

# Metric Ball Screws



BALL SCREWS — METRIC SERIES

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## Metric Ball Screws Product Overview

Superior performance for today's most stringent positioning requirements.

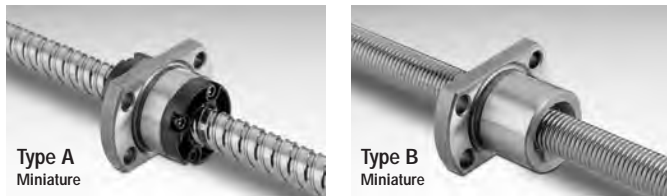
Thomson has a wide range of internal return metric ball screw products, featuring four distinct product families — Miniature, Fineline, Thomson NEFF and Precision Plus. Each family is designed to meet unique application requirements.

### Miniature Rolled Ball Screws (page 109)

Miniature Rolled Ball Screw Assemblies are an efficient, cost-effective solution in a small envelope. Ball screw assemblies range from 4mm to 14mm in diameter, with standard lead accuracies of 52 microns/300mm.

Compact ball nuts are available with body diameters as small as 11mm and overall lengths as short as 17mm. Miniature Rolled Ball Screws are ideal for laboratory, semiconductor, and medical applications.

Miniature ball screws are available in two nut styles.



### Precision Plus Ground Ball Screws (page 131)

Precision Plus Ground Ball Screw Assemblies are our highest precision product, with standard lead accuracies of 12 microns/300mm. These ball screw assemblies feature our FL-style ball nut, precisely preloaded to customer specifications. This unique nut design provides high repeatability and high stiffness for the most demanding ball screw applications. Each nut comes standard with an integral plastic wiper to protect against chips and other debris. Precision Plus Ground Ball Screws are ideal for applications requiring high repeatability and high stiffness (e.g., high precision machine tool).

Precision Plus screws are available with our FL style nut.



### FineLine Rolled Ball Screws (page 113)

FineLine Rolled Ball Screw Assemblies are designed and manufactured to provide high level performance at an affordable price. Ball screws are manufactured using Thomson's patented, German-engineered Precision Screw Forming (PSF) Technology, which provides high accuracy (23 microns/300mm standard) with the manufacturing efficiency of rolled processes. Ball nuts are manufactured with one of two ball return systems (button or end return) made with reinforced steel, making them extremely durable and ideal for high speed, high load, and/or high temperature applications. Each nut comes standard with an integral plastic wiper to protect against chips or other debris. FineLine Rolled Ball Screws are ideal for machining centers, factory automation, packaging, and injection molding applications.

FineLine ball screws are available in four nut styles.



### Thomson NEFF Rolled Ball Screws (page 121)

Neff 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. Standard NEFF ball screws are rolled to an accuracy of 50 microns/300mm, with higher accuracies readily available upon request.

Ball nuts include one of three unique ball return systems (depending on the diameter and lead of the screw used) providing perfect guidance, low wear, and smooth running performance. Ball nuts come standard with profiled rubber wipers to contain lubricant and help repel fine contaminants (dust, powders, etc). NEFF Rolled Ball Screws are ideal for wood working, water cutting, electronic assembly and medical applications.

Thomson NEFF ball screws are available in four nut styles.



## Metric Ball Screws Product Overview

An overview of ball screw sizes available within each product family is shown below. Refer to individual product family sections for additional details.

### Miniature Rolled Ball Screws — Product Availability (page 109)

	1mm	2mm	4mm	5mm	6mm	8mm	10mm	12mm	15mm	20mm	25mm	32mm	40mm	50mm
4mm	●													
5mm			●											
6mm	●				●									
8mm	●	●		●		●		●						
10mm		●					●		●	●				
12mm		●												
13mm								●		●				
14mm		●	●											

### FineLine Rolled Ball Screws — Product Availability (page 113)

	1mm	2mm	4mm	5mm	6mm	8mm	10mm	12mm	15mm	20mm	25mm	32mm	40mm	50mm
12mm			●	●										
16mm				●										
20mm				●						●				
25mm				●			●				●			
32mm				●			●					●		
40mm				●			●						●	
50mm							●							
63mm							●							
80mm							●							

BALL SCREWS — METRIC SERIES

### NEFF Rolled Ball Screws — Product Availability (page 121)

	1mm	2mm	4mm	5mm	6mm	8mm	10mm	12mm	15mm	20mm	25mm	32mm	40mm	50mm
12mm				●										
16mm				●			●							
20mm				●						●				●
25mm				●			●			●				●
32mm				●			●					●	●	
40mm				●			●						●	
50mm							●			●				
63mm							●							

### Precision Plus Ground Ball Screws — Product Availability\* (page 131)

	1mm	2mm	4mm	5mm	6mm	8mm	10mm	12mm	15mm	20mm	25mm	32mm	40mm	50mm
16mm				●										
20mm				●										
25mm				●										
32mm				●			●							
40mm				●										
50mm							●							
63mm							●							
80mm							●							

\* Additional ground ball screw sizes are available in diameters up to 200mm. Contact us for more details.

## Metric Ball Screws Product Overview

The Thomson series of metric ball screws includes three families of rolled ball screws (Miniature, FineLine, Thomson NEFF) with four nut styles — Miniature, Cylindrical, Threaded and Flanged. An overview of our rolled product offering is organized by nut style, below. Refer to individual product family sections for additional details.

### Miniature Ball Nuts

#### Miniature: Type A, Type B

**Return:** Internal

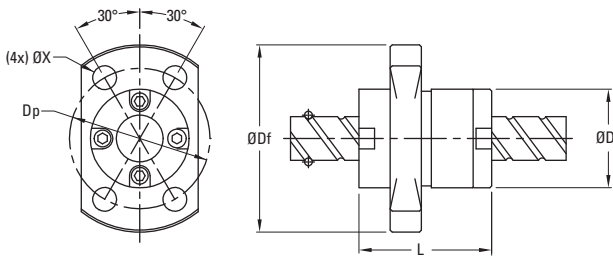
**Style:** Miniature

**Mounting:** Flanged

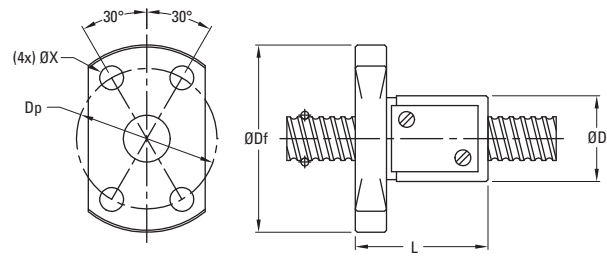
**Backlash:** Non-preloaded

**Thread Direction:** Right Hand

#### Type A



#### Type B



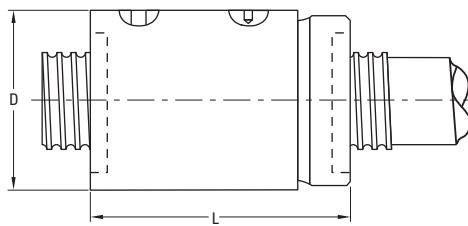
Nominal Diameter	Lead	Dynamic Load Capacity (C <sub>am</sub> )	Length L	Width/Diameter D	Ball Nut Form	Flange Diameter D <sub>f</sub>	Bolt Hole Circle D <sub>p</sub>	Hole Diameter X	Ball Nut	Screw and Nut Assembly P/N	Catalog Page
(mm)	(mm)	(kN)	(mm)	(mm)		(mm)	(mm)	(mm)			
4	1	0.6	17.0	11.0	Type B	24.0	18.0	3.4	Type B	PRM0401	110
5	4	0.5	22.0	12.0	Type B	24.0	18.0	3.4	Type B	PRM0504	110
6	1	0.7	17.0	13.0	Type B	26.0	20.0	3.4	Type B	PRM0601	110
6	6	0.9	17.0	14.0	Type A	27.0	21.0	3.4	Type A	PRM0606	110
8	1	0.8	17.0	16.0	Type B	29.0	23.0	3.4	Type B	PRM0801	110
8	2	2.4	24.0	20.0	Type B	37.0	29.0	4.5	Type B	PRM0802	110
8	5	1.9	28.0	18.0	Type B	31.0	25.0	3.4	Type B	PRM0805	110
8	8	2.2	20.0	18.0	Type A	31.0	25.0	3.4	Type A	PRM0808	110
8	12	2.2	27.0	18.0	Type A	31.0	25.0	3.4	Type A	PRM0812	110
10	2	2.7	24.0	23.0	Type B	40.0	32.0	4.5	Type B	PRM1002	110
10	10	3.3	24.0	23.0	Type A	40.0	32.0	4.5	Type A	PRM1010	110
10	15	3.3	33.0	23.0	Type A	40.0	32.0	4.5	Type A	PRM1015	110
10	20	2.1	23.0	20.0	Type A	37.0	29.0	4.5	Type A	PRM1020	110
12	2	3.0	24.0	25.0	Type B	42.0	34.0	4.5	Type B	PRM1202	110
13	12	5.0	30.0	28.0	Type A	45.0	37.0	4.5	Type A	PRM1312	110
13	20	5.0	43.0	28.0	Type A	45.0	37.0	4.5	Type A	PRM1320	110
14	2	3.2	25.0	26.0	Type B	45.0	36.0	5.5	Type B	PRM1402	110
14	4	5.7	33.0	30.0	Type B	49.0	40.0	5.5	Type B	PRM1404	110

## Metric Ball Screws Product Overview

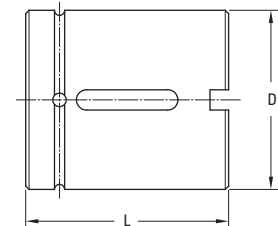
### Cylindrical Ball Nuts

**Fineline:** ZG  
**NEFF:** KGM-N, KGM-D  
**Return:** Internal  
**Style:** Cylindrical  
**Mounting:** Threaded  
**Backlash:** Z1, Z2 and Z3  
**Thread Direction:** Right Hand

ZG



KGM-N, KGM-D

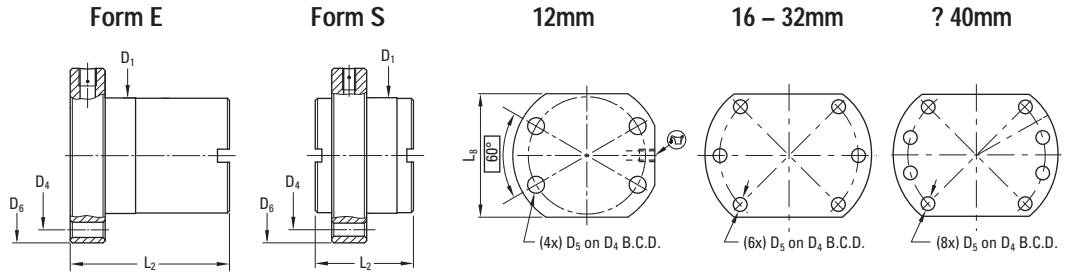


Nominal Diameter	Lead	Dynamic Load Capacity (C <sub>am</sub> )	Length L	Width/Diameter D	Ball Nut Form	Flange Diameter D <sub>f</sub>	Bolt Hole Circle D <sub>p</sub>	Hole Diameter X	Ball Nut	Nut P/N	Screw P/N	Catalog Page
(mm)	(mm)	(kN)	(mm)	(mm)		(mm)	(mm)	(mm)				
12	4	3.5	34.0	25.0	Threaded	n/a	n/a	n/a	ZG	7832771	7832770	114
12	5	4.4	24.0	20.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-1205-RH-EE	KGS-1205-050-RH	128
16	5	9.3	34.0	28.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-1605-RH-EE	KGS-1605-050-RH	126
16	5	12.1	57.5	32.0	Threaded	n/a	n/a	n/a	ZG	7832778	7832776	114
16	10	15.4	50.0	28.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-1610-RH-EE	KGS-1610-050-RH	126
20	5	10.5	34.0	36.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-2005-RH-EE	KGS-2005-050-RH	126
20	5	10.5	34.0	32.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-2005-RH-EE	KGS-2005-050-RH	128
20	5	14.8	57.5	38.0	Threaded	n/a	n/a	n/a	ZG	7832781	7832779	114
20	20	11.6	30.0	35.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-2020-RH-EE	KGS-2020-050-RH	128
20	50	13.0	56.0	35.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-2050-RH-EE	KGS-2050-050-RH	128
25	5	12.3	34.0	40.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-2505-RH-EE	KGS-2505-050-RH	126
25	5	12.3	34.0	38.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-2505-RH-EE	KGS-2505-050-RH	128
25	5	20.4	63.5	42.0	Threaded	n/a	n/a	n/a	ZG	7832788	7832786	114
25	10	13.2	45.0	40.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-2510-RH-EE	KGS-2510-050-RH	126
25	10	19.9	61.0	42.0	Threaded	n/a	n/a	n/a	ZG	7832792	7832790	114
25	20	13.0	35.0	40.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-2520-RH-EE	KGS-2520-050-RH	126
25	25	16.7	35.0	40.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-2525-RH-EE	KGS-2525-050-RH	126
25	50	15.4	58.0	40.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-2550-RH-EE	KGS-2550-050-RH	126
32	5	21.5	45.0	50.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-3205-RH-EE	KGS-3205-050-RH	126
32	5	21.5	45.0	45.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-3205-RH-EE	KGS-3205-050-RH	128
32	5	23.3	65.5	52.0	Threaded	n/a	n/a	n/a	ZG	7832797	7832795	114
32	10	33.4	60.0	53.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-3210-RH-EE	KGS-3210-050-RH	128
32	10	33.8	85.0	52.0	Threaded	n/a	n/a	n/a	ZG	7832800	7832798	114
32	20	29.7	70.0	53.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-3220-RH-EE	KGS-3220-050-RH	128
32	40	14.9	45.0	53.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-3240-RH-EE	KGS-3240-050-RH	128
40	5	23.8	45.0	63.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-4005-RH-EE	KGS-4005-050-RH	126
40	5	23.8	45.0	53.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-4005-RH-EE	KGS-4005-050-RH	128
40	5	26.3	67.5	58.0	Threaded	n/a	n/a	n/a	ZG	7832806	7832804	114
40	10	38.0	60.0	63.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-4010-RH-EE	KGS-4010-050-RH	126
40	10	78.6	105.5	65.0	Threaded	n/a	n/a	n/a	ZG	7832810	7832808	114
40	20	33.3	70.0	63.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-4020-RH-EE	KGS-4020-050-RH	126
40	40	35.0	85.0	63.0	Keyway	n/a	n/a	n/a	KGM-D	KGM-D-4040-RH-EE	KGS-4040-050-RH	126
50	10	68.7	82.0	72.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-5010-RH-EE	KGS-5010-050-RH	128
50	10	97.8	118.0	78.0	Threaded	n/a	n/a	n/a	ZG	7832819	7832817	114
50	20	60.0	82.0	85.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-5020-RH-EE	KGS-5020-050-RH	128
63	10	76.0	82.0	85.0	Keyway	n/a	n/a	n/a	KGM-N	KGM-N-6310-RH-EE	KGS-6310-050-RH	128
63	10	109.7	118.0	92.0	Threaded	n/a	n/a	n/a	ZG	7832824	7832822	114
80	10	121.9	126.0	120.0	Threaded	n/a	n/a	n/a	ZG	7832829	7832827	114
80	20	213.7	187.0	120.0	Threaded	n/a	n/a	n/a	ZG	7832832	7832830	114

## Metric Ball Screws Product Overview

### Flanged Ball Nuts

**Fineline:** FK, FH  
**NEFF:** KGF-D  
**Return:** Internal  
**Style:** Flanged  
**Mounting:** Flanged  
**Backlash:** Z1, Z2 and Z3  
**Thread Direction:** Right Hand



Note: KGF-D 2525 and 4040 models have round flanges.

Nominal Diameter (mm)	Lead (mm)	Dynamic Load Capacity ( $C_{am}$ ) (kN)	Length $L_2$ (mm)	Width/ Diameter $D_1$ (mm)	Ball Nut Form	Flange Diameter $D_6$ (mm)	Bolt Hole Circle $D_4$ (mm)	Hole Diameter $D_5$ (mm)	Ball Nut	Nut P/N	Screw P/N	Catalog Page
12	5	5.6	46.5	24.0	Form S	40.0	32.0	4.6	FK	7832773	7832772	118
16	5	9.5	48.5	28.0	Form S	48.0	38.0	5.5	FK	7832777	7832776	118
16	5	9.3	42.0	28.0	Form E	48.0	38.0	5.5	KGF-D	KGF-D-1605-RH-EE	KGS-1605-050-RH	122
16	10	15.4	55.0	28.0	Form E	48.0	38.0	5.5	KGF-D	KGF-D-1610-RH-EE	KGS-1610-050-RH	122
20	5	11.5	48.5	36.0	Form S	58.0	47.0	6.6	FK	7832780	7832779	118
20	5	10.5	42.0	36.0	Form E	58.0	47.0	6.6	KGF-D	KGF-D-2005-RH-EE	KGS-2005-050-RH	122
20	20	10.8	36.0	36.0	Form S	58.0	47.0	6.6	FH	7832784	7832783	118
25	5	13.1	49.0	40.0	Form S	62.0	51.0	6.6	FK	7832787	7832786	118
25	5	12.3	42.0	40.0	Form E	62.0	51.0	6.6	KGF-D	KGF-D-2505-RH-EE	KGS-2505-050-RH	122
25	10	22.9	51.0	40.0	Form S	62.0	51.0	6.6	FH	7832791	7832790	118
25	10	13.2	55.0	40.0	Form E	62.0	51.0	6.6	KGF-D	KGF-D-2510-RH-EE	KGS-2510-050-RH	122
25	20	13.0	35.0	40.0	Form S	62.0	51.0	6.6	KGF-D	KGF-D-2520-RH-EE	KGS-2520-050-RH	122
25	25	13.1	39.0	40.0	Form S	62.0	51.0	6.6	FH	7832794	7832793	118
25	25	16.7	35.0	40.0	Form S	62.0	51.0	6.6	KGF-D	KGF-D-2525-RH-EE	KGS-2525-050-RH	122
25	50	15.4	58.0	40.0	Form S	62.0	51.0	6.6	KGF-D	KGF-D-2550-RH-EE	KGS-2550-050-RH	122
32	5	19.3	57.0	50.0	Form S	80.0	65.0	9.0	FK	7832796	7832795	118
32	5	21.5	55.0	50.0	Form E	80.0	65.0	9.0	KGF-D	KGF-D-3205-RH-EE	KGS-3205-050-RH	122
32	10	26.4	73.0	50.0	Form S	80.0	65.0	9.0	FK	7832799	7832798	118
32	10	33.4	69.0	53.0	Form E	80.0	65.0	9.0	KGF-D	KGF-D-3210-RH-EE	KGS-3210-050-RH	122
32	20	47.2	83.0	56.0	Form S	86.0	71.0	9.0	FH	7832803	7832802	118
32	20	29.7	80.0	53.0	Form E	80.0	65.0	9.0	KGF-D	KGF-D-3220-RH-EE	KGS-3220-050-RH	122
32	32	19.7	42.0	56.0	Form S	86.0	71.0	9.0	FH	7833300	7833301	118
32	32	18.0	42.0	50.0	Form S	80.0	65.0	9.0	KGF-D	KGF-D-3232-RH-EE	KGS-3232-050-RH	122
40	5	26.3	66.0	63.0	Form S	93.0	78.0	9.0	FK	7832805	7832804	118
40	5	23.8	57.0	63.0	Form E	93.0	78.0	9.0	KGF-D	KGF-D-4005-RH-EE	KGS-4005-050-RH	122
40	10	64.9	88.5	63.0	Form S	93.0	78.0	9.0	FK	7832809	7832808	118
40	10	38.0	71.0	63.0	Form E	93.0	78.0	9.0	KGF-D	KGF-D-4010-RH-EE	KGS-4010-050-RH	122
40	20	52.2	83.0	63.0	Form S	93.0	78.0	9.0	FH	7832812	7832811	118
40	20	33.3	80.0	63.0	Form E	93.0	78.0	9.0	KGF-D	KGF-D-4020-RH-EE	KGS-4020-050-RH	122
40	40	59.7	104.0	70.0	Form S	100.0	85.0	9.0	FH	7832815	7832814	118
40	40	35.0	85.0	63.0	Form S	93.0	78.0	9.0	KGF-D	KGF-D-4040-RH-EE	KGS-4040-050-RH	122
50	10	66.4	92.0	75.0	Form S	110.0	93.0	11.0	FK	7832818	7832817	118
50	10	68.7	95.0	75.0	Form E	110.0	93.0	11.0	KGF-D	KGF-D-5010-RH-EE	KGS-5010-050-RH	122
50	20	78.8	85.0	75.0	Form S	110.0	93.0	11.0	FH	7832821	7832820	118
50	20	60.0	95.0	85.0	Form E	125.0	103.0	11.0	KGF-D	KGF-D-5020-RH-EE	KGS-5020-050-RH	122
63	10	93.8	103.5	90.0	Form S	125.0	108.0	11.0	FK	7832823	7832822	118
63	20	103.1	86.0	95.0	Form S	135.0	115.0	13.5	FK	7832826	7832825	118
80	10	121.9	121.0	105.0	Form S	145.0	125.0	13.5	FK	7832828	7832827	118
80	20	176.4	160.5	125.0	Form S	165.0	145.0	13.5	FK	7832831	7832830	118

## Metric Ball Screws Product Overview

### Flanged Ball Nuts

**Fineline FS**

**NEFF KGF-N**

**Return:** Internal

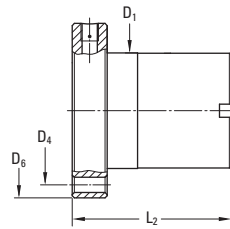
**Style:** Flanged

**Mounting:** Flanged

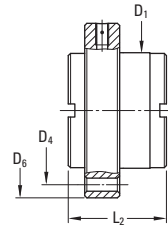
**Backlash:** Z1, Z2 and Z3

**Thread Direction:** Right Hand

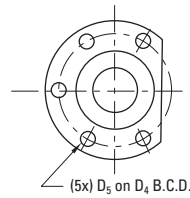
**Form E**



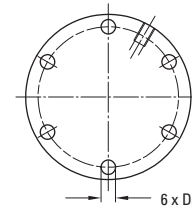
**Form S**



**FS**



**KGF-N**



Nominal Diameter	Lead	Dynamic Load Capacity (C <sub>am</sub> )	Length L <sub>2</sub>	Width/Diameter D <sub>1</sub>	Ball Nut Form	Flange Diameter D <sub>6</sub>	Bolt Hole Circle D <sub>4</sub>	Hole Diameter D <sub>5</sub>	Ball Nut	Nut P/N	Screw P/N	Catalog Page
16	5	9.3	44.0	28.0	Form E	48.0	38.0	5.5	KGF-N	KGF-N-1605-RH-EE	KGS-1605-050-RH	124
20	5	11.1	48.0	33.0	Form E	58.0	45.0	6.6	FS	7832782	7832779	116
20	5	10.5	44.0	32.0	Form E	55.0	45.0	7.0	KGF-N	KGF-N-2005-RH-EE	KGS-2005-050-RH	124
20	20	11.5	56.5	40.0	Form E	63.0	50.0	6.6	FS	7832785	7832783	116
20	20	11.6	30.0	35.0	Form S	62.0	50.0	7.0	KGF-N	KGF-N-2020-RH-EE	KGS-2020-050-RH	124
20	50	13.0	56.0	35.0	Form S	62.0	50.0	7.0	KGF-N	KGF-N-2050-RH-EE	KGS-2050-050-RH	124
25	5	13.1	53.0	38.0	Form E	63.0	50.0	6.6	FS	7832789	7832786	116
25	5	12.3	46.0	38.0	Form E	62.0	50.0	7.0	KGF-N	KGF-N-2505-RH-EE	KGS-2505-050-RH	124
32	5	21.5	59.0	45.0	Form E	70.0	58.0	7.0	KGF-N	KGF-N-3205-RH-EE	KGS-3205-050-RH	124
32	10	26.4	72.0	50.0	Form E	80.0	65.0	9.0	FS	7832801	7832798	116
32	10	33.4	73.0	53.0	Form E	80.0	68.0	7.0	KGF-N	KGF-N-3210-RH-EE	KGS-3210-050-RH	124
32	40	14.9	45.0	53.0	Form S	80.0	68.0	7.0	KGF-N	KGF-N-3240-RH-EE	KGS-3240-050-RH	124
40	5	21.7	53.0	56.0	Form E	80.0	68.0	6.6	FS	7832807	7832804	116
40	5	23.8	59.0	53.0	Form E	80.0	68.0	7.0	KGF-N	KGF-N-4005-RH-EE	KGS-4005-050-RH	124
40	10	38.0	73.0	63.0	Form E	95.0	78.0	9.0	KGF-N	KGF-N-4010-RH-EE	KGS-4010-050-RH	124
40	20	39.7	62.0	75.0	Form E	110.0	93.0	11.0	FS	7832813	7832811	116
40	40	29.8	106.0	72.0	Form E	110.0	93.0	11.0	FS	7832816	7832814	116
50	10	68.7	97.0	72.0	Form E	110.0	90.0	11.0	KGF-N	KGF-N-5010-RH-EE	KGS-5010-050-RH	124
63	10	76.0	99.0	85.0	Form E	125.0	105.0	11.0	KGF-N	KGF-N-6310-RH-EE	KGS-6310-050-RH	124

**NOTES:**

A large grid of graph paper, consisting of 30 columns and 40 rows of small squares, intended for taking notes.



## Miniature Rolled Ball Screws — Metric Series



**Miniature Rolled Ball Screw Assemblies** are an efficient, cost-effective solution in a small envelope. Ball screw assemblies range from 4mm to 14mm in diameter, with standard lead accuracies of 52 microns/300mm. Compact ball nuts are available with body diameters as small as 11mm and overall lengths as short as 17mm. Miniature Rolled Ball Screws are ideal for laboratory, semiconductor, and medical applications.

Need a quote or have a question about an application? Contact us in North America at:

Phone: 540-633-3549

Fax: 540-639-4162

Email: [thomson@danahermotion.com](mailto:thomson@danahermotion.com)

## Miniature Rolled Ball Screws — Metric Series

4mm to 14mm Diameter, Lead Accuracy:  $\pm 52\mu\text{m}/300\text{mm}$



Type A



Type B

### Non-Preloaded, Rolled Ball Screw Assemblies

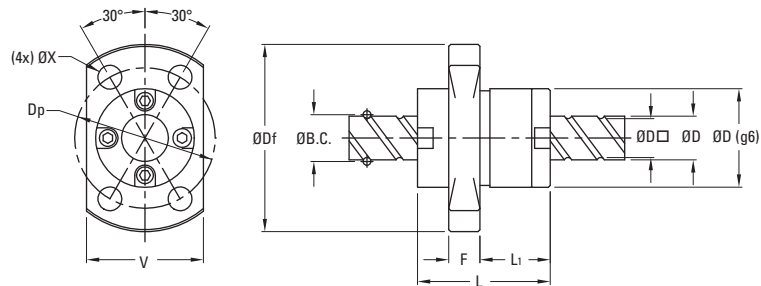
- Cost-effective solution in a small envelope, ideal for use in small spaces
- Clearance held to max .02mm
- Two nut styles (Type A & B) provide optimum performance in low and high lead assemblies

Nominal Diameter (size)	Lead	Nut Type	Ball Screw and Nut Assembly P/N <sup>(1)</sup>	Suggested Bearing Size	Performance Data						
					Dynamic Load Capacity		Static Load Capacity		Max. Axial Backlash	Minor Diameter	Max. Length
(mm)	(mm)			(mm)	(kN)	(lbf)	(kN)	(lbf)	(mm)	(mm)	(mm)
4	1	B	PRM0401	N/A	0.6	126	0.8	178	0.02	3.3	100
5	4	B	PRM0504	N/A	0.5	106	0.7	162	0.02	4.3	220
6	1	B	PRM0601	4	0.7	153	1.2	270	0.02	5.3	265
6	6	A	PRM0606	4	0.9	196	1.5	326	0.02	5.2	265
8	1	B	PRM0801	6	0.8	175	1.7	371	0.02	7.3	360
8	2	B	PRM0802	6	2.4	540	4.1	922	0.02	6.6	360
8	5	B	PRM0805	6	1.9	416	3.0	674	0.02	6.6	360
8	8	A	PRM0808	6	2.2	495	3.8	854	0.02	6.7	360
8	12	A	PRM0812	6	2.2	495	4.0	899	0.02	6.7	360
10	2	B	PRM1002	6	2.7	607	5.3	1,191	0.02	8.6	355
10	10	A	PRM1010	6	3.3	742	5.9	1,326	0.02	8.4	405
10	15	A	PRM1015	6	3.3	742	6.4	1,439	0.02	8.4	405
10	20	A	PRM1020	6	2.1	472	4.0	899	0.02	8.7	405
12	2	B	PRM1202	8	3.0	674	6.4	1,439	0.02	10.6	395
13	12	A	PRM1312	8	5.0	1,124	9.9	2,226	0.02	11.0	700
13	20	A	PRM1320	8	5.0	1,124	10.7	2,405	0.02	11.0	700
14	2	B	PRM1402	8	3.2	719	7.5	1,686	0.02	12.6	445
14	4	B	PRM1404	8	5.7	1,281	11.6	2,608	0.02	11.8	445

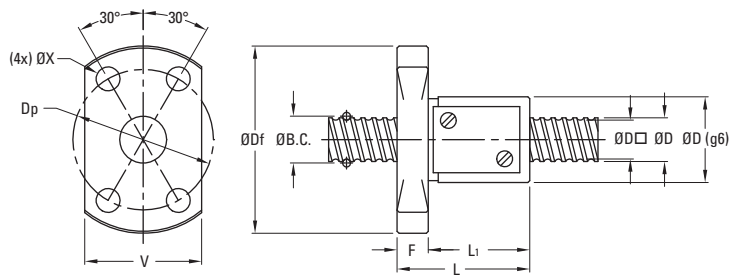
(1) All Miniature Rolled product is sold in matched sets as ball screw and nut assemblies. Please contact factory for sizes not listed.

## Miniature Rolled Ball Screws — Metric Series

### Type A — End Cap Design



### Type B — Return Plate Design



Nominal Diameter (size)	Lead	Nut Type	Nut Specifications								
			Outside Diameter D	Flange Outside Diameter Df	Overall Length L	Body Length L1	Flange Width F	Flange Flat Width V	Bolt Circle Diameter Dp	Mounting Hole Diameter X	Ball Diameter
(mm)	(mm)		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
4	1	B	11.0	24.0	17.0	13.0	4.0	15.0	18.0	3.4	0.80
5	4	B	12.0	24.0	22.0	18.0	4.0	16.0	18.0	3.4	0.80
6	1	B	13.0	26.0	17.0	13.0	4.0	16.0	20.0	3.4	0.80
6	6	A	14.0	27.0	17.0	8.0	4.0	16.0	21.0	3.4	1.00
8	1	B	16.0	29.0	17.0	13.0	4.0	18.0	23.0	3.4	0.80
8	2	B	20.0	37.0	24.0	19.0	5.0	22.0	29.0	4.5	1.59
8	5	B	18.0	31.0	28.0	24.0	4.0	20.0	25.0	3.4	1.59
8	8	A	18.0	31.0	20.0	10.0	4.0	20.0	25.0	3.4	1.59
8	12	A	18.0	31.0	27.0	17.0	4.0	20.0	25.0	3.4	1.59
10	2	B	23.0	40.0	24.0	19.0	5.0	25.0	32.0	4.5	1.59
10	10	A	23.0	40.0	24.0	13.0	5.0	25.0	32.0	4.5	2.00
10	15	A	23.0	40.0	33.0	22.0	5.0	25.0	32.0	4.5	2.00
10	20	A	20.0	37.0	23.0	13.0	5.0	22.0	29.0	4.5	1.59
12	2	B	25.0	42.0	24.0	19.0	5.0	27.0	34.0	4.5	1.59
13	12	A	28.0	45.0	30.0	17.0	5.0	30.0	37.0	4.5	2.38
13	20	A	28.0	45.0	43.0	29.0	5.0	30.0	37.0	4.5	2.38
14	2	B	26.0	45.0	25.0	19.0	6.0	28.0	36.0	5.5	1.59
14	4	B	30.0	49.0	33.0	27.0	6.0	32.0	40.0	5.5	2.38

**NOTES:**

A large grid area for taking notes, consisting of a 30x30 grid of small squares. The grid is empty and occupies the majority of the page below the 'NOTES:' header.

## FineLine Rolled Ball Screws — Metric Series



**FineLine Rolled Ball Screw Assemblies** are designed and manufactured to provide high level performance at an affordable price. Ball screws are manufactured using Thomson's patented, German-engineered Precision Screw Forming (PSF) Technology, which provides high accuracy (23 microns/300mm standard) with the manufacturing efficiency of rolled processes. Ball nuts are manufactured with one of two ball return systems (button or end return) made with reinforced steel, making them extremely durable and ideal for high speed, high load, and/or high temperature applications. Each nut comes standard with an integral plastic wiper to protect against chips or other debris. FineLine Rolled Ball Screws are ideal for machining centers, factory automation, packaging, and injection molding applications.

Need a quote or have a question about an application? Contact us in North America at:

Phone: 540-633-3549

Fax: 540-639-4162

Email: [thomson@danahermotion.com](mailto:thomson@danahermotion.com)

## FineLine Rolled Ball Screws — ZG Style Ball Nuts

Standard Lead Accuracy:  $\pm 23\mu\text{m}/300\text{mm}$



ZG Style Nut

### Internal Return Threaded Ball Nut and Screw

- Flexible solution for non-standard mounting
- Integral wiper<sup>(4)</sup> included as standard
- Available in three preload classes (Type Z1, Z2, Z3)
  - Z1 – light preload to 1-2%
  - Z2 – no preload, clearance held to max .18mm
  - Z3 – no preload, clearance held to max .05mm

Nominal Diameter (size)	Lead	Ball Screw P/N <sup>(1) (2) (6)</sup>	Ball Nut P/N	Available Preload Types	Performance Data				Screw Specifications <sup>(3)</sup>				
					Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Max. Axial Backlash	Major Diameter	Minor Diameter	Max. Length <sup>(5)</sup>	Screw Weight
					(kN)	(lbf)	(kN)	(lbf)					
12	4	7832770-P5	7832771	Z1, Z2, Z3	3.5	787	4.0	899	0.07	11.6	9.7	3000	0.7
16	5	7832776-P5	7832778	Z1, Z2, Z3	12.1	2,720	14.5	3,260	0.09	15.6	12.7	3000	1.2
20	5	7832779-P5	7832781	Z1, Z2, Z3	14.8	3,327	20.7	4,654	0.09	19.6	16.7	4000	2.0
25	5	7832786-P5	7832788	Z1, Z2, Z3	20.4	4,586	33.7	7,576	0.09	24.6	21.7	5000	3.3
25	10	7832790-P5	7832792	Z1, Z2, Z3	19.9	4,474	31.8	7,149	0.09	24.6	21.7	5000	3.3
32	5	7832795-P5	7832797	Z1, Z2, Z3	23.3	5,238	45.5	10,229	0.09	31.6	28.7	6000	5.6
32	10	7832798-P5	7832800	Z1, Z2, Z3	33.8	7,599	52.0	11,690	0.15	31.6	27.1	6000	5.3
40	5	7832804-P5	7832806	Z1, Z2, Z3	26.3	5,912	59.2	13,309	0.09	39.6	36.7	6000	9.0
40	10	7832808-P5	7832810	Z1, Z2, Z3	78.6	17,670	136.2	30,619	0.18	39.6	34.0	6000	8.3
50	10	7832817-P5	7832819	Z1, Z2, Z3	97.8	21,986	213.2	47,929	0.18	49.5	43.0	6000	13.5
63	10	7832822-P5	7832824	Z1, Z2, Z3	109.7	24,662	275.6	61,957	0.18	62.5	56.9	6000	22.0
80	10	7832827-T7	7832829	Z2	121.9	27,404	375.0	84,303	0.18	79.5	73.9	6000	36.4
80	20	7832830-T7	7832832	Z2	213.7	48,044	496.0	111,511	0.18	79.5	69.9	6000	36.4

(1) FineLine Ball Screws, Ball Nuts and End Blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

(2) All ball screws and nuts are right-hand thread.

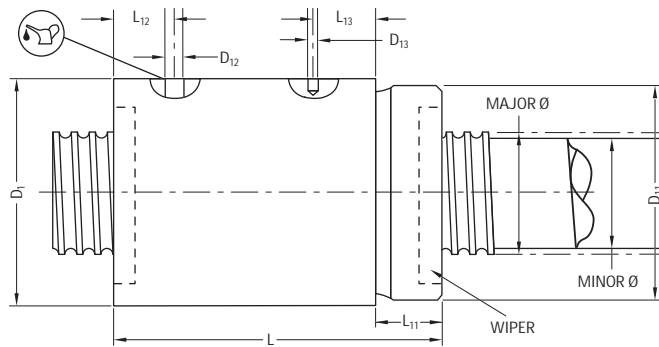
(3) Dimensional information on bearing supports and standard end machining is available on page 160.

(4) Wiper not included on 12 x 4 ball nut.

(5) Max. length includes 150mm on each end usable for end machining only. Max. travel length equals table value minus 300mm. Ends are hardened.

(6) -P5 Accuracy Class is  $\pm 23\mu\text{m}/300\text{mm}$ . -T7 Accuracy Class is  $\pm 52\mu\text{m}/300\text{mm}$

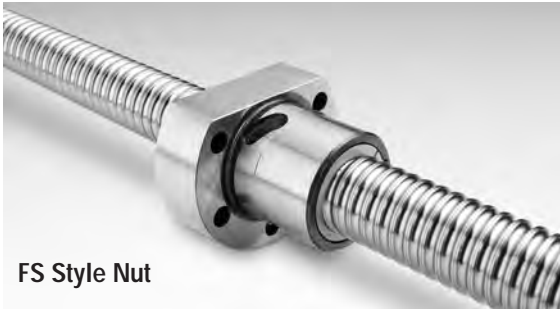
## FineLine Rolled Ball Screws — ZG Style Ball Nuts



Nominal Diameter (size)	Lead	Nut Specifications (mm)									
		D <sub>1</sub>	D <sub>11</sub>	D <sub>12</sub>	D <sub>13</sub>	L	L <sub>11</sub>	L <sub>12</sub>	L <sub>13</sub>	Nut Weight	Ball Diameter
(mm)	(mm)	h12				-0.2				(kg)	(mm)
12	4	25.0	M 20 x 1.0	3.0	—	34.0	10.0	5.0	—	0.10	1.984
16	5	32.0	M 30 x 1.5	M 6 x 1	4	57.5	16.5	10.5	22.0	0.22	3.500
20	5	38.0	M 35 x 1.5	M 6 x 1	4	57.5	16.5	10.5	22.0	0.30	3.500
25	5	42.0	M 40 x 1.5	M 6 x 1	4	63.5	17.0	10.5	23.0	0.37	3.500
25	10	42.0	M 40 x 1.5	M 6 x 1	4	61.0	17.0	10.0	21.0	0.38	3.500
32	5	52.0	M 48 x 1.5	M 6 x 1	5	65.5	19.0	10.5	23.0	0.55	3.500
32	10	52.0	M 48 x 1.5	M 6 x 1	5	85.0	19.0	12.0	43.0	0.65	5.556
40	5	58.0	M 56 x 1.5	M 8 x 1	5	67.5	19.0	12.0	22.5	0.60	3.500
40	10	65.0	M 60 x 2.0	M 8 x 1	6	105.5	27.0	13.0	43.0	1.25	7.144
50	10	78.0	M 72 x 2.0	M 8 x 1	6	118.0	29.0	13.0	53.0	1.95	7.144
63	10	92.0	M 85 x 2.0	M 8 x 1	6	118.0	29.0	13.0	53.0	2.40	7.144
80	10	120.0	M 110 x 2.0	M 8 x 1	8	126.0	34.0	15.5	53.0	4.90	7.144
80	20	120.0	M 110 x 2.0	M 8 x 1	8	187.0	39.0	18.0	83.0	4.90	12.700

## FineLine Rolled Ball Screws — FS Style Ball Nuts

Standard Lead Accuracy:  $\pm 23\mu\text{m}/300\text{mm}$



FS Style Nut

### Internal Return Flanged Ball Nut and Screw

- Compact package utilizing shortest nut length possible
- Integral wiper and flange included as standard
- Available in three preload classes (Type Z1, Z2, Z3)
  - Z1 – light preload to 1-2%
  - Z2 – no preload, clearance held to max .18mm
  - Z3 – no preload, clearance held to max .05mm

Nominal Diameter (size)	Lead	Ball Screw P/N <sup>(1) (2)</sup>	Ball Nut P/N	Available Preload Types	Performance Data					Screw Specifications <sup>(3)</sup>			
					Z2 Standard	Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Max. Axial Backlash	Major Diameter	Minor Diameter	Max. Length <sup>(4)</sup>
			(kN)			(lbf)	(kN)	(lbf)	(mm)				
20	5	7832779-P5	7832782	Z1, Z2, Z3	11.1	2,495	15.1	3,395	0.09	19.6	16.7	4000	2.0
20	20	7832783-P5	7832785	Z2, Z3	11.5	2,585	17.5	3,934	0.09	19.6	16.7	4000	1.9
25	5	7832786-P5	7832789	Z1, Z2, Z3	13.1	2,945	20.2	4,541	0.09	24.6	21.7	5000	3.3
32	10	7832798-P5	7832801	Z1, Z2, Z3	26.4	5,935	39.0	8,768	0.15	31.6	27.1	6000	5.3
40	5	7832804-P5	7832807	Z1, Z2, Z3	21.7	4,878	47.4	10,656	0.09	39.6	36.7	6000	9.0
40	20	7832811-P5	7832813	Z2, Z3	39.7	8,925	74.0	16,636	0.15	39.6	35.2	6000	7.6
40	40	7832814-P5	7832816	Z2, Z3	29.8	6,699	45.4	10,206	0.18	39.6	34.0	6000	8.4

(1) FineLine Ball Screws, Ball Nuts and End Blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

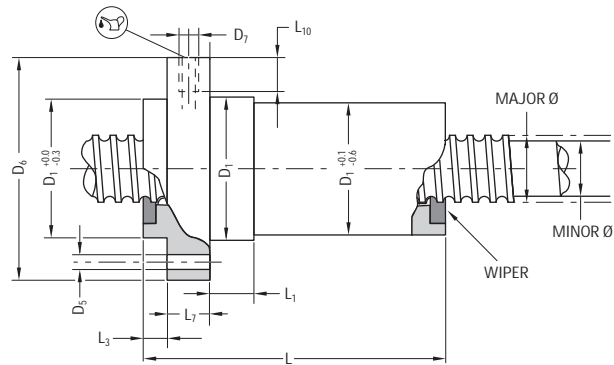
(2) All ball screws and nuts are right-hand thread.

(3) Dimensional information on bearing supports and standard end machining is available on page 160.

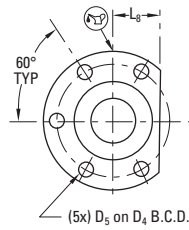
(4) Max. length includes 150mm on each end usable for end machining only. Max. travel length equals table value minus 300mm. Ends are hardened.



### FineLine Rolled Ball Screws — FS Style Ball Nuts



	$D_7$	$L_{10}$
$d_0 < 40\text{mm}$	M6 x 1	8
$d_0 \geq 40\text{mm}$	M8 x 1	10



Nominal Diameter (size)	Lead	Nut Specifications (mm)										
		$D_1$	$D_4$	$D_5$	$D_6$	L	$L_1$	$L_3$	$L_7$	$L_8$	Nut Weight (kg)	Ball Diameter (mm)
(mm)	(mm)	g6		H13	h13				h13			
20	5	33.0	45.0	6.6	58	48.0	12.0	0.0	15.0	22.0	0.35	3.500
20	20	40.0	50.0	6.6	63	56.5	15.0	0.0	20.0	21.0	0.45	3.500
25	5	38.0	50.0	6.6	63	53.0	11.0	0.0	20.0	21.0	0.37	3.500
32	10	50.0	65.0	9.0	80	72.0	12.0	0.0	12.0	28.5	0.80	5.556
40	5	56.0	68.0	6.6	80	53.0	12.0	0.0	19.0	30.0	1.20	3.500
40	20	75.0	93.0	11.0	110	62.0	15.0	0.0	16.0	42.5	1.60	5.556
40	40	72.0	93.0	11.0	110	106.0	16.0	0.0	16.0	42.5	2.40	7.144

BALL SCREWS — METRIC SERIES

## FineLine Rolled Ball Screws — FK/FH Style Ball Nuts

Standard Lead Accuracy:  $\pm 23\mu\text{m}/300\text{mm}^{(1)}$



FK Style Nut



FH Style Nut

### Internal Return Flanged Ball Nut and Screw

- Two nut styles (FK & FH) provide optimal performance in low and high lead assemblies
- Integral wiper and flange included as standard
- Available in three preload classes (Type Z1, Z2, Z3)
  - Z1 – light preload to 1-2%
  - Z2 – no preload, clearance held to max .18mm
  - Z3 – no preload, clearance held to max .05mm

Nominal Diameter (size)	Lead	Nut Type	Ball Screw P/N <sup>(2) (3) (6)</sup>	Ball Nut P/N	Available Preload Types	Performance Data					Screw Specifications <sup>(4)</sup>			
						Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Max. Axial Backlash	Major Diameter	Minor Diameter	Max. Length <sup>(5)</sup>	Screw Weight
						(kN)	(lbf)	(kN)	(lbf)					
12	5	FK	7832772-T7	7832773	Z1, Z2, Z3	5.6	1,259	6.2	1,393	0.07	11.6	9.7	3000	0.7
16	5	FK	7832776-P5	7832777	Z1, Z2, Z3	9.5	2,136	10.9	2,450	0.09	15.6	12.7	3000	1.2
20	5	FK	7832779-P5	7832780	Z1, Z2, Z3	11.5	2,585	15.5	3,485	0.09	19.6	16.7	4000	2.0
20	20	FH	7832783-P5	7832784	Z2, Z3	10.8	2,428	18.6	4,181	0.08	19.6	16.7	4000	1.9
25	5	FK	7832786-P5	7832787	Z1, Z2, Z3	13.1	2,945	20.2	4,541	0.09	24.6	21.7	5000	3.3
25	10	FH	7832790-P5	7832791	Z2, Z3	22.9	5,148	141.2	31,743	0.09	24.6	21.7	5000	3.3
25	25	FH	7832793-P5	7832794	Z2, Z3	13.1	2,945	26.0	5,845	0.08	24.6	22.0	5000	3.3
32	5	FK	7832795-P5	7832796	Z1, Z2, Z3	19.3	4,339	36.3	81,606	0.09	31.6	28.7	6000	5.6
32	10	FK	7832798-P5	7832799	Z1, Z2, Z3	26.4	5,935	39.0	8,768	0.15	31.6	27.1	6000	5.3
32	20	FH	7832802-P5	7832803	Z2, Z3	47.2	10,611	83.2	18,704	0.15	31.6	27.1	6000	5.3
32	32	FH	7833301-P5	7833300	Z2, Z3	19.7	4,429	37.4	8,408	0.08	31.3	28.3	6000	5.3
40	5	FK	7832804-P5	7832805	Z1, Z2, Z3	26.3	5,912	59.2	13,309	0.09	39.6	36.7	6000	9.0
40	10	FK	7832808-P5	7832809	Z1, Z2, Z3	64.9	14,590	109.0	24,504	0.18	39.6	34.0	6000	8.3
40	20	FH	7832811-P5	7832812	Z2, Z3	52.2	11,735	103.6	23,290	0.15	39.6	35.2	6000	7.6
40	40	FH	7832814-P5	7832815	Z2, Z3	59.7	13,421	108.9	24,482	0.18	39.6	34.0	6000	8.4
50	10	FK	7832817-P5	7832818	Z1, Z2, Z3	66.4	14,927	134.3	30,192	0.18	49.5	43.0	6000	13.5
50	20	FH	7832820-P5	7832821	Z2, Z3	78.8	17,715	188.7	42,421	0.16	49.5	44.6	6000	13.6
63	10	FK	7832822-P5	7832823	Z1, Z2, Z3	93.8	21,087	229.7	51,639	0.18	62.5	56.9	6000	22.0
63	20	FH	7832825-P5	7832826	Z2, Z3	103.1	23,178	270.8	60,878	0.18	62.5	56.9	6000	22.0
80	10	FK	7832827-T7	7832828	Z1, Z2, Z3	121.9	27,404	374.9	84,281	0.18	79.5	73.9	6000	36.4
80	20	FK	7832830-T7	7832831	Z2, Z3	176.4	39,700	375.0	84,300	0.18	79.5	69.9	6000	36.4

(1) 12mm and 80mm nominal diameter screws are  $\pm 52\mu\text{m}/300\text{mm}$ .

(2) FineLine Ball Screws, Ball Nuts and End Blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

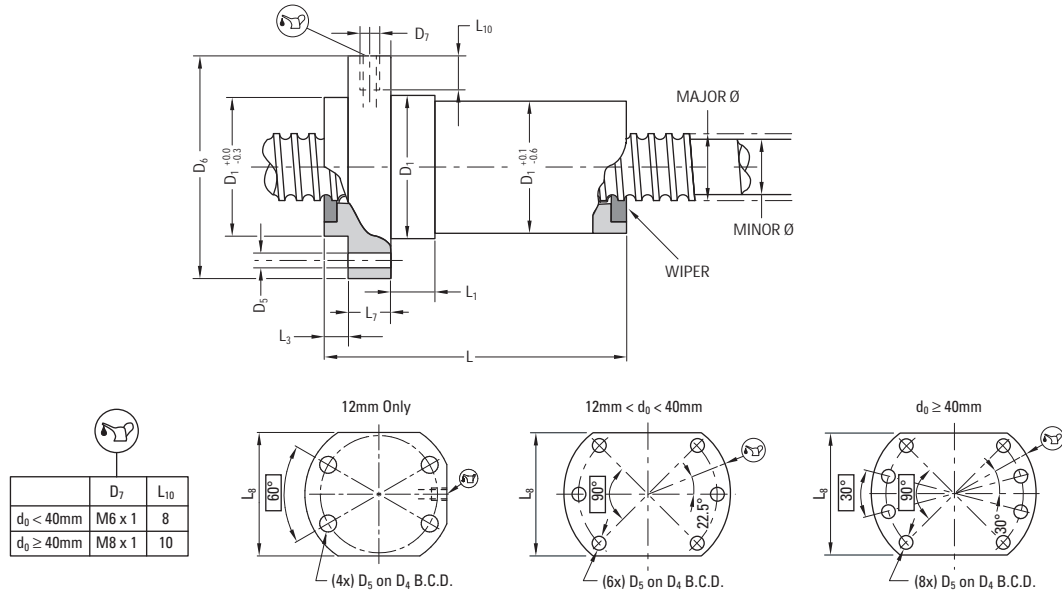
(3) All ball screws and nuts are right-hand thread.

(4) Dimensional information on bearing supports and standard end machining is available on page 160.

(5) Max. length includes 150mm on each end usable for end machining only. Max. travel length equals table value minus 300mm. Ends are hardened.

(6) -P5 Accuracy Class is  $\pm 23\mu\text{m}/300\text{mm}$ . -T7 Accuracy Class is  $\pm 52\mu\text{m}/300\text{mm}$

### FineLine Rolled Ball Screws — FK/FH Style Ball Nuts



Nominal Diameter (size)	Lead	Nut Specifications (mm)										Nut Weight (kg)	Ball Diameter (mm)
		D <sub>1</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	L	L <sub>1</sub>	L <sub>3</sub>	L <sub>7</sub>	L <sub>8</sub>			
(mm)	(mm)	g6		H13	h13				h13	h13			
12	5	24.0	32.0	4.6	40.0	46.5	10.0	5.5	8.0	26.0	0.1	2.381	
16	5	28.0	38.0	5.5	48.0	48.5	10.0	5.5	10.0	40.0	0.3	3.500	
20	5	36.0	47.0	6.6	58.0	48.5	10.0	5.5	10.0	44.0	0.4	3.500	
20	20	36.0	47.0	6.6	58.0	36.0	4.0	11.0	10.0	44.0	0.5	3.500	
25	5	40.0	51.0	6.6	62.0	49.0	10.0	6.0	10.0	48.0	0.4	3.500	
25	10	40.0	51.0	6.6	62.0	51.0	9.0	16.0	10.0	48.0	0.5	3.500	
25	25	40.0	51.0	6.6	62.0	39.0	9.0	10.0	10.0	48.0	0.6	3.500	
32	5	50.0	65.0	9.0	80.0	57.0	10.0	6.0	12.0	62.0	0.7	3.500	
32	10	50.0	65.0	9.0	80.0	73.0	16.0	6.0	12.0	62.0	0.8	5.556	
32	20	56.0	71.0	9.0	86.0	83.0	25.0	19.0	22.0	68.0	1.4	5.556	
32	32	56.0	71.0	9.0	86.0	42.0	12.0	9.0	12.0	68.0	0.8	3.969	
40	5	63.0	78.0	9.0	93.0	66.0	10.0	7.0	14.0	70.0	1.2	3.500	
40	10	63.0	78.0	9.0	93.0	88.5	16.0	7.0	14.0	70.0	1.4	7.144	
40	20	63.0	78.0	9.0	93.0	83.0	25.0	19.5	14.0	70.0	1.6	5.556	
40	40	70.0	85.0	9.0	100.0	104.0	25.0	21.0	14.0	77.0	2.4	7.144	
50	10	75.0	93.0	11.0	110.0	92.0	16.0	7.0	16.0	85.0	2.0	7.144	
50	20	75.0	93.0	11.0	110.0	85.0	16.0	22.0	16.0	85.0	2.2	6.400	
63	10	90.0	108.0	11.0	125.0	103.5	16.0	7.0	18.0	95.0	3.0	7.144	
63	20	95.0	115.0	13.5	135.0	86.0	18.0	24.0	20.0	100.0	3.8	7.144	
80	10	105.0	125.0	13.5	145.0	121.0	16.0	9.0	20.0	110.0	3.9	7.144	
80	20	125.0	145.0	13.5	165.0	160.5	25.0	9.0	25.0	130.0	3.9	7.144	

**NOTES:**

A large grid area for taking notes, consisting of a 30x30 grid of small squares. The grid is empty and occupies the majority of the page below the 'NOTES:' header.

## Thomson NEFF Rolled Ball Screws — Metric Series



**NEFF 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. Standard NEFF ball screws are rolled to an accuracy of 50 microns/300mm, with higher accuracies readily available upon request. Ball nuts include one of three unique ball return systems (depending on the diameter and lead of the screw used) providing perfect guidance, low wear, and smooth running performance. Ball nuts come standard with profiled rubber wipers to contain lubricant and help repel fine contaminants (dust, powders, etc). NEFF Rolled Ball Screws are ideal for wood working, water cutting, electronic assembly and medical applications.

Need a quote or have a question about an application? Contact us in North America at:

Phone: 540-633-3549

Fax: 540-639-4162

Email: [thomson@danahermotion.com](mailto:thomson@danahermotion.com)

## Thomson NEFF Rolled Ball Screws — KGF-D Style Ball Nuts

Standard Lead Accuracy:  $\pm 50\mu\text{m}/300\text{mm}^{(1)}$



**KGF-D Style Nut**

### Internal Return Flanged Ball Nut and Screw

- Flexible solution for non-standard mounting
- Integral wiper and flange included as standard
- Available in three preload classes (Type Z1, Z2, Z3)
  - Z1 – light preload to 1 – 2%
  - Z2 – no preload, clearance held to max .08 – .15mm
  - Z3 – no preload, clearance held to max .05mm

Nominal Diameter (size)	Lead	Nut Type	Ball Screw P/N <sup>(1) (2) (3)</sup>	Ball Nut P/N	Available Preload Types <sup>(4)</sup>	Performance Data					Screw Specifications <sup>(6)</sup>			
						Z2 Standard	Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Max. Axial Backlash	Major Diameter	Minor Diameter	Max. Length <sup>(7)</sup>
				(mm)		(mm)	(kN)	(lbf)	(kN)	(lbf)	(mm)	(mm)	(mm)	(mm)
16	5	E	KGS-1605-050-RH	KGF-D-1605-RH-EE	Z1, Z2, Z3	9.3	2,091	13.1	2,945	0.08	15.3	12.9	6000	1.3
16	10	E	KGS-1610-050-RH	KGF-D-1610-RH-EE	Z1, Z2, Z3	15.4	3,462	26.5	5,957	0.08	15.2	13.0	6000	1.3
20	5	E	KGS-2005-050-RH	KGF-D-2005-RH-EE	Z1, Z2, Z3	10.5	2,361	16.6	3,732	0.08	19.3	16.9	6000	2.0
25	5	E	KGS-2505-050-RH	KGF-D-2505-RH-EE	Z1, Z2, Z3	12.3	2,766	22.5	5,058	0.08	24.3	21.9	6000	3.3
25	10	E	KGS-2510-050-RH	KGF-D-2510-RH-EE	Z1, Z2, Z3	13.2	2,968	25.3	5,688	0.08	24.3	21.9	6000	3.3
25	20	S	KGS-2520-050-RH	KGF-D-2520-RH-EE	Z2, Z3	13.0	2,921	23.3	5,238	0.15	24.4	22.0	6000	3.3
25	25	S	KGS-2525-050-RH	KGF-D-2525-RH-EE	Z2, Z3	16.7	3,755	32.2	7,239	0.08	24.3	22.0	6000	3.3
25	50	S	KGS-2550-050-RH	KGF-D-2550-RH-EE	Z2, Z3	15.4	3,463	31.7	7,126	0.15	23.9	21.5	6000	3.3
32	5	E	KGS-3205-050-RH	KGF-D-3205-RH-EE	Z1, Z2, Z3	21.5	4,834	49.3	11,083	0.08	31.3	28.9	6000	5.6
32	10	E	KGS-3210-050-RH	KGF-D-3210-RH-EE	Z1, Z2, Z3	33.4	7,509	54.5	12,252	0.08	32.5	27.3	6000	5.6
32	20	E	KGS-3220-050-RH	KGF-D-3220-RH-EE	Z2, Z3	29.7	6,678	59.8	13,444	0.08	31.5	27.9	6000	5.6
32	32	S	KGS-3232-050-RH	KGF-D-3232-RH-EE	Z2, Z3	18.0	4,047	34.7	7,800	0.15	31.6	27.1	6000	5.3
40	5	E	KGS-4005-050-RH	KGF-D-4005-RH-EE	Z1, Z2, Z3	23.8	5,351	63.1	14,185	0.08	39.3	36.9	6000	9.0
40	10	E	KGS-4010-050-RH	KGF-D-4010-RH-EE	Z1, Z2, Z3	38.0	8,544	69.1	15,534	0.08	39.3	34.1	6000	8.4
40	20	E	KGS-4020-050-RH	KGF-D-4020-RH-EE	Z2, Z3	33.3	7,487	76.1	17,108	0.08	39.5	35.9	6000	9.0
40	40	S	KGS-4040-050-RH	KGF-D-4040-RH-EE	Z2, Z3	35.0	7,869	101.9	22,908	0.08	38.7	36.3	6000	9.0
50	10	E	KGS-5010-050-RH	KGF-D-5010-RH-EE	Z1, Z2, Z3	68.7	15,446	155.8	35,025	0.08	49.3	44.1	6000	13.5
50	20	E	KGS-5020-050-RH	KGF-D-5020-RH-EE	Z2, Z3	60.0	13,490	136.3	30,641	0.08	49.3	44.1	6000	13.5

(1)  $23\mu\text{m}/300\text{mm}$  lead accuracy available upon request for most sizes.

(2) Thomson NEFF Rolled Ball Screws, Ball Nuts and End Blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

(3) All ball screws and nuts are right-hand thread.

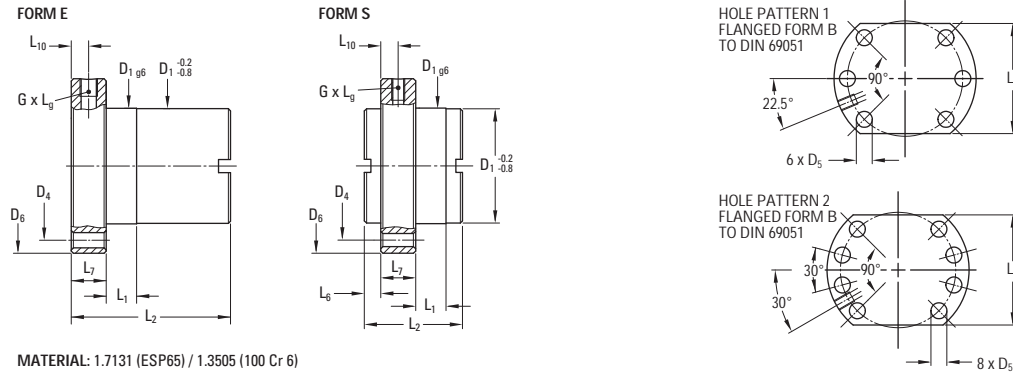
(4) Double nut pre-load systems (for up to 10% of dynamic load rating) are also available for all sizes. Contact customer service for more details.

(5) Round flange.

(6) Dimensional information on bearing supports and standard end machining is available on page 160.

(7) Max. length includes 200mm on each end usable for end machining only. Max. travel length equals table value minus 400mm. Ends are soft annealed.

# Thomson NEFF Rolled Ball Screws — KGF-D Style Ball Nuts



Nominal Diameter (size)	Lead	Hole Pattern	Nut Specifications (mm)														Lube Hole (G)	No. of Circuits	Nut Weight (kg)	Ball Diameter (mm)
			D <sub>1</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>6</sub>	L <sub>7</sub>	L <sub>8</sub>	L <sub>9</sub>	L <sub>10</sub>							
(mm)	(mm)		g6																	
16	5	1	28.0	38.0	5.5	48.0	10.0	42.0	—	10.0	40.0	10.0	5.0	M 6	3.0	0.20	3.500			
16	10	1	28.0	38.0	5.5	48.0	10.0	55.0	—	10.0	40.0	10.0	5.0	M 6	6.0	0.30	3.000			
20	5	1	36.0	47.0	6.6	58.0	10.0	42.0	—	10.0	44.0	10.0	5.0	M 6	3.0	0.25	3.500			
25	5	1	40.0	51.0	6.6	62.0	10.0	42.0	—	10.0	48.0	10.0	5.0	M 6	3.0	0.35	3.500			
25	10	1	40.0	51.0	6.6	62.0	16.0	55.0	—	10.0	48.0	10.0	5.0	M 6	3.0	0.45	3.500			
25	20	1	40.0	51.0	6.6	62.0	4.0	35.0	10.5	10.0	48.0	8.0	5.0	M 6	4.0	0.30	3.500			
25	25	1	40.0	51.0	6.6	62.0	9.0	35.0	8.0	10.0	N/A <sup>(5)</sup>	8.0	5.0	M 6	5.0	0.65	3.500			
25	50	1	40.0	51.0	6.6	62.0	10.0	58.0	10.0	10.0	48.0	8.0	5.0	M 6	5.0	0.40	3.500			
32	5	1	50.0	65.0	9.0	80.0	10.0	55.0	—	12.0	62.0	10.0	6.0	M 6	5.0	0.55	3.500			
32	10	1	53.0	65.0	9.0	80.0	16.0	69.0	—	12.0	62.0	10.0	6.0	M 8x1	3.0	0.90	7.140			
32	20	1	53.0	65.0	9.0	80.0	16.0	80.0	—	12.0	62.0	10.0	6.0	M 6	4.0	1.10	5.000			
32	32	1	50.0	65.0	9.0	80.0	12.0	42.0	9.0	12.0	62.0	8.0	6.0	M6	3.0	0.80	3.969			
40	5	2	63.0	78.0	9.0	93.0	10.0	57.0	—	14.0	70.0	10.0	7.0	M 6	5.0	0.70	3.500			
40	10	2	63.0	78.0	9.0	93.0	16.0	71.0	—	14.0	70.0	10.0	7.0	M 8x1	3.0	1.20	7.140			
40	20	2	63.0	78.0	9.0	93.0	16.0	80.0	—	14.0	70.0	10.0	7.0	M 8x1	4.0	1.50	5.000			
40	40	2	63.0	78.0	9.0	93.0	16.0	85.0	7.5	14.0	N/A <sup>(5)</sup>	10.0	7.0	M 8x1	8.0	1.20	3.500			
50	10	2	75.0	93.0	11.0	110.0	16.0	95.0	—	16.0	85.0	10.0	8.0	M 8x1	5.0	2.00	7.140			
50	20	2	85.0	103.0	11.0	125.0	22.0	95.0	—	18.0	95.0	10.0	9.0	M 8x1	4.0	2.50	7.140			

BALL SCREWS — METRIC SERIES

## Thomson NEFF Rolled Ball Screws — KGF-N Style Ball Nuts

Standard Lead Accuracy:  $\pm 50\mu\text{m}/300\text{mm}^{(1)}$



**KGF-N Style Nut**

### Internal Return Flanged Ball Nut and Screw

- Flexible solution for non-standard mounting
- Integral wiper and flange included as standard
- Available in three preload classes (Type Z1, Z2, Z3)
  - Z1 – light preload to 1 – 2%
  - Z2 – no preload, clearance held to max .08 – .15mm
  - Z3 – no preload, clearance held to max .05mm

Nominal Diameter (size)	Lead	Nut Type	Ball Screw P/N <sup>(1) (2) (3)</sup>	Ball Nut P/N	Available Preload Types <sup>(4)</sup>	Performance Data					Screw Specifications <sup>(5)</sup>			
						Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Max. Axial Backlash	Major Diameter	Minor Diameter	Max. Length <sup>(6)</sup>	Screw Weight
						(kN)	(lbf)	(kN)	(lbf)					
16	5	E	KGS-1605-050-RH	KGF-N-1605-RH-EE	Z1, Z2, Z3	9.3	2,091	13.1	2,945	0.08	15.3	12.9	6000	1.3
20	5	E	KGS-2005-050-RH	KGF-N-2005-RH-EE	Z1, Z2, Z3	10.5	2,361	16.6	3,732	0.08	19.3	16.9	6000	2.0
20	20	S	KGS-2020-050-RH	KGF-N-2020-RH-EE	Z2, Z3	11.6	2,608	18.4	4,136	0.08	19.3	16.9	6000	2.0
20	50	S	KGS-2050-050-RH	KGF-N-2050-RH-EE	Z2, Z3	13.0	2,923	24.6	5,530	0.15	18.9	16.5	6000	2.0
25	5	E	KGS-2505-050-RH	KGF-N-2505-RH-EE	Z1, Z2, Z3	12.3	2,766	22.5	5,058	0.08	24.3	21.9	6000	3.3
32	5	E	KGS-3205-050-RH	KGF-N-3205-RH-EE	Z1, Z2, Z3	21.5	4,834	49.3	11,083	0.08	31.3	28.9	6000	5.6
32	10	E	KGS-3210-050-RH	KGF-N-3210-RH-EE	Z1, Z2, Z3	33.4	7,509	54.5	12,252	0.08	32.5	27.3	6000	5.6
32	40	S	KGS-3240-050-RH	KGF-N-3240-RH-EE	Z2, Z3	14.9	3,350	32.4	7,284	0.08	30.7	28.3	6000	5.6
40	5	E	KGS-4005-050-RH	KGF-N-4005-RH-EE	Z1, Z2, Z3	23.8	5,351	63.1	14,185	0.08	39.3	36.9	6000	9.0
40	10	E	KGS-4010-050-RH	KGF-N-4010-RH-EE	Z1, Z2, Z3	38.0	8,544	69.1	15,534	0.08	39.3	34.1	6000	8.4
50	10	E	KGS-5010-050-RH	KGF-N-5010-RH-EE	Z1, Z2, Z3	68.7	15,446	155.8	35,025	0.08	49.3	44.1	6000	13.5
63	10	E	KGS-6310-050-RH	KGF-N-6310-RH-EE	Z1, Z2, Z3	76.0	17,087	197.0	44,287	0.08	62.3	57.1	6000	22.0

(1)  $23\mu\text{m}/300\text{mm}$  lead accuracy available upon request for most sizes.

(2) Thomson NEFF Rolled Ball Screws, Ball Nuts and End Blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

(3) All ball screws and nuts are right-hand thread.

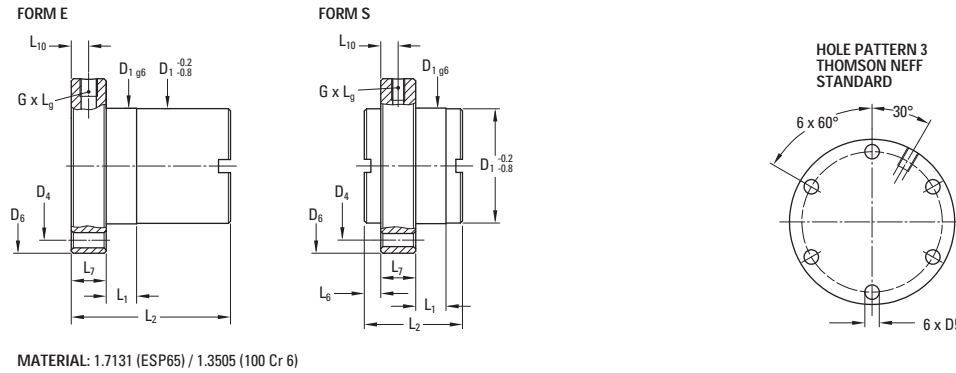
(4) Double nut pre-load systems (for up to 10% of dynamic load rating) are also available for all sizes. Contact customer service for more details.

(5) Dimensional information on bearing supports and standard end machining is available on page 160.

(6) Max. length includes 200mm on each end usable for end machining only. Max. travel length equals table value minus 400mm. Ends are soft annealed.



## Thomson NEFF Rolled Ball Screws — KGF-N Style Ball Nuts



Nominal Diameter (size)	Lead	Nut Specifications (mm)													
		D <sub>1</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>6</sub>	L <sub>7</sub>	L <sub>9</sub>	L <sub>10</sub>	Lube Hole (G)	No. of Circuits	Nut Weight (kg)	Ball Diameter (mm)
(mm)	(mm)	g6													
16	5	28.0	38.0	5.5	48.0	8.0	44.0	—	12.0	8.0	6.0	M 6	3	0.20	3.500
20	5	32.0	45.0	7.0	55.0	8.0	44.0	—	12.0	8.0	6.0	M 6	3	0.25	3.500
20	20	35.0	50.0	7.0	62.0	4.0	30.0	8.0	10.0	8.0	5.0	M 6	4	0.25	3.500
20	50	35.0	50.0	7.0	62.0	10.0	56.0	9.0	10.0	8.0	5.0	M 6	5	0.40	3.500
25	5	38.0	50.0	7.0	62.0	8.0	46.0	—	14.0	8.0	7.0	M 6	3	0.35	3.500
32	5	45.0	58.0	7.0	70.0	10.0	59.0	—	16.0	8.0	8.0	M 6	5	0.55	3.500
32	10	53.0	68.0	7.0	80.0	10.0	73.0	—	16.0	8.0	8.0	M 8x1	3	0.90	7.140
32	40	53.0	68.0	7.0	80.0	14.0	45.0	7.5	16.0	10.0	8.0	M 6	4	0.45	3.500
40	5	53.0	68.0	7.0	80.0	10.0	59.0	—	16.0	8.0	8.0	M 6	5	0.70	3.500
40	10	63.0	78.0	9.0	95.0	10.0	73.0	—	16.0	8.0	8.0	M 8x1	3	1.20	7.140
50	10	72.0	90.0	11.0	110.0	10.0	97.0	—	18.0	8.0	9.0	M 8x1	5	2.00	7.140
63	10	85.0	105.0	11.0	125.0	10.0	99.0	—	20.0	8.0	10.0	M 8x1	5	2.80	7.140

## Thomson NEFF Rolled Ball Screws — KGM-D Style Ball Nuts

Standard Lead Accuracy:  $\pm 50\mu\text{m}/300\text{mm}^{(1)}$

Threaded ball nut and screw, offering low cost, high precision performance in applications typically requiring ground product.



KGM-D Style Nut

### Internal Return Cylindrical Ball Nut and Screw

- Flexible solution for non-standard mounting
- Integral wiper included as standard
- Available in three preload classes (Type Z1, Z2, Z3)
  - Z1 – light preload to 1-2%
  - Z2 – no preload, clearance held to max .18mm
  - Z3 – no preload, clearance held to max .05mm

Nominal Diameter (size)	Lead	Nut Type	Ball Screw P/N <sup>(1) (2) (3)</sup>	Ball Nut P/N	Available Preload Types <sup>(4)</sup>	Performance Data					Screw Specifications <sup>(5)</sup>			
						Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Max. Axial Backlash	Major Diameter	Minor Diameter	Max. Length <sup>(6)</sup>	Screw Weight
						(kN)	(lbf)	(kN)	(lbf)					
16	5	E	KGS-1605-050-RH	KGM-D-1605-RH-EE	Z1, Z2, Z3	9.3	2,091	13.1	2,945	0.08	15.3	12.9	6000	1.3
16	10	E	KGS-1610-050-RH	KGM-D-1610-RH-EE	Z1, Z2, Z3	15.4	3,463	26.5	5,957	0.08	15.2	13.0	6000	1.3
20	5	E	KGS-2005-050-RH	KGM-D-2005-RH-EE	Z1, Z2, Z3	10.5	2,361	16.6	3,732	0.08	19.3	16.9	6000	2.0
25	5	E	KGS-2505-050-RH	KGM-D-2505-RH-EE	Z1, Z2, Z3	12.3	2,766	22.5	5,058	0.08	24.3	21.9	6000	3.3
25	10	E	KGS-2510-050-RH	KGM-D-2510-RH-EE	Z1, Z2, Z3	13.2	2,947	25.3	5,688	0.08	24.3	21.9	6000	3.3
25	20	S	KGS-2520-050-RH	KGM-D-2520-RH-EE	Z2, Z3	13.0	2,923	23.3	5,238	0.15	24.4	22.0	6000	3.3
25	25	S	KGS-2525-050-RH	KGM-D-2525-RH-EE	Z2, Z3	16.7	3,755	32.2	7,239	0.08	24.3	22.0	6000	3.3
25	50	S	KGS-2550-050-RH	KGM-D-2550-RH-EE	Z2, Z3	15.4	3,463	31.7	7,126	0.15	23.9	21.5	6000	3.3
32	5	E	KGS-3205-050-RH	KGM-D-3205-RH-EE	Z1, Z2, Z3	21.5	4,834	49.3	11,083	0.08	31.3	28.9	6000	5.6
40	5	E	KGS-4005-050-RH	KGM-D-4005-RH-EE	Z1, Z2, Z3	23.8	5,351	63.1	14,185	0.08	39.3	36.9	6000	9.0
40	10	E	KGS-4010-050-RH	KGM-D-4010-RH-EE	Z1, Z2, Z3	38.0	8,544	69.1	15,534	0.08	39.3	34.1	6000	8.4
40	20	E	KGS-4020-050-RH	KGM-D-4020-RH-EE	Z1, Z2, Z3	33.3	7,487	76.1	17,108	0.08	39.5	35.9	6000	9.0
40	40	S	KGS-4040-050-RH	KGM-D-4040-RH-EE	Z2, Z3	35.0	7,869	101.9	22,908	0.08	38.7	36.3	6000	9.0

(1)  $23\mu\text{m}/300\text{mm}$  lead accuracy available upon request for most sizes.

(2) Thomson NEFF Rolled Ball Screws, Ball Nuts and End Blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

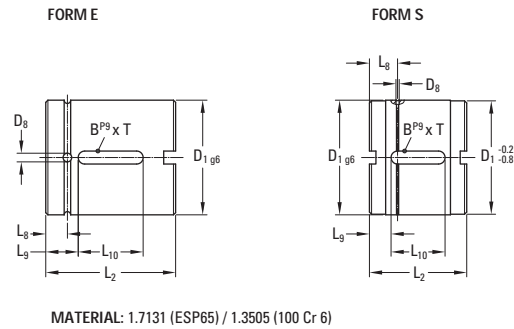
(3) All ball screws and nuts are right-hand thread.

(4) Double nut pre-load systems (for up to 10% of dynamic load rating) are also available for all sizes. Contact customer service for more details.

(5) Dimensional information on bearing supports and standard end machining is available on page 160.

(6) Max. length includes 200mm on each end usable for end machining only. Max. travel length equals table value minus 400mm. Ends are soft annealed.

## Thomson NEFF Rolled Ball Screws — KGM-D Style Ball Nuts



Nominal Diameter (size)	Lead	Nut Specifications (mm)									
		D <sub>1</sub>	D <sub>8</sub>	L <sub>2</sub>	L <sub>8</sub>	L <sub>9</sub>	L <sub>10</sub>	BxT	No. of Circuits	Nut Weight	Ball Diameter
(mm)	(mm)	g6								(kg)	(mm)
16	5	28.0	3.0	34.0	7.0	7.0	20.0	5x2	3	0.10	3.500
16	10	28.0	3.0	50.0	7.0	15.0	20.0	5x2	6	0.20	3.000
20	5	36.0	3.0	34.0	7.0	7.0	20.0	5x2	3	0.20	3.500
25	5	40.0	3.0	34.0	7.0	7.0	20.0	5x2	3	0.20	3.500
25	10	40.0	3.0	45.0	7.5	12.5	20.0	5x2	3	0.24	3.500
25	20	40.0	1.5	35.0	14.0	11.5	12.0	5x3	4	0.20	3.500
25	25	40.0	1.5	35.0	11.5	11.0	13.0	5x3	5	0.45	3.500
25	50	40.0	1.5	58.0	17.0	19.0	20.0	5x3	5	0.30	3.500
32	5	50.0	3.0	45.0	7.5	8.0	30.0	6x2.5	5	0.50	3.500
40	5	63.0	3.0	45.0	7.5	8.0	30.0	6x2.5	5	0.80	3.500
40	10	63.0	4.0	60.0	10.0	15.0	30.0	6x2.5	3	1.00	7.140
40	20	63.0	3.0	70.0	7.5	20.0	30.0	6x2.5	4	1.20	5.000
40	40	63.0	1.5	85.0	15.0	27.5	30.0	6x3.5	8	0.90	3.500

## Thomson NEFF Rolled Ball Screws — KGM-N Style Ball Nuts

Standard Lead Accuracy:  $\pm 50\mu\text{m}/300\text{mm}^{(1)}$

Threaded ball nut and screw, offering low cost, high precision performance in applications typically requiring ground product.



KGM-N Style Nut

### Internal Return Cylindrical Ball Nut and Screw

- Flexible solution for non-standard mounting
- Integral wiper included as standard<sup>(5)</sup>
- Available in three preload classes (Type Z1, Z2, Z3)
  - Z1 – light preload to 1 – 2%
  - Z2 – no preload, clearance held to max .18mm
  - Z3 – no preload, clearance held to max .05mm

Nominal Diameter (size)	Lead	Nut Type	Ball Screw P/N <sup>(1) (2) (3)</sup>	Ball Nut P/N	Available Preload Types <sup>(4)</sup>	Performance Data					Screw Specifications <sup>(7)</sup>			
						Z2 Standard	Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Max. Axial Backlash	Major Diameter	Minor Diameter	Max. Length <sup>(8)</sup>
				(kN)			(lbf)	(kN)	(lbf)	(mm)				
12	5	E	KGS-1205-050-RH	KGM-N-1205-RH-00	Z1, Z2, Z3	4.4	990	6.8	1,529	0.08	11.3	10.1	1500 <sup>(9)</sup>	0.8
20	5	E	KGS-2005-050-RH	KGM-N-2005-RH-EE	Z1, Z2, Z3	10.5	2,361	16.6	3,732	0.08	19.3	16.9	6000	2.0
20	20	S	KGS-2020-050-RH	KGM-N-2020-RH-EE	Z2, Z3	11.6	2,608	18.4	4,136	0.08	19.3	16.9	6000	2.0
20	50	S	KGS-2050-050-RH	KGM-N-2050-RH-EE	Z2, Z3	13.0	2,923	24.6	5,530	0.15	18.9	16.5	6000	2.0
25	5	E	KGS-2505-050-RH	KGM-N-2505-RH-EE	Z1, Z2, Z3	12.3	2,766	22.5	5,058	0.08	24.3	21.9	6000	3.3
32	5	E	KGS-3205-050-RH	KGM-N-3205-RH-EE	Z1, Z2, Z3	21.5	4,834	49.3	11,083	0.08	31.3	28.9	6000	5.6
32	10	E	KGS-3210-050-RH	KGM-N-3210-RH-EE	Z1, Z2, Z3	33.4	7,509	54.5	12,252	0.08	32.5	27.3	6000	5.6
32	20	E	KGS-3220-050-RH	KGM-N-3220-RH-EE	Z1, Z2, Z3	29.7	6,678	59.8	13,444	0.08	31.5	27.9	6000	5.6
32	40	S	KGS-3240-050-RH	KGM-N-3240-RH-EE	Z2, Z3	14.9	3,350	32.4	7,284	0.08	30.7	28.3	6000	5.6
40	5	E	KGS-4005-050-RH	KGM-N-4005-RH-EE	Z1, Z2, Z3	23.8	5,351	63.1	14,185	0.08	39.3	36.9	6000	9.0
50	10	E	KGS-5010-050-RH	KGM-N-5010-RH-EE	Z1, Z2, Z3	68.7	15,446	155.8	35,025	0.08	49.3	44.1	6000	13.5
50	20	E	KGS-5020-050-RH	KGM-N-5020-RH-EE	Z1, Z2, Z3	60.0	13,490	136.3	30,641	0.08	49.3	44.1	6000	13.5
63	10	E	KGS-6310-050-RH	KGM-N-6310-RH-EE	Z1, Z2, Z3	76.0	17,087	197.0	44,287	0.08	62.3	57.1	6000	22.0

(1) 23 $\mu\text{m}/300\text{mm}$  lead accuracy available upon request for most sizes.

(2) Ball screws, ball nuts and end blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

(3) All ball screws and nuts are right-hand thread.

(4) Double nut pre-load systems (for up to 10% of dynamic load rating) are also available for all sizes. Contact customer service for more details.

(5) 12x5 nut does not include wiper.

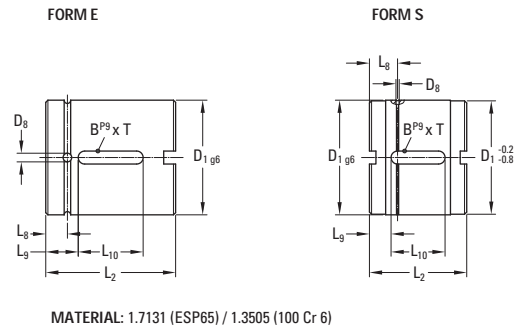
(6) D1 -0.2/-0.8 does not apply, therefore D1 -1.0/-1.5.

(7) Dimensional information on bearing supports and standard end machining is available on page 160.

(8) Max. length includes 200mm on each end usable for end machining only. Max. travel length equals table value minus 400mm. Ends are soft annealed.

(9) Max. length includes 100mm on each end usable for end machining only. Max. travel length equals table value minus 200mm. Ends are soft annealed.

## Thomson NEFF Rolled Ball Screws — KGM-N Style Ball Nuts



Nominal Diameter (size)	Lead	Nut Specifications (mm)									
		D <sub>1</sub>	D <sub>8</sub>	L <sub>2</sub>	L <sub>8</sub>	L <sub>9</sub>	L <sub>10</sub>	BxT	No. of Circuits	Nut Weight	Ball Diameter
(mm)	(mm)	g6								(kg)	(mm)
12	5	20.0 <sup>(5)</sup>	—	24.0	—	5.0	14.0	3x1.8	3	0.03	2.000
20	5	32.0	3.0	34.0	7.0	7.0	20.0	5x2	3	0.10	3.500
20	20	35.0	1.5	30.0	11.5	9.0	12.0	5x3	4	0.14	3.500
20	50	35.0	1.5	56.0	16.0	18.0	20.0	5x3	5	0.30	3.500
25	5	38.0	3.0	34.0	7.0	7.0	20.0	5x2	3	0.15	3.500
32	5	45.0	3.0	45.0	7.5	8.0	30.0	6x2.5	5	0.30	3.500
32	10	53.0	4.0	60.0	10.0	15.0	30.0	6x2.5	3	0.55	7.140
32	20	53.0	3.0	70.0	7.5	20.0	30.0	6x2.5	4	0.80	5.000
32	40	53.0 <sup>(6)</sup>	1.5	45.0	13.0	10.0	25.0	6x4	4	0.46	3.500
40	5	53.0	3.0	45.0	7.5	8.0	30.0	6x2.5	5	0.60	3.500
50	10	72.0	4.0	82.0	11.0	23.0	36.0	6x2.5	5	1.10	7.140
50	20	85.0	4.0	82.0	10.0	23.0	36.0	6x2.5	4	1.40	7.140
63	10	85.0	4.0	82.0	11.0	23.0	36.0	6x2.5	5	1.45	7.140

**NOTES:**

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## Precision Plus Ground Ball Screws — Metric Series



**Precision Plus Ground Ball Screw Assemblies** are our highest precision product, with standard lead accuracies of 12 microns/300mm. These ball screw assemblies feature our FL-style ball nut, precisely preloaded to customer specifications. This unique nut design provides high repeatability and high stiffness for the most demanding ball screw applications. Each nut comes standard with an integral plastic wiper to protect against chips and other debris. Precision Plus Ground Ball Screws are ideal for applications requiring high repeatability and high stiffness (e.g., high precision machine tool).

Need a quote or have a question about an application? Contact us in North America at:

Phone: 540-633-3549

Fax: 540-639-4162

Email: [thomson@danahermotion.com](mailto:thomson@danahermotion.com)

## Precision Plus Ground Ball Screws — Metric Series

Standard Lead Accuracy:  $\pm 12\mu\text{m}/300\text{mm}$

Flanged ball nut and screw assembly, offering the highest level of accuracy, repeatability and stiffness.



FL Style Nut

### Internal Return Flanged Ball Nut and Screw

- Excellent accuracy, repeatability and stiffness
- Features Z0 Type preload (range from 2% to 13%, to customer specification)
- Nut stiffness based on 10% preload ( $F = 10\% \times C_{am}$ )
- Integral wiper and flange included as standard
- Additional sizes available in diameters up to 200mm. Contact us for more details.

Nominal Diameter (size)	Lead	Nut Type	Ball Screw and Nut Assembly P/N <sup>(1) (2)</sup>	Performance Data						Screw Specifications <sup>(3)</sup>				
				Dynamic Load Capacity ( $C_{am}$ )		Static Load Capacity ( $C_o$ )		Minimum Stiffness	Max. Axial Backlash	No. of Loaded Turns	Major Diameter	Minor Diameter	Max. Length	Screw Weight
				(kN)	(lbf)	(kN)	(lbf)	(kN/ $\mu\text{m}$ )	(mm)	(turns)	(mm)	(mm)	(mm)	(kg/m)
16	5	FL	<b>7832835</b>	6.7	1,506	7.2	1,619	0.16	0.00	2 + 2	15.6	12.7	3000	1.2
20	5	FL	<b>7832838</b>	11.5	2,585	15.5	3,485	0.30	0.00	3 + 3	19.6	16.7	4000	2.0
25	5	FL	<b>7832841</b>	12.6	2,833	19.1	4,294	0.38	0.00	3 + 3	24.5	21.7	5000	3.3
32	5	FL	<b>7832862</b>	19.3	4,339	36.4	8,183	0.60	0.00	4 + 4	31.6	28.7	6000	5.6
32	10	FL	<b>7832844</b>	26.4	5,935	39.0	8,768	0.49	0.00	3 + 3	31.6	27.1	6000	5.3
40	5	FL	<b>7832847</b>	26.3	5,912	59.2	13,309	0.89	0.00	5 + 5	39.6	36.7	6000	9.0
40	10	FL	<b>7832850</b>	64.9	14,590	109.0	24,504	0.94	0.00	4 + 4	39.6	34.0	6000	8.3
50	10	FL	<b>7832853</b>	69.0	15,511	142.2	31,966	1.18	0.00	5 + 5	49.5	43.0	6000	13.5
63	10	FL	<b>7832856</b>	93.8	21,087	229.7	51,639	1.74	0.00	5 + 5	62.5	56.9	6000	22.0
80	10	FL	<b>7832859</b>	121.9	27,404	375.0	84,303	2.45	0.00	6 + 6	79.5	73.9	6000	36.4

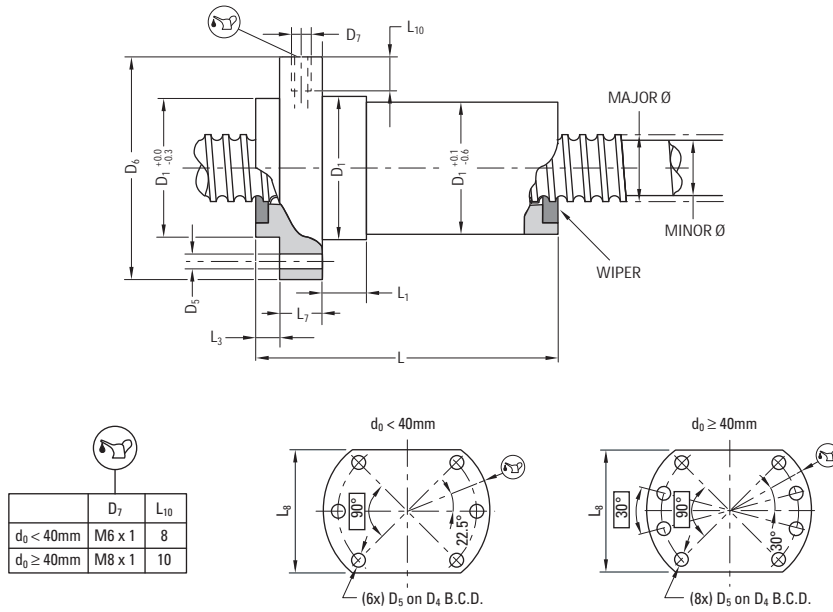
(1) End Blocks can be sold together as assemblies or separately as components (preloaded ball nuts sold only as an assembly).

(2) All ball screws and nuts are right-hand thread.

(3) Dimensional information on bearing supports and standard end machining is available on page 160.



## Precision Plus Ground Ball Screws — Metric Series



Nominal Diameter (size)	Lead	Nut Specifications (mm)										
		D <sub>1</sub>	D <sub>4</sub>	D <sub>5</sub>	D <sub>6</sub>	L	L <sub>1</sub>	L <sub>3</sub>	L <sub>7</sub>	L <sub>8</sub>	Nut Weight	Ball Diameter
(mm)	(mm)	g6		H13	h13				h13	h13	(kg)	(mm)
16	5	28.0	38.0	5.5	48.0	55.0	10.0	5.5	10.0	40.0	0.3	3.500
20	5	36.0	47.0	6.6	58.0	68.5	10.0	5.5	10.0	44.0	0.4	3.500
25	5	40.0	51.0	6.6	62.0	69.5	10.0	6.0	10.0	48.0	0.4	3.500
32	5	50.0	65.0	9.0	80.0	83.0	12.0	6.0	12.0	62.0	0.7	3.500
32	10	50.0	65.0	9.0	80.0	105.5	12.0	6.0	12.0	62.0	0.8	3.500
40	5	63.0	78.0	9.0	93.0	97.0	14.0	7.0	14.0	70.0	1.3	3.500
40	10	63.0	78.0	9.0	93.0	142.0	14.0	7.0	14.0	70.0	1.5	7.144
50	10	75.0	93.0	11.0	110.0	144.0	16.0	7.0	16.0	85.0	2.2	7.144
63	10	90.0	108.0	11.0	125.0	166.0	18.0	7.0	18.0	95.0	3.3	7.144
80	10	105.0	125.0	13.5	145.0	192.0	20.0	9.0	20.0	110.0	4.3	7.144

**NOTES:**

A large grid of graph paper, consisting of 30 columns and 40 rows of small squares, intended for taking notes.

# Ball Splines



A Thomson Precision ball spline consists of mating inner and outer races containing concave axial races and a complement of bearing balls. The balls provide the only physical contact between the inner and outer races. Unlimited rolling travel is achieved by diverting the path of the balls at the extremes of the outer race into the end cap return circuit. This provides a closed loop through which the balls recirculate when the races are displaced axially relative to each other. The bearing balls resist radial displacement resulting from torque loads.

- Efficiency — coefficient of friction .007 maximum
- Hardness — minimum of RC 56 in ball race
- Lash — .005 inch maximum standard play perpendicular to rotational axis

Need a quote or have a question about an application? Contact us in North America at:

Phone: 540-633-3549

Fax: 540-639-4162

Email: [thomson@danahermotion.com](mailto:thomson@danahermotion.com)

## Precision Rolled Ball Splines

0.375 in to 6.000 in Diameter



### Inner and Outer Spline Races

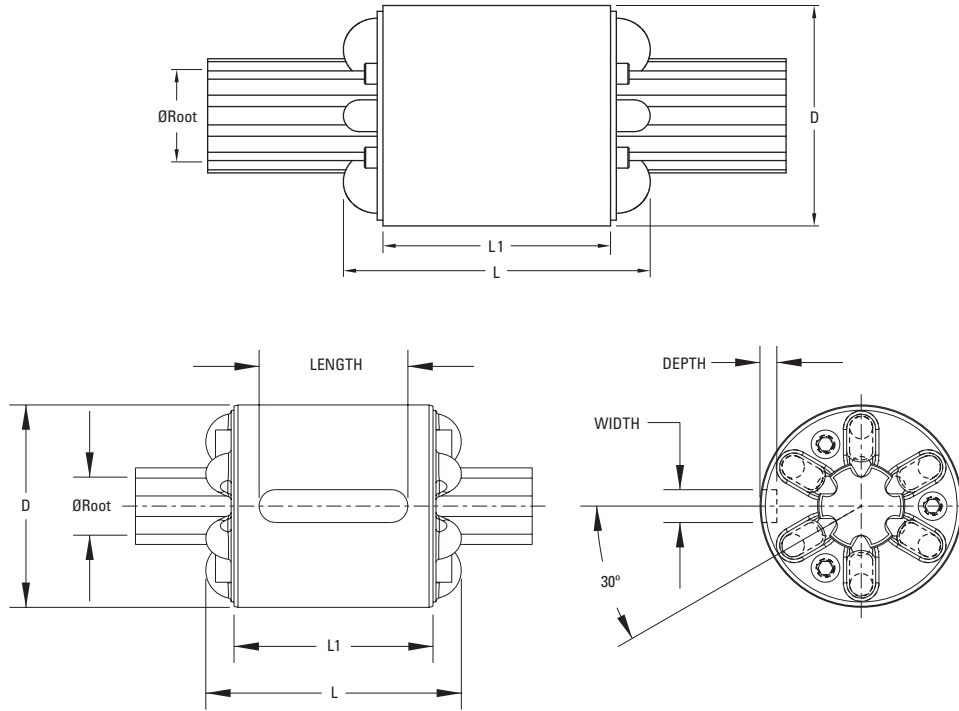
- Offers high speed, anti-friction linear motion under high torsional loads
- All units available with and without keyway
- **All sizes stocked for quick delivery**

Nominal Diameter (in.)	Active Races <sup>(1)(2)</sup>	Inner Race P/N	Outer Race P/N (w/o keyway)	Outer Race P/N (w/ keyway)	Performance Data				Inner Race Specifications		
					Dynamic Load Capacity (C <sub>am</sub> ) (in-lb)	Static Torque Capacity (C <sub>o</sub> ) (in-lb)	Max. Diametral Backlash (in.)	Max. Angular Backlash (radians)	Root Diameter (in.)	Standard Length (in.)	Inner Weight (lb/ft)
0.375	3	5707547	5706900	7828127	200	626	0.005	0.0266	0.200	24	0.02
0.625	3	5707548	5707445	7828128	585	1,770	0.005	0.0160	0.425	48	0.06
0.625	6	5707548	5708943	7828129	1,170	3,540	0.005	0.0160	0.425	48	0.06
1.000	3	5706084	5707472	7828130	1,300	3,900	0.005	0.0100	0.800	144	0.17
1.000	6	5706084	5708944	7828131	2,600	7,800	0.005	0.0100	0.800	144	0.17
1.500	3	5706388	5707528	7828132	4,200	11,588	0.005	0.0067	1.230	144	0.4
1.500	6	5706388	5708945	7828133	8,400	23,176	0.005	0.0067	1.230	144	0.4
2.000	3	5706436	5707530	7828134	8,000	20,138	0.005	0.0050	1.670	144	0.75
2.000	6	5706436	5708946	7828135	16,000	40,276	0.005	0.0050	1.670	144	0.75
2.500	3	5706484	5707532	7828136	13,500	36,625	0.005	0.0040	2.100	144	1.17
2.500	6	5706484	5708947	7828137	27,000	62,250	0.005	0.0040	2.100	144	1.17
4.062	6	5702204	5708330	7828138	57,000	140,000	0.005	0.0025	3.660	144	3.13
6.000	8	5704982	5704798	7828140	214,700	584,000	0.007	0.0023	5.470	72	7.01

(1) Dimensional information on bearing supports and standard end machining is available on page 176.

(2) Information on required lubrication is on page 243.

## Precision Rolled Ball Splines



Nominal Diameter	Active Races	Outer Race Specifications					
		D (max.)	L	L1	Keyway Dimensions (Optional) (Width x Depth x Length)	Outer Weight	Ball Diameter
(in.)		(in.)	(in.)	(in.)	(in.)	(lb)	(in.)
0.375	3	1.161	1.589	1.099	0.187 x 0.093 x 1.000	0.25	0.156
0.625	3	1.531	2.035	1.505	0.250 x 0.125 x 1.125	0.37	0.187
0.625	6	1.531	2.035	1.505	0.250 x 0.125 x 1.125	0.37	0.187
1.000	3	1.906	2.598	2.068	0.250 x 0.125 x 1.625	0.92	0.187
1.000	6	1.906	2.598	2.068	0.250 x 0.125 x 1.625	0.92	0.187
1.500	3	2.693	3.719	3.005	0.250 x 0.125 x 2.000	3.33	0.250
1.500	6	2.693	3.719	3.005	0.375 x 0.187 x 2.000	3.33	0.250
2.000	3	3.427	4.022	3.130	0.250 x 0.125 x 2.500	5.42	0.312
2.000	6	3.427	4.022	3.130	0.500 x 0.219 x 2.500	5.42	0.312
2.500	3	4.170	4.426	3.380	0.250 x 0.125 x 3.000	7.50	0.375
2.500	6	4.170	4.426	3.380	0.500 x 0.250 x 3.000	7.50	0.375
4.062	6	5.6245	5.495	4.500	1.000 x 0.500 x 3.500	14.50	0.375
6.000	8	8.625	7.495	5.995	1.000 x 0.500 x 5.500	51.52	0.500

**NOTES:**

A large grid of graph paper for taking notes, consisting of 30 columns and 40 rows of small squares.