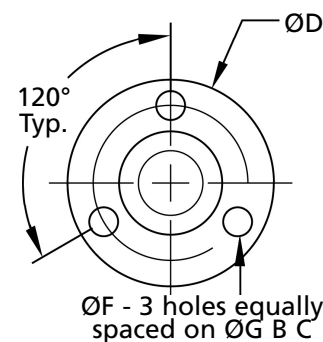
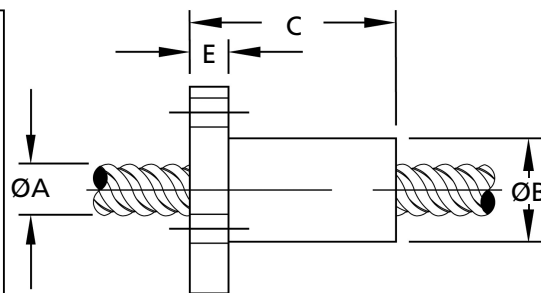


LINEAR MOTION

B

Precision Leadscrew Assemblies

General Purpose Nut & Leadscrew



Discounts: 5+ -4% 10+ -10% 25+ -15%

Part Number	No. of Starts	Screw ØA	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Mount Hole ØF	Bolt ØG	Metric Lead	Design Load kg	Efficiency	Root Ø	Price Each 1 - 4	
													A 300mm	B 600mm
B4M01	1	6.35	12.70	25.40	25.40	4.75	3.56	19.05	1.00	20	41%	4.82	£132.54	£163.28
B4M01.5	1	6.35	12.70	25.40	25.40	4.75	3.56	19.05	1.50	20	52%	4.37	£132.54	£163.28
B4M02	1	6.35	12.70	25.40	25.40	4.75	3.56	19.05	2.00	20	59%	4.32	£132.54	£163.28
B4M03	2	6.35	12.70	25.40	25.40	4.75	3.56	19.05	3.00	20	68%	4.32	£132.54	£163.28
B4M10	5	6.35	12.70	25.40	25.40	4.75	3.56	19.05	10.00	20	75%	4.32	£132.54	£163.28
B6M01.4	1	9.53	15.88	25.40	28.58	4.75	3.56	23.23	1.40	35	36%	7.69	£142.15	£169.02
B6M02	1	9.53	15.88	25.40	28.58	4.75	3.56	23.23	2.00	35	47%	6.76	£142.15	£169.02
B6M04	2	9.53	15.88	25.40	28.58	4.75	3.56	23.23	4.00	35	65%	6.96	£142.15	£169.02
B6M05	2	9.53	15.88	25.40	28.58	4.75	3.56	23.23	5.00	35	69%	6.76	£142.15	£169.02
B6M12	5	9.53	15.88	25.40	28.58	4.75	3.56	23.23	12.00	35	82%	7.29	£142.15	£169.02
B6M25	8	9.53	15.88	25.40	28.58	4.75	3.56	23.23	25.00	35	84%	6.60	£142.15	£169.02
B7M02	1	11.11	19.05	38.10	38.10	4.75	5.16	28.58	2.00	40	45%	9.50	£142.15	£184.42
B7M03	2	11.11	19.05	38.10	38.10	4.75	5.16	28.58	3.00	40	52%	7.82	£142.15	£184.42
B7M05	2	11.11	19.05	38.10	38.10	4.75	5.16	28.58	5.00	40	65%	7.95	£142.15	£184.42
B7M06	2	11.11	19.05	38.10	38.10	4.75	5.16	28.58	6.00	40	70%	7.95	£142.15	£184.42
B7M10	4	11.11	19.05	38.10	38.10	4.75	5.16	28.58	10.00	40	77%	7.95	£142.15	£184.42
B7M12	4	11.11	19.05	38.10	38.10	4.75	5.16	28.58	12.00	40	80%	8.26	£142.15	£184.42
B8M02.5	1	12.70	19.05	38.10	38.10	4.75	5.16	28.58	2.50	68	46%	9.65	£157.52	£201.71
B8M04	2	12.70	19.05	38.10	38.10	4.75	5.16	28.58	4.00	68	58%	9.75	£157.52	£201.71
B8M05	2	12.70	19.05	38.10	38.10	4.75	5.16	28.58	5.00	68	62%	9.27	£157.52	£201.71
B8M10	4	12.70	19.05	38.10	38.10	4.75	5.16	28.58	10.00	68	76%	9.19	£157.52	£201.71
B8M25	8	12.70	19.05	38.10	38.10	4.75	5.16	28.58	25.00	68	84%	9.45	£157.52	£201.71
B10M08	3	15.88	22.23	38.10	38.10	4.75	5.16	30.18	8.00	100	68%	12.52	£178.65	£242.04
B12M2.5	1	19.05	28.58	50.80	44.45	6.35	5.16	36.53	2.50	160	46%	15.09	£222.85	£299.68
B12M05	2	19.05	28.58	50.80	44.45	6.35	5.16	36.53	5.00	160	51%	15.85	£222.85	£299.68
B12M10	4	19.05	28.58	50.80	44.45	6.35	5.16	36.53	10.00	160	74%	15.72	£222.85	£299.68
B12M15	5	19.05	28.58	50.80	44.45	6.35	5.16	36.53	15.00	160	74%	15.75	£222.85	£299.68
B12M19	6	19.05	28.58	50.80	44.45	6.35	5.16	36.53	19.00	160	77%	-	£222.85	£P.O.A
B12M24	10	19.05	28.58	50.80	44.45	6.35	5.16	36.53	24.00	160	80%	16.26	£222.85	£299.68
B12M50	14	19.05	28.58	50.80	44.45	6.35	5.16	36.53	50.00	160	84%	15.88	£222.85	£299.68
B14M06	4	22.23	38.10	57.10	57.15	6.35	5.16	47.63	6.00	227	52%	18.97	£276.65	£366.94
B14M24	8	22.23	38.10	57.10	57.15	6.35	5.16	47.63	24.00	227	79%	19.05	£276.65	£366.94

Material

Nut: Self-lubricating Acetal **Leadscrew:** 303 Stainless Steel with TFE extended life coating

Performance

Positional Repeatability: 0.0013mm **Lead Accuracy:** 0.0006mm/mm

Other Info.

For applications not requiring anti-backlash and wear compensation. Provides effective power transmission at minimum cost and features long life self-lubricating polyacetal nuts. The secure mounting and convenience of a circular flange is standard on the "B" nuts.

When ordering add to the part number:- for 300mm long add A for 600mm long add B

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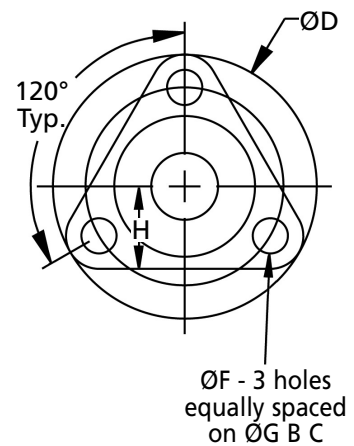
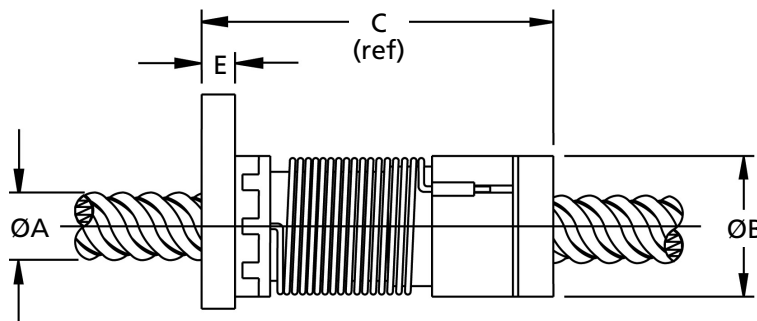
Product information updated 3rd May 2011 and subject to change. Please contact Sales for the latest prices and availability.

LINEAR MOTION

KHD

Precision Leadscrew Assemblies

Anti-Backlash Nut & Leadscrew



Discounts: 5+ -4% | 10+ -10% | 25+ -15%

Part Number	Screw ØA	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Mount Hole ØF	Bolt ØG	H	Metric Lead	Drag Torque Nm	Design Load kg	Efficiency	Root Ø	Price Each 1 - 4	
														A 300mm	B 600mm
KHD6M01.4	9.53	20.32	50.80	38.10	4.83	5.08	28.58	11.9	1.4	0.007-0.020	10	36%	7.69	£161.36	£192.09
KHD6M02	9.53	20.32	50.80	38.10	4.83	5.08	28.58	11.9	2.0	0.007-0.020	10	47%	6.76	£161.36	£192.09
KHD6M04	9.53	20.32	50.80	38.10	4.83	5.08	28.58	11.9	4.0	0.007-0.020	10	65%	6.98	£161.36	£192.09
KHD6M05	9.53	20.32	50.80	38.10	4.83	5.08	28.58	11.9	5.0	0.007-0.020	10	69%	6.76	£161.36	£192.09
KHD6M12	9.53	20.32	50.80	38.10	4.83	5.08	28.58	11.9	12.0	0.007-0.020	10	80%	7.29	£161.36	£192.09
KHD6M25	9.53	20.32	50.80	38.10	4.83	5.08	28.58	11.9	25.0	0.007-0.020	10	84%	6.60	£161.36	£192.09

Material

Nut: Self-lubricating Acetal **Leadscrew:** 303 Stainless Steel with TFE extended life coating

Performance

Positional Repeatability: 0.0013mm **Lead Accuracy:** 0.0006mm/mm

Other Info.

When ordering add to the part number:-
for 300mm long add A
for 600mm long add B

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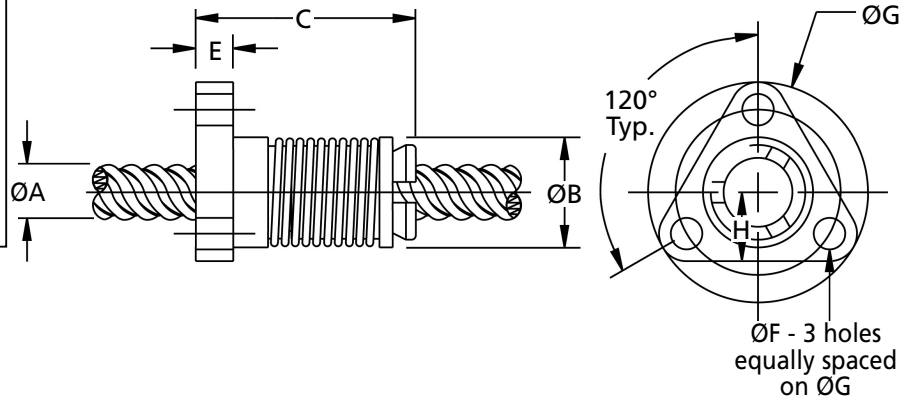
Product information updated 1st April 2011 and subject to change. Please contact Sales for the latest prices and availability.

ZBX

LINEAR MOTION

Precision Leadscrew Assemblies

Anti-Backlash Nut & Leadscrew

**Discounts: 5+ -4% 10+ -10% 25+ -15%**

Part Number	No. of Starts	Screw ØA	Nut ØB	Nut Length C	Flange ØD	Flange Width E	Mount Hole ØF	Bolt ØG	H	Metric Lead	Drag Torque Nm	Design Load kg	Efficiency	Root Ø	Price Each 1 - 4	
															A 300mm	B 600mm
ZBX4M01	1	6.35	12.70	25.40	25.40	4.57	3.63	19.05	7.935	1.00	0.007-0.030	2	41%	4.82	£142.15	£170.97
ZBX4M01.5	1	6.35	12.70	25.40	25.40	4.57	3.63	19.05	7.935	1.50	0.007-0.030	2	51%	4.37	£142.15	£170.97
ZBX4M02	1	6.35	12.70	25.40	25.40	4.57	3.63	19.05	7.935	2.00	0.007-0.030	2	59%	4.32	£142.15	£170.97
ZBX4M03	2	6.35	12.70	25.40	25.40	4.57	3.63	19.05	7.935	3.00	0.007-0.030	2	68%	4.32	£142.15	£170.97
ZBX4M10	5	6.35	12.70	25.40	25.40	4.57	3.63	19.05	7.935	10.00	0.007-0.030	2	75%	4.32	£142.15	£170.97
ZBX6M01.4	1	9.53	17.78	48.26	38.10	4.57	5.08	28.58	11.900	1.40	0.014-0.035	5	36%	7.69	£147.90	£182.47
ZBX6M02	1	9.53	17.78	48.26	38.10	4.57	5.08	28.58	11.900	2.00	0.014-0.035	5	47%	6.76	£147.90	£182.47
ZBX6M04	2	9.53	17.78	48.26	38.10	4.57	5.08	28.58	11.900	4.00	0.014-0.035	5	65%	6.96	£147.90	£182.47
ZBX6M05	2	9.53	17.78	48.26	38.10	4.57	5.08	28.58	11.900	5.00	0.014-0.035	5	69%	6.76	£147.90	£182.47
ZBX6M12	5	9.53	17.78	48.26	38.10	4.57	5.08	28.58	11.900	12.00	0.014-0.035	5	82%	7.29	£147.90	£182.47
ZBX6M25	8	9.53	17.78	48.26	38.10	4.57	5.08	28.58	11.900	25.00	0.014-0.035	5	84%	6.60	£147.90	£182.47
ZBX7M02	1	11.11	20.32	48.26	38.10	4.57	5.08	28.58	11.900	2.00	0.021-0.042	7	45%	9.50	£147.90	£194.01
ZBX7M03	2	11.11	20.32	48.26	38.10	4.57	5.08	28.58	11.900	3.00	0.021-0.042	7	52%	7.82	£147.90	£194.01
ZBX7M05	2	11.11	20.32	48.26	38.10	4.57	5.08	28.58	11.900	5.00	0.021-0.042	7	65%	7.95	£147.90	£194.01
ZBX7M06	2	11.11	20.32	48.26	38.10	4.57	5.08	28.58	11.900	6.00	0.021-0.042	7	70%	7.95	£147.90	£194.01
ZBX7M10	4	11.11	20.32	48.26	38.10	4.57	5.08	28.58	11.900	10.00	0.021-0.042	7	77%	7.95	£147.90	£194.01
ZBX7M12	4	11.11	20.32	48.26	38.10	4.57	5.08	28.58	11.900	12.00	0.021-0.042	7	80%	8.26	£147.90	£194.01
ZBX8M02.5	1	12.70	22.61	50.80	41.15	6.60	5.08	31.75	12.660	2.50	0.021-0.042	11	46%	9.65	£169.02	£217.08
ZBX8M04	2	12.70	22.61	50.80	41.15	6.60	5.08	31.75	12.660	4.00	0.021-0.042	11	58%	9.75	£169.02	£217.08
ZBX8M05	2	12.70	22.61	50.80	41.15	6.60	5.08	31.75	12.660	5.00	0.021-0.042	11	62%	9.27	£169.02	£217.08
ZBX8M10	4	12.70	22.61	50.80	41.15	6.60	5.08	31.75	12.660	10.00	0.021-0.042	11	76%	9.19	£169.02	£217.08
ZBX8M25	8	12.70	22.61	50.80	41.15	6.60	5.08	31.75	12.660	25.00	0.021-0.042	11	84%	9.45	£169.02	£217.08
ZBX10M08	3	15.88	26.99	50.80	44.45	6.60	5.08	34.93	13.515	8.00	0.030-0.050	16	68%	12.52	£211.30	£293.94

Material

Nut: Self-lubricating Acetal **Leadscrew:** 303 Stainless Steel with TFE extended life coating

Performance

Positional Repeatability: 0.0013mm **Lead Accuracy:** 0.0006mm/mm

Other Info.

Designed for operations requiring precise positional accuracy and repeatability, with minimum cost. Utilises a patented self-lubricating polyacetal nut radially preloaded on a 303 stainless steel screw. Offers exceptional torque consistency and repeatability when traversing in either direction. Ideally suited for vertical applications requiring noise or vibration control.

When ordering add to the part number:-

for 300mm long add A

for 600mm long add B

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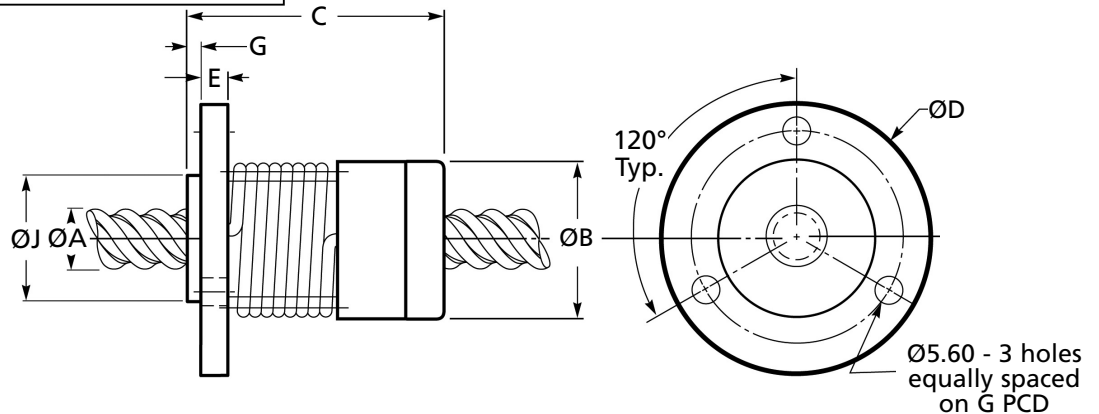
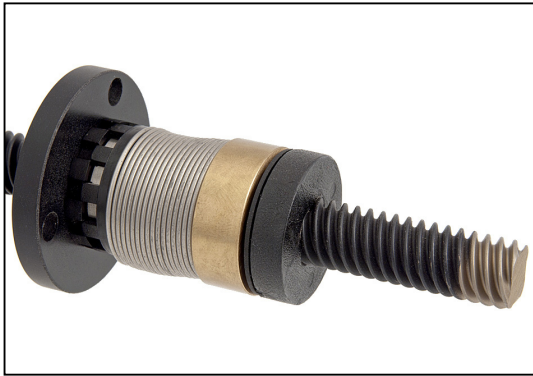
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Product information updated 1st April 2011 and subject to change. Please contact Sales for the latest prices and availability.

LINEAR MOTION

VHD

Precision Leadscrew Assemblies High Backlash Nut & Leadscrew *High Load*



Discounts: 5+ -4% 10+ -10% 25+ -15%

Part Number	No. of Starts	Screw ØA	Nut ØB	Nut Length C	Flange ØD	Flange Width E	ØJ	G PCD	H	Metric Lead	Drag Torque Nm	Design Load kg	Efficiency	Root Ø	Price Each 1 - 4	
															A	B
VHD8M02.5	1	12.70	28.5	59	44.5	5.9	23.62	35.71	3.1	2.50	0.01-0.02	68	46%	9.65	£259.35	£320.82
VHD8M04	2	12.70	28.5	59	44.5	5.9	23.62	35.71	3.1	4.00	0.01-0.02	68	58%	9.75	£259.35	£320.82
VHD8M05	2	12.70	28.5	59	44.5	5.9	23.62	35.71	3.1	5.00	0.01-0.02	68	62%	9.27	£259.35	£320.82
VHD8M10	4	12.70	28.5	59	44.5	5.9	23.62	35.71	3.1	10.00	0.01-0.02	68	76%	9.19	£259.35	£320.82
VHD8M16	6	12.70	28.5	59	44.5	5.9	23.62	35.71	3.1	16.00	0.01-0.02	68	80%	9.50	£259.35	£320.82
VHD8M25	8	12.70	28.5	59	44.5	5.9	23.62	35.71	3.1	25.00	0.01-0.02	68	84%	9.45	£259.35	£320.82
VHD12M02.5	1	19.05	41.2	71	60.5	7.9	-	50.80	-	2.50	0.02-0.05	159	46%	15.09	£332.37	£399.63
VHD12M05	2	19.05	41.2	71	60.5	7.9	-	50.80	-	5.00	0.02-0.05	159	51%	15.85	£332.37	£399.63
VHD12M10	4	19.05	41.2	71	60.5	7.9	-	50.80	-	10.00	0.02-0.05	159	74%	15.72	£332.37	£399.63
VHD12M15	5	19.05	41.2	71	60.5	7.9	-	50.80	-	15.00	0.02-0.05	159	75%	15.75	£332.37	£399.63
VHD12M19	6	19.05	41.2	71	60.5	7.9	-	50.80	-	19.00	0.02-0.05	159	77%	-	£332.37	£399.63
VHD12M24	10	19.05	41.2	71	60.5	7.9	-	50.80	-	24.00	0.02-0.05	159	81%	16.26	£332.37	£399.63
VHD12M50	14	19.05	41.2	71	60.5	7.9	-	50.80	-	50.00	0.02-0.05	159	85%	15.88	£332.37	£399.63

Material

Nut: Self-lubricating Acetal **Leadscrew:** 303 Stainless Steel with TFE extended life coating

Performance

Positional Repeatability: 0.0013mm **Lead Accuracy:** 0.0006mm/mm

Other Info.

Provides the maximum load carrying capacity and the highest axial and radial stiffness of any of our nut assemblies. Designed for smooth, quiet operation and long life, the VHD assembly provides low drag torque by machine use of the Axial take-up mechanism. Drag and wear associated with high pre-load forces are eliminated with the VHD Series.

When ordering add to the part number:-
for 300mm long add A
for 600mm long add B

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LINEAR MOTION

Leadscrew Assemblies

TFE Coating

T
E
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The general purpose in TFE coating is to supply a more even distribution of lubricant than is normally found when using standard self-lubricating plastics on steel. The wear life, coefficient of friction and resulting torque to drive a lead screw assembly are highly governed by the ability of the engineered plastic to supply sufficient lubrication to the nut/screw interface. The inability of the internal lubricating agents in some plastics to consistently migrate to the surface may result in erratic drag torques and unpredictable wear. TFE coating the entire screw surface thus results in an extremely even lubrication distribution. Test results indicate system torque requirements to be consistent with little or no change in required frictional driving torque, even with changes in motor R.P.M.

Handling

Lubrication to the interface occurs by the nut picking up the TFE particles from the coating as well as from the migration of the internal lubricant within the plastic nut.

Although care should be taken to ensure that chips and voids do not occur in the coating, small voids have been shown to have little effect on system performance. The lubricant, although solid, has some "spreading" ability as in fluid lubricants. When machining for bearing ends, soft fixturing is recommended.

The manufacture has developed a custom composition TFE specifically for our lead screws and nut materials. It is applied at high temperatures in our facilities and provides extended nut life and smooth operation at very low additional cost.

TFE coated screws provide the maximum level of self-lubrication and should not be additionally lubricated or used in environments where oils or other lubricant contamination is possible.

Screws up to 8ft (2.4m) can be supplied coated.

Design and Engineering Data

Screw Accuracy

A unique precision rolling process for screw manufacturing is used.

Positionally repeatability is within 0.0013mm.

Lead accuracy for standard screws is .0006 mm/mm. Lead accuracies are available up to .0001 mm/mm.

We can provide a laser-interferometer generated mapping of high lead screw accuracy screws. Assemblies have an extremely high repeatability of .0013mm.

Lead

Advancement per revolution

$$\text{Lead} = \text{Pitch} \times \text{Number of Starts}$$

End Machining

We can custom machine screws to your requirements (quote to your drawings) or cut to length screws for your own machining.

Lengths can be specified up to 4m, or up to 2.4m with TFE coating.

Pitch

Crest to crest distance or one divided by threads per inch. (on a multiple start thread, the pitch equals the lead divided by the number of starts.)

Critical Speed

This is the rotational speed at which a screw will experience vibration or other dynamic problems. See Critical Speed Chart to determine if application parameters result in speed approaching critical.

To minimize critical speed problems: use a longer lead, choose a larger diameter or increase bearing mount support.

Prices for specials to drawings available.

Please fax for a quote.

Traverse Speed

The polyacetal nut material used provides long wear life over a wide variety of conditions. However, very high loads and/or speeds will accelerate nut wear. We recommend the following linear traversing speeds for optimum life:

Maximum Load

Although these Anti-Backlash assemblies are capable of withstanding relatively high loads without catastrophic failure, they have been designed to operate under the loading shown in the size charts on the product pages (Design load kg).

Lead mm	Traverse Speed mm/sec
2.5 - 12	100
12 - 25	250
25 - 60	760

Efficiency

Efficiency of a lead screw varies highly with lead angle (see size listings). For example the efficiency is low when the lead screw is either very small or very large. For example high helix screws approach maximum efficiency because of their optimum lead angle.

Torque

The required motor torque to drive a lead screw assembly is the sum of three components: The inertia torque, static frictional torque, and torque to move load. It must be noted that this is the torque necessary to drive the lead screw assembly alone. Additional torque associated with driving frictional bearings and motor shafts, moving components, and drag due to general assembly misalignment must also be considered.

Inertia Torque

$T = I a$ Where I = screw inertia

a = angular acceleration

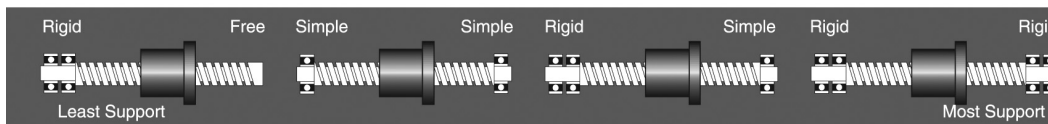
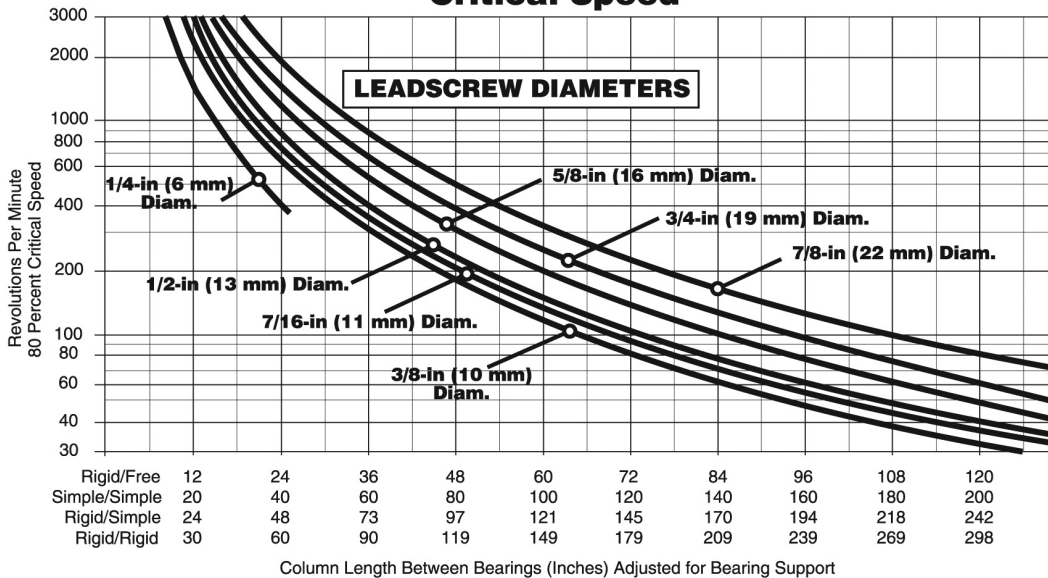
LINEAR MOTION

Leadscrew Assemblies

TFE Coating

LINEAR MOTION

Critical Speed



Static Frictional Torque

Our Anti-Backlash Assemblies are typically supplied with static frictional torque of 0.007Nm to 0.05Nm. The magnitude of the frictional torque is dependant on the standard factory settings or settings specified by the customer. Generally the higher the preset force, the better the Anti-Backlash characteristics.

Torque To Move Load

The torque to move a certain load is a function of the lead and the efficiency of the lead screw assembly.

$$\text{TORQUE} = \frac{\text{Load} \times \text{Lead}}{2\pi \times \text{Efficiency}}$$

Back Driving

Sometimes referred to as reversibility, this is the ability of a screw to be turned by a thrust load applied to the nut. Generally, when the screw lead is less than 1/2 the diameter, back driving will not occur. For higher leads, where back driving is likely, the torque required for holding a load is:

$$T_b = \frac{\text{Load} \times \text{Lead} \times \text{Efficiency}}{2\pi}$$

PV Calculation (Material Limits)

O.D (Inches)
 Root Dia. R.D. (Inches)
 Lead (Inches)
 Load – Axial (Lbs.)
 Linear Speed (Inches/sec.)

Use the Critical Speed chart for limits of Rpm and then the PV Calculation for Material Limits. The lowest value must not be exceeded when converted into Rpm or linear speed.

Helix Travel

$$\text{H.T.} = (\text{Surface Travel per Rev.})$$

$$= \frac{\% (\text{Lead})^2 + (\text{Pd})^2}{(\text{Thread Length})} \text{ IN}$$

$$\text{Where Pd} = \frac{\text{O.D} + \text{R.D.}}{2}$$

$$\begin{aligned} \text{At} &= \text{Area per Thread} \\ &= \text{H.T.} \times \text{Thread Thickness} \\ &= \frac{\text{H.T.} \times \text{O.D} - \text{R.D.}}{2} \end{aligned}$$

$$\begin{aligned} \text{ATA} &= \text{Total Thread Area} \\ &= \text{At} \times 3 \text{ (Assuming 3 Thread Contact)} \end{aligned}$$

$$\text{Rs} = \frac{\text{Linear Speed}}{\text{Lead}} = \text{Rev./sec.}$$

$$\text{RPM} = \text{RS} \times 60 = \text{Rev./min.}$$

$$\text{Travel Speed} = \text{Ft/min} = \text{Rpm} \times \frac{\text{H.T.}}{12} = \text{Ts}$$

$$\text{PV} = \text{TS} \times \frac{\text{Load}}{\text{ATA}} \text{ lb./in}^2 \text{ ft/min}$$

LINEAR MOTION

Leadscrew Assemblies

Screw Straightness

Screw straightness is indicated by Total Indicator Runout. (TIR).
The standard straightness for lead screws is 0.075mm/300mm.
We can provide tighter specifications on customer request.

SCREW / NUT SERIES	STATIC FRICTIONAL DRAG TORQUE (Nm)	SCREW INERTIA kgm ² /inch	ANTI-BACKLASH LIFE*	ANTI BACKLASH LIFE W/TFE COATING
B4000	FREE WHEELING	2.11 x 10 ⁻⁸	N/A	N/A
B6000		1.06 x 10 ⁻⁹	Typical Backlash	Typical Backlash
B7000		2.47 x 10 ⁻⁹		
B8000		3.67 x 10 ⁻⁹		
B10000		1.00 x 10 ⁻¹⁰	0.076 - 0.25mm	0.076 - 0.25mm
B12000		2.15 x 10 ⁻¹⁰		
B14000		4.09 x 10 ⁻¹⁰		
ZBX4000	0.007 - 0.03	2.11 x 10 ⁻⁸	100-150 million cm	380-500 million cm
ZBX6000	0.010 - 0.03	1.06 x 10 ⁻⁹		
ZBX7000	0.020 - 0.04	2.47 x 10 ⁻⁹		
ZBX8000	0.020 - 0.04	3.67 x 10 ⁻⁹		
ZBX10000	0.030 - 0.05	1.00 x 10 ⁻¹⁰		
KHD 600	0.007 - 0.02	1.06 x 10 ⁻⁹	200-250 million cm	450-580 million cm
VHD 8000	0.010 - 0.04	3.67 x 10 ⁻⁹	500-570 million cm	760-880 million cm
VHD 10000	0.010 - 0.04	1.00 x 10 ⁻⁹		
VHD 12000	0.020 - 0.05	2.15 x 10 ⁻¹⁰		

PHYSICAL PROPERTIES

LEAD SCREWS		NUTS			ASSEMBLY	
MATERIAL	SURFACE FINISH	MATERIAL	TENSILE STRENGTH	COEFFICIENT OF EXPANSION	STANDARD OPERATING TEMPERATURE RANGE	COEFFICIENT OF FRICTION NUT TO SCREW
303 Stainless Steel	Better than 400 microns (0.4 µm Ra)	Polyacetal with lubricating additive	1.4N/m ² (9,700 psi)	6.0 x 10 ⁻⁵ in./in./°F (3.3 x 10 ⁻⁵ mm/mm/°C)	32 - 200 °F (0 - 93°C)	Static = 0.08 Dynamic = 0.09 (un-coated Static 0.08 Dynamic 0.15)

*Life will vary with loading, operating environment and duty cycle. The longer screw leads generally provide longer life.

Degassing in a Vacuum at 10⁻⁴ TORS.

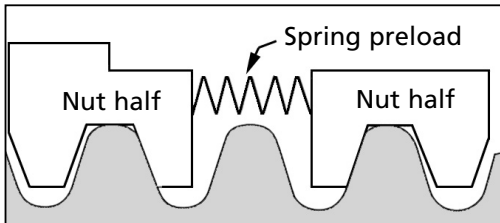
Time	Weight loss %
24 hrs	0.20%
48 hrs	0.26%
96 hrs	0.35%
330 hrs	0.37%

LINEAR MOTION

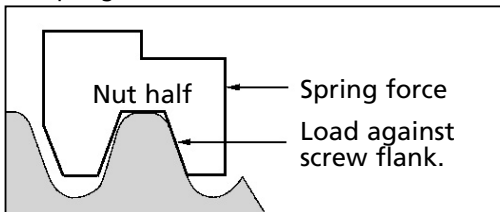
Leadscrew Assemblies

Axial Take-Up Mechanism

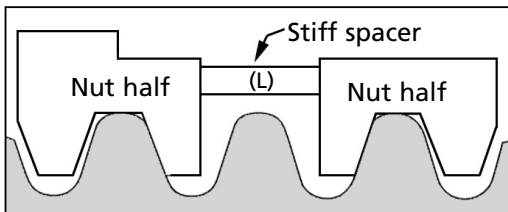
A patented - backlash compensation without high drag torque.



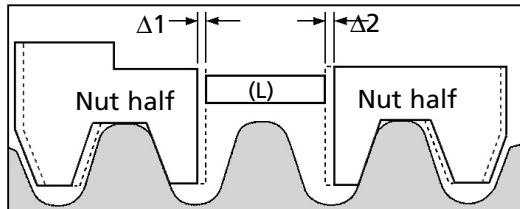
The standard method for taking up backlash is to bias two nut halves axially using some type of compliant spring (wavy washer, compression spring, rubber washer, etc.) The unit is very stiff in the direction in which the nut half is loaded against the flank of the screw thread. However, in the direction away from the screw thread, the nut is only as axially stiff as the amount of preload which the spring exerts.



For example, if the maximum axial load which the system is subjected to is 50lbs, the amount of spring preload must be equal to or greater than 50lbs. In order to maintain intimate screw/nut contact. The problems arising from preloading in this manner are increased torque and nut wear.

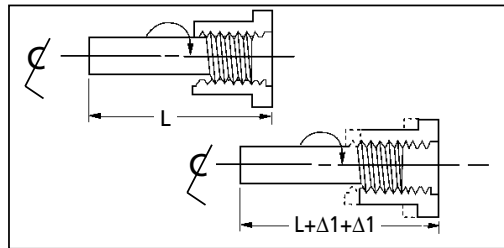


Obviously, the higher the load at the screw/nut interface, the higher the required torque to drive the nut on the screw and the more susceptible the unit is to nut wear. An alternate method would thus be to replace the spring with a stiff spacer sized to fit exactly between the two nut halves. There would then be no excessive preload force at the interface and the unit would be capable of carrying high axial loads in either direction with no backlash. This is fine initially, however, as use time increases, wear begins on the nut threads causing a gap to develop between the spacer (L) and the nut halves.



This gap ($\Delta 1 + \Delta 2$) is now the amount of backlash which has developed in the unit. This backlash can be removed by replacing the stiff spacer with a new spacer equal to $(L + \Delta 1 + \Delta 2)$. This process, although effective, would be extremely costly and difficult to implement on a continuous basis.

THE MANUFACTURER'S SOLUTION



What is needed, then, is a stiff spacer which will continually expand to accommodate the wear which occurs during use. This is done by creating a spacer threaded at one end with a complimentary nut torsionally biased to advance when a gap develops. The thread at the end of the spacer is a fine helix such that an axial load will not backdrive the nut once space growth has occurred. The amount of preload on the unit is only that necessary to turn the spacer nut on the spacer rod and is independent of the external system loadings.

THEREFORE, WE HAVE A SELF-WEAR COMPENSATING UNIT WHICH HAS EXTREMELY LOW FRICTIONAL DRAG TORQUE YET HIGH AXIAL STIFFNESS.