fixed, other end supported.

All screws with curves which pass through or above and to the right of the plotted point are suitable for the example.

The suitable compression loads shown in this graph are not to exceed the maximum static load capacity as given in the rating table for the individual ball nut assembly.

Custom Capabilities

The Thomson Advantage

In addition to our extensive standard ball screw products, Thomson has designed and manufactured custom engineered products to fit the unique requirements of our customers. We welcome and encourage requests for specialized products, regardless of quantity or frequency of order. Our custom products range from one-time-only units to high quantity requirements. A few of our custom possibilities are listed below:

Precision Screw Products

Thomson provides engineering support and quality assurance for all of its components and assemblies allowing our customers to focus on the larger design picture. Our full range of designs and sizes for our linear motion components allow greater design flexibility, while our support staff ensures proper initial application and comprehensive support once installed.

Components and Assemblies

From components to complete assemblies, Thomson always provides the highest performance products to your applications. Let us assist in your design to ensure proper operation of our components, or let us provide you a complete solution.

- Complete solutions to your linear motion designs with our industry tested assemblies
- Full complement of linear motion components: Rails (square and round), Motor Mounts, Bearing Mounts, Ball Nuts, Acme Plastic Nuts, Bronze Nuts, Anti-Backlash Nuts, Miniature Ball Nuts, Bearings, and more

If you don't see it, just ask us. Our application engineers will help you specify these options and modifications or they will work with you to create entirely new ones which will improve your machine's performance and lower your cost.

Design Ranges

During our 70+ years of servicing customers, our engineers have continuously developed new lead screw, ball screw, and spline assemblies required for many of industry's most unique, demanding applications. Our current product offering represents our evolving and expanding design and manufacturing capabilities.

The result of this experience is a portfolio of capabilities second to none. Thomson is the pioneer in the design and manufacture of:

- High speed ball screws – up to 300 in/min
- Telescoping assemblies – up to five sections
- Hollow shafting for low inertia and low weight
- Safety nuts with up to five redundant load paths
- Nylon nuts, offering extreme speeds and loads
- Ultimate accuracy assemblies – up to .0002 in/ft





Glossary

Accuracy

A measurement of precision. Perfect accuracy, for example, means advancing a ball nut 1 in. from any point on a screw will always require the exact same number of revolutions.

Annealed Ends

A manufacturing process which removes brittleness while softening screw stock to allow for machining of end journals.

Arbor or Mandrel

Temporary shaft used to support ball nut during shipping assembly/disassembly.

Axial Lash/Backlash

The axial free motion between the ball nut and ball screw; a measure of system stiffness and repeatability.

Backdrive

Application of a force on a ball nut to cause rotation of the screw shaft; in essence, converting linear to rotary motion.

Ball Bearing Spline

A linear motion device using the rolling contact principle. In a spline, the path of the bearings is parallel to the shaft to allow axial freedom and to provide torque transmitting capacity.

Ball Circle Diameter

The distance between the centerlines of two exactly opposing recirculating balls when they are in contact with the screw. The basic point of reference used by Thomson when dealing with ball screws.

Ball Nut

A nut compatible with a ball screw. The nut contains a series of bearing balls which are carried from one end of the nut to the other by a return tube.

Ball Screw

A ball bearing screw is a screw that runs on bearing balls. The primary function of a ball bearing screw is to convert rotary motion to linear motion or torque to thrust.

Bearing Ball Circuit

The closed path of recirculating balls within the ball nut assembly. A multiple circuits has a greater load carrying capability than a single circuit ball nut assembly of the same.

Compression Load

Compression load is a load which would tend to compress or buckle the ball screw shaft.

Conformity Ratio

Ratio of the ball track radius to the ball diameter.

Contact Angle

Nominal angle between a plane perpendicular to the screw and a line drawn between a ball and the ball tracks and projected on a plane passing through the screw axis and the center of the ball. The angle at which the ball contacts the groove.

Column Load

Column loading is the compression load on the screw. This load has a tendency to buckle the screw and is dependent on screw diameter, screw length and type of mounting.

Critical Speed

The condition where the rotary speed of the assembly sets up harmonic vibrations. These vibrations are the result of shaft diameter, unsupported length, type of bearing support, ball nut mounting method, or the shaft or ball nut rpm. Vibrations may also be caused by a bent screw or faulty installation alignment.

Cycle

The complete forward and reverse motion of the screw (or nut) when moving the load. One cycle is equivalent to two load carrying strokes (one forward and one backward).

Diameter — Major

The outside diameter of the ball bearing screw shaft. In dealing with ball bearing screws, this is the basic measurement.

Diameter — Minor (Root)

Diameter of the screw measured at the bottom of the ball track.

Diameter — Pitch

The nominal diameter of a theoretical cylinder passing through the centers of the balls when they are in contact with the ball bearing screw and ball nut tracks.

Driving Torque

The amount of effort, measured in pound-inches, required to turn the ball screw and move the load.

Dynamic Load Rating

Dynamic load rating is the maximum load which a ball bearing screw assembly can maintain for 1.0 million inches of travel (Inch Series) or 1.0 million revolutions (Metric Series).

Efficiency

Expressed as a percentage, the ability of a ball screw assembly to convert torque to thrust with minimal mechanical loss. Thomson ball screws operate at over 90% efficiency.

End Bearing Support (End Fixity)

The three basic bearing configurations that are commonly used to support the ends of a ball screw are.

- a) A single journal or ball type bearing (simple support).
- b) A pair of back-to-back, angular contact bearings to control end play (simple support).
- c) A pair of spaced bearings for added rigidity (rigid support)

Four combinations of bearing supports are used throughout this catalog for selection purposes.

Glossary

Flange

A metal mounting plate attached to a ball nut.

Gothic (or Ogival) Groove

A ball track cross-section shaped like a Gothic arch.

Journal

1. A machined cylindrical surface.
2. End journals are machined ends of ball bearing screws which allow for bearing mounting.

Land Area

The area on the outside diameter of a ball bearing screw between ball grooves.

Lead

The axial distance a screw travels during one revolution.

Lead Error

The amount of positional error per foot (Inch Series) or per 300mm (Metric Series) that is inherent in linear motion on ball screws.

Lead Tolerance

The maximum variation from nominal, measured in inches per foot, cumulative.

Left (Right) Hand Threads

The direction of threads on a shaft or in a nut. Left hand means that the nut will move away if rotated counterclockwise. Right hand means the nut will move away if rotated clockwise.

Linear Expansion

Ball screw and spline inner races have a coefficient of linear expansion of 0.0000065 for each degree of change (F) and for each inch of race length.

Load Carrying Balls

The balls in contact with the ball grooves of both the nut and the screw for load carrying purposes.

Load/Life Rating

The usable life of a ball bearing screw assembly measured in inches of travel under a specific load. The length of travel that 90 percent of a group of ball bearing screws will complete, or exceed, before the first evidence of fatigue develops.

Lubrication

To provide the maximum useful life, ball splines and ball screws require lubrication. In general, standard ball bearing lubrication practices are acceptable.

Off Center Load (Eccentric)

A load tending to cock the ball nut on the screw, reducing the rated life. This must be considered in the selection of the ball screw assembly.

Operating Loads

The normal operating force in pounds (lb.) or Newtons (N) which the ball spline or ball screw will experience is considered the operating load. Contact us for assistance in applications subject to widely fluctuating loads or to optimize design.

Preload

The use of one group of bearing balls set in opposition to another to remove axial lash or backlash and increase ball bearing screw stiffness. All axial backlash is eliminated in preloading.

Protective Coatings

Standard outer races are supplied with a black oxide coating. Inner races are furnished with a phosphate coating. Contact Application Engineering for additional options.

Repeatability

A measure of constancy that is directly related to axial backlash. Higher backlash equates to lower repeatability and may be corrected by preloading the ball nut if required.

Root Diameter

The diameter of the screw shaft as measured at the bottom of the ball track.

Screw Diameter (land diameter)

The outside diameter of the screw shaft.

Screw Starts

The integral number of independent threads on the screw shaft; typically one, two, or four.

Side Load (radial)

A load from the side that will reduce the rated life and must be considered in the selection of the ball bearing screw.

Spring Rate

A ratio of load versus deflection of a component or of a total system. System stiffness will always be less than its most compliant member. Thus, in any system where a ball screw is used and where high system stiffness is a primary design requirement, Thomson should be contacted for recommendations based on the specifics of the application.

Static Load

Static load is the maximum non-operating load capacity above which brinelling of the ball track occurs.

Straightness

The linearity of a screw shaft. Precision screw stock is .010 in/ft. with .040 inch max. Precision Plus stock is typically .003 inch over the entire length of the screw.

Stroke

The maximum length of extension of a ball nut on the screw shaft.



Glossary

Temperature (operating)

With suitable lubricants, ball splines and ball screws will operate with a minimum loss of efficiency between temperatures of -65° to +300°F (-53° to +149°C). Contact our application engineers for assistance in applications with extreme temperatures.

Tension Load

Tension load is a load which would tend to stretch the ball screw shaft.

Thrust Load

Thrust load is loading parallel to and concentric with the centerline of the screw shaft which acts continuously in one direction. Thrust loading is the proper method of attaching the load to the ball bearing screw assembly.

Travel and Travel Rate

The distance a ball nut moves relative to the screw shaft. Travel rate is the distance traveled in a specific time period.

Date: ____ / ____ / ____

Application Data Sheet

Use this form if you need assistance selecting a product. We will respond within four hours.

1. Information

Name		Title/Dept.	
Company Name			
Address			
Phone		Fax	
Email			

2. Application Requirements

What is your LOAD?		<input type="checkbox"/> lbs	<input type="checkbox"/> kg
		<input type="checkbox"/> N	<input type="checkbox"/> Other (please specify)
What is your MOTION?		<input type="checkbox"/> Vertical	<input type="checkbox"/> Horizontal
		<input type="checkbox"/> Other (please specify)	

Accuracy Requirements	0.004"/ft <input type="checkbox"/>	0.005"/ft <input type="checkbox"/>	52 μ /300mm <input type="checkbox"/>	23 μ /300mm <input type="checkbox"/>	12 μ /300mm <input type="checkbox"/>	Other (please specify)
------------------------------	---------------------------------------	---------------------------------------	---	---	---	------------------------

Backlash Requirements	0.000" <input type="checkbox"/>	0.002" <input type="checkbox"/>	0.010" <input type="checkbox"/>	0.05mm <input type="checkbox"/>	0.2mm <input type="checkbox"/>	Other (please specify)
------------------------------	------------------------------------	------------------------------------	------------------------------------	------------------------------------	-----------------------------------	------------------------

Bearing Supports?	<input type="checkbox"/> Fixed/Fixed	<input type="checkbox"/> Fixed/Free	<input type="checkbox"/> Fixed/Simple
	<input type="checkbox"/> Other (please specify)		

Motor Cube Required?	<input type="checkbox"/> NEMA 17	<input type="checkbox"/> NEMA 23	<input type="checkbox"/> Other (please specify)
	<input type="checkbox"/> NEMA 42	<input type="checkbox"/> NEMA 34	

Quantity Required?		<input type="checkbox"/> per Week	<input type="checkbox"/> per Month
		<input type="checkbox"/> per Year	<input type="checkbox"/> Other (please specify)

Additional Information/Comments

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