

TUSK Direct, Inc.

Linear Motion Products

PRODUCT REFERENCE GUIDE



TUSK *DIRECT, INC.*

GENERAL

Tusk Direct Inc. offers the design engineer a wide variety of linear bearings and automation components for use in automated equipment of many kinds. Every effort is made to have products in stock for immediate delivery. This catalog is organized by the outstanding feature of each product type. Within each section there are a variety of sizes and types of bearings all of which offer a similar feature but with a different design thereby allowing the design engineer to tailor the product to the application.

SPECIALS, MODIFICATIONS

There are many special services available to accommodate particular application needs. Some of these are modified mounting holes, finishes, travel, performance. Changes can be made for applications in special environments such as vacuum, high heat, high speed or clean room. Most modification requests are answered promptly and the work can be performed quickly and at a reasonably cost.

QUANTITY DISCOUNTS

Large quantity orders can be placed at attractive discounts to the standard list price.

HOW TO ORDER FROM TUSK

Toll Free: 1-800-447-2042 FAX: 203-748-5147

Email: sales@tuskdirect.com WEB: www.tuskdirect.com

**Tusk Direct, Inc.
Clarke Industrial Park
P.O. Box 326
Bethel, CT, 06801**

Our technical team is available Monday thru Friday, 9:00a.m. to 5:00p.m. EST,. and will gladly answer your questions and assist you in placing your order. Please confirm your phone order in writing. Remember to include model number, description and quantity. Include your purchase order number or check, and your name and mailing address. Sales tax must be added to all orders from CT (6%), if applicable.

SHIPPING

All orders are stocked, processed, and shipped out within 24 hours. We ship UPS Ground Service unless next day delivery is requested. Minimum order is \$20.

EASY RETURN POLICY

Every TUSK product is backed by a 30 day guarantee and a 90 day warranty. We want our customers to be completely satisfied. This unconditional return privilege allows you to return your order within 30 days of receipt of delivery.

TERMS OF SALE

All prices are FOB, Bethel, CT. Terms are net 30 days. Purchase orders are accepted subject only to the conditions and warranty in this catalog despite conditions or statements to the contrary contained in any purchase order. Prices, specifications, and engineering information are subject to change without notice.



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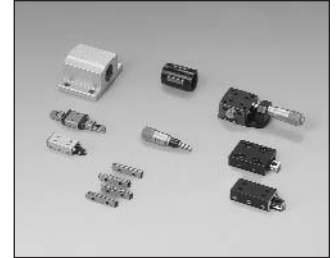
MINIATURE AND SUBMINIATURE PRODUCTS

Each of Tusk's product types include a subminiature member useful in today's increasingly small mechanical mechanisms in modern industrial machinery and instrumentation

Miniature And Subminiature Slides:

Small in size, lightweight miniature linear bearings and components feature the same high quality materials and construction as used in the larger versions

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ECONOMICAL LINEAR SLIDES

For guiding, supporting and reducing friction in reciprocating mechanisms. Tusk ball and crossed roller slides utilize a straight line design which allows for low friction characteristics and inexpensive production methods resulting in an economical alternative in linear bearing design.

Linear Ball Bearing Slide assemblies:

High precision subminiature, easy to install and use, ball slides reduce friction between moving parts in all types of automated equipment. Sizes range from: 0.23" high, 0.38" wide, 0.75" long, load capacity 1.5 lbs. up to 1" high, 2.62" wide, 15" long, load capacity 205 lbs.

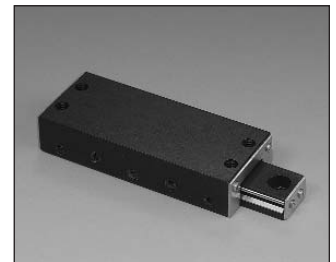
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Linear Crossed Roller Slides:

Overall dimensions and characteristics are the same as ball slides, however, crossed roller slides feature high capacity rollers and flat raceways to allow extremely smooth movement and 6-8 times the capacity of a similarly sized ball slide. Features include positive stops and travel range of 0.5" through 12".

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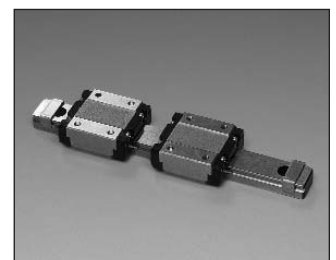
UNLIMITED TRAVEL SLIDES

Unlimited travel design allows a relatively small carriage to travel the entire length of the mating rail or shaft. The rolling elements, (balls) recirculate along on oval path entering and leaving the load zone as the slide moves. The linear ball bearing and shaft type is available as separate components or complete assemblies. the square rail slide guide type can be purchased with more than one carriage on the common rail to add versatility and stability.

Recirculating Slide Guides:

The DP type consists of a block and a guide rail, both having two R-shape raceway grooves machined by precision grinding. The block consists of a main body having raceway grooves and a resin return cap ensuring smooth circulation of balls. These precision steel balls roll in the respective raceway groove with contact at four points.

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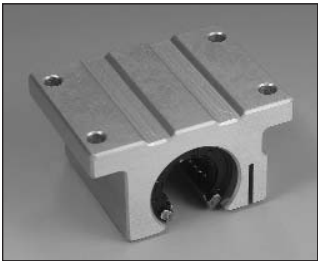
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Recirculating Ball Bearings:

A wide range of linear bearings are offered: self-aligning, integrally sealed, resin retainers, open and adjustable. With diameters ranging from 1/4" to 1", the new "Ultimate Series" adds the advantage of being completely self aligning (1.0 degrees in all directions) allowing the designer to allow for misalignment without the extra expense of precision machining of the mounting rails and supports.

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Recirculating Linear Ball Bearing Pillow Blocks:

Linear bearings are mounted in easily installed aluminum pillow block housings. The bearings range from 3/16" to 1" inner diameter and are offered in closed, open and adjustable styles in either high precision or the new "Ultimate Series" self-aligning bearing.

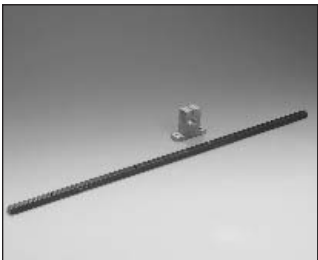
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Linear Bearing Shafts:

AISI C- 1060 case hardened and ground shafts are available in steel and stainless 1/4" through 2" diameter cut to length. These linear bearing grade shafts are ideal for use with Tusk linear bushing bearings and pillow blocks. Straight, rigid and smooth, these shafts offer low friction linear travel and high wear resistance for long life and high precision. Shafts are available plain or predrilled for mounting to supports.

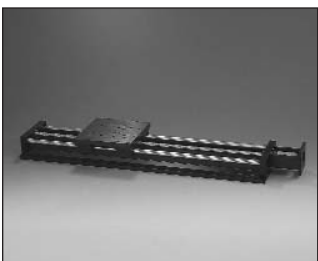
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Linear Shaft Supports And Hangers:

Aluminum shaft hangers offer predrilled mounting holes and locking fastener to assure precise support and location of linear bearing shafting. Continuous 24" or 48" aluminum shaft supports are ideal for use over long spans where continuous support of open linear bearings is desired. Plain or predrilled models are offered. A low profile series of predrilled continuous supports is available in steel for high rigidity and straightness.

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Linear Ball Bearing Assemblies:

LBA assemblies provide a stable linear bearing platform suitable for mating with a lead screw and motor drive or air cylinder system.

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Actuated Stages

Tusk actuated stages are multi-axis positioners available with manual micrometer head actuators for accurate measurement of stage location and settings. The AutoSlide lead screw actuated positioners are motor ready with coupling and nema motor frame bracket.

Auto Slide:

Motor ready, lead screw drive, zero backlash coupling, one, two, or three axis, standard mounting hole pattern carriage and base.

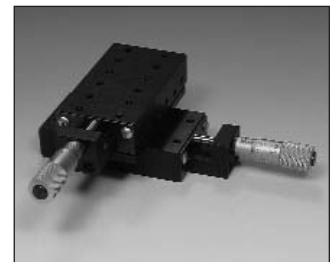
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Multi-Axis Positioning Slides (Ball or Crossed Roller):

Micrometer driven and spring loaded; stages are available in one, two, or three axis configurations with either ball or roller internal bearings for precise intermittent positioning of probes, sensors, mirrors, cameras, focusing lenses and anything which needs to be located in space precisely and accurately. Subminiature model BPS-X features 0.25" travel and a 0.75" work surface.

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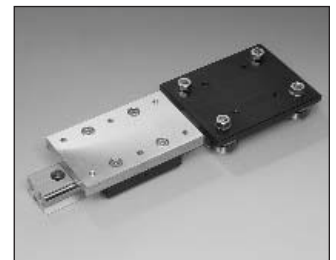
EXTENDED TRAVEL SLIDES

Short carriages move over the precision twin rail system. Adjustable preload allows manipulation of play in the carriage. Patented alignment design assures consistent rail spacing. An extremely low cost approach to precise linear motion

Econo-Rail Slides:

Twin rail with interchangeable carriages. Up to 9 feet of travel. Recirculating or precision roller configuration

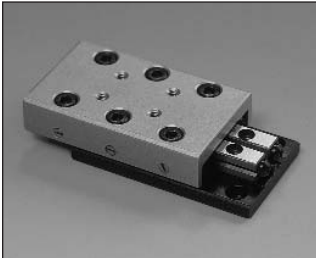
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HIGHEST CAPACITY SLIDES

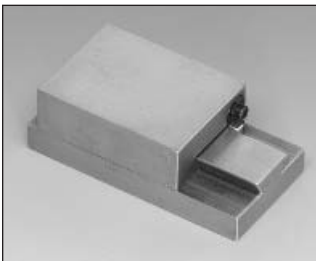
Ideal for impact and overhanging loads, Tusk heavy duty slides utilize dovetail plain bearing design with tapered gibs or crossed roller slide design.



Heavy Duty Crossed Roller Tables:

Aluminum base and carriage and precision hardened and ground V-grooved rails give the RT series of crossed roller tables the greatest load capacity in the Tusk line. Straight line accuracy of 0.0001" per inch of travel and a maximum capacity of 723lbs. allows the designer to accurately guide loads and forces. Sizes range from 0.590" high, 1.181" wide, 1.969" long to 1.7" high, 3.9" wide and 14" long.

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DoveTail Slides

Tusk DoveTail Slides are made of continuous cast G2 40,000 PSI pearlitic grey iron. This material may be milled, drilled, tapped, etc. for altering or mounting purposes. Short carriages with long travel, up to 12 inches, or long carriages with short base, all in one "Precision DoveTail Slide", that may be mounted in any position.

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HIGHEST ACCURACY LINEAR SLIDES

Parallelism of 80 millions of an inch is achievable with the CR series The EA and LT series offer precise runout and straightline accuracy.



Crossed Roller Rail Sets:

Crossed roller rail sets allow custom installation of precise smooth linear motion in your assembly. Each set consists of four v-grooved rails which are tapped and counter-bored, two sets of rollers in retainers and four end stops. The rollers are alternately opposed at 45 degrees to allow loads from any direction.

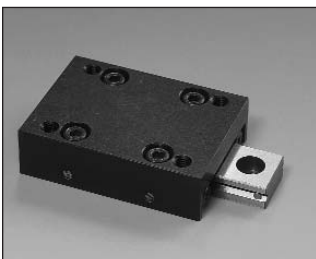
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Extreme Accuracy Ball / Roller Slides:

The extreme accuracy series is available in ball or crossed roller design with repeatability of 0.00002 inches and straight line accuracy of 0.00004 inch/per inch of travel. The flanged base type provides additional stability.

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Low Profile Crossed Roller Tables:

An aluminum carriage and flangeless base distinguishes this low profile series. The base rail consists of one double V-grooved rail which interfaces with the two outer rails attached to the carriage. Extremely smooth low friction travel makes this series ideal for high rate reciprocating mechanisms. Interchangeable with those of other manufacturers. Three low profile heights are offered: 0.315", 0.472", and 0.630" with travel up to 5".

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LINEAR BEARING LUBRICANTS

Ideal for reciprocating mechanisms improves the life and performance of all types of linear bearings and moving parts.

Lubricants:

Linear lubricant is a colorless and odorless Teflon/mineral oil liquid available in one ounce tubes. Slidicone is a silicone based spray lube.

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MISCELLANEOUS COMPONENTS

Linear actuation components allow precise measurable movement.

TLS Series Anti-Backlash Lead Screw Assemblies:

Assemblies offer high accuracy, long life and smooth quiet operation. The anti-backlash nuts are self lubricating and wear compensating.

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Micrometer Heads:

Satin chrome finish, resists glare and corrosion. Lock nut available, locks spindle at any reading. Travel range from 1/4 inch to 2 inch. Tusk micrometer heads offer easy to read distinct figures for precise settings. Select our micrometer heads for machine tools, fixtures, special gages and all applications requiring micrometer accuracy in settings and adjustment.

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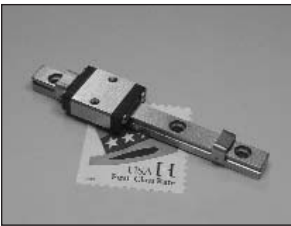
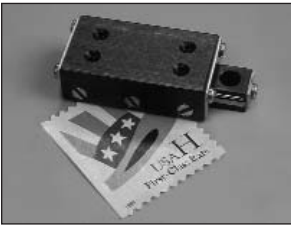
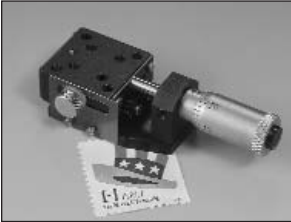


Technical Information

Ratings, formulas for life / load / moment capacity

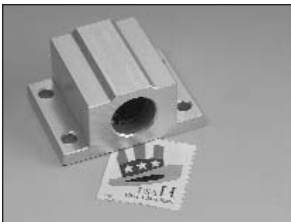
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Miniature Linear Slides



Miniature Slides and Automation Components				
PART NUMBER	HEIGHT	WIDTH	LENGTH	PAGE
BPS	.53"	.75"	2.28"	44
BX1-1	.23"	.38"	.75"	10
RX1-1	.32"	.56"	1.06"	12
MK1-1	.354"	.354"	1.445"	76
TD.5-1-40	.236"	.472"	1.57"	14

Miniature Linear Slides



Miniature Slides and Automation Components				
PART NUMBER	HEIGHT	WIDTH	LENGTH	PAGE
RT1-1	.59"	1.181"	1.96"	57
CR1020	.158"	.335"	.788"	61
LT1-1	.315"	.788"	.984"	68
UWA4WW	.813"	1.625"	1.188"	25
DT 1.5-10	1.0"	1.5"	3"	59

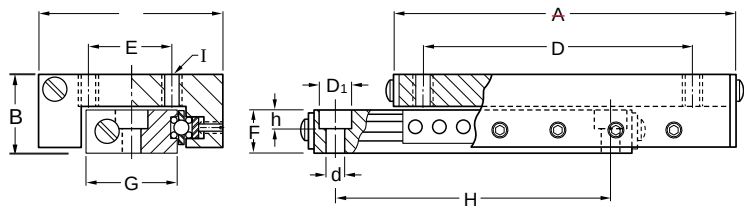


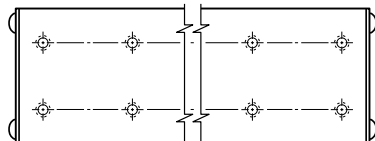
Economical Slides

Linear Ball Bearing Slide Assemblies

* Minimum Centered around Mean Position											
MODEL	TRAVEL*	LOAD CAPACITY LB	WEIGHT OZ	LENGTH A	HEIGHT B	WIDTH C	CARRIAGE HOLE SPACING		BASE DIMENSIONS		
							D	E	HEIGHT F	WIDTH G	HOLE SPACING H
BX1-1	.50	1.5	.10	.75	.23	.38	.375	.156	.135	.156	.375
BX1-2	1.00	1.5	.15	1.25	.23	.38	.875	.156	.135	.156	.875
BX1-3	1.50	1.5	.25	1.75	.23	.38	1.375	.156	.135	.156	1.375
BX2-1	.50	4	.30	1.06	.32	.56	.625	.218	.187	.250	.750
BX2-2	1.00	8	.50	2.06	.32	.56	1.625	.218	.187	.250	1.375
BX2-3	2.00	12	.80	3.06	.32	.56	2.625	.218	.187	.250	2.375
BX2-4	3.00	14	1.1	4.06	.32	.56	3.625	.218	.187	.250	3.375
BX2-5	4.00	16	1.2	5.06	.32	.56	4.625	.218	.187	.250	3.500
BX2-6	5.00	18	1.5	6.06	.32	.56	5.625	.218	.187	.250	4.500
BX3-1	.50	8	.40	1.06	.41	.75	.625	.375	.250	.375	.750
BX3-2	1.00	10	.90	2.06	.41	.75	1.625	.375	.250	.375	1.375
BX3-3	2.00	12	1.3	3.06	.41	.75	2.625	.375	.250	.375	2.375
BX3-4	3.00	14	1.7	4.06	.41	.75	3.625	.375	.250	.375	3.375
BX3-5	4.00	16	2.1	5.06	.41	.75	4.625	.375	.250	.375	3.500
BX3-6	5.00	18	2.5	6.06	.41	.75	5.625	.375	.250	.375	4.500
BX3.5-1	.50	10	1.2	1.56	.50	1.00	1.250	.437	.250	.500	1.250
BX3.5-2	1.00	12	1.7	2.56	.50	1.00	2.250	.437	.250	.500	2.250
BX3.5-2.5	1.50	13	1.9	3.06	.50	1.00	2.750	.437	.250	.500	2.750
BX3.5-3	2.00	15	2.2	3.56	.50	1.00	3.250	.437	.250	.500	3.250
BX3.5-4	3.00	18	5.0	4.56	.50	1.00	4.250	.437	.250	.500	4.250

SERIES	BX1	BX2	BX3	BX3.5	BX4	BX5	BX6	BX7
CARRIAGE 4 HOLES (I)	2-56 UNC-2B THREAD	2-56 UNC-2B THREAD	4-40 UNC-2B THREAD	6-32 UNC-2B THREAD	6-32 UNC-2B THREAD	6-32 UNC-2B THREAD	6-32 UNC-2B THREAD	10-32 UNF-2B THREAD
BASE HOLE d	2-56 UNC	.101	.125	.125	.157	.157	.157	.204
BASE HOLE D ₁	-	.144	.198	.198	.244	.244	.244	.328
BASE HOLE h	-	.100	.125	.125	.150	.150	.150	.205
COUNTER BORE SCREW SIZE	N/A	#2	#4	#4	#6	#6	#6	#10





MODEL
BX7-6
BX7-7
BX7-8

OF HOLES
**6
**8
**10

SPECIFICATIONS:

Straight Line Accuracy
.0005"/inch of travel

Coefficient of Friction
0.003 typical

Positional Repeatability
.0002"

Construction
Aluminum carriage and base,
hardened steel shafts and balls,
mild steel end caps.

Finish
Clear anodize standard
Black anodize available at
no extra cost.

*Minimum Centered around Mean Position							CARRIAGE HOLE SPACING		BASE DIMENSIONS		
MODEL	TRAVEL	LOAD CAPACITY LB	WEIGHT OZ	LENGTH A	HEIGHT B	WIDTH C	D	E	HEIGHT F	WIDTH G	HOLE SPACING H
BX4-1	.75	15	1.3	1.56	.53	1.06	1.250	.437	.312	.500	1.125
BX4-2	1.50	18	2.3	2.56	.53	1.06	2.250	.437	.312	.500	2.125
BX4-3	2.00	20	3.0	3.56	.53	1.06	3.250	.437	.312	.500	3.125
BX4-4	3.00	25	5.2	4.56	.53	1.06	4.000	.437	.312	.500	3.250
BX4-5	4.00	30	6.0	6.00	.53	1.06	5.500	.437	.312	.500	4.000
BX4-6	6.00	35	7.0	8.00	.53	1.06	7.500	.437	.312	.500	5.000
BX4-7	8.00	40	8.0	10.00	.53	1.06	9.500	.437	.312	.500	7.000
BX5-1	1.00	15	2.9	2.00	.62	1.50	1.375	.625	.340	.750	1.500
BX5-2	2.00	20	4.3	3.00	.62	1.50	2.375	.625	.340	.750	2.500
BX5-3	3.00	25	6.0	4.00	.62	1.50	3.375	.625	.340	.750	3.500
BX5-3.5	3.50	30	6.7	5.00	.62	1.50	4.375	.625	.340	.750	3.500
BX5-4	4.00	35	8.2	6.00	.62	1.50	5.375	.625	.340	.750	4.000
BX5-5	6.00	45	9.2	8.00	.62	1.50	7.375	.625	.340	.750	5.000
BX5-6	8.00	55	11.5	10.00	.62	1.50	9.375	.625	.340	.750	7.000
BX6-1	1.00	20	4.0	2.00	.75	1.75	1.375	.875	.400	.875	1.625
BX6-1.5	1.50	30	6.0	2.75	.75	1.75	2.125	.875	.400	.875	2.250
BX6-2	2.00	42	6.5	3.25	.75	1.75	2.625	.875	.400	.875	2.750
BX6-3	3.00	52	8.0	4.00	.75	1.75	3.375	.875	.400	.875	3.500
BX6-4	4.00	60	11.8	6.00	.75	1.75	5.500	.875	.400	.875	4.000
BX6-5	6.00	75	15.7	8.00	.75	1.75	7.500	.875	.400	.875	5.000
BX6-6	8.00	90	19.5	10.00	.75	1.75	9.500	.875	.400	.875	7.000
BX7-.5	1.00	30	10.0	2.62	1.00	2.62	2.125	1.250	.625	1.500	2.125
BX7-1	1.50	35	10.0	2.62	1.00	2.62	1.625	1.250	.625	1.500	1.875
BX7-2	2.00	62	15.0	4.00	1.00	2.62	3.000	1.250	.625	1.500	3.375
BX7-3	3.00	88	20.8	5.00	1.00	2.62	4.000	1.250	.625	1.500	4.375
BX7-4	4.00	118	27.2	6.00	1.00	2.62	5.000	1.250	.625	1.500	5.375
BX7-5	5.00	135	31.0	8.00	1.00	2.62	7.000	1.250	.625	1.500	7.375
BX7-6	6.00	150	35.2	9.00	1.00	2.62	**3.000	1.250	.625	1.500	7.000
BX7-7	9.00	185	46.5	12.00	1.00	2.62	**3.000	1.250	.625	1.500	10.000
BX7-8	12.00	205	58.0	15.00	1.00	2.62	**3.000	1.250	.625	1.500	13.000



Economical Slides

Crossed Roller Slide Assemblies

LOAD RATINGS AND LIFE ESTIMATES

Crossed roller slide rated load capacities may be a mass load on a horizontal slide, or a force load normal to the mounting surface in any position. The rated load must be centered and distributed over the slide, and the base must be supported on a flat mounting surface. Avoid concentrated or distributed bending forces.

At rated load capacity and moderate speeds, expected life is 10 million inches of travel. The expected life at one half the rated load is 100 million inches.

LUBRICATION

The crossed roller slides are lightly lubricated during assembly. Additional lubrication is required for speeds above 1200 inches/min. and is advisable at lower speeds where high loads are applied in continuous duty applications.

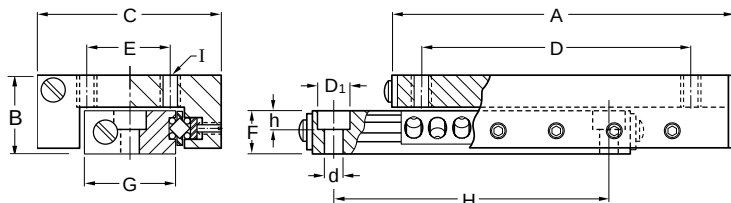
MOUNTING

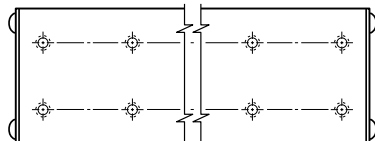
Mount the crossed roller slides on flat surfaces to provide full support to the base.

* Minimum Centered Around Mean Position

MODEL	TRAVEL*	LOAD CAPACITY LB	WEIGHT OZ	LENGTH A	HEIGHT B	WIDTH C	CARRIAGE HOLE SPACING		BASE DIMENSIONS		
							D	E	HEIGHT F	WIDTH G	HOLE SPACING H
RX1-1	.50	30	0.4	1.06	.32	.56	.625	.218	.187	.250	.750
RX1-2	1.00	55	0.6	2.06	.32	.56	1.625	.218	.187	.250	1.375
RX1-3	2.00	66	0.9	3.06	.32	.56	2.625	.218	.187	.250	2.375
RX1-4	3.00	71	1.2	4.06	.32	.56	3.625	.218	.187	.250	3.375
RX1-5	4.00	80	1.3	5.06	.32	.56	4.625	.218	.187	.250	3.500
RX1-6	5.00	90	1.6	6.06	.32	.56	5.625	.218	.187	.250	4.500
RX2-1	.50	48	0.5	1.06	.41	.75	.625	.375	.250	.375	.750
RX2-2	1.00	78	1.0	2.06	.41	.75	1.625	.375	.250	.375	1.375
RX2-3	2.00	94	1.4	3.06	.41	.75	2.625	.375	.250	.375	2.375
RX2-4	3.00	98	1.8	4.06	.41	.75	3.625	.375	.250	.375	3.375
RX2-5	4.00	104	2.2	5.06	.41	.75	4.625	.375	.250	.375	3.500
RX2-6	5.00	108	2.6	6.06	.41	.75	5.625	.375	.250	.375	4.500
RX2.5-1	.50	70	1.3	1.56	.50	1.00	1.250	.437	.250	.500	1.250
RX2.5-2	1.00	78	1.8	2.56	.50	1.00	2.250	.437	.250	.500	2.250
RX2.5-3	1.50	78	2.0	3.06	.50	1.00	2.750	.437	.250	.500	2.750
RX2.5-4	2.00	83	2.3	3.56	.50	1.00	3.250	.437	.250	.500	3.250
RX2.5-5	3.00	90	2.8	4.56	.50	1.00	4.250	.437	.250	.500	4.250

SERIES	RX1	RX2	RX2.5	RX3	RX4	RX5	RX6
CARRIAGE 4 HOLES (I)	2-56 UNC-2B THREAD	4-40 UNC-2B THREAD	6-32 UNC-2B THREAD	6-32 UNC-2B THREAD	6-32 UNC-2B THREAD	6-32 UNC-2B THREAD	10-32 UNF-2B THREAD
BASE HOLE d	.101	.125	.125	.157	.157	.157	.204
BASE HOLE D1	.144	.198	.198	.244	.244	.244	.328
BASE HOLE h	.100	.125	.125	.150	.150	.150	.205
COUNTER BORE SCREW SIZE	#2	#4	#4	#6	#6	#6	#10





MODEL
 RX6-5
 RX6-6
 RX6-7

OF HOLES
 ** 6
 ** 8
 ** 10

SPECIFICATIONS:

Straight line accuracy	0.0001"/inch of travel
Positional repeatability	0.0001"
Coefficient of friction	0.003, typical
Construction	Aluminum carriage and base, hardened steel rods and rollers, stainless steel end caps.
Finish	Black anodize

* Minimum Centered Around Mean Position											
MODEL	TRAVEL*	LOAD CAPACITY LB	WEIGHT OZ	LENGTH A	HEIGHT B	WIDTH C	CARRIAGE HOLE SPACING		BASE DIMENSIONS		
							D	E	HEIGHT F	WIDTH G	HOLE SPACING H
RX3-.5	.75	110	1.4	1.56	.53	1.06	1.250	.437	.312	.500	1.125
RX3-1	1.50	132	2.4	2.56	.53	1.06	2.250	.437	.312	.500	2.125
RX3-2	2.00	220	3.1	3.56	.53	1.06	3.250	.437	.312	.500	3.125
RX3-3	3.00	264	5.3	4.56	.53	1.06	4.000	.437	.312	.500	3.250
RX3-4	4.00	285	6.1	6.00	.53	1.06	5.500	.437	.312	.500	4.000
RX3-5	6.00	298	7.2	8.00	.53	1.06	7.500	.437	.312	.500	5.000
RX3-6	8.00	320	8.2	10.00	.53	1.06	9.500	.437	.312	.500	7.000
RX4-1	1.00	132	3.0	2.00	.62	1.50	1.375	.625	.340	.750	1.500
RX4-2	2.00	176	4.5	3.00	.62	1.50	2.375	.625	.340	.750	2.500
RX4-3	3.00	176	6.2	4.00	.62	1.50	3.375	.625	.340	.750	3.500
RX4-3.5	3.50	210	6.9	5.00	.62	1.50	4.375	.625	.340	.750	3.500
RX4-4	4.00	308	8.4	6.00	.62	1.50	5.375	.625	.340	.750	4.000
RX4-5	6.00	360	9.4	8.00	.62	1.50	7.375	.625	.340	.750	5.000
RX4-6	8.00	413	11.7	10.00	.62	1.50	9.375	.625	.340	.750	7.000
RX5-1	1.00	132	4.1	2.00	.75	1.75	1.375	.875	.400	.875	1.625
RX5-1.5	1.50	150	6.1	2.75	.75	1.75	2.125	.875	.400	.875	2.250
RX5-2	2.00	176	6.6	3.25	.75	1.75	2.625	.875	.400	.875	2.750
RX5-3	3.00	176	8.2	4.00	.75	1.75	3.375	.875	.400	.875	3.500
RX5-4	4.00	308	12.1	6.00	.75	1.75	5.500	.875	.400	.875	4.000
RX5-5	6.00	375	16.0	8.00	.75	1.75	7.500	.875	.400	.875	5.000
RX5-6	8.00	450	19.8	10.00	.75	1.75	9.500	.875	.400	.875	7.000
RX6-.5	1.00	225	10.3	2.62	1.00	2.62	2.125	1.250	.625	1.500	2.125
RX6-1	1.50	264	10.3	2.62	1.00	2.62	1.625	1.250	.625	1.500	1.875
RX6-2	2.00	352	16.0	4.00	1.00	2.62	3.000	1.250	.625	1.500	3.375
RX6-3	3.00	440	22.4	5.00	1.00	2.62	4.000	1.250	.625	1.500	4.375
RX6-4	4.00	440	28.8	6.00	1.00	2.62	5.000	1.250	.625	1.500	5.375
RX6-4.5	5.00	473	33.0	8.00	1.00	2.62	7.000	1.250	.625	1.500	7.375
RX6-5	6.00	704	38.4	9.00	1.00	2.62	**3.000	1.250	.625	1.500	7.000
RX6-6	9.00	740	48.2	12.00	1.00	2.62	**3.000	1.250	.625	1.500	10.000
RX6-7	12.00	779	61.0	15.00	1.00	2.62	**3.000	1.250	.625	1.500	13.000

Recirculating Ball Slide Guide



Accuracy

TD™ Miniature Linear Guides are available in 3 classes of accuracy. Precision (P), High (H), and Normal (N).

Speed

The maximum speed of the TD™ Miniature Linear Guide is $V_{\max} = 3 \text{ m/s}$ and the maximum acceleration $a_{\max} = 250 \text{ m/s}^2$.

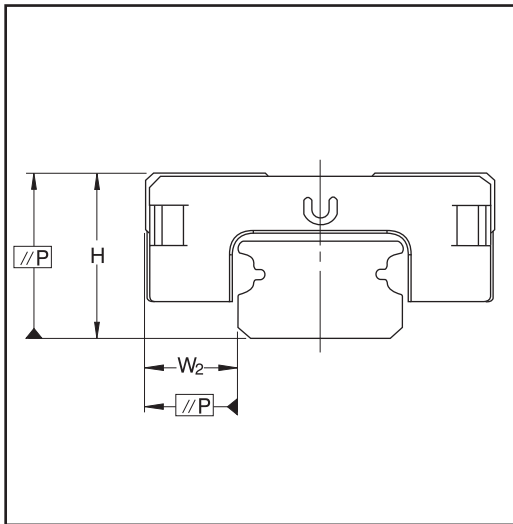


Table of Accuracy

Accuracy classes (μm)		Precision P	High H	Normal N
H Tolerance	H	± 10	± 20	± 40
Variation of height for different carriages on the same rail	ΔH	7	15	25
W Tolerance	W_2	± 15	± 25	± 40
Variation of width for different carriages on the same rail	ΔW_2	10	20	30

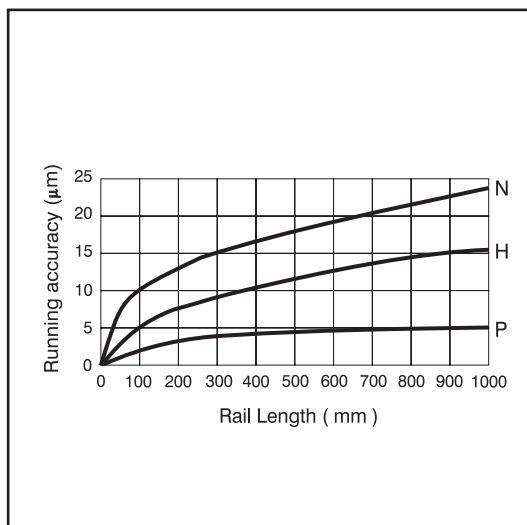
Preload

TD™ Miniature Linear Guides have 2 classes of preload. Proper preload can enhance the performance of the rigidity, precision, and torque resistance, but will also affect life, and friction.

Permissible Operating Temperature

TD™ Linear Guides can operate in a temperature range of -40°C - 80°C and, for short periods can reach 100°C .

Parallelism



Preload

Preload Classes	Preload	Clearance (μm)					
		Size					
		3	5	7	9	12	15
standard	Small clearance to light preload	+1-0	+1.5-0	+2-0	+2-0	+3-0	+5-0
V1	Light preload 0.02C	0-(-.5)	0-(-1)	0-(-3)	0-(-4)	0-(-6)	0-(-10)

Technical Data

The TD Linear Guide must be lubricated before use.

Grease Lubrication

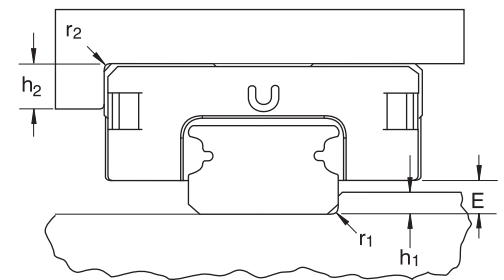
Mineral oil based lithium-soap grease with a viscosity between (ISO VG32-100) is recommended.

Oil Lubrication

Mineral oil CLP or CGLP or HLP with viscosity ranges between ISO VG32-100 for a working temperature between 0°C - 70°C is recommended. (We recommend ISO VG 10 for use in lower temperature environment.)

Moment Load Ratings

MODEL	M1	M2	M3	MODEL	M1	M2	M3
TD3	0.6	0.4	0.4	TD3W	1.6	0.9	0.9
TD3L	0.9	1.1	1.1	TD3WL	2.5	1.9	1.9
TD5	1.7	1	1	TD5W	4.6	2.2	2.2
TD5L	2.4	2.1	2.1	TD5WL	6.8	4.1	4.1
TD7	5.2	3.3	3.3	TD7W	7.8	7.3	7.3
TD7L	9	7.7	7.7	TD7WL	22.65	14.9	14.9
TD9	11.7	6.4	6.4	TD9W	33.2	13.7	13.7
TD9L	18.2	12.4	12.4	TD9WL	45.9	26.7	26.7
TD12	21.5	9.5	9.5	TD12W	63.7	26.3	26.3
TD12L	34.9	16	16	TD12WL	95.6	56.4	56.4
TD15	43.6	10.9	10.9	TD15W	127.9	45.7	45.7
TD15L	70	26.9	26.9	TD15WL	191.9	93.1	93.1



Mounting

Height and Fillet of the Fitting Edge

To avoid any interference, the corner of the fitting edge with a recess is recommended. If not so, please refer to the table to the right for the fillet of the fitting edge corner and the height of the fitting edge.

Dimensions of the fitting edge

Dimension	h_1	r_1 max	h_2	r_2 max	E	Dimension	h_1	r_1 max	h_2	r_2 max	E
3	0.5	0.2	1.5	0.3	0.7	3W	0.7	0.2	1.7	0.3	1
5	1.2	0.2	1.9	0.3	1.5	5W	1.2	0.2	2	0.3	1.5
7	1.2	0.3	2.8	0.3	1.5	7W	1.2	0.3	2.8	0.3	2
9	1.5	0.3	3	0.3	2.2	9W	1.5	0.3	3	0.3	4.2
12	2.5	0.5	4	0.5	3	12W	2.5	0.5	4	0.5	4
15	2.5	0.5	4.5	0.5	4	15W	2.5	0.5	4.5	0.5	4

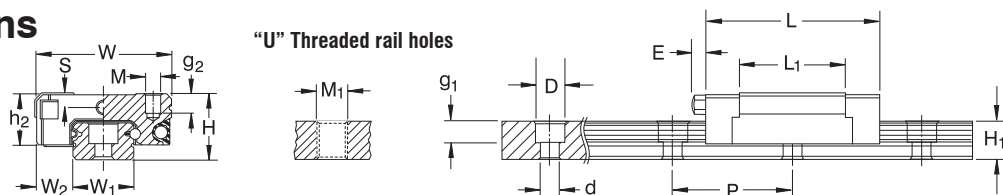
Mounting Surface

Surface roughness
The mounting surface should be ground or fine milled to reach a surface roughness Ra 1.6.

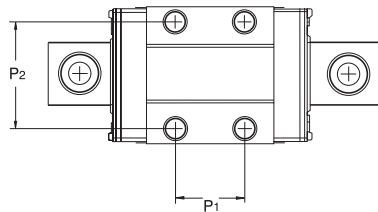
Screw Tightening Torque (Nm)

Screw grade	Steel	Cast Iron	Non Iron metal
12.9			
M2	0.6	0.4	0.3
M3	1.8	1.3	1.0
M4	4.0	2.5	2.0

Dimensions

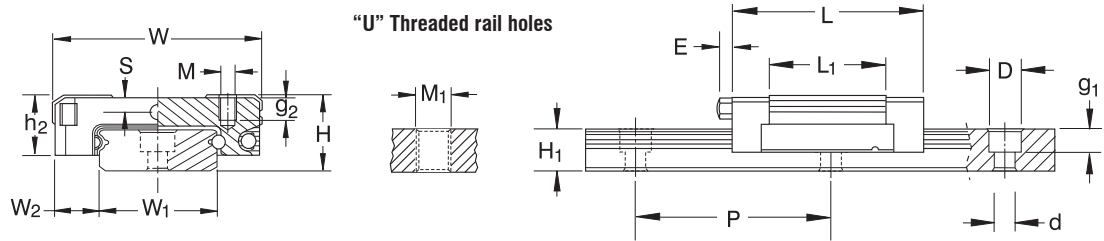


Size	Ass. Dimensions		Rail Dimensions (mm)						"U" Threaded rail holes
	H	W ₂	W ₁	H ₁	P	D	d	g ₁	M ₁
TD3	4	2.5	3	2.6	10	-	-	-	M1.6
TD3L	4	2.5	3	2.6	10	-	-	-	M1.6
TD5	6	3.5	5	3.5	15	3.5	2.4	1	M3x0.5
TD5L	6	3.5	5	3.5	15	3.5	2.4	1	M3x0.5
TD7	8	5	7	4.7	15	4.2	2.4	2.3	M3x0.5
TD7L	8	5	7	4.7	15	4.2	2.4	2.3	M3x0.5
TD9	10	5.5	9	5.5	20	6	3.5	3.5	M4x0.7
TD9L	10	5.5	9	5.5	20	6	3.5	3.5	M4x0.7
TD12	13	7.5	12	7.5	25	6	3.5	3.5	M4x0.7
TD12L	13	7.5	12	7.5	25	6	3.5	3.5	M4x0.7
TD15	16	8.5	15	9.5	40	6	3.5	4.5	M4x0.7
TD15L	16	8.5	15	9.5	40	6	3.5	4.5	M4x0.7

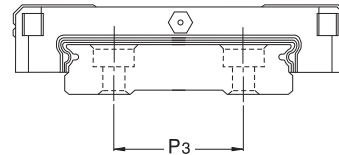
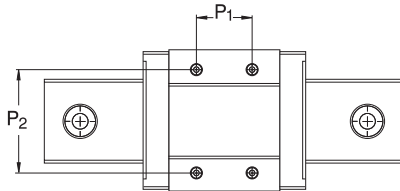


Size	Carriage Dimensions (mm)										Load Capacities (N)		Weight	
	W	L	L ₁	P ₁	P ₂	E	h ₂	M	g ₂	S	C(dyn.)	Co(stat.)	Block g	Rail g/m
TD3	8	11.4	6.7	3.5	-	-	3.3	M1.6	1.1	-	190	310	.9	53
TD3L	8	15.7	11	5.5	-	-	3.3	M2	1.1	-	295	575	1.2	53
TD5	12	16.1	10	-	8	-	4.5	M2	1.5	1.1	335	550	3	120
TD5L	12	19.6	13.5	7	-	-	4.5	M2.6	2.0	1.1	470	900	3.3	120
TD7	17	21.0	14.3	8	12	-	6.5	M2	2.5	1.7	890	1400	9	230
TD7L	17	32.4	21.8	13	12	-	6.5	M2	2.5	1.7	1310	2440	16	230
TD9	20	30.8	20.5	10	15	-	7.8	M3	2.8	2.2	1570	2495	17	330
TD9L	20	40.9	30.8	16	15	-	7.8	M3	2.8	2.2	2135	3880	25	330
TD12	27	35.4	22	15	20	-	10	M3	3.5	2.6	2308	3465	34	600
TD12L	27	47.6	34	20	20	-	10	M3	3.5	2.6	3240	5630	51	600
TD15	32	43.5	27.2	20	25	3.6	12	M3	5.5	2.8	3810	5590	53	1010
TD15L	32	60.1	44	25	25	3.6	12	M3	5.5	2.8	5350	9080	90	1010

Wide Type Dimensions



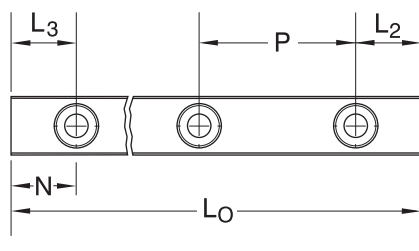
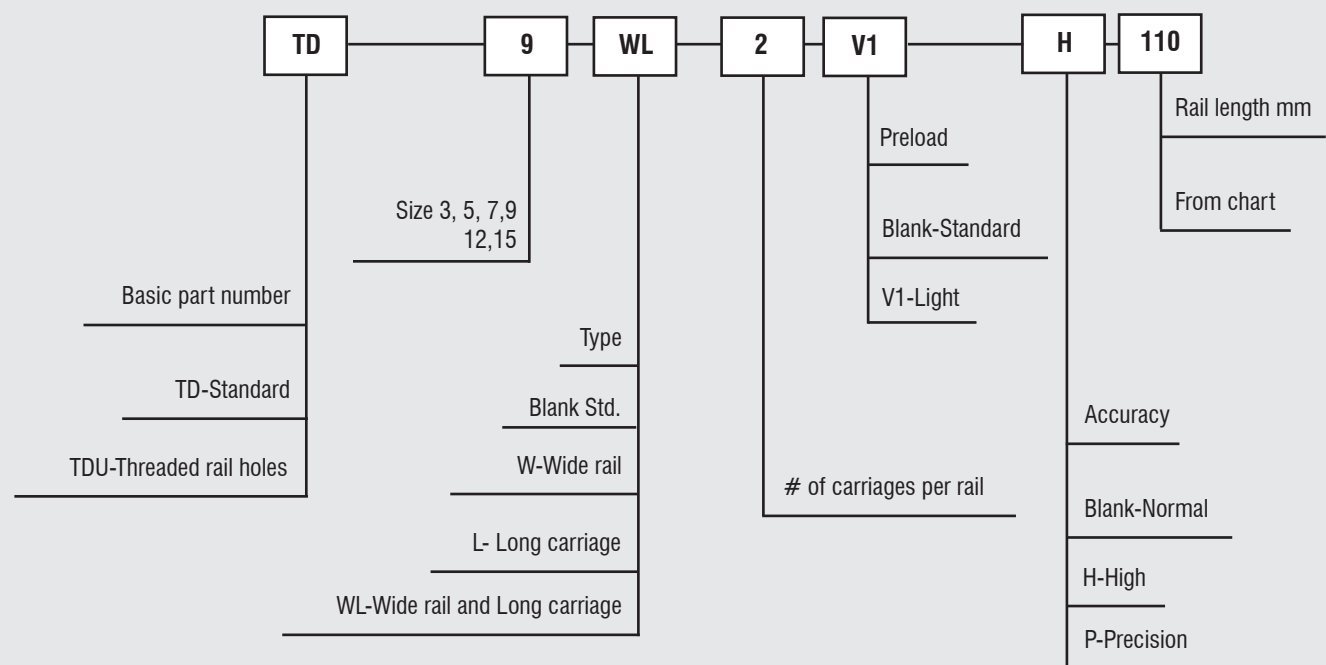
Size	Ass. Dimensions		Rail Dimensions (mm)							"U" Threaded Rail Holes
	H	W ₂	W ₁	H ₁	P	P ₃	D	d	g ₁	M ₁
TD3W	4.5	3	6	2.6	15	—	4	2.4	1.5	—
TD3WL	4.5	3	6	2.6	15	—	4	2.4	1.5	—
TD5W	6.5	3.5	10	4	20	—	5.5	3	3	M4X0.7
TD5WL	6.5	3.5	10	4	20	—	5.5	3	3	M4X0.7
TD7W	9	5.5	14	5.2	30	—	6	3.5	3.5	M4x0.7
TD7WL	9	5.5	14	5.2	30	—	6	3.5	3.5	M4X0.7
TD9W	12	6	18	7.5	30	—	6	3.5	3.5	M4x0.7
TD9WL	12	6	18	7.5	30	—	6	3.5	3.5	M4x0.7
TD12W	14	8	24	8.5	40	—	8	4.5	4.5	M4x0.7
TD12WL	14	8	24	8.5	40	—	8	4.5	4.5	M4x0.7
TD15W	16	9	42	9.5	40	23	8	4.5	4.5	M5x0.8
TD15WL	16	9	42	9.5	40	23	8	4.5	4.5	M5x0.8



Size	Carriage Dimensions (mm)										Load Capacities (N)		Weight	
	W	L	L ₁	P ₁	P ₂	E	h ₂	M	g ₂	S	C(dyn.)	Co(stat.)	Carriage g	Rail g/m
TD3W	12	15.2	10	4.5	—	—	3.5	M2	1.6	0.8	280	530	2.4	130
TD3WL	12	20.1	15	8	—	—	3.5	M2	1.6	0.8	370	800	3.4	130
TD5W	17	21.1	15.1	6.5	13	—	5	M2.5	1.5	1.2	475	900	5.9	280
TD5WL	17	27.2	21.2	11	13	—	5	M2.5	1.5	1.2	615	1315	7.5	280
TD7W	25	31.6	21.2	10	19	—	7	M3	3	1.6	1180	2095	17	460
TD7WL	25	40.6	30.1	19	19	—	7	M3	3	1.6	1570	3140	31	460
TD9W	30	39.2	27.4	12	21	—	8.6	M3	3	2	2030	3605	33	660
TD9WL	30	50.9	39.5	24	23	—	8.6	M3	3	2	2550	4990	47	660
TD12W	40	44.5	31	15	28	—	10	M3	3.5	3	3065	5200	63	1200
TD12WL	40	59.4	46	28	28	—	10	M3	3.5	3	4070	7800	94	1200
TD15W	60	55.7	38.5	20	45	3.6	12	M4	4.5	3.5	5065	8385	128	2828
TD15WL	60	74.4	57.6	35	45	3.6	12	M4	4.5	3.5	6725	12580	210	2828

Ordering Information

Nomenclature



Rail Length- L ₀	Size					
	3W	5W	7W	9W	12W	15W
Single piece standard rail length (mm)	40	50	50	50	70	110
	55	70	80	80	110	150
	70	90	110	110	150	190
		110	140	140	190	230
		130	170	170	230	270
		150	200	200	270	310
		170	260	260	310	430
			290	290	390	550
				320	470	670
					550	790
Hole pitch (mm) P	15	20	30	30	40	40
L2, L3min	3	4	3	4	4	4
L2, L3max	10	15	25	25	35	35
Lo max	940	940	940	940	940	940
N	5	5	10	10	15	15

Rail Length- L ₀	Size					
	3	5	7	9	12	15
Single piece standard rail length (mm)	30	40	40	55	70	70
		55	55	75	95	110
	40	70	70	95	120	150
	50	85	85	115	145	190
		100	100	135	170	230
			130	155	195	270
				175	220	310
				195	245	350
				275	270	390
				375	320	430
					370	470
					470	550
					570	670
						870
Hole pitch (mm) P	10	15	15	20	25	40
L2, L3min	3	3	3	4	4	4
L2, L3max	5	10	10	15	20	35
Lo max	300	930	930	920	930	930
N	5	5	5	7.5	10	15

N = Nominal dimension from end to 1st counterbore hole for standard lengths listed above.

L2, L3 Min = For non standard lengths is minimum length from end to 1st counterbore.

L2, L3 Max = For non standard lengths is maximum length from end to 1st counterbore.

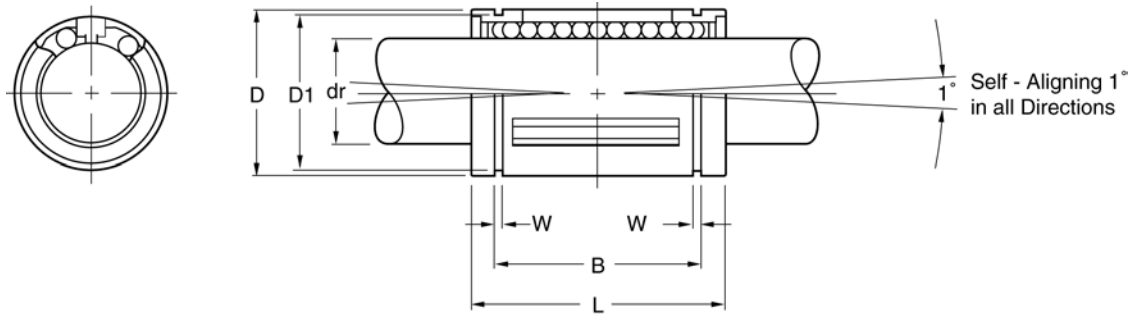
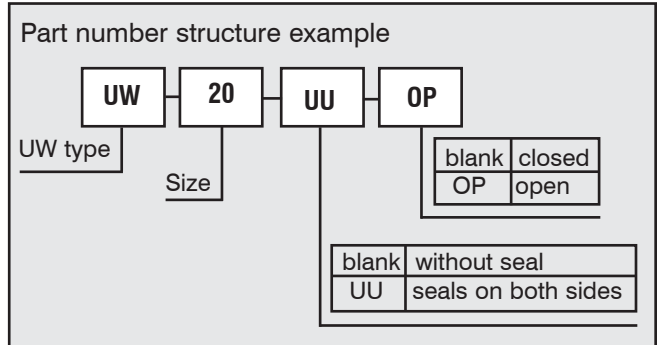


Unlimited Travel Slides

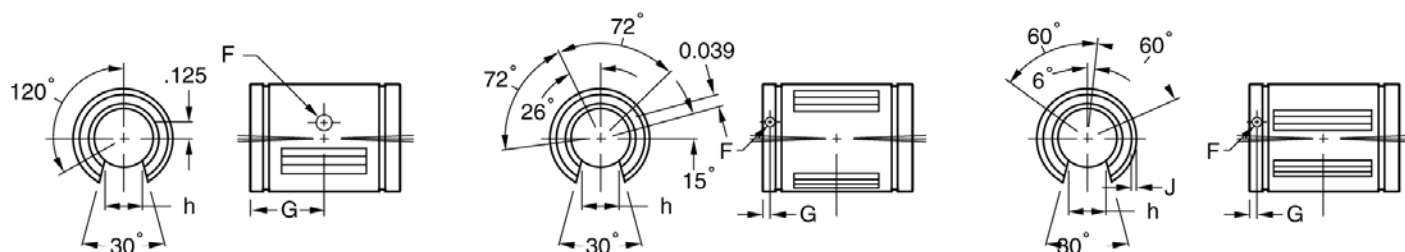
Ultimate Recirculating Ball Bearings

The New Ultimate from *Tusk* was designed and built to offer engineers and designers the latest in Linear Bearing Technology. **The Ultimate** from *Tusk* offers among the highest Linear Bearing capacities available in today's market while still addressing the most basic concerns such as interchangeability, life and coefficient of friction

The New Ultimate from *Tusk* is designed to be used in applications which require high capacity, self alignment for easy installation, and smooth/quiet travel. **The Ultimate** fits into standard housing bore specifications and is used in conjunction with standard FW and FW-SS shafting. The preload adjustment feature is standard on all **Ultimate** units.



part number						major dimensions				
UW	closed type		open type			dr	tolerance*	D	L	
	no.of ball circuits	mass lbs		no.of ball circuits	mass lbs					tolerance*
						inch	inch	lbs.	inch	inch
UW 3	4	.004	—	—	—	.1875	0 — .0005	.3750	.562	±.008
UW 4	4	.009	—	—	—	.2500		.5000	.750	0
UW 6	4	.014	—	—	—	.3750		.6250	.875	— .015
UW 8	4	.043	UW 8-OP	3	.033	.5000		.8750	1.250	0 — .020
UW 10	5	.103	UW 10-OP	4	.083	.6250		1.1250	1.500	
UW 12	6	.123	UW 12-OP	5	.102	.7500		1.2500	1.625	
UW 16	6	.265	UW 16-OP	5	.220	1.0000	0 — .0006 0/— .0008	1.5625	2.250	0/— .025 0/— .030 0/— .040
UW 20	6	.485	UW 20-OP	5	.419	1.2500		2.0000	2.625	
UW 24	6	.750	UW 24-OP	5	.639	1.5000		2.3750	3.000	
UW 32	6	1.411	UW 32-OP	5	.1.168	2.0000		3.0000	4.000	



The Ultimate is completely interchangeable with conventional *Tusk* Recirculating Ball Bearings as well as directly with all standard industry dimensions. This includes all basic dimensions of length*, working diameters, outside diameters as well as the less obvious dimensions such as distance between retainers, retention hole locations and retainer widths.

The New Ultimate from Tusk is offered in two basic configurations: Closed - Open

Both types are clearance adjustable and available with seals.

*The seals used in the New Ultimate Linear Bearings are integral to the bearing and are not an added after thought. The sealed versions do not add to overall length and are full floating. They are allowed to float on the shaft surface as the bearing aligns itself thus providing good shaft contact without generating unnecessary drag.

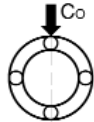
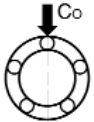
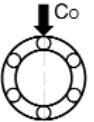
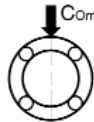
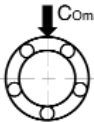
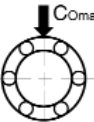
								basic load rating		nominal shaft diameter
B	W	D ₁	open type				dynamic C	static Co		
			tolerance	h	F	G			J	
inch	inch	inch	inch	inch	inch	inch	inch	lbs.	lbs.	inch
—	—	—	—	—	—	—	—	35	47	3/16
.515	0	.0390	.4687	—	—	—	—	60	80	1/4
.703	—.015	.0390	.5880	—	—	—	—	95	120	3/8
1.032	0 —.020	.0459	.8209	.313	.136	.6250	through	230	290	1/2
1.112		.0559	1.0590	.375	.105	.1250	.0390	400	500	5/8
1.272		.0559	1.1760	.438	.136	.1250	.0590	470	590	3/4
1.886		.0679	1.4687	.563	.136	.1250	.0470	850	1,060	1
2.011	0/—.025	.0679	1.8859	.625	.201	.1875	.0900	1,230	1,530	1-1/4
2.422	0/—.030	.0859	2.2389	.750	.201	.1875	.0900	1,480	1,850	1-1/2
3.206	0/—.040	.1029	2.8379	1.000	.265	.3125	through	2,430	3,040	2

Basic Static Load Rating:

If a slide is loaded when it is in a stationary condition or working at low speed, a permanent elastic deformation is formed on the rolling element. The deformation prevents smooth movement of the bushing. To eliminate this possibility, the static load rating must not be exceeded.

Relation Between Ball Circuits and Load Ratings:

The load rating of a slide varies according to the loaded position on the circumference. The value in the dimensional table indicates the lowest load rating with the load placed on top of one ball circuit. If the slide is used with two ball circuits loaded uniformly, the value will be greater. Table C-2 shows the load ratio for the number of ball circuits in each case.

Number Of Rows	4	5	6
Co (Load Rating Specified On The Table)			
Comax (Maximum Load Rating)			
Load Ratio Comax/Co	1,414	1,463	1,280

Clearance and Fit:

An appropriate clearance between the slide and shaft is required in ultimate operation. Inadequate clearance may cause early failure and/or poor, rough movement. Proper clearance is determined by shaft diameter and housing bore. Table C-4 shows Tusk's recommended tolerances of the shaft and housing bore in order to maintain the appropriate clearance.

Table C-4 Recommended tolerance for shaft O.D. and housing bore.

size	shaft dia.		housing bore.	
	dr inch	tol.(g6) inch	D inch	tol.(H7) inch
UW 3	.1875	—.0002	.3750	+.0005 0
UW 4	.2500		.5000	+.0007 0
UW 6	.3750	—.0006	.6250	
UW 8	.5000	—.0002	.8750	+.0008 0
UW10	.6250	—.0007	1.1250	
UW12	.7500	—.0003	1.2500	+.0010 0
UW16	1.0000	—.0008	1.5625	
UW20	1.2500	—.0004	2.0000	+.0012 0
UW24	1.5000	—.0010	2.3750	
UW32	2.0000	—.0004 —.0012	3.0000	

Shaft and Housing:

To Optimize performance, high precision shafts and housings are required.

1. Shaft: Dimensional tolerance, surface finish and hardness greatly affect the traveling performance of the Ultimate. The shaft must be manufactured to the following tolerances.

A. A surface finish of 0.4Ra or less.

B. Hardness of 60 HRC or more. Hardness less than 60 HRC decreases the life considerably and reduces the permissible load.

C. The correct tolerance of the shaft diameter is recommended on Table C-3 and C-4

The Tusk slide shaft is an ideal component manufactured to these specifications.

2. Housing: There are a wide range of designs and manufacturing techniques for mounted housings. Tusk pre-engineered slide units are also available.

Mounting:

Ultimate is designed to be press fitted into the housing bore. When inserting slide, however, don't apply excess force nor shock load which may cause permanent damage.

Examples of Mounting

The following examples (Figures C-5 to C-8) Illustration assembly of the inserted slide as they should be designed and mounted.

Figure C-5 Use of holding plates

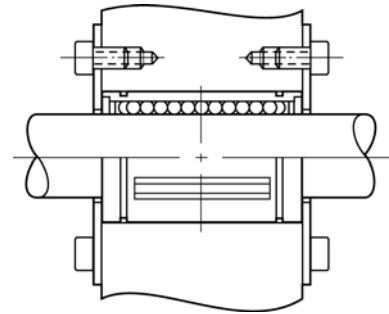


Figure C-6 Adjustable type housing

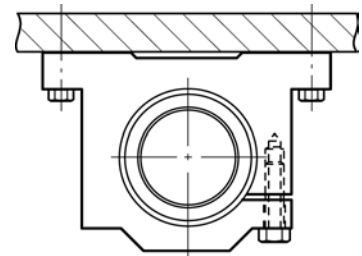


Figure C-7 Use of external retaining rings

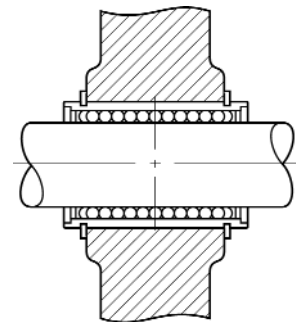
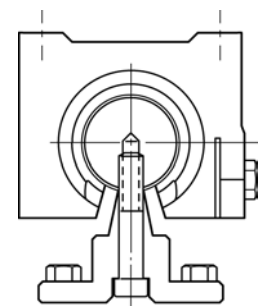


Figure C-8 Open type housing





Unlimited Travel Slides

Recirculating Ball Bearings

Unlimited linear motion

- High load capacity
- Low frictional coefficient
- High rigidity and precision
- Smooth motion with low noise

Tusk high quality Recirculating Ball Bearings offer high load capacity and unlimited smooth linear motion. The outside cylinder of this bearing, made of high-carbon chromium bearing steel, encloses a seamless retainer with grooves to guide three to eight ball circuits with minimum friction and high performance.

Select from 42 models with bearing bore diameters from .25" to 1". Five types meet all your requirements - High Lubricity Retainer, Self-aligning, Sealed, Clearance Adjusting, and Open. Applications include: machine tools, industrial machines, electronic equipment, optical instruments, food processing machines, and measuring instruments, or wherever smooth linear motion is needed.



WW G

High lubricity retainer

Our popular WW G type ensures smooth linear motion with low noise and high performance.



WW GR

Self-aligning type

In the WW GR types, the center of the outside cylinder profile is convex enabling adjustment of the angle for the axial offset. This structure allows easy assembling.



WW...UU

Sealed type - Model UU

Integral rubber seals on both sides of the WW...UU type bearings keep out dust, keep in lubricant, and eliminate the need for installation of separate seals. Available for all G and GR models in diameters from .25" - 1".



WW...AJ

Clearance adjusting type - Model AJ

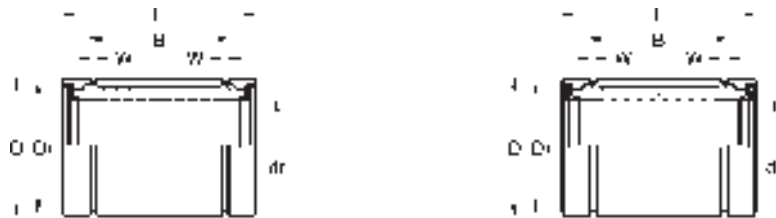
WW...AJ type models feature an axial slit in the outside cylinder to allow adjustment of the shaft clearance. Can be used when assembled in a Recirculating Ball Bearing Pillow Block with adjustable bore diameter.



WW...OP

Open type - Model OP

The outside cylinder of the WW...OP type has an opening equal to one circuit of balls. This opening allows installation of a support rail for reinforcement to eliminate shaft deflection when very long shafts or additional rigidity are a requirement.

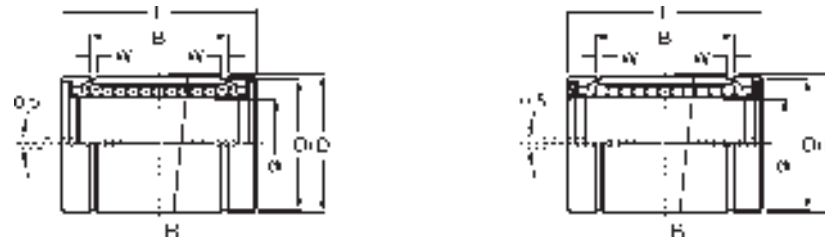


WW G TYPE

SHAFT
DIAMETER

RECIRCULATING BALL BEARING MODEL NUMBER

INCHES	MODEL	BALL CIRCUIT	WEIGHT OZ.	MODEL	BALL CIRCUIT	WEIGHT OZ.	ECCENTRICITY INCH	RADIAL CLEARANCE (MAX) INCH	BASIC DYNAMIC LOAD RATING LB	BASIC STATIC LOAD RATING LB
.250	WW-4G	4	.28	---	---	---	.0005	-.0001	46	60
.250	WW-4GUU	4	.28	WW-4G-AJ	4	.26	.0005	-.0001	46	60
.375	WW-6G	4	.49	---	---	---	.0005	-.0001	51	71
.375	WW-6GUU	4	.49	WW-6G-AJ	4	.48	.0005	-.0001	51	71
.500	WW-8G	4	1.3	WW-8G-OP	3	.99	.0005	-.0002	115	174
.500	WW-8GUU	4	1.3	WW-8G-AJ	4	1.3	.0005	-.0002	115	174
.625	WW-10G	4	2.7	WW-10G-OP	3	2.0	.0005	-.0002	174	265
.625	WW-10GUU	4	2.7	WW-10G-AJ	4	2.6	.0005	-.0002	174	265
.750	WW-12G	5	3.4	WW-12G-OP	4	2.7	.0006	-.0002	194	309
.750	WW-12GUU	5	3.4	WW-12G-AJ	5	3.3	.0006	-.0002	194	309
1.000	WW-16G	6	7.1	WW-16G-OP	5	6.0	.0006	-.0002	221	353
1.000	WW-16GUU	6	7.1	WW-16G-AJ	6	7.0	.0006	-.0002	221	353



WW GR TYPE

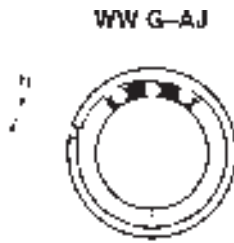
SHAFT
DIAMETER

RECIRCULATING BALL BEARING MODEL NUMBER

INCHES	MODEL	BALL CIRCUIT	WEIGHT OZ.	MODEL	BALL CIRCUIT	WEIGHT OZ.	ECCENTRICITY INCH	RADIAL CLEARANCE (MAX) INCH	BASIC DYNAMIC LOAD RATING LB	BASIC STATIC LOAD RATING LB
.250	WW-4GR	4	.28	---	---	---	.0005	-.0001	46	60
.250	WW-4GRUU	4	.28	---	---	---	.0005	-.0001	46	60
.375	WW-6GR	4	.49	---	---	---	.0005	-.0001	51	71
.375	WW-6GRUU	4	.49	---	---	---	.0005	-.0001	51	71
.500	WW-8GR	4	1.4	WW-8GR-OP	3	.99	.0005	-.0001	115	174
.500	WW-8GRUU	4	1.4	WW-8GR-AJ	4	1.3	.0005	-.0001	115	174
.625	WW-10GR	4	2.7	WW-10GR-OP	3	2.0	.0005	-.0001	174	265
.625	WW-10GRUU	4	2.7	WW-10GR-AJ	4	2.6	.0005	-.0001	174	265
.750	WW-12GR	5	3.4	WW-12GR-OP	4	2.7	.0006	-.0002	194	309
.750	WW-12GRUU	5	3.4	WW-12GR-AJ	5	3.3	.0006	-.0002	194	309
1.000	WW-16GR	6	7.1	WW-16GR-OP	5	6.0	.0006	-.0002	221	353
1.000	WW-16GRUU	6	7.1	WW-16GR-AJ	6	7.0	.0006	-.0002	221	353



WW G



WW G-AJ

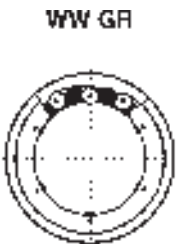


WW G-OP

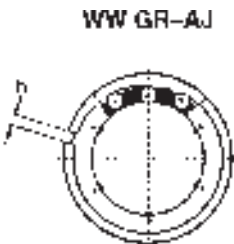
BOUNDARY DIMENSIONS AND TOLERANCE

SHAFT
DIAMETER

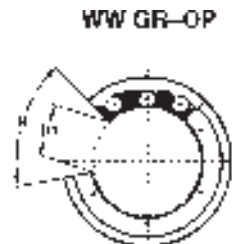
dr		D		L		B		W	D ₁	h	h ₁	Ø	INCHES
INCH	TOLERANCE INCH	INCH	TOLERANCE INCH	INCH	TOLERANCE INCH	INCH	TOLERANCE INCH	INCH	INCH	INCH	INCH		
.2500 .2500	0-.00040 0-.00040	.5000 .5000	0-.00045 0-.00045	.7500 .7500	0-.008 0-.008	.5110 .5110	0-.008 0-.008	.0390 .0390	.4687 .4687	.04 .04	--- ---	--- ---	.250 .250
.3750 .3750	0-.00040 0-.00040	.6250 .6250	0-.00050 0-.00050	.8750 .8750	0-.008 0-.008	.6358 .6358	0-.008 0-.008	.0390 .0390	.5880 .5880	.04 .04	--- ---	--- ---	.375 .375
.5000 .5000	0-.00040 0-.00040	.8750 .8750	0-.00050 0-.00050	1.2500 1.2500	0-.008 0-.008	.9625 .9625	0-.008 0-.008	.0459 .0459	.8209 .8209	.06 .06	.34 .34	80° 80°	.500 .500
.6250 .6250	0-.00040 0-.00040	1.1250 1.1250	0-.00050 0-.00050	1.5000 1.5000	0-.008 0-.008	1.1039 1.1039	0-.008 0-.008	.0559 .0559	1.0590 1.0590	.06 .06	.375 .375	80° 80°	.625 .625
.7500 .7500	0-.00040 0-.00040	1.2500 1.2500	0-.00065 0-.00065	1.6250 1.6250	0-.008 0-.008	1.1657 1.1657	0-.008 0-.008	.0559 .0559	1.1760 1.1760	.06 .06	.4375 .4375	60° 60°	.750 .750
1.000 1.000	0-.00040 0-.00040	1.5625 1.5625	0-.00065 0-.00065	2.2500 2.2500	0-.012 0-.012	1.7547 1.7547	0-.012 0-.012	.0679 .0679	1.4687 1.4687	.06 .06	.46 .46	50° 50°	1.000 1.000



WW GR



WW GR-AJ

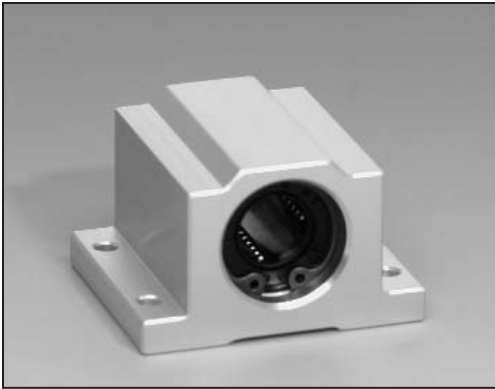


WW GR-OP

BOUNDARY DIMENSIONS AND TOLERANCE

SHAFT
DIAMETER

dr		D		L		B		W	D ₁	h	h ₁	Ø	INCHES
INCH	TOLERANCE INCH	INCH	TOLERANCE INCH	INCH	TOLERANCE INCH	INCH	TOLERANCE INCH	INCH	INCH	INCH	INCH		
.2500 .2500	0-.00040 0-.00040	.5000 .5000	0-.00045 0-.00045	.7500 .7500	0-.008 0-.008	.5110 .5110	0-.008 0-.008	.0390 .0390	.4687 .4687	.04 .04	--- ---	--- ---	.250 .250
.3750 .3750	0-.00040 0-.00040	.6250 .6250	0-.00050 0-.00050	.8750 .8750	0-.008 0-.008	.6358 .6358	0-.008 0-.008	.0390 .0390	.5880 .5880	.04 .04	--- ---	--- ---	.375 .375
.5000 .5000	0-.00040 0-.00040	.8750 .8750	0-.00050 0-.00050	1.2500 1.2500	0-.008 0-.008	.9625 .9625	0-.008 0-.008	.0459 .0459	.8209 .8209	.06 .06	.34 .34	80° 80°	.500 .500
.6250 .6250	0-.00040 0-.00040	1.1250 1.1250	0-.00050 0-.00050	1.5000 1.5000	0-.008 0-.008	1.1039 1.1039	0-.008 0-.008	.0559 .0559	1.0590 1.0590	.06 .06	.375 .375	80° 80°	.625 .625
.7500 .7500	0-.00040 0-.00040	1.2500 1.2500	0-.00065 0-.00065	1.6250 1.6250	0-.008 0-.008	1.1657 1.1657	0-.008 0-.008	.0559 .0559	1.1760 1.1760	.06 .06	.4375 .4375	60° 60°	.750 .750
1.000 1.000	0-.00040 0-.00040	1.5625 1.5625	0-.00065 0-.00065	2.2500 2.2500	0-.012 0-.012	1.7547 1.7547	0-.012 0-.012	.0679 .0679	1.4687 1.4687	.06 .06	.46 .46	50° 50°	1.000 1.000



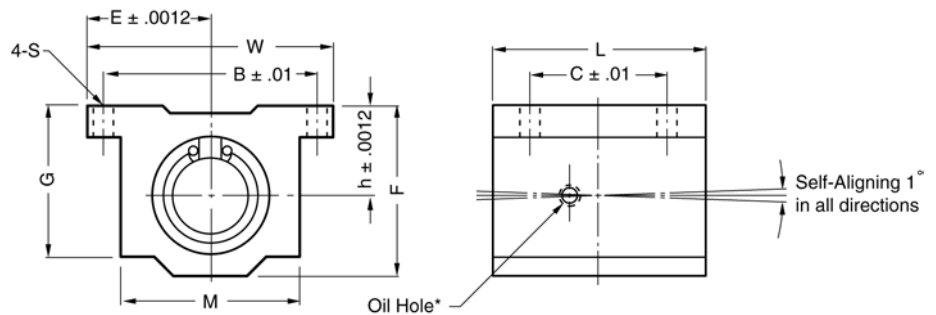
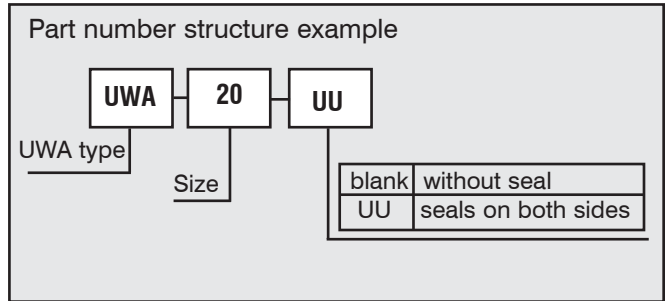
Unlimited Travel Slides

Ultimate Recirculating Bearing Pillow Blocks

The New Ultimate from *Tusk* was designed and built to offer engineers and designers the latest in Linear Bearing Technology.

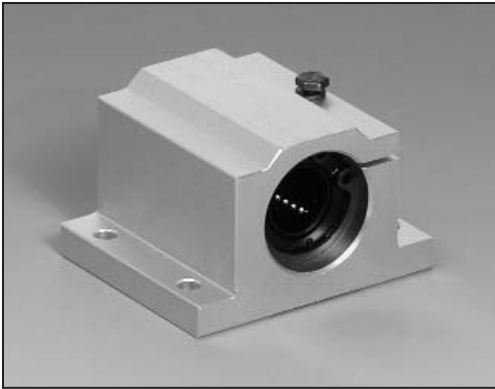
The Ultimate offers among the highest Linear Bearing capacities available in today's market while still addressing the most basic concerns such as interchangeability, life and coefficient of friction.

The New Ultimate from *Tusk* is designed to be used in applications which require highest capacity, self alignment for easy installation, and smooth quiet travel due to precision ground raceways.



part number	nom. shaft dia. inch	major dimensions								mounting dimensions			basic load rating		mass lbs
		h	E	W	L	F	T	G	M	B	C	S	dynamic C	static Co	
		inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	lbs	lbs	
UWA 4UU	1/4	.4370	.8125	1.625	1.188	.813	.188	.750	1.000	1.312	.750	.156	60	80	.090
UWA 6UU	3/8	.5000	.8750	1.750	1.313	.938	.188	.875	1.125	1.437	.875	.156	95	120	.120
UWA 8UU	1/2	.6870	1.0000	2.000	1.688	1.250	.250	1.125	1.375	1.688	1.000	.156	230	290	.248
UWA 10UU	5/8	.8750	1.2500	2.500	1.938	1.625	.281	1.437	1.750	2.125	1.125	.188	400	500	.465
UWA 12UU	3/4	.9370	1.3750	2.750	2.063	1.750	.313	1.563	1.875	2.375	1.250	.188	470	590	.553
UWA 16UU	1	1.1870	1.6250	3.250	2.813	2.188	.375	1.938	2.375	2.875	1.750	.219	850	1060	1.200
UWA 20UU	1-1/4	1.5000	2.0000	4.000	3.625	2.813	.438	2.500	3.000	3.500	2.000	.219	1230	1530	2.380
UWA 24UU	1-1/2	1.7500	2.3750	4.750	4.000	3.250	.500	2.875	3.500	4.125	2.500	.281	1480	1850	3.460
UWA 32UU	2	2.1250	3.0000	6.000	5.000	4.063	.625	3.625	4.500	5.250	3.250	.406	2430	3040	6.830

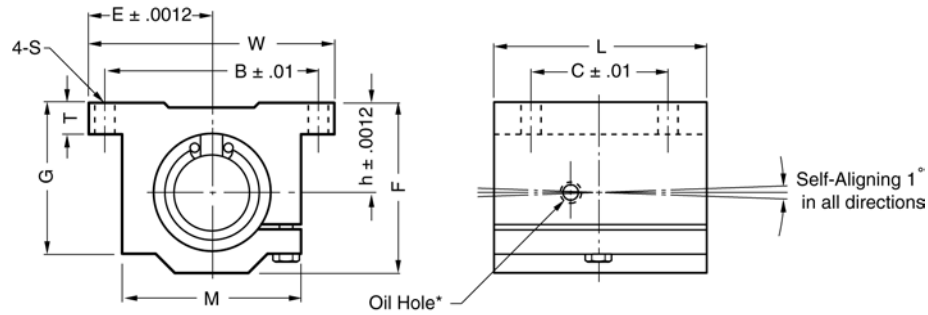
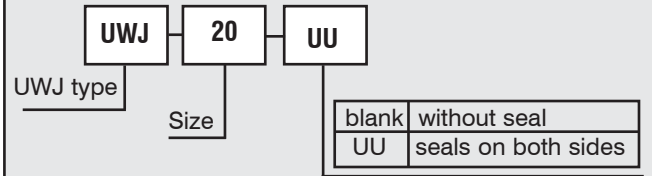
Provided with push in oil fitting for 1/4" to 1/2" sizes. Sizes from 5/8" to 2" offer a 1/4-28 tapped hole with a plug for adding a fitting if desired.



Unlimited Travel Slides

Ultimate Recirculating Bearing Pillow Blocks

Part number structure example



part number	nom. shaft dia. inch	major dimensions								mounting dimensions			basic load rating		mass lbs
		h	E	W	L	F	T	G	M	B	C	S	dynamic C	static Co	
		inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	lbs	lbs	
UWJ 4UU	1/4	.4370	.8125	1.625	1.188	.813	.188	.750	1.000	1.312	.750	.156	60	80	.090
UWJ 6UU	3/8	.5000	.8750	1.750	1.313	.938	.188	.875	1.125	1.437	.875	.156	95	120	.120
UWJ 8UU	1/2	.6870	1.0000	2.000	1.688	1.250	.250	1.125	1.375	1.688	1.000	.156	230	290	.248
UWJ 10UU	5/8	.8750	1.2500	2.500	1.938	1.625	.281	1.437	1.750	2.125	1.125	.188	400	500	.465
UWJ 12UU	3/4	.9370	1.3750	2.750	2.063	1.750	.313	1.563	1.875	2.375	1.250	.188	470	590	.553
UWJ 16UU	1	1.1870	1.6250	3.250	2.813	2.188	.375	1.938	2.375	2.875	1.750	.219	850	1060	1.200
UWJ 20UU	1-1/4	1.5000	2.0000	4.000	3.625	2.813	.438	2.500	3.000	3.500	2.000	.219	1230	1530	2.380
UWJ 24UU	1-1/2	1.7500	2.3750	4.750	4.000	3.250	.500	2.875	3.500	4.125	2.500	.281	1480	1850	3.460
UWJ 32UU	2	2.1250	3.0000	6.000	5.000	4.063	.625	3.625	4.500	5.250	3.250	.406	2430	3040	6.830

Provided with push in oil fitting for 1/4" to 1/2" sizes. Sizes from 5/8" to 2" offer a 1/4-28 tapped hole with a plug for adding a fitting if desired.



Unlimited Travel Slides

Ultimate Recirculating Bearing Pillow Blocks

Part number structure example

UWD

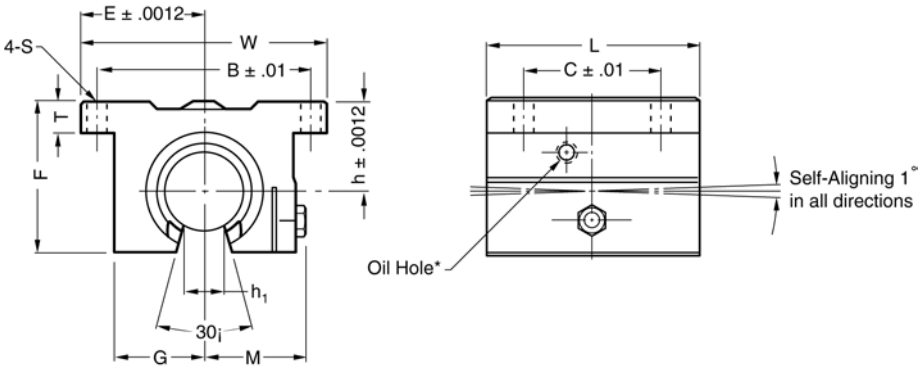
20

UU

UWD type

Size

blank	without seal
UU	seals on both sides



part number	nom. shaft dia. inch	major dimensions									mounting dimensions			basic load rating		mass lbs
		h	E	W	L	F	T	G	M	h ₁	B	C	S	dynamic C	static Co	
		inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	lbs	lbs	
UWD 8UU	1/2	.6870	1.000	2.000	1.500	1.100	.250	.688	.98	.260	1.688	1.000	.156	230	290	.188
UWD 10UU	5/8	.8750	1.2500	2.500	1.750	1.405	.281	.875	1.15	.319	2.125	1.125	.188	400	500	.365
UWD 12UU	3/4	.9370	1.3750	2.750	1.875	1.535	.315	.937	1.23	.386	2.375	1.250	.188	470	590	.452
UWD 16UU	1	1.1870	1.6250	3.250	2.625	1.975	.375	1.188	1.48	.512	2.875	1.750	.218	850	1060	1.010
UWD 20UU	1-1/4	1.5000	2.0000	4.000	3.375	2.485	.437	1.500	1.88	.569	3.500	2.000	.218	1230	1530	1.980
UWD 24UU	1-1/2	1.7500	2.3750	4.750	3.750	2.910	.500	1.750	2.12	.681	4.125	2.500	.281	1480	1850	2.950
UWD 32UU	2	2.1250	3.0000	6.000	4.750	3.660	.625	2.250	2.70	.933	5.250	3.250	.406	2430	3040	5.840

Provided with push in oil fitting for 1/4" to 1/2" sizes. Sizes from 5/8" to 2" offer a 1/4-28 tapped hole with a plug for adding a fitting if desired.



Unlimited Travel Slides

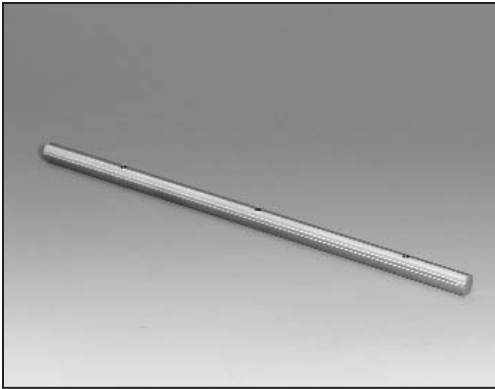
Shafts

Steel Case Hardened and Ground

MODEL	NOMINAL DIAMETER	TOLERANCE B	WEIGHT PER INCH (lbs)	MIN. DEPTH HARDNESS (inches)	*MAXIMUM LENGTH
FW-4	1/4	.2490 / .2495	.014	.040	96
FW-6	3/8	.3740 / .3745	.031	.040	132
FW-8	1/2	.4990 / .4995	.055	.060	148
FW-10	5/8	.6240 / .6245	.086	.060	144
FW-12	3/4	.7490 / .7495	.125	.060	148
FW-14	7/8	.8740 / .8745	.170	.060	148
FW-16	1	.9990 / .9995	.222	.080	148
FW-18	1-1/8	1.1240 / 1.1245	.281	.080	132
FW-20	1-1/4	1.2490 / 1.2495	.348	.080	148
FW-22	1-3/8	1.3740 / 1.3745	.420	.080	132
FW-24	1-1/2	1.4989 / 1.4994	.500	.080	134
FW-28	1-3/4	1.7490 / 1.7495	.681	.100	132
FW-32	2	1.9987 / 1.9994	.890	.100	138

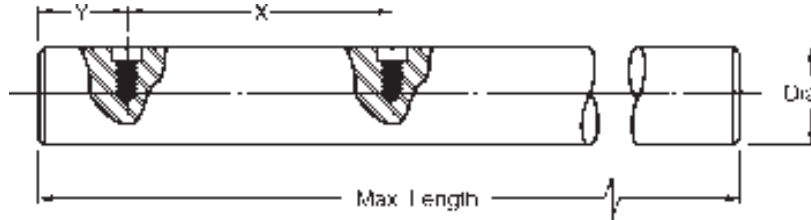
440C Stainless Steel

MODEL	NOMINAL DIAMETER	TOLERANCE B	WEIGHT PER INCH (lbs)	MIN. DEPTH HARDNESS (inches)	*MAXIMUM LENGTH
FW-6SS	3/8	.3740 / .3745	.031	.040	144
FW-8SS	1/2	.4990 / .4995	.055	.060	144
FW-10SS	5/8	.6240 / .6245	.086	.060	144
FW-12SS	3/4	.7490 / .7495	.125	.060	144
FW-16SS	1	.9990 / .9995	.222	.080	144
FW-20SS	1-1/4	1.2490 / 1.2495	.348	.080	144
FW-24SS	1-1/2	1.4989 / 1.4994	.500	.080	144
FW-32SS	2	1.9987 / 1.9994	.890	.100	144



Unlimited Travel Slides

Predrilled Shafts



Pre-Drilled Shafts - Steel Case Hardened and Ground

MODEL	NOM. DIAMETER	DIAMETER TOLERANCE	MAXIMUM LENGTH	"X" HOLE SPACING	TAP SIZE
FW 8 PD	1/2	.4990 / .4995	144 ± 1/32	4	6 - 32
FW 10 PD	5/8	.6240 / .6245	144 ± 1/32	4	8 - 32
FW 12 PD	3/4	.7490 / .7495	144 ± 1/32	6	10 - 32
FW 16 PD	1	.9990 / .9995	144 ± 1/32	6	1/4 - 20
FW 20 PD	1 1/4	1.2490 / 1.2495	144 ± 1/16	6	5/16 - 18
FW 24 PD	1 1/2	1.4989 / 1.4994	132 ± 1/16	8	3/8 - 16
FW 32 PD	2	1.9987 / 1.9994	132 ± 1/16	8	1/2 - 13

For longer lengths, please inquire at the factory.

Pre-Drilled Shafts - 440C Stainless Steel

MODEL	NOM. DIAMETER	DIAMETER TOLERANCE	MAXIMUM LENGTH	"X" HOLE SPACING	TAP SIZE
FW 8 PDSS	1/2	.4990 / .4995	144 ± 1/32	4	6 - 32
FW 10 PDSS	5/8	.6240 / .6245	144 ± 1/32	4	8 - 32
FW 12 PDSS	3/4	.7490 / .7495	144 ± 1/32	6	10 - 32
FW 16 PDSS	1	.9990 / .9995	144 ± 1/32	6	1/4 - 20
FW 20 PDSS	1 1/4	1.2490 / 1.2495	144 ± 1/16	6	5/16 - 18
FW 24 PDSS	1 1/2	1.4989 / 1.4994	132 ± 1/16	8	3/8 - 16
FW 32 PDSS	2	1.9987 / 1.9994	132 ± 1/16	8	1/2 - 13

For longer lengths, please inquire at the factory.

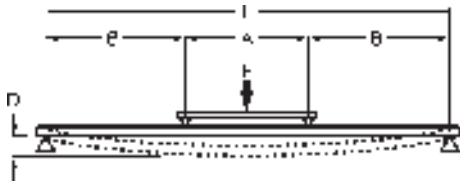
Note:

The standard "Y" dimension of in-stock shafts is 1/2 of the "X" dimension, but different first hole locations may be specified when ordering, providing the location is not more than the "X" hole spacing. Holes are drilled and tapped to center of shaft.

SHAFT DEFLECTION

Shaft Deflection will affect the system's performance. Use the following equation to calculate the maximum shaft deflection (in the center) of a system using Tusk shafting and end supports.

$$D = \frac{F \times B \times [3L^2 - 4B^2]}{48EI} + \frac{5SL^4}{384EI}$$



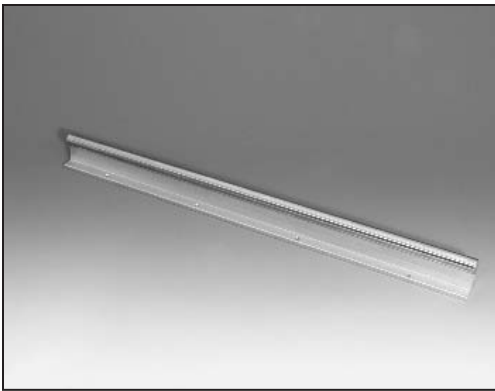
- D = Deflection (in)
- L = Distance between the shaft support (in)
- E = Modulus of Elasticity (lbf/in²)
- I = Shafts Moment of inertia (in⁴)
- S = Shaft unit weight (lbf/in)
- F = Load (including carriage weight) (lbf)
- *A = Distance between the carriage bearings (in)
- B = (L - A) / 2 (in)

*Notes:

For shaft deflection of a system using single pillow block with no carriage use the above equation with A = 0.

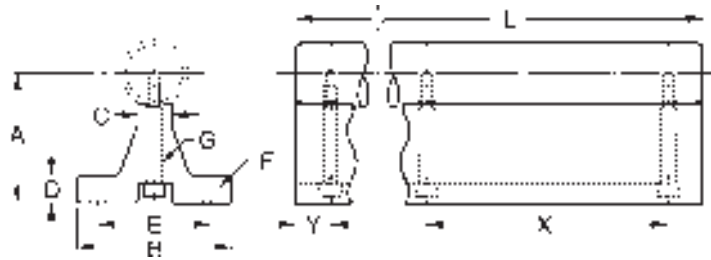
For shaft deflection of systems using double or twin pillow blocks with no carriage use the above equation with A = Distance between the pillow block bearing (see tables).

SHAFT DIAMETER (inches)	EI (lbf/in ²)	S (lbf/in)
0.250	5.75 x 10 ³	0.014
0.375	2.91 x 10 ⁴	0.031
0.500	9.20 x 10 ⁴	.055
0.625	2.25 x 10 ⁵	.086
0.750	4.66 x 10 ⁵	0.125
0.875	8.63 x 10 ⁵	0.170
1.000	1.47 x 10 ⁶	.222
1.125	2.36 x 10 ⁶	.281
1.250	3.60 x 10 ⁶	.348
1.375	5.26 x 10 ⁶	.420
1.500	7.46 x 10 ⁶	.500
1.750	1.38 x 10 ⁷	.681
2.000	2.36 x 10 ⁷	0.890
3.000	1.19 x 10 ⁸	2.003



Unlimited Travel Slides

Rail Shaft Assemblies



Shafting can be provided in steel or 440C. The support rails are manufactured in standard 24" and 48" lengths.

Longer lengths of shafting require the use of multiple rails. Hole spacing will be the standard Pre-Drilled hole pattern associated with that diameter.

MODEL	NOM. DIA.	A	B	C	D	E	BOLT F HOLE		G THD	Y	X
FWR 8	1/2	1.125	1 1/2	1/4	3/16	1	#6	.169	6-32	2	4
FWR 10	5/8	1.125	1 5/8	5/16	1/4	1 1/8	#8	.193	8-32	2	4
FWR 12	3/4	1.500	1 3/4	3/8	1/4	1 1/4	#10	.221	10-32	3	6
FWR 16	1	1.750	2 1/8	1/2	1/4	1 1/2	1/4	.281	1/4-20	3	6
FWR 20	1 1/4	2.125	2 1/2	9/16	5/16	1 7/8	5/16	.343	5/16-18	3	6
FWR 24	1 1/2	2.500	3	11/16	3/8	2 1/4	5/16	.343	3/8-16	4	8
FWR 32	2	3.250	3 3/4	7/8	1/2	2 3/4	3/8	.406	1/2-13	4	8

Standard "Y" dimensions of in-stock shafts and rails is 1/2 of the "X" dimension, but different first hole locations may be specified, providing that they do not exceed the "X" dimension.

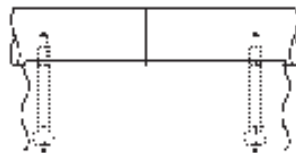
Stainless Steel

MODEL	NOM. DIA.	A	B	C	D	E	BOLT F HOLE		G THD	Y	X
FWR 8 SS	1/2	1.125	1 1/2	1/4	3/16	1	#6	.169	6-32	2	4
FWR 10 SS	5/8	1.125	1 5/8	5/16	1/4	1 1/8	#8	.193	8-32	2	4
FWR 12 SS	3/4	1.500	1 3/4	3/8	1/4	1 1/4	#10	.221	10-32	3	6
FWR 16 SS	1	1.750	2 1/8	1/2	1/4	1 1/2	1/4	.281	1/4-20	3	6
FWR 20 SS	1 1/4	2.125	2 1/2	9/16	5/16	1 7/8	5/16	.343	5/16-18	3	6
FWR 24 SS	1 1/2	2.500	3	11/16	3/8	2 1/4	5/16	.343	3/8-16	4	8
FWR 32 SS	2	3.250	3 3/4	7/8	1/2	2 3/4	3/8	.406	1/2-13	4	8

UNLIMITED LENGTHS

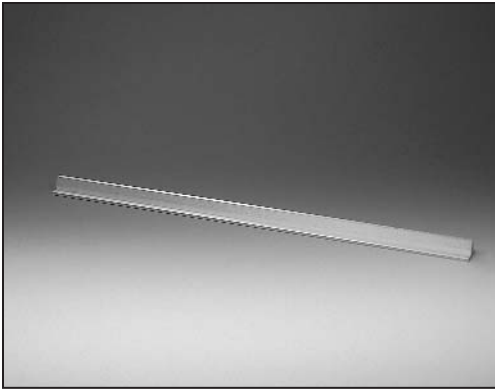


Dowel Joint



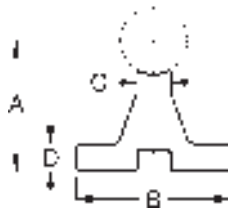
Butt Joint

Assembly shafts can be doweled with a concentricity of .002" or can simply have butted ends to obtain longer lengths. In each case, the mating ends are machined square and there is no chamfer.



Unlimited Travel Slides

Aluminum Shaft Supports



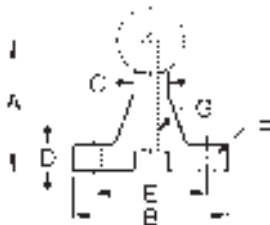
For effective, low cost continuous or intermittent support, extruded aluminum support rails are available in a full range of sizes to accommodate shafts up to 2" diameter (see specification chart below). These rails can be supplied with or without mounting holes and can be used vertically or horizontally to provide optimum rigidity. Available in standard lengths of 24" and 48" + 0", - 1/8" ...which can easily be cut to meet shorter length requirements.

TYPE R EXTRUDED ALUMINUM SHAFT SUPPORTS

MODEL	NOM. SHAFT DIA.	A ±.002	B	C	D	WT. PER 24" (lbs)
R-8	1/2	1.125	1-1/2	1/4	3/16	1.2
R-10	5/8	1.125	1-5/8	5/16	1/4	1.5
R-12	3/4	1.500	1-3/4	3/8	1/4	2.0
R-16	1	1.750	2-1/8	1/2	1/4	2.6
R-20	1 1/4	2.125	2-1/2	9/16	5/16	3.5
R-24	1 1/2	2.500	3	11/16	3/8	5.1
R-32	2	3.250	3-3/4	7/8	1/2	8.2

TYPE R-PD SERIES EXTRUDED ALUMINUM SHAFT SUPPORTS

WITH PRE-DRILLED HOLES TO MATE WITH TYPE PD SHAFTS



MODEL	NOM. SHAFT DIA.	A ±.002	B	C	D	E	F BOLT	F HOLE	BOLT	G HOLE	WT. PER 24" (lbs)
R-8-PD	1/2	1.125	1-1/2	1/4	3/16	1	#6	.169	6-32 x 7/8	.169	1.2
R-10-PD	5/8	1.125	1-5/8	5/16	1/4	1-1/8	#8	.193	8-32 x 7/8	.193	1.5
R-12-PD	3/4	1.500	1-3/4	3/8	1/4	1-1/4	#10	.221	10-32 x 1-1/4	.221	2.0
R-16-PD	1	1.750	2-1/8	1/2	1/4	1-1/2	1/4	.281	1/4 20 x 1-1/2	.281	2.6
R-20-PD	1 1/4	2.125	2-1/2	9/16	5/16	1-7/8	5/16	.343	5/16-18 x 1 3/4	.343	3.5
R-24-PD	1 1/2	2.500	3	11/16	3/8	2-1/4	5/16	.343	3/8-16 x 2	.406	5.1
R-32-PD	2	3.250	3-3/4	7/8	1/2	2-3/4	3/8	.406	1/2-13 x 2-1/2	.531	8.2

Note: Pre-drilled support rails are stocked for immediate delivery in standard 24" and 48" lengths, but can be cut to size. When longer shafts are to be supported, the rails can be continuously mounted end-to-end or intermittently mounted.

Mounting Hole Patterns

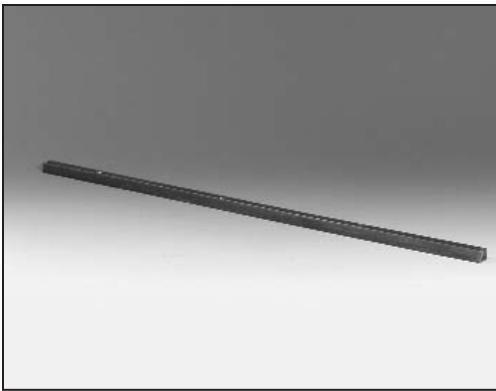
for various sizes are shown below. The alignment and location of holes are ±.010 non-cumulative.



How To Order

When ordering standard support rails with mounting holes, order by part number only (for example, R-20-PD, 32"). If a shorter length is required, specify part number and exact length. For example, R-20-PD, 18" long. We provide a cutting service at a slight additional charge.

We can supply shafts and supports as complete assemblies in any length. When ordering, please specify the shaft diameter and overall length, and we will assemble using standard pre-drilled shafts and supports. For hole spacing other than the standard patterns shown above, please send drawings with your request for a quotation.

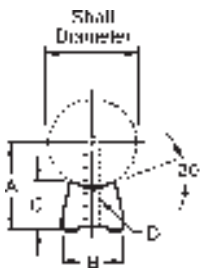


Unlimited Travel Slides

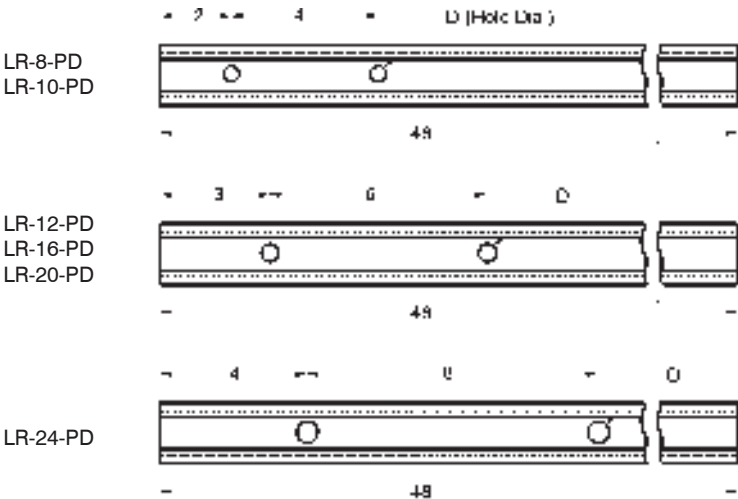
Low Profile Support Rails

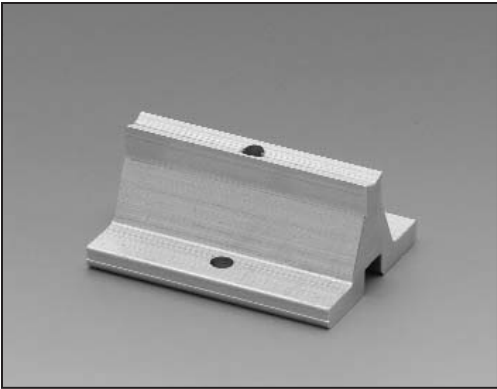
Low shaft support rails permit the design of compact linear motion systems with more than a 40% lower profile. The low shaft support rails are made of AISI C-1018 steel. Continuous or intermittent support is

permissible when using open-type linear recirculating ball bearing pillow blocks. LR-PD rails have pre-drilled mounting holes to match the pre-drilled and tapped holes in the PD series shafts. Standard length for all low shaft rails is 48".



MODEL	SHAFT DIA.	A ±.002	B ±.005	C	D		HOLE SPACING FOR LSR-PD		APPROX. WT. IN LBS. PER 48"
					BOLT	HOLE	Y	X	
LR-8 LR-8-PD	.500	.562	.370	.341	6-32	.169	2	4	1.32
LR-10 LR-10-PD	.625	.687	.450	.412	8-32	.193	2	4	1.95
LR-12 LR-12-PD	.750	.750	.510	.420	10-32	.221	3	6	2.25
LR-16 LR-16-PD	1.000	1.000	.690	.560	1/4-20	.281	3	6	4.25
LR-20 LR-20-PD	1.250	1.187	.780	.626	5/16-18	.343	3	6	5.08
LR-24 LR-24-PD	1.500	1.375	.930	.703	3/8-16	.406	4	8	6.72





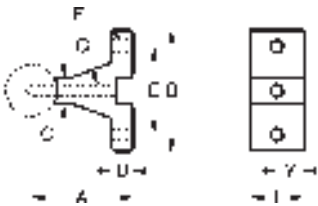
Unlimited Travel Slides

Intermittent Support Rails

INTERMITTENT SUPPORT RAILS RS 1

The RS 1 supports are for those applications not requiring continuous support.

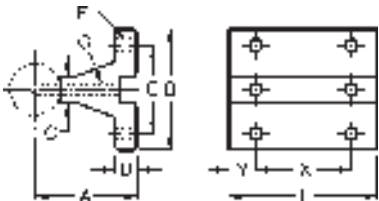
MODEL	SHAFT DIA.	A	B	C	D	E	F	G	Y	L
RS1-8	1/2	1.125	1-1/2	1/4	3/16	1	#6	6-32	1	2
RS1-10	5/8	1.125	1-5/8	5/16	1/4	1-1/8	#8	8-32	1	2
RS1-12	3/4	1.500	1-3/4	3/8	1/4	1-1/4	#10	10-32	1-1/2	3
RS1-16	1	1.750	2-1/8	1/2	1/4	1-1/2	1/4	1/4-20	1-1/2	3
RS1-20	1 1/4	2.125	2-1/2	9/16	5/16	1-7/8	5/16	5/16-18	1-1/2	3
RS1-24	1 1/2	2.500	3	11/16	3/8	2-1/4	5/16	3/8-16	2	4
RS1-32	2	3.250	3-3/4	7/8	1/2	2-3/4	3/8	1/2-13	2	4



INTERMITTENT SUPPORT RAILS RS 2

The RS 2 intermittent rails are ideal for support below joints in shafting.

MODEL	SHAFT DIA.	A	B	C	D	E	F	G	Y	X	L
RS2-8	1/2	1.125	1-1/2	1/4	3/16	1	#6	6-32	1	4	6
RS2-10	5/8	1.125	1-5/8	5/16	1/4	1-1/8	#8	8-32	1	4	6
RS2-12	3/4	1.500	1-3/4	3/8	1/4	1-1/4	#10	10-32	1	6	8
RS2-16	1	1.750	2-1/8	1/2	1/4	1-1/2	1/4	1/4-20	1	6	8
RS2-20	1 1/4	2.125	2-1/2	9/16	5/16	1-7/8	5/16	5/16-18	1	6	8
RS2-24	1 1/2	2.500	3	11/16	3/8	2-1/4	5/16	3/8-16	1-1/2	8	11
RS2-32	2	3.250	3-3/4	7/8	1/2	2-3/4	3/8	1/2-13	1-1/2	8	11





Unlimited Travel Slides

Intermittent Low Shaft Support Rails

INTERMITTENT LOW SHAFT SUPPORT RAILS LRS 1

The LRS 1 supports are for those applications not requiring continuous support.

MODEL	SHAFT DIA.	A	B	C	BOLT	D	HOLE	Y	L
LRS 1-8	1/2	.562	.370	.341	6-32		.169	1	2
LRS 1-10	5/8	.687	.450	.412	8-32		.193	1	2
LRS 1-12	3/4	.750	.510	.420	10-32		.221	1-1/2	3
LRS 1-16	1	1.000	.690	.560	1/4-20		.281	1-1/2	3
LRS 1-20	1 1/4	1.187	.780	.626	5/16-18		.343	1-1/2	3
LRS 1-24	1 1/2	1.375	.930	.703	3/8-16		.406	2	4
LRS 1-32	2	1.750	1.180	.845	1/2-13		.531	2	4



INTERMITTENT LOW SHAFT SUPPORT RAILS LRS 2

The LRS 2 Intermittent support rails are ideal for support below joints in shafting.

MODEL	SHAFT DIA.	A	B	C	BOLT	D	HOLE	Y	X	L
LRS 2-8	1/2	.562	.370	.341	6-32		.169	1	4	6
LRS 2-10	5/8	.687	.450	.412	8-32		.193	1	4	6
LRS 2-12	3/4	.750	.510	.420	10-32		.221	1	6	8
LRS 2-16	1	1.000	.690	.560	1/4-20		.281	1	6	8
LRS 2-20	1 1/4	1.187	.780	.626	5/16-18		.343	1	6	8
LRS 2-24	1 1/2	1.375	.930	.703	3/8-16		.406	1-1/2	8	11
LRS 2-32	2	1.750	1.180	.845	1/2-13		.531	1-1/2	8	11

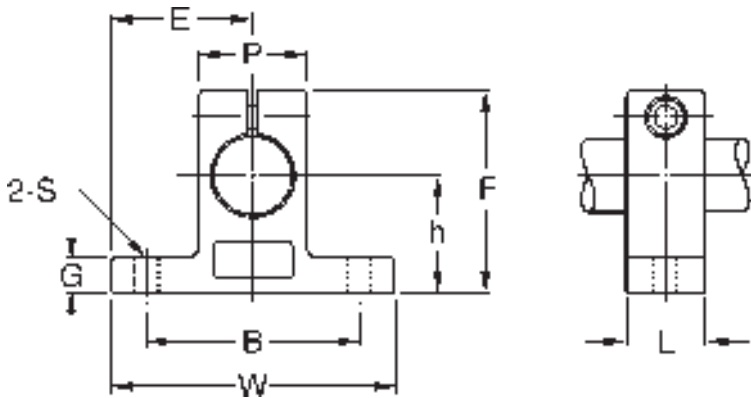


The length tolerance of Intermittent support rails is +.000" / -.125"



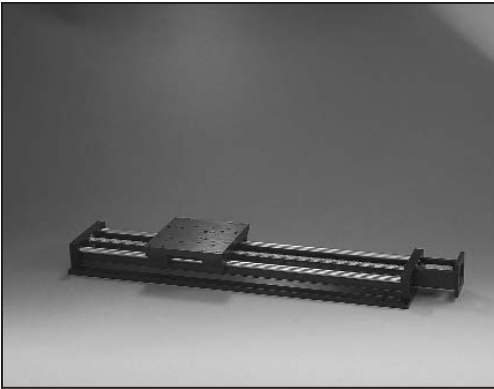
Unlimited Travel Slides

H-A Shaft Hangers



Nominal Shaft Diam. inch/mm	Part No.	Major Dimensions (inch/mm)										Weight g
		h ±.001 ±0.02	E ±.005 ±0.1	W	L	F	G	P	B ±.01 ±0.2	S	BOLT	
1/4 6.350	H 4A	.6875 17.463	.7500 19.050	1.500 38.10	.500 12.70	1.063 27.00	.250 6.35	.500 12.70	1.125 28.58	.156 4.0	#6	15
3/8 9.525	H 6A	.7500 19.050	.8125 20.637	1.625 41.28	.563 14.30	1.187 30.16	.250 6.35	.688 17.46	1.250 31.75	.156 4.0	#6	21
1/2 12.700	H 8A	1.0000 25.400	1.0000 25.400	2.000 50.80	.625 15.88	1.625 41.28	.250 6.35	.875 22.23	1.500 38.10	.188 4.8	#8	35
5/8 15.875	H 10A	1.0000 25.400	1.2500 31.750	2.500 63.50	.688 17.46	1.750 44.45	.313 7.94	1.000 25.40	1.875 47.63	.218 5.6	#10	52
3/4 19.050	H 12A	1.2500 31.750	1.5315 38.900	2.500 63.50	.750 19.05	2.063 52.40	.313 7.94	1.250 31.75	2.000 50.80	.218 5.6	#10	74
1 25.400	H 16A	1.5000 38.100	1.8750 47.625	3.063 77.80	1.000 25.40	2.500 63.50	.375 9.53	1.500 38.10	2.500 63.50	.281 7.2	1/4	136
1-1/4 31.750	H 20A	1.7500 44.450	2.1875 47.625	3.750 95.25	1.125 28.58	3.000 76.20	.438 11.14	2.000 50.80	3.000 76.20	.346 8.8	5/16	254
1-1/2 38.100	H 24A	2.0000 50.800	2.1875 55.550	4.375 111.13	1.250 31.75	3.437 87.30	.500 12.70	2.250 57.15	3.500 88.90	.346 8.8	5/16	340
2 50.800	H 32A	2.5000 63.500	2.7500 69.850	5.500 139.70	1.500 38.10	4.375 111.13	.625 15.88	3.000 76.20	4.500 114.30	.406 10.5	3/8	670

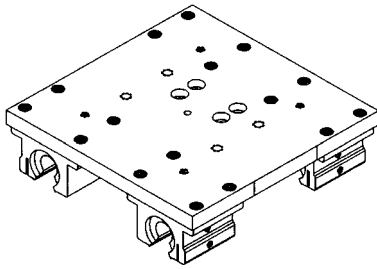
1kg = 2.205 lbs



Unlimited Travel Slides

Linear Bearing Assemblies

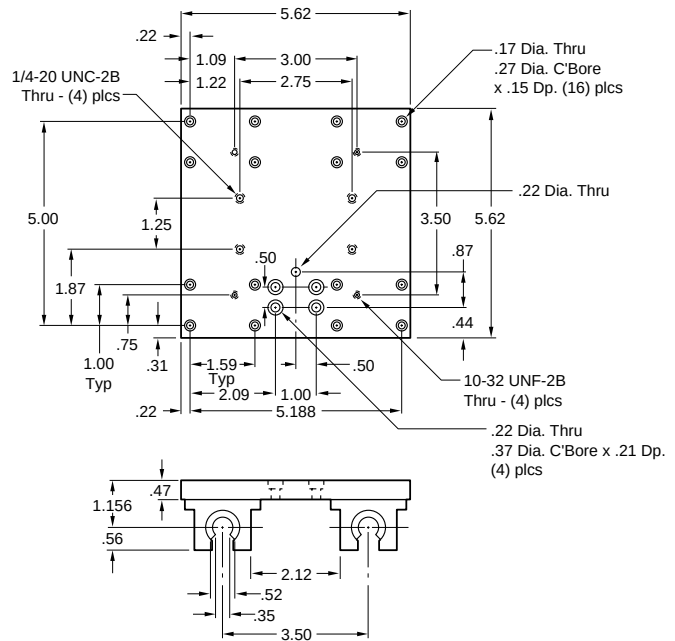
Carriage



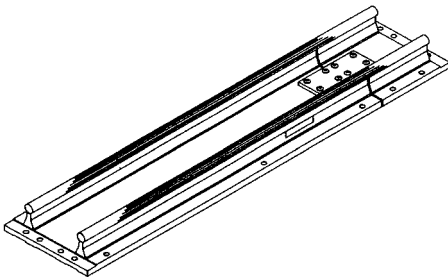
These carriage tops are available with self-aligning recirculating ball bearings. The bearings are prealigned for ease of installation.

Material

Table Top: Aluminum Black Anodized
Housing: Aluminum Black Anodized
Bearing: Self Aligning Recirculating Ball



Base



1/2" diameter shafting is continuously supported to eliminate deflection. Units may be joined to create longer lengths.

Specifications

Flatness: $\pm .0002$ in./in.
Straightness: $\pm .0002$ in./in.
Material: — Aluminum base; black anodize
Shafting: — C-1060 steel hardened & ground shafting or 303 stainless steel

Ordering Information

LBA	8	()	()
LBA = Linear Bushing Assembly	Shaft fully supported		
Code	(A) Overall Length (in.)	Shafting	
12	12	(C1060) hardened ground	
16	16		
20	20		
24	24	(303) stainless steel for use with engineered plastic bearing	
28	28		
32	32		
36	36		
40	40		
44	44		
48	48		

Model LBA-8-12 through 24 One Piece Construction

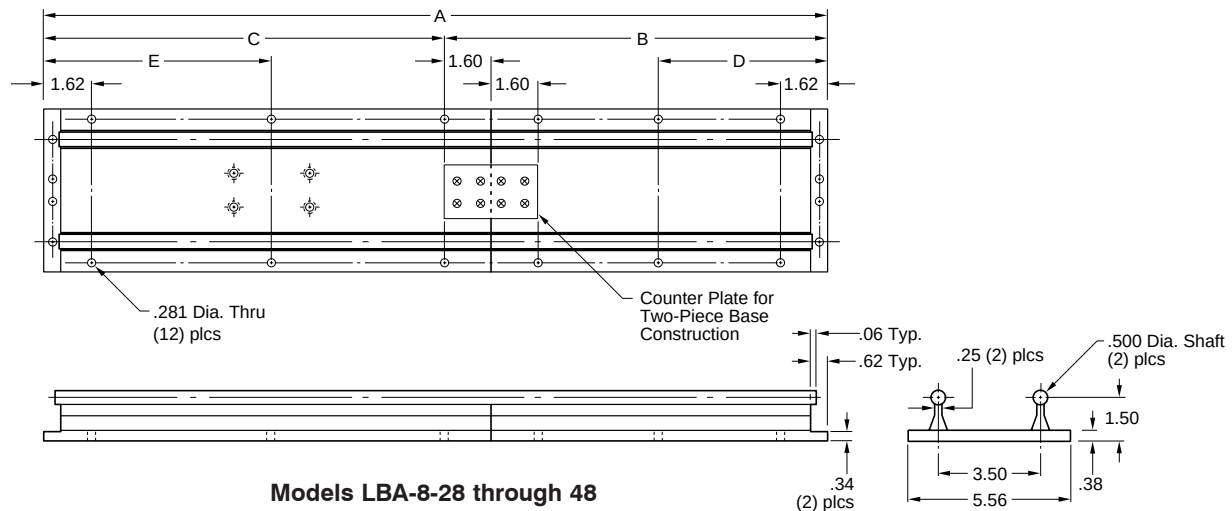
Part Number	A Inches	E Inches
LBA-8-12	12.00	6.00
LBA-8-16	16.00	8.00
LBA-8-20	20.00	10.00
LBA-8-24	24.00	12.00

Model LBA-8-28 through 48 Two Piece Construction

Part Number	A Inches	B Inches	C Inches	D Inches	E Inches
LBA-8-28	*28.00	11.98	15.98	6.00	8.00
LBA-8-32	32.00	15.98	15.98	8.00	8.00
LBA-8-36	36.00	15.98	19.98	8.00	10.00
LBA-8-40	40.00	19.98	19.98	10.00	10.00
LBA-8-44	44.00	19.98	23.98	10.00	12.00
LBA-8-48	48.00	23.98	23.98	12.00	12.00

*LBA-8-28 is also available in a single 28 inch version.

Dimensions





Actuated Stages

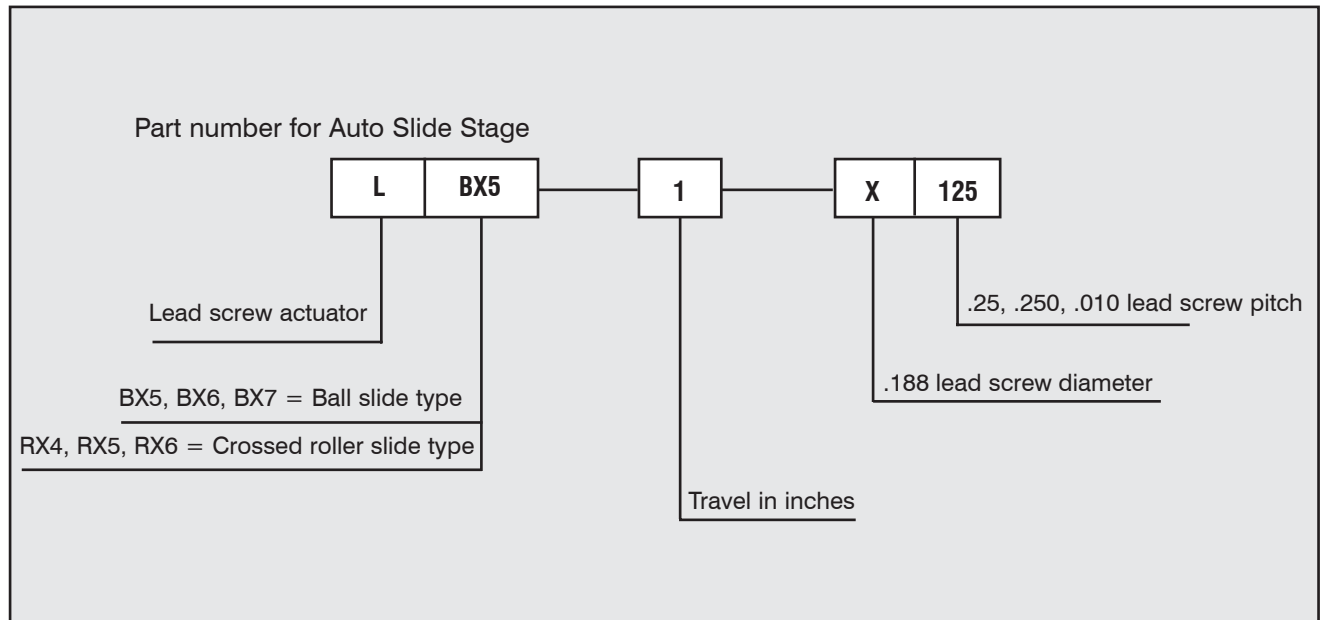
Auto Slides

Motor Ready Linear Ball or Crossed Roller Stages

With a flexible zero backlash coupling, straight line accuracy of up to 0.0001 inch per inch of travel and repeatability of 0.0001 inch, Tusk Auto-Slides offer precision linear motion at a very reasonable cost. Prices start at \$844 for linear ball slides with a one-inch travel and 30 pound load capacity.

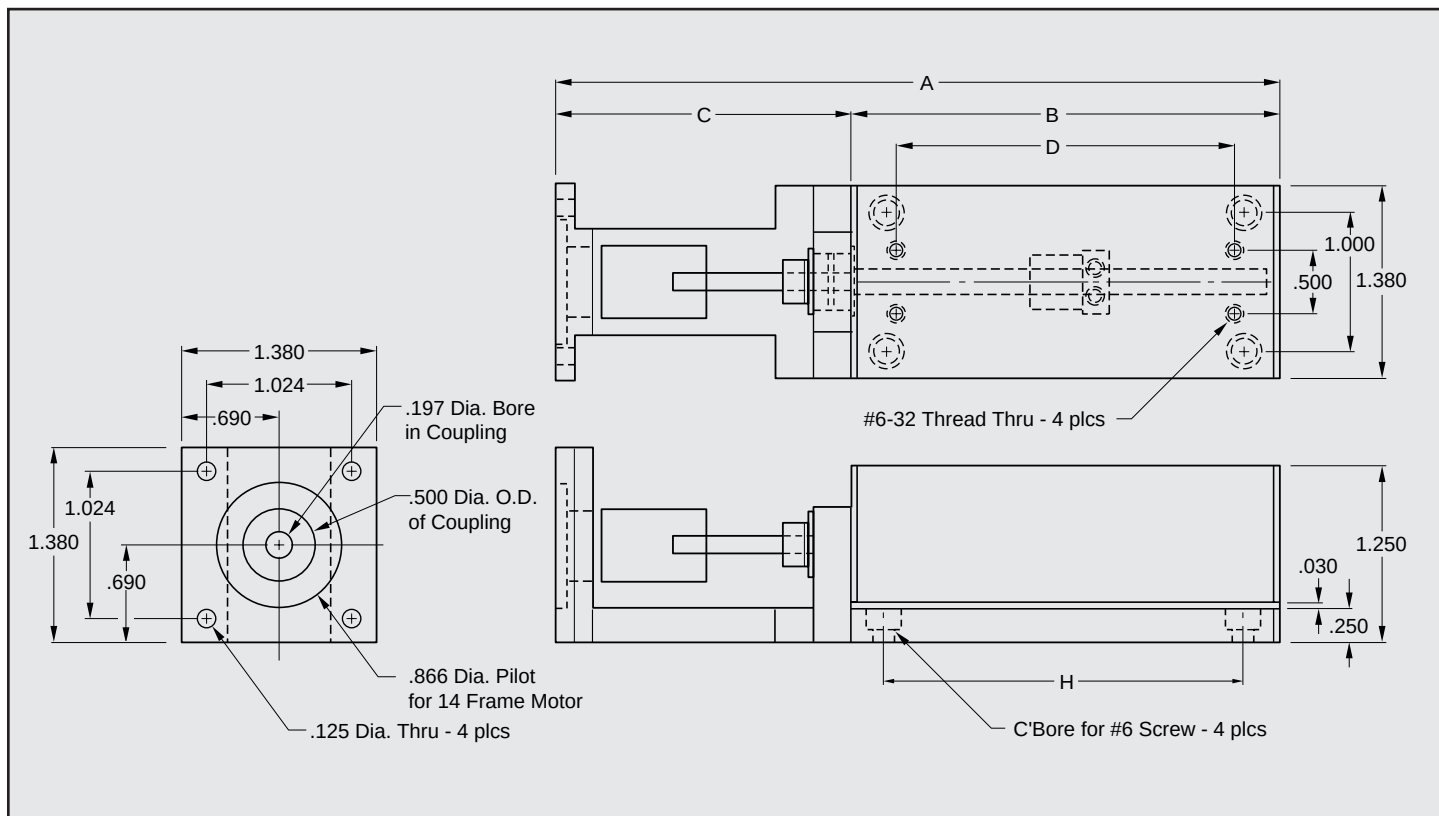
Auto-Slides provide a lead screw with anti-backlash nut and contain a Nema bracket mount for motor installation. They are available with special configurations, with other motor mounts, hand crank actuation and a variety of leads and pitches.

Nomenclature



Auto Slide Series L BX5, L RX4

Designed for NEMA 14 motor frame, other motor adapters available. Supplied with coupling for .1968" (5mm) motor shaft. Couplings with inch and metric bore available. Uses .125" diameter leadscrew with anti-backlash nut. Standard lead is .125". Leads available in .025, .050, .096, .188, .250, and .375". Standard travels of 1, 2, 3, and 4"



Auto Slide Stages

Specifications

Drive: .188 diameter .125 lead screw with anti-backlash nut.

Coupling: Flexible zero backlash coupling.

Motor Mount: Accepts Nema 14 motor

Travel: 1" - 4"

Anti-Friction Slide: Linear ball or crossed roller slide.

Load Capacity: Up to 40lbs.

Configuration: 1, 2 or 3 axis.

Accuracy: Straight line, up to 0.0001" per inch of travel.

Repeatability: 0.0001"

Also available are special configurations, motor mounts, hand crank actuation, and a variety of leads and pitches.

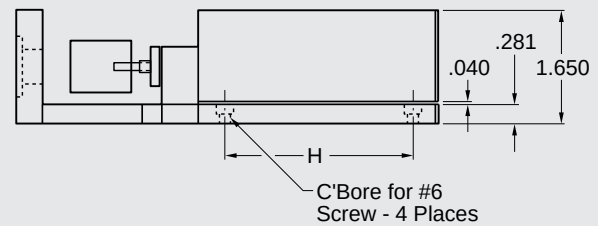
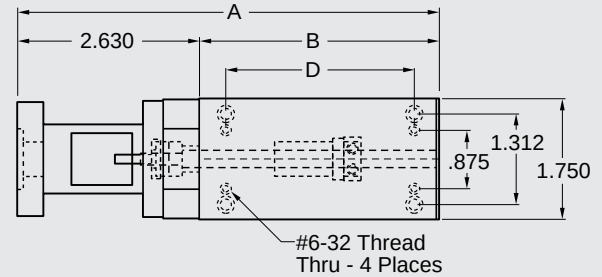
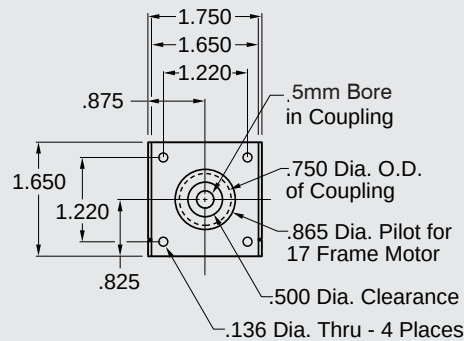
Motor/controller available.

Ball Slide	Travel	A	B	C	D	H	Load Capacity LB
L BX5-1-X125	1"	4.07	2.000	2.07	1.375	1.500	8
L BX5-2-X125	2"	5.07	3.000	2.07	2.375	2.500	10
L BX5-3-X125	3"	6.07	4.000	2.07	3.375	3.500	15
L BX5-4-X125	4"	8.32	6.000	2.32	5.375	4.000	20

Roller Slide	Travel	A	B	C	D	H	Load Capacity LB
L RX4-1-X125	1"	4.07	2.000	2.07	1.375	1.500	15
L RX4-2-X125	2"	5.07	3.000	2.07	2.375	2.500	20
L RX4-3-X125	3"	6.07	4.000	2.07	3.375	3.500	30
L RX4-4-X125	4"	8.32	6.000	2.32	5.375	4.000	40

Auto Slide Series LBX6, LRX5

Designed for NEMA 17 motor frame, other motor adapters available. Supplied with coupling for 5mm motor shaft. Couplings with inch and metric bore available. Uses .250" diameter leadscrew with anti-backlash nut. Standard lead is .250". Leads available in .025, .050, .062, .200, .250, .500, and 1.00". Standard travels of 1, 1.5, 2, 3, and 4"



Ball Slide	Travel	A	B	D	H	Load Capacity LB
LBX6-1-Y25	1"	4.88	2.25	1.375	1.625	10
LBX6-1.5-Y25	1.5"	5.63	3.00	2.125	2.250	15
LBX6-2-Y25	2"	6.13	3.50	2.750	2.750	20
LBX6-3-Y25	3"	6.88	4.25	3.375	3.500	25
LBX6-4-Y25	4"	8.63	6.00	5.500	4.000	30

Auto Slide Stages

Specifications

Drive: .250 diameter .250 lead screw with anti-backlash nut.

Coupling: Flexible zero backlash coupling.

Motor Mount: Accepts Nema 17 motor

Travel: 1" - 4"

Anti-Friction Slide: Linear ball or crossed roller slide.

Load Capacity: Up to 60lbs.

Configuration: 1, 2 or 3 axis.

Accuracy: Straight line, up to 0.0001" per inch of travel.

Repeatability: 0.0001"

Also available are special configurations, motor mounts, hand crank actuation, and a variety of leads and pitches.

Motor/controller available.

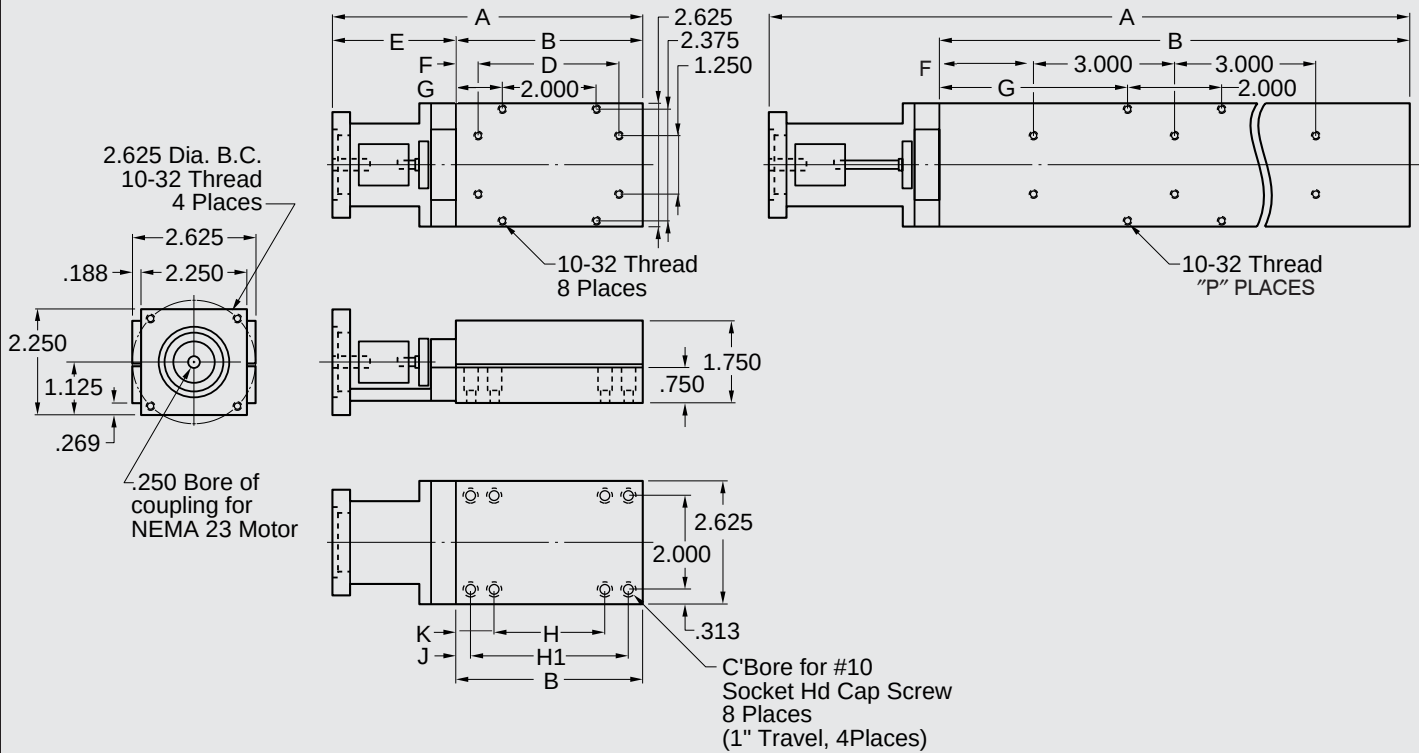
Roller Slide	Travel	A	B	D	H	Load Capacity LB
LRX5-1-Y25	1"	4.88	2.25	1.375	1.625	20
LRX5-1.5-Y25	1.5"	5.63	3.00	2.125	2.250	30
LRX5-2-Y25	2"	6.13	3.50	2.750	2.750	40
LRX5-3-Y25	3"	6.88	4.25	3.375	3.500	50
LRX5-4-Y25	4"	8.63	6.00	5.500	4.000	60

Auto Slide																
MODEL	A	B	D	P	E	F	G	H	H1	J	K	L	M	N	R	S
LBX7-1-Z10-X	5.63	3.00	2.125		2.63	0.44	0.50	2.375	0	0.00	0.31	0.188	0	3.731	0.32	2.06
LBX7-2-Z10-X	6.63	4.00	3.000		2.63	0.50	1.00	2.375	3.375	0.31	0.82	0.688	0	3.731	0.32	1.56
LBX7-3-Z10-X	7.63	5.00	4.000		2.63	0.50	1.50	2.375	4.375	0.31	1.31	1.188	0	3.731	0.32	1.06
LBX7-4-Z10-X	8.63	6.00	5.000		2.63	0.50	2.00	2.375	5.375	0.31	1.81	1.688	0	3.371	0.75	0.56
LBX7-6-Z10-X	12.63	9.00	6.000		3.63	1.50	3.50	4.000	7.000	1.00	2.50	3.188	0.375	4.106	1.75	-0.94
LBX7-8-Z10-X	15.63	11.00		12	4.63	1.00	4.50	6.000	9.000	1.00	2.50	4.188	0.375	4.106	2.75	-1.94
LBX7-10-Z10-X	18.63	13.00		14	5.63	0.50	5.50	8.000	11.000	1.00	2.50	5.188	0.375	4.106	3.75	-2.94
LBX7-12-Z10-X	21.63	15.00		14	6.63	1.50	6.50	10.000	13.000	1.00	2.50	6.188	0.375	4.106	4.75	-3.94
LRX6-1-Z10-X	5.63	3.00	2.125		2.63	0.44	0.50	2.3750	3.375	0.00	0.31	0.188	0	3.731	0.32	2.06
LRX6-2-Z10-X	6.63	4.00	3.000		2.63	0.50	1.00	2.3750	4.375	0.31	0.82	0.688	0	3.731	0.32	1.56
LRX6-3-Z10-X	7.63	5.00	4.000		2.63	0.50	1.50	2.3750	5.375	0.31	1.31	1.188	0	3.731	0.32	1.06
LRX6-4-Z10-X	8.63	6.00	5.000		2.63	0.50	2.00	2.3750	7.000	0.31	1.81	1.688	0	3.731	0.75	0.56
LRX6-6-Z10-X	12.63	9.00	6.000		3.63	1.50	3.50	4.0000	9.000	1.00	2.50	3.188	0.375	4.106	1.75	-0.94
LRX6-8-Z10-X	15.63	11.00		12	4.63	1.00	4.50	6.0000	11.000	.00	2.50	4.188	0.375	4.106	2.75	-1.94
LRX6-10-Z10-X	18.63	13.00		14	5.63	0.50	5.50	8.0000	13.000	.00	2.50	5.188	0.375	4.106	3.75	-2.94
LRX6-12-Z10-X	21.63	15.00		14	6.63	1.50	6.50	10.0000		1.00	2.50	6.188	0.375	4.106	4.75	-3.94

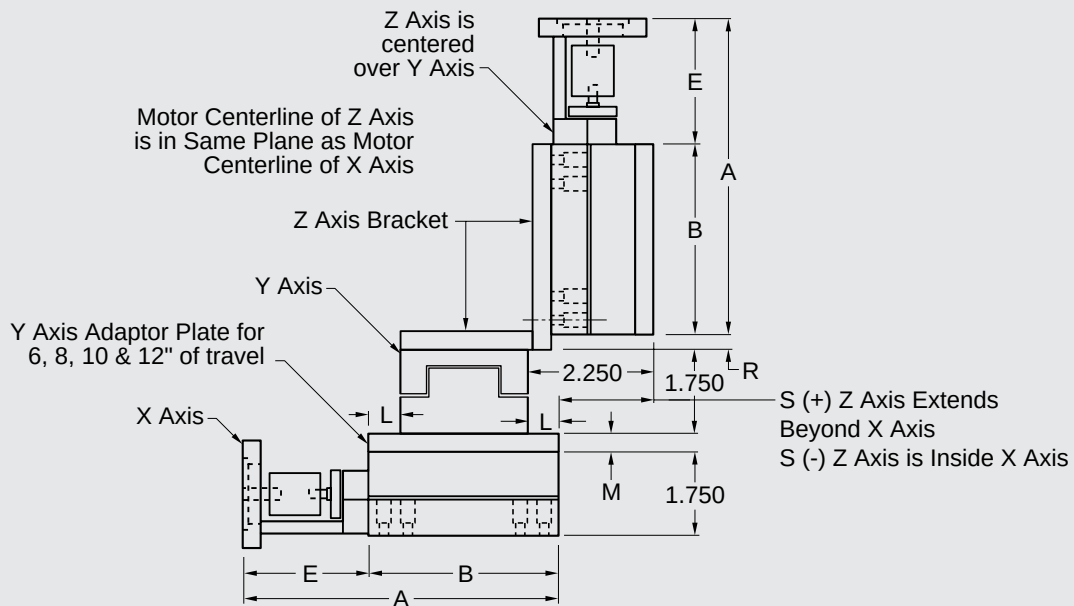
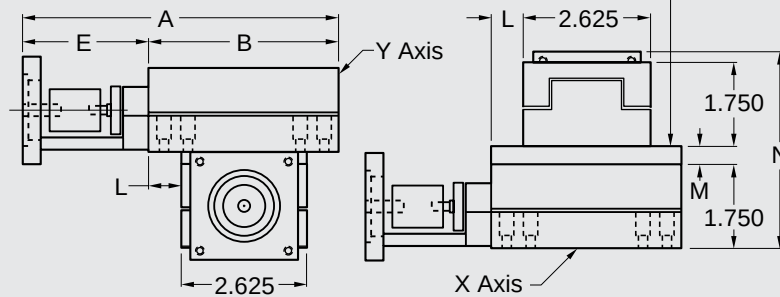
Auto Slide		
MODEL	TRAVEL INCHES	LOAD
		CAPACITY LB.
LBX7-1-Z10-X	1	30
LBX7-2-Z10-X	2	35
LBX7-3-Z10-X	3	40
LBX7-4-Z10-X	4	45
LBX7-6-Z10-X	6	55
LBX7-8-Z10-X	8	60
LBX7-10-Z10-X	10	75
LBX7-12-Z10-X	12	90
LRX6-1-Z10-X	1	60
LRX6-2-Z10-X	2	70
LRX6-3-Z10-X	3	80
LRX6-4-Z10-X	4	90
LRX6-6-Z10-X	6	110
LRX6-8-Z10-X	8	120
LRX6-10-Z10-X	10	150
LRX6-12-Z10-X	12	180

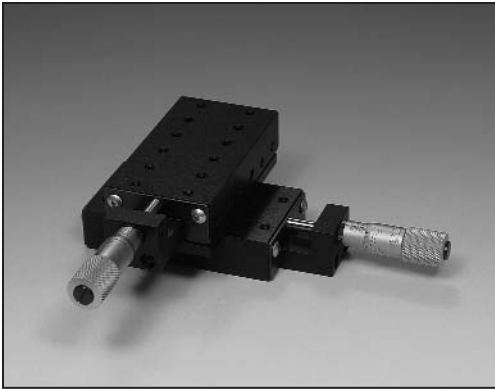
Carriage Dimensions 1-4" of Travel

Carriage Dimensions 6-12" of Travel



Y Axis Adaptor Plate for 6, 8, 10 & 12" of travel





Actuated Stages

Ball Slide Positioning Stages

SPECIFICATIONS:

Straight Line Accuracy
.0005"/inch of travel

Repeatability
.0002"

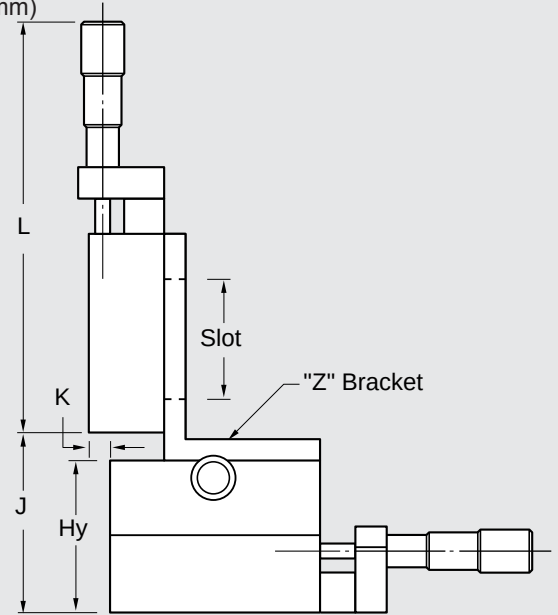
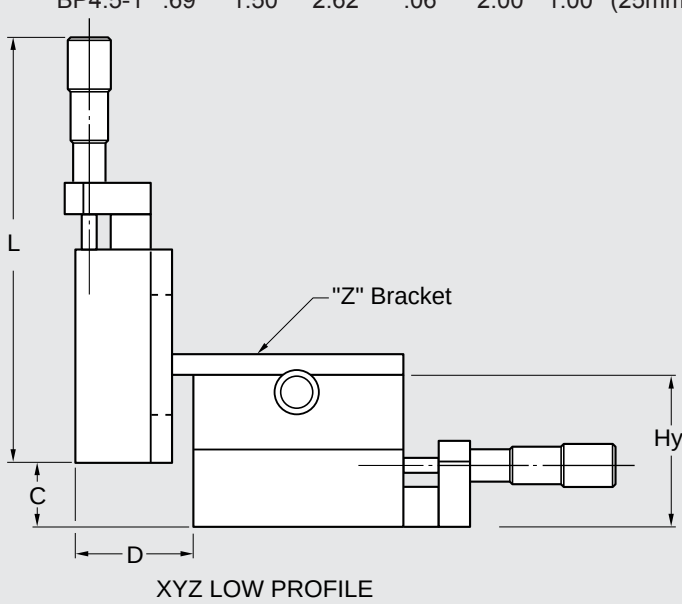
Coefficient
0.003 typical

Construction
Aluminum carriage and base,
hardened steel shafts and balls,
mild steel end caps.

Finish
Black anodize standard
Other finishes on request

MODEL	TRAVEL	WORK SURFACE	OVERALL DIMENSIONS		LOAD CAPACITY, LB		THROUGH HOLE
		A X B	L	Hx	X, XY	Z	
BPS	.25	.75 X .75	2.28	.53	5	1.25	NO
BP1	.50	1.25 X 1.25	3.25	.38	4	1.25	NO
BP2	.50	1.75 X 1.75	3.75	.38	4	1.25	NO
BP3	.50	1.50 X 1.50	3.50	.62	12	2	.312 DIA.
BP4-1	.50 (13 mm)	1.75 X 1.75	4.38	.75	20	2	NO
BP4-2	1.00 (25 mm)	1.75 X 1.75	5.88	.75	20	2	NO
BP4-3	.50 (13 mm)	1.75 X 1.75	4.38	.75	20	2	.50 DIA.
BP4.5-1	.50 (13 mm)	2.62 X 2.62	5.25	1.00	60	2	NO
BP4.5-2	1.00 (25 mm)	2.62 X 2.62	6.75	1.00	60	2	NO
BP4.5-3	.50 (13 mm)	2.62 X 2.62	5.25	1.00	60	2	1.00 DIA.
BP5	.50 (13 mm)	2.00 X 1.75	4.62	.75	20	20	NO
BP6-1	.50 (13 mm)	3.25 X 1.75	5.86	.75	42	20	NO
BP6-2	1.00 (25 mm)	3.25 X 1.75	7.41	.75	42	20	NO
BP7-1	.50 (13 mm)	4.00 X 2.62	6.62	1.00	60	20	NO
BP7-2	1.00 (25 mm)	4.00 X 2.62	8.25	1.00	60	20	NO
BP8-1	1.00 (25 mm)	3.12 X 3.12	7.25	.91	30	30	NO
BP8-2	1.00 (25 mm)	3.12 X 3.12	7.25	.91	30	30	1.00 DIA.
BP9-1	1.00 (25 mm)	4.12 X 4.12	8.25	.91	30	30	NO
BP9-1.5	2.00	4.12 X 4.12	10.25	.91	30	30	NO
BP9-2	1.00 (25 mm)	4.12 X 4.12	8.25	.91	30	30	1.50 DIA.
BP9-2.5	2.00	4.12 X 4.12	10.25	.91	30	30	1.50 DIA.
BP10-1	1.00 (25 mm)	5.12 X 5.12	9.25	.91	30	30	NO
BP10-1.5	2.00	5.12 X 5.12	11.25	.91	30	30	NO
BP10-2	1.00 (25 mm)	5.12 X 5.12	9.25	.91	30	30	2.00 DIA.
BP10-3	2.00	5.12 X 5.12	11.25	.91	30	30	2.00 DIA.
PLAIN MODELS (WITHOUT MICROMETER, BRACKETS OR SPRINGS). X AND XY CONFIGURATIONS ONLY.							
BP1P	.50	1.25 X 1.25	—	.38	4	—	NO
BP2P	.50	1.75 X 1.75	—	.38	4	—	NO
BP3P	.50	1.50 X 1.50	—	.62	12	—	.312 DIA.
BP4-2P	1.00	1.75 X 1.75	—	.75	20	—	NO
BP4-3P	1.00	1.75 X 1.75	—	.75	20	—	.50 DIA.
BP4.5-2P	1.00	2.62 X 2.62	—	1.00	60	—	NO
BP4.5-3P	1.00	2.62 X 2.62	—	1.00	60	—	1.00 DIA.
BP8-1P	2.00	3.12 X 3.12	—	.91	30	—	NO
BP8-2P	2.00	3.12 X 3.12	—	.91	30	—	1.00 DIA.
BP9-1P	3.00	4.12 X 4.12	—	.91	30	—	NO
BP9-2P	3.00	4.12 X 4.12	—	.91	30	—	1.50 DIA.
BP10-1P	4.00	5.12 X 5.12	—	.91	30	—	NO
BP10-2P	4.00	5.12 X 5.12	—	.91	30	—	2.00 DIA.

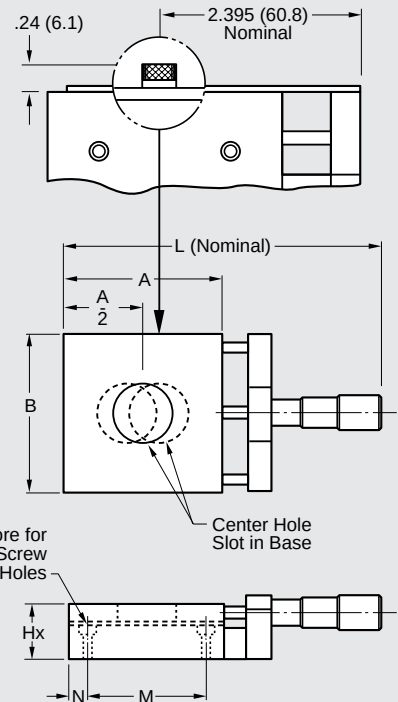
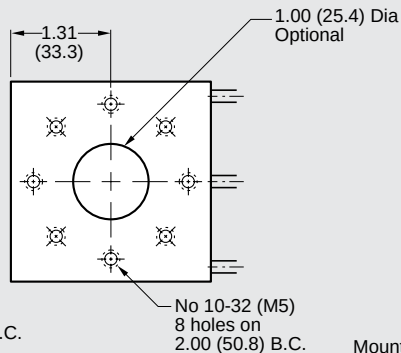
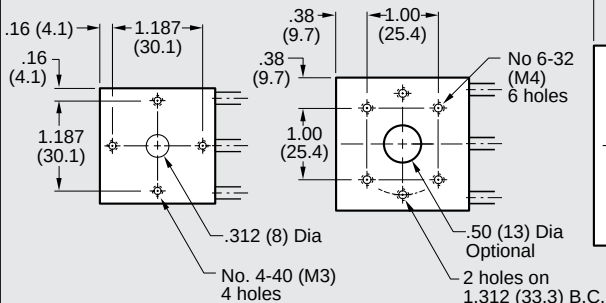
SERIES	C	D	J	K	Hy	SLOT
BP3	.44"	1.00"	1.62"	.32"	1.25"	.38" (8mm) x .88" (22mm)
BP4-1	.69"	1.12"	2.00"	—	1.50"	.50" (3mm) x 1.00" (25mm)
BP4.5-1	.69"	1.50"	2.62"	.06"	2.00"	1.00" (25mm) x 1.50" (38mm)



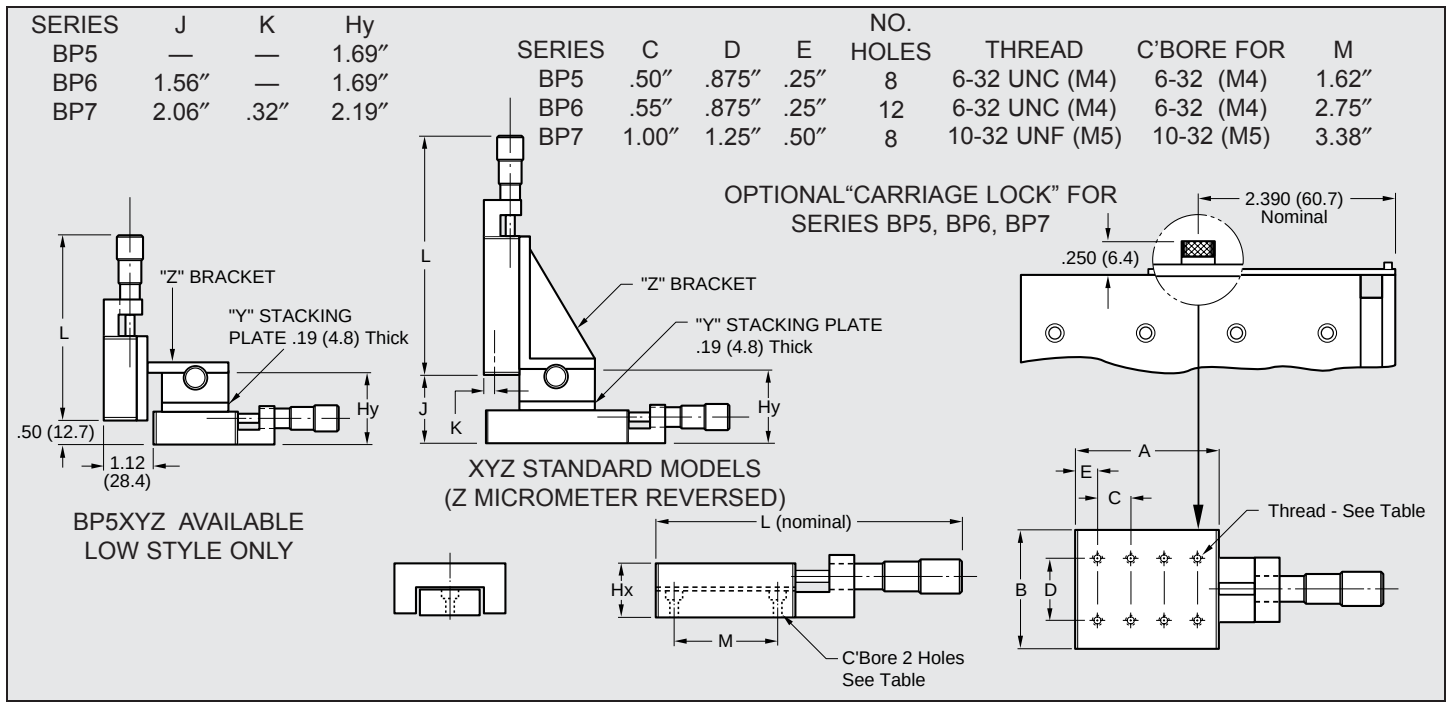
SERIES BP3, BP4-1, BP4.5-1

SERIES	M	N	MTG. SCREW C'BORE
300	1.187"	.16"	#4-M3
450	1.312"	.22"	#6-M4
750	2.00"	.31"	#10-M5

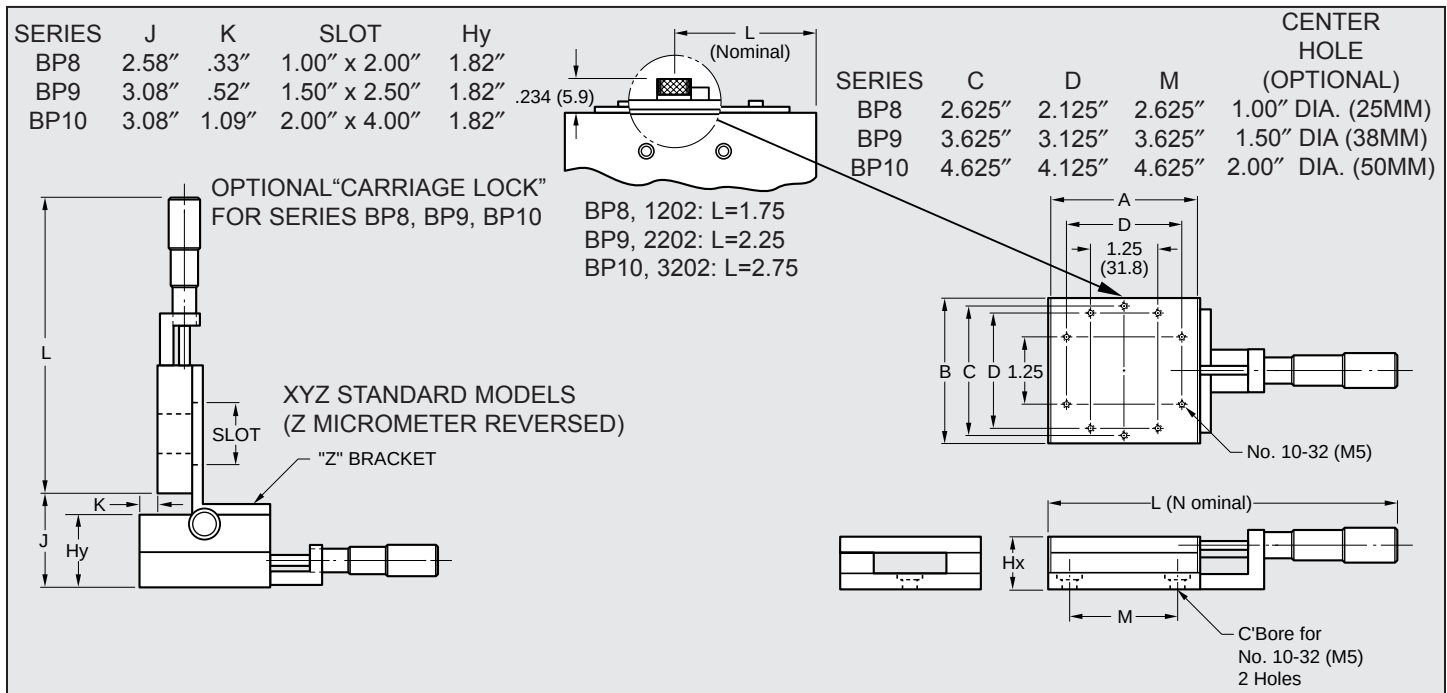
OPTIONAL "CARRIAGE LOCK" FOR SERIES BP3, BP4-1, BP4.5-1



SERIES BP3, BP4-1, BP4.5-1

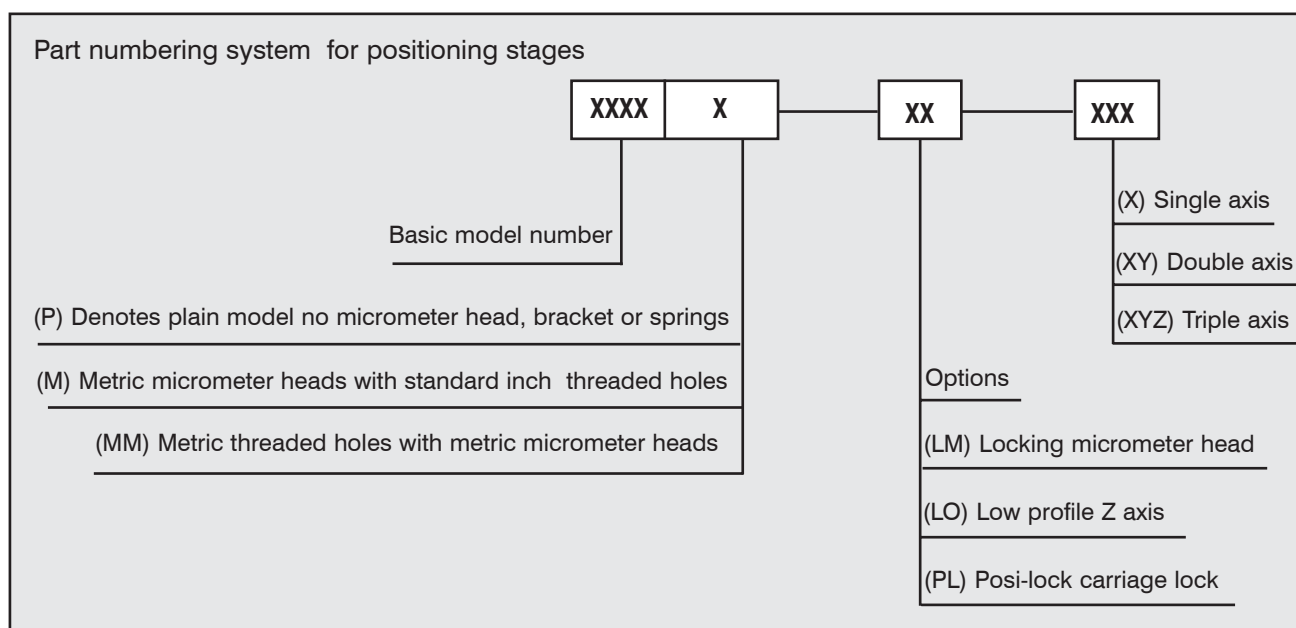


SERIES BP5, BP6, BP7

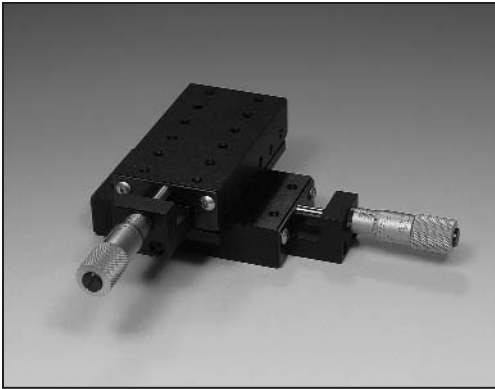


SERIES BP8, BP9, BP10

Nomenclature



- “Carriage Lock” feature consists of steel shim and extended micrometer bracket secured by a screw mounted to the side of the stage carriage. This allows the user to positively lock the position of the carriage during use. Carriage Lock is standard on the model BPS and optional on all others.
- “Locking micrometer heads” are available to positively lock the micrometer setting. Not available for models BPS, BP1, BP2, BP3.
- Space saving side mount micrometer head style available. Please inquire.
- Loads in Z axis will extend springs if too heavy. Series BP5, BP6, BP7, BP8, BP9 and BP10 have micrometer bracket reversed to prevent this and increase Z axis capacity
- Custom designs quoted on request.
- Metric threaded mounting holes optional at no cost.
- P style (plain) are free floating slides without micrometer head, brackets or springs.
- (P-PL) Plain with Carriage Lock available, only on BP8, BP9, & BP10 series.



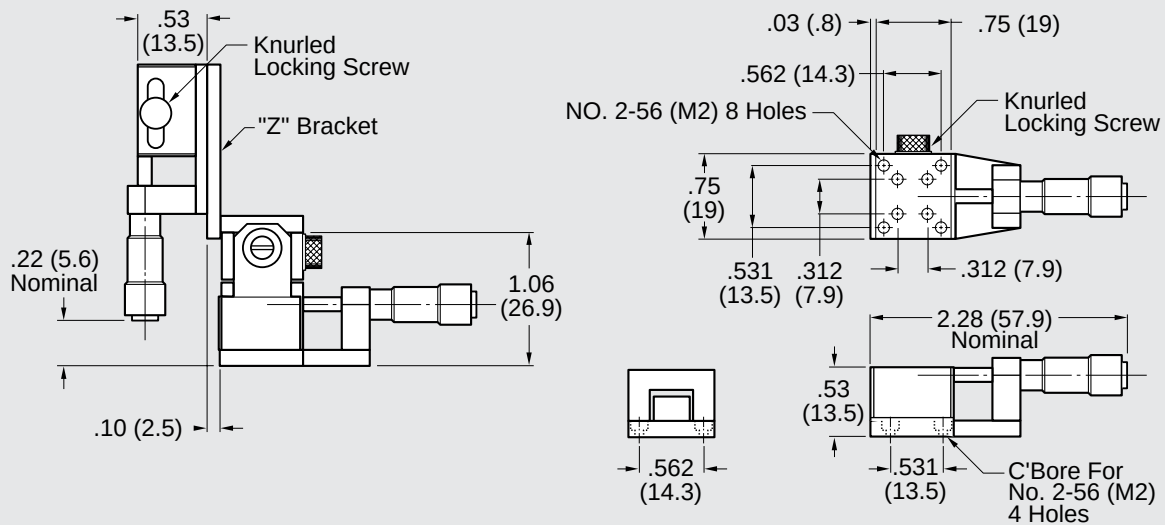
Actuated Stages

Crossed Roller Positioning Stages

Specifications:

Straight line accuracy	.0001"/inch of travel
Repeatability	.0001"
Coefficient of friction	0.003 typical
Drive	Micrometer, .001" graduations standard, .01 mm graduations optional
Construction	Aluminum carriage and base, hardened steel shafts and balls, mild steel endcaps
Finish	Black anodize standard; other finishes on request

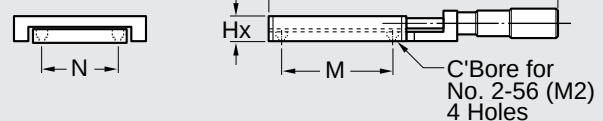
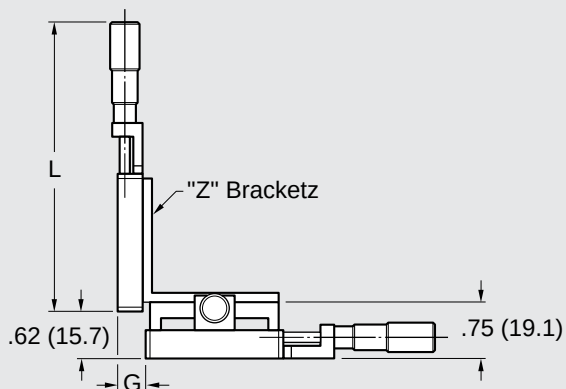
MODEL	TRAVEL	WORK SURFACE	OVERALL DIMENSIONS		LOAD CAPACITY, LB		THROUGH HOLE
		A X B	L	Hx	X, XY	Z	
RPS	.25	.75 X .75	2.28	.53	40	1.25	NO
RP1	.50	1.25 X 1.25	3.25	.38	23	1.25	NO
RP2	.50	1.75 X 1.75	3.75	.38	23	1.25	NO
RP3	.50	1.50 X 1.50	3.50	.62	40	2	.312 DIA.
RP4-1	.50 (13 mm)	1.75 X 1.75	4.38	.75	40	2	NO
RP4-2	1.00 (25 mm)	1.75 X 1.75	5.88	.75	40	2	NO
RP4-3	.50 (13 mm)	1.75 X 1.75	4.38	.75	40	2	.50 DIA.
RP4.5-1	.50 (13 mm)	2.62 X 2.62	5.25	1.00	120	2	NO
RP4.5-2	1.00 (25 mm)	2.62 X 2.62	6.75	1.00	120	2	NO
RP4.5-3	.50 (13 mm)	2.62 X 2.62	5.25	1.00	120	2	1.00 DIA.
RP5	.50 (13 mm)	2.00 X 1.75	4.62	.75	40	20	NO
RP6-1	.50 (13 mm)	3.25 X 1.75	5.86	.75	80	20	NO
RP6-2	1.00 (25 mm)	3.25 X 1.75	7.41	.75	80	20	NO
RP7-1	.50 (13 mm)	4.00 X 2.62	6.62	1.00	160	20	NO
RP7-2	1.00 (25 mm)	4.00 X 2.62	8.25	1.00	160	20	NO
RP8-1	1.00 (25 mm)	3.12 X 3.12	7.25	.91	85	30	NO
RP8-2	1.00 (25 mm)	3.12 X 3.12	7.25	.91	85	30	1.00 DIA.
RP9-1	1.00 (25 mm)	4.12 X 4.12	8.25	.91	85	30	NO
RP9-1.5	2.00	4.12 X 4.12	10.25	.91	85	30	NO
RP9-2	1.00 (25 mm)	4.12 X 4.12	8.25	.91	85	30	1.50 DIA.
RP9-2.5	2.00	4.12 X 4.12	10.25	.91	85	30	1.50 DIA.
RP10-1	1.00 (25 mm)	5.12 X 5.12	9.25	.91	85	30	NO
RP10-1.5	2.00	5.12 X 5.12	11.25	.91	85	30	NO
RP10-2	1.00 (25 mm)	5.12 X 5.12	9.25	.91	85	30	2.00 DIA.
RP10-3	2.00	5.12 X 5.12	11.25	.91	85	30	2.00 DIA.
PLAIN MODELS (WITHOUT MICROMETER, BRACKETS OR SPRINGS), X AND XY CONFIGURATIONS ONLY.							
RP1P	.50	1.25 X 1.25	—	.38	23	—	NO
RP2P	.50	1.75 X 1.75	—	.38	23	—	NO
RP3P	.50	1.50 X 1.50	—	.62	40	—	.312 DIA.
RP4-2P	1.00	1.75 X 1.75	—	.75	40	—	NO
RP4-3P	1.00	1.75 X 1.75	—	.75	40	—	.50 DIA.
RP4.5-2P	1.00	2.62 X 2.62	—	1.00	120	—	NO
RP4.5-3P	1.00	2.62 X 2.62	—	1.00	120	—	1.00 DIA.
RP8-1P	2.00	3.12 X 3.12	—	.91	85	—	NO
RP8-2P	2.00	3.12 X 3.12	—	.91	85	—	1.00 DIA.
RP9-1P	3.00	4.12 X 4.12	—	.91	85	—	NO
RP9-2P	3.00	4.12 X 4.12	—	.91	85	—	1.50 DIA.
RP10-1P	4.00	5.12 X 5.12	—	.91	85	—	NO
RP10-2P	4.00	5.12 X 5.12	—	.91	85	—	2.00



SERIES RPS

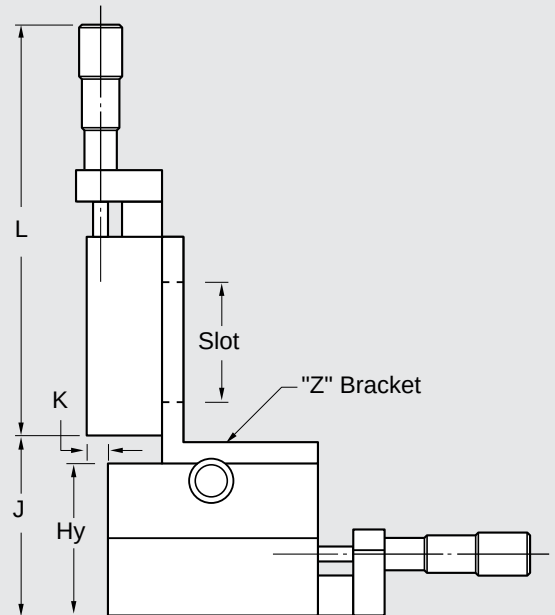
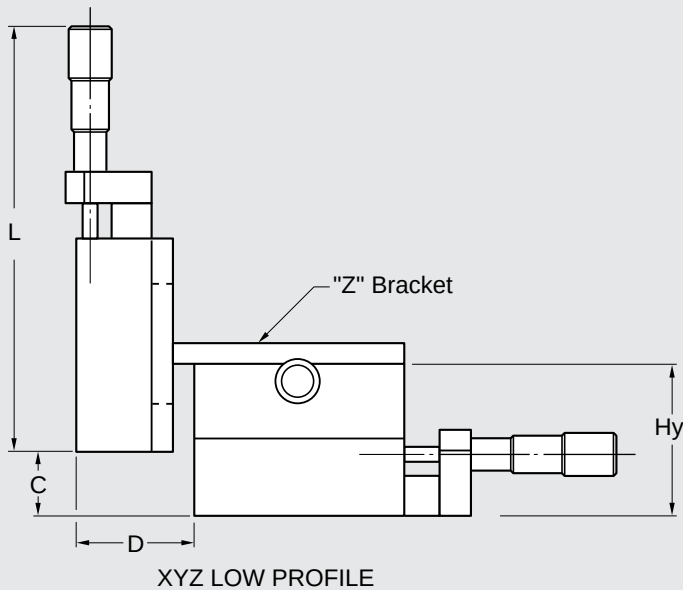
MODEL	G	SERIES	C	D	E	F	G	M	N
RP1 XYZ	.38"	RP1	1.00"	1.00"	.69"	.50"	.38"	1.00"	.69"
RP2 XYZ	.44"	RP2	1.50"	1.50"	1.19"	1.00"	.44"	1.50"	1.19"

OPTIONAL "CARRIAGE LOCK" FOR
SERIES RP1, RP2



SERIES RP1, RP2

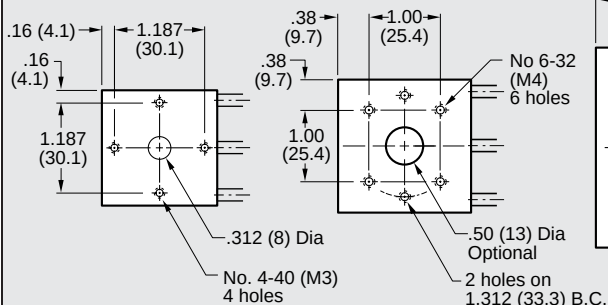
SERIES	C	D	J	K	Hy	SLOT
RP3	.44"	1.00"	1.62"	.32"	1.25"	.38" (8mm) x .88" (22mm)
RP4-1	.69"	1.12"	2.00"	—	1.50"	.50" (13mm) x 1.00" (25mm)
RP4.5-1	.69"	1.50"	2.62"	.06"	2.00"	1.00" (25mm) x 1.50" (38mm)



SERIES RP3, RP4-1, RP4.5-1

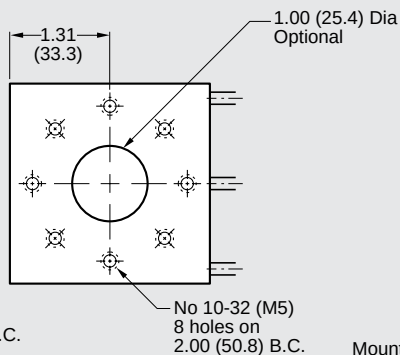
SERIES	M	N	MTG. SCREW C'BORE
RP3	1.187"	.16"	#4-M3
RP4-1	1.312"	.22"	#6-M4
RP4.5-1	2.00"	.31"	#10-M5

OPTIONAL "CARRIAGE LOCK" FOR
SERIES RP3, RP4-1, RP4.5-1

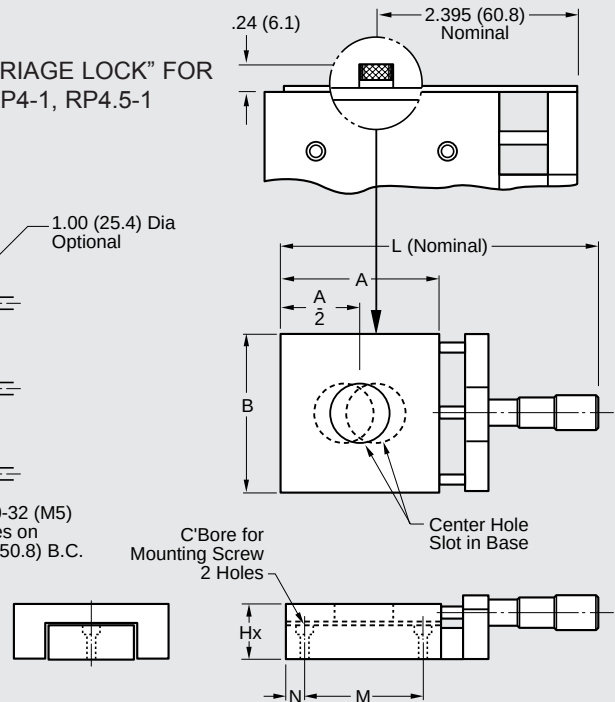


SERIES RP3

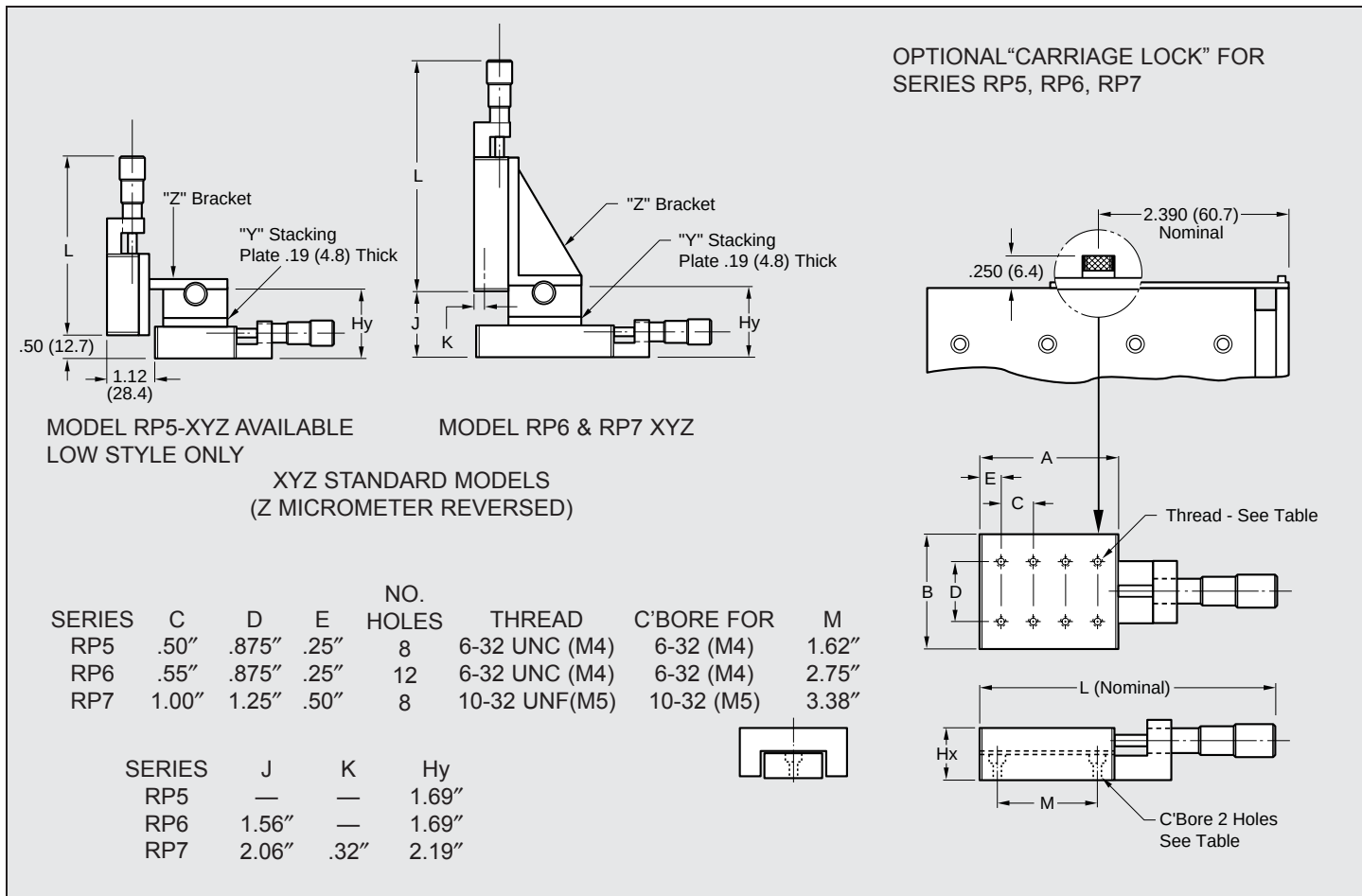
SERIES RP4-1



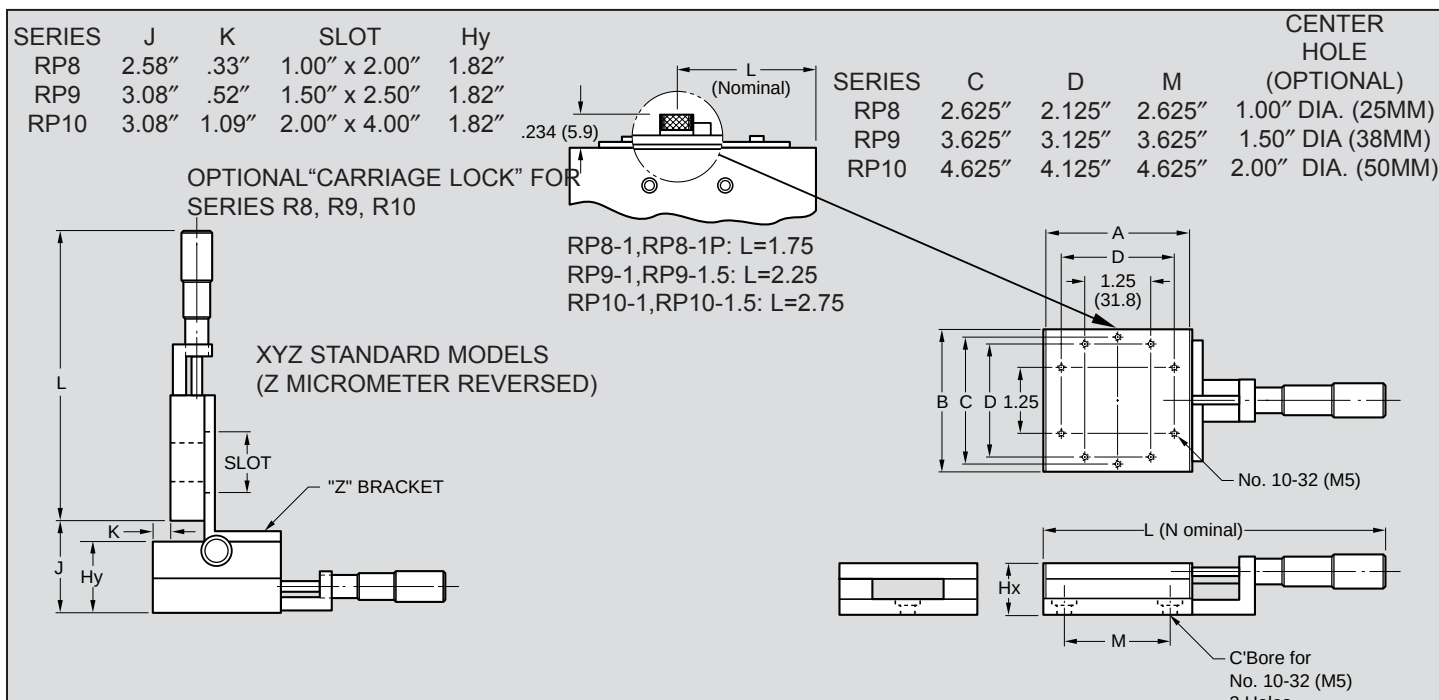
SERIES RP4.5-1



SERIES RP3, RP4-1, RP4.5-1

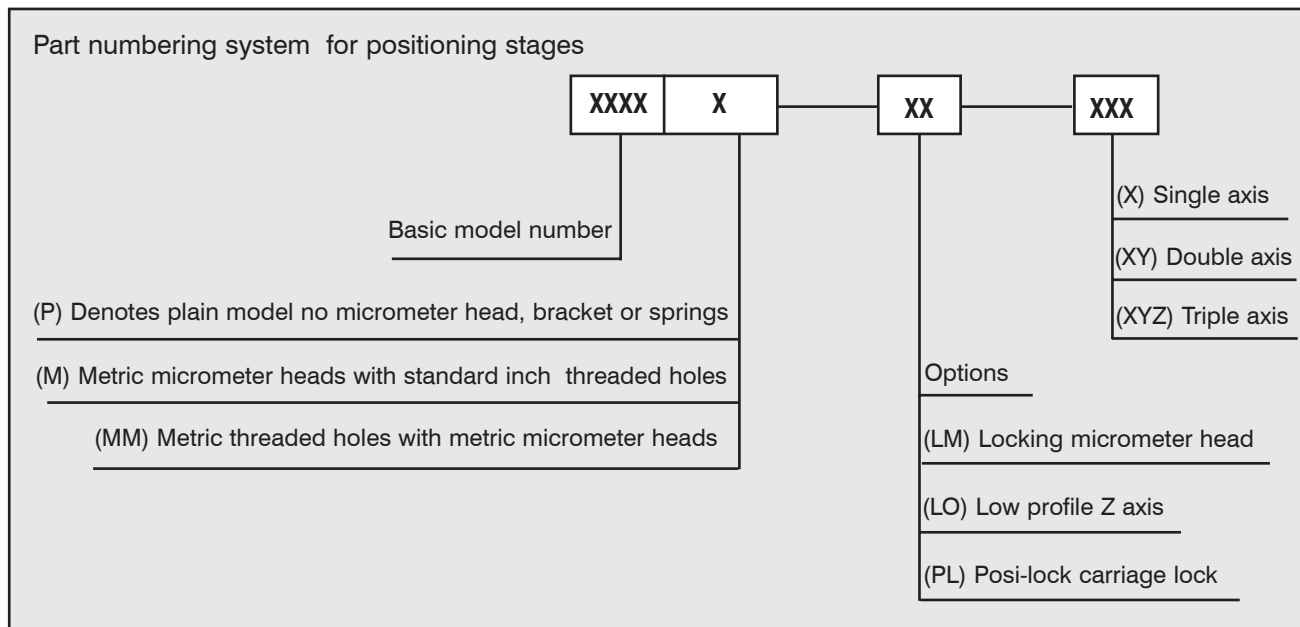


SERIES RP5, RP6, RP7

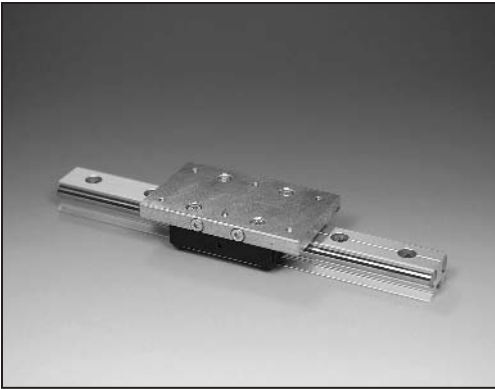


SERIES RP8, RP9, RP10

Nomenclature

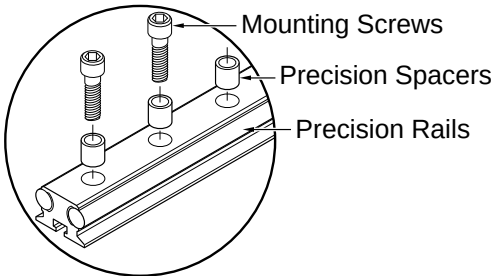


- “Carriage Lock” feature consists of a steel shim and extended micrometer bracket secured by a screw mounted to the side of the stage carriage. This allows the user to positively lock the position of the carriage during use. “Carriage Lock” is standard on the RPS and optional on all others.
- “Locking micrometer heads” are available to positively lock the micrometer setting. Not available for models RPS, RP1, RP3.
- Space saving side mount micrometer head style available. Please inquire.
- Loads in Z axis will extend springs if too heavy. Series RP5, RP6, RP7, RP8, RP9 and RP10 have micrometer bracket reversed to prevent this and increase Z axis capacity.
- Custom designs quoted on request.
- Metric threaded mounting holes optional at no cost.
- P style (plain) are free floating slides without micrometer head, brackets or springs.
- P-PL Plain with Carriage Lock available. Only on RP8, RP9, & RP10 series.



Extended Travel Linear Slides

Econo-Rail Slides

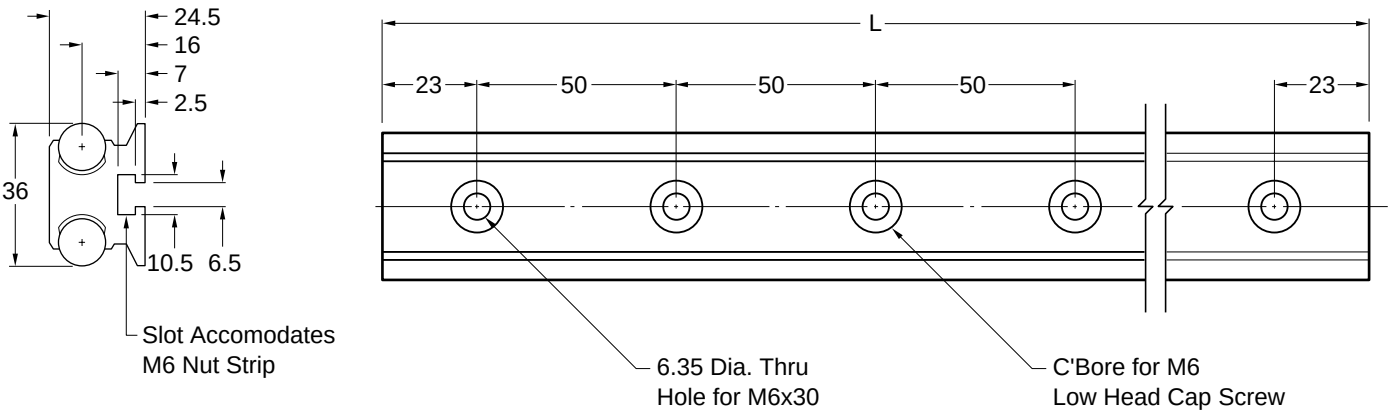


Double Rail Guide

Double Rail Guide

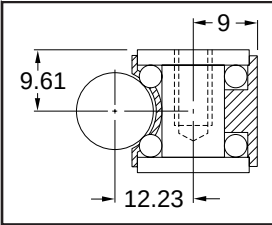
The double rail guide consists of two parallel, hardened and ground 12 mm diameter steel shafts, accuracy grade h6, hardness RC 62. These rails are secured in extruded aluminum channels 25 mm high. Parallelism and accurate center distances are achieved by the use of 12mm diameter h6 hardened and ground spacers inserted into the extrusion at 50 mm centers. The hardened spacers, hardness RC 62, are drilled to 6.5 mm diameter to accommodate mounting screws.

The intrinsic accuracy of this bearing system is provided by the precision steel shafts separated by precision spacers. The aluminum extrusion acts as a frame holding the components together. The entire system can be fabricated with no precision machining and, therefore, is very economical.



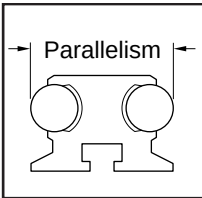
MODEL#	NOMINAL LENGTH MM (INCHES)	
ER 300	300	(11.8)
ER 400	400	(15.7)
ER 500	500	(19.7)
ER 600	600	(23.6)
ER 850	850	(33.5)
ER 1000	1000	(39.4)
ER 1100	1100	(43.3)
ER 1250	1250	(49.2)
ER 1350	1350	(53.1)
ER 1500	1500	(59.1)
ER 1750	1750	(68.9)
ER 2000	2000	(78.7)
ER 2500	2500	(98.4)
ER 3000	3000	(118.1)

Principle Of Operation



1. Ground bearing block RC 60
2. Two parallel ball circuits 3.5mm
3. Steel shaft 12mm, h6, RC 60
4. Plastic cage for ball circulation

Technical Information

	Parallelism	Weight
	0.04 mm / m 0.0005" / ft	3kg / m 2lb / ft

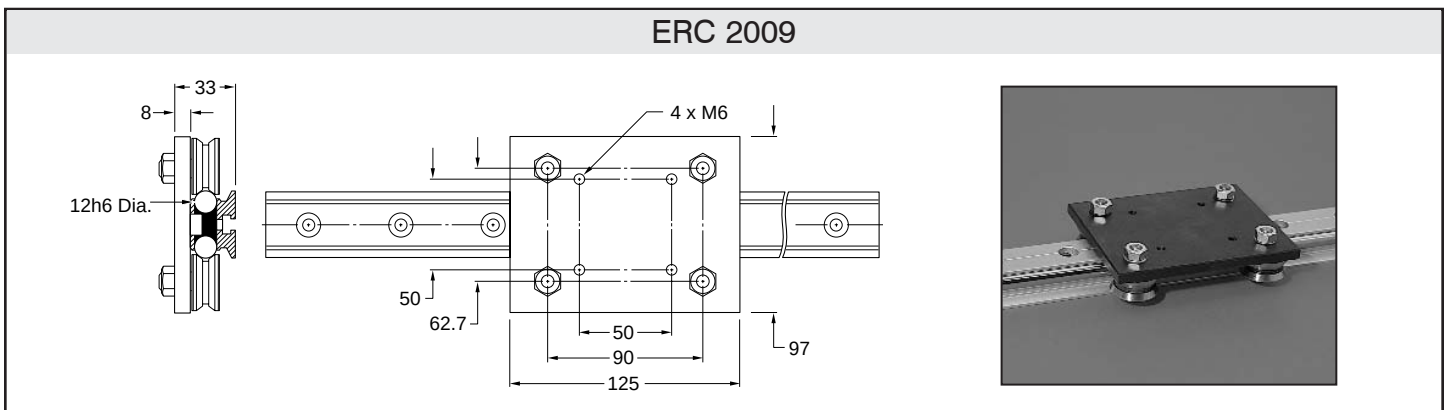
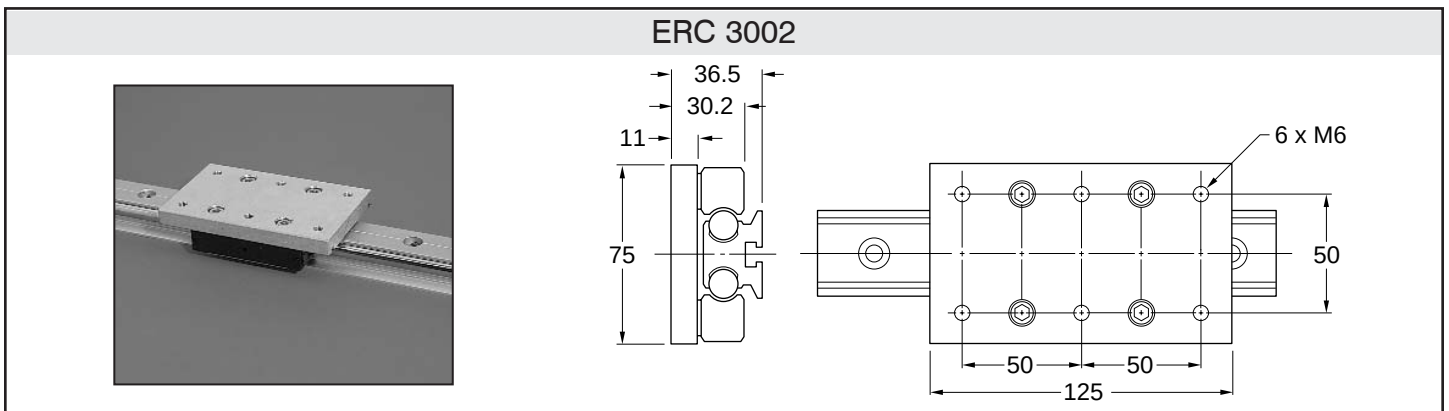
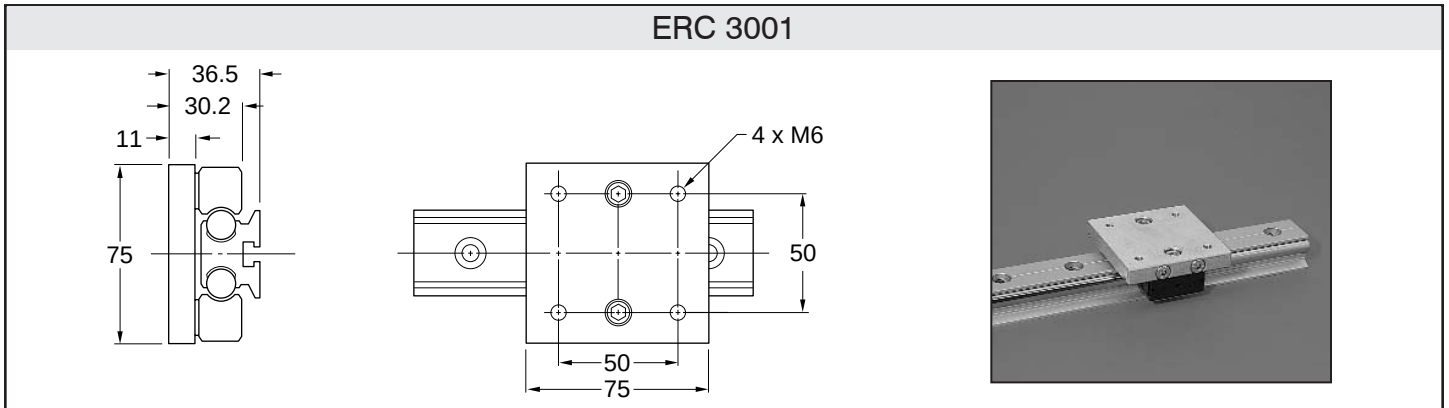
NOTE: STEEL SPACERS ARE NOT TO BE REMOVED

CARRIAGES

The Econo Rail Linear Bearing System has been designed to provide an economical guide system for a wide variety of applications, material handling equipment, pc board transfer lines, adhesive dispensing equipment, sign making machines, CNC wood routers, automation equipment, and robotics.

Precision and Economy

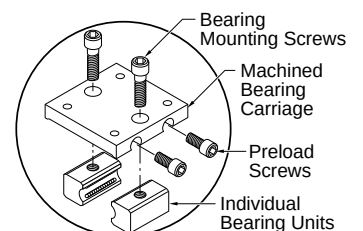
The patented design of the Econo Rail System provides precise motion and allows the guide system to be fabricated economically.



Linear Bearing

The heart of the linear bearing consists of a single piece bearing core which is ground all over and two recirculating ball bearing circuits with 3.5 mm diameter steel balls.

Two bearing elements are mounted on a specially machined plate to provide precise alignment. The bearing is preloaded to eliminate play and provide smooth and accurate motion along the track.



Linear Bearing

Load & Life

The load capacity of the bearing assembly is a function of the applied force and its angle of application. Only the components of the applied force F_y and F_z are to be used in the life and load calculations.

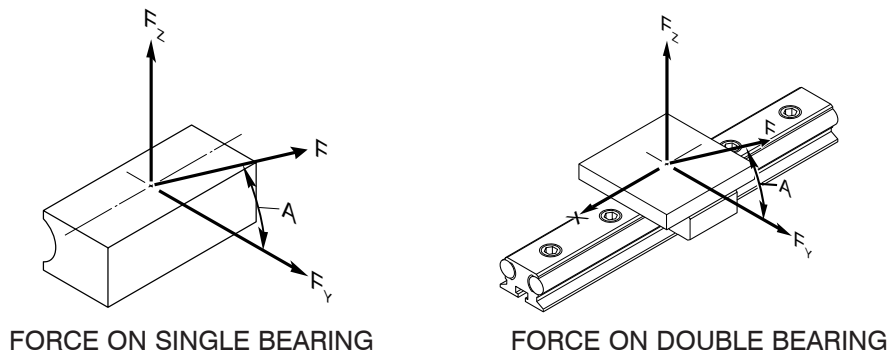


FIGURE 1.

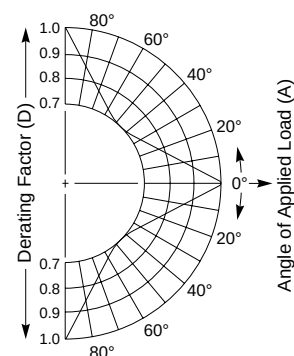


FIGURE 2.

TABLE 1:

Maximum static load and dynamic load capacity as a function of the angle A, of the applied force F

Carriage	Maximum Load Newtons (lbs.)	
	Static	Dynamic
ERC 3001	D x 430N (96)	D x 400N (89)
ERC 3002	D x 1270N (284)	D x 750N (168)
ERC 2009	FZ = 470N (106) FY = 1100N (246)	FZ = 1075N (240) FY = 2450N (548)

TABLE 2:

Maximum permissible moment for carriages

ERC	Moment Nm (lb. /in.)		
	Static		
	M_x	M_y	M_z
3001	7.3 (64.6)	3.7 (32.7)	3.7 (32.7)
3002	22 (194.7)	12.6 (111.5)	12.6 (111.5)
2009	20 (177)	36 (318.6)	42 (371.7)
ERC	Dynamic		
	M_x	M_y	M_z
	M_x	M_y	M_z
3001	7.3 (64.6)	3.7 (32.7)	3.7 (32.7)
3002	22 (194.7)	12.6 (111.5)	12.6 (111.5)
2009	50 (442.5)	90 (796.5)	100 (885)

Example:

ERC 3001 will be used with an applied load of 50N acting at an angle 45° from the horizontal.

1. To determine the maximum permitted static load that ERC 3001 can carry refer to table 1.

Maximum permitted static load = D x 430N, where D, the derating factor, is determined from Figure 2. At 45°, the derating factor is 0.7.

Maximum permitted static load = 0.7 x 430N = 301N

Static safety factor = $\frac{301N}{50N} = 6.02$

2. To determine the maximum permitted dynamic load that ERC 3001 can carry, refer to table 1.

Maximum permitted dynamic load = D x 400N, where D, the derating factor is determined from figure 2. At 45°, the derating factor is 0.7.

Maximum permitted dynamic load = 0.7 x 400N = 280N

3. The useful life is given by:

(Static Safety Factor)³ x 10⁵ meters
= (6.02)³ x 10⁵ meters
= 2.18 x 10⁷ meters

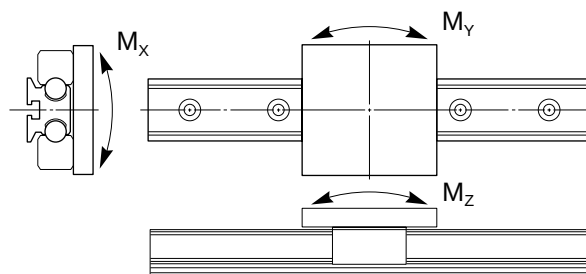


FIGURE 3.



Highest Capacity Slides

Crossed Roller Tables

Stainless Steel Models Available

For applications where particulate contamination caused by corrosion must be reduced, Tusk offers crossed roller positioning tables equipped with corrosion-resistant, stainless steel, crossed roller linear bearings.

TO ORDER:
Add SS to end of number. For example: RT1-1SS

Dimensions in inches (mm)					BASE MOUNTING HOLES (COUNTERBORED)			CARRIAGE MOUNTING HOLES (THREADED)	
MODEL	STAINLESS STEEL	TRAVEL T	LENGTH L	LOAD CAPACITY LBF (kgf)	NO. HOLES	U	SPACING W	NO. HOLES	SPACING M
RT1-1	SS	1.00	1.969 (50)	96 (44)	4	1.575 (40)	—	4	1 x .5906 (15)
RT1-2	SS	1.50	2.559 (65)	114 (52)	4	2.165 (55)	—	6	2 x .5906 (15)
RT1-3	SS	2.00	3.150 (80)	145 (66)	8	2.756 (70)	1.575 (40)	8	3 x .5906 (15)
RT1-4	SS	2.50	3.740 (95)	162 (74)	8	3.346 (85)	2.165 (55)	10	4 x .5906 (15)
RT1-5	SS	3.00	4.921 (125)	198 (90)	8	4.528 (115)	3.346 (85)	14	6 x .5906 (15)
RT2-.5-18	SS	0.71	1.378 (35)	66 (30)	4	0.984 (25)	—	2	—
RT2-1	SS	1.00	1.969 (50)	96 (44)	4	1.575 (40)	—	4	1 x .5906 (15)
RT2-1-30	SS	1.18	1.969 (50)	96 (44)	4	1.575 (40)	—	4	1 x .5906 (15)
RT2-2	SS	1.50	2.559 (65)	114 (52)	4	2.165 (55)	—	6	2 x .5906 (15)
RT2-2-40	SS	1.58	2.559 (65)	114 (52)	4	2.165 (55)	—	6	2 x .5906 (15)
RT2-3-50	SS	1.97	3.150 (80)	145 (66)	8	2.756 (70)	1.575 (40)	8	3 x .5906 (15)
RT2-3	SS	2.00	3.150 (80)	145 (66)	8	2.756 (70)	1.575 (40)	8	3 x .5906 (15)
RT2-4-60	SS	2.36	3.740 (95)	162 (74)	8	3.346 (85)	2.165 (55)	10	4 x .5906 (15)
RT2-4	SS	2.50	3.740 (95)	162 (74)	8	3.346 (85)	2.165 (55)	10	4 x .5906 (15)
RT2-4.5-70	SS	2.76	4.331 (110)	187 (85)	8	3.937 (100)	2.756 (70)	12	5 x .5906 (15)
RT2-5	SS	3.00	4.921 (125)	198 (90)	8	4.528 (115)	3.346 (85)	14	6 x .5906 (15)
RT2-5-80	SS	3.15	4.921 (125)	198 (90)	8	4.528 (115)	3.346 (85)	14	6 x .5906 (15)
RT2-6-100	SS	3.94	6.102 (155)	317 (144)	8	5.708 (145)	4.527 (115)	18	8 x .5906 (15)
RT2-7-120	SS	4.72	7.283 (185)	383 (174)	8	6.889 (175)	5.708 (145)	22	10 x .5906 (15)
RT3-1	SS	1.00	2.165 (55)	193 (88)	4	1.378 (35)	—	2	—
RT3-1-30	SS	1.18	2.165 (55)	193 (88)	4	1.378 (35)	—	2	—
RT3-1.5-45	SS	1.77	3.150 (80)	220 (100)	4	2.362 (60)	—	4	1 x .9843 (25)
RT3-2	SS	2.00	4.134 (105)	338 (154)	4	3.345 (85)	—	6	2 x .9843 (25)
RT3-2-60	SS	2.36	4.134 (105)	338 (154)	4	3.345 (85)	—	6	2 x .9843 (25)
RT3-2.5-75	SS	2.95	5.118 (130)	374 (170)	4	4.330 (110)	—	8	3 x .9843 (25)
RT3-3	SS	3.00	6.102 (155)	477 (217)	4	5.315 (135)	—	10	4 x .9843 (25)
RT3-3-90	SS	3.54	6.102 (155)	477 (217)	4	5.315 (135)	—	10	4 x .9843 (25)
RT3-4	SS	4.00	7.087 (180)	545 (248)	4	6.299 (160)	—	12	5 x .9843 (25)
RT3-4-105	SS	4.13	7.087 (180)	545 (248)	4	6.299 (160)	—	12	5 x .9843 (25)
RT3-5	SS	5.00	8.071 (205)	576 (262)	8	7.283 (185)	3.346 (85)	14	6 x .9843 (25)
RT3-5-130	SS	5.12	8.071 (205)	576 (262)	8	7.283 (185)	3.346 (85)	14	6 x .9843 (25)
RT3-6-155	SS	6.10	9.055 (230)	638 (290)	8	8.267 (210)	4.300 (110)	16	7 x .9843 (25)
RT3-7-180	SS	7.09	10.039 (255)	682 (310)	8	9.251 (235)	5.314 (135)	18	8 x .9843 (25)
RT3-8-205	SS	8.07	11.024 (280)	748 (340)	8	10.236 (260)	6.299 (160)	20	9 x .9843 (25)
RT3-9-230	SS	9.06	12.008 (305)	792 (360)	8	11.220 (285)	7.283 (185)	22	10 x .9843 (25)
RT4-1	SS	2.00	3.346 (85)	430 (196)	4	2.559 (65)	—	2	—
RT4-2	SS	3.00	4.921 (125)	600 (273)	4	4.134 (105)	—	4	1 x 1.575 (40)
RT4-3	SS	4.00	6.496 (165)	723 (329)	4	5.709 (145)	—	6	2 x 1.575 (40)
RT4-4	SS	5.00	8.071 (205)	870 (395)	4	7.283 (185)	—	8	3 x 1.575 (40)
RT4-5	SS	6.00	9.646 (245)	1016 (462)	4	8.858 (225)	—	10	4 x 1.575 (40)
RT5-1	SS	3.00	4.331 (110)	616 (280)	4	3.543 (90)	—	2	—
RT5-2	SS	4.00	6.300 (160)	1062 (483)	4	5.512 (140)	—	4	1 x 1.969 (50)
RT5-3	SS	6.00	10.24 (260)	1600 (728)	4	9.449 (240)	—	8	3 x 1.969 (50)
RT5-4	SS	9.00	14.17 (360)	2032 (924)	8	13.39 (340)	5.512 (140)	12	5 x 1.969 (50)

SERIES	Mounting Dimensions							
	CARRIAGE				BASE			
	SPACING N	P	THREAD J	DEPTH K	SPACING R	S	COUNTERBORE D	d
RT1	0.689 (17.5)	0.394 (10)	4-40	0.177 (4.5)	0.197 (5)	0.866 (22)	0.198 (5)	0.125 (3.1)
RT2	0.689 (17.5)	0.591 (15)	6-32	0.315 (8)	0.197 (5)	1.181 (30)	0.241 (6.1)	0.149 (3.7)
RT3	1.083 (27.5)	0.984 (25)	10-32	0.413 (10.5)	0.394 (10)	1.575 (40)	0.328 (8.3)	0.197 (5)
RT4	1.673 (42.5)	1.575 (40)	10-32	0.512 (13)	0.394 (10)	2.165 (55)	0.328 (8.3)	0.197 (5)
RT5	2.165 (55)	1.969 (50)	1/4-20	0.630 (16)	0.394 (10)	2.362 (60)	0.406 (10.3)	0.266 (6.7)

Dimensions in inches (mm)

Specifications:

Straight Line Accuracy
0.0001"/inch of travel

Finish
Carriage: Gold anodize, Base: Black anodize

Positional Repeatability
0.0001"

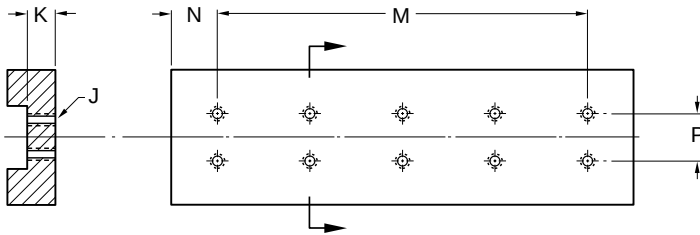
Coefficient of Friction
0.003 typical

Construction
Aluminum carriage and base, hardened steel crossed roller rail sets.

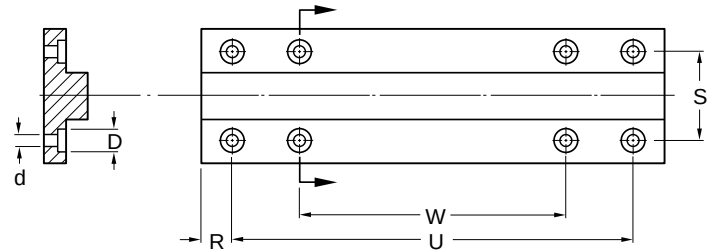
Ordering
Order standard positioning tables from table by model number according to load and travel required.

Delivery stock to 6 weeks.

CARRIAGE MOUNTING DIMENSIONS

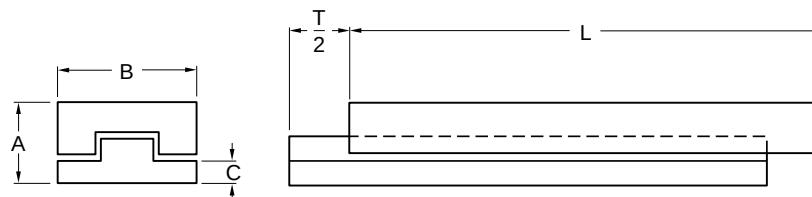


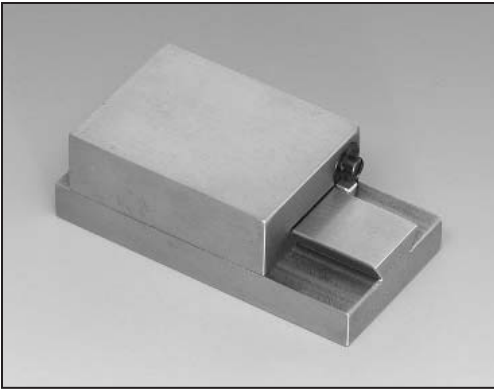
BASE MOUNTING DIMENSIONS



SERIES	Profile Dimensions		
	HEIGHT A ±.005 (0.13)	WIDTH B ±.010 (0.25)	BASE THICKNESS C
RT1	0.590 (15)	1.181 (30)	0.160 (4.1)
RT2	0.827 (21)	1.575 (40)	0.256 (6.5)
RT3	1.102 (28)	2.362 (60)	0.354 (9)
RT4	1.378 (35)	3.150 (80)	0.413 (10.5)
RT5	1.772 (45)	3.937 (100)	0.512 (13)

Dimensions in inches (mm)





Highest Capacity Slides

DoveTail Slides

DOVETAIL SLIDE USES

- ☐ Work feeders for production milling.
- ☐ Shuttle devices.
- ☐ Assembly equipment.
- ☐ Special machines.
- ☐ Work holding devices.
- ☐ Checking fixtures.
- ☐ Positioning fixtures for staking, drilling, reaming, etc.

MATERIAL

TUSK DOVETAIL SLIDES are made of continuous cast G2 40,000 PSI pearlitic grey iron. This material may be milled, drilled tapped, etc. for altering or mounting purposes.

DESIGN

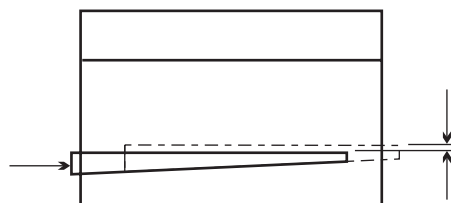
Short carriages with long travel, up to 12 inches, or long carriage with short base, all in one "Precision Dovetail Slide," that may be mounted in any position.

All Tusk Dovetail Slides from the 1.5 inch width to our 4 inch width have tapered gibs. These gibs assure accuracy throughout the life of the slide. Available with two carriages on a single base. Slides are manufactured with no standard mounting holes. Customer supplied holes must be more than 0.050" from way areas.

Our Dovetail slides have precision ground outer surfaces resulting in runout accuracy of .001 inches per 12 inches of travel. Lubrication is provided for with ball detent oilers. 10W light hydraulic oil recommended.

Tapered gibs are adjusted with a single screw that moves the gib on the taper. This type of gib remains parallel and wear is less as it occurs over the entire surface.

Straight gibs, when improperly adjusted, can cause binding in one area and looseness in another, creating uneven wear.

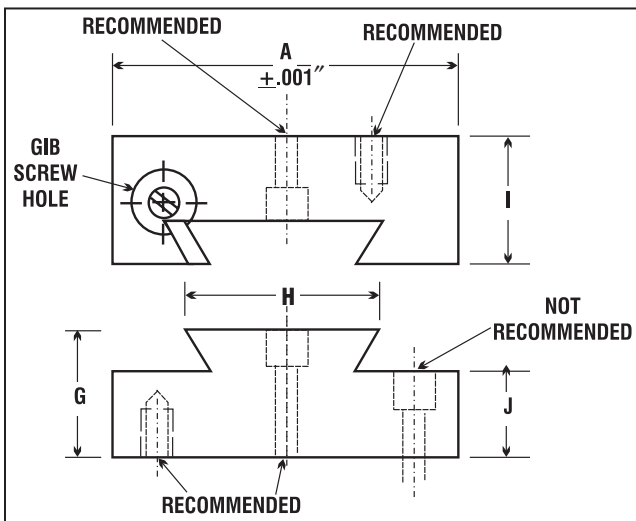
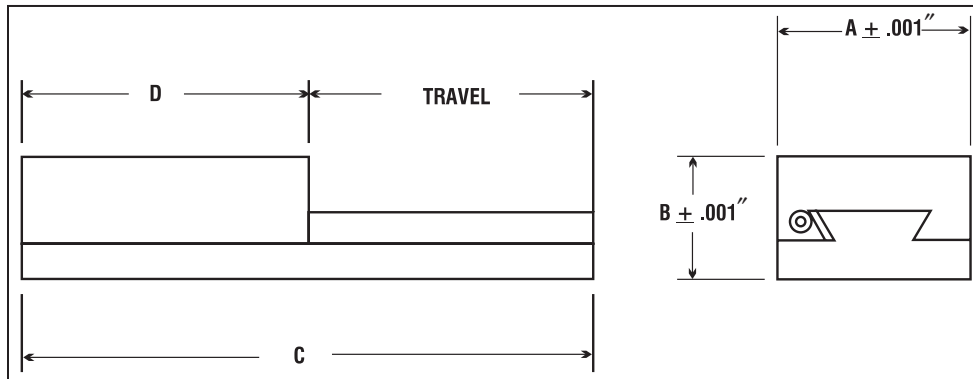


MODEL	A	B	C	D	TRAVEL
DT 1.5-10	1.500	1.000	3	2	1"
DT 1.5-20	1.500	1.000	4	2	2"
DT 1.5-30	1.500	1.000	5	2	3"
DT 1.5-40	1.500	1.000	6	2	4"
DT 1.5-50	1.500	1.000	7	2	5"
DT 1.5-60	1.500	1.000	8	2	6"
DT 1.5-70	1.500	1.000	9	2	7"
DT 1.5-80	1.500	1.000	10	2	8"
DT 1.5-90	1.500	1.000	11	2	9"
DT 1.5-100	1.500	1.000	12	2	10"

MODEL	A	B	C	D	TRAVEL
DT 2-10	2.000	1.250	4	3	1"
DT 2-20	2.000	1.250	5	3	2"
DT 2-30	2.000	1.250	6	3	3"
DT 2-40	2.000	1.250	7	3	4"
DT 2-50	2.000	1.250	8	3	5"
DT 2-60	2.000	1.250	9	3	6"
DT 2-70	2.000	1.250	10	3	7"
DT 2-80	2.000	1.250	11	3	8"
DT 2-90	2.000	1.250	12	3	9"
DT 2-100	2.000	1.250	13	3	10"
DT 2-110	2.000	1.250	14	3	11"
DT 2-120	2.000	1.250	15	3	12"

MODEL	A	B	C	D	TRAVEL
DT 3-10	3.000	1.500	5	4	1"
DT 3-20	3.000	1.500	6	4	2"
DT 3-30	3.000	1.500	7	4	3"
DT 3-40	3.000	1.500	8	4	4"
DT 3-50	3.000	1.500	9	4	5"
DT 3-60	3.000	1.500	10	4	6"
DT 3-70	3.000	1.500	11	4	7"
DT 3-80	3.000	1.500	12	4	8"
DT 3-90	3.000	1.500	13	4	9"
DT 3-100	3.000	1.500	14	4	10"
DT 3-110	3.000	1.500	15	4	11"
DT 3-120	3.000	1.500	16	4	12"

MODEL	A	B	C	D	TRAVEL
DT 4-10	4.000	1.750	6	5	1"
DT 4-20	4.000	1.750	7	5	2"
DT 4-30	4.000	1.750	8	5	3"
DT 4-40	4.000	1.750	9	5	4"
DT 4-50	4.000	1.750	10	5	5"
DT 4-60	4.000	1.750	11	5	6"
DT 4-70	4.000	1.750	12	5	7"
DT 4-80	4.000	1.750	13	5	8"
DT 4-90	4.000	1.750	14	5	9"
DT 4-100	4.000	1.750	15	5	10"
DT 4-110	4.000	1.750	16	5	11"
DT 4-120	4.000	1.750	17	5	12"

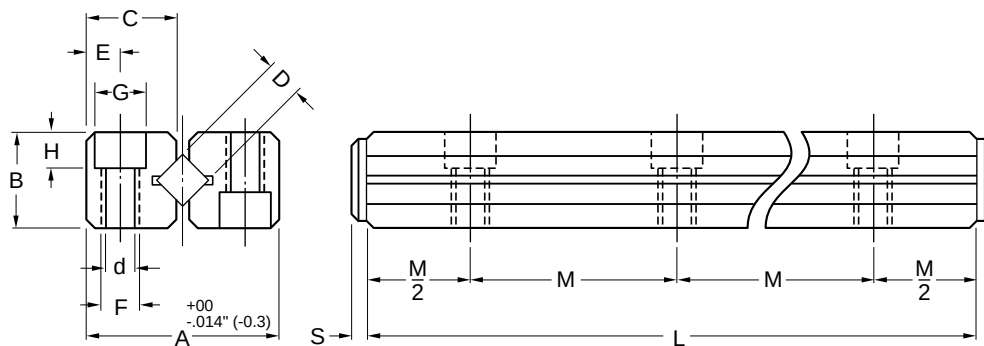


MODEL	A	G	H	I	J
DT 1.5-00	1.500	.609	.687	.625	.375
DT 2-00	2.000	.743	1.062	.750	.500
DT 3-00	3.000	.895	1.640	.937	.562
DT 4-00	4.000	.984	2.470	1.187	.562



Highest Capacity Slides

Crossed Roller Rail Sets



Length, Travel, and Load Selection

MODEL	NO. OF ROLLERS IN EACH RETAINER	LENGTH L	TRAVEL T	NO. HOLES	RAIL SET LOAD CAPACITY LB	MODEL	NO. OF ROLLERS IN EACH RETAINER	LENGTH L	TRAVEL T	NO. HOLES	RAIL SET LOAD CAPACITY LB
CR-1020	5	0.788 (20)	0.473 (12)	2	44	CR-3225	31	8.858 (225)	5.315 (135)	9	682
CR-1030	7	1.181 (30)	0.788 (20)	3	61	CR-3250	35	9.843 (250)	5.709 (145)	10	770
CR-1040	10	1.575 (40)	1.063 (27)	4	88	CR-3275	38	10.827 (275)	6.496 (165)	11	836
CR-1050	13	1.969 (50)	1.260 (32)	5	114	CR-3300	42	11.811 (300)	6.890 (175)	12	924
CR-1060	16	2.362 (60)	1.457 (37)	6	140	CR-3325	45	12.795 (325)	7.677 (195)	13	990
CR-1070	19	2.756 (70)	1.654 (42)	7	167	CR-3350	49	13.780 (350)	8.071 (205)	14	1,078
CR-1080	21	3.150 (80)	1.969 (50)	8	184						
CR-2030	5	1.181 (30)	0.709 (18)	2	66	CR-4080	7	3.150 (80)	2.283 (58)	2	308
CR-2045	8	1.772 (45)	0.945 (24)	3	105	CR-4120	11	4.725 (120)	3.228 (82)	3	484
CR-2060	11	2.362 (60)	1.181 (30)	4	145	CR-4160	15	6.299 (160)	4.134 (105)	4	660
CR-2075	13	2.953 (75)	1.732 (44)	5	171	CR-4200	19	7.874 (200)	5.118 (130)	5	836
CR-2090	16	3.544 (90)	1.969 (50)	6	211	CR-4240	23	9.449 (240)	5.905 (175)	6	1,012
CR-2105	18	4.134 (105)	2.520 (64)	7	237	CR-4280	27	11.024 (280)	6.890 (175)	7	1,188
CR-2120	21	4.725 (120)	2.756 (70)	8	277	CR-4320	31	12.598 (320)	7.874 (200)	8	1,364
CR-2135	23	5.315 (135)	3.307 (84)	9	303	CR-4360	35	14.173 (360)	8.858 (225)	9	1,540
CR-2150	26	5.906 (150)	3.544 (90)	10	343	CR-4400	39	15.748 (400)	9.843 (250)	10	1,716
CR-2165	29	6.496 (165)	3.740 (95)	11	382	CR-4440	43	17.323 (440)	10.630 (270)	11	1,892
CR-2180	32	7.087 (180)	3.937 (100)	12	422	CR-4480	47	18.898 (480)	11.614 (295)	12	2,068
CR-3050	7	1.969 (50)	1.102 (28)	2	154	CR-6100	8	3.937 (100)	2.165 (55)	2	704
CR-3075	10	2.953 (75)	1.890 (48)	3	220	CR-6150	12	5.906 (150)	3.346 (85)	3	1,056
CR-3100	14	3.937 (100)	2.283 (58)	4	308	CR-6200	16	7.874 (200)	4.724 (120)	4	1,408
CR-3125	17	4.921 (125)	3.071 (78)	5	374	CR-6250	20	9.843 (250)	5.906 (150)	5	1,760
CR-3150	21	5.906 (150)	3.464 (88)	6	462	CR-6300	24	11.811 (300)	7.283 (185)	6	2,112
CR-3175	24	6.890 (175)	4.134 (105)	7	528	CR-6350	28	13.780 (350)	8.465 (215)	7	2,464
CR-3200	28	7.874 (200)	4.528 (115)	8	616	CR-6400	32	15.748 (400)	9.646 (245)	8	2,816

Please specify (SS) for Stainless Steel

SERIES	Profile Dimensions					Mounting Dimensions						
	A	B	C	D	S	M	E	F*	J**	d	G	H
CR-1	0.335 (8.5)	0.158 (4.0)	0.154 (3.9)	0.059 (1.5)	0.059 (1.5)	0.3937 (10)	0.0709 (1.8)	M2	#0	0.065 (1.65)	0.118 (3.0)	0.055 (1.4)
CR-2	0.473 (12)	0.236 (6.0)	0.217 (5.5)	0.079 (2.0)	0.079 (2.0)	0.591 (15)	0.0984 (2.5)	M3	#2	0.100 (2.55)	0.173 (4.4)	0.079 (2.0)
CR-3	0.708 (18)	0.315 (8.0)	0.327 (8.3)	0.118 (3.0)	0.079 (2.0)	0.9843 (25)	0.1378 (3.5)	M4	#4	0.130 (3.30)	0.236 (6.0)	0.122 (3.1)
CR-4	0.866 (22)	0.433 (11)	0.402 (10.2)	0.158 (4.0)	0.079 (2.0)	1.5748 (40)	0.1772 (4.5)	M5	#8	0.169 (4.3)	0.315 (8.0)	0.165 (4.2)
CR-6	1.221 (31)	0.591 (15)	0.559 (14.2)	0.236 (6.0)	0.118 (3.0)	1.9685 (50)	0.236 (6.0)	M6	#10	0.205 (5.2)	0.374 (9.5)	0.205 (5.2)

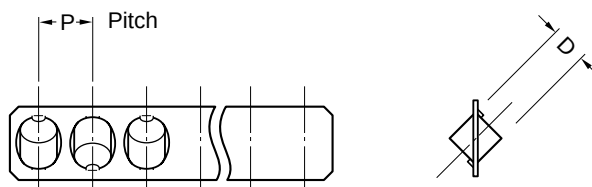
*Thread Size

**Hole F clears cap screw for through mounting.

Modifying Length of Travel

For a given length of bearing way, since there is no slip at any load, both length of travel and load capacity depend on the number of rollers and their pitch. The number of rollers supplied with each standard bearing set provides a travel distance of approximately 60% of the way length (see page 56). In some cases (e.g., when mounting space is restricted)

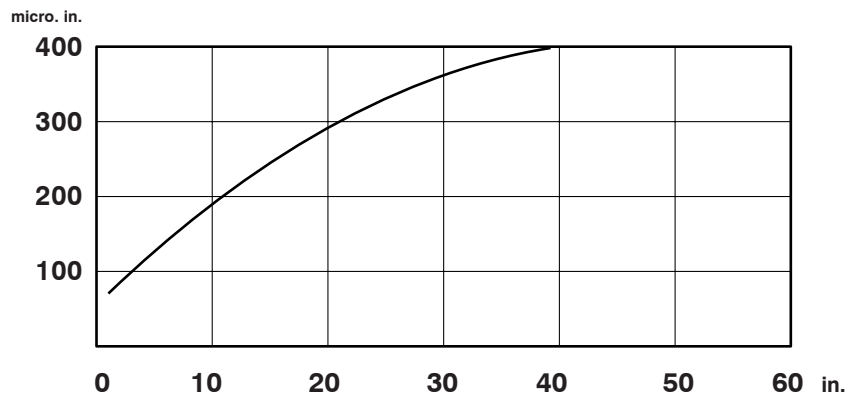
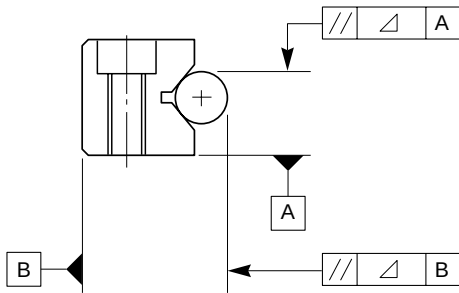
it may be practical to increase travel at the expense of load capacity by removing one or more rollers instead of selecting a longer bearing. Since travel extends symmetrically around the mean position, the travel increase is twice the pitch for each roller removed. Similarly, the load capacity for the set (page 61) is reduced by twice the load capacity per roller.



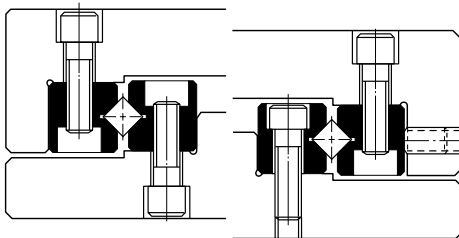
ROLLER SIZE	ROLLER DIAMETER (D) in (mm)	ROLLER DISTANCE (P) in (mm)	INCREASE OF TRAVEL FOR EACH ROLLER CUT-OFF in (mm)	ROLLER LOAD CARRYING CAP. PER ROLLER lbs (kg)
CR-1	0.059 (1.5)	0.098 (2.5)	.197 (5)	8.8 (4)
CR-2	0.079 (2)	.158 (4)	.316 (8)	13.2 (6)
CR-3	.118 (3)	.197 (5)	.394 (10)	22 (10)
CR-4	.158 (4)	.275 (7)	.550 (14)	44 (20)
CR-6	.236 (6)	.334 (8.5)	.668 (17)	88 (40)

Ratings and Specifications

Load ratings in the tables are dynamic ratings for each set. Ratings are based on theoretical data, proper installation, appropriate lubrication, and a predicted life of 10 million inches. Ratings are suggested only, based on standard and typical industry practice, and cannot be guaranteed. Life can be increased approximately 10 times by operating a given bearing at 1/2 its rated load, other factors being constant. Temperature of bearings must not exceed 100°C (212°F), even for short periods, since this will reduce hardness and result in significantly reduced load capacity and working life.



Maximum deviation from parallelism between the vee groove face and datum faces of each way bar is shown in the graph. Actual accuracy achieved depends on proper installation.

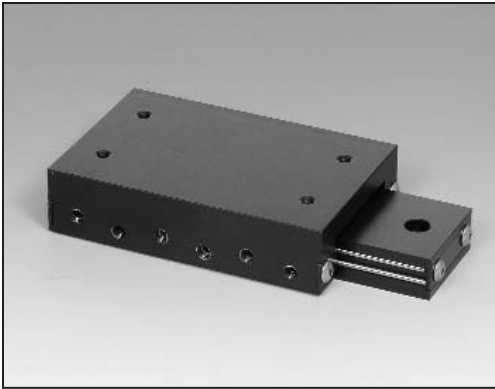


Mounting holes in the way bars are threaded, and also counterbored to alternatively permit using the next smaller size screw with threaded mounting holes in the user's components.

Ordering

Order standard bearing sets from table by model number according to load and travel required.

Each set consists of two complete bearings (4 way bars, 2 roller cages, and end stops).



Highest Accuracy Slides

Extreme Accuracy Series Ball Slides

SPECIFICATIONS:

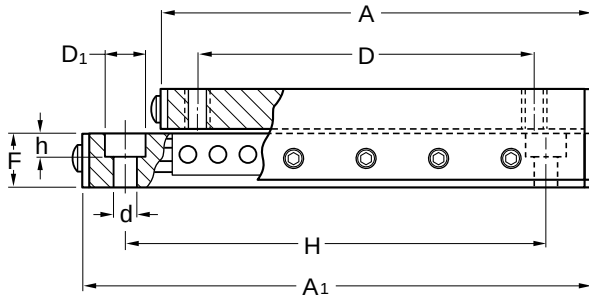
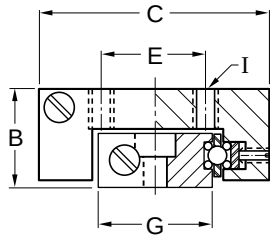
Straight Line Accuracy
0.000040"/" of travel.

Repeatability
0.000020".

Coefficient of Friction
0.002.

Construction

Aluminum carriage and base.
Hardened stainless steel balls, shafts, pre-load gibs.
Interchangeable with other manufacturers. Carriage and base ground to optical flatness. Bearing way surfaces held to submicron tolerances. Carriage surface flat to 0.0001"/". Ball Slide design offers low rolling resistance and economical price.



*Minimum Centered Around Mean Position																
Model	LOAD CAPACITY			A	A ₁	B	C	D	d	D ₁	E	F	G	H	h	I
	Travel* (in.)	Lbs.	Weight (lbs.)													
EA8-1	0.5	8	0.06	1.00	1.25			0.625						0.750		
EA8-2	1.0	15	0.11	1.75	2.00	.500	1.00	1.375	.125	.198	CL	0.24	0.40	1.500	.125	#4-40
EA8-2.5	1.5	25	0.16	2.50	2.75			2.125						2.250		
EA8-3	2.0	30	0.20	3.25	3.50			2.875						3.000		
EA12-1	1.0	25	0.28	2.00	2.25			1.375						1.625		
EA12-1.5	1.5	31	0.38	2.75	3.00	.750	1.75	2.125	.157	.244	0.875	0.40	0.87	2.250	.150	#6-32
EA12-2	2.0	42	0.46	3.25	3.50			2.625						2.750		
EA12-3	3.0	51	0.56	4.00	4.25			3.375						3.500		
EA16-1	1.0	72	0.66	2.62	2.62			2.125						2.125		
EA16-2	2.0	84	1.00	4.00	4.37			3.000						3.375		
EA16-3	3.0	102	1.25	5.00	5.37	1.000	2.62	4.000	.204	.328	1.250	0.62	1.50	4.375	.205	#10-32
EA16-4	4.0	132	1.50	6.00	6.37			5.000						5.375		
EA16-5	5.0	145	2.00	8.00	8.37			7.000						7.375		
EA22-2	2.0	130	2.00	4.00	4.50			2.000						2.500		
EA22-3	3.0	140	2.88	5.75	6.25			3.750						4.250		
EA22-5	5.0	160	4.00	8.00	8.50	1.375	3.50	6.000	.204	.328	2.000	0.62	1.98	6.500	.205	#10-32
EA22-6.5	6.5	175	5.13	10.25	10.75			8.250						8.750		
EA22-9	9.0	200	7.00	14.00	14.50			12.000						12.500		
EA32-5	5.0	150	10.00	8.25	8.75			6.250						6.250		
EA32-7	7.0	180	14.52	12.00	12.50	2.000	5.75	10.000	.281	.412	4.000	0.98	3.70	10.000	.280	1/4-20
EA32-10	10.0	225	18.15	15.00	15.50			13.000						13.000		



Highest Accuracy Slides

Extreme Accuracy Series Ball Slides (Flange Base)

SPECIFICATIONS:

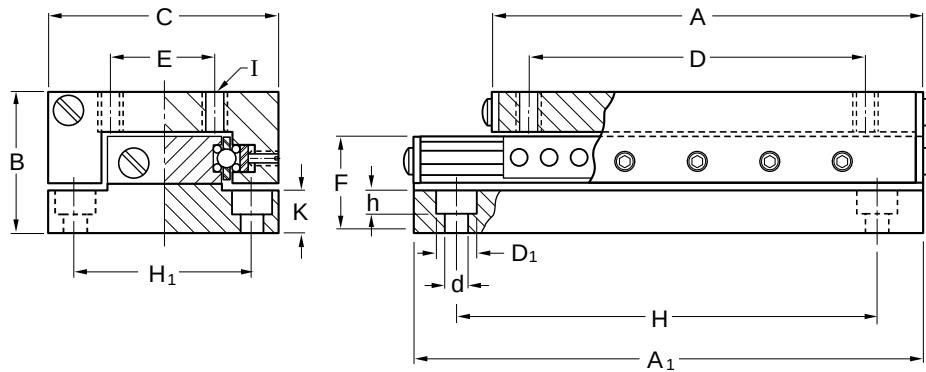
Straight Line Accuracy
0.000040"/" of travel.

Repeatability
0.000020".

Coefficient of Friction
0.002.

Construction

Aluminum carriage and base.
Hardened stainless steel balls, shafts, pre-load gibs.
Interchangeable with other manufacturers. Carriage and base ground to optical flatness. Bearing way surfaces held to submicron tolerances. Carriage surface flat to 0.0001"/". Flange Base design allows ease of mounting and stability.



*Minimum Centered Around Mean Position

LOAD CAPACITY

Model	Travel* (in.)	Lbs.	Weight (lbs.)	A	A ₁	B	C	D	d	D ₁	E	F	H ₁	H	h	I	K
EA12-1FB	0.5	8	0.08	1.00	1.25			0.625						0.750			
EA12-2FB	1.0	15	0.14	1.75	2.00	.750	1.00	1.375	.125	.198	CL	0.50	0.750	1.500	.125	#4-40	0.25
EA12-2.5FB	1.5	25	0.20	2.50	2.75			2.125						2.250			
EA12-3FB	2.0	30	0.26	3.25	3.50			2.875						3.000			
EA16-1FB	1.0	25	0.38	2.00	2.25			1.375						1.625			
EA16-1.5FB	1.5	31	0.52	2.75	3.00	1.031	1.75	2.125	.157	.244	0.875	0.68	1.312	2.250	.150	#6-32	0.28
EA16-2FB	2.0	42	0.61	3.25	3.50			2.625						2.750			
EA16-3FB	3.0	51	0.75	4.00	4.25			3.375						3.500			
EA22-1FB	1.0	72	0.91	2.62	2.62			2.125						2.125			
EA22-2FB	2.0	84	1.40	4.00	4.37			3.000						3.375			
EA22-3FB	3.0	102	1.75	5.00	5.37	1.375	2.62	4.000	.204	.328	1.250	1.00	2.062	4.375	.205	#10-32	0.37
EA22-4FB	4.0	132	2.10	6.00	6.37			5.000						5.375			
EA22-5FB	5.0	145	2.80	8.00	8.37			7.000						7.375			
EA28-2FB	2.0	130	2.50	4.00	4.50			2.000						2.500			
EA28-3FB	3.0	140	3.59	5.75	6.25			3.750						4.250			
EA28-5FB	5.0	160	5.00	8.00	8.50	1.750	3.50	6.000	.204	.328	2.000	0.99	2.750	6.500	.205	#10-32	0.37
EA28-6.5FB	6.5	175	6.41	10.25	10.75			8.250						8.750			
EA28-9FB	9.0	200	8.75	14.00	14.50			12.000						12.500			
EA38-5FB	5.0	150	12.00	8.25	8.75			6.250						6.250			
EA38-7FB	7.0	180	17.40	12.00	12.50	2.375	5.75	10.000	.281	.412	4.000	1.35	5.000	10.000	.280	1/4-20	0.37
EA38-10FB	10.0	225	21.76	15.00	15.50			13.000						13.000			



Highest Accuracy Slides

Extreme Accuracy Series Crossed Roller Slides

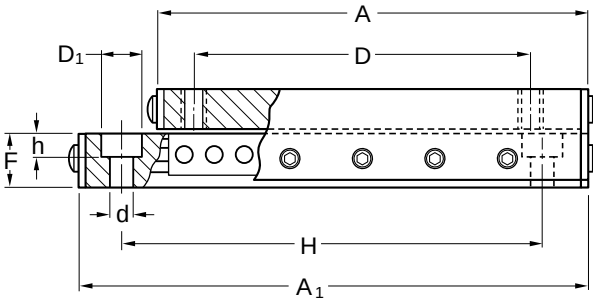
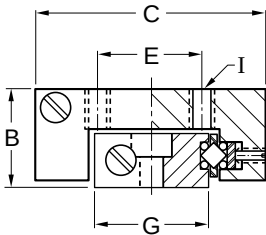
SPECIFICATIONS:

Straight Line Accuracy
0.000040"/" of travel.

Repeatability
0.000020".

Coefficient of Friction
0.002.

Construction
Aluminum carriage and base.
Hardened stainless steel rollers, shafts, pre-load gibs.
Interchangeable with other manufacturers. Carriage and base ground to optical flatness. Bearing way surfaces held to submicron tolerances. Carriage surface flat to 0.0001"/". Crossed Roller design greatly increases load capacity and overhung load capability.

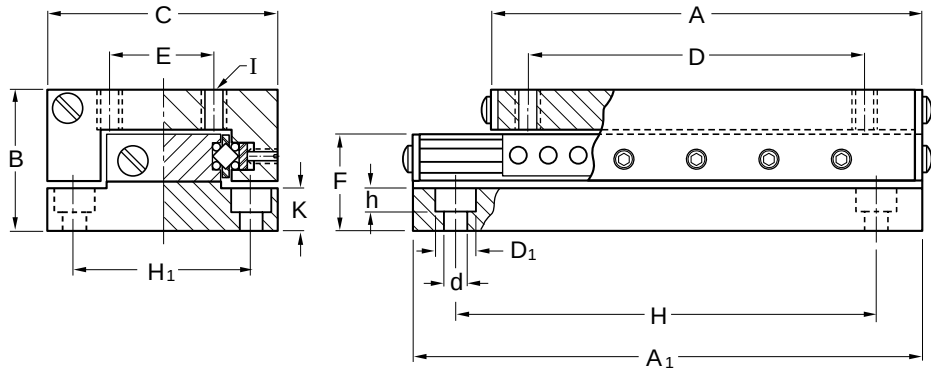


*Minimum Centered Around Mean Position																
Model	LOAD CAPACITY			A	A ₁	B	C	D	d	D ₁	E	F	G	H	h	I
	Travel* (in.)	Lbs.	Weight (lbs.)													
EAR12-1	1.0	90	0.28	2.00	2.25			1.375						1.625		
EAR12-1.5	1.5	115	0.38	2.75	3.00	.750	1.75	2.125	.157	.244	0.875	0.40	0.87	2.250	.150	#6-32
EAR12-2	2.0	130	0.46	3.25	3.50			2.625						2.750		
EAR12-3	3.0	140	0.56	4.00	4.25			3.375						3.500		
EAR16-1	1.0	220	0.66	2.62	2.62			2.125						2.125		
EAR16-2	2.0	250	1.00	4.00	4.37	1.000	2.62	3.000	.204	.328	1.250	0.62	1.50	3.375	.205	#10-32
EAR16-3	3.0	350	1.25	5.00	5.37			4.000						4.375		
EAR16-4	4.0	390	1.50	6.00	6.37			5.000						5.375		
EAR16-5	5.0	420	2.00	8.00	8.37			7.000						7.375		
EAR22-2	2.0	260	2.00	4.00	4.50			2.000						2.500		
EAR22-3	3.0	280	2.88	5.75	6.25	1.375	3.50	3.750	.204	.328	2.000	0.62	1.98	4.250	.205	#10-32
EAR22-5	5.0	320	4.00	8.00	8.50			6.000						6.500		
EAR22-6.5	6.5	350	5.13	10.25	10.75			8.250						8.750		
EAR22-9	9.0	400	7.00	14.00	14.50			12.000						12.500		
EAR32-5	5.0	300	10.00	8.25	8.75			6.250						6.250		
EAR32-7	7.0	360	14.52	12.00	12.50	2.000	5.75	10.000	.281	.412	4.000	0.98	3.70	10.000	.280	1/4-20
EAR32-10	10.0	450	18.15	15.00	15.50			13.000						13.000		



Highest Accuracy Slides

Extreme Accuracy Series Crossed Roller Slides (Flanged Base)



*Minimum Centered Around Mean Position																	
Model	Travel* (in.)	LOAD CAPACITY		A	A ₁	B	C	D	d	D ₁	E	F	H ₁	H	h	I	K
		Lbs.	Weight (lbs.)														
EAR16-1FB	1.0	90	0.38	2.00	2.25			1.375						1.625			
EAR16-1.5FB	1.5	115	0.52	2.75	3.00	1.031	1.75	2.125	.157	.244	0.875	0.68	1.312	2.250	.150	#6-32	0.28
EAR16-2FB	2.0	130	0.61	3.25	3.50			2.625						2.750			
EAR16-3FB	3.0	140	0.75	4.00	4.25			3.375						3.500			
EAR22-1FB	1.0	220	0.91	2.62	2.62			2.125						2.125			
EAR22-2FB	2.0	250	1.40	4.00	4.37	1.375	2.62	3.000	.204	.328	1.250	1.00	2.062	3.375	.205	#10-32	0.37
EAR22-3FB	3.0	350	1.75	5.00	5.37			4.000						4.375			
EAR22-4FB	4.0	390	2.10	6.00	6.37			5.000						5.375			
EAR22-5FB	5.0	420	2.80	8.00	8.37			7.000						7.375			
EAR28-2FB	2.0	260	2.50	4.00	4.50			2.000						2.500			
EAR28-3FB	3.0	280	3.59	5.75	6.25	1.750	3.50	3.750	.204	.328	2.000	.99	2.750	4.250	.205	#10-32	0.37
EAR28-5FB	5.0	320	5.00	8.00	8.50			6.000						6.500			
EAR28-6.5FB	6.5	350	6.41	10.25	10.75			8.250						8.750			
EAR28-9FB	9.0	400	8.75	14.00	14.50			12.000						12.500			
EAR38-5FB	5.0	300	12.00	8.25	8.75			6.250						6.250			
EAR38-7FB	7.0	360	17.40	12.00	12.50	2.375	5.75	10.000	.281	.412	4.000	1.35	5.000	10.000	.280	1/4-20	0.37
EAR38-10FB	10.0	450	21.76	15.00	15.50			13.000						13.000			



Highest Accuracy Slides

LT Series Crossed Roller Slides

SPECIFICATIONS:

Straight Line Accuracy
0.0001" per inch of travel.

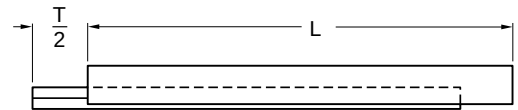
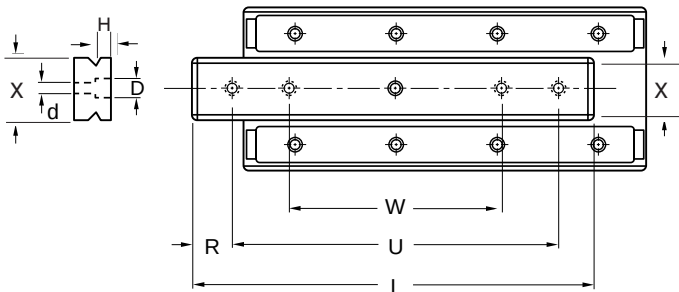
Positional Repeatability
0.0001"

Coefficient of Friction
0.003 typical

Construction
Aluminum carriage, hardened steel crossed roller rail set with double v-grooved inner rail.

Finish
Black anodized carriage, hardened steel base.

BASE MOUNTING DIMENSIONS

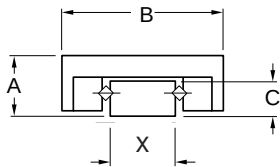


Length, Travel, and Load Selection

Dimensions in inches (mm)									
MODEL	STAINLESS STEEL	TRAVEL T	LENGTH L	LOAD CAPACITY LBF (kgf)	BASE MOUNTING HOLES (COUNTERBORED)			CARRIAGE MOUNTING HOLES (THREADED)	
					NO. HOLES	SPACING U	W	NO. HOLES	SPACING M
LT1-1	SS	0.473 (12)	0.984 (25)	50 (23)	2	0.709 (18)	—	4	0.709 (18)
LT1-2	SS	0.709 (18)	1.378 (35)	70 (32)	2	0.984 (25)	—	4	1 × 1.102 (28)
LT1-3	SS	0.984 (25)	1.772 (45)	103 (47)	4	1.496 (38)	0.984 (25)	4	1 × 0.788 (20)
LT1-4	SS	1.260 (32)	2.165 (55)	118 (54)	4	1.890 (48)	1.142 (29)	4	1 × 1.181 (30)
LT1-5	SS	1.575 (40)	2.559 (65)	132 (60)	4	2.165 (55)	1.220 (31)	6	2 × 0.788 (20)
LT1-6	SS	1.772 (45)	2.953 (75)	160 (73)	4	2.559 (65)	1.378 (35)	4	1 × 1.181 (30)
LT1-7	SS	1.969 (50)	3.347 (85)	173 (79)	4	2.953 (75)	1.575 (40)	6	2 × 1.181 (30)
LT2-1	SS	0.709 (18)	1.378 (35)	88 (40)	2	0.984 (25)	—	4	1 × 1.102 (28)
LT2-2	SS	1.181 (30)	1.969 (50)	138 (63)	2	1.378 (35)	—	4	1 × 1.693 (43)
LT2-3	SS	1.575 (40)	2.559 (65)	165 (75)	4	2.165 (55)	1.299 (33)	4	1 × 1.181 (30)
LT2-4	SS	1.969 (50)	3.150 (80)	209 (95)	4	2.756 (70)	1.575 (40)	4	1 × 1.772 (45)
LT2-5	SS	2.363 (60)	3.740 (95)	231 (105)	4	3.347 (85)	1.772 (45)	6	2 × 1.181 (30)
LT2-6	SS	2.756 (70)	4.330 (110)	264 (120)	4	3.740 (95)	1.969 (50)	4	1 × 1.772 (45)
LT2-7	SS	3.150 (80)	4.921 (125)	286 (130)	4	4.330 (110)	2.165 (55)	6	2 × 1.772 (45)
LT3-1	SS	1.181 (30)	2.165 (55)	277 (126)	2	1.575 (40)	—	4	1 × 1.575 (40)
LT3-2	SS	1.772 (45)	3.150 (80)	404 (184)	4	2.677 (68)	1.693 (43)	4	1 × 2.560 (65)
LT3-3	SS	2.362 (60)	4.134 (105)	484 (220)	4	3.543 (90)	2.165 (55)	4	1 × 1.969 (50)
LT3-4	SS	2.953 (75)	5.118 (130)	605 (275)	4	4.528 (115)	2.559 (65)	4	1 × 2.953 (75)
LT3-5	SS	3.543 (90)	6.102 (155)	682 (310)	4	5.512 (140)	3.740 (95)	6	2 × 1.969 (50)
LT3-6	SS	4.134 (105)	7.087 (180)	781 (355)	4	6.496 (165)	3.346 (85)	4	1 × 2.953 (75)
LT3-7	SS	5.118 (130)	8.070 (205)	825 (375)	4	7.480 (190)	3.543 (90)	6	2 × 2.953 (75)

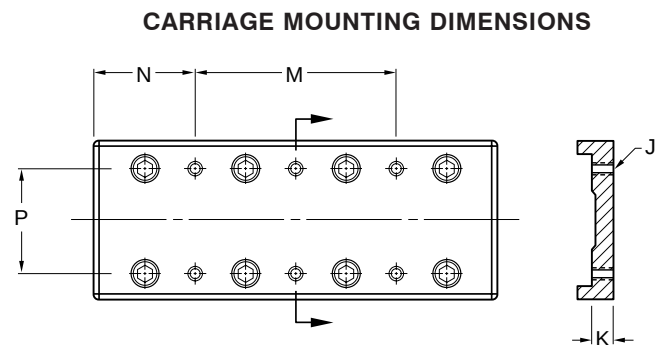
Mounting Dimensions								
SERIES	CARRIAGE		BASE					
	SPACING N	THREAD P	DEPTH J	DEPTH K	SPACING R	D	COUNTERBORE d	h
LT1-1	0.138 (3.5)	0.551 (14)	2-56	0.138 (3.5)	0.138 (3.5)	0.155 (3.9)	0.101 (2.6)	.100 (2.5)
LT1-2	0.138 (3.5)	—	—	—	0.197 (5)	—	—	.100 (2.5)
LT1-3	0.492 (12.5)	—	—	—	0.138 (3.5)	—	—	.100 (2.5)
LT1-4	0.492 (12.5)	—	—	—	0.138 (3.5)	—	C'BORE FOR 2-56	.100 (2.5)
LT1-5	0.492 (12.5)	—	—	—	0.197 (5)	—		.100 (2.5)
LT1-6	0.886 (22.5)	—	—	—	0.197 (5)	—		.100 (2.5)
LT1-7	0.492 (12.5)	—	—	—	0.197 (5)	—		.100 (2.5)
LT2-1	0.138 (3.5)	0.866 (22)	6-32	0.217 (5.5)	0.197 (5)	0.241 (6.1)	0.157 (4)	.150 (3.8)
LT2-2	0.138 (3.5)	—	—	—	0.295 (7.5)	—	—	.150 (3.8)
LT2-3	0.689 (17.5)	—	—	—	0.197 (5)	—	C'BORE FOR 6-32	.150(3.8)
LT2-4	0.689 (17.5)	—	—	—	0.197 (5)	—		.150 (3.8)
LT2-5	0.689 (17.5)	—	—	—	0.197 (5)	—		.150 (3.8)
LT2-6	1.280 (32.5)	—	—	—	0.295 (7.5)	—		.150 (3.8)
LT2-7	0.689 (17.5)	—	—	—	0.295 (7.5)	—	—	.150 (3.8)
LT3-1	0.295 (7.5)	1.181 (30)	10-32	0.295 (7.5)	0.295 (7.5)	0.327 (8.3)	0.204 (5.2)	.205 (5.2)
LT3-2	0.295 (7.5)	—	—	—	0.236 (6)	—	—	.205 (5.2)
LT3-3	1.083 (27.5)	—	—	—	0.295 (7.5)	—	C'BORE FOR 10-32	.205 (5.2)
LT3-4	1.083 (27.5)	—	—	—	0.295 (7.5)	—		.205 (5.2)
LT3-5	1.083 (27.5)	—	—	—	0.295 (7.5)	—		.205 (5.2)
LT3-6	2.067 (52.5)	—	—	—	0.295 (7.5)	—		.205 (5.2)
LT3-7	1.083 (27.5)	—	—	—	0.295 (7.5)	—	—	.205 (5.2)

Dimensions in inches (mm)



Profile Dimensions				
SERIES	HEIGHT A ±0.004 (0.1)	WIDTH B ±0.004 0.1)	BASE THICKNESS C	BASE WIDTH X
LT1	0.315 (8)	0.788 (20)	0.158 (4)	.259 (6.6)
LT2	0.472 (12)	1.181 (30)	0.236 (6)	.472 (12)
LT3	0.630 (16)	1.575 (40)	0.315 (8)	.629 (16)

Dimensions in inches (mm)





Lubricants

Linear Lubricant, Slidicone

Tusk Direct introduces a family of specialty lubricants designed specifically for linear bearings and reciprocating mechanisms.

“Linear Lubricant”

TUSK “Linear Lubricant” is a colorless and odorless PTFE specialty lubricant available in a non-toxic mineral oil base.

“Linear Lubricant” is especially well suited for linear ball and roller-bearing applications requiring low friction for reciprocating motion such as light robotic mechanisms, pick and place systems and component insertion machinery.

“Linear Lubricant” is available for immediate delivery with same day shipping service is needed.

“SLIDICONE”

TUSK “Slidicone” is a clear spray lubricant which penetrates, lubricates and offers corrosion protection for linear bearings, slides, positioners, recirculating bearings, and in any application in which traditional greases and oils are not an option.

“Slidicone” is formulated to be ozone friendly (a non-chlorinated and non-aerosolized liquid). It applies as a thin clear liquid which dries to the touch.

“Slidicone” is available for immediate delivery with same day shipping service if needed.

ORDERING INFORMATION

“Linear Lubricant”

Packed in 1 oz tube with convenient 1” nozzle tip.

\$7.00 / each	Order model LL-1
\$55.00 / package of 10	Order model LL-2

“Slidicone”

Available in a convenient 5 oz. spray container.

\$7.00 / each	Order model SL-1
\$55.00 / package of 10	Order model SL-2



Misc. Components

TSL Series Anti-Backlash Lead Screw Assemblies

The TLS Series anti-backlash assembly offers an effective linear actuator for design operations requiring precise positional accuracy and repeatability, with minimum cost.

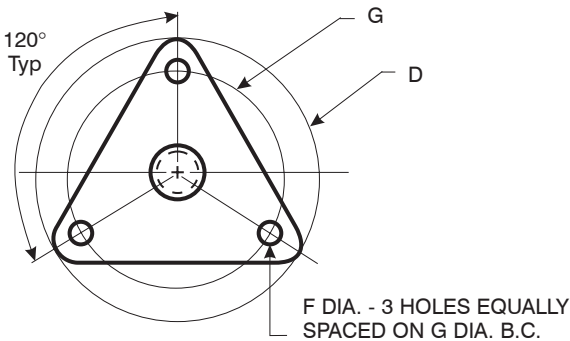
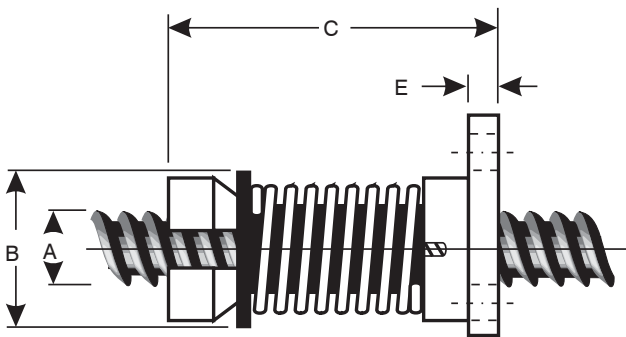
The standard TLS unit utilizes a patented self-lubricating polyacetal nut radially preloaded on a 303 stainless steel screw.

The TLS assembly, through its unique transfer of loads, offers exceptional torque consistency and repeatability when traversing in either direction. The inherent dampening qualities of the TLS design make it ideally suited for vertical applications requiring noise or vibration control.

TLS STANDARD MOUNTING DIMENSIONS, IN. (MM)

SERIES	NOMINAL SCREW DIA. A in. (mm)	NUT DIA. B in. (mm)	NUT LENGTH. C in. (mm)	FLANGE DIA. D in. (mm)	FLANGE WIDTH E in. (mm)	MOUNTING HOLES F in. (mm)	BOLT CIRCLE DIA. G in. (mm)
TLS 6000	3/8 (9.53)	.70 (17.78)	1.9 (48.26)	1.50 (38.10)	.18 (4.57)	.200 (5.08)	1.125 (28.58)

Other mountings available. Please contact **Tusk** for information.



HIGH ACCURACY: 50 micro-inch (.0013mm) repeatability. Lead accuracy to 0.0001 in./in. (mm/mm).

LONG LIFE: To 350 million inches (880 million cm) of travel.

LOW MAINTENANCE: Self lubricating and wear compensating nuts and optional TFE coating on screws eliminate the need for repetitive lubrication or adjustment.

SMOOTH, QUIET OPERATION: No recirculating ball noise or metal on metal contact.

TLS SERIES ASSEMBLIES

SCREW DIA. (NOMINAL)	INCH LEAD	METRIC LEAD	LEFT HAND AVAILABLE	PART NO.	DRAG TORQUE	DESIGN LOAD	EFFICIENCY %	ROOT DIA. IN. (MM)
3/8" (9.53mm)	0.100	2.0	✓	TLS 6010	2-5 oz. - in. (.014 - .035NM)	10 lbs. (5 kg)	53	.266 (6.76)
	0.200	5.0		TLS 6020			69	.266 (6.76)
	0.500	12.0		TLS 6050			81	.265 (6.73)
	1.000			TLS 6100			84	.254 (6.45)
				TLS 6M02			47	.266 (6.76)
				TLS 6M05			69	.266 (6.76)
				TLS6M12			82	.287 (7.29)

Additional diameters and leads available on special order.

DESIGN AND ENGINEERING DATA

Screw Accuracy

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

Assemblies have an extremely high repeatability of 50 micro-inches (.0013mm).

End Machining

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

MECHANICAL PROPERTIES

SCREW/NUT SERIES	STATIC FRICTIONAL DRAG TORQUE OZ.-IN (NM)	SCREW INERTIA OZ.-IN.-SEC. ² /IN.	ANTI-BACKLASH LIFE*	ANTI-BACKLASH LIFE W/TFE COATING
TLS 6000	2-5(.01-.03)	1.5×10^{-5}	40-60 Million Inches (100-150 million cm)	150-200 Million Inches (380-500 million cm)

Conservative numbers for most applications.

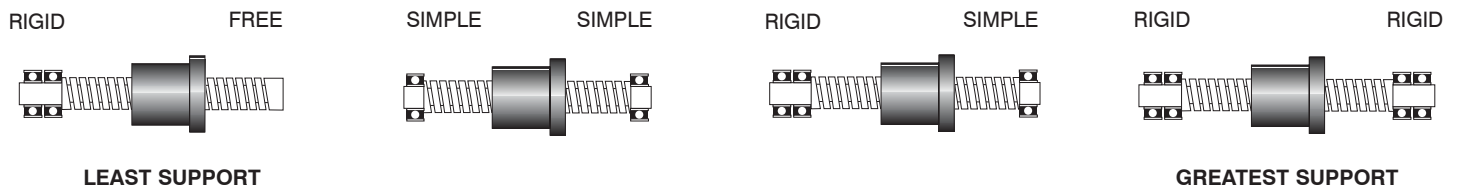
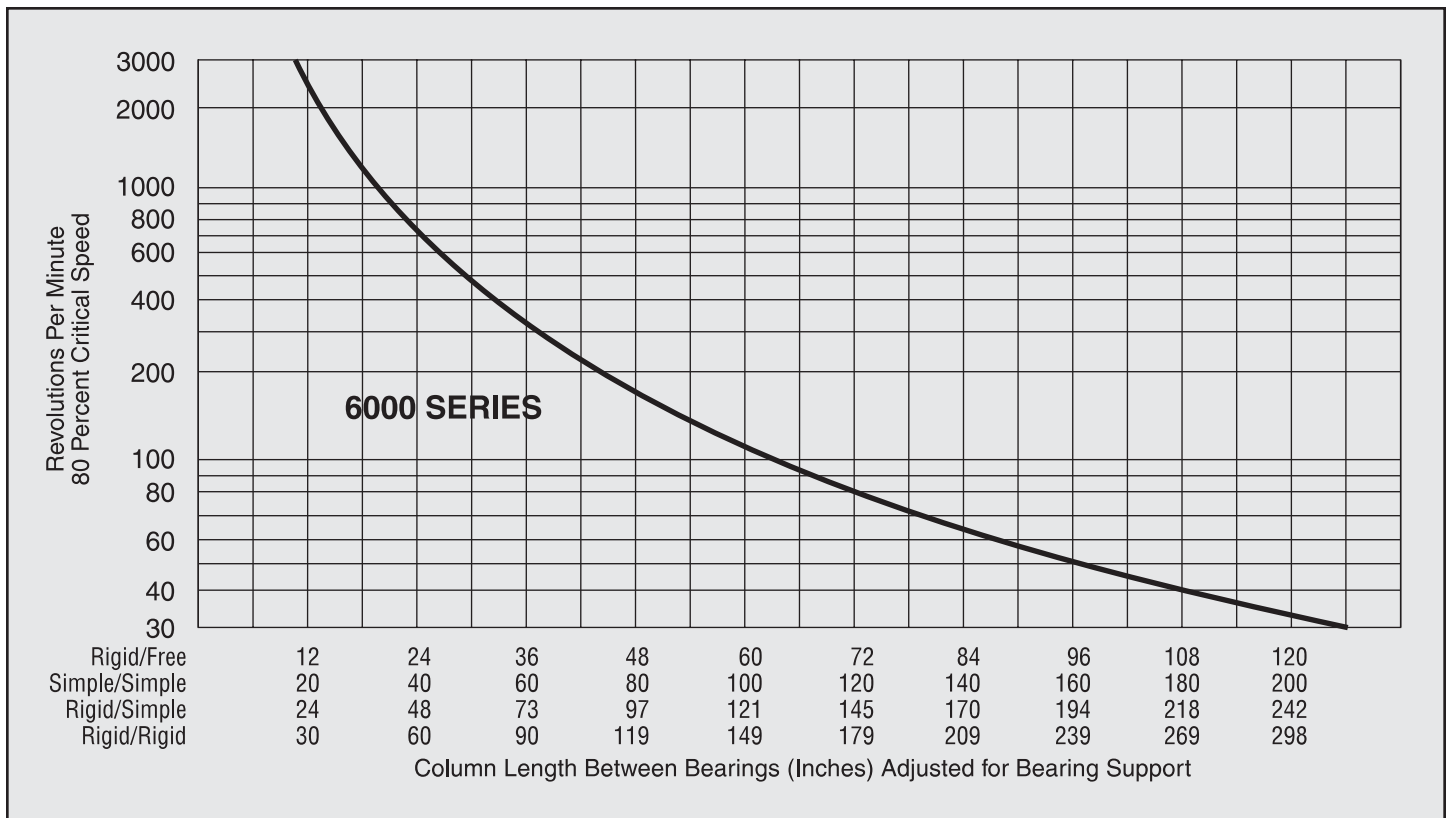
PHYSICAL PROPERTIES

LEAD SCREW		NUTS		ASSEMBLY		
MATERIAL	SURFACE FINISH	MATERIAL	TENSILE STRENGTH	COEFFICIENT OF EXPANSION	STANDARD OPERATING TEMP. RANGE	COEFFICIENT OF FRICTION NUT TO SCREW
303 Stainless Steel (options available)	Better than 16 Micro Inch	Polyacetal with Lubricating Additive	9,700 psi	6.0×10^{-5} in./in./°F	32-200°F** (0-93°C)	Static = .08 .08* Dynamic = .15 .09* *with TFE Coating

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

** Please call **TUSK** for optional temperature range materials.

CRITICAL SPEED



Lengths can be specified up to 12 ft. (3.6m) from stock, or up to 10 ft. (2.4m) with TFE coating.

LEAD

Advancement per revolution.

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

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.

TRAVERSE SPEED

The polyacetal nut materials we use provide 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*:

Lead	Traverse Speed
1/10" - 1/2"	4 in./sec.
1/2" - 1"	10 in./sec.
1" - 2 1/2"	30 in./sec.
2.5 - 12mm	100mm/sec.
12 - 25mm	250mm/sec.
25 - 60mm	760mm/sec.

*Continuous duty operation. Higher speeds acceptable for short durations.

MAXIMUM LOAD

Although Tusk Anti-Backlash Assemblies are capable of withstanding relatively high loads without catastrophic failure, these units have been designed to operate under the loading shown in the size charts.

EFFICIENCY

Efficiency of lead screw varies highly with lead angle (see size listings). For example, the efficiency is low when the lead angle is either very small or very large.

TORQUE

The required motor torque to drive a lead screw assembly is the sum of three components: The inertial 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:

$$T = I\alpha \quad \text{Where } I = \text{screw inertia}$$
$$\alpha = \text{angular acceleration}$$

Static Frictional Torque

Tusk Anti-Backlash Assemblies are typically supplied with static frictional torque of 1 to 7 oz./in. The magnitude of the frictional torque is dependent 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 1/3 the diameter, back driving will not occur. For higher leads where back driving is likely, the torque required for holding a load is:

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

SCREW STRAIGHTNESS

Screw straightness is indicated by Total Indicator Runout (TIR). The standard straightness for lead screws is .003"/ft. Tusk can provide tighter specifications on customer request.

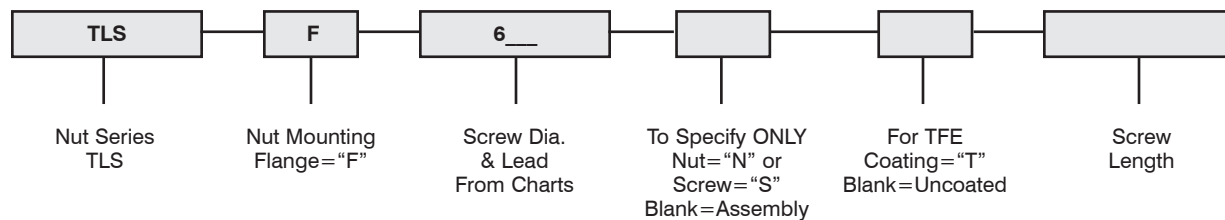
ORDERING INFORMATION

For Screws & Assemblies with End Machining for Bearings, Mountings, Etc.

Tusk will price and machine to your drawings and tolerances. Order by your drawing or part number plus Tusk number (nut series & screw size per listings).

For Cut-To-Length Screws, Assemblies & Parts

Order by Tusk part number:



Other Options to be Specified:

- High Lead accuracy .0003, .0002 or .0001
- Left Hand (L/H) threads
- Modified or custom nuts
- Special mounting for nuts
- Special environments (temperature, clean room, contaminant's, etc.)

PRICES: TLS6000 3/8"			
LENGTH (IN.)	QUANTITY		
	1 - 24	25 - 99	100 - 199
6	\$ 55.15	\$ 49.45	\$ 40.25
12	66.05	60.80	51.60
24	91.90	82.70	70.00
36	128.65	115.95	95.40
48	176.35	157.95	132.15
Extra Nuts	30.20	27.60	22.75
TFE Coat/FT	4.85	4.40	3.50

NOTE: Prices include one nut.



Misc. Components

Component Accessories

MICROMETERS: Series MK3 and MK4

High quality micrometer heads

- Satin chrome finish - resists glare and rust
- Lock nut available - locks spindle at any reading
- Two travel ranges, 1/2" and 1"

TUSK™ micrometer heads offer easy to read distinct figures for precise settings. Select our micrometers for machine tools, fixtures, special gages, and all applications requiring micrometer accuracy in settings and adjustment.

MODEL	TRAVEL	GRADUATIONS	DESCRIPTION
MK3-1	0-1/2	.001	No Lock Nut
MK3-2	0-1/2	.001	With Lock Nut
MK4-1	0-1	.001	No Lock Nut
MK4-2	0-1	.001	With Lock Nut

All dimensions in inches

Ordering:

Specify model number from table.
Metric micrometers are available on special order. Add M to the model number.
See page 9 for miniature micrometers.

Life Formulas

Linear Ball and Roller Slides

Rated Life

The rated life “L” of a linear slide is the length of travel endured by the slide under a specified condition. Since in reality, life varies from one slide to another, industry normally uses the L10 life rating which is defined as the length of travel that 90% of apparently identical slides will complete before the first evidence of failure.

Speed Factor

The effect of speed on the load rating of a slide can be accounted for by a speed factor:

$$f_s = \sqrt[m]{\frac{30}{V}}$$

Formula 1

where: V = speed of the slide movement in inches/min (when the speed varies during the cycle, the peak value should be used)

m = 3 for ball slides, or

m = 10/3 for roller slides

Note: When the speed is less than 30 in/min, $f_s = 1$.

Temperature Factor

When the temperature of the slide exceeds certain limits, it reduces the hardness of contacting elements and consequently affects the load rating of the slide. Therefore, its load rating shall be adjusted by a temperature factor “ft”. The values of this factor are presented in Table 1.

Table 1

Temperature, deg.F	Temperature Factor, “ft”	
	Regular Bearing Steel Contacting Elements	Stainless Steel Contacting Elements
220	1	1
300	0.9	1
400	0.75	0.9
500	not recommended	0.75

Note: When specifying slides for elevated temperature service, it should be kept in mind that the delrin retainers found in many slides are not recommended for temperatures above 180 deg.F.

Load Type Factor

In reality, the load endured by a slide can never be absolutely smooth, but rather is a sum of variable forces that include working load, inertial forces, vibrations, impacts, occasional loads, etc. In order to have their influence taken into account, the load rating of the slide shall be adjusted by a load type factor “fw”.

The values of “fw” for calculations per formula (2) and (3) are presented in Table 2.

Table 2

Condition of Load	Value of “fw”
Relatively smooth motion	1 to 1.5
Motion with impacts	2 to 3

Life Formula for Ball and Roller Slides

Based on the above definitions and role of different factors, the real life of linear slides can be obtained from the following formula:

Formula 2

$$L_{10} = \left(\frac{C \times f_s \times f_t}{P_c \times f_w} \right)^m \times 10^6 \text{ inches}$$

where:

- L_{10} = life of the slide at 90% of reliability as defined above (in inches).
 C = catalog "load capacity" of the slide in lbs. (which is a load that corresponds to an L_{10} life of 10 million inches, provided the factors f_s , f_t and f_w are equal to 1).
 P_c = calculated effective load the slide is subjected to in lbs. (f_s , f_t and f_w are factors as described above.)
 m = 3 for ball slides, or 10/3 for roller slides.

When other than 90% reliability is required (for instance, "K"% reliability), the known value of L_{10} shall be multiplied by a reliability factor "fr" so that:

$$L_n = f_r \times L_{10}$$

where:

L_n = rated life at the reliability of K%
 (n = 100-K).

The values of the factor "fr" are presented in Table 3.

Table 3

RELIABILITY K%	" L_n " rated life	"fr", reliability factor
50	L50	5.00
90	L10	1.00
95	L5	0.62
97	L3	0.44
99	L1	0.21

The general formula for the life of Tusk linear slides is expressed as following:

Example

Formula 3

$$L_n = f_r \times \left(\frac{C \times f_s \times f_t}{P_c \times f_w} \right)^m \times 10^6 \text{ inches}$$

Design considerations lead to the selection of a ball slide. The available space accommodates the Del-Tron S2-4 slide. Find the life at 95% reliability (L_5 life) under the following conditions:

- Peak speed during the cycle:
 $V = 150$ in/min.
- Working temperature of slide = 150 deg.F.
- Calculated effective load the slide is subjected to: $P_c = 20$ lbs.
- Type of load: Moderate vibration, no impacts.

Solution:

- (1) With the formula (1) the speed factor " f_s " is found as:

$$f_s = \sqrt[3]{\frac{30}{150}} = 0.58$$

- (2) The value of the temperature factor " f_t " is found in Table 1 as: $f_t = 1$.
 (3) Using Table 2, the value of the type of load factor can be estimated as: $f_w = 1.25$.
 (4) The value of reliability factor " f_r " is found in Table 3 as: $f_r = 0.62$.
 (5) The value of the load capacity for the Del-Tron S2-4 slide is found in the Del-

Tron

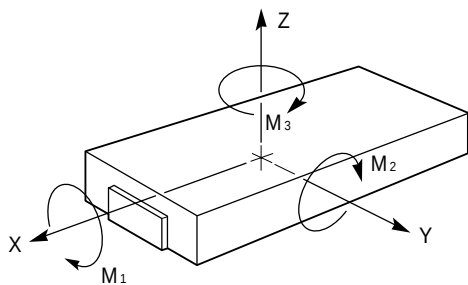
Catalog as: $C = 60$ lbs.

- (6) The required life of the slide can then be calculated using formula (3):

$$L_5 = 0.62 \times \left(\frac{60 \times 0.58 \times 1}{20 \times 1.25} \right)^3 \times 10^6 = 1.67 \times 10^6 \text{ inches}$$

Technical Information

Moment Load Ratings



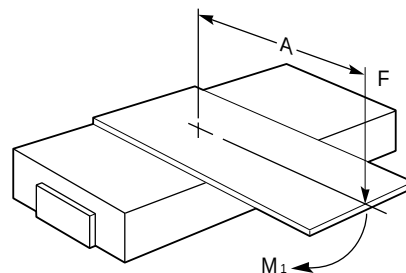
A = Distance (inches) from slide centerline to line of acting force.

F = Acting force (lbs).

L = Published load capacity (lbs).

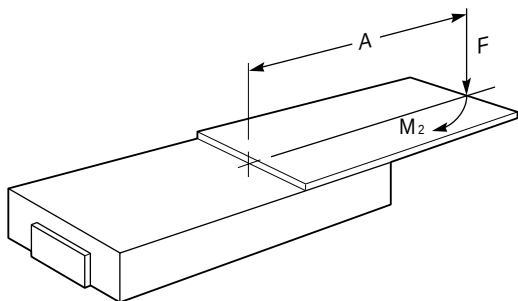
M1, M2, M3 = Moment load rating (lbs - inch).

m1 - m2 - m3 = Acting moment load (lbs - inch).



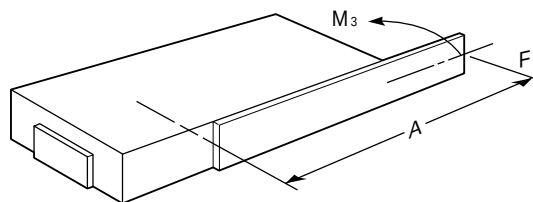
$$m1 = [F \times A]$$

$$\left[\frac{F}{L} + \frac{m1}{M1} \right] \leq 1$$



$$m2 = [F \times A]$$

$$\left[\frac{F}{L} + \frac{m2}{M2} \right] \leq 1$$



$$m3 = [F \times A]$$

$$\left[\frac{F}{L} + \frac{m3}{M3} \right] \leq 1$$

Technical Information

Moment Load Ratings

Ball Slide Assemblies

Refer to Page 10

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
BX1-1	.124	.216	.227	BX4-6	8.98	66.50	69.83
BX1-2	.124	.324	.340	BX4-7	10.26	92.00	96.60
BX1-3	.124	.486	.510				
				BX5-1	5.56	6.00	6.30
BX2-1	.51	.96	1.01	BX5-2	7.38	12.00	12.60
BX2-2	1.22	4.48	4.70	BX5-3	9.23	20.00	21.00
BX2-3	1.53	8.64	9.07	BX5-3.5	11.07	33.00	34.65
BX2-4	1.79	13.44	14.11	BX5-4	12.92	49.00	51.45
BX2-5	2.04	17.92	18.81	BX5-5	16.61	81.00	85.05
BX2-6	2.30	23.04	24.19	BX5-6	20.30	121.00	127.05
BX3-1	1.55	1.92	2.01	BX6-1	8.51	8.00	8.40
BX3-2	1.94	4.80	5.04	BX6-1.5	12.76	18.00	18.90
BX3-3	2.33	8.64	9.07	BX6-2	17.86	29.40	30.87
BX3-4	2.72	13.44	14.11	BX6-3	22.11	41.60	43.68
BX3-5	3.10	17.92	18.81	BX6-4	25.52	84.00	88.20
BX3-6	3.49	23.04	24.19	BX6-5	31.89	135.00	141.75
				BX6-6	38.27	198.00	207.90
BX3.5-1	2.50	3.33	3.50		21.87	16.80	17.64
BX3.5-2	3.00	8.64	9.07	BX7-.5	25.52	16.80	17.64
BX3.5-2.5	3.25	10.40	10.92	BX7-1	45.20	60.76	63.80
BX3.5-3	3.75	13.20	13.86	BX7-2	64.15	110.88	116.42
BX3.5-4	4.50	20.16	21.17	BX7-3	86.02	181.72	190.81
				BX7-4	98.42	283.50	297.68
BX4-1	3.85	4.50	4.73	BX7-5	109.35	357.00	374.85
BX4-2	4.62	10.80	11.34	BX7-6	134.87	543.90	571.10
BX4-3	5.13	18.00	18.90	BX7-7	149.45	717.50	753.38
BX4-4	6.41	27.50	28.88	BX7-8			
BX4-5	7.70	45.00	47.25				

Technical Information

Moment Load Ratings

Crossed Roller Slide Assemblies

Refer to Page 12

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
RX1-1	3.83	7.20	7.56	RX4-1	48.71	59.14	62.10
RX1-2	6.30	23.52	24.70	RX4-2	55.71	84.56	88.79
RX1-3	8.43	43.56	45.74	RX4-3	64.94	137.98	144.88
RX1-4	8.95	67.20	70.55	RX4-3.5	77.49	231.00	242.55
RX1-5	10.20	89.60	94.05	RX4-4	113.65	413.95	434.65
RX1-6	11.50	115.25	120.95	RX4-5	132.88	648.00	680.40
				RX4-6	152.25	907.50	952.88
RX2-1	9.31	11.52	12.10	RX5-1	56.13	59.14	62.10
RX2-2	13.58	33.60	35.28	RX5-1.5	63.80	90.00	94.50
RX2-3	18.23	62.40	65.14	RX5-2	74.84	118.27	124.19
RX2-4	19.04	94.08	98.77	RX5-3	74.84	137.98	144.19
RX2-5	20.15	116.48	122.27	RX5-4	130.98	413.95	434.65
RX2-6	20.94	138.24	145.14	RX5-5	159.45	675.00	708.50
				RX5-6	191.35	990.00	1039.50
RX2.5-1	17.50	23.31	24.50	RX6-.5	164.03	126.00	132.30
RX2.5-2	19.50	56.16	58.96	RX6-1	190.67	158.40	166.32
RX2.5-3	19.50	62.40	65.52	RX6-2	254.23	316.80	332.64
RX2.5-4	20.63	72.60	76.23	RX6-3	317.80	528.00	554.40
RX2.5-5	22.50	100.80	105.85	RX6-4	317.80	660.00	693.00
				RX6-4.5	344.47	992.25	1041.88
RX3.5-1	28.11	32.85	31.39	RX6-5	508.46	1478.40	1552.32
RX3.5-2	33.86	73.92	77.62	RX6-6	539.48	2175.60	2284.40
RX3.5-3	50.27	153.66	161.35	RX6-7	567.91	2726.50	2862.84
RX3.5-4	61.56	241.92	254.01				
RX3.5-5	73.15	427.50	448.88				
RX3.5-6	76.33	565.25	593.56				
	82.08	736.00	772.80				

Technical Information

Moment Load Ratings

Extreme Accuracy Ball Slides

Refer to Page 64

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
EA8-1	2.50	3.33	3.50
EA8-2	3.50	9.12	9.55
EA8-2.5	4.88	15.60	16.38
EA8-3	6.56	23.10	32.92
EA12-1	8.51	8.00	8.40
EA12-1.5	12.76	18.00	18.90
EA12-2	17.86	29.40	30.87
EA12-3	22.11	41.60	43.68
EA16-1	40.35	33.25	35.22
EA16-2	61.23	82.32	86.44
EA16-3	74.36	128.52	134.94
EA16-4	96.22	203.28	213.44
EA16-5	105.71	304.50	319.73
EA22-2	98.42	283.50	297.68
EA22-3	109.35	357.00	374.85
EA22-5	124.35	465.33	475.25
EA22-6.5	134.87	543.90	571.10
EA22-9	149.45	717.50	753.38
EA32-5	143.00	535.13	546.54
EA32-7	155.10	625.49	656.77
EA32-10	171.87	825.13	866.39

NOTE: Ratings for FB (Flanged Base) type are the same.

Extreme Accuracy Roller Slides

Refer to Page 66

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
EAR12-1	44.65	47.04	49.39
EAR12-1.5	49.68	73.36	75.92
EAR12-2	59.53	94.07	98.78
EAR12-3	69.45	109.75	114.69
EAR16-1	158.26	131.47	138.05
EAR16-2	180.50	224.93	236.17
EAR16-3	251.06	417.12	437.98
EAR16-4	332.99	580.80	609.84
EAR16-5	382.94	667.92	701.32
EAR22-2	172.24	496.13	520.94
EAR22-3	191.36	624.75	655.99
EAR22-5	217.61	814.33	831.69
EAR22-6.5	236.02	951.83	999.43
EAR22-9	261.54	1255.63	1318.42
EAR32-5	250.25	936.48	956.44
EAR32-7	271.43	1094.60	1149.34
EAR32-10	300.77	1443.97	1516.18

NOTE: Ratings for FB (Flanged Base) type are the same.

Auto Slides

Refer to Page 39

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
LBX5-1	5.56	6.00	6.30	LRX4-1	48.71	59.14	62.10
LBX5-2	7.38	12.00	12.60	LRX4-2	55.71	84.56	88.79
LBX5-3	9.23	20.00	21.00	LRX4-3	64.94	137.98	144.88
LBX5-4	12.92	49.00	51.45	LRX4-4	113.65	413.95	434.65
LBX6-1	8.51	8.00	8.40	LRX5-1	56.13	59.14	62.10
LBX6-1.5	12.76	18.00	18.90	LRX5-1.5	62.45	92.22	98.44
LBX6-2	17.86	29.40	30.87	LRX5-2	74.84	118.27	124.19
LBX6-3	22.11	41.60	43.68	LRX5-3	87.31	137.98	144.19
LBX6-4	25.52	84.00	88.20	LRX5-4	130.98	413.95	434.65
LBX7-.5	21.87	16.80	17.64	LRX6-.5	190.67	158.40	166.32
LBX7-2	45.20	60.76	63.80	LRX6-2	254.23	316.80	332.64
LBX7-3	64.15	110.88	116.42	LRX6-3	317.80	528.00	554.40
LBX7-4	86.02	181.72	190.81	LRX6-4	378.40	660.00	693.00
LBX7-6	109.35	357.00	374.85	LRX6-6	508.46	1478.40	1552.32
LBX7-8	122.48	442.00	477.23	LRX6-8	569.51	1830.40	1976.29
LBX7-10	141.89	629.66	665.22	LRX6-10	659.76	2607.50	2754.79
LBX7-12	149.45	717.50	753.38	LRX6-12	697.24	2871.30	3121.62

Technical Information

Moment Load Ratings

Ball Slide Positioning Stages

Refer to Page 44

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
BPS	0.97	0.97	0.97	BP6-2	17.86	17.86	17.86
BP1	1.68	1.60	1.60	BP7-1	43.74	43.74	43.74
BP2	2.52	2.40	2.40	BP7-2	43.74	43.74	43.74
BP3	4.43	4.43	4.43				
				BP8-1	18.14	17.28	17.28
BP4-1	8.51	8.51	8.51	BP8-2	18.14	17.28	17.28
BP4-2	8.51	8.51	8.51	BP9-1	28.44	26.88	26.88
BP4-3	8.51	8.51	8.51	BP9-1.5	28.44	26.88	26.88
BP4.5-1	43.74	43.74	43.74	BP9-2	28.44	26.88	26.88
BP4.5-2	43.74	43.74	43.74	BP9-2.5	28.44	26.88	26.88
BP4.5-3	43.74	43.74	43.74	BP10-1	37.63	35.84	35.84
				BP10-1.5	37.63	35.84	35.84
BP3P	4.43	6.00	6.30	BP10-2	37.63	35.84	35.84
BP4-2P	8.51	10.00	10.50	BP10-3	37.63	35.84	35.84
BP4-3P	8.51	10.00	10.50				
BP4.5-2P	43.74	50.88	53.42	8-1P	25.6	17.28	18.14
BP4.5-3P	43.74	50.88	53.42	BP8-2P	25.6	17.28	18.14
				BP9-1P	42.47	26.88	28.44
BP5	8.51	8.51	8.51	BP9-2P	42.47	26.88	28.44
BP6-1	17.86	17.86	17.86	BP10-1P	42.47	26.88	28.44
				BP10-2P	62.93	35.84	37.63

Crossed Roller Positioning Stages

Refer to Page 49

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
RP1	9.66	9.20	9.20	RP7-1	116.64	116.64	116.64
RP2	14.49	13.80	13.80	RP7-2	116.64	116.64	116.64
RP3	25.47	25.47	25.47				
				RP8-1	51.40	48.96	48.96
RP4-1	17.02	17.02	17.02	RP8-2	51.40	48.96	48.96
RP4-2	17.02	17.02	17.02	RP9-1	80.58	76.16	76.16
RP4-3	17.02	17.02	17.02	RP9-1.5	80.58	76.16	76.16
RP4.5-1	87.48	87.48	87.48	RP9-2	80.58	76.16	76.16
RP4.5-2	87.48	87.48	87.48	RP9-2.5	80.58	76.16	76.16
RP4.5-3	87.48	87.48	87.48	RP10-1	106.62	101.55	101.55
				RP10-1.5	106.62	101.55	101.55
RP3P	14.77	20.00	21.00	RP10-2	106.62	101.55	101.55
RP4-2P	17.02	20.00	21.00	RP10-3	106.62	101.55	101.55
RP4-3P	17.02	20.00	21.00				
RP4.5-2P	87.48	101.76	106.85	RP8-1P	72.53	48.96	51.40
RP4.5-3P	87.48	101.76	106.85	RP8-2P	72.53	48.96	51.40
				RP9-1P	120.33	76.16	80.58
RP5	17.02	17.02	17.02	RP9-2P	120.33	76.16	80.58
RP6-1	34.02	34.02	34.02	RP10-1P	120.33	76.16	80.58
RP6-2	34.02	34.02	34.02	RP10-2P	178.30	101.55	106.62

Technical Information

Moment Load Ratings

Low Profile Crossed Roller Slide Tables

Refer to Page 68

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
LT1-1	7.1	11.4	11.8	LT2-5	54.6	177.5	186.4
LT1-2	9.2	22.9	24.0	LT2-6	62.4	234.1	245.8
LT1-3	13.4	40.3	42.4	LT2-7	67.6	287.4	301.8
LT1-4	15.4	47.4	49.8	LT3-1	87.4	131.1	137.6
LT1-5	17.2	72.2	73.7	LT3-2	127.6	275.2	288.9
LT1-6	20.1	102.5	107.7	LT3-3	152.6	429.8	450.6
LT1-7	22.6	123.3	129.5	LT3-4	190.7	661.6	694.7
LT2-1	20.8	27.1	28.4	LT3-5	215.0	887.0	931.0
LT2-2	32.8	57.4	60.2	LT3-6	246.2	1200.0	1260.0
LT2-3	39.0	87.8	92.2	LT3-7	260.7	1395.0	1465.0
LT2-4	49.4	135.9	142.7				

Crossed Roller Rail Sets

Refer to Page 61

MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
CR1-020	0	9.7	10.2	CR3-200	0	1382.3	1451.4
CR1-030	0	19.2	20.1	CR3-225	0	1691.5	1776.1
CR1-040	0	36.7	38.6	CR3-250	0	2152.5	2260.1
CR1-050	0	61.1	64.1	CR3-275	0	2534.4	2661.1
CR1-060	0	91.5	96.0	CR3-300	0	3092.1	3246.7
CR1-070	0	128.9	135.3	CR3-325	0	3546.8	3724.1
CR1-080	0	159.4	167.3	CR3-350	0	4201.8	4411.9
CR2-030	0	21.8	22.9	CR4-080	0	247.4	259.8
CR2-045	0	54.6	57.3	CR4-120	0	602.3	632.4
CR2-060	0	102.7	107.9	CR4-160	0	1117.2	1173.1
CR2-075	0	142.8	149.9	CR4-200	0	1777.3	1866.2
CR2-090	0	216.0	226.8	CR4-240	0	2629.8	2761.3
CR2-105	0	272.5	286.1	CR4-280	0	3601.5	3781.6
CR2-120	0	370.8	389.4	CR4-320	0	4725.4	4961.7
CR2-135	0	443.8	466.0	CR4-360	0	6002.3	6302.4
CR2-150	0	567.2	595.5	CR4-400	0	7431.3	7802.9
CR2-165	0	706.9	742.2	CR4-440	0	9087.7	9542.0
CR2-180	0	864.0	907.2	CR4-480	0	10828.9	11370.3
CR3-050	0	87.3	91.7	CR6-100	0	803.8	844.0
CR3-075	0	176.7	185.5	CR6-150	0	1788.0	1877.4
CR3-100	0	344.4	361.6	CR6-200	0	3104.4	3259.6
CR3-125	0	506.5	531.8	CR6-250	0	4850.6	5093.1
CR3-150	0	771.4	809.9	CR6-300	0	6901.6	7246.7
CR3-175	0	1018.6	1069.5	CR6-350	0	9410.0	9880.5
				CR6-400	0	12305.9	12921.2

Technical Information

Moment Load Ratings

Crossed Roller Slide Tables (Aluminum)

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MODEL #	STAINLESS STEEL	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	STAINLESS STEEL	M1 lb-in	M2 lb-in	M3 lb-in
RT1-1	SS	22.2	56.4	59.2	RT3-2	SS	167.6	423.7	444.9
RT1-2	SS	26.4	82.5	86.6	RT3-2-60	SS	167.6	423.7	444.9
RT1-3	SS	33.6	124.7	130.9	RT3-2.5-75	SS	184.4	466.1	489.4
RT1-4	SS	37.5	161.4	169.4	RT3-3	SS	218.6	878.1	922.0
RT1-5	SS	45.8	270.9	284.5	RT3-3-90	SS	218.6	878.1	922.0
					RT3-4	SS	270.3	1109.0	1164.4
RT2-.5-18	SS	23.0	42.3	44.4	RT3-4-105	SS	270.3	1109.0	1164.4
RT2-1	SS	30.7	56.4	59.2	RT3-5	SS	285.7	1283.6	1347.7
RT2-1-30	SS	30.7	56.4	59.2	RT3-5-130	SS	285.7	1283.6	1347.7
RT2-2	SS	36.4	82.5	86.6	RT3-6	SS	314.3	1412.0	1482.5
RT2-2-40	SS	36.4	82.5	86.6	RT3-7	SS	336.3	1510.8	1586.2
RT2-2-50	SS	46.3	124.7	130.9	RT3-8	SS	366.5	1646.8	1729.0
RT2-3	SS	46.3	124.7	130.9	RT3-9	SS	388.5	1745.6	1832.7
RT2-5-60	SS	51.7	161.4	169.4					
RT2-4	SS	51.7	161.4	169.4	RT4-1	SS	304.8	403.5	423.7
RT2-4.5-70	SS	58.8	215.6	226.8	RT4-2	SS	425.3	821.0	862.1
RT2-5	SS	63.2	270.9	284.5	RT4-3	SS	512.5	1423.2	1494.3
RT2-5-80	SS	63.2	270.9	284.5	RT4-4	SS	616.6	1938.7	2035.6
RT2-6-100	SS	94.8	406.4	426.8	RT4-5	SS	720.1	2700.9	2836.0
RT2-7-120	SS	113.8	487.6	512.1					
					RT5-1	SS	491.5	697.6	732.4
RT3-1	SS	95.7	128.5	135.0	RT5-2	SS	847.3	1826.6	1918.0
RT3-1-30	SS	95.7	128.5	135.0	RT5-3	SS	1276.6	4633.6	4865.3
RT3-1.5-45	SS	114.8	154.2	162.0	RT5-4	SS	1621.3	7859.8	8252.8

Recirculating Ball Slide Guides

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MODEL #	M1 lb-in	M2 lb-in	M3 lb-in	MODEL #	M1 lb-in	M2 lb-in	M3 lb-in
SGS.5 SGS.5UU	16.8	10.6	13.3	SGS1.5 SGS1.5UU	138.9	95.5	112.9
SGS1 SG2S1UU	46.0	36.5	43.4	SGS2.5 SGS2.5UU	269.1	121.5	147.6
SGS2 SGS2UU	104.2	60.8	69.5	SGS3.5 SGS3.5UU	460.1	329.9	190.9
SGS3 SGS3UU	164.9	78.1	95.5	SGS4.5 SGS4.5UU	1310.9	355.9	425.4
SGS4 SGS4UU	355.9	190.9	225.7				
SGS5 SGS5UU	868.2	451.4	538.3				

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Jan 2026