

INTRODUCTION

SMI was founded in 1990 in response to a rapidly growing need for a competent supplier of linear motion components and systems. For the first 5 years SMI focused all of its attention on becoming a **Master Distributor of linear motion components** in California and the West Coast offering Engineering and Applications assistance. During this time period, SMI developed a significant customer (OEM) base by supplying volume users with leading edge linear products from around the world. SMI was able to do this by offering factory pricing and volume discounts. Our large customers found SMI to be more competitive than rival direct pricing and offered customers the advantage of local stock and a deeper commitment to customer satisfaction and cooperation.

SMI quickly became an **authority on linear mechanical motion products** focused on creating a product offering, which was broad in range but centered exclusively on motion products. This broad range of products is supported by qualified and knowledgeable factory trained Engineers for product selection and assistance.

What truly made SMI unique and a rapid growth company was the fact that SMI was able to secure authorized relationships with manufacturers who offered overlapping and complimentary products. **SMI is able to offer true consultative type assistance** without the need to fit every application into a single product source. SMI's approach became **"let's fit every application with the right product, not fit a single product into every application"**. In many cases, multiple sources represented were acceptable to an application with fit, form and functionality. Now both the Engineers and Buyers were happy since they had multiple sources available at volume pricing from a single confident source that supported their needs.

- SMI has the ability to review an application from an Engineering standpoint,
- Offer creative solutions from a multitude of sources from around the world,
- Keep and maintain inventory for fast delivery,
- Have a back up source waiting in the wings and
- Offer factory direct volume pricing without Engineers and buyers having to deal with 15 different sales people.

We took this rapidly accepted advantage and took it one step further.

We began adding machining capabilities.

Our founder served his apprenticeship years in the Machine Tool world and quickly adapted those skills at SMI to offer a new value added service. What began with simple knee mill opportunities offering customers a value-added source quickly expanded into a **fully capable CNC facility** with Lathes, Vertical Machines and Grinders.

SMI is extremely proficient in working with the intricacies of hardened materials used in raceway type products from round shaft to profile guide rails. Our shop operates in the Master Cam environment supported by Solid Works modeling and is ISO compatible.

As more jobs came in for machining, a need for assembly arose. **In 1998 SMI began an assembly department for the creation of finished sub-assemblies.** Now, SMI is used as an Applications Solutions House, as a distributor for product selection, as a machine facility for modifications and now an assembly department to build completed sub-assemblies all supported by Engineering.

SMI can help you design **complete motion solutions.** This runs the spectrum from simple single axis stage to complex multi-axis robots. SMI is able to combine all of its resources and experiences to develop complete answers to your complex motion requirements.

The products shown in this catalog are of an open architecture approach using the **"keep it simple"** philosophy. Some rival manufacturers of stages and systems have found ways of making their units excessively costly and inordinately complex for their needs. These units, even though aesthetically attractive, offer little in the way of engineering advantages. **SMI stages are logically uncomplicated, industrially tough and designed to serve a need: Your needs.**

The following catalog is a compilation of popular linear components from our distributor side, linear stages and systems we have built from these units as well as our own line of products developed from market needs. **If you don't see it here, call us and ask. We enjoy a good challenge.**



Introduction1

Table of Contents2



Systems:

Linear Motion Systems4

Miniature Precision Systems (MP)20

Simple Slide Systems26

SV Positioning Systems29



Sub-Assemblies:

Custom Sub-Assemblies31



Modular Framing:

Extrusions35



Motion Components:

Precision Ball Screws50



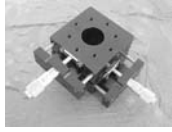
Ball Slides (BS)58

Ball Slides Precision Series (BSPS)63

Cross Roller Slides (XRS)64

Ball Slide Positioning Stages (MAC)68





Motion Components:

Cross Roller Positioning Stages (MACR)75



Cross Roller Tables (XRT)77

Crossover Tables78



Bushings79

Pillow Blocks85



Precision Shafting89

Pre-Drilled Shafting90



Support Rails (SR)91

Pre-Drilled Support Rails (SRPD)92



Support Rail Assemblies (SRA)93

Low Support Rails (LSR)94



Low Support Rail Assemblies (LSRA)95

Shaft End Supports96



Profile Guide Rails97



Technical Guide128

Ordering Information131



Terms & Conditions132

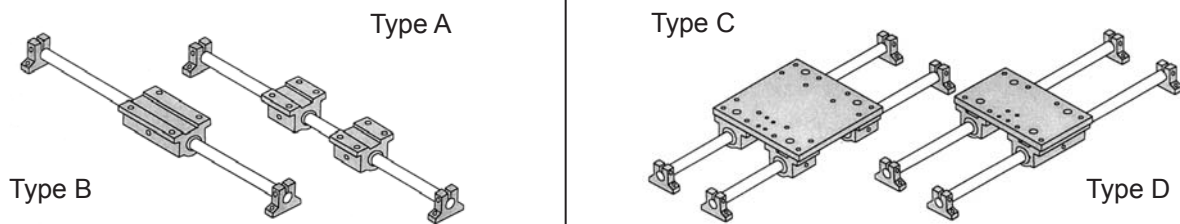
Application / Request for Quote Form135



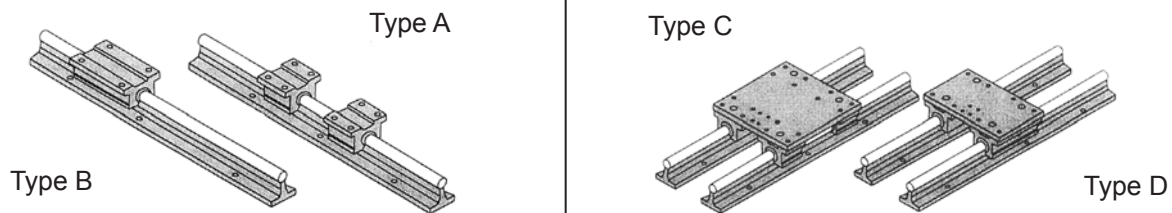
SYSTEM OVERVIEW

All SMI Linear Motion Systems are constructed of high quality aluminum alloy and is protected with a clear anodized surface finish. The mounting surfaces are precision machined to assure flatness, and all mounting holes are fitted with locking steel threaded inserts to prevent mounting bolts from working loose.

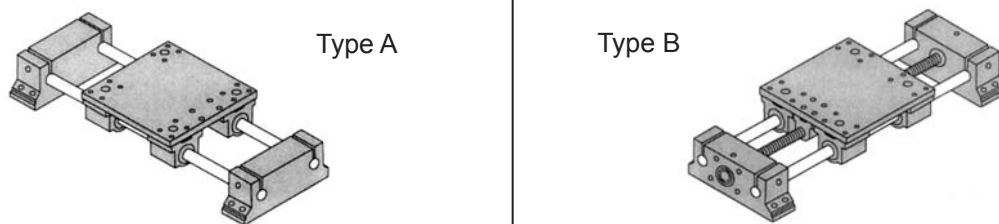
Stage 1 - End Supported Systems



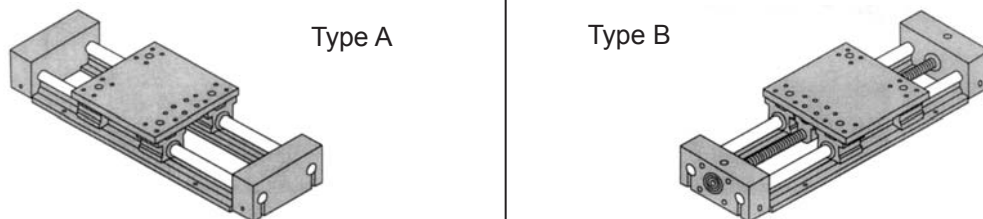
Stage 2 - Continuously Supported Systems



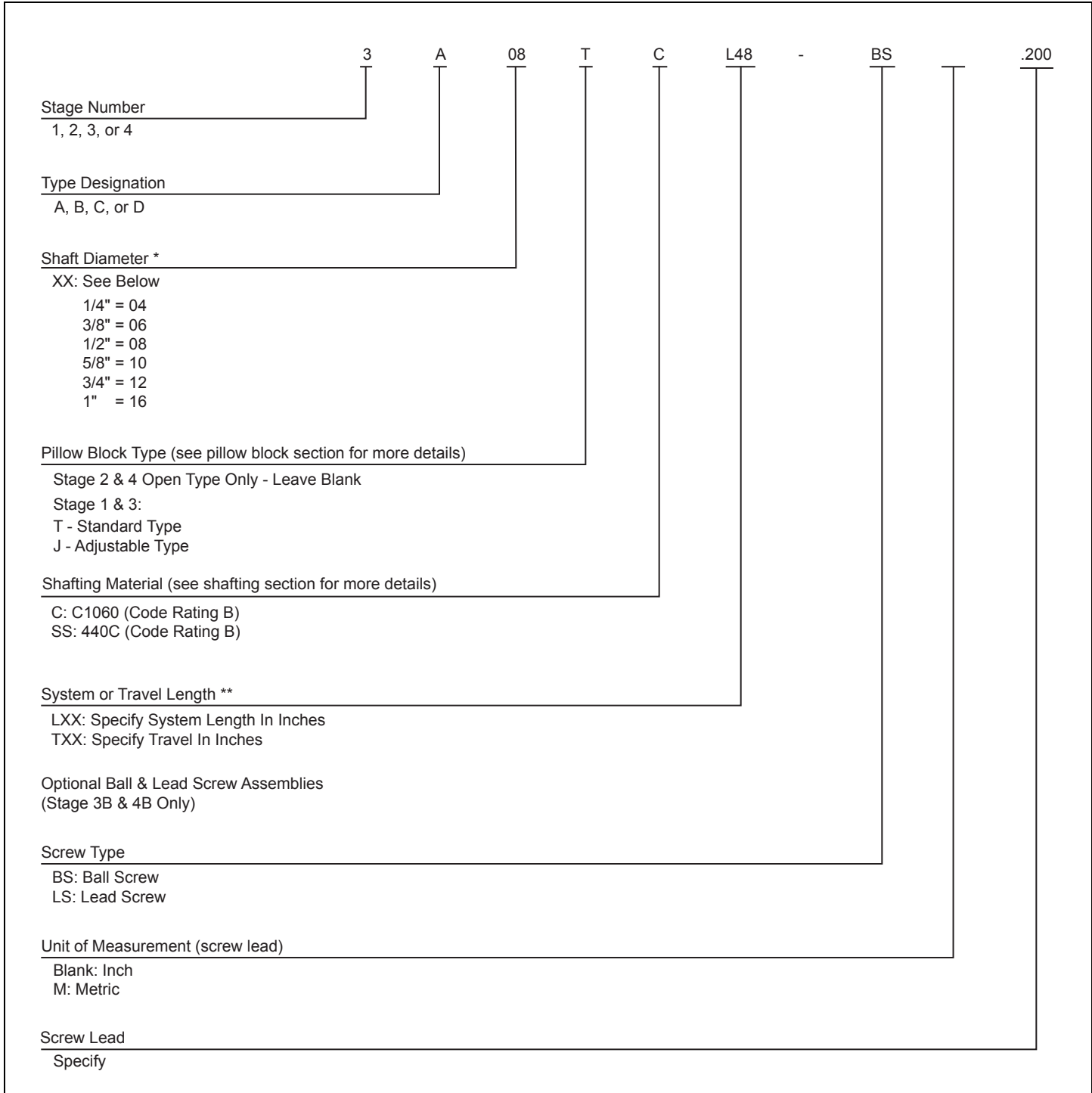
Stage 3 - Double End Supported Systems



Stage 4 - Double Continuously Supported System



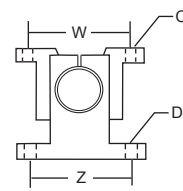
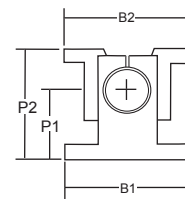
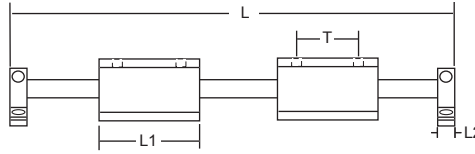
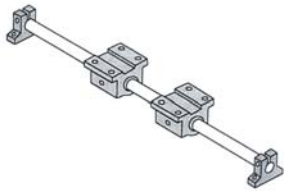
PART NUMBER SYSTEM



* Size 04 & 06 are available in Stage 1 (A, B, C, D) systems only.
 ** For Stages 1 & 2 the LXX is the systems overall length.
 For Stages 3 & 4 the TXX is the systems travel length.

STAGE 1 TYPE A & B - END SUPPORTED SYSTEM

Type A / Single Pillow Blocks



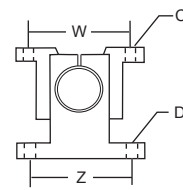
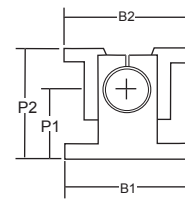
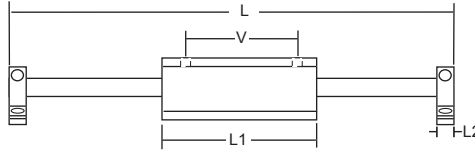
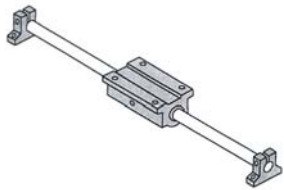
Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	L2	B1	B2	P1	P2	W	T	Z	C Thru Hole / Bolt Size	D Thru Hole / Bolt Size
1A-04	0.250	120	See Below	1.19	0.50	1.50	1.63	0.688	1.125	1.312	0.750	1.12	0.156 / #6	0.156 / #6
1A-06	0.375	190		1.31	0.56	1.63	1.75	0.750	1.250	1.437	0.875	1.25	0.156 / #6	0.156 / #6
1A-08	0.500	460		1.69	0.63	2.00	2.00	1.000	1.687	1.688	1.000	1.50	0.156 / #6	0.188 / #8
1A-10	0.625	800		1.94	0.69	2.50	2.50	1.000	1.875	2.125	1.125	1.88	0.188 / #8	0.218 / #10
1A-12	0.750	940		2.06	0.75	2.50	2.75	1.250	2.187	2.375	1.250	2.00	0.188 / #8	0.218 / #10
1A-16	1.000	1700		2.81	1.00	3.06	3.25	1.500	2.687	2.875	1.750	2.50	0.219 / #10	0.281 / 1/4

* Based on a travel of 2 million inches.

System Type	Standard System Lengths (L)						
Stage 1 - A	12"	18"	24"	30"	36"	42"	48"

Type B / Double Wide Pillow Blocks



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	L2	B1	B2	P1	P2	W	V	Z	C Thru Hole / Bolt Size	D Thru Hole / Bolt Size
1B-04	0.250	96	See Below	2.50	0.50	1.50	1.630	0.688	1.125	1.312	2.000	1.12	0.156 / #6	0.156 / #6
1B-06	0.375	150		2.75	0.56	1.63	1.750	0.750	1.250	1.437	2.250	1.25	0.156 / #6	0.156 / #6
1B-08	0.500	370		3.50	0.63	2.00	2.000	1.000	1.687	1.688	2.500	1.50	0.156 / #6	0.188 / #8
1B-10	0.625	640		4.00	0.69	2.50	2.500	1.000	1.875	2.125	3.000	1.88	0.188 / #8	0.218 / #10
1B-12	0.750	750		4.50	0.75	2.50	2.750	1.250	2.187	2.375	3.500	2.00	0.188 / #8	0.218 / #10
1B-16	1.000	1360		6.00	1.00	3.06	3.250	1.500	2.687	2.875	4.500	2.50	0.219 / #10	0.281 / 1/4

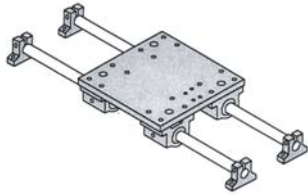
* Based on a travel of 2 million inches.

System Type	Standard System Lengths (L)						
Stage 1 - B	12"	18"	24"	30"	36"	42"	48"

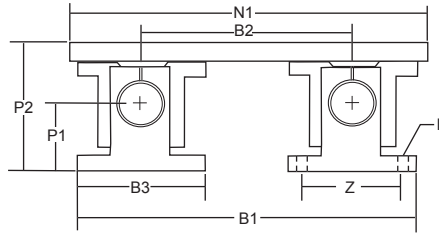
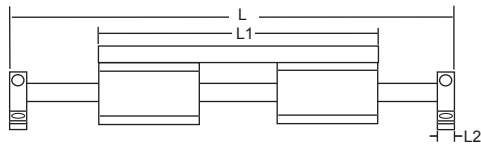
Travel length is calculated by subtracting the pillow block length (L1) and both the end support block length (L2) from the total system length (L).

STAGE 1 TYPE C - END SUPPORTED SYSTEM

Type C / Single Pillow Blocks



Travel length is calculated by subtracting the carriage length (L1) and both the end support block length (L2) from the total system length (L).



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	L2	B1	B2	B3	N1	P1	P2	Z	D Thru Hole / Bolt Size
1C-04	0.250	240	See Below	4.00	0.50	3.75	2.25	1.50	4.00	0.688	1.375	1.12	0.156 / #6
1C-06	0.375	300		4.50	0.56	4.13	2.50	1.63	4.50	0.750	1.500	1.25	0.156 / #6
1C-08	0.500	920		5.50	0.63	5.25	3.25	2.00	5.50	1.000	2.063	1.50	0.188 / #8
1C-10	0.625	1600		6.50	0.69	6.25	3.75	2.50	6.50	1.000	2.250	1.88	0.218 / #10
1C-12	0.750	1880		7.50	0.75	7.00	4.50	2.50	7.50	1.250	2.688	2.00	0.218 / #10
1C-16	1.000	3400		9.00	1.00	8.56	5.50	3.06	9.00	1.500	3.188	2.50	0.281 / 1/4

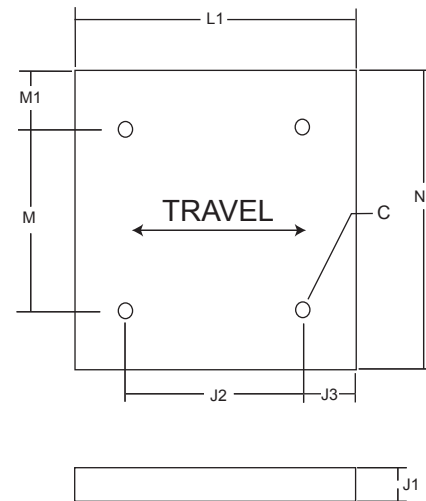
* Based on a travel of 2 million inches.

System Type	Standard System Lengths (L)						
Stage 1 - C	12"	18"	24"	30"	36"	42"	48"

Stage 1 Type C Carriage Dimensions

Unit: inch

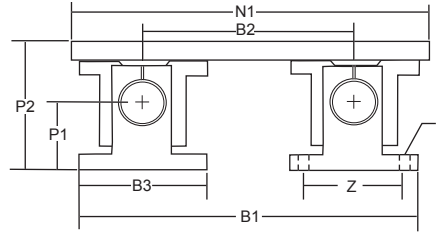
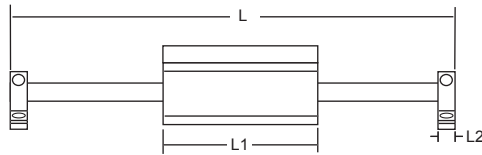
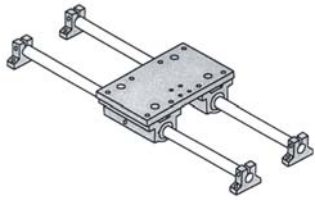
Part No.	Dia.	M	M1	J1	C	J2	J3	L1	N1
1C-04	0.250	2.25	0.88	0.25	#8-32	3.50	0.25	4.00	4.00
1C-06	0.375	2.50	1.00	0.25	#10-32	3.75	0.38	4.50	4.50
1C-08	0.500	3.25	1.13	0.37	1/4-20	4.50	0.50	5.50	5.50
1C-10	0.625	3.75	1.38	0.37	1/4-20	5.25	0.63	6.50	6.50
1C-12	0.750	4.50	1.50	0.50	5/16-18	6.00	0.75	7.50	7.50
1C-16	1.000	5.50	1.75	0.50	3/8-16	7.00	1.00	9.00	9.00



STAGE 1 TYPE D - END SUPPORTED SYSTEM

Type D / Double Wide Pillow Blocks

Travel length is calculated by subtracting the carriage length (L1) and both the end support block length (L2) from the total system length (L).



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	L2	B1	B2	B3	N1	P1	P2	Z	D Thru Hole / Bolt Size
1D-04	0.250	192	See Below	2.50	0.50	3.75	2.25	1.50	4.00	0.688	1.375	1.12	0.156 / #6
1D-06	0.375	300		2.75	0.56	4.13	2.50	1.63	4.50	0.750	1.500	1.25	0.156 / #6
1D-08	0.500	740		3.50	0.63	5.25	3.25	2.00	5.50	1.000	2.063	1.50	0.188 / #8
1D-10	0.625	1280		4.00	0.69	6.25	3.75	2.50	6.50	1.000	2.250	1.88	0.218 / #8
1D-12	0.750	1500		4.50	0.75	7.00	4.50	2.50	7.50	1.250	2.688	2.00	0.218 / #8
1D-16	1.000	2720		6.00	1.00	8.56	5.50	3.06	9.00	1.500	3.188	2.50	0.281 / 1/4

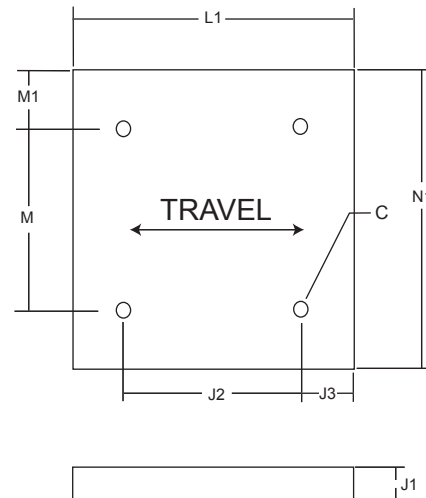
* Based on a travel of 2 million inches.

System Type	Standard System Lengths (L)						
Stage 1 - D	12"	18"	24"	30"	36"	42"	48"

Stage 1 Type D Carriage Dimensions

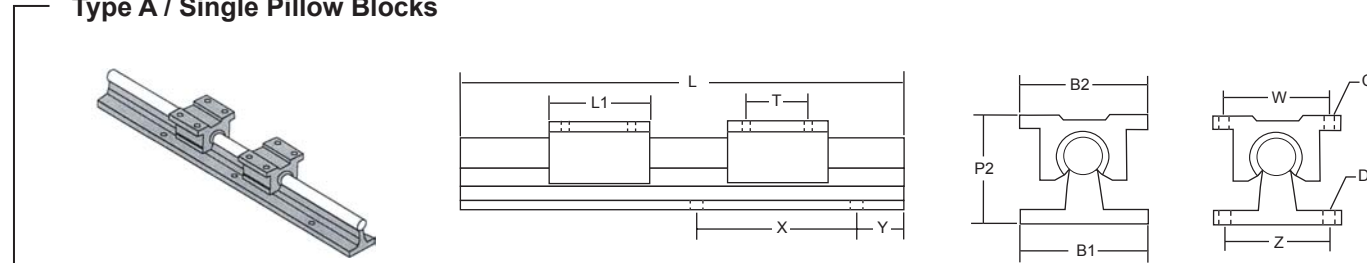
Unit: inch

Part No.	Dia.	M	M1	J1	C	J2	J3	L1	N1
1D-04	0.250	2.25	0.88	0.25	#8-32	2.00	0.25	2.50	4.00
1D-06	0.375	2.50	1.00	0.25	#10-32	2.00	0.38	2.75	4.50
1D-08	0.500	3.25	1.13	0.37	1/4-20	2.50	0.50	3.50	5.50
1D-10	0.625	3.75	1.38	0.37	1/4-20	3.00	0.50	4.00	6.50
1D-12	0.750	4.50	1.50	0.50	5/16-18	3.50	0.50	4.50	7.50
1D-16	1.000	5.50	1.75	0.50	3/8-16	4.50	0.75	6.00	9.00



STAGE 2 TYPE A & B - CONTINUOUSLY SUPPORTED SYSTEM

Type A / Single Pillow Blocks



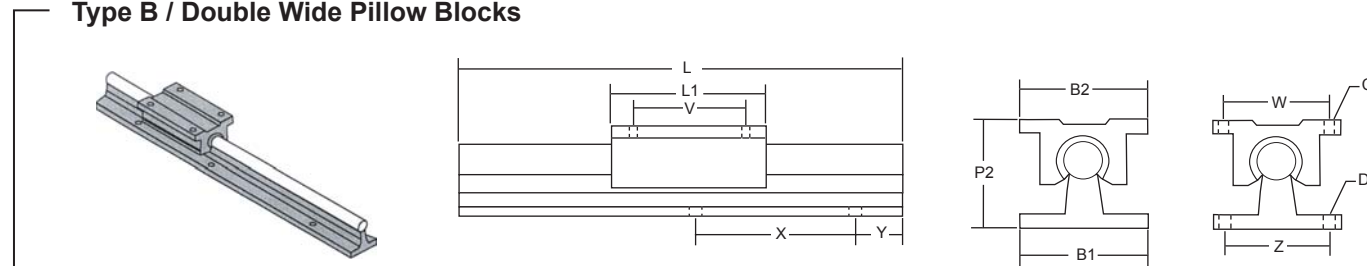
Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	P2	W	T	X	Y	Z	C Thru Hole / Bolt Size	D Thru Hole / Bolt Size
2A-08	0.500	460	See Below	1.50	1.50	2.00	1.812	1.688	1.00	4.00	2.00	1.000	0.156 / #6	0.169 / #6
2A-10	0.625	800		1.75	1.63	2.50	2.000	2.125	1.13	4.00	2.00	1.125	0.188 / #8	0.193 / #8
2A-12	0.750	940		1.88	1.75	2.75	2.437	2.375	1.25	6.00	3.00	1.250	0.188 / #8	0.221 / #10
2A-16	1.000	1700		2.63	2.13	3.25	2.937	2.875	1.75	6.00	3.00	1.500	0.219 / #10	0.281 / 1/4

* Based on a travel of 2 million inches.

System Type	Standard System Lengths (L)							
Stage 2 - A	12"	18"	24"	30"	36"	42"	48"	

Type B / Double Wide Pillow Blocks



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	P2	W	V	X	Y	Z	C Thru Hole / Bolt Size	D Thru Hole / Bolt Size
2B-08	0.500	370	See Below	3.50	1.50	2.00	1.812	1.688	2.50	4.00	2.00	1.000	0.156 / #6	0.169 / #6
2B-10	0.625	640		4.00	1.63	2.50	2.000	2.125	3.00	4.00	2.00	1.125	0.188 / #8	0.193 / #8
2B-12	0.750	750		4.50	1.75	2.75	2.437	2.375	3.50	6.00	3.00	1.250	0.188 / #8	0.221 / #10
2B-16	1.000	1360		6.00	2.13	3.25	2.937	2.875	4.50	6.00	3.00	1.500	0.219 / #10	0.281 / 1/4

* Based on a travel of 2 million inches.

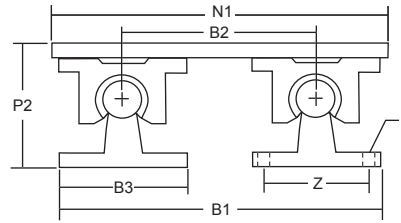
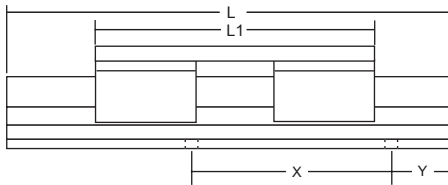
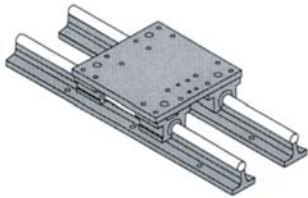
System Type	Standard System Lengths (L)							
Stage 2 - B	12"	18"	24"	30"	36"	42"	48"	

Travel length is calculated by subtracting the pillow block length (L1) from the total system length (L).

STAGE 2 TYPE C - CONTINUOUSLY SUPPORTED SYSTEM

Type C / Single Pillow Blocks

Travel length is calculated by subtracting the carriage length (L1) from the total system length (L).



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	B3	N1	P2	X	Y	Z	D Thru Hole / Bolt Size
2C-08	0.500	920	See Below	5.50	4.75	3.25	1.50	5.50	2.187	4.00	2.00**	1.000	0.169 / #6
2C-10	0.625	1600		6.50	5.38	3.75	1.63	6.50	2.375	4.00	2.00**	1.125	0.193 / #8
2C-12	0.750	1880		7.50	6.25	4.50	1.75	7.50	2.937	6.00	3.00	1.250	0.221 / #10
2C-16	1.000	3400		9.00	7.63	5.50	2.13	9.00	3.437	6.00	3.00	1.500	0.281 / 1/4

* Based on a travel of 2 million inches.

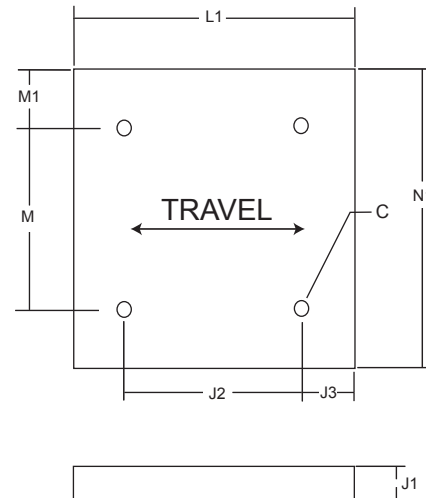
** For 18", 30", and 42" system lengths subtract 1" of "Y" dimension.

System Type	Standard System Lengths (L)						
Stage 2 - C	12"	18"	24"	30"	36"	42"	48"

Stage 2 Type C Carriage Dimensions

Unit: inch

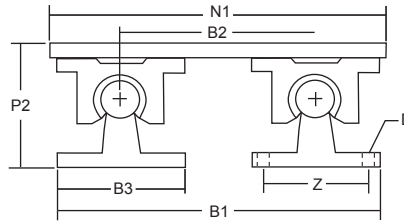
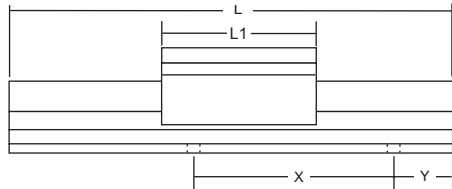
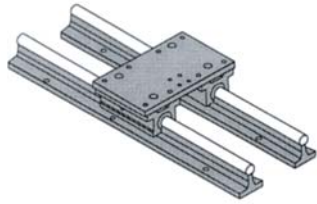
Part No.	Dia.	M	M1	J1	C	J2	J3	L1	N1
2C-08	0.500	3.25	1.13	0.37	1/4-20	4.50	0.50	5.50	5.50
2C-10	0.625	3.75	1.38	0.37	1/4-20	5.25	0.63	6.50	6.50
2C-12	0.750	4.50	1.50	0.50	5/16-18	6.00	0.75	7.50	7.50
2C-16	1.000	5.50	1.75	0.50	3/8-16	7.00	1.00	9.00	9.00



STAGE 2 TYPE D - CONTINUOUSLY SUPPORTED SYSTEM

Type D / Double Wide Pillow Blocks

Travel length is calculated by subtracting the carriage length (L1) from the total system length (L).



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	B3	N1	P2	X	Y	Z	D Thru Hole / Bolt Size
2D-08	0.500	740	See Below	3.50	4.75	3.25	1.50	5.50	2.187	4.00	2.00**	1.000	0.169 / #6
2D-10	0.625	1280		4.00	5.38	3.75	1.63	6.50	2.375	4.00	2.00**	1.125	0.193 / #8
2D-12	0.750	1500		4.50	6.25	4.50	1.75	7.50	2.937	6.00	3.00	1.250	0.221 / #10
2D-16	1.000	2720		6.00	7.63	5.50	2.13	9.00	3.437	6.00	3.00	1.500	0.281 / 1/4

* Based on a travel of 2 million inches.

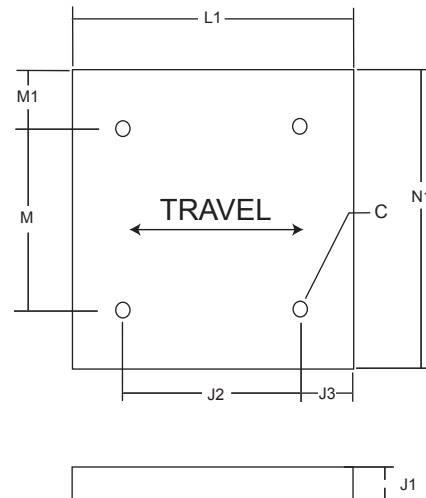
** For 18", 30", and 42" system lengths subtract 1" of "Y" dimension.

System Type	Standard System Lengths (L)						
Stage 2 - D	12"	18"	24"	30"	36"	42"	48"

Stage 2 Type D Carriage Dimensions

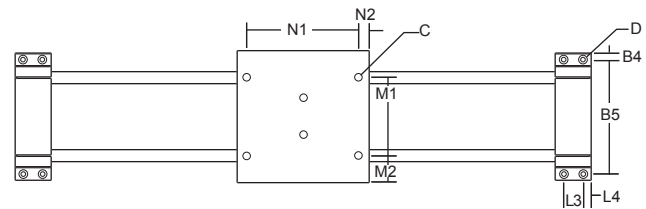
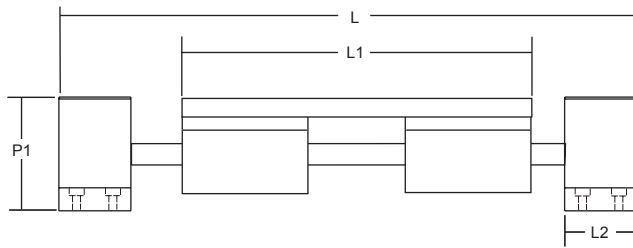
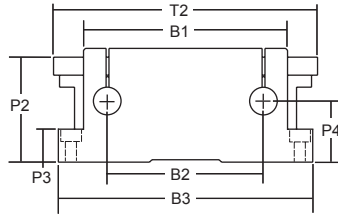
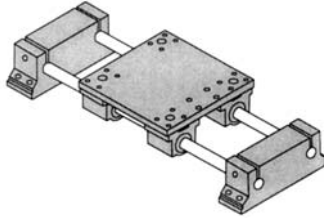
Unit: inch

Part No.	Dia.	M	M1	J1	C	J2	J3	L1	N1
2D-08	0.500	3.25	1.13	0.37	1/4-20	2.50	0.50	3.50	5.50
2D-10	0.625	3.75	1.38	0.37	1/4-20	3.00	0.50	4.00	6.50
2D-12	0.750	4.50	1.50	0.50	5/16-18	3.50	0.50	4.50	7.50
2D-16	1.000	5.50	1.75	0.50	3/8-16	4.50	0.75	6.00	9.00



STAGE 3 TYPE A - END SUPPORTED SYSTEM

Type A / Single Pillow Blocks



Unit: inch

Part No.	Dia.	Max Load* (lbs.)	L	L1	L2	L3	L4	B1	B2	B3	B4	B5	M1	M2	N1	N2	P1	P2	P3	P4	T2	C	D	
																							Bolt	Hole
3A-08	0.500	920	See Below	5.50	1.00	0.56	0.22	4.25	3.25	5.30	0.25	4.80	3.25	1.125	4.50	0.50	2.38	2.187	0.50	1.125	5.50	1/4-20	#8	0.19
3A-10	0.625	1600		6.50	1.00	0.56	0.22	5.00	3.75	6.25	0.25	5.75	3.75	1.375	5.25	0.63	2.38	2.375	0.60	1.313	6.50	1/4-20	#8	0.19
3A-12	0.750	1880		7.50	1.30	0.80	0.25	6.00	4.50	7.20	0.25	6.70	4.50	1.500	6.00	0.75	2.75	2.937	0.75	1.500	7.50	5/16-18	#10	0.22
3A-16	1.000	3400		9.00	1.30	0.74	0.28	7.25	5.50	8.70	0.35	8.00	5.50	1.750	7.00	1.00	3.37	3.437	0.75	1.750	9.00	3/8-16	1/4	0.28

* Based on a travel of 2 million inches.

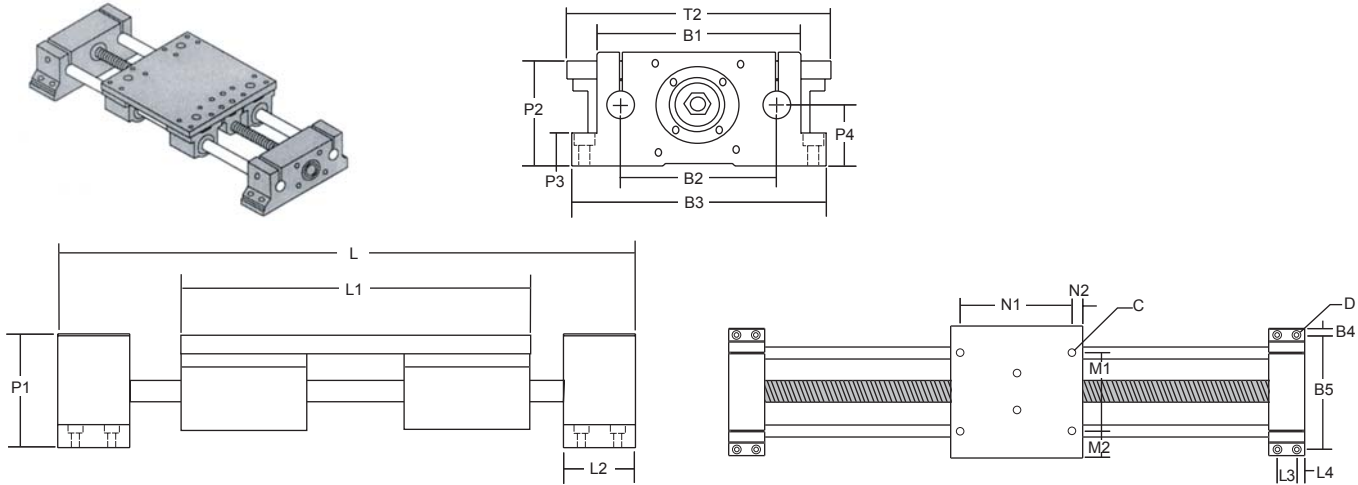
Unit: inch

Travel	Overall System Length (L)			
	3A-08	3A-10	3A-12	3A-16
6	13.5	14.5	16.1	17.6
12	19.5	20.5	22.1	23.6
18	25.5	26.5	28.1	29.6
24	31.5	32.5	34.1	35.6
30	37.5	38.5	40.1	41.6
36	43.5	44.5	46.1	47.6
42	49.5	50.5	52.1	53.6

STAGE 3 TYPE B - END SUPPORTED SYSTEM WITH BALL SCREW

Type B / Single Pillow Blocks

See page 16-19 for motor options



Unit: inch

Part No.	Dia.	Max Load * (lbs.)	L	L1	L2	L3	L4	B1	B2	B3	B4	B5	M1	M2	N1	N2	P1	P2	P3	P4	T2	C	D	
																							Bolt	Hole
3B-08	0.500	920	See Below	5.50	1.00	0.56	0.22	4.25	3.25	5.30	0.25	4.80	3.25	1.125	4.50	0.50	2.38	2.187	0.50	1.125	5.50	1/4-20	#8	0.19
3B-10	0.625	1600		6.50	1.00	0.56	0.22	5.00	3.75	6.25	0.25	5.75	3.75	1.375	5.25	0.63	2.38	2.375	0.60	1.313	6.50	1/4-20	#8	0.19
3B-12	0.750	1880		7.50	1.30	0.80	0.25	6.00	4.50	7.20	0.25	6.70	4.50	1.500	6.00	0.75	2.75	2.937	0.75	1.500	7.50	5/16-18	#10	0.22
3B-16	1.000	3400		9.00	1.30	0.74	0.28	7.25	5.50	8.70	0.35	8.00	5.50	1.750	7.00	1.00	3.37	3.437	0.75	1.750	9.00	3/8-16	1/4	0.28

* Based on a travel of 2 million inches.

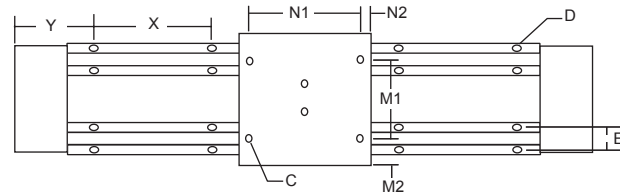
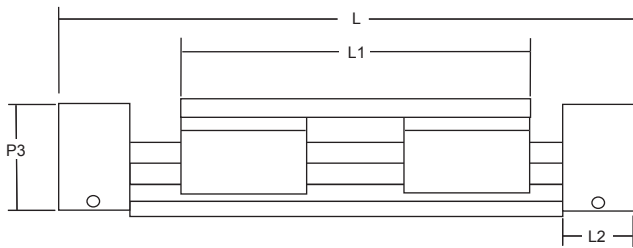
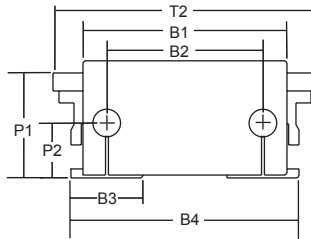
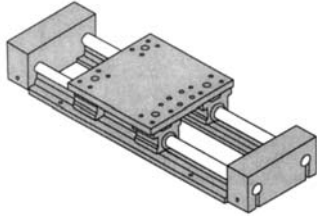
Unit: inch

Travel	Overall System Length (L)			
	3B-08	3B-10	3B-12	3B-16
6	13.5	14.5	16.1	17.6
12	19.5	20.5	22.1	23.6
18	25.5	26.5	28.1	29.6
24	31.5	32.5	34.1	35.6
30	37.5	38.5	40.1	41.6
36	43.5	44.5	46.1	47.6
42	49.5	50.5	52.1	53.6

Various ball screw & lead screw options available. Please specify screw lead when ordering or call SMI for available options.

STAGE 4 TYPE A - CONTINUOUSLY SUPPORTED SYSTEM

Type A / Single Pillow Blocks



Unit: inch

Part No.	Dia.	Max Load* (lbs.)	L	L1	L2	B1	B2	B3	B4	M1	M2	N1	N2	P1	P2	P3	T2	C	D		E	X	Y
																			Bolt	Hole			
4A-08	0.500	920	See Below	5.50	1.00	4.25	3.25	1.50	4.75	3.25	1.125	4.50	0.50	2.187	1.125	2.38	5.50	1/4-20	#6	0.17	1	4.00	2.75**
4A-10	0.625	1600		6.50	1.00	5.00	3.75	1.63	5.38	3.75	1.375	5.25	0.63	2.375	1.125	2.38	6.50	1/4-20	#8	0.19	1-1/8	4.00	3.25**
4A-12	0.750	1880		7.50	1.30	6.00	4.50	1.75	6.25	4.50	1.500	6.00	0.75	2.937	1.500	2.75	7.50	5/16-18	#10	0.22	1-1/4	6.00	2.05
4A-16	1.000	3400		9.00	1.30	7.25	5.50	2.13	7.63	5.50	1.750	7.00	1.00	3.437	1.750	3.37	9.00	3/8-16	1/4	0.28	1-1/2	6.00	2.80

* Based on a travel of 2 million inches.

** For 12", 24", and 36" travel lengths subtract 1" of "Y" dimension.

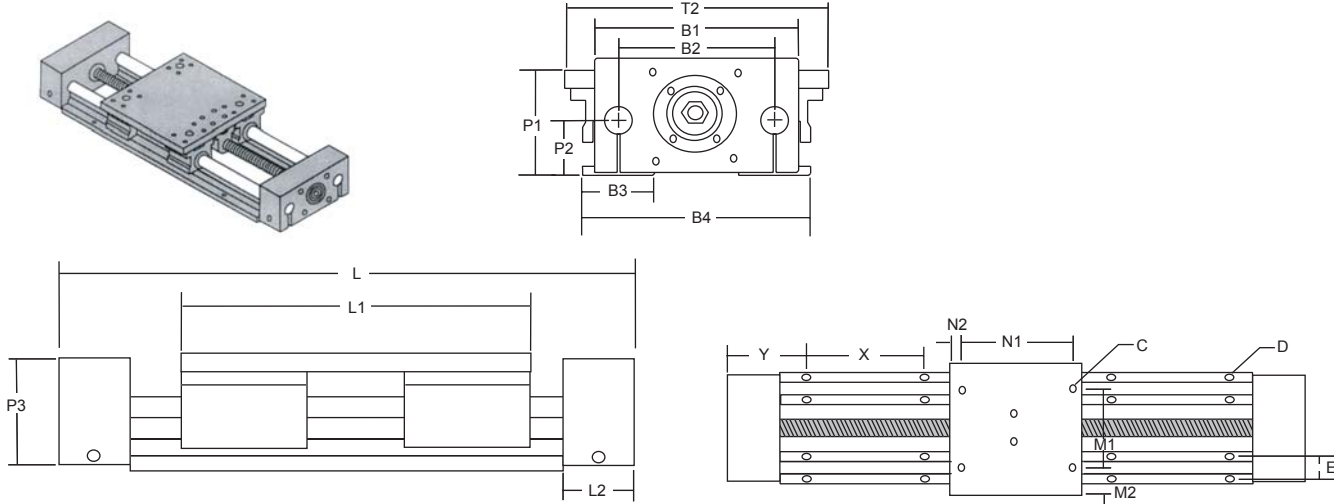
Unit: inch

Travel	Overall System Length (L)			
	4A-08	4A-10	4A-12	4A-16
6	13.5	14.5	16.1	17.6
12	19.5	20.5	22.1	23.6
18	25.5	26.5	28.1	29.6
24	31.5	32.5	34.1	35.6
30	37.5	38.5	40.1	41.6
36	43.5	44.5	46.1	47.6
42	49.5	50.5	52.1	53.6

STAGE 4 TYPE B - CONTINUOUSLY SUPPORTED SYSTEM W/BALL SCREW

Type B / Single Pillow Blocks

See page 16-19 for motor options



Unit: inch

Part No.	Dia.	Max Load * (lbs.)	L	L1	L2	B1	B2	B3	B4	M1	M2	N1	N2	P1	P2	P3	T2	C	D		E	X	Y
																			Bolt	Hole			
4B-08	0.500	920	See Below	5.50	1.00	4.25	3.25	1.50	4.75	3.25	1.125	4.50	0.50	2.187	1.125	2.38	5.50	1/4-20	#6	0.17	1	4.00	2.75**
4B-10	0.625	1600		6.50	1.00	5.00	3.75	1.63	5.38	3.75	1.375	5.25	0.63	2.375	1.125	2.38	6.50	1/4-20	#8	0.19	1-1/8	4.00	3.25**
4B-12	0.750	1880		7.50	1.30	6.00	4.50	1.75	6.25	4.50	1.500	6.00	0.75	2.937	1.500	2.75	7.50	5/16-18	#10	0.22	1-1/4	6.00	2.05
4B-16	1.000	3400		9.00	1.30	7.25	5.50	2.13	7.63	5.50	1.750	7.00	1.00	3.437	1.750	3.37	9.00	3/8-16	1/4	0.28	1-1/2	6.00	2.80

* Based on a travel of 2 million inches.

** For 12", 24", and 36" travel lengths subtract 1" of "Y" dimension.

Unit: inch

Travel	Overall System Length (L)			
	4B-08	4B-10	4B-12	4B-16
6	13.5	14.5	16.1	17.6
12	19.5	20.5	22.1	23.6
18	25.5	26.5	28.1	29.6
24	31.5	32.5	34.1	35.6
30	37.5	38.5	40.1	41.6
36	43.5	44.5	46.1	47.6
42	49.5	50.5	52.1	53.6

Various ball screw & lead screw options available. Please specify screw lead when ordering or call SMI for available options.

STAGE 3 & 4 TYPE B - MOTOR OPTIONS

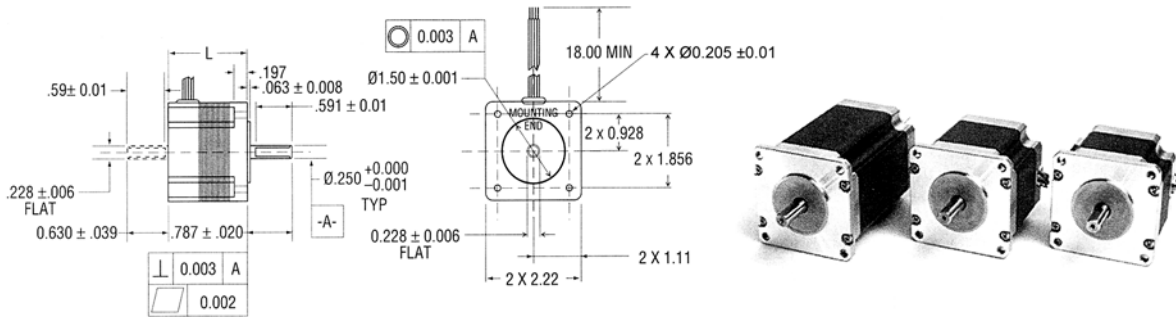
SMI offers an extensive line of stepper motors for your application needs. The following pages are a brief overview of some of the most popular motors sizes (HT23 & HT34) for our 3B & 4B LM systems.

We also offer a complete line of controllers, drives, indexers, and servo motors. Contact SMI to receive a complete listing of our motors or speak to our engineers regarding choosing the best motor for your application.

System Size	Motor Size
08	NEMA HT23
10	NEMA HT23
12	NEMA HT23
16	NEMA HT34

We use standard NEMA motor mounting configurations for each 3B & 4B system size

NEMA SIZE HT23 HYBRID STEP MOTOR



Part No.	Motor Connection 1 = Series 2 = Parallel 3 = Unipolar	Motor Length (inch)	Min. Holding Torque (oz-in)	Leads	Step Angle	Volts	Amps	Ohms	mH	Rotor Inertia (oz-in ² /G-CM ²)	Motor Weight (lbs.)
HT23-394	1	1.54	76.6	8	1.8	4.0	1.41	2.80	5.6	0.66 / 120	1.00
	2		76.6			2.0	2.83	0.70	1.4		
	3		54.2			2.8	2.00	1.40	1.4		
HT23-395	1	1.54	76.6	8	1.8	2.7	2.12	1.30	2.4	0.66 / 120	1.00
	2		76.6			1.3	4.24	0.30	0.6		
	3		54.2			1.9	3.00	0.60	0.6		
HT23-397	1	2.13	177.0	8	1.8	5.1	1.41	3.60	10.0	1.64 / 300	1.54
	2		177.0			2.5	2.83	0.90	2.5		
	3		125.0			3.6	2.00	1.80	2.5		
HT23-398	1	2.13	177.0	8	1.8	3.3	2.12	1.50	4.8	1.64 / 300	1.54
	2		177.0			1.6	4.24	0.40	1.2		
	3		125.0			2.3	3.00	0.80	1.2		
HT23-401	1	2.99	264.0	8	1.8	4.2	2.12	2.00	6.4	2.62 / 480	2.20
	2		264.0			2.1	4.24	0.50	1.6		
	3		187.0			3.0	3.00	1.00	1.6		

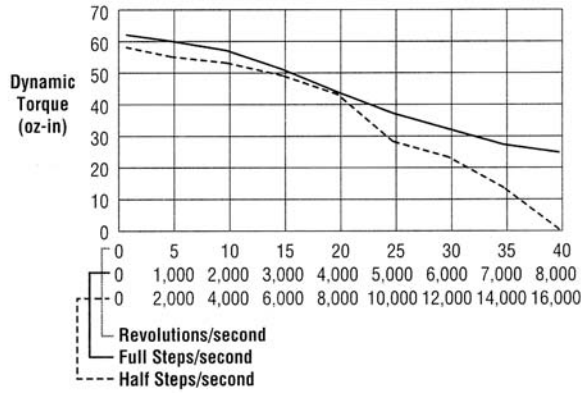
Other lengths and windings available upon request.

- Part numbers listed are for single shaft. To order double shaft add "D" to the end.
- All HT23 motors are optimized for microstepping.

SIZE HT23 MOTOR - TYPICAL SPEED / TORQUE PERFORMANCE *

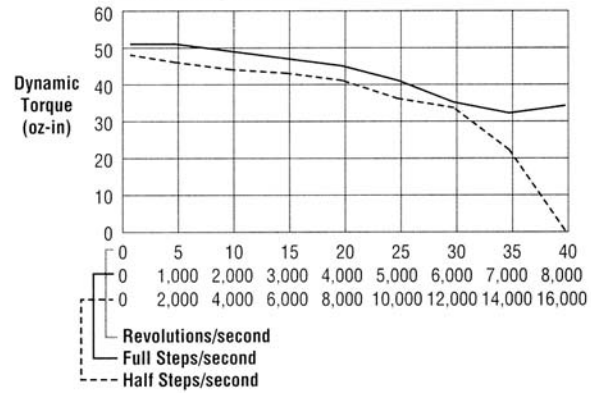
HT23-394 MOTOR

Motor Connection: Parallel
Drive: 3535 w/PS430 power supply
Drive Setting: 30 VDC • 2.8A/Phase



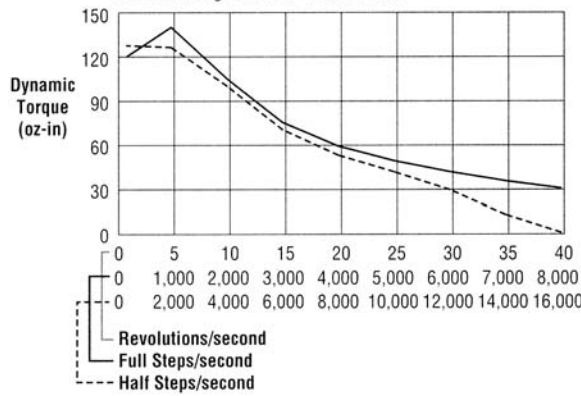
HT23-395 MOTOR

Motor Connection: Parallel
Drive: 3535 w/PS430 power supply
Drive Setting: 30 VDC • 3.5A/Phase



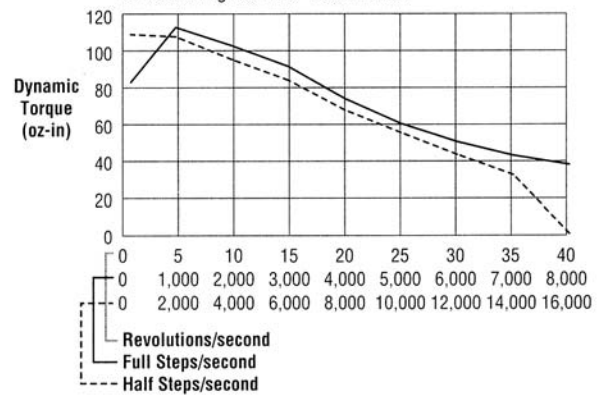
HT23-397 MOTOR

Motor Connection: Parallel
Drive: 3535 w/PS430 power supply
Drive Setting: 30 VDC • 2.8A/Phase



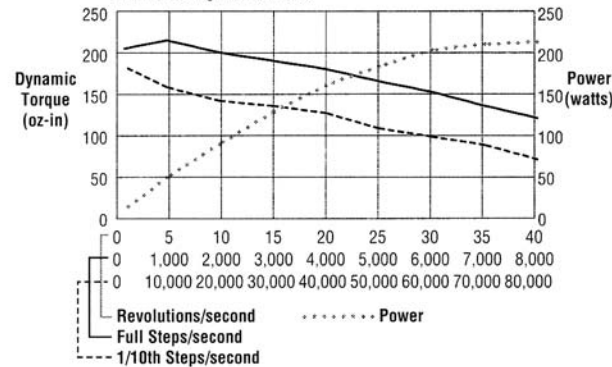
HT23-398 MOTOR

Motor Connection: Parallel
Drive: 3535 w/PS430 power supply
Drive Setting: 30 VDC • 3.5A/Phase



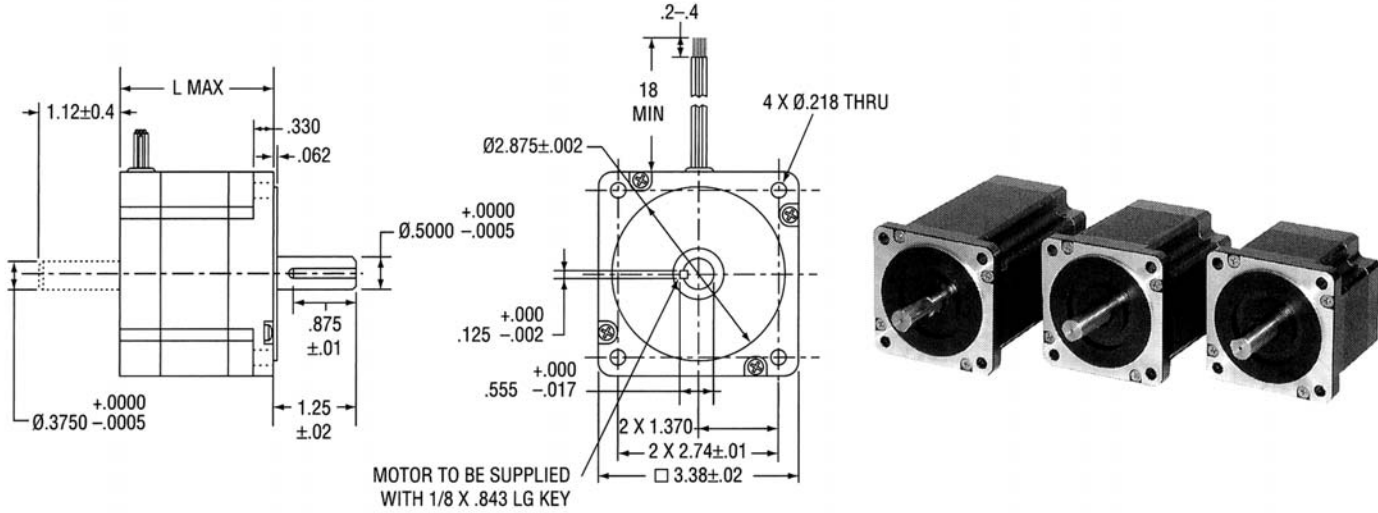
HT23-401 MOTOR

Motor Connection: Parallel
Drive: PD5580
Drive Setting: 4.2A/Phase



*Full steps/sec = Rev/sec x 200. Half steps/sec = Rev/sec x 400.

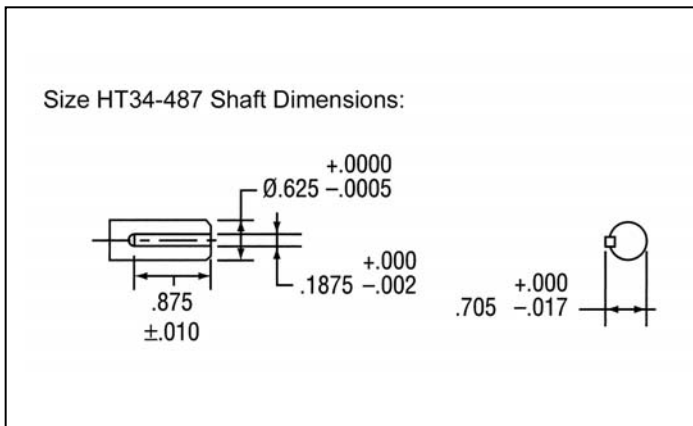
NEMA SIZE HT34 HYBRID STEP MOTOR



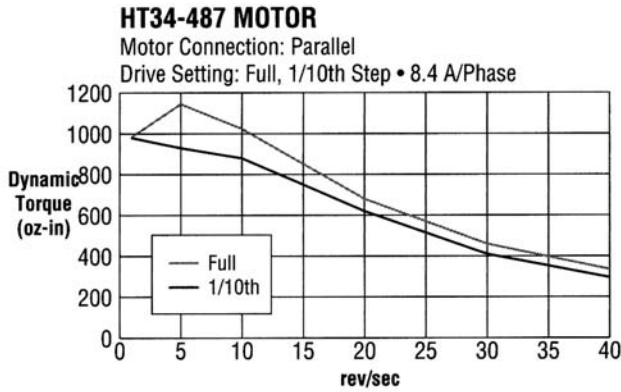
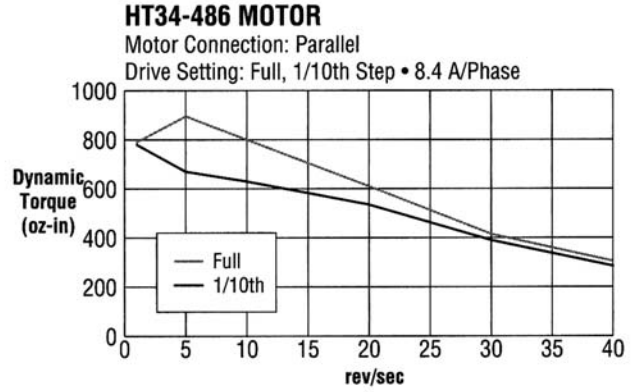
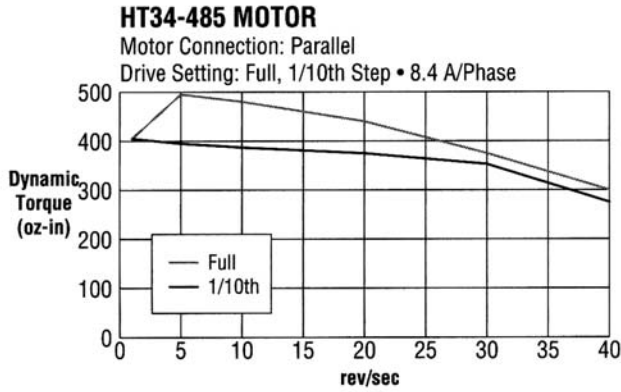
Part No.	Motor Connection 1 = Series 2 = Parallel 3 = Unipolar	Motor Length (inch)	Min. Holding Torque (oz-in)	Leads	Step Angle	Volts	Amps	Ohms	mH	Rotor Inertia (oz-in ² /G-CM ²)	Motor Weight (lbs.)
HT34-485	1	3.11	650	8	1.8	3.2	4.3	0.76	5.2	7.8 / 1400	6.18
	2		650			1.6	8.6	0.19	1.3		
	3		455			2.24	6.0	0.38	1.3		
HT34-486	1	4.63	1200	8	1.8	4.4	4.1	1.08	8.8	14.6 / 2680	8.40
	2		1200			2.2	8.1	0.27	2.2		
	3		840			3.1	5.7	0.54	2.2		
HT34-487	1	6.14	1845	8	1.8	4.8	4.5	1.08	9.6	21.9 / 4000	11.90
	2		1845			2.4	9.0	0.27	2.4		
	3		1290			3.4	6.3	0.54	2.4		

Other lengths and windings available upon request.

- Part numbers listed are for single shaft. To order double shaft add "D" to the end.
- All HT34 motors are optimized for microstepping.



SIZE HT34 MOTOR - TYPICAL SPEED / TORQUE PERFORMANCE *

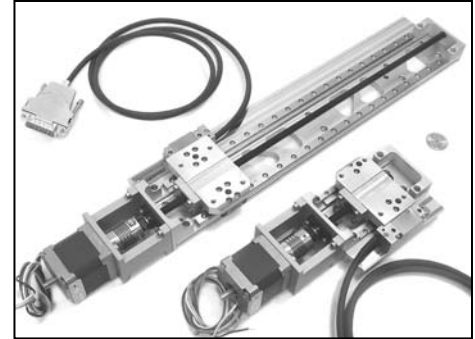


*Full steps/sec = Rev/sec x 200. Half steps/sec = Rev/sec x 400.

MP SERIES

Our Miniature Precision Systems (MP) are small in size and big on performance. Designed for precision, small envelope, large capacities and long term reliability. The MP system comes in three sizes - MP3, MP5 and MP7 with various travel lengths. The MP system incorporates square rail technology to provide high load capacity, precision and repeatability at an affordable cost.

The MP system's size and performance make it ideal for applications in inspection, vision, gauging or where existing stages and motors are simply too large. All systems come with the following features as standard.



Modified MP7-10 & MP5-1

FEATURES

High Strength Aluminum Body

Constructed to provide a compact, high strength extruded aluminum body that we protect with an anodized finish.

High Efficiency Ball Screw Drive

Our ball screw drive offers a high throughput, efficiency, accuracy and repeatability. Precision class C7 with 90% efficiency.

Anti-Backlash Lead Screw Option

For excellent repeatability and cost considerations an anti-backlash lead screw option is available upon request. Contact SMI for available diameters, leads, materials and anti-corrosive coatings.

Square Rail Sets

The MP System is equipped with carriage support bearings which provide high load capacity, smooth precise motion and dependable performance.

Fixed End Support Bearing

Utilizing precision bearing technology, these end support bearings have a compact design. The fixed side housing unit, lock nut, and simple support side unit are assembled as a kit and designed especially for the MP Systems.

NEMA Motor

The MP system is equipped with a NEMA motor size 11 & 14. We carry a multitude of other sizes and performance levels, as well as controllers and indexers.

Mounting Guides & Holes

Continuous slots along the side of the system provide a convenient means of mounting the system to a work surface as well as mounting accessories to the system. Carriage equipped with numerous drilled & tapped mounting holes with thread inserts for strength.

Motor Couplers

An integral part of our MP System is the motor coupler for effective transmission of motor torque to the system drive screw.

System Options

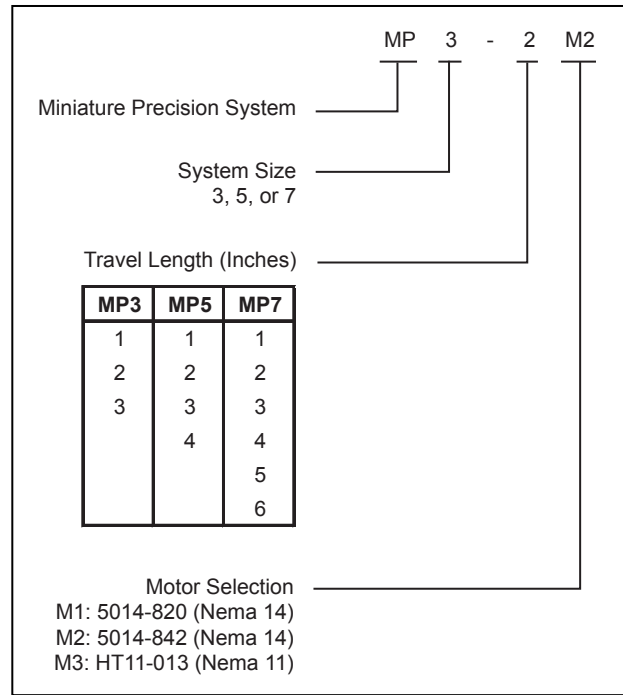
- Stainless steel body
- Ground ball screw
- Lead screw
- Limit / home sensors
- Motor upgrade
- Custom motor mounts
- Adaptable to other SMI positioning products
- Controllers & indexers
- Specific mounting holes
- High grade square rails
- Encoders
- Modified off-the-shelf systems
- Stackable XYZ configurations

MP SPECIFICATIONS

General Specifications

Height: 1" to 1.28"
Width: 1.75" to 2.27"
Flat & Straight: 0.0001" to 0.0006" max.
Static Load Capacity: 273 lbs. To 882 lbs.

Part Number System



Flatness & Straightness

Unit: inch

Part No.	Flatness ¹		Straightness ¹	
	Standard	Precision	Standard	Precision
MP3-1	0.0003	0.0001	0.0003	0.0001
MP3-2	0.0004	0.0002	0.0004	0.0002
MP3-3	0.0005	0.0002	0.0005	0.0002
MP5-1	0.0003	0.0001	0.0003	0.0001
MP5-2	0.0004	0.0002	0.0004	0.0002
MP5-3	0.0005	0.0002	0.0005	0.0002
MP5-4	0.0005	0.0002	0.0005	0.0002
MP7-1	0.0003	0.0001	0.0003	0.0001
MP7-2	0.0004	0.0002	0.0004	0.0002
MP7-3	0.0005	0.0002	0.0005	0.0002
MP7-4	0.0005	0.0002	0.0005	0.0002
MP7-5	0.0006	0.0002	0.0006	0.0002
MP7-6	0.0006	0.0003	0.0006	0.0003

Load Ratings

Part No.	Vertical Load ²		Axial load	Tranverse Load ³		Roll Moment ³		Pitch Moment ³		Yaw Moment ³	
	Static (lbf)	Dynamic (lbf)	Dynamic (lbf)	Static (lbf)	Dynamic (lbf)	Static (lbf*in)	Dynamic (lbf*in)	Static (lbf*in)	Dynamic (lbf*in)	Static (lbf*in)	Dynamic (lbf*in)
MP3-1	273	154	110	308	174	191	108	17	10	21	12
MP3-2	273	154	110	308	174	191	108	17	10	21	12
MP3-3	273	154	110	308	174	191	108	17	10	21	12
MP5-1	529	273	110	444	240	445	230	42	23	39	23
MP5-2	529	273	110	444	240	445	230	42	23	39	23
MP5-3	529	273	110	444	240	445	230	42	23	39	23
MP5-4	529	273	110	444	240	445	230	42	23	39	23
MP7-1	882	539	110	741	465	703	416	78	43	86	52
MP7-2	882	539	110	741	465	703	416	78	43	86	52
MP7-3	882	539	110	741	465	703	416	78	43	86	52
MP7-4	882	539	110	741	465	703	416	78	43	86	52
MP7-5	882	539	110	741	465	703	416	78	43	86	52
MP7-6	882	539	110	741	465	703	416	78	43	86	52

¹ Based upon no misalignment or inaccuracies of the mounting surface.

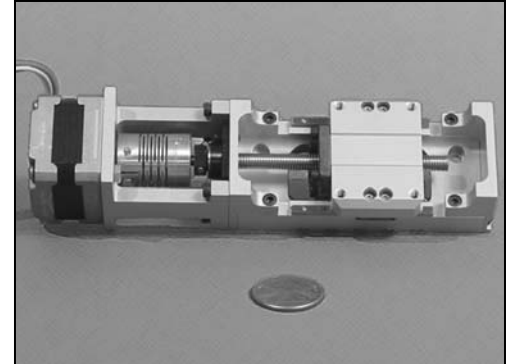
² Based upon load application via a rigid structure flat on the carriage surface.

³ Based upon no other combined loads.

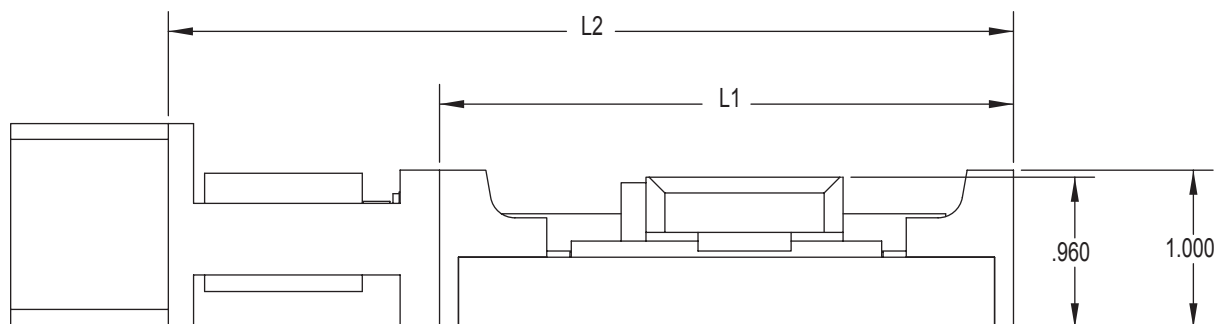
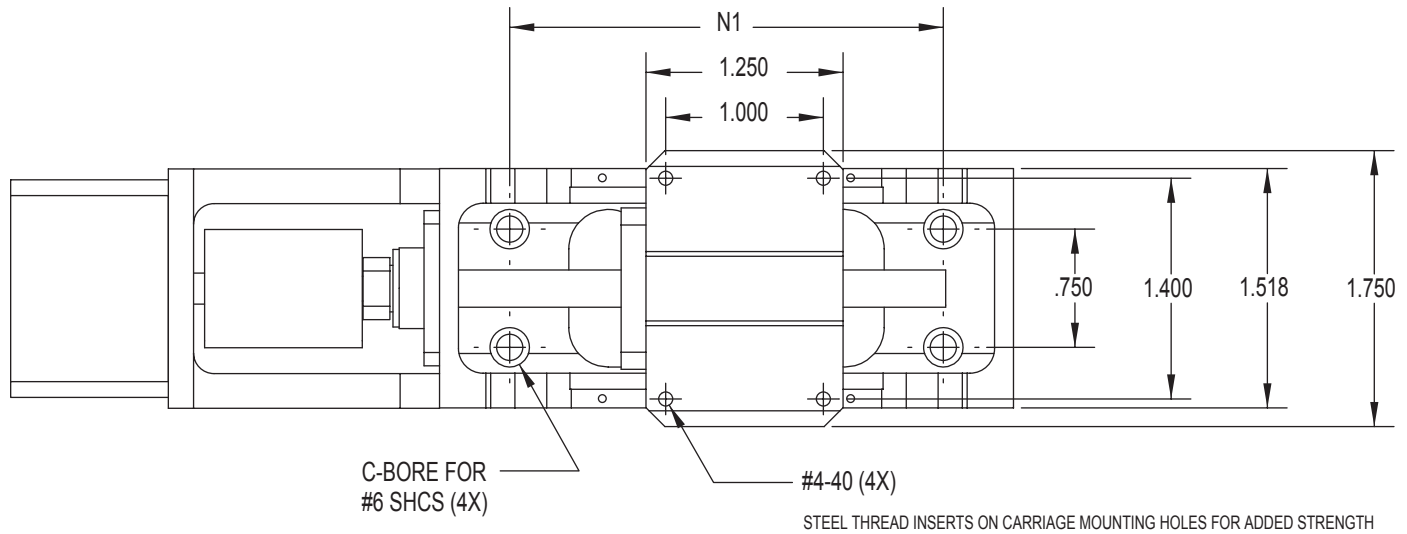
MP3 SERIES

Unit: inch

Part No.	Dimensions			
	Travel	L1	L2	N1
MP3-1	1.00	3.64	5.36	2.75
MP3-2	2.00	4.64	6.36	3.75
MP3-3	3.00	5.64	7.36	4.75



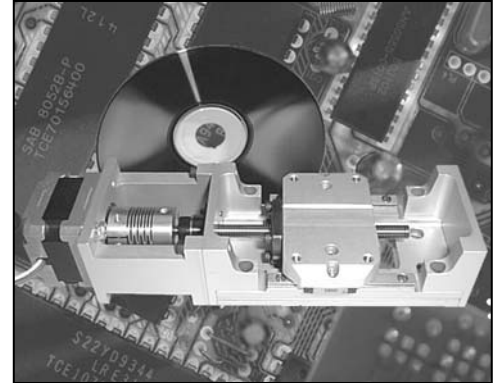
MP3-1



MP5 SERIES

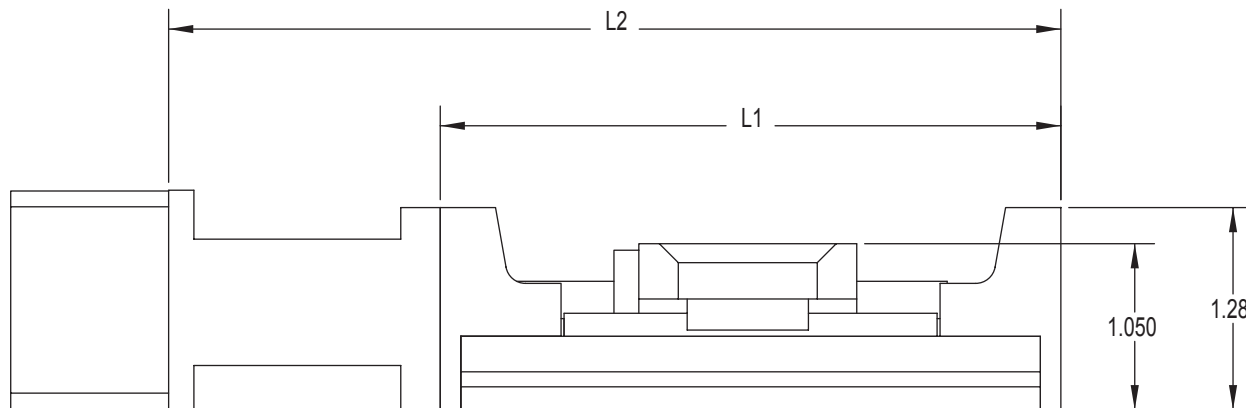
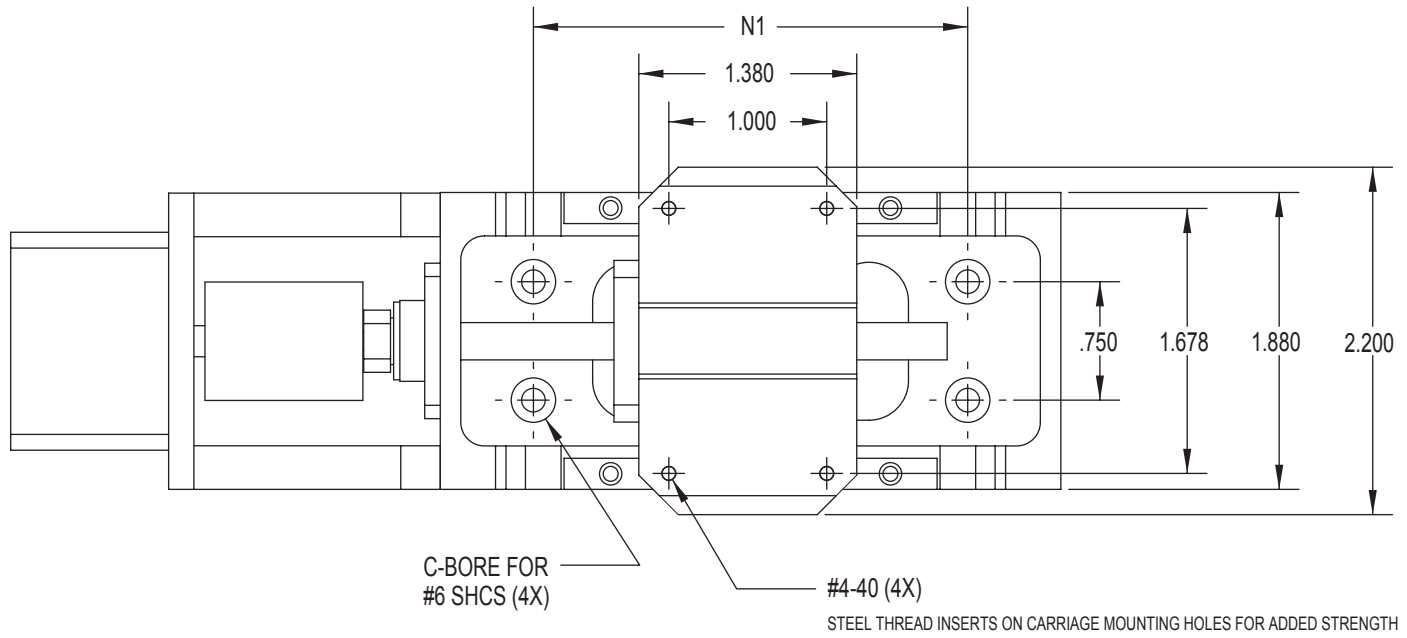
Unit: inch

Part No.	Dimensions			
	Travel	L1	L2	N1
MP5-1	1.00	3.93	5.65	2.75
MP5-2	2.00	4.93	6.65	3.75
MP5-3	3.00	5.93	7.65	4.75
MP5-4	4.00	6.93	8.65	5.75



MP5-1

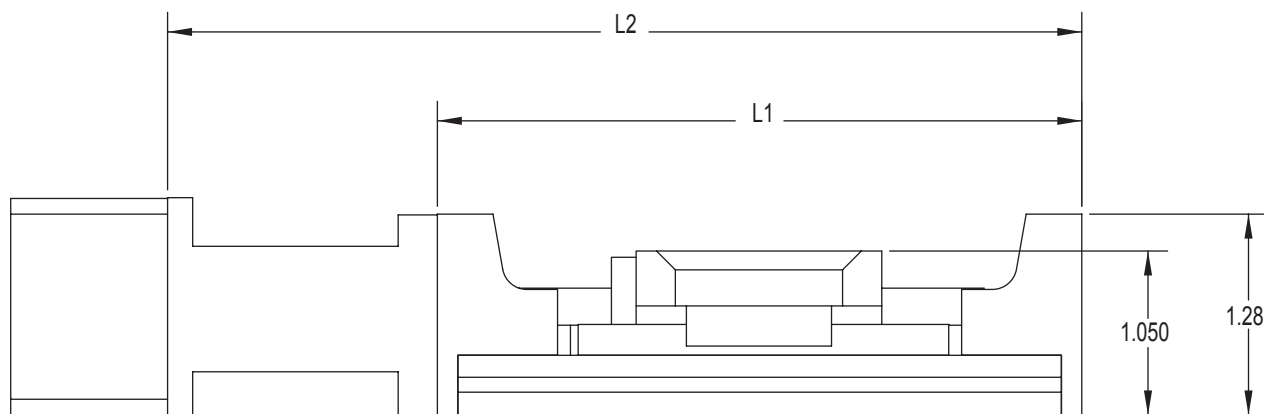
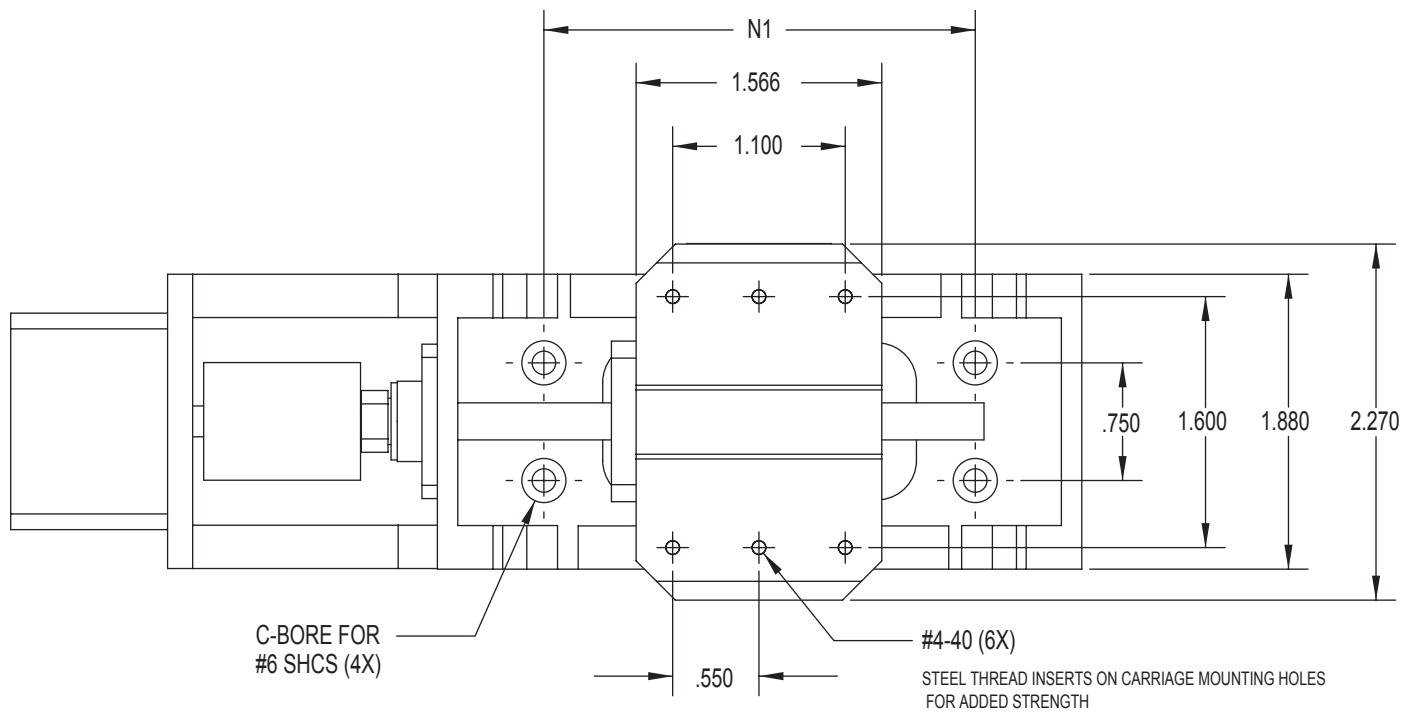
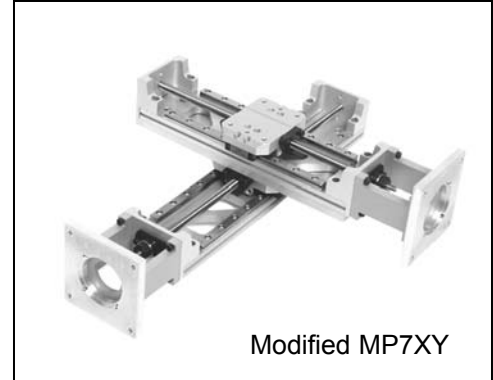
SYSTEMS



MP7 SERIES

Unit: inch

Part No.	Dimensions			
	Travel	L1	L2	N1
MP7-1	1.00	4.11	5.83	2.75
MP7-2	2.00	5.11	6.83	3.75
MP7-3	3.00	6.11	7.83	4.75
MP7-4	4.00	7.11	8.83	5.75
MP7-5	5.00	8.11	9.83	6.75
MP7-6	6.00	9.11	10.83	7.75



MP DRIVE SPECIFICATIONS

BALL SCREW SPECIFICATIONS

Dia.	Lead	Accuracy	Axial Clearance
6mm	1mm	C7	20 microns

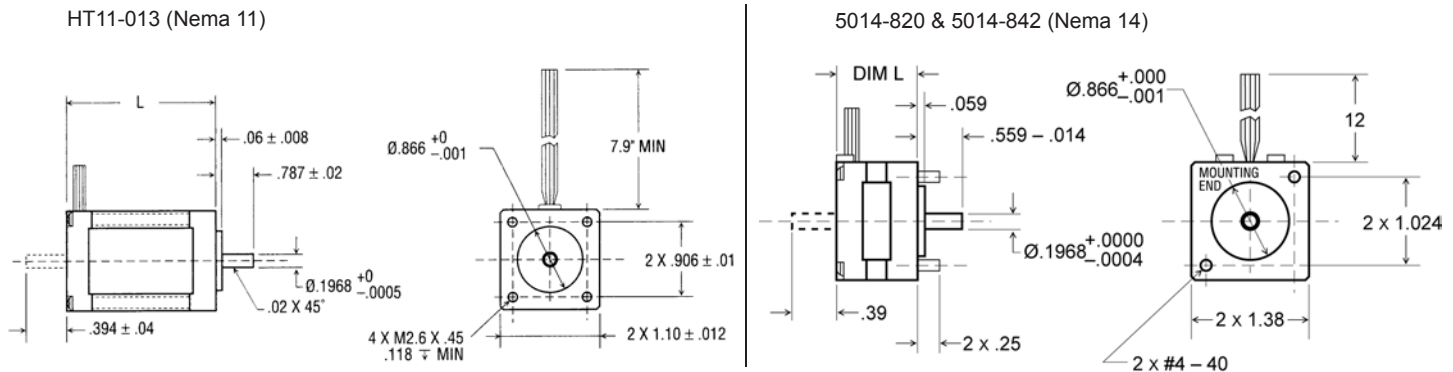
C7: $\pm 0.05 / 300\text{mm}$

The MP System comes standard with a precision rolled ball screw.

Contact SMI if special ball screw requirements are needed. Anti-backlash lead screw options also available upon request.

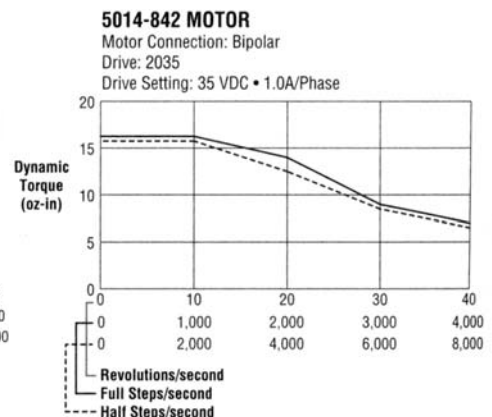
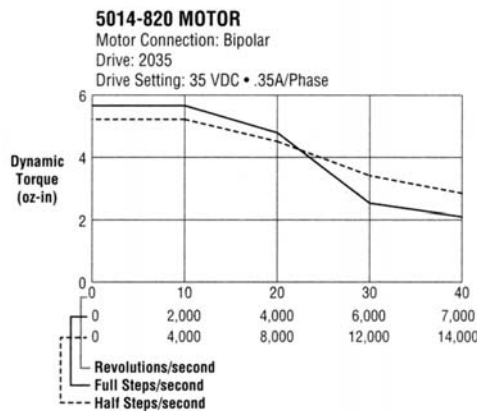
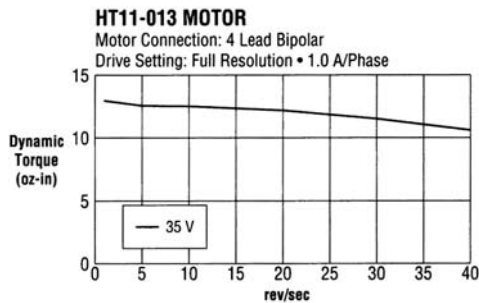
MOTOR SPECIFICATIONS

The following motors listed are available to you as a standard feature of the MP System. Below you will find the performance charts and motor specifications for our Nema size 11 and 14 motors. If you require specific parameters that are not met by the listed motors below, we also offer an extensive line of other motors to meet your needs. Furthermore, we carry a complete line of controllers, indexers and servo motors. Contact SMI for a complete listing or our motors or talk to our engineers regarding choosing the best motor for your application.



Part No.	Motor Length L (inch)	Min. Holding Torque (oz-in)	Leads	Step Angle	Volts	Amps	Ohms	mH	Rotor Inertia (oz-in ² /G-CM ²)	Motor Weight (lbs.)
HT11-013	1.87	15.0	4	1.8	2.0	1.00	2.00	2.6	0.098 / 18	0.39
5014-820	1.00	8.0	4	1.8	3.2	0.35	8.50	8.0	0.051 / 9.3	0.33
5014-842	1.57	26.0	4	1.8	4.8	1.00	4.30	5.5	0.109 / 20	0.47

Typical Speed / Torque Performance *



*Full steps/sec = Rev/sec x 200. Half steps/sec = Rev/sec x 400.

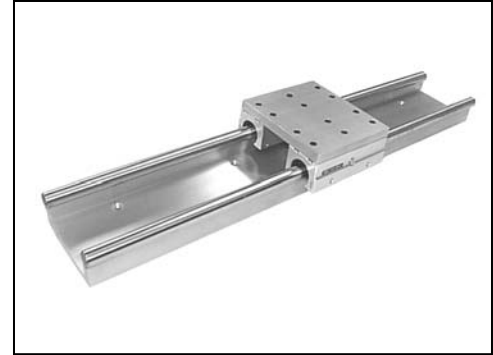
SIMPLE SLIDE SYSTEMS



SYSTEMS

SIMPLE SLIDE FEATURES

Designed as a low-cost, multi-functional linear table with high load capacity and long life, the Simple Slide does just what its name implies: it keeps your application simple. Using round rail technology this design allows for long travel lengths and the recirculation ball bushings provide high load capacity with very low friction. With its modular design, the ball bearings can be replaced easily. The Simple Slide is ideal for assembly and automation applications where high speeds, long life and fast, low cost maintenance is a must. Add one of the motors, ball screws, and the Simple Slide is ready for parts transfer, cut-off machines, and fluid dispensing to name a few.

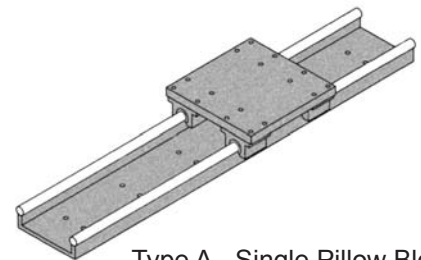
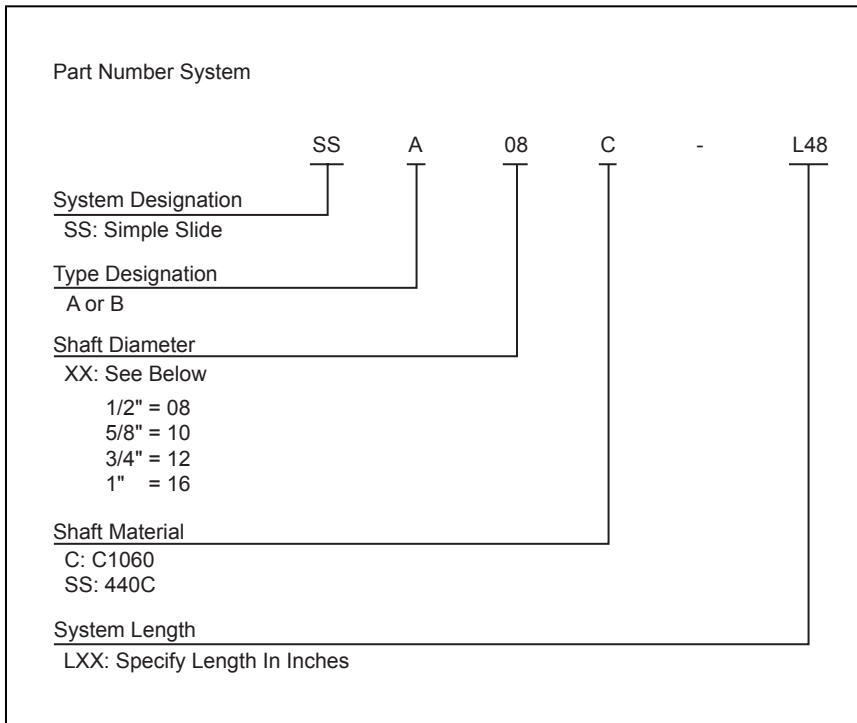


SIMPLE SLIDE CONSTRUCTION

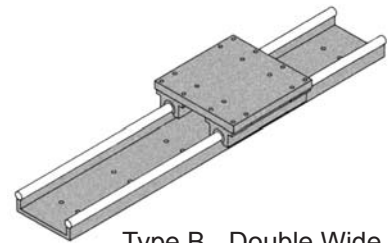
The top and base are constructed of aluminum alloy and are protected with an anodized surface finish. The mounting surfaces are precision ground to assure flatness. The linear shafting is uniformly case hardened and produced to exceed industrial standards. Also utilized in the Simple Slide is our linear motion pillow blocks with a self-aligning bushing inside. These pillow blocks offer three times the load capacity, and the capability of providing up to 27 times the normal life of a pillow block using a conventional ball bushing.

SIMPLE SLIDE OPTIONS

- Custom carriage tops
- Specific mounting holes
- Stainless steel shafting
- Call factory for off-the-shelf systems and options



Type A - Single Pillow Blocks

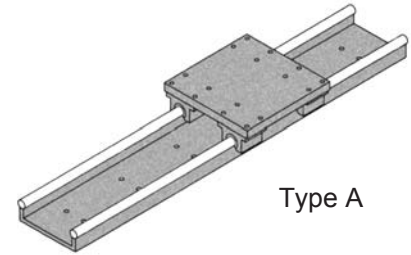
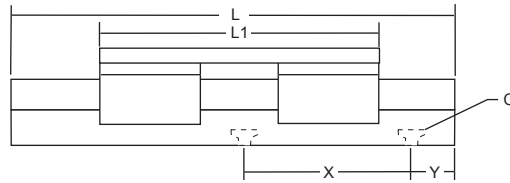
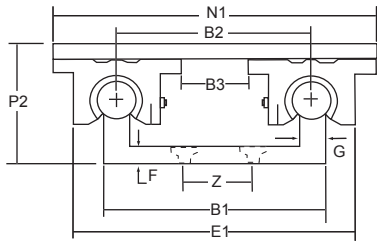


Type B - Double Wide Pillow Blocks

SSA - SINGLE PILLOW BLOCKS

SSA - Single Pillow Blocks

Travel length is calculated by subtracting the carriage plate length (L1) from the total system length (L).



Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	B3	E1	X	Y	Z	C Thru Hole / Bolt Size	F	G	N1	P2
SSA-08	0.500	920	See Below	4.50	2.56	2.31	0.31	3.69	4.00	2.00**	0.75	0.28 / 1/4	0.25	0.25	4.50	2.00
SSA-10	0.625	1600		5.25	3.00	2.68	0.25	4.44	4.00	2.00**	0.88	0.28 / 1/4	0.37	0.37	5.25	2.25
SSA-12	0.750	1880		6.00	3.63	3.25	0.50	5.13	6.00	3.00	1.00	0.34 / 5/16	0.37	0.37	6.00	2.50
SSA-16	1.000	3400		7.50	5.00	4.50	1.25	6.90	6.00	3.00	1.25	0.41 / 3/8	0.47	0.47	7.75	3.00

* Based on a travel of 2 million inches & bearing capacity.

** For 18", 30" and 42" system lengths subtract 1" of "Y" dimension.

Unit: inch

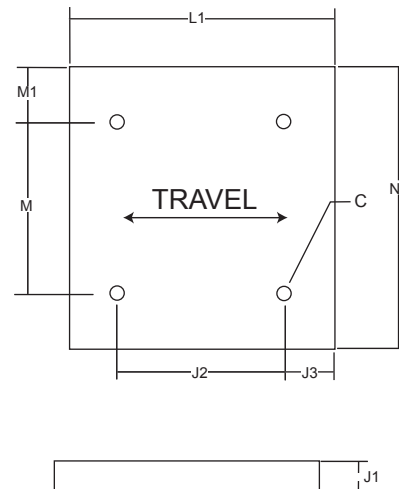
System Type	Standard System Lengths (L)						
SSA	12	18	24	30	36	42	48

	Travel						
SSA-08	7.5	13.5	19.5	25.5	31.5	37.5	43.5
SSA-10	6.8	12.8	18.8	24.8	30.8	36.8	42.8
SSA-12	6.0	12.0	18.0	24.0	30.0	36.0	42.0
SSA-16	4.5	10.5	16.5	22.5	28.5	34.5	40.5

Simple Slide Type A Carriage Dimensions

Unit: inch

Part No.	Dia.	C	L1	M	M1	J1	J2	J3	N1
SSA-08	0.500	1/4-20	4.50	2.50	1.00	0.37	3.00	0.75	4.50
SSA-10	0.625	1/4-20	5.25	2.75	1.25	0.37	3.50	0.88	5.25
SSA-12	0.750	5/16-18	6.00	3.25	1.38	0.50	4.00	1.00	6.00
SSA-16	1.000	3/8-16	7.50	4.50	1.63	0.50	5.00	1.25	7.75



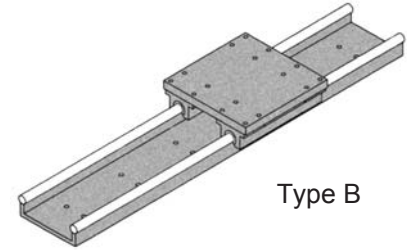
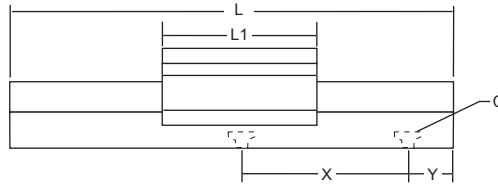
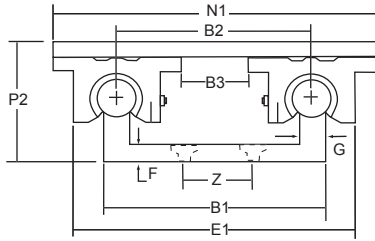
SIMPLE SLIDE SYSTEMS



SYSTEMS

SSB - Double Wide Pillow Blocks

Travel length is calculated by subtracting the carriage plate length (L1) from the total system length (L).



Type B

Unit: inch

Part No.	Dia.	Max. Load * (lbs.)	L	L1	B1	B2	B3	E1	X	Y	Z	C Thru Hole / Bolt Size	F	G	N1	P2
SSB-08	0.500	740	See Below	3.50	2.56	2.31	0.31	3.69	4.00	2.00**	0.75	0.28 / 1/4	0.25	0.25	4.50	2.00
SSB-10	0.625	1280		4.00	3.00	2.68	0.25	4.44	4.00	2.00**	0.88	0.28 / 1/4	0.37	0.37	5.25	2.25
SSB-12	0.750	1500		4.50	3.63	3.25	0.50	5.13	6.00	3.00	1.00	0.34 / 5/16	0.37	0.37	6.00	2.50
SSB-16	1.000	2720		6.00	5.00	4.50	1.25	6.90	6.00	3.00	1.25	0.41 / 3/8	0.47	0.47	7.75	3.00

* Based on a travel of 2 million inches & bearing capacity.

** For 18", 30" and 42" system lengths subtract 1" of "Y" dimension.

Unit: inch

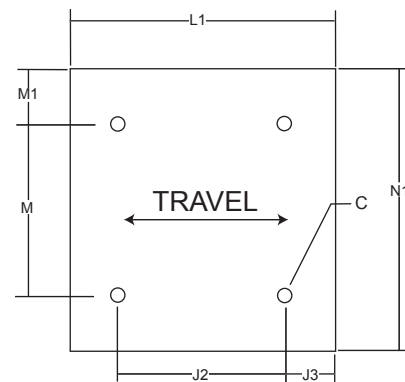
System Type	Standard System Lengths (L)						
SSB	12	18	24	30	36	42	48

	Travel						
SSB-08	8.5	14.5	20.5	26.5	32.5	38.5	44.5
SSB-10	8.0	14.0	20.0	26.0	32.0	38.0	44.0
SSB-12	7.5	13.5	19.5	25.5	31.5	37.5	43.5
SSB-16	6.0	12.0	18.0	24.0	30.0	36.0	42.0

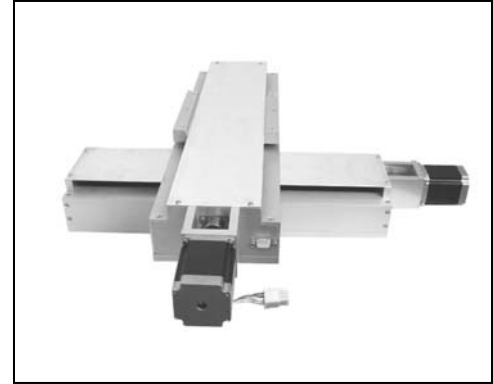
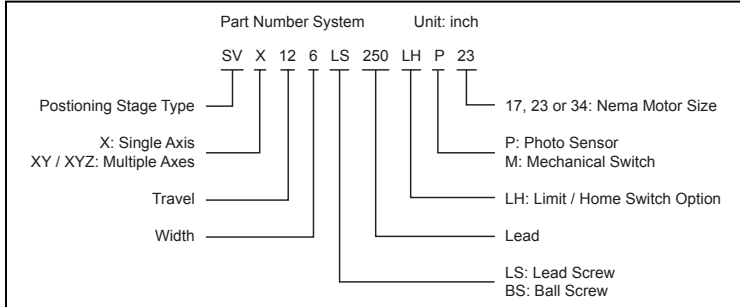
Simple Slide Type B Carriage Dimensions

Unit: inch

Part No.	Dia.	C	L1	M	M1	J1	J2	J3	N1
SSB-08	0.500	1/4-20	3.50	2.50	1.00	0.37	2.00	0.75	4.50
SSB-10	0.625	1/4-20	4.00	2.75	1.25	0.37	2.50	0.75	5.25
SSB-12	0.750	5/16-18	4.50	3.25	1.38	0.50	3.00	0.75	6.00
SSB-16	1.000	3/8-16	6.00	4.50	1.63	0.50	4.00	1.00	7.75



SV SERIES SIMPLE & VERSATILE POSITIONING SYSTEMS



SYSTEMS

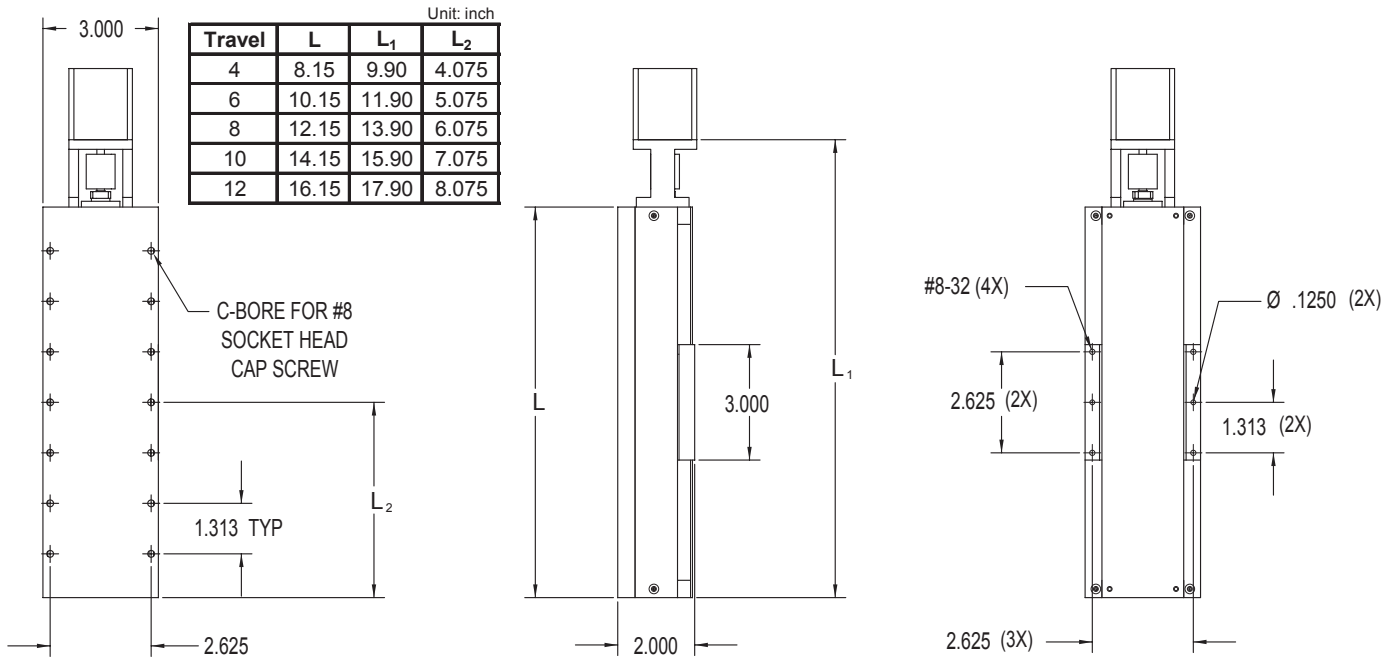
General Specifications:

- Travel: SV3's up to 12" & SV6's up to 24"
- Load: Up to 1000 lbs.
- Accuracy: Up to .0001" / inch of travel
- Repeatability: .0001"
- Construction: Light weight, anti-corrosive aluminum
- Finish: Clear anodize or your choice of color
- Covers included
- Compact & stackable

Options:

- Stepper motors (Nema 17, 23 or your choice)
- Servo motors
- Controllers
- Ground ball screw
- Rolled ball screw
- Lead screw
- Single axis
- Multiple axes
- Limit / home switch with external 9 pin connector(s) (DB9 female)
- Photo sensor
- Mechanical switch
- Custom dimensions

SV3 SERIES (4 TO 12 INCH TRAVEL)



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

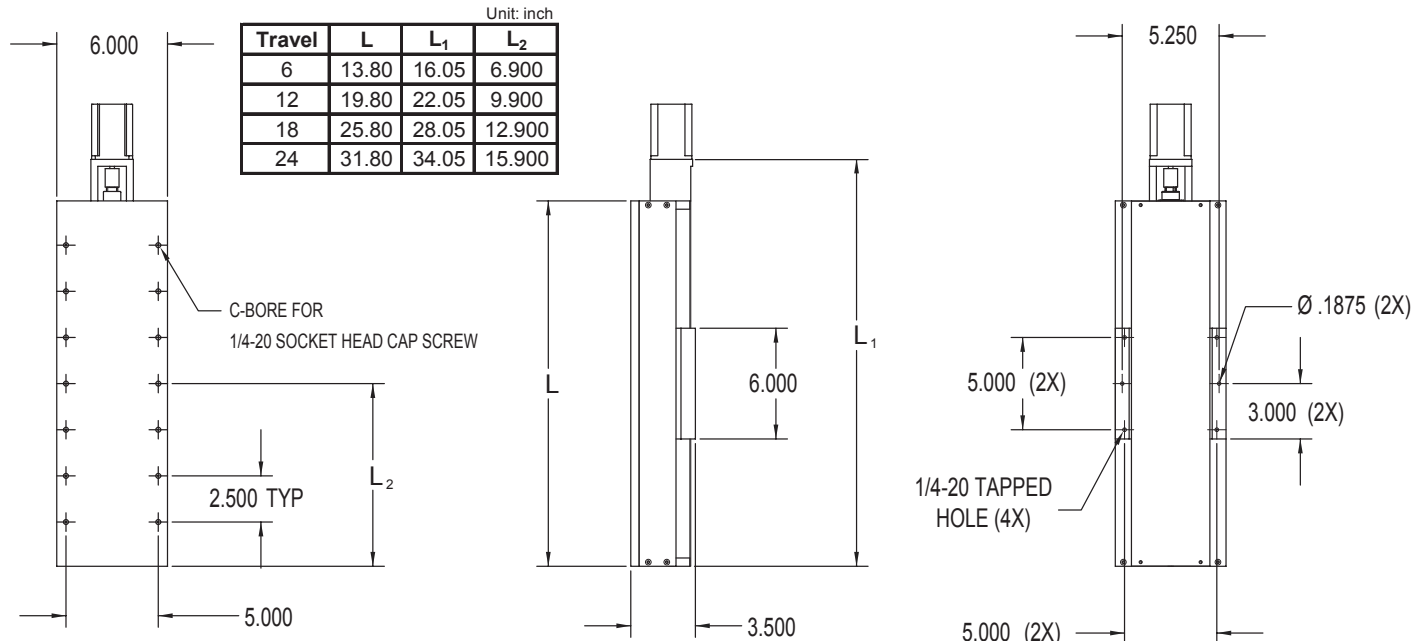
FRACTIONS	DECIMALS	ANGLES
±1/16	.XX ±.01	±1°
	.XXX ±.005	
	.XXXX ±.0005	

For custom lengths, contact SMI.

SYSTEMS

SV SERIES SIMPLE & VERSATILE POSITIONING SYSTEMS

SV6 SERIES (6 TO 24 INCH TRAVEL)



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±1/16	.XX ±.01	±1°
	.XXX ±.005	
	.XXXX ±.0005	

For custom lengths, contact SMI.

CUSTOM SUB-ASSEMBLIES AND PREVIOUS DESIGNS

The following section is dedicated to offering ideas in creating custom sub-assemblies for your specific application. Each design shown has a brief description as to the concept or purpose for the design configuration.

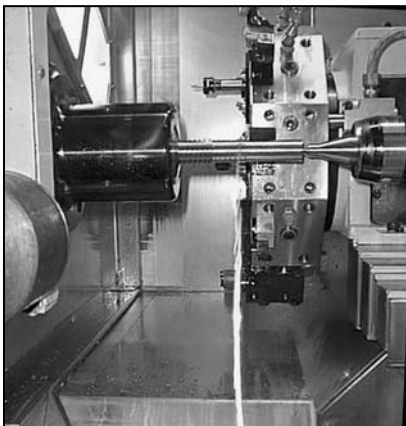
The units you will see are designs which we have developed over time to satisfy specific needs. Each unit is based upon elegant simplicity while meeting specific requirements with cost control a predominant factor.

The only requirement we ask is that the volume be more than 25 units. We do this for one reason, per part cost. Anything smaller than 25 units, you (and we) do not see any economies of discounts based upon CNC/programming/tooling/engineering amortization. We will do one off designs, but costs are typically very high and we encourage off the shelf products for small quantities. Prototype designs are accepted, but again small quantities are expensive without volume potential.

Several of these units have been or are made in large volumes and would be considered standard designs, particularly the open architecture units. If you would like more information about any of the units shown here, call us to discuss. Each unit is identified with a design title for reference and discussion purpose.

If none of these sub-assemblies appear to be correct for your needs, we will be happy to assist in the design phase using Solid Works 3 D modeling, or machine and build from your design and you retain ownership. If you would like input in design or cost saving suggestions, call our engineering staff and they will be glad to assist.

SMI can design the units in house, machine the components, supply linear and mechanical components with distributor discounts, assemble in house, serialize and test with laser for accuracy and deliver craftsmanship.



CNC Machining



Engineering & Technical Support



Machining & Design Capabilities



Assembly



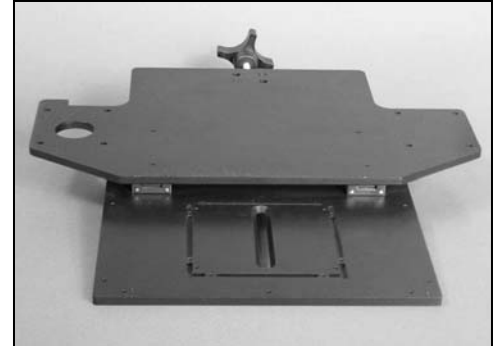
QC Laser System



Quality Control

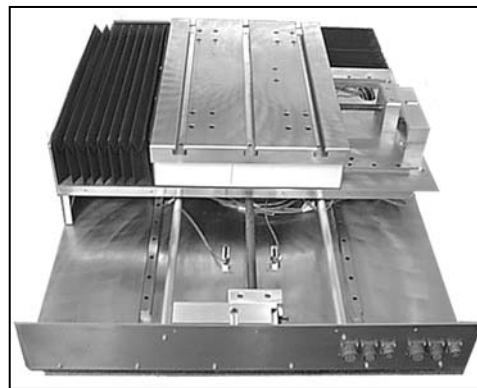
MICRO FICHE SCREEN ADJUSTER

- Off-the-shelf ball slides placed between 2 CNC machined plates
- Aluminum construction with black anodized finish
- Manual, stainless steel lead screw drive
- Simple solution to a complex application



T-SLOT TABLES

- All stainless steel T-slot XY table
- Design with ground ball screw
- Bellows
- Servo wrap drive
- All external connectors for switches
- Designed for integration with vacuum welder
- Optional motion control cabinet assembly



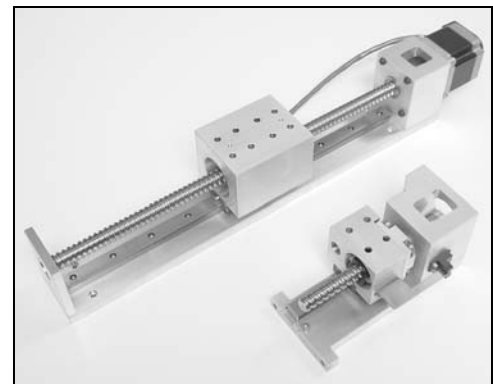
QUIET DRIVE STAGES

- Clean medical design for high volume, low cost and quiet
- Teflon coated lead screw
- Single precision grade profile rail
- Stepper or servo drive



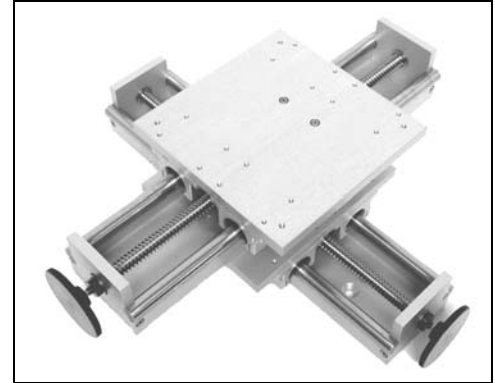
ECONOMY STAGES

- Very high volume, simple and fast
- High lead ball screw
- Single carriage with sensors
- All bearing design for high duty cycle and long life



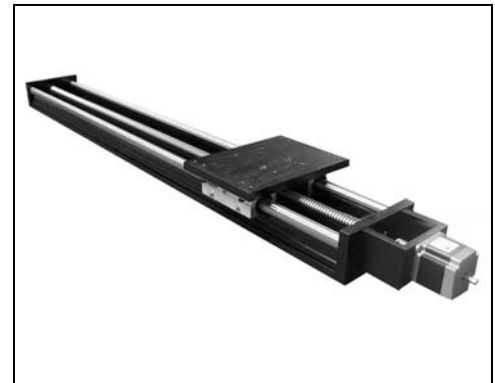
HAND DRIVEN XY STAGES

- Simple, cost effective
- Hand driven stage with lead screw and crank drive
- Can be configured in a multitude of lengths and sizes
- Accuracy .002" / foot
- Smooth, steady motion



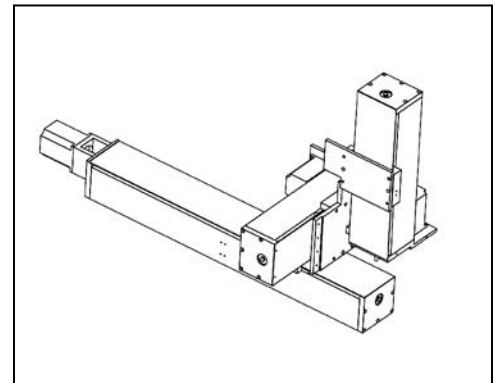
ROUND SHAFT X-OVER

- Industry standard round shaft stage
- Can be made in any length and with several width variations
- Stepper driven with lead or ball screw



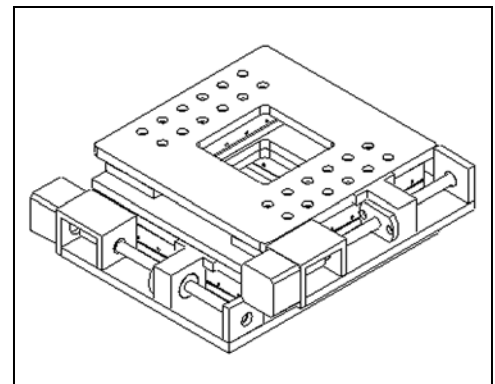
XYZ STAGES

- High accuracy, high duty cycle
- Clean medical related design
- 12" x 6" x 6" travel
- Designed for stepper or servo motors
- All switches built inside and covered



LOW PROFILE 6 X 6 INCH TABLES

- Open aperture design with smooth low profile travel
- Bread board type mounting surface for quick change over
- Stepper drive
- Lead screw or ball screw capable



300mm WAFER BOAT LOADER

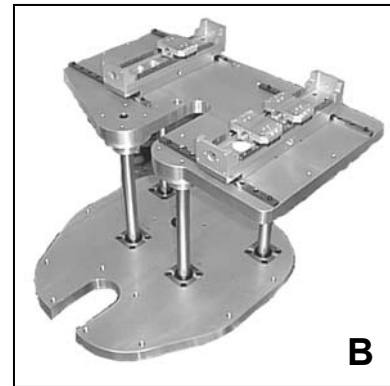
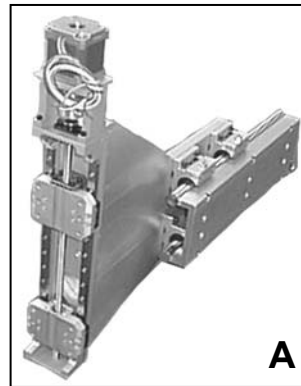
- Outsource manufacturer
- Integration & sub-assembly house
- 6 axes rotational control



SUB-ASSEMBLIES

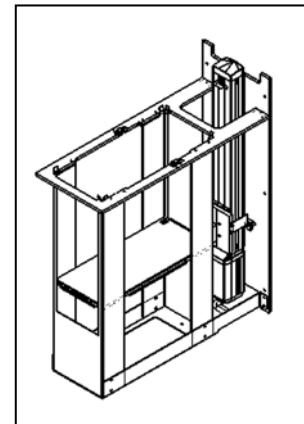
INSPECTION SUB-ASSEMBLIES

- A) Gas pedal test apparatus
- B) Brake & clutch test apparatus
- Custom sub-assembly using std. off-the-shelf MP's
- Design, production, assembly, inspection & delivery

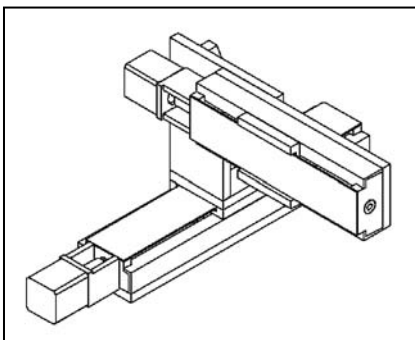


AUTOMATED TRAY LOADER

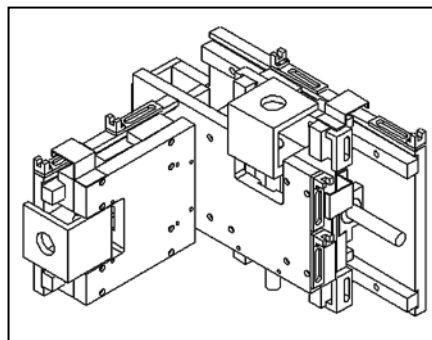
- Designed for the chip inspection industry
- Clean room environment sub-assemblies
- Vacuum environment sub-assemblies
- High-tech applications



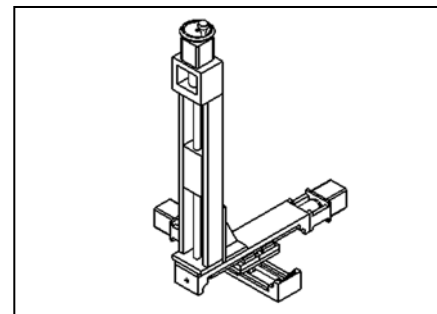
2 AXES GANTRY STAGES



LOW PROFILE 3 AXES SUB-ASSEMBLY



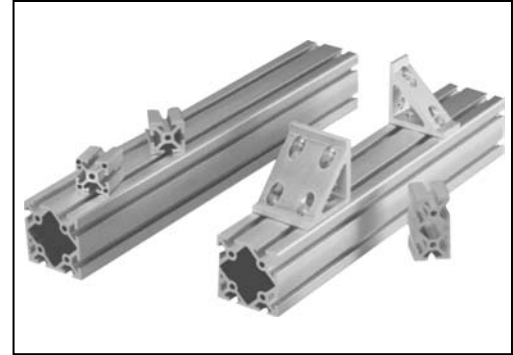
3 AXES MANUAL & MOTORIZED CAMERA POSITIONER



TECHNICAL DATA

T-SLOT EXTRUSION ADVANTAGE

- Linear adjustment in X, Y and Z axis
- Use standard fractional or metric sized fasteners
- Lightweight and easy to use
- Stocked in 240" lengths
- No welding required to assemble your design - no heat stress or warpage
- Easy to fabricate
- Add to your design or change it at any time - flexibility is the key

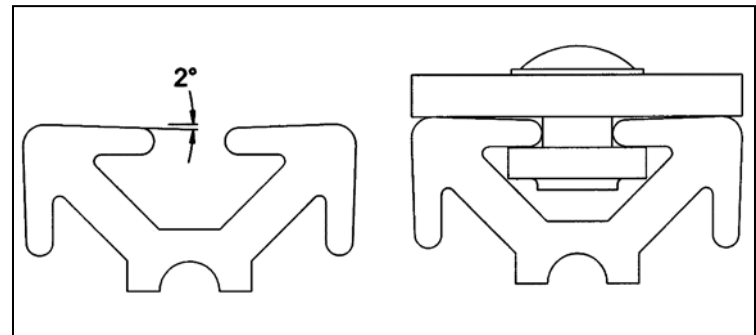


EXTRUSION SPECIFICATIONS

- Alloy - 6063, T6 Temper
- Yield Strength - Mpa = 200
- 0.2% Proof Stress - ksi = 29
- Tensile Strength - Mpa = 230
- ksi = 33
- Elongation A5 minimum 10%
- Elongation A10 minimum 8%
- Elasticity E approximately 10,000 lbs. / sq. inch
- Hardness - Webster Model "B" 11 - 12
- Flatness - 0.004" per inch of width
- Straightness - 0.0125" per foot of length, not to exceed 0.120 inches over 20 feet of length.
- Twist - Twist per foot of length does not exceed 0.25 degree and total twist over 20 feet of length does not exceed 1.5 degrees.

SPRING LOCK FEATURE

All T-Slot structural extrusions have a 2° taper that spring locks fasteners as they are tightened. Fasteners will not loosen, even under heavy vibration.



FASTENER TORQUE SPECIFICATIONS

The table to the right indicates the amount of torque needed in foot lbs.. to activate the 2° drop lock feature of the extrusion. The nut and bolt combination is pre-loaded when tightened to the minimum torque rating. The pre-loaded state makes a vibration proof connection.

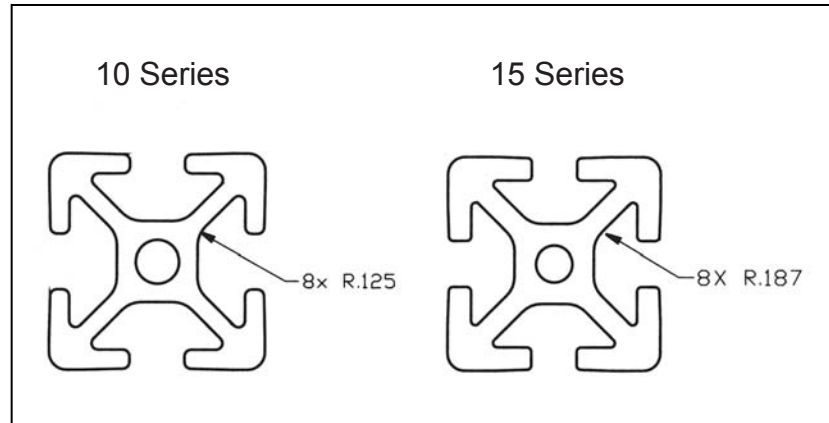
Unit: inch

Fastener Description	Tested Extrusion	Min. ft. lbs. Torque	Max. ft. lbs. Torque
5/16-18 FBHSCS or BHSCS	1.5 x 1.5	15	20
Econ T-Slot Stud, Washer & Hex Nut	1.5 x 1.5	20	25
Anchor Fastener & Standard T-Nut	1.5 x 1.5	17	22
End Fastener	1.5 x 1.5	17	22
1/4-20 FBHSCS or BHSCS	1.5 x 1.5	12	17
1/4-20 FBHSCS used as an End Fastener for the 1x1	1.5 x 1.5	13	18
10-32 SHCS or BHSCS	1.5 x 1.5	9	13

MODULAR FRAMING

RADIUS T-SLOTS

T-Slot extrusions incorporate a radius in the T-slot to ensure drop-in T-nuts are easy to use.



ALUMINUM ALLOY

An aluminum extrusion alloy is a predetermined mixture of one or more elements together with aluminum to be heated and hydraulically pressed through an extrusion die. Some common elements alloyed with aluminum include copper, magnesium, chromium, silicon, iron, nickel and zinc.

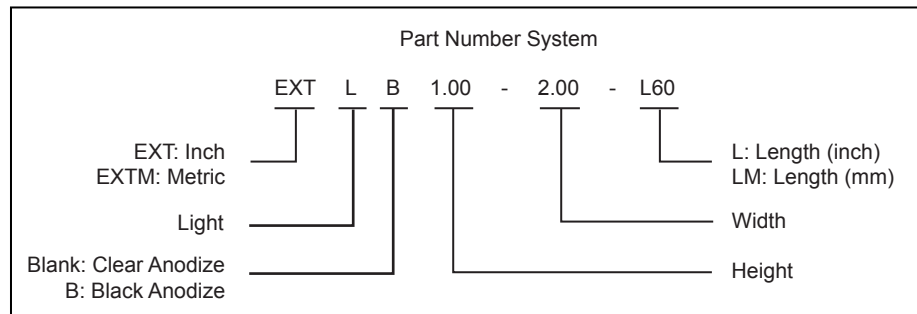
T-Slot extrusions use the 6063 alloy. The major alloying elements for this alloy include: Mg 0.45 - 0.9% and Si 0.20 - 0.6%.

ANODIZING

Anodizing is an electrochemical process that thickens and toughens the naturally occurring protective oxide. The resulting finish makes a corrosion resistant extrusion. T-Slot extrusions have an etch anodized finish that is 0.15 to 0.25 millimeters thick.

AVAILABLE OPTIONS

- Custom extrusions
- Heat-treating
- Anodizing
- Cut-to-length
- Fabrication
- Machining
- Painting
- Punch, slot, countersink
- Engineering assistance
- Motion control products
- Brackets
- Panels & doors
- Linear slides
- Hinges
- Accessories
- Casters
- Leveling legs
- Joining plate
- Corner brackets
- Corner gusset



There are three 10 Series extrusions to choose from 1" x 1", 1" x 2" and 2" x 2". The 10 Series T-slots have .255" slot widths and are modular to each other. Accessories throughout this catalog allow you to build a complete structure with our 10 Series accessories and transition it to and from our 15 Series. The 10 Series T-slot has an inside radius of .125" to make sliding drop-in T-nuts easier.

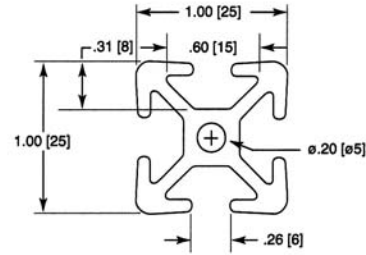
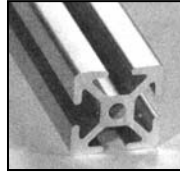
There are six 15 Series extrusions to choose from 1.5" x 1.5" to 3" x 3". The 15 Series T-slot sizes have .322" slot widths and are modular to each other. Accessories throughout this catalog allow you to build a complete structure with our 15 Series accessories and transition it to and from our 10 Series. The 15 Series T-slot has an inside radius of .187" to make sliding drop-in T-nuts easier.

All available accessories are not listed in this catalog. Check website for updates or call SMI for more information.

INCH SERIES

10 Series (10-10)

Part Number:	EXT1.00-1.00
Length:	20' (6 m)
Weight:	0.548 lbs. / ft. (0.816 kg / m)
Estimated Area:	0.457 in ² (2.948 cm ²)
Moment of Inertia:	IX = 0.046 in ⁴ (1.915 cm ⁴) IY = 0.046 in ⁴ (1.915 cm ⁴)

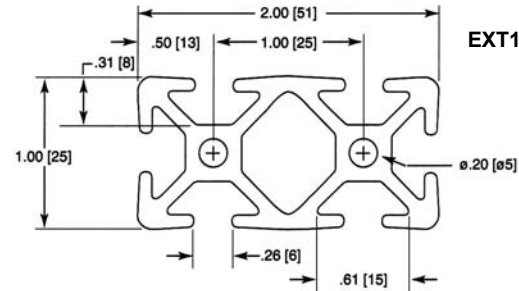
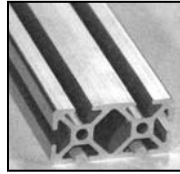


EXT1.00-1.00

The 1"x1" extrusion is ideal for machine guarding, sound enclosures, small load work benches, display racks and panel mount racks. Mount accessories such as valves, sensors, switches, slatwall panels, DIN rails and many others directly to T-slots.

10 Series (10-20)

Part Number:	EXT1.00-2.00
Length:	20' (6 m)
Weight:	0.989 lbs. / ft. (1.472 kg / m)
Estimated Area:	0.824 in ² (5.316 cm ²)
Moment of Inertia:	IX = 0.087 in ⁴ (3.621 cm ⁴) IY = 0.321 in ⁴ (13.361 cm ⁴)

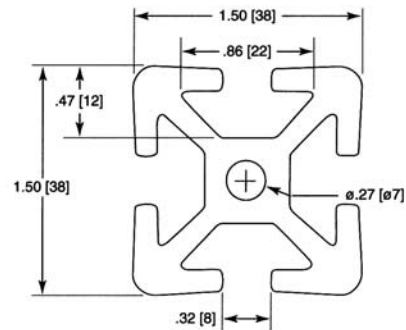
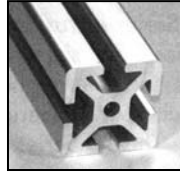


EXT1.00-2.00

The 1"x2" shape is designed for machine guarding, work benches, sound enclosures and mounting devices. The 1"x2" shape can be used to run air lines or as a pressure or vacuum manifold.

15 Series (15-15)

Part Number:	EXT1.50-1.50
Length:	20' (6 m)
Weight:	1.438 lbs. / ft. (2.140 kg / m)
Estimated Area:	1.198 in ² (7.729 cm ²)
Moment of Inertia:	IX = 0.266 in ⁴ (11.072 cm ⁴) IY = 0.266 in ⁴ (11.072 cm ⁴)

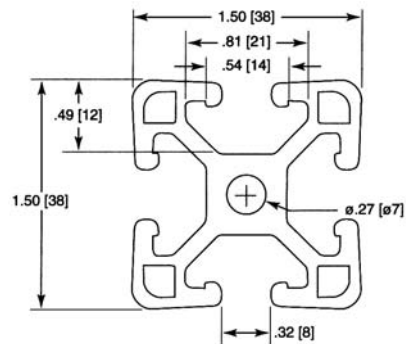
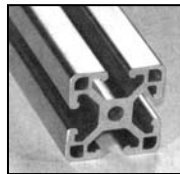


EXT1.50-1.50

The 1.5"x1.5" shape has a thicker wall that will accommodate heavier applications than the Light 1.5"x1.5". Applications include machine frames, workstations, shop carts, tables and machine retrofits.

15 Light Series (Light 15-15)

Part Number:	EXTL1.50-1.50
Length:	20' (6 m)
Weight:	1.110 lbs. / ft. (1.652 kg / m)
Estimated Area:	0.925 in ² (5.968 cm ²)
Moment of Inertia:	IX = 0.194 in ⁴ (8.075 cm ⁴) IY = 0.194 in ⁴ (8.075 cm ⁴)

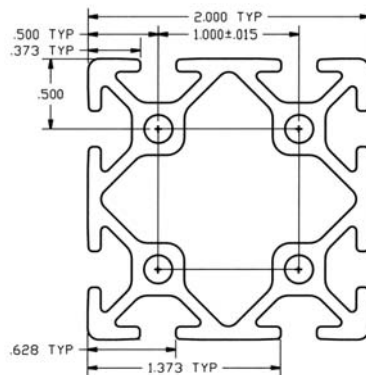
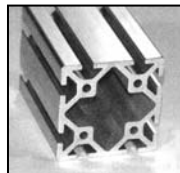


EXTL1.50-1.50

The Light 1.5"x1.5" shape is designed for lighter weight and strength requirements than our 1.5"x1.5". Applications include lighter load bearing structures, guarding and light weight frames.

10 Series (20-20)

Part Number:	EXT2.00-2.00
Length:	20' (6 m)
Weight:	1.542 lbs. / ft. (2.295 kg / m)
Estimated Area:	1.285 in ² (8.290 cm ²)
Moment of Inertia:	IX = 0.578 in ⁴ (24.058 cm ⁴) IY = 0.578 in ⁴ (24.085 cm ⁴)



EXT2.00-2.00

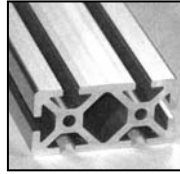
The 2"x2" extrusion is ideal for structures where more strength is needed for smaller frame assemblies. The center of the 2"x2" can be used to run air lines or serve as a pressure or vacuum manifold up to 150 p.s.i. The 2"x2" T-slot extrusion accepts 10 Series fasteners, accessories and stanchions.

MODULAR FRAMING

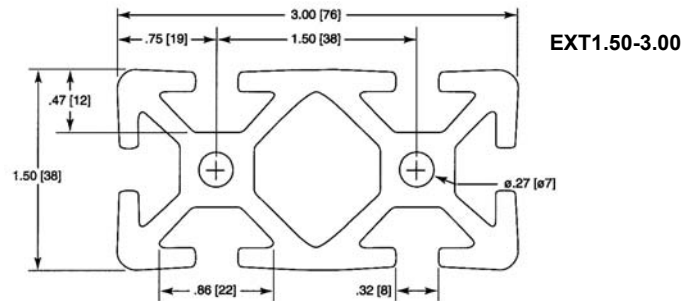
INCH SERIES

15 Series (15-30)

Part Number:	EXT1.50-3.00
Length:	20' (6 m)
Weight:	2.586 lbs. / ft. (3.848 kg / m)
Estimated Area:	2.155 in ² (13.903 cm ²)
Moment of Inertia:	IX = 0.502 in ⁴ (20.895 cm ⁴) IY = 1.877 in ⁴ (78.127 cm ⁴)

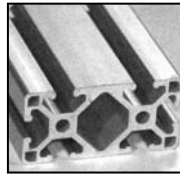


The 1.5"x3.0" shape is designed for larger and heavier structures where strength is required. Applications for 1.5"x3.0" include framing systems, roller conveyor systems, fixturing, specialty machines, supports, linear slides and automated assembly systems. This shape can be used to run air lines or as a pressure or vacuum manifold up to 150 p.s.i.

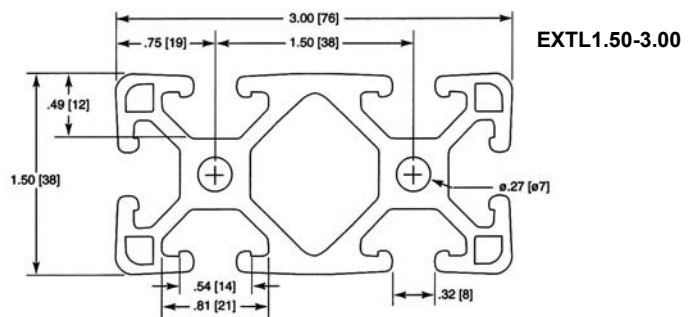


15 Light Series (Light 15-30)

Part Number:	EXTL1.50-3.00
Length:	20' (6 m)
Weight:	2.119 lbs. / ft. (3.153 kg / m)
Estimated Area:	1.766 in ² (11.394 cm ²)
Moment of Inertia:	IX = 0.408 in ⁴ (16.982 cm ⁴) IY = 1.431 in ⁴ (59.563 cm ⁴)

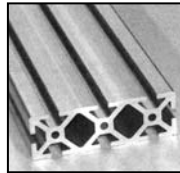


The Light 1.5"x3.0" shape is designed for larger structures where strength is not critical. Applications for Light 1.5"x3.0" include framing and door tracks. This shape can be used to run air lines or as a pressure or vacuum manifold up to 150 p.s.i.

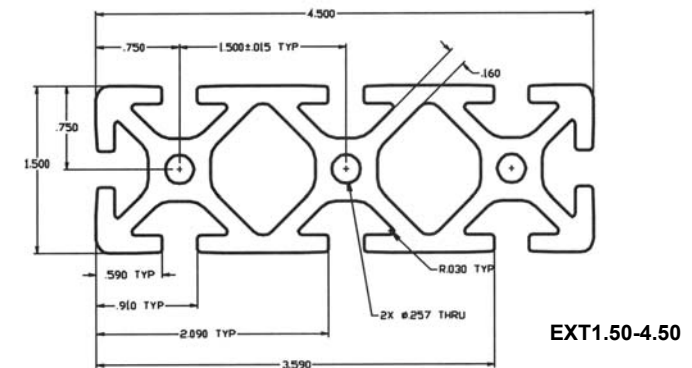


15 Series (15-45)

Part Number:	EXT1.50-4.50
Length:	20' (6 m)
Weight:	3.74 lbs. / ft. (5.566 kg / m)
Estimated Area:	3.113 in ² (20.084 cm ²)
Moment of Inertia:	IX = .739 in ⁴ (30.760 cm ⁴) IY = 5.913 in ⁴ (246.118 cm ⁴)

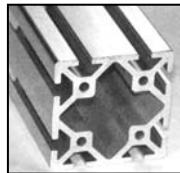


The 1.5"x4.5" shape is ideal for applications where long lengths without supporting structures are needed. Use the 1.5"x4.5" in conveyor systems, linear motion, material handling and large machine frames. The two hollow centers are good for dual air manifolds up to 150 p.s.i.

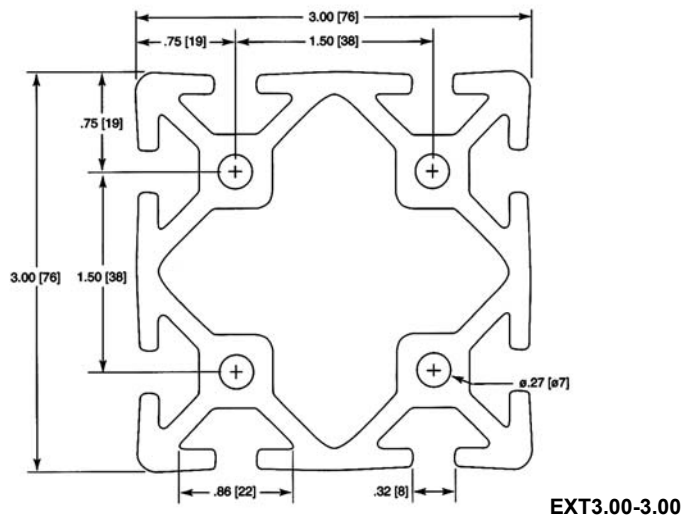


15 Series (30-30)

Part Number:	EXT3.00-3.00
Length:	20' (6 m)
Weight:	4.027 lbs. / ft. (5.993 kg / m)
Estimated Area:	3.356 in ² (21.652 cm ²)
Moment of Inertia:	IX = 3.379 in ⁴ (140.645 cm ⁴) IY = 3.379 in ⁴ (140.645 cm ⁴)



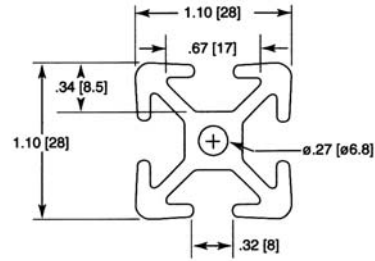
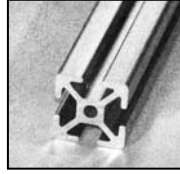
The 3"x3" shape is our most heavy duty inch shape available. This shape has a thicker wall and is designed for heavier and stronger structures where strength is critical. This shape can be used to run air lines or as a pressure or vacuum manifold up to 150 p.s.i.



METRIC SERIES

Metric Series (28-28)

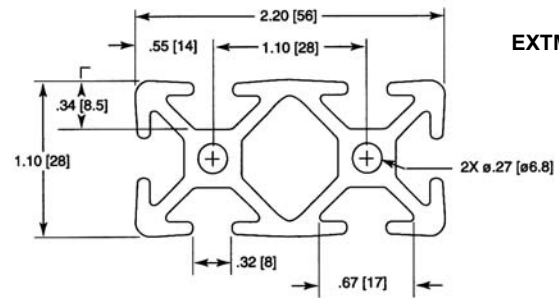
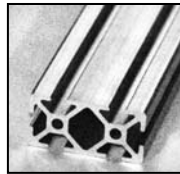
Part Number:	EXTM28-28
Length:	20' (6 m)
Weight:	0.640 lbs. / ft. (0.952 kg / m)
Estimated Area:	0.533 in ² (3.439 cm ²)
Moment of Inertia:	IX = 0.066 in ⁴ (2.747 cm ⁴) IY = 0.066 in ⁴ (2.747 cm ⁴)



EXTM28-28

Metric Series (28-56)

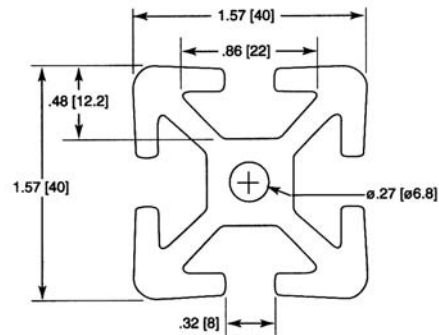
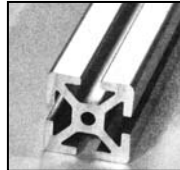
Part Number:	EXTM28-56
Length:	20' (6 m)
Weight:	1.158 lbs. / ft. (1.723 kg / m)
Estimated Area:	0.965 in ² (6.226 cm ²)
Moment of Inertia:	IX = 0.123 in ⁴ (5.120 cm ⁴) IY = 0.454 in ⁴ (18.897 cm ⁴)



EXTM28-56

Metric Series (40-40)

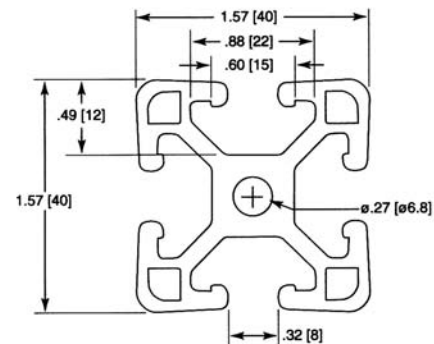
Part Number:	EXTM40-40
Length:	20' (6 m)
Weight:	1.628 lbs. / ft. (2.423 kg / m)
Estimated Area:	1.357 in ² (8.755 cm ²)
Moment of Inertia:	IX = 0.324 in ⁴ (13.486 cm ⁴) IY = 0.324 in ⁴ (13.486 cm ⁴)



EXTM40-40

Metric Light Series (Light 40-40)

Part Number:	EXTML40-40
Length:	20' (6 m)
Weight:	1.260 lbs. / ft. (1.875 kg / m)
Estimated Area:	1.050 in ² (6.774 cm ²)
Moment of Inertia:	IX = 0.236 in ⁴ (9.823 cm ⁴) IY = 0.236 in ⁴ (9.823 cm ⁴)

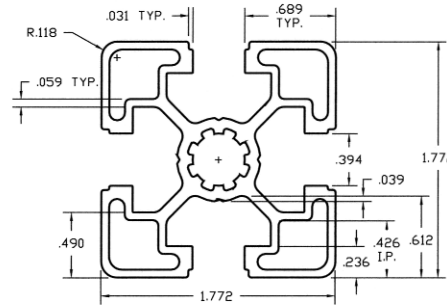
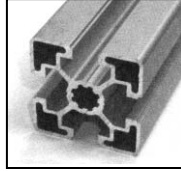


EXTML40-40

METRIC SERIES

Metric Series (45-45)

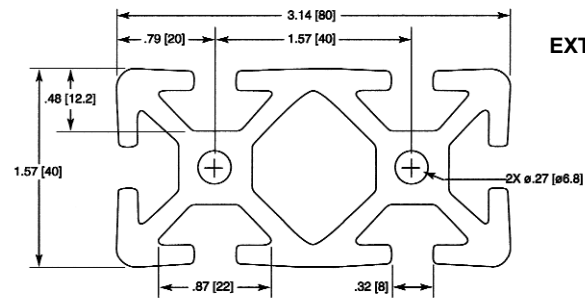
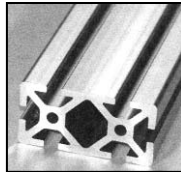
Part Number:	EXTM45-45
Length:	20' (6 m)
Weight:	1.062 lbs. / ft. (1.5 kg / m)
Estimated Area:	.885 in ² (5.677 cm ²)
Moment of Inertia:	IX = .2643 in ⁴ (11.0 cm ⁴) IY = .2643 in ⁴ (11.0 cm ⁴)



EXTM45-45

Metric Series (40-80)

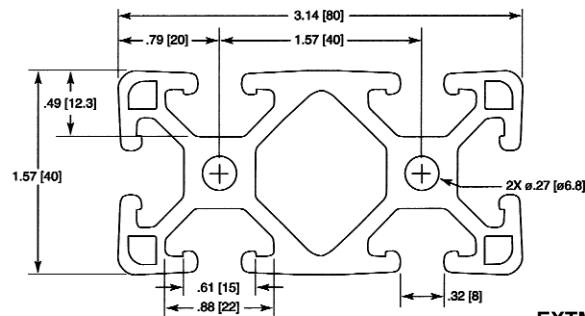
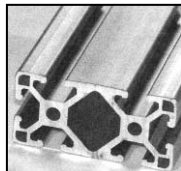
Part Number:	EXTM40-80
Length:	20' (6 m)
Weight:	2.905 lbs. / ft. (4.329 kg / m)
Estimated Area:	2.423 in ² (15.632 cm ²)
Moment of Inertia:	IX = 0.621 in ⁴ (25.848 cm ⁴) IY = 2.271 in ⁴ (94.526 cm ⁴)



EXTM40-80

Metric Light Series (Light 40-80)

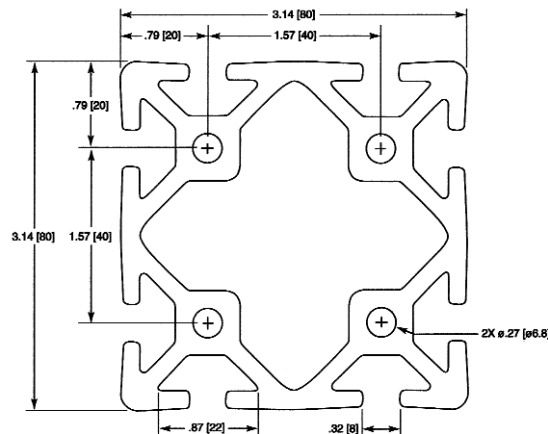
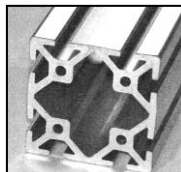
Part Number:	EXTML40-80
Length:	20' (6 m)
Weight:	2.423 lbs. / ft. (3.609 kg / m)
Estimated Area:	2.021 in ² (12.981 cm ²)
Moment of Inertia:	IX = 0.495 in ⁴ (20.603 cm ⁴) IY = 1.761 in ⁴ (73.298 cm ⁴)



EXTML40-80

Metric Series (80-80)

Part Number:	EXTM80-80
Length:	20' (6 m)
Weight:	4.807 lbs. / ft. (7.154 kg / m)
Estimated Area:	4.006 in ² (25.845 cm ²)
Moment of Inertia:	IX = 4.289 in ⁴ (178.522 cm ⁴) IY = 4.289 in ⁴ (178.522 cm ⁴)



EXTM80-80

MODULAR FRAMING

FASTENERS

INTRODUCTION

There are a number of T-slot fasteners from which you can choose. Economy T-nuts are the most economical way to fasten your assembly. Anchor fasteners are a lower cost alternative to make a strong, clean, flush 90° joint in a variable location. End fasteners allow your frame to have a strong, square, hidden joint in a fixed location that makes assembly of your frame easier. This section covers a partial listing of all the available fasteners SMI offers. Please visit our website for updates or call for SMI for more information.

When ordering fasteners for your application, keep these suggestions in mind:

- Check out the Fastener Application Tests to determine which fasteners are right for your job
- For the most cost effective fastening option, choose economy T-nuts and fasteners
- When you have a captivated extrusion end, select drop-in fasteners and T-nuts
- Use the right tools for the job (not in catalog, but available from SMI)

FASTENER ADVANTAGES

- Fasteners let you keep it together
- Options allow loading from end or from side
- Many available in inch and metric sizes
- Highest quality available
- Finishes include corrosion resistant black zinc, bright zinc and stainless steel
- Clean flush connections easily achieved

Thread Size	Fastener Head			
	SHCS	BHSCS	FBHSCS	FHSCS
8/32	N/A	3/32"	N/A	N/A
10-32	5/32"	1/8"	N/A	n
1/4-20	3/16"	5/32"	5/32"	5/32"
5/16-18	1/4"	3/16"	3/16"	3/16"
3/8-16	5/16"	N/A	N/A	7/32"
M6	5mm	N/A	N/A	N/A
M8	6mm	N/A	N/A	N/A

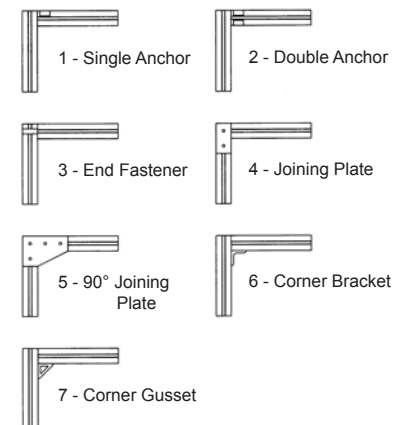
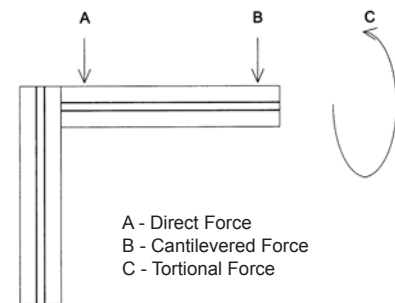
Numbers in chart reflect hex tool size required

Fastener Application Test

Fastener	EXT1.00-1.00		
	A (lbs)	B (lbs)	C (in/lbs)
1	500	250	180
2	900	250	250
3	450	200	325
4	175	50	400
5	175	50	500
6	325	75	180
7	325	220	260

Fastener	EXT1.50-1.50Light		
	A (lbs)	B (lbs)	C (in/lbs)
1	950	625	540
2	1200	700	1150
3	1000	500	680
4	225	200	1000
5	250	200	1120
6	375	225	500
7	375	750	500

Fastener	EXT1.50-1.50		
	A (lbs)	B (lbs)	C (in/lbs)
1	950	1000	700
2	1200	1200	2000
3	1000	820	1150
4	225	200	1100
5	250	200	1260
6	575	225	500
7	575	750	500



MODULAR FRAMING

FASTENERS T-NUTS

Economy T-Nuts

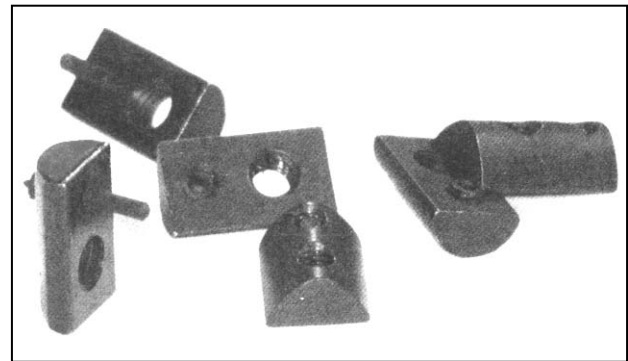
Part No.	Description	Thread
651095	Black zinc 10 series economy T-nut	8-32
651321	Bright zinc 10 series economy T-nut	1/4-20
651163	Black zinc 10 series economy T-nut	1/4-20
651386	Bright zinc 10 series metric economy T-nut	M6x1.0
651105	Black zinc 15 series economy T-nut	1/4-20
651322	Bright zinc 15 series economy T-nut	1/4-20
651294	Stainless steel 15 series economy T-nut	1/4-20
651097	Black zinc 15 series economy T-nut	5/16-18
651316	Bright zinc 15 series economy T-nut	5/16-18
651288	Stainless steel 15 series economy T-nut	5/16-19
651366	Bright zinc 15 series metric economy T-nut	M6x1.0
651367	Bright zinc 15 series metric economy T-nut	M8x1.25



- Economical
- High strength
- Extrusion end loading only
- 10 and 15 series sizes

Drop In T-Nuts with Flexible Handle

Part No.	Description	Thread
651157	Black zinc 10 series drop in T-nut	10-32
651435	Stainless steel 10 series drop in T-nut	1/4-20
651326	Bright zinc 10 series drop in T-nut	1/4-20
651402	Bright zinc metric 10 series drop in T-nut	M5x8
651403	Bright zinc metric 10 series drop in T-nut	M6x1.0
651103	Black zinc 15 series drop in T-nut	10-32
651102	Black zinc 15 series drop in T-nut	1/4-20
651319	Bright zinc 15 series drop in T-nut	1/4-20
651372	Bright zinc 15 series metric drop in T-nut	M6x1.0
651101	Black zinc 15 series drop in T-nut	5/16-18
651399	Bright zinc 15 series drop in T-nut	5/16x18
651371	Bright zinc 15 series metric drop in T-nut	M8x1.25
651246	Stainless steel 15 series drop in T-nut	1/4-20

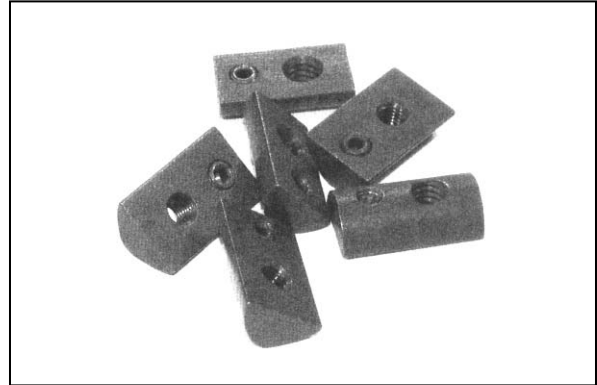


- Tapered bottom allows for easy loading and removal from extrusion sides
- Reduces assembly time
- Easy to add and reposition in T-slot when ends are closed off
- Rubber nub holds T-nut in vertical T-slot
- 10 and 15 series sizes
- High strength

**FASTENERS
T-NUTS & ANCHORS**

Drop In T-Nuts with Set Screw

Part No.	Description	Thread
651125	Black zinc 10 series drop in T-nut w/set screw	10-32
651126	Black zinc 10 series drop in T-nut w/set screw	1/4-20
651123	Black zinc 15 series drop in T-nut w/set screw	1/4-20
651247	Stainless steel 15 series drop in T-nut w/set screw	1/4-20
651124	Black zinc 15 series drop in T-nut w/set screw	5/16-18
651248	Stainless steel 15 series drop in T-nut w/set screw	5/16-18
651323	Bright zinc 15 series drop in T-nut w/set screw	1/4-20
651324	Bright zinc 15 series drop in T-nut w/set screw	5/16-18
651421	Bright zinc 15 series metric drop in T-nut w/set screw	M8x1.25
651425	Bright zinc 15 series metric drop in T-nut w/set screw	M6x1.0



- Tapered bottom allows for easy loading and removal from extrusion sides
- Reduces assembly time
- Easy to add and reposition in T-slot when ends are closed off
- Set screw holds T-nut in vertical T-slot
- 10 and 15 series sizes
- High strength

Anchor Fasteners

Part No.	Description
651173	10 series anchor fastener w/ 10-32 bolt & standard T-nut
651149	10 series anchor fastener w/ 10-32 bolt & drop in T-nut
651146	15 series anchor fastener w/ 5/16-18 bolt & standard T-nut
651148	15 series anchor fastener w/ 5/16-18 bolt & drop in T-nut
651281	15 series anchor fastener w/ stainless steel 5/16-18 bolt & standard T-nut
651423	10 series metric anchor fastener w/ M5 bolt & standard T-nut
651424	15 series metric anchor fastener w/ M8 bolt & standard T-nut



- Strongest of available fasteners
- Creates 90 degree T-slot connections
- 10 and 15 series sizes

MODULAR FRAMING

FASTENERS END FASTENERS & DOUBLE END FASTENERS

End Fasteners

Part No.	Description	Thread
651162	Black zinc 10 series end fastener with screw	1/4-20
651292	Bright zinc 10 series end fastener with stainless steel screw	1/4-20
651422	Bright zinc 10 series metric end fastener with screw	M6x1.0
651291	Bright zinc 10 series end fastener without screw	N/A
651159	Black zinc 10 series end fastener without screw	N/A
651161	Black zinc 15 series end fastener with screw	5/16-18
651290	Bright zinc 15 series end fastener with stainless steel screw	5/16-18
651418	Bright zinc 15 series metric end fastener with screw	M8x1.25
651289	Bright zinc 15 series end fastener without screw	N/A
651160	Black zinc 15 series end fastener without screw	N/A



- Provides a hidden fastener when connecting extrusions at 90 degrees
- Mating extrusions glide over end fastener
- Tapping service required in the extrusion base end and access hole in the mating extrusion
- 10 and 15 series
- Prevents mating extrusion from rotating

Double End Fasteners

Part No.	Description	Thread
651137	Black zinc 10 series double end fastener with screw	1/4-20
651327	Bright zinc 10 series double end fastener with stainless steel screw	1/4-20
651428	Bright zinc 10 series metric double end fastener with screw	M6x1.0
651329	Bright zinc 10 series double end fastener without screw	N/A
651139	Black zinc 10 series double end fastener without screw	N/A
651138	Black zinc 15 series double end fastener with screw	5/16-18
651328	Bright zinc 15 series double end fastener with stainless steel screw	5/16-18
651429	Bright zinc 15 series metric double end fastener with screw	M8x1.25
651330	Bright zinc 15 series double end fastener without screw	N/A
651140	Black zinc 15 series double end fastener without screw	N/A

- Provides a hidden fastener when connecting extrusions at 90 degrees
- Mating extrusions glide over end fastener
- Tapping service required in the extrusion base end and access hole in the mating extrusion
- 10 and 15 series
- Prevents mating extrusion from rotating

PANELS & DOORS

This section covers a partial listing of all the panels and doors for guarding, bi-fold doors, sliding doors or enclosures available from SMI. Please visit our website for updates or call SMI for more information.

DOOR HINGES

Lift-off hinges for quick door removal, adjustable hinges for panels and aluminum hinges for doors.

HANDLES

Small, medium and large size door handles, offset handles for bi-fold doors, steel door handles, panel handles, locking grabber handles and cabinet and furniture handles.

DOOR AND ENCLOSURE LATCHES

Spring loaded deadbolts and sliding door locks for cabinets or display cases. Other handles will mount inside your enclosures. Call SMI for more information.

SLIDING DOOR

Roller wheels, roller wheel brackets, sliding door glides and door tracks. Call SMI for more information.

PANEL MOUNT ACCESSORIES

Mount panels flush, recessed or in the T-slot. Use panel stiffeners or panel gaskets to secure panels. Call SMI for more information.

PANELS

Panels are stocked in 4' x 8' sheets and can be cut to size. Available panels are:

- Polycarbonate
- Acrylic
- ABS-Haircell
- Alucobond®
- Alumalite®
- Wire Mesh
- Expanded PVC
- Expanded Metal

All available in a wide variety of colors. Call SMI for more information.

PANELS & DOORS LIFT-OFF HINGES

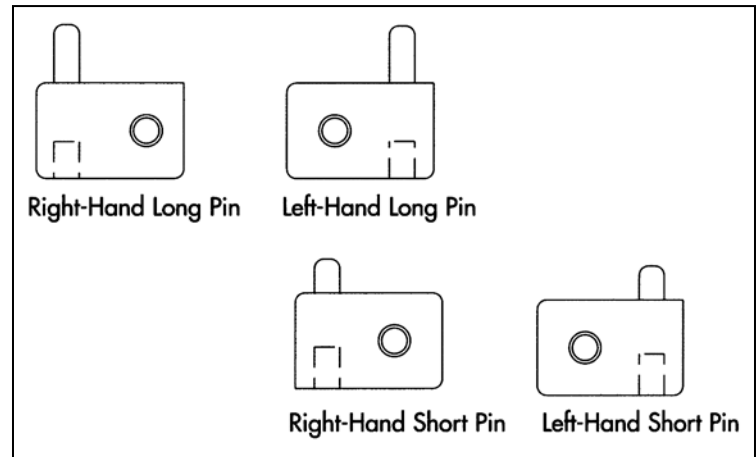
10 Series Lift-Off Hinges

Part No.	Description
655070	10 series right hand lift-off hinge with long pin
655071	10 series left hand lift-off hinge with long pin
655072	10 series right hand lift-off hinge with short pin
655073	10 series left hand lift-off hinge with short pin
655074	10 series lift-off hinge section with bushing
655075	10 series lift-off hinge with 2 pins



15 Series Lift-Off Hinges

Part No.	Description
655089	15 series right hand lift-off hinge with long pin
655090	15 series left hand lift-off hinge with long pin
655091	15 series right hand lift-off hinge with short pin
655092	15 series left hand lift-off hinge with short pin
655093	15 series lift-off hinge section with bushing
655094	15 series lift-off hinge with 2 pins



MODULAR FRAMING

10 Series

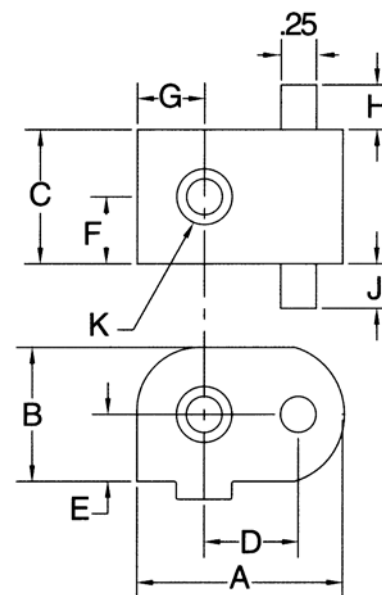
Unit: inch

Dimensions	655070	655071	655072	655073	655074	655075
A	1.156	1.156	1.156	1.156	1.156	1.156
B	0.500	0.500	0.500	0.500	0.500	0.500
C	0.750	0.750	0.750	0.750	0.750	0.750
D	0.529	0.529	0.529	0.529	0.529	0.529
E	0.250	0.250	0.250	0.250	0.250	0.250
F	0.375	0.375	0.375	0.375	0.375	0.375
G	0.377	0.377	0.377	0.377	0.377	0.377
H	N/A	0.36	N/A	0.36	N/A	0.36
J	N/A	0.36	N/A	0.36	N/A	0.36
K	10-32	10-32	10-32	10-32	10-32	10-32
Lbs.	0.06	0.06	0.055	0.055	0.065	0.05

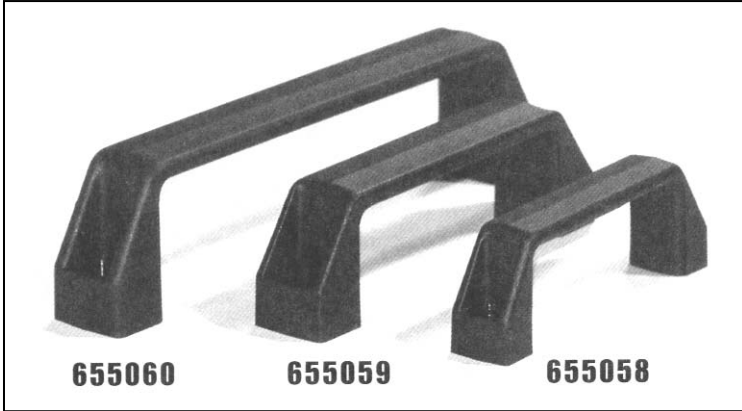
15 Series

Unit: inch

Dimensions	655089	655090	655091	655092	655093	655094
A	1.655	1.655	1.655	1.655	1.655	1.655
B	0.500	0.500	0.500	0.500	0.500	0.500
C	0.750	0.750	0.750	0.750	0.750	0.750
D	0.780	0.780	0.780	0.780	0.780	0.780
E	0.250	0.250	0.250	0.250	0.250	0.250
F	0.375	0.375	0.375	0.375	0.375	0.375
G	0.625	0.625	0.625	0.625	0.625	0.625
H	N/A	0.750	N/A	0.36	N/A	0.36
J	0.750	N/A	0.360	N/A	N/A	0.36
K	1/4-20	1/4-20	1/4-20	1/4-20	1/4-20	1/4-20
Lbs.	0.085	0.085	0.080	0.080	0.090	0.075



PANELS & DOORS
DOOR HANDLES



Recommended Bolt Assembly

Qty.	Handle Part No.	Bolt Part No.
2	655060	651234
2	655059	651202
2	655058	651202

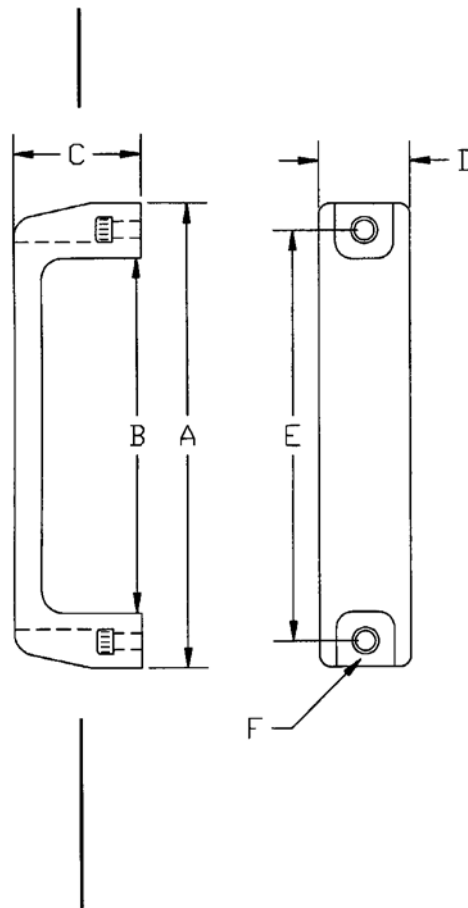
- Mounts directly in T-slot or machined panel
- Made of black polycarbonate
- 10 and 15 series sizes

Plastic Door Handles

Part No.	Description
655060	Small plastic door handle - black
655059	Medium plastic door handle - black
655058	Large plastic door handle - black

Unit: inch

Dimensions	65060	655059	655058
A	4.41	5.47	7.75
B	2.95	3.69	6.02
C	1.42	1.63	2.00
D	0.830	1.02	1.10
E	3.678	4.60	7.05
F	1/4 SHCS (2)	5/16 SHCS (2)	5/16 SHCS (2)



MODULAR FRAMING

ACCESSORIES

This section covers a partial listing of all the accessories available from SMI. Please visit our website for updates or call SMI for more information.

END CAPS & T-SLOT COVERS

Intended to enclose the ends of the extrusion and cover the T-slots. By capping the extrusion and covering the T-slot you can utilize that space to run cables in a protected environment. The end caps and T-slot cover fits all of the extrusions and come in multiple colors.

TABLETOPS

Allows you to build heavy-duty workstations and desks. Remember, we can also build tabletops that meet your project requirements. Call SMI for more information.

CART GUARD ®

Available to protect cart corners. Call SMI for more information.

ACROBINS ® & SHELF BINS

Available to store your own materials on-site. Call SMI for more information.

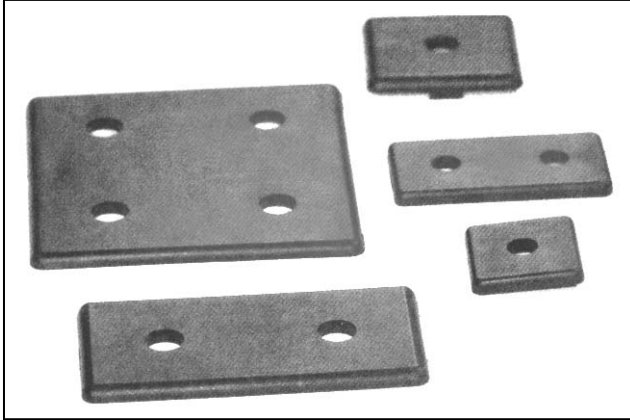
TOOL HANGERS & TUBE CLAMPS

Tool hangers can be used to hand air tools, cable reels, or transport cables. Tube clamps attach your tubes and wires of all sizes; single and double, stackable tubes. Call SMI for more information.

MANIFOLD PLATES

Manifold plates are compatible with most fluids and gases. There are manifold plates to match most extrusion sizes. If your project calls for a custom manifold plate, we can machine it for you. Call SMI for more information.

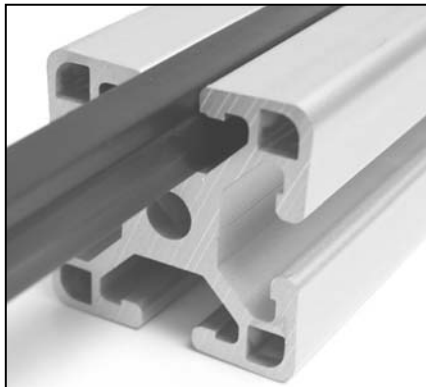
ACCESSORIES
END CAPS & T-SLOT COVERS



END CAPS

- Allows you to cap off extrusion ends
- Push in fasteners included
- Can be mounted with 1/4-20 or 5/16-18 fasteners
- 10 and 15 series sizes

Part No.	Description
655000	1" x 1" end cap - black
655010	1" x 2" end cap - black
655020	2" x 2" end cap - black
655025	1.5" x 1.5" / 1.5" x 1.5" Light end cap - black
655035	1.5" x 3" / 1.5" x 3" Light end cap - black
655040	1.5" x 4.5" end cap - black
655045	3" x 3" end cap - black



T-SLOT COVERS

- Covers T-slot to keep dust and dirt out
- Covers wires and tubes in T-slot
- Stocked in 72" lengths
- Wire duct

Part No.	Description
655107	10 series yellow T-slot cover
655108	10 series black T-slot cover
655109	10 series grey T-slot cover
655104	15 series yellow T-slot cover
655105	15 series black T-slot cover
655106	15 series gray T-slot cover

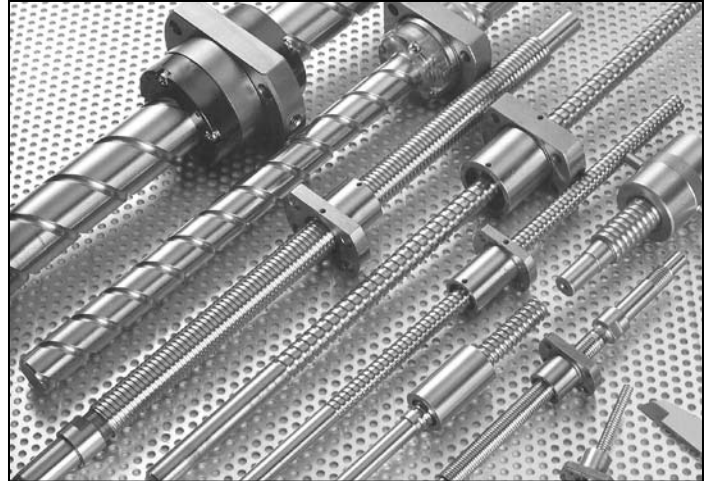
PRECISION BALL SCREWS



SMI / Comtop carries an extensive line of ground and precision rolled ball screws. Shaft diameters range from 4mm to 100mm. Lead varies from 1mm to 64mm depending on the shaft diameter.

Our ball screws have high mechanical efficiency, smooth rotation, high accuracy, easy maintenance and long predictable life. Time tested and industrially proven to meet your requirements.

Contact SMI for custom end machining or for special requirements. Stainless steel, double nuts, support units, and shaft diameters above 80mm to 100mm are available upon request. Special sizes (i.e. 9x2.5mm) are not included in this catalog and are RFQ only. New shaft diameters, leads & types are continually being developed & will be updated on our website.



GROUND & ROLLED BALL SCREW SIZES

Unit: mm

Shaft Dia.	Lead																				
	1	2	2.5	3	4	5	5.08	6	8	10	12	15	16	20	24	25	32	40	50	60	64
4	■																				
6	■																				
8	■	■	●						●	●											
9			●								●										
10		■			●					●		●									
12		■	●	●	●	●		●			●										
14		■		●																	
15						●				●											
16		●			■	■				●			■				●				
19		●																			
20		●			■	■				●				■				●			
25		●	●		●	■		●		■						●			●		
28								●	●	●											
32			●		●	■		●	●	■	●			●			■				●
36										●	●										
38																●					
40						■	●		●	■	●		●	●	●			■			
50									●	■	●		●	●					●		
63										●				●				●			
80										●				●				●			
100																●					

■ Ground & Rolled ● Ground Only

MOTION COMPONENTS

ACCURACY

LEAD / TRAVEL ACCURACY

- Lead accuracy of SMI / Comptop ball screws (grades C0 to C5) is specified in 4 basic terms (E, e, e₃₀₀, e_{2π}). They are defined in Figure A. Tolerance deviation (± E) and variation (e) of accumulated reference travel are shown in Tables 1 and 2.
- Accumulated travel deviations for grades C7 and C10 are specified only by the allowable value per 300mm measured within any portion of the thread length. They are 0.05mm for C7 and 0.21mm for C10.

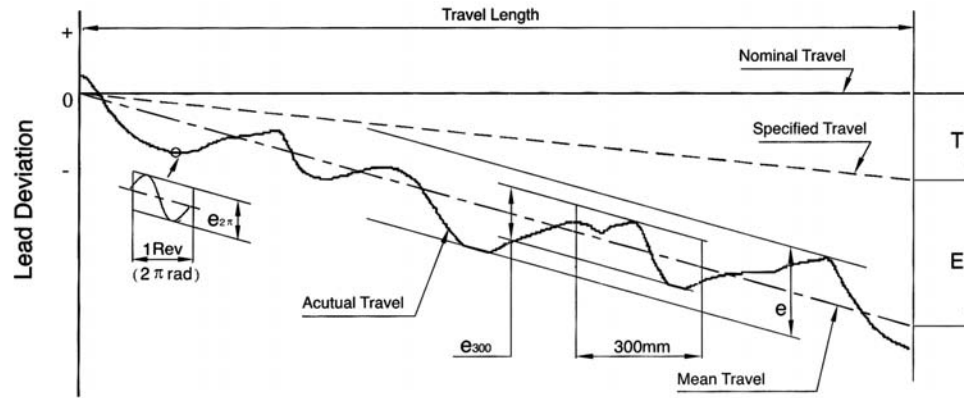


Fig. A Diagram of Lead Accuracy

Definition of Terms for Lead Accuracy

Term	Symbol	Definition	Table
Travel Compensation	T	Travel compensation is the difference between specified and nominal travel within the useful travel. A slightly smaller value compared to the nominal travel is often selected by the customer to compensate for an expected elongation caused by temperature rise or external load. Therefore "T" is usually a negative value. If no compensation is needed, specified travel is the same as nominal travel.	
Actual Travel		Actual travel is the axial displacement of the nut relative to the screw shaft.	
Mean Travel		Mean travel is the linear best fit line of actual. This could be obtained by the least squares method. This line represents the tendency of actual travel.	
Mean Travel Deviation	E	Mean travel deviation is the difference between mean travel and specified travel within the travel length.	1
Travel Variation		Travel variations is the band of 2 lines drawn parallel to the mean travel, on the plus and minus side.	
	e	Maximum width of variation over the travel length.	1
	e ₃₀₀	Actual width of variation for the length of 30mm taken anywhere within the travel length.	2
	e _{2π}	Wobble error, actual width of variation for one revolution (2 π radian).	2

Table 1 Mean Travel Deviation (± E) and Travel Variation (e) JIS B 1192

Unit: μm

Grade		C0	C1	C2	C3	C5	C7	C10							
Travel Length (mm)	Over	Incl.	± E	e	± E	e	± E	e	± E	e	± E	e	± 50 / 300mm	± 210 / 300mm	
		100	3	3	3.5	5	5	7	8	8	18	18			
		100	200	3.5	3	4.5	5	7	7	10	8	20			18
		200	315	4	3.5	6	5	8	7	12	8	23			18
		315	400	5	3.5	7	5	9	7	13	10	25			20
		400	500	6	4	8	5	10	7	15	10	27			20
		500	630	6	4	9	6	11	8	16	12	60			23
		630	800	7	5	10	7	13	9	18	13	35			25
		800	1000	8	6	11	8	15	10	21	15	40			27
		1000	1250	9	6	13	9	18	11	24	16	46			30
		1250	1600	11	7	15	10	21	13	29	18	54			35
		1600	2000			18	11	25	15	35	21	65			40
	2000	2500			22	13	30	18	41	24	77	46			
	2500	3150			26	15	36	21	50	29	93	54			

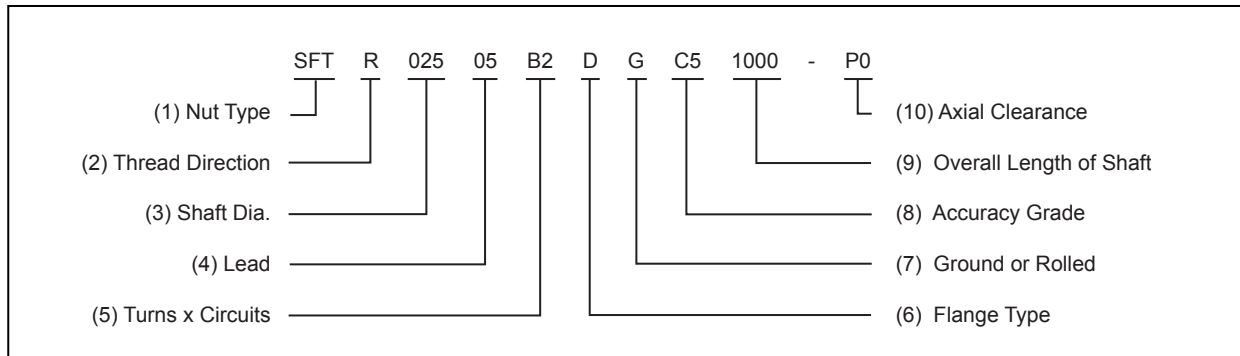
Table 2 Variation / 300mm & Wobble Error (e_{2π}) Unit: μm

Grade	C0	C1	C2	C3	C5	C7	C10
e ₃₀₀	3.5	5	7	8	18	50	210
e _{2π}	2.5	4	5	6	8	-	-

Table 3 Combination of Accuracy & Axial Play

Grade	P0	P1	P2	P3	P4
Axial Play	50μm max.	0	Light Pre-load	Med. Pre-load	Heavy Pre-load

Part Number System

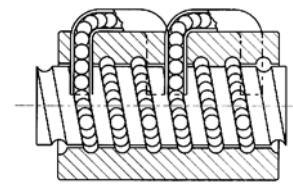


(1) Nut Type Codes

S: S: Single Nut
D: Double Nut

F: F: With Flange
C: Without Flange

T: T: T type nut
I: I: I type nut
D: D type nut
E: E type nut
K: K type nut
U: DIN nut



Type T Nut

(2) Thread Direction

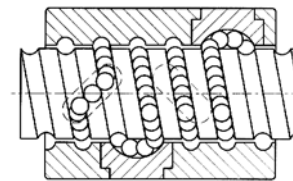
R: Right L: Left

(3) Shaft Diameter (mm)

(4) Lead (mm)

(5) Turns x Circuits

T: 1 A: 1.5 or 1.7 B: 2.5 C: 3.5
Example: B2 = 2.5 x 2



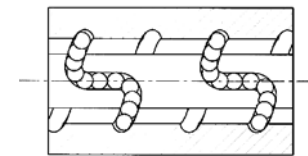
Type I Nut

(6) Flange Type

N: Round S: Single Flat D: Double Flats

(7) Thread Type

G: Ground R: Rolled



Type K Nut

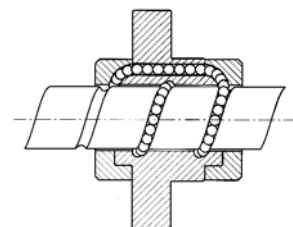
(8) Accuracy Grade (see table below)

C0, C1, C2, C3, C5, C7, C10

(9) Overall Length of Shaft (mm)

(10) Axial Clearance (see table below)

P0, P1, P2, P3, P4



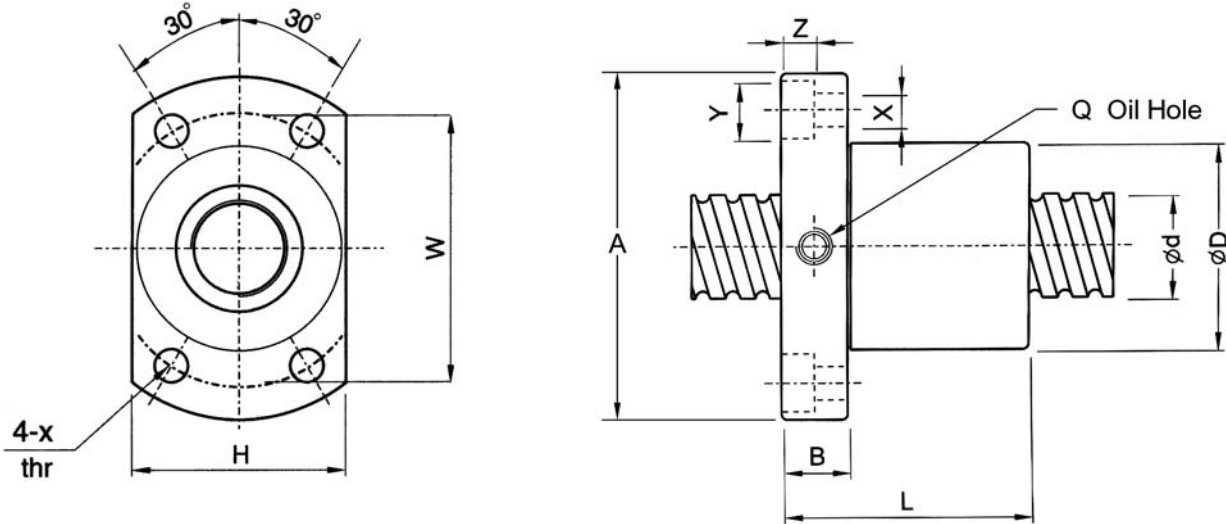
Type E Nut

Mean travel deviation based on 300mm of travel Unit: μm

Grade	C0	C1	C2	C3	C5	C7	C10
$\pm E$	4	6	8	12	23	50	210

Axial Clearance	P0	P1	P2	P3	P4
Designations	50 μm max.	0	Light Pre-load	Med. Pre-load	Heavy Pre-load

SFK SERIES



Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)
SFK0401 *	4	1	0.8	10	20	3	12	15	14	2.9	-	-	-	2	42	51
SFK0601 *	6	1	0.8	12	24	3.5	15	18	16	3.4	-	-	-	3	73	121
SFK0801 *	8	1	0.8	14	27	4	16	21	18	3.4	-	-	-	4	93	173
SFK0802 *	8	2	1.2	14	27	4	16	21	18	3.4	-	-	-	3	135	225
SFK082.5 *	8	2.5	1.2	16	29	4	26	23	20	3.4	-	-	-	3	177	278
SFK1002 *	10	2	1.2	18	35	5	28	27	22	4.5	-	-	-	3	185	305
SFK1004 *	10	4	2.0	26	46	10	34	36	28	4.5	-	-	-	3	395	590
SFK1202 *	12	2	1.2	20	37	5	28	29	24	4.5	-	-	-	4	173	317
SFK1204 *	12	4	2.5	24	40	6	28	32	25	3.5	6	3.5	-	3	454	722
SFK1205 *	12	5	2.5	22	37	8	39	29	24	4.5	-	-	-	3	619	883
SFK1402 *	14	2	1.2	21	40	6	23	31	26	5.5	-	-	-	4	287	633
SFK1602	16	2	1.2	25	43	10	40	35	29	5.5	-	-	-	4	253	670
SFK1604 *	16	4	2.381	30	49	10	45	39	34	4.5	8	4.5	M6	4	640	1340
SFK2002	20	2	1.2	50	80	15	55	65	68	6.5	10.5	6	M6	6	397	1269
SFK2004	20	4	2.381	34	57	11	46	45	40	5.5	9.5	5.5	M6	4	670	1480
SFK2502	25	2	1.2	50	80	13	43	65	68	6.5	10.5	6	M6	5	375	1331
SFK2503	25	3	2.381	40	63	11	51	51	48	5.5	9.5	5.5	M6	6	1100	3076
SFK2504 *	25	4	2.381	40	63	11	46	51	46	5.5	9.5	5.5	M6	4	760	1950
SFK2510 *	25	10	6.35	46	72	12	85	58	52	6.5	11	6.5	M6	4	2350	6690
SFK3204	32	4	2.381	46	72	12	47	58	52	6.5	11	6.5	M6	4	860	3050

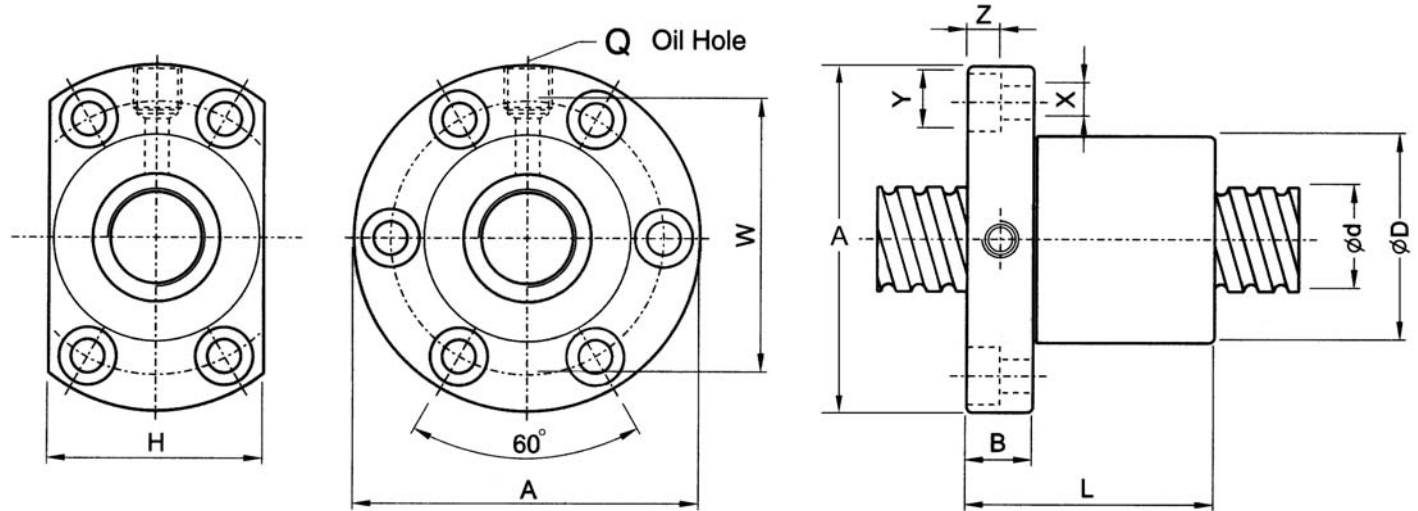
* Left-hand threads available

Refer to size chart for available rolled sizes

PRECISION BALL SCREWS



SFD & SFI SERIES



SFD

Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFD1604	16	4	2.381	30	49	10	45	39	34	4.5	8	4.5	M6	4	640	1340	16
SFD2004	20	4	2.381	34	57	11	46	45	40	5.5	9.5	5.5	M6	4	670	1480	25
SFD2504	25	4	2.381	40	63	11	46	51	46	5.5	9.5	5.5	M6	4	760	1950	31
SFD2510	25	10	6.350	46	72	12	85	58	52	6.5	11	6.5	M6	4	2350	6690	45
SFD3204	32	4	2.381	46	72	12	47	58	52	6.5	11	6.5	M6	4	860	3050	40

SFI

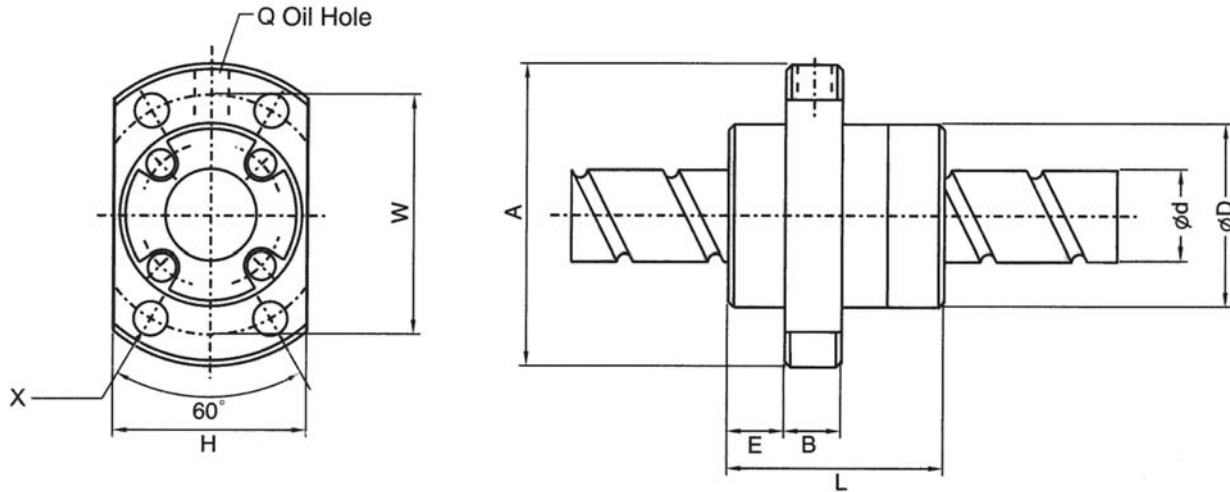
Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFI1605-4	16	5	3.175	30	49	10	50	39	34	4.5	8	4.5	M6	4	780	1790	20
SFI1610-3 *	16	10	3.175	34	58	10	57	45	34	5.5	9.5	5.5	M6	3	833	1249	15
SFI2005-4 *	20	5	3.175	34	57	11	51	45	40	5.5	9.5	5.5	M6	4	1130	2380	25
SFI2005T *	20	5.08	3.175	34	57	11	51	45	40	5.5	9.5	5.5	M6	4	1130	2380	25
SFI2505-4 *	25	5	3.175	40	63	11	51	51	46	5.5	9.5	5.5	M8	4	1280	3110	35
SFI3205-4 *	32	5	3.175	46	72	12	52	58	52	6.5	11	6.5	M8	4	1450	4150	40
SFI3210-4	32	10	6.35	54	88	15	90	70	62	9	14	8.5	M8	4	3390	7170	40
SFI4005-4 *	40	5	3.175	56	90	15	55	72	64	9	14	8.5	M8	4	1610	5330	49
SFI4010-4	40	10	6.35	62	104	18	93	82	70	11	17.5	11	M8	4	3910	9520	50
SFI5010-4	50	10	6.35	72	114	18	93	92	82	11	17.5	11	M8	4	4450	12500	65
SFI6310-4 *	63	10	6.35	85	131	22	98	107	95	14	20	13	M8	4	5070	16600	80
SFI8010-4 *	80	10	6.35	105	150	22	98	127	115	14	20	13	M8	4	5620	21300	90

* Left-hand threads available

Refer to size chart for available rolled sizes

SFE SERIES



Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	E	B	L	X	W	H	Q	Turns x Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFE1616-3	16	16	2.778	32	53	15	10	38	4.5	42	34	M6	1.7x2	650	1280	19
SFE1616-6			2.778	32	53	15	10	38	4.5	42	34	M6	1.7x4	1180	2550	36
SFE1632-3		32	3.175	34	55	10.5	10	34	5.5	45	36	M6	0.7x2	410	680	21
SFE1632-6			3.175	34	55	10.5	10	34	5.5	45	36	M6	0.7x4	820	1360	41
SFE2020-3	20	20	3.175	39	62	11.5	10	47	5.5	50	41	M6	1.7x2	980	2140	25
SFE2020-6			3.175	39	62	11.5	10	47	5.5	50	41	M6	1.7x4	1780	4280	49
SFE2040-3		40	3.175	38	58	11	10	41	5.5	48	40	M6	0.7x2	455	880	25
SFE2040-6			3.175	38	58	11	10	41	5.5	48	40	M6	0.7x4	910	1760	49
SFE2525-3	25	25	3.969	47	74	13	12	57	6.6	60	49	M6	1.7x2	1470	3350	31
SFE2525-6			3.969	47	74	13	12	57	6.6	60	49	M6	1.7x4	2660	6690	60
SFE2550-3		50	3.969	46	70	13	12	50	6.6	58	48	M6	0.7x2	685	1380	31
SFE2550-6			3.969	46	70	13	12	50	6.6	58	48	M6	0.7x4	1370	2760	60
SFE3232-3	32	32	4.762	58	92	16	12	71	9	74	60	M6	1.7x2	2140	5260	40
SFE3232-6			4.762	58	92	16	12	71	9	74	60	M6	1.7x4	3890	10500	76
SFE3264-3		64	4.762	58	92	15.5	12	62	9	74	60	M6	0.7x2	1000	2130	40
SFE3264-6			4.762	58	92	15.5	12	62	9	74	60	M6	0.7x4	2000	4260	77
SFE4040-3	40	40	6.350	73	114	19	15	89	11	93	75	M6	1.7x2	3410	8820	49
SFE4040-6			6.350	73	114	19	15	89	11	93	75	M6	1.7x4	6200	17600	95
SFE5050-3	50	50	7.938	90	135	21.5	20	107	14	112	92	M6	1.7x2	5100	13800	60
SFE5050-6			7.938	90	135	21.5	20	107	14	112	92	M6	1.7x4	7260	27600	117

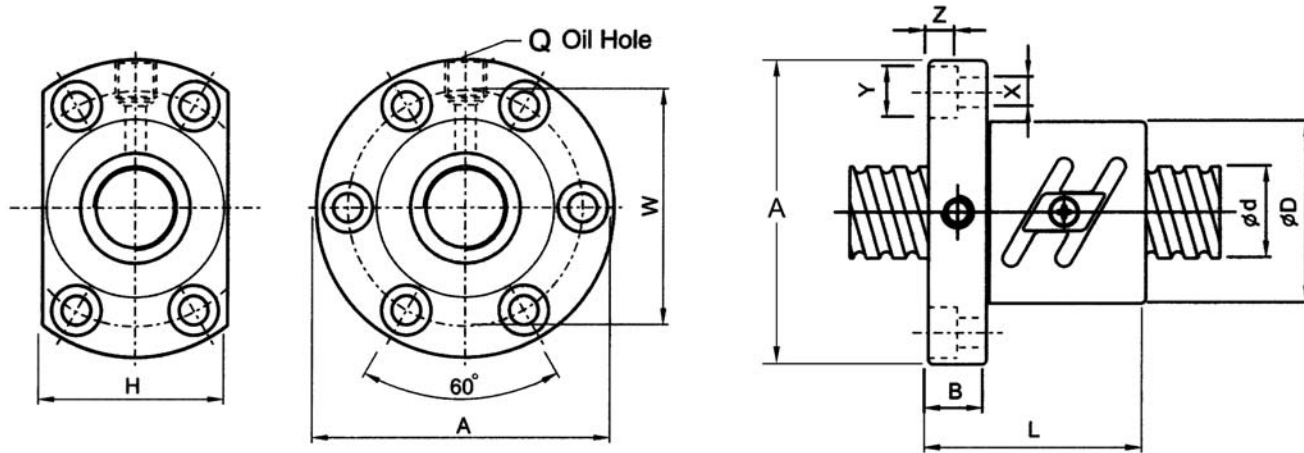
Note: "-3" refers to 2 starts, "-6" refers to 4 starts.
Refer to size chart for available rolled sizes

MOTION COMPONENTS

PRECISION BALL SCREWS



SFT SERIES

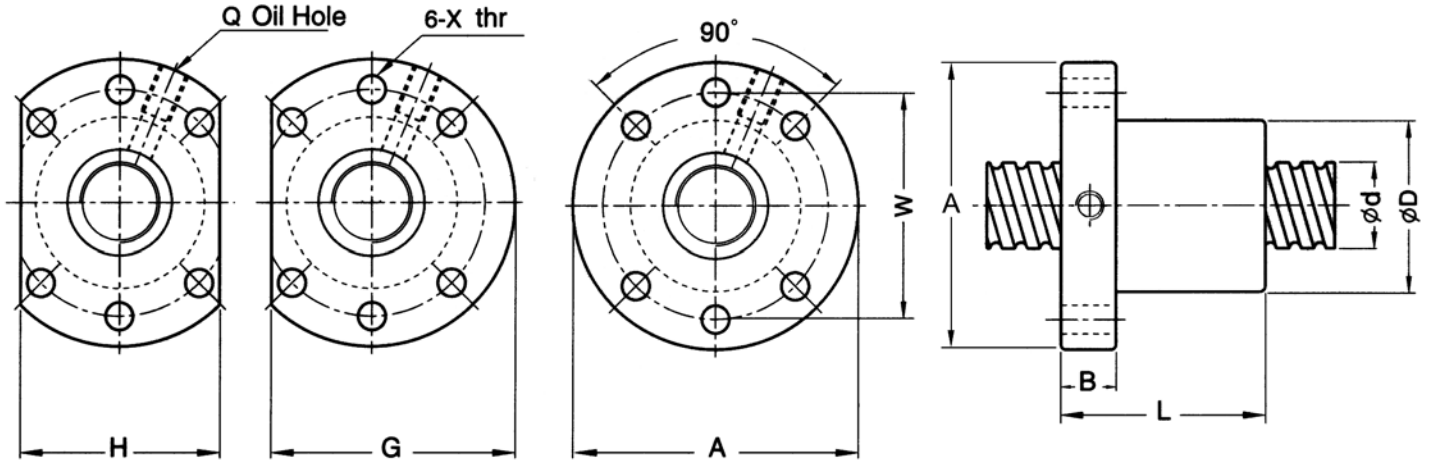


Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	H	X	Y	Z	Q	Turns x Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μ m)
SFT2505-5	25	5	3.175	50	73	11	55	61	52	5.5	9.5	5.5	M8	2.5x2	1690	4460	46
SFT2510-2.5	25	10	6.350	68	102	15	70	84	82	9	14	8.5	M8	2.5x1	2440	4730	26
SFT3205-5	32	5	3.175	58	85	12	56	71	64	6.6	11	6.5	M8	2.5x2	1880	5720	55
SFT3206-5	32	6	3.969	62	89	12	65	75	68	6.6	11	6.5	M8	2.5x2	2520	7080	56
SFT3208-5	32	8	4.762	66	100	15	82	82	76	9	14	8.5	M8	2.5x2	3230	8360	58
SFT3210-5	32	10	6.350	74	108	15	96	90	82	9	14	8.5	M8	2.5x2	4820	11500	63
SFT3220-2.5	32	20	6.350	74	108	16	100	90	82	9	14	8.5	M8	2.5x1	2680	6020	30
SFT4005-5	40	5	3.175	67	101	15	59	83	72	9	14	8.5	M8	2.5x2	2026	7200	66
SFT4010-5	40	10	6.350	82	124	18	100	102	94	11	17.5	11	M8	2.5x2	5300	14000	72
SFT4020-2.5	40	20	6.350	82	124	18	100	102	94	11	17.5	11	M8	2.5x1	2970	7370	38
SFT5010-5	50	10	6.350	93	135	18	103	113	98	11	17.5	11	M8	2.5x2	5940	18000	89
SFT5020-2.5	50	20	9.525	105	152	28	121	128	110	14	20	13	M8	2.5x1	7400	18700	45
SFT6310-5	63	10	6.350	108	154	22	105	130	110	14	20	13	M8	2.5x2	6550	22700	107
SFT6320-2.5	63	20	9.525	122	180	28	127	150	130	18	26	18	M8	2.5x1	8110	23200	73
SFT8010-5	80	10	6.350	130	176	22	105	152	132	14	20	13	M8	2.5x2	7200	28900	129
SFT8020-5	80	20	9.525	143	204	28	180	172	148	18	26	18	M8	2.5x2	16700	60100	175
SFT8020-7.5	80	20	9.525	143	204	28	240	172	148	18	26	18	M8	2.5x3	23500	89100	252

All SFT sizes available in left-hand threads
Refer to size chart for available rolled sizes

SFU SERIES



Unit: mm

Part No.	Shaft Dia.	Lead	Ball Dia.	D	A	B	L	W	X	G	H	Q	Circuits	Dynamic Load Ca (kgf)	Static Load Coa (kgf)	Stiffness (Kg / μm)
SFU1605-4	16	5	3.175	28	48	10	50	38	5.5	44	40	M6	4	780	1790	20
SFU2005-4 *	20	5	3.175	36	58	10	51	47	6.6	51	44	M6	4	1130	2380	25
SFU2505-4 *	25	5	3.175	40	62	10	51	51	6.6	55	48	M6	4	1280	3110	35
SFU3205-4 *	32	5	3.175	50	80	12	52	65	9	71	62	M6	4	1450	4150	40
SFU3210-4	32	10	6.350	50	80	12	90	65	9	71	62	M6	4	3390	7170	40
SFU4005-4 *	40	5	3.175	63	93	14	55	78	9	81.5	70	M8	4	1610	5330	49
SFU4010-4	40	10	6.350	63	93	14	93	78	9	81.5	70	M8	4	3910	9520	50
SFU5010-4	50	10	6.350	75	110	16	93	93	11	97.5	85	M8	4	4450	12500	65
SFU6310-4 *	63	10	6.350	90	125	18	98	108	11	110	95	M8	4	5070	16600	80
SFU8010-4 *	80	10	6.350	105	145	20	98	125	14	127.5	110	M8	4	5620	21300	90

* Left-hand threads available

Refer to size chart for available rolled sizes

BALL SLIDES



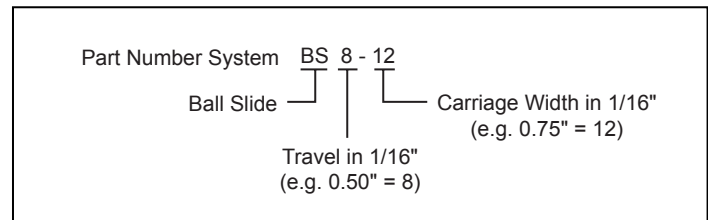
BS SERIES

Specialty Motions, Inc. (SMI) ball slides utilize hardened and ground wire race technology combined with precision grade ball bearings which produce long, extremely smooth and predictable life. SMI ball slides incorporate fewer components in its construction which gives a higher degree of reliability and reduces costs. Pre-assembled and pre-loaded for immediate installation, mounting can be done with our standard hole patterns with standard fasteners or can be created to your requirements including metrics. Center holes are standard and are a unique feature on SMI ball slides (for travel 1" and over). Mounting with a center hole will eliminate any bow on the slide and add greater mounting security. Interchangeable with many popular sizes. Custom-made ball slides available.



GENERAL SPECIFICATIONS

Straight Line Accuracy: 0.0005"/inch of travel
Finish: Black anodized
Positional Repeatability: 0.0001"
Options: Customs Color
Coefficient of Friction: 0.003 typical
 ISO or Co. P/N ID
 Private label

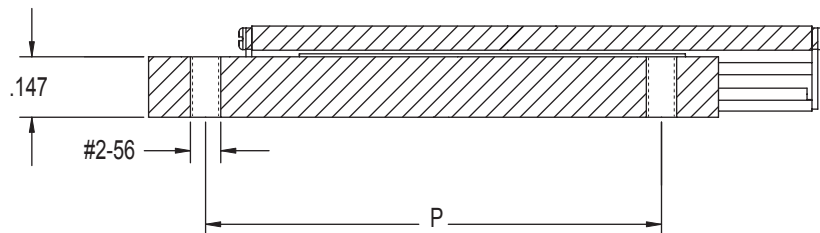
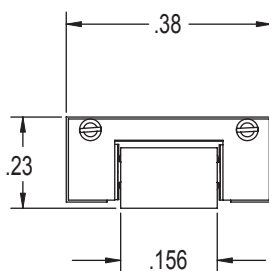
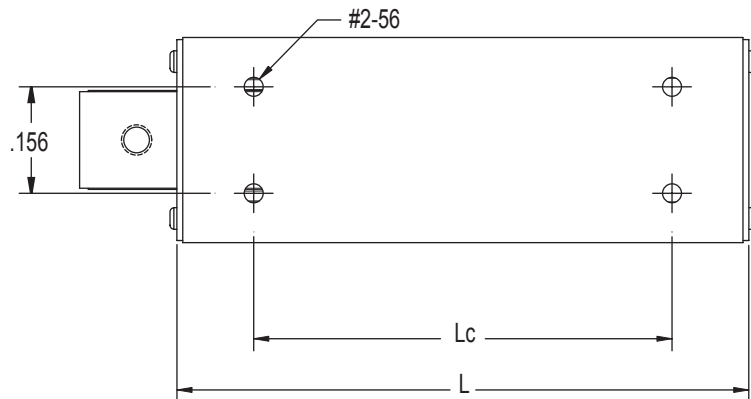


Construction:
 Aluminum carriage and base, hardened steel shafts and balls, mild steel end caps. Center hole standard for strokes 1" and over.

BS6 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS8-6	0.50	1.5	0.375	0.75	0.375
BS16-6	1.00	1.5	0.875	1.25	0.875
BS24-6	1.50	1.5	1.375	1.75	1.375



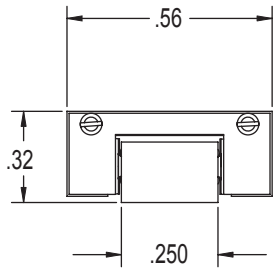
Tolerances: .XX ±0.01
 .XXX ±0.005

MOTION COMPONENTS

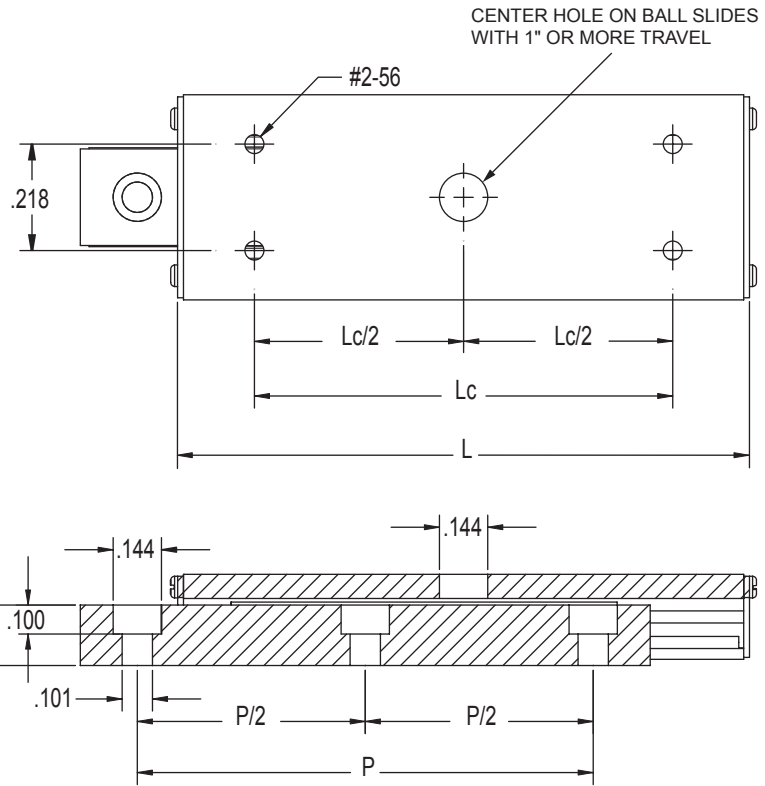
BS9 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS8-9	0.50	4	0.625	1.06	0.750
BS16-9	1.00	8	1.625	2.06	1.375
BS32-9	2.00	12	2.625	3.06	2.375
BS48-9	3.00	14	3.625	4.06	3.375
BS64-9	4.00	16	4.625	5.06	3.500



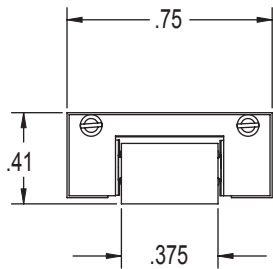
Tolerances: .XX ±0.01
.XXX ±0.005



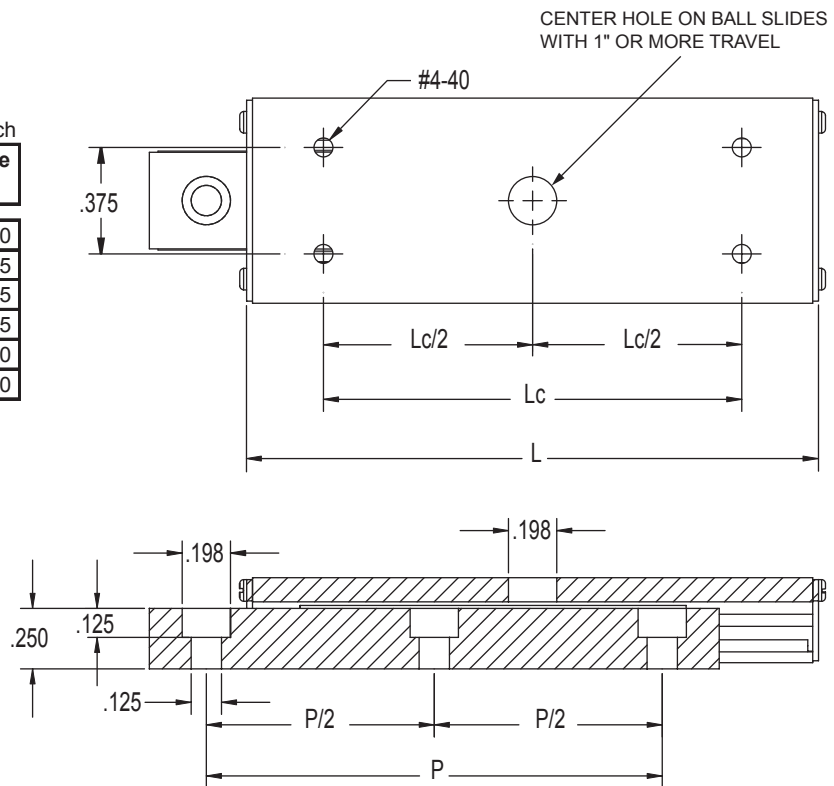
BS12 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS8-12	0.50	8	0.625	1.06	0.750
BS16-12	1.00	10	1.625	2.06	1.375
BS32-12	2.00	12	2.625	3.06	2.375
BS48-12	3.00	14	3.625	4.06	3.375
BS64-12	4.00	16	4.625	5.06	3.500
BS80-12	5.00	18	5.625	6.06	4.500



Tolerances: .XX ±0.01
.XXX ±0.005



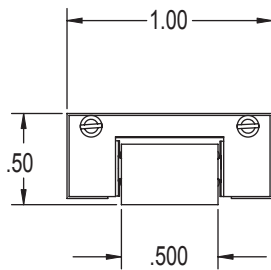
BALL SLIDES



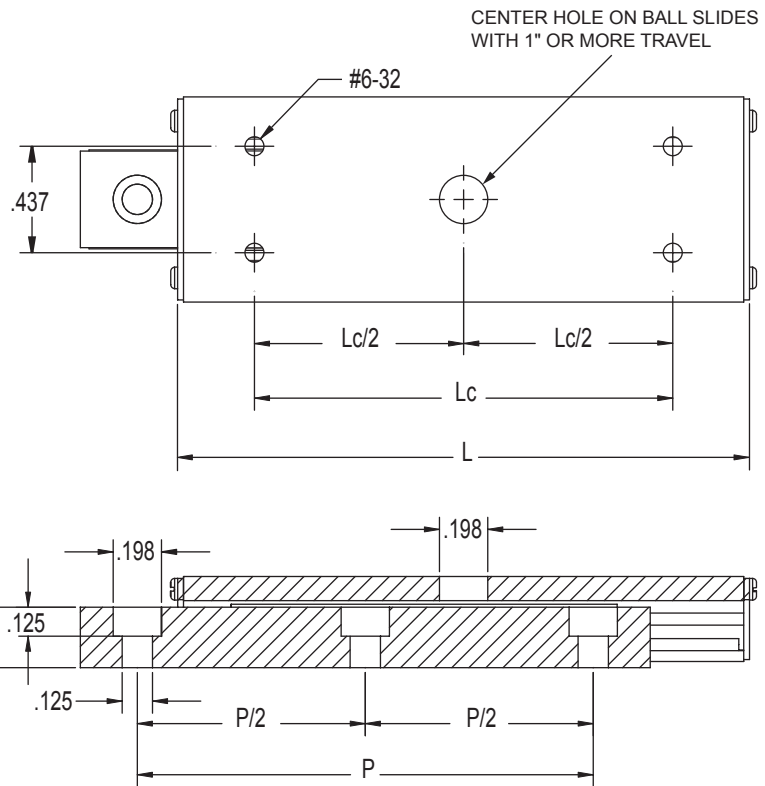
BS16 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS8-16	0.50	10	1.250	1.56	1.250
BS16-16	1.00	12	2.250	2.56	2.250
BS24-16	1.50	13	2.750	3.06	2.750
BS32-16	2.00	15	3.250	3.56	3.250
BS48-16	3.00	18	4.250	4.56	4.250



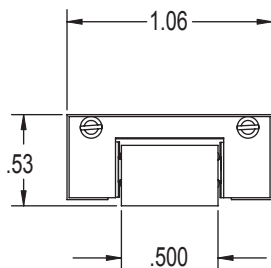
Tolerances: .XX ±0.01
.XXX ±0.005



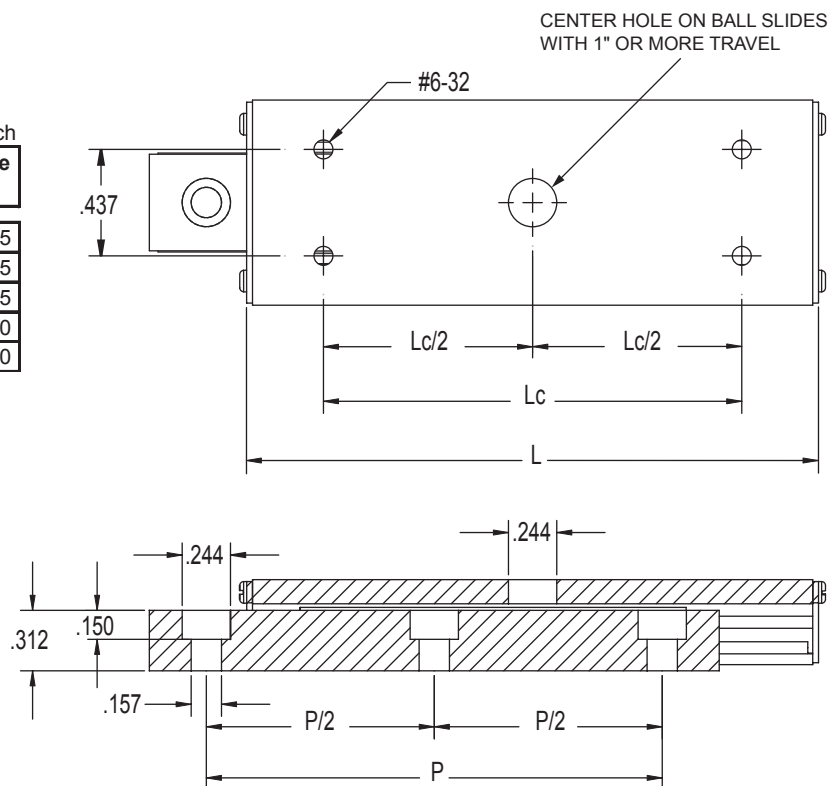
BS17 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS12-17	0.75	15	1.250	1.56	1.125
BS24-17	1.50	18	2.250	2.56	2.125
BS32-17	2.00	20	3.250	3.56	3.125
BS48-17	3.00	25	4.000	4.56	3.250
BS64-17	4.00	30	5.500	6.00	4.000



Tolerances: .XX ±0.01
.XXX ±0.005

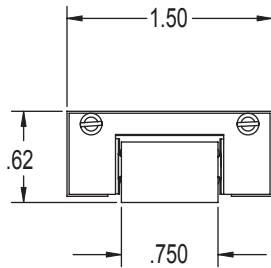


MOTION COMPONENTS

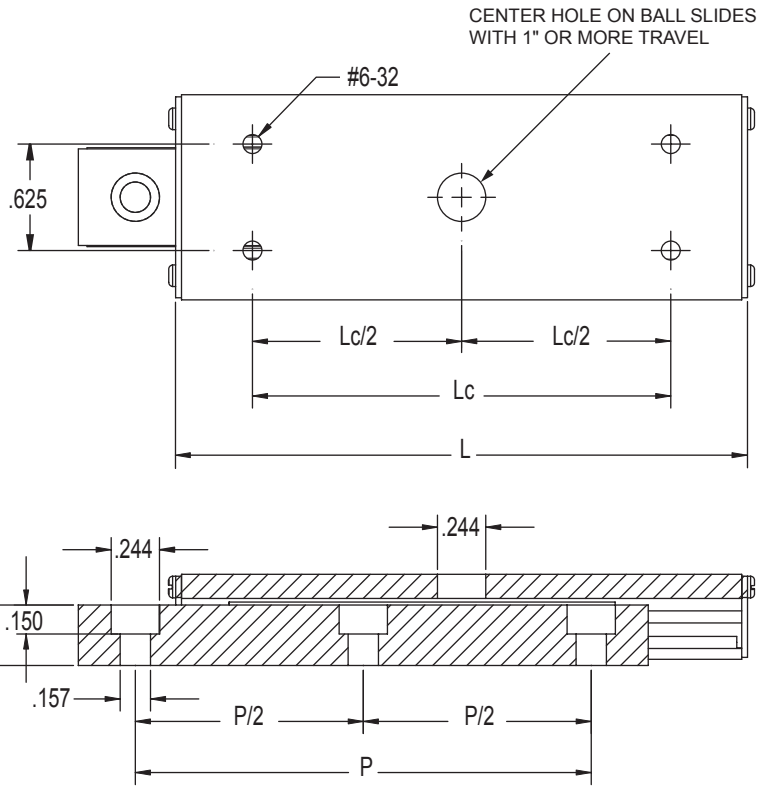
BS24 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS16-24	1.00	15	1.375	2.00	1.500
BS32-24	2.00	20	2.375	3.00	2.500
BS48-24	3.00	25	3.375	4.00	3.500
BS56-24	3.50	30	4.375	5.00	3.500
BS64-24	4.00	35	5.375	6.00	4.000



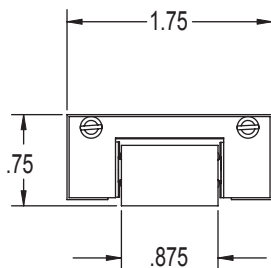
Tolerances: .XX ±0.01
.XXX ±0.005



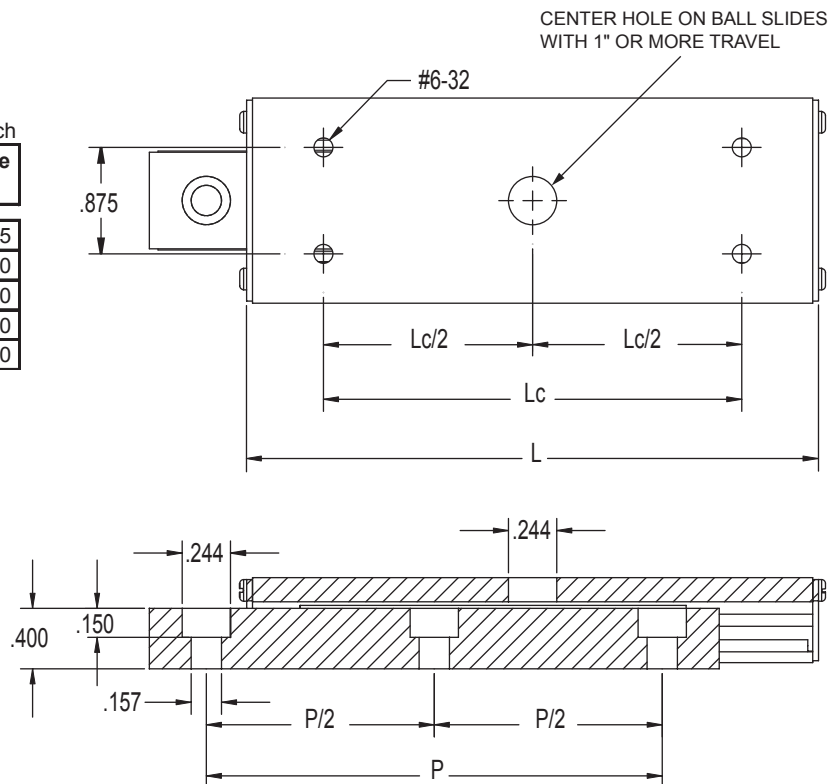
BS28 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS16-28	1.00	20	1.375	2.00	1.625
BS24-28	1.50	30	2.125	2.75	2.250
BS32-28	2.00	42	2.625	3.25	2.750
BS48-28	3.00	52	3.375	4.00	3.500
BS64-28	4.00	60	5.500	6.00	4.000



Tolerances: .XX ±0.01
.XXX ±0.005



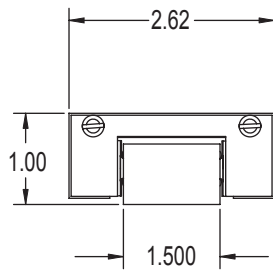
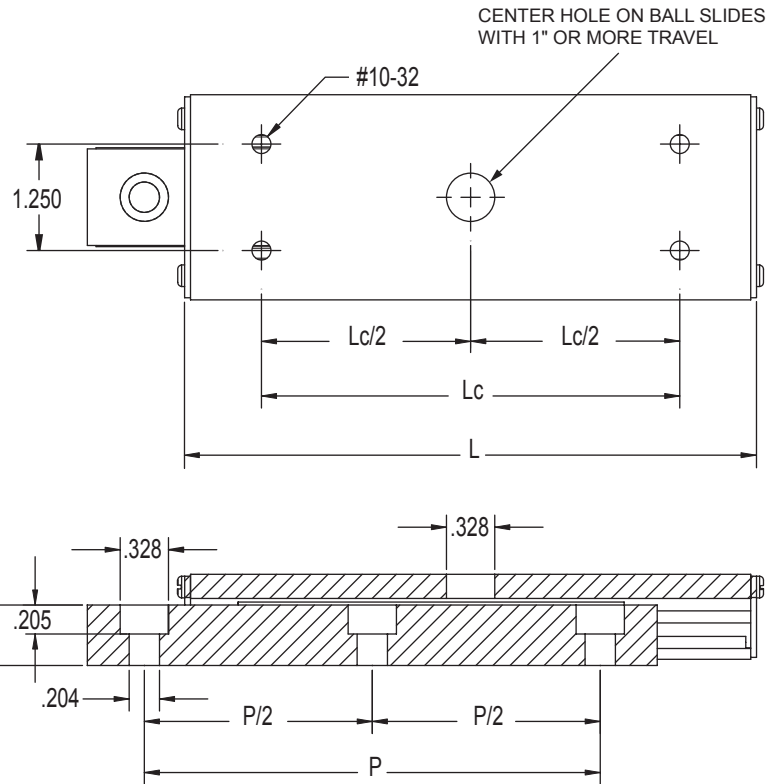
BALL SLIDES



BS42 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
BS16-42	1.00	30	2.125	2.62	2.125
BS24-42	1.50	35	1.625	2.62	1.875
BS32-42	2.00	62	3.000	4.00	3.375
BS48-42	3.00	88	4.000	5.00	4.375
BS64-42	4.00	118	5.000	6.00	5.375



Tolerances: .XX ±0.01
.XXX ±0.005

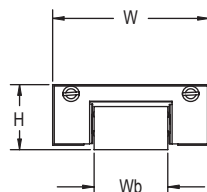
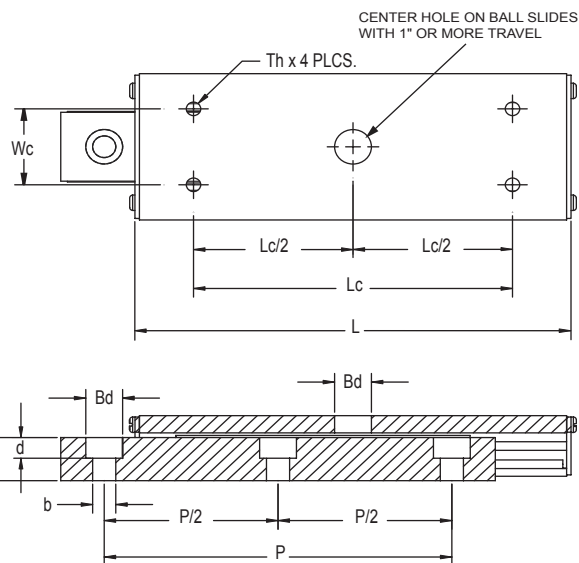
SPECIAL & METRIC SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Attachment Holes			W	H	L	Base			Bd	b	d
			Lc	Wc	Th				Wb	Hb	P			
BS29-17	1.81	18	2.165	0.551	M3x.5	1.06	0.47	2.95	0.500	0.312	2.360	0.250	0.157	0.150
BSM64-24	4.00	35	5.354	0.630	M4x.7	1.50	0.62	6.00	0.750	0.340	3.938	0.320	0.183	0.176

Sample selection of special & metric sizes that SMI has done for customers who have requested them.

Contact SMI for special or metric requirements.



Tolerances: .XX ±0.01
.XXX ±0.005

MOTION COMPONENTS

BSPS PRECISION SERIES

SMI offers a precision series ball slide for designers who require a higher degree of accuracy and repeatability. Preload can be customized to fit the designers requirements. SMI precision ball slides incorporate fewer components in its construction which gives a higher degree of reliability and reduces costs. Pre-assembled and pre-loaded for immediate installation, mounting can be done with our standard hole patterns with standard fasteners or can be created to your requirements including metrics. Center holes are standard and are a unique feature on SMI ball slides (for travel 1" and over). Mounting with a center hole will eliminate any bow on the slide and add greater mounting security. Interchangeable with many popular sizes. Custom-made ball slides available.



SPECIFICATIONS

Straight Line Accuracy:
0.0001"/inch of travel

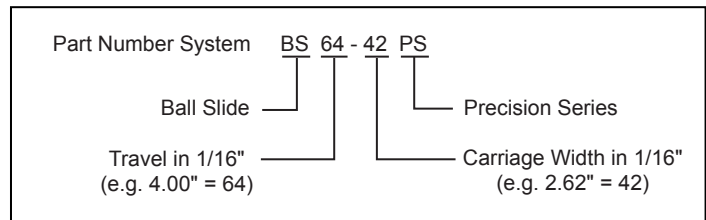
Finish:
Black Anodized

Repeatability:
0.000050"

Coefficient of Friction:
0.002 typical

Construction:

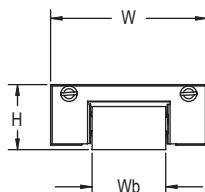
Aluminum carriage and base, hardened stainless steel shafts, balls and pre-load gibs. Center hole standard for strokes 1" and over.



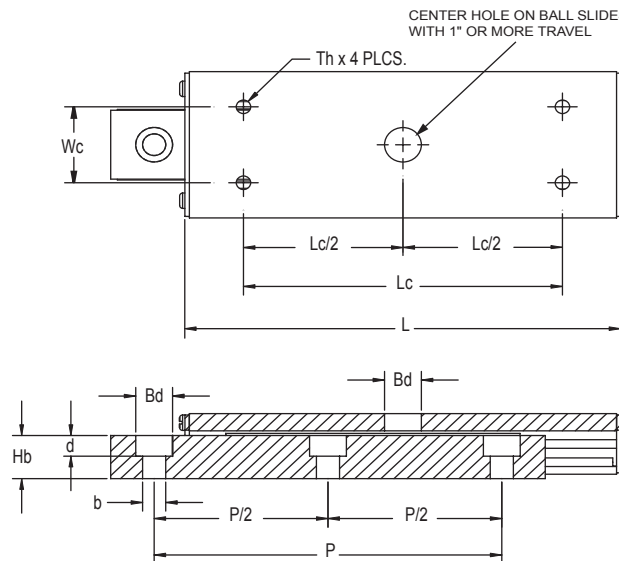
Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Attachment Holes			W	H	L	Base			Bd	b	d
			Lc	Wc	Th				Wb	Hb	P			
BS64-42PS	4.00	122	5.000	1.250	#10-32 UNF	2.62	1.00	6.00	1.500	0.625	5.375	0.328	0.204	0.205

More sizes in progress. Call for availability or visit our website.



Tolerances: .XX ±0.01
.XXX ±0.005



CROSS ROLLER SLIDES



XRS SERIES

SMI precision cross roller slides are built with the same advanced technology and cost saving technique as our ball slides. The bearing design utilizes a bearing system containing cylindrical steel rollers offering engineers an option for high load carrying capacity with extremely smooth and predictable life. Pre-assembled and pre-loaded for immediate installation, mounting can be done with our standard hole patterns with standard fasteners or can be created to your requirements including metrics. Center holes are standard and are a unique feature on SMI precision cross roller slides (for travel 1" and over). Mounting with a center hole will eliminate any bow on the slide and add greater mounting security. Interchangeable with many popular sizes. Custom-made cross roller slides available.

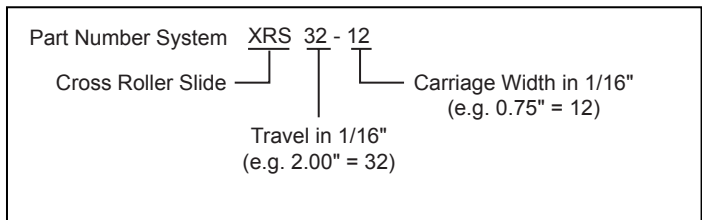


GENERAL SPECIFICATIONS

Straight Line Accuracy: 0.0001"/inch of travel
Finish: Black anodized

Coefficient of Friction: 0.003 typical

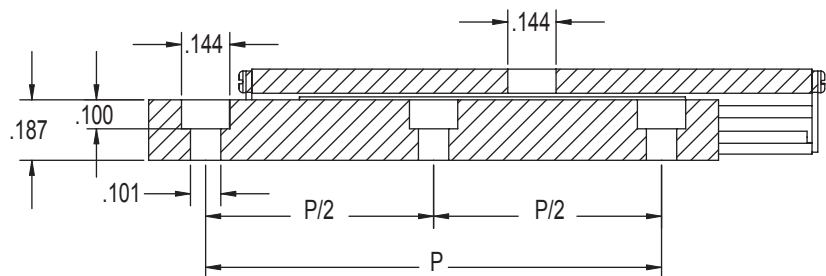
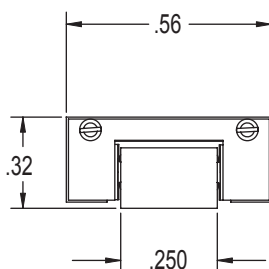
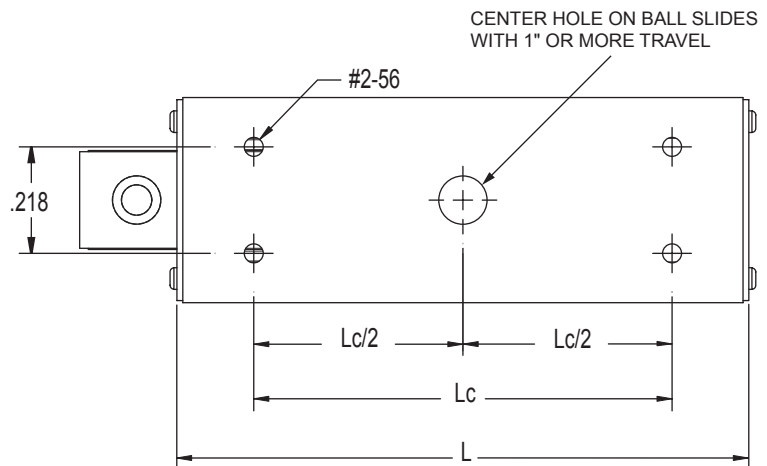
Construction: Aluminum carriage and base, hardened steel rods and rollers, mild steel end caps. Center hole standard for strokes 1" and over.



XRS9 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
XRS8-9	0.50	30	0.625	1.06	0.750
XRS-16-9	1.00	55	1.625	2.06	1.375
XRS32-9	2.00	66	2.625	3.06	2.375
XRS48-9	3.00	71	3.625	4.06	3.375



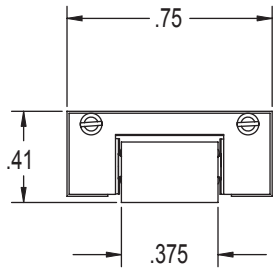
Tolerances: .XX ±0.01
 .XXX ±0.005

MOTION COMPONENTS

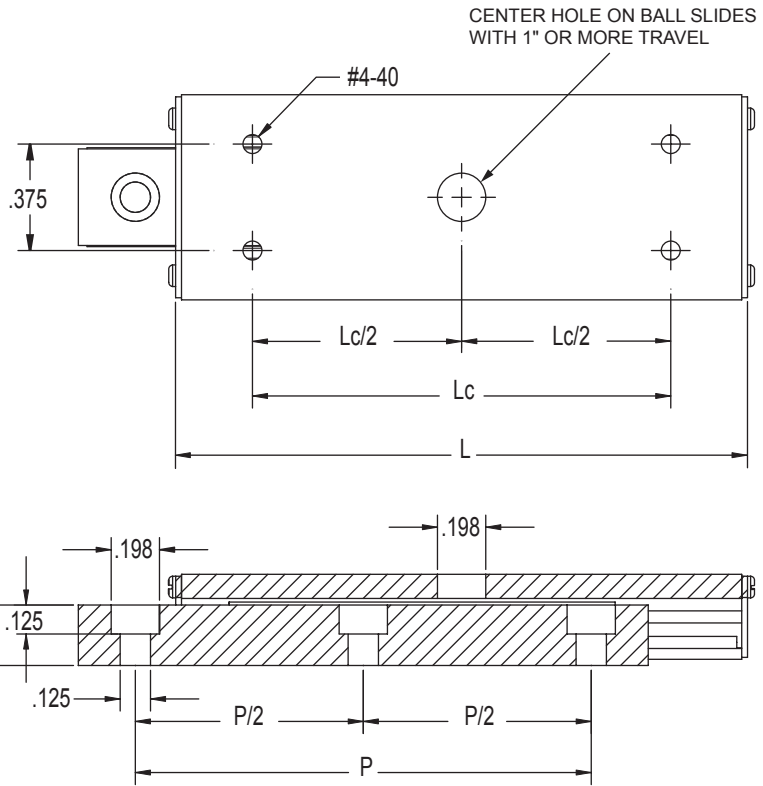
XRS12 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
XRS8-12	0.50	48	0.625	1.06	0.750
XRS16-12	1.00	78	1.625	2.06	1.375
XRS32-12	2.00	94	2.625	3.06	2.375



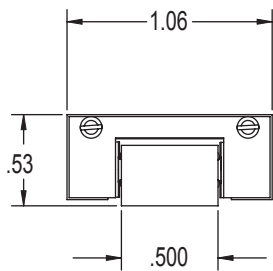
Tolerances: .XX ±0.01
.XXX ±0.005



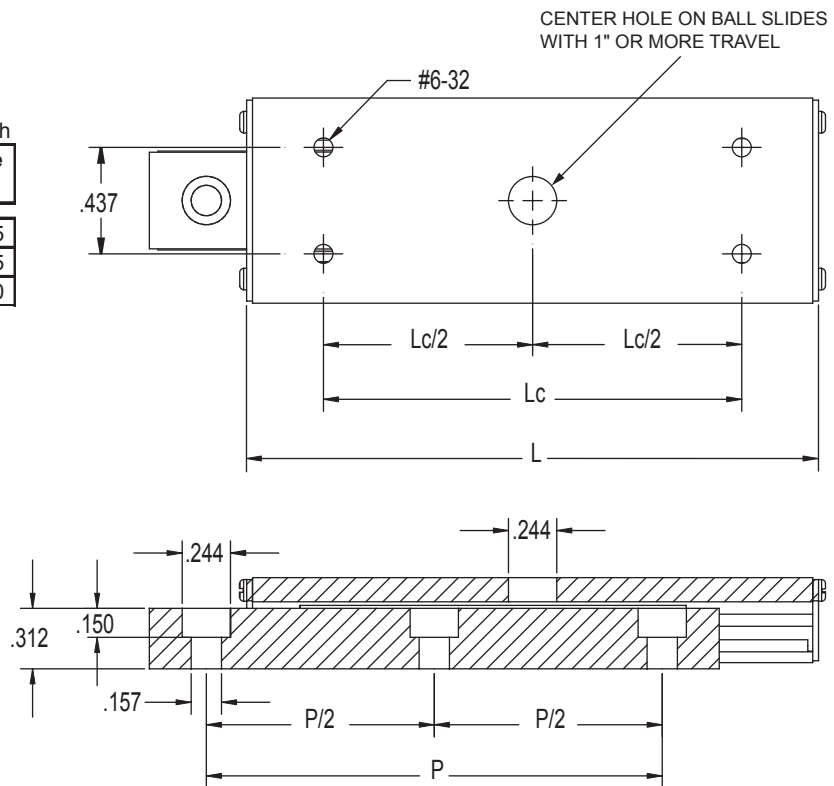
XRS17 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
XRS24-17	1.50	132	2.250	2.56	2.125
XRS32-17	2.00	220	3.250	3.56	3.125
XRS48-17	3.00	264	4.000	4.56	3.250



Tolerances: .XX ±0.01
.XXX ±0.005



MOTION COMPONENTS

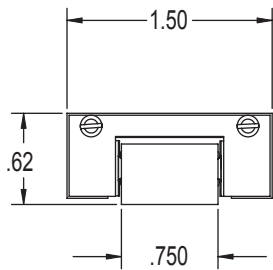
CROSS ROLLER SLIDES



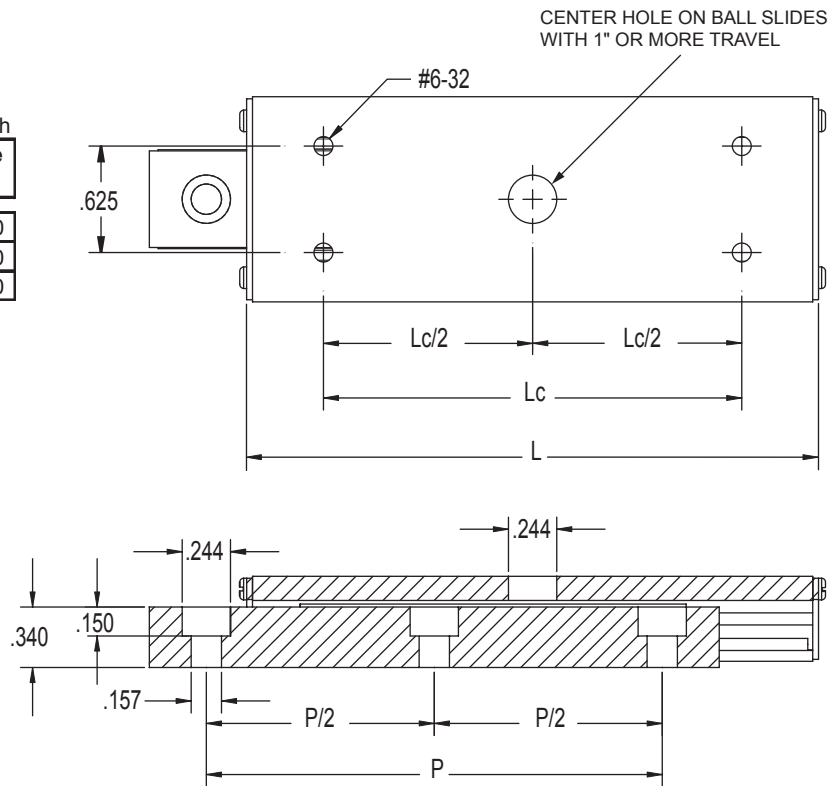
XRS24 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
XRS16-24	1.00	132	1.375	2.00	1.500
XRS32-24	2.00	176	2.375	3.00	2.500
XRS48-24	3.00	176	3.375	4.00	3.500



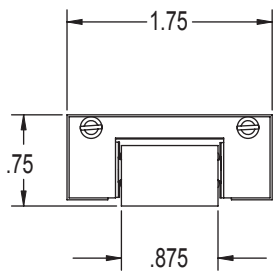
Tolerances: .XX ±0.01
.XXX ±0.005



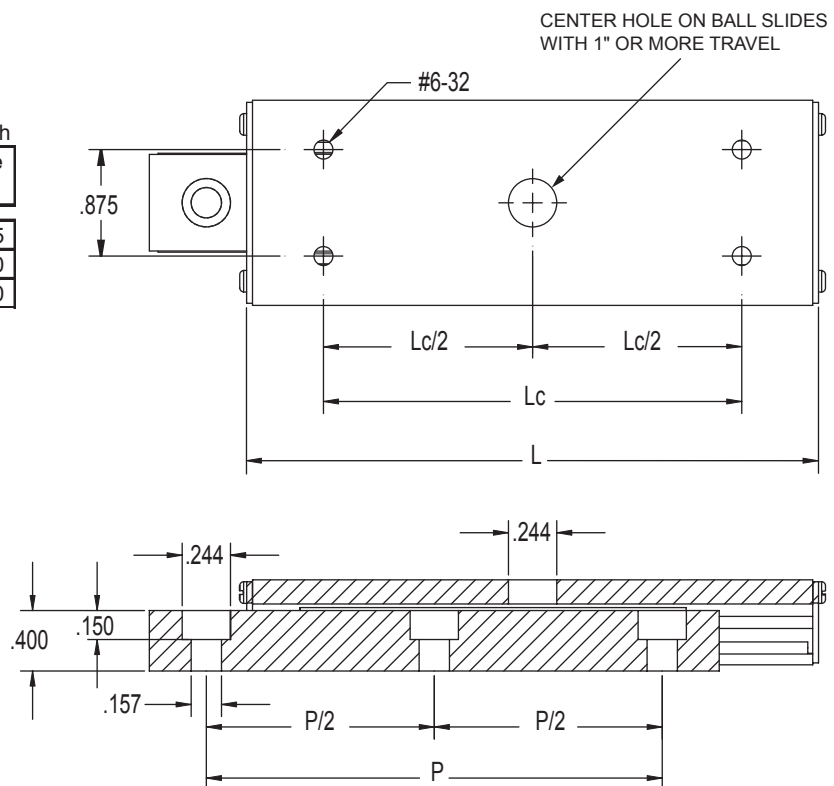
XRS28 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
XRS16-28	1.00	132	1.375	2.00	1.625
XRS32-28	2.00	176	2.625	3.25	2.750
XRS48-28	3.00	176	3.375	4.00	3.500



Tolerances: .XX ±0.01
.XXX ±0.005

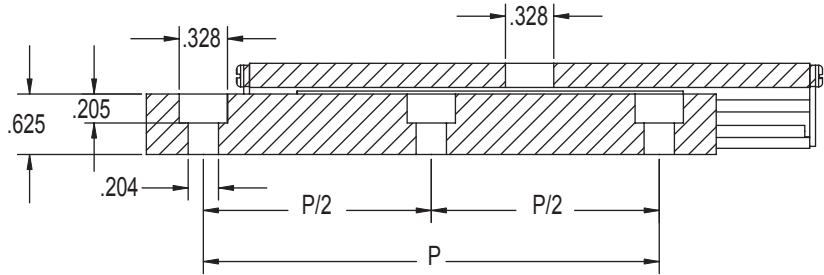
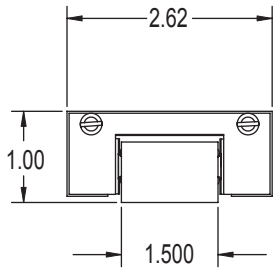
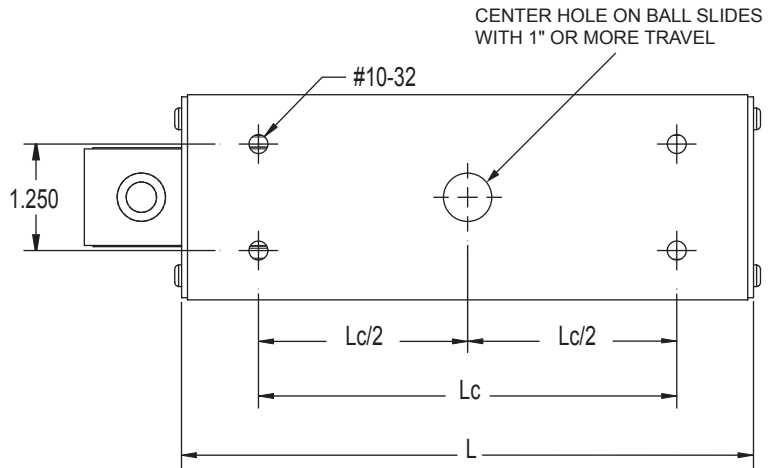


MOTION COMPONENTS

XRS42 SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Lc	Length L	Base P
XRS24-42	1.50	264	1.625	2.62	1.875
XRS32-42	2.00	352	3.000	4.00	3.375
XRS48-42	3.00	440	4.000	5.00	4.375



Tolerances: .XX ±0.01
.XXX ±0.005

BALL SLIDE POSITIONING STAGES



MAC SERIES

SMI produces low cost, high precision ball slide positioning stages for versatile, smooth, accurate travel used in gauging and positioning light to heavy loads. Pre-assembled and pre-loaded for immediate installation, mounting can be done with our standard hole patterns with standard fasteners or can be created to your requirements including metrics. Our process of manufacturing eliminates unnecessary components and stack up tolerances which improves accuracy and reliability, and reduces the overall cost of the stage. Multiple axis assemblies available. Interchangeable with many popular sizes. Custom-made ball slide positioning stages available.



GENERAL SPECIFICATIONS

Straight Line Accuracy:
0.0005" / inch of travel

Positional Repeatability:
0.0001"

Coefficient of Friction:
0.003 typical

Drive:
Micrometer 0.001" graduations, 0.01mm graduations optional.

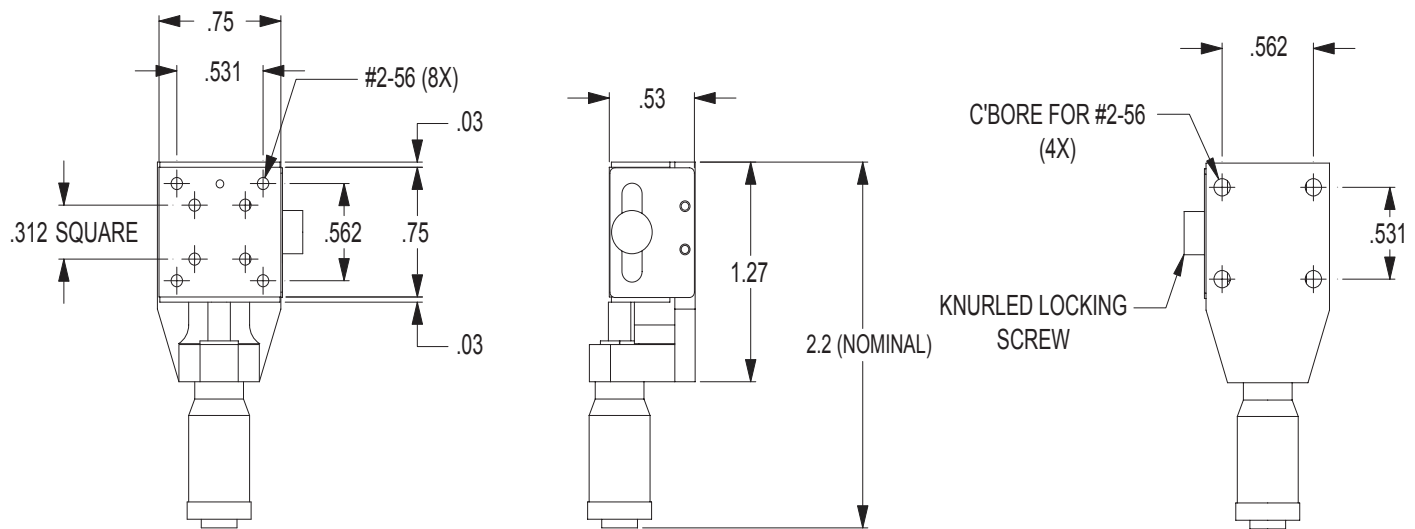
Construction:
Aluminum carriage and base, hardened steel shafts and balls, mild steel end caps.

Finish:
Black anodized

MAC4-12

Stroke: 0.25"
Height: 0.53"
Load Cap: 5 lbf (X, XY)
1.25 lbf (Z)

Part Number System	MAC 4 - 12 XY	Blank = Single Axis
		XY = Double Axis
		XZ = Double Axis
		XYZ = Triple Axis
Ball Slide Positioning Stage		
Travel in 1/16"		Carriage Width in 1/16"
(e.g. 0.25" = 4)		(e.g. 0.75" = 12)



Tolerances: .XX ±0.01
.XXX ±0.005

MOTION COMPONENTS

MAC8-20A20H6

Stroke: 0.50"
Height: 0.38"
Load Cap: 4 lbf (X, XY)
1.25 lbf (Z)

Part Number System: MAC 8 - 20 A20 H6

Ball Slide Positioning Stage: MAC

Travel in 1/16" (e.g. 0.50" = 8): 8

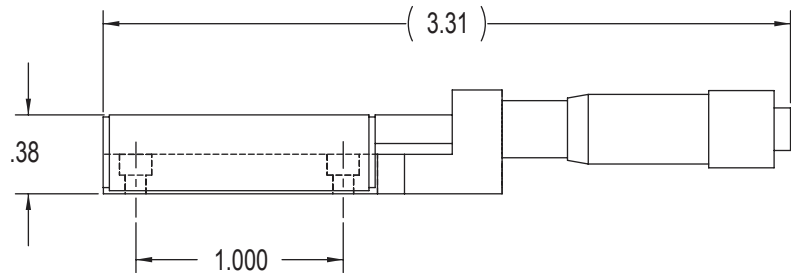
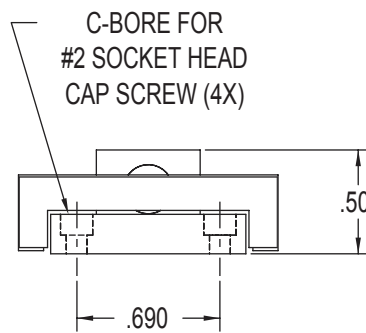
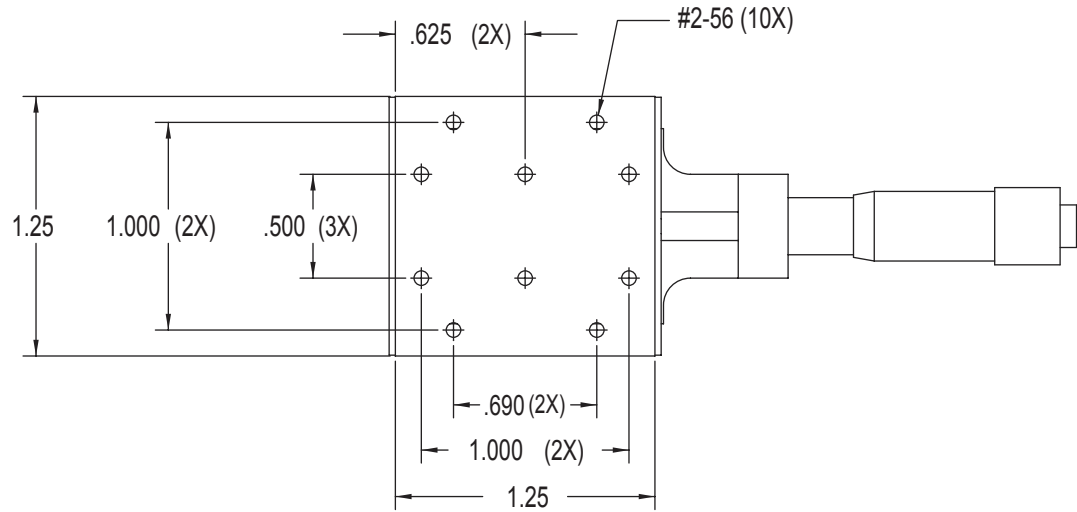
Carriage Width in 1/16" (e.g. 1.25" = 20): 20

Carriage Height in 1/16" (e.g. 0.38" = 6): 6

Carriage Length in 1/16" (e.g. 1.25" = 20): 20

Blank	No through hole
T	With through hole

Blank	Single Axis
XY	Double Axis
XZ	Double Axis
XYZ	Triple Axis



Tolerances: .XX ±0.01
.XXX ±0.005

OPTIONAL SIDE LOCK AVAILABLE. CONTACT SMI.

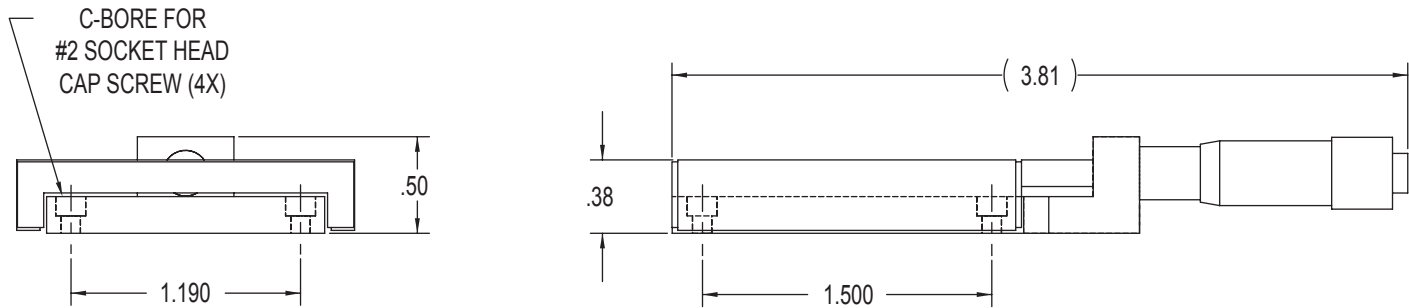
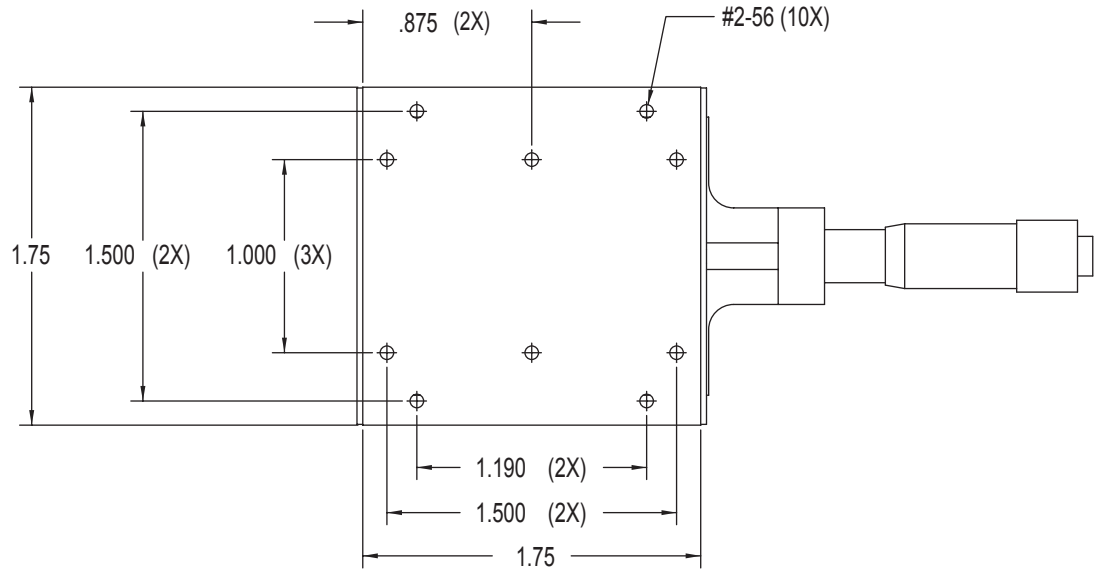
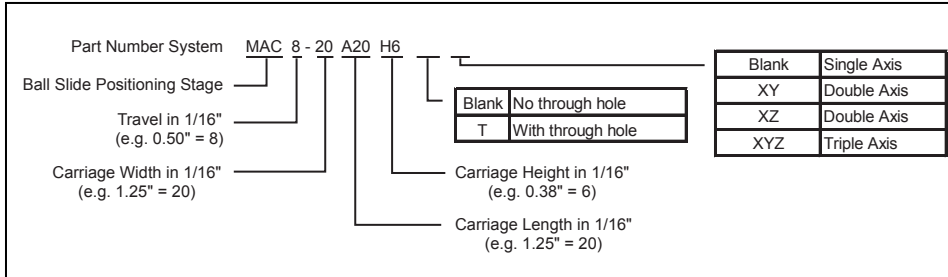
MOTION COMPONENTS

BALL SLIDE POSITIONING STAGES



MAC8-28A28H6

Stroke: 0.50"
Height: 0.38"
Load Cap: 4 lbf (X, XY)
 1.25 lbf (Z)



Tolerances: .XX ±0.01
 .XXX ±0.005

MOTION COMPONENTS

OPTIONAL SIDE LOCK AVAILABLE. CONTACT SMI.

BALL SLIDE POSITIONING STAGES

MAC8-28A28H12

Stroke: 0.50"
Height: 0.75"
Load Cap: 20 lbf (X, XY)
2 lbf (Z)

Part Number System: MAC 8 - 20 A20 H6

Ball Slide Positioning Stage

Travel in 1/16" (e.g. 0.50" = 8)

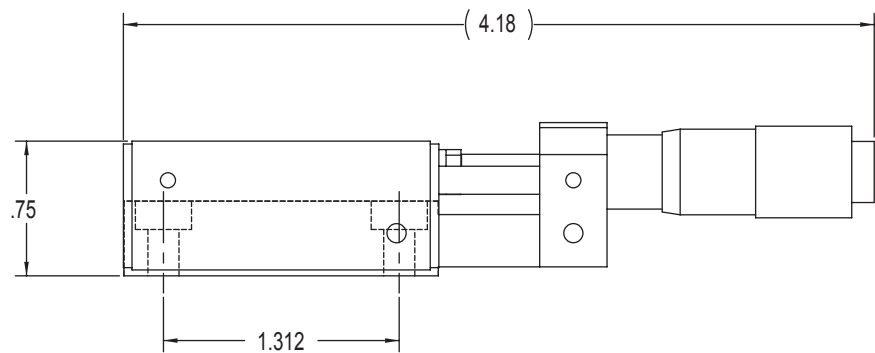
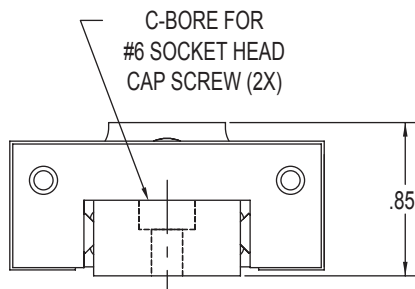
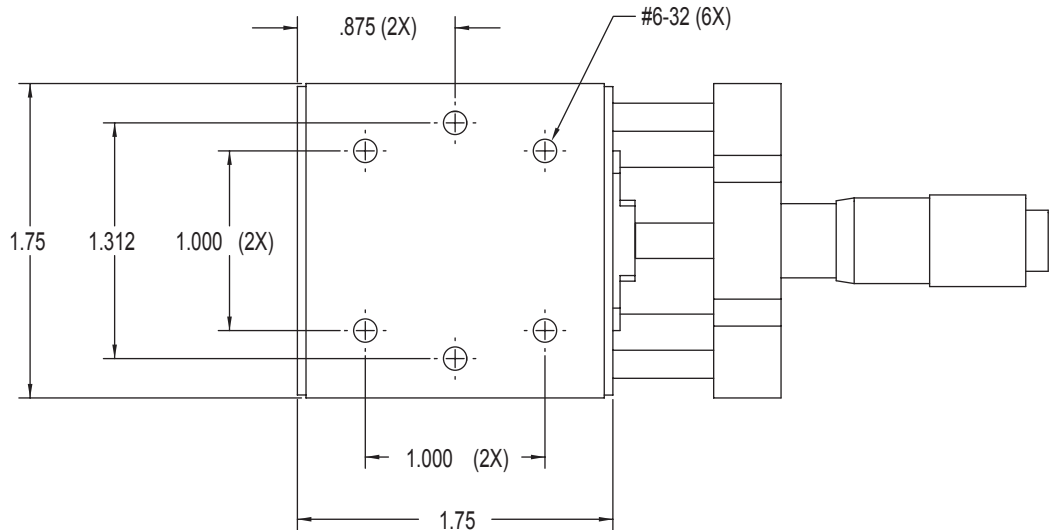
Carriage Width in 1/16" (e.g. 1.25" = 20)

Carriage Height in 1/16" (e.g. 0.38" = 6)

Carriage Length in 1/16" (e.g. 1.25" = 20)

Blank	No through hole	Blank	Single Axis
XY		XY	Double Axis
XZ		XZ	Double Axis
XYZ		XYZ	Triple Axis

T	With through hole
---	-------------------



Tolerances: .XX ±0.01
.XXX ±0.005

OPTIONAL SIDE LOCK AVAILABLE. CONTACT SMI.

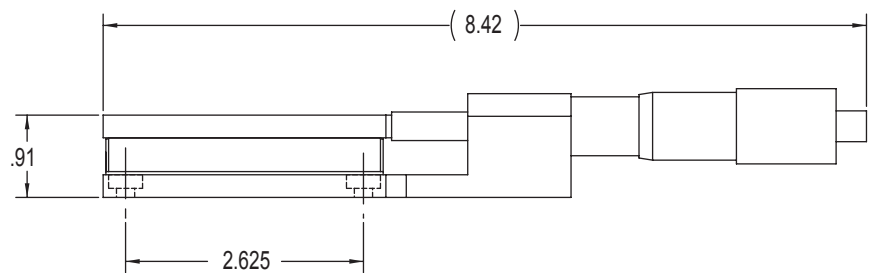
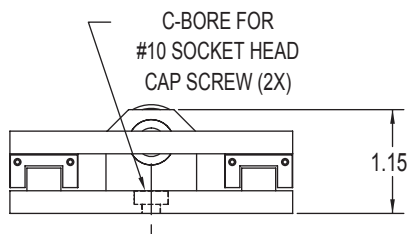
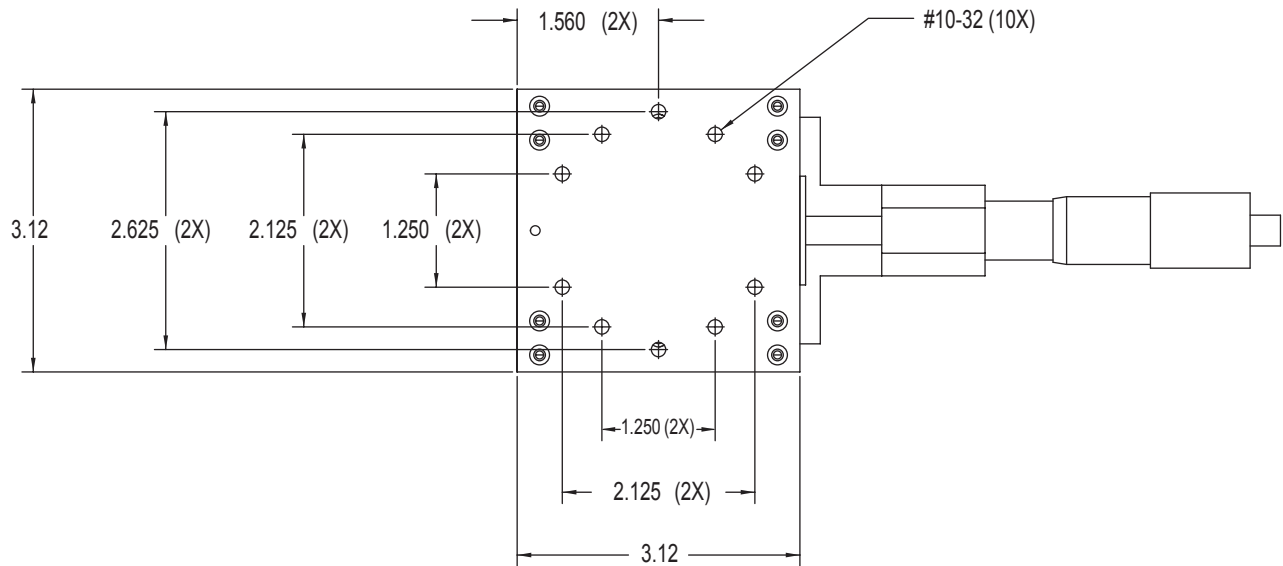
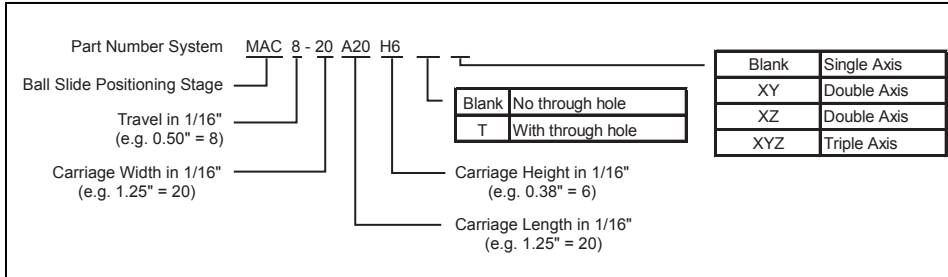
MOTION COMPONENTS

BALL SLIDE POSITIONING STAGES



MAC16-50A50H15

Stroke: 1.00"
Height: 0.91"
Load Cap: 30 lbf (X, XY)
 30 lbf (Z)



Tolerances: .XX ±0.01
 .XXX ±0.005

MOTION COMPONENTS

OPTIONAL SIDE LOCK AVAILABLE. CONTACT SMI.

BALL SLIDE POSITIONING STAGES

MAC32-66A66H15

Stroke: 2.00"
Height: 0.91"
Load Cap: 30 lbf (X, XY)
30 lbf (Z)



Part Number System: MAC 8 - 20 A20 H6

Ball Slide Positioning Stage

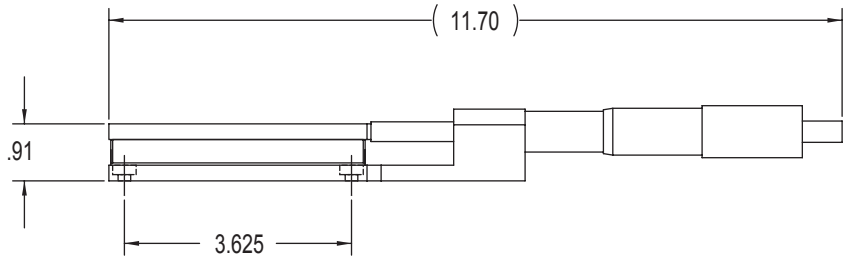
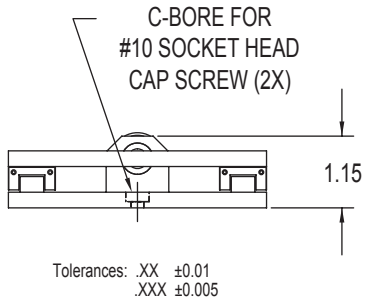
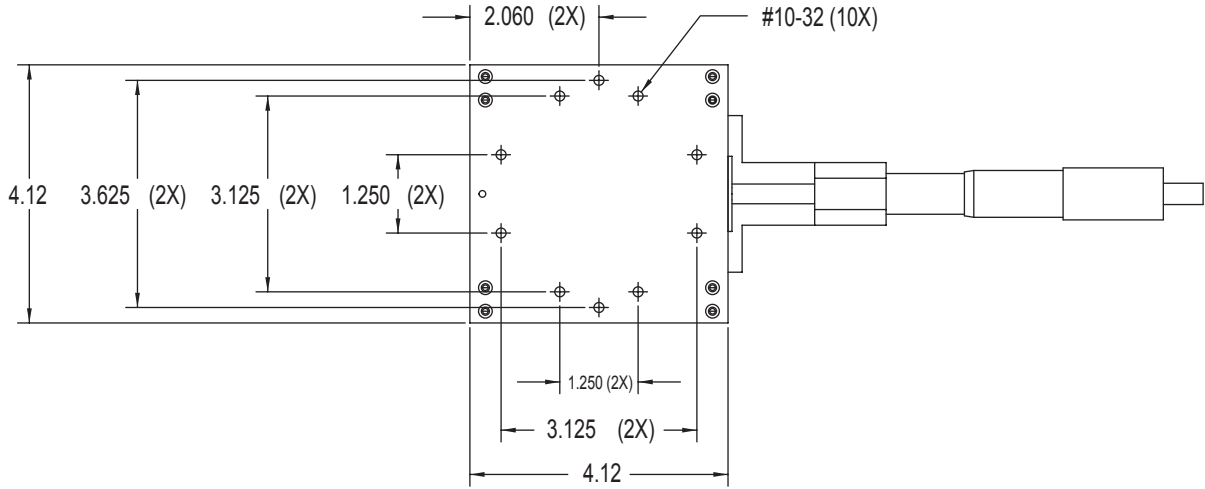
Travel in 1/16" (e.g. 0.50" = 8)

Carriage Width in 1/16" (e.g. 1.25" = 20)

Carriage Height in 1/16" (e.g. 0.38" = 6)

Carriage Length in 1/16" (e.g. 1.25" = 20)

Blank	No through hole	Blank	Single Axis
XY		XZ	Double Axis
T	With through hole	XYZ	Triple Axis



OPTIONAL SIDE LOCK AVAILABLE. CONTACT SMI.

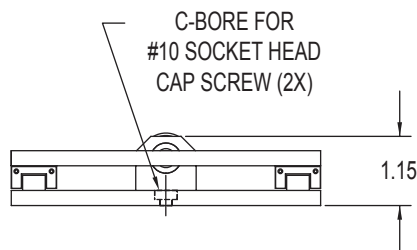
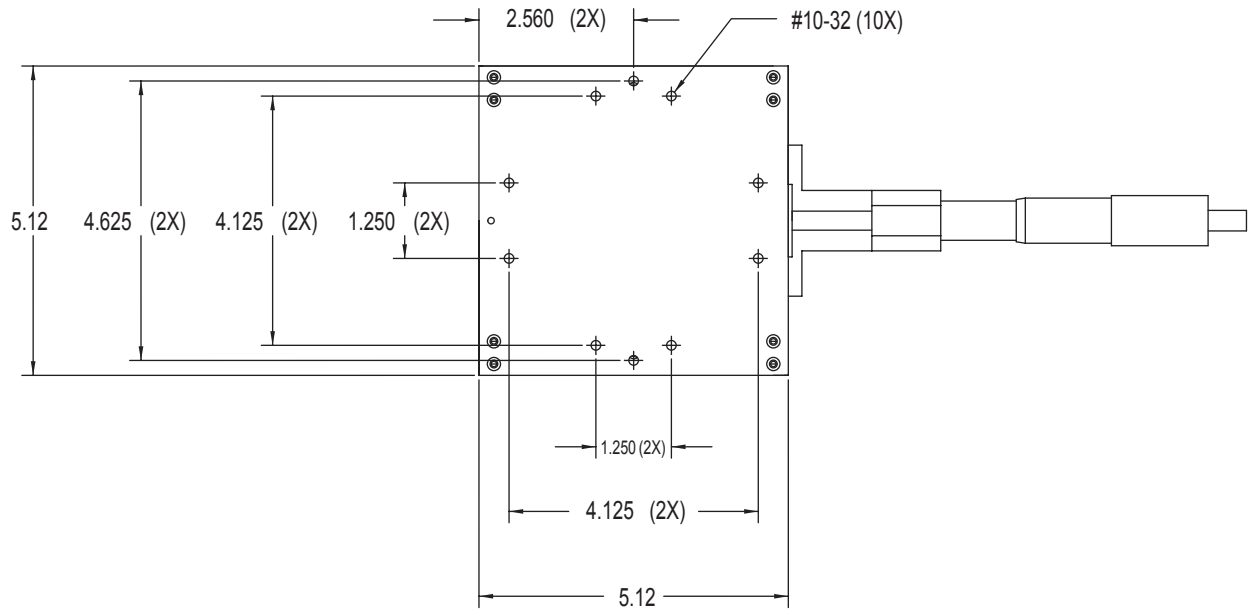
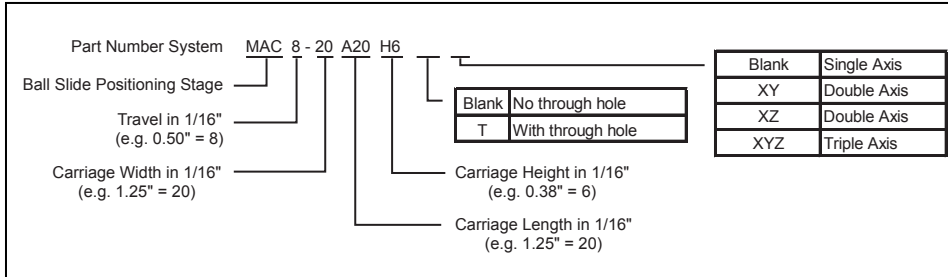
MOTION COMPONENTS

BALL SLIDE POSITIONING STAGES

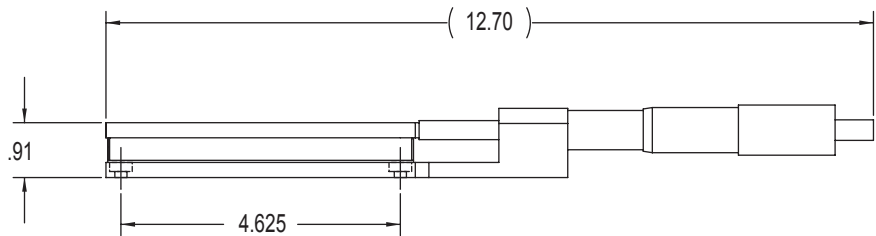


MAC32-82A66H15

Stroke: 1.00"
Height: 0.91"
Load Cap: 30 lbf (X, XY)
 30 lbf (Z)



Tolerances: .XX ±0.01
 .XXX ±0.005

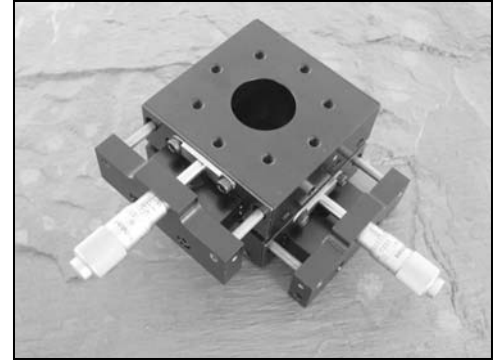


MOTION COMPONENTS

OPTIONAL SIDE LOCK AVAILABLE. CONTACT SMI.

MACR SERIES

SMI heavy duty cross roller stages are made from the same stringent, state-of-the-art manufacturing process as our ball slide positioning stages (MAC series). Ideal for applications that require higher load capacity and accuracy. Spring loaded micrometer drive allows precise repeatable positioning with low friction and zero backlash. Positioning stages can be stacked for multi-axis applications. Interchangeable with many popular sizes including metric. Custom-made cross roller positioning stages available.



MACR SERIES SPECIFICATIONS

Straight Line Accuracy:
0.0001" / inch of travel

Positional Repeatability:
0.0001"

Coefficient of Friction:
0.003 typical

Drive:

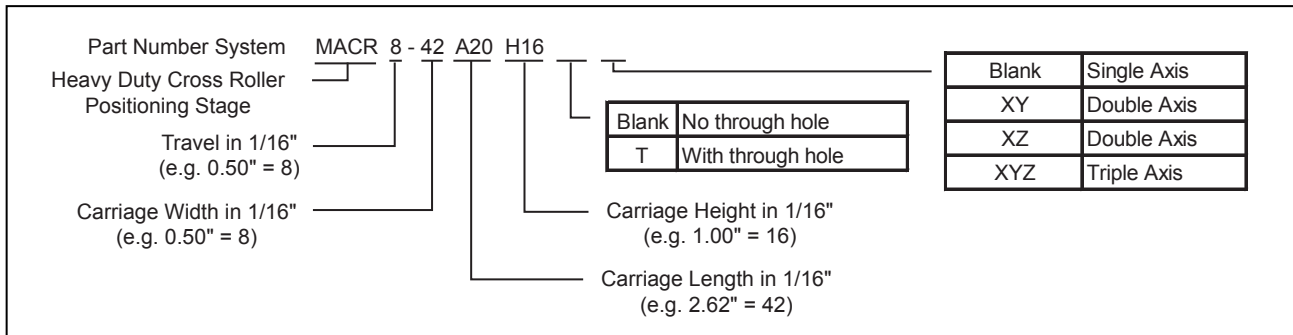
Micrometer 0.001" graduations, 0.01mm graduations optional.

Construction:

Aluminum carriage and base, hardened steel rods and rollers, mild steel end caps.

Finish:

Black anodized



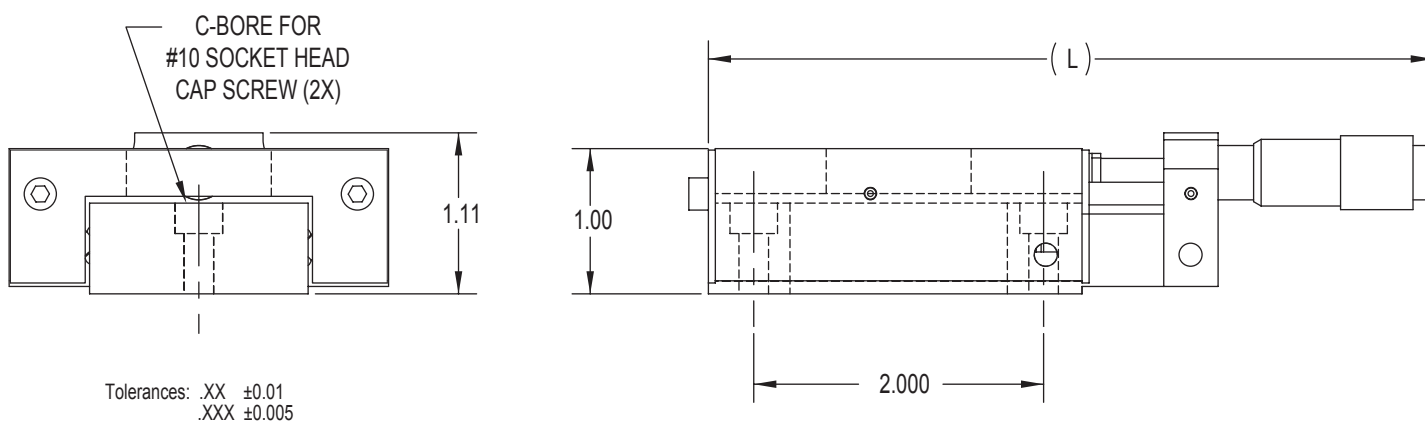
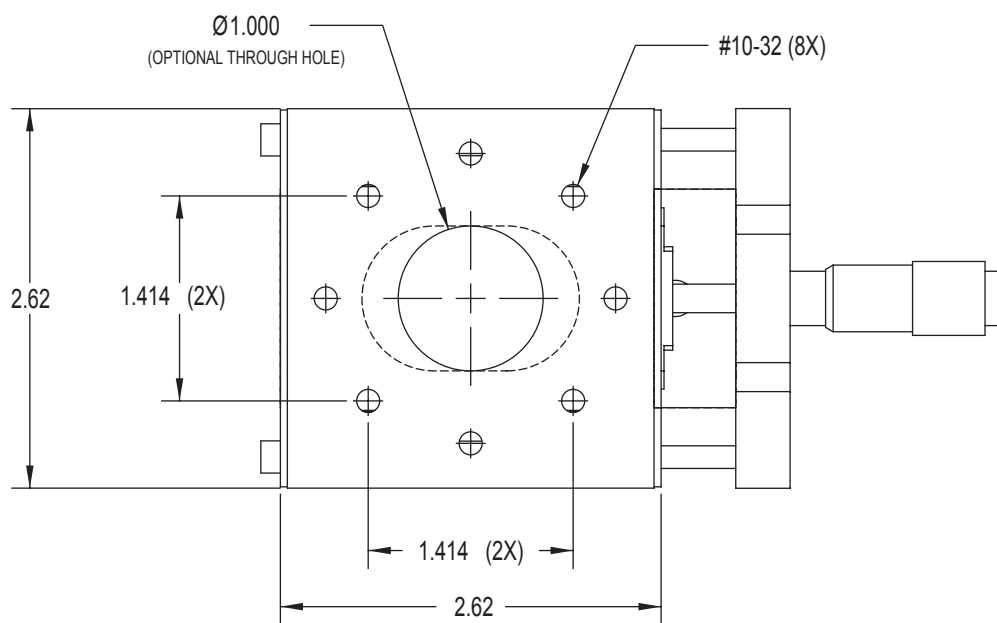
CROSS ROLLER POSITIONING STAGES



MACR SERIES

Unit: inch

Part No.	Travel	Load Cap. (lbf)		L
		X, XY	Z	
MACR8-42A42H16	0.50	120	2.00	5.00
MACR8-42A42H16T	0.50	120	2.00	5.00
MACR16-42A42H16	1.00	120	2.00	7.87



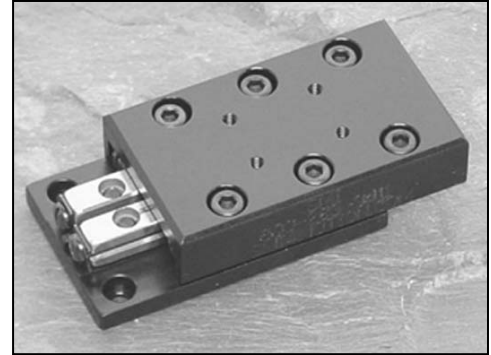
Tolerances: .XX ±0.01
.XXX ±0.005

MOTION COMPONENTS

OPTIONAL SIDE LOCK AVAILABLE. CONTACT SMI.

XRT SERIES

SMI cross roller tables are built with precision ground V grooved ways and rollers for applications requiring higher accuracy, rigidity and load capacity. The mounting surfaces of the table and base are precision finished to ensure high precision linear motion. Low friction non-recirculating mechanism provides stable motion from low to high speeds. Internal stopper protects bearing from over-travel. Factory assembled, pre-loaded and ready to install. Interchangeable with many popular sizes. Custom-made cross roller tables available.



SPECIFICATIONS

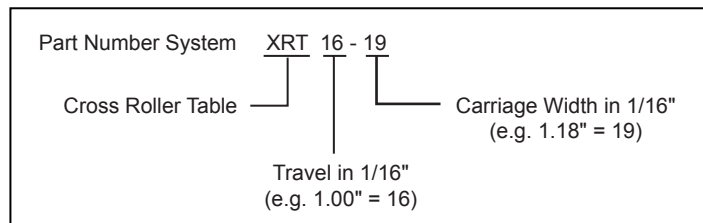
Straight Line Accuracy:
0.0001"/inch of travel

Finish:
Black Anodized

Positional Repeatability:
0.0001"

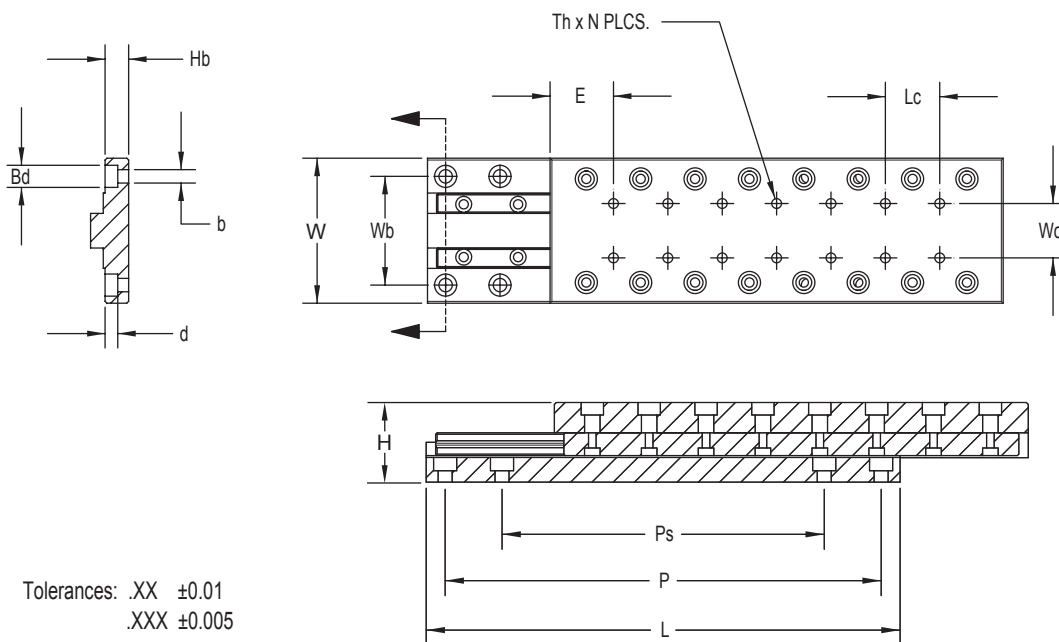
Coefficient of Friction:
0.003 typical

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



Unit: inch

Part No.	Travel	Load Cap. (lbf)	Carriage Attachment Holes				W	H	L	Base			Ps	Bd	b	d
			E	Lc	Wc	Th				Wb	Hb	P				
XRT16-19	1.00	96	0.689	0.591	0.394	#4-40 UNC x 4	1.18	0.590	1.97	0.866	0.160	1.575	-	0.198	0.125	0.130
XRT32-19	2.00	145	0.689	0.591	0.394	#4-40 UNC x 8	1.18	0.590	3.15	0.866	0.160	2.756	1.575	0.198	0.125	0.130
XRT40-19	2.50	162	0.689	0.591	0.394	#4-40 UNC x 10	1.18	0.590	3.74	0.866	0.160	3.346	2.165	0.198	0.125	0.130
XRT48-25	3.00	198	0.689	0.591	0.591	#6-32 UNC x 14	1.58	0.827	4.92	1.181	0.256	4.528	3.346	0.241	0.149	0.150



MOTION COMPONENTS

CROSSOVER TABLES



CROSSOVER TABLES

Unit: inch

BALL SLIDES

SMI Part No.	Del-Tron Part No.	Travel
BS8-6	C-1	0.50
BS16-6	C-2	1.00
BS24-6	C-3	1.50

BS8-9	D-1	0.50
BS16-9	D-2	1.00
BS32-9	D-3	2.00
BS48-9	D-4	3.00
BS64-9	D-5	4.00

BS8-12	E-1	0.50
BS16-12	E-2	1.00
BS32-12	E-3	2.00
BS48-12	E-4	3.00
BS64-12	E-5	4.00
BS80-12	E-6	5.00

BS8-16	M-1	0.50
BS16-16	M-2	1.00
BS24-16	M-2.5	1.50
BS32-16	M-3	2.00
BS48-16	M-4	3.00

BS12-17	N-1	0.75
BS24-17	N-2	1.50
BS29-17	-	1.81
BS32-17	N-3	2.00
BS48-17	N-4	3.00
BS64-17	N-6	4.00

BS16-24	S1-1	1.00
BS32-24	S1-2	2.00
BS48-24	S1-3	3.00
BS56-24	S1-3.5	3.50
BS64-24	S1-4	4.00
BSM64-24 (metric)	SA1-4	4.00

BS16-28	S2-1	1.00
BS24-28	S2-1.5	1.50
BS32-28	S2-2	2.00
BS48-28	S2-3	3.00
BS64-28	S2-4	4.00

BS16-42	S3-1	1.00
BS24-42	S3-1.5	1.50
BS32-42	S3-2	2.00
BS48-42	S3-3	3.00
BS64-42	S3-4	4.00

PRECISION BALL SLIDES

SMI Part No.	Del-Tron Part No.	Travel
BS64-42PS	S3-4SS	4.00

PRECISION CROSS ROLLER SLIDES

SMI Part No.	Del-Tron Part No.	Travel
XRS8-9	RD-1	0.50
XRS16-9	RD-2	1.00
XRS32-9	RD-3	2.00
XRS48-9	RD-4	3.00

XRS8-12	RE-1	0.50
XRS16-12	RE-2	1.00
XRS32-12	RE-3	2.00

XRS24-17	RN-2	1.50
XRS32-17	RN-3	2.00
XRS48-17	RN-4	3.00

XRS16-24	RS1-1	1.00
XRS32-24	RS1-2	2.00
XRS48-24	RS1-3	3.00

XRS16-28	RS2-1	1.00
XRS32-28	RS2-2	2.00
XRS48-28	RS2-3	3.00

XRS24-42	RS3-1.5	1.50
XRS32-42	RS3-2	2.00
XRS48-42	RS3-3	3.00

BALL SLIDE POSITIONING STAGES

SMI Part No.	Del-Tron Part No.	Travel
MAC4-12	99-X	0.25
MAC8-20A20H6	101-X	0.50
MAC8-28A28H6	201-X	0.50
MAC8-28A28H12	450-X	0.50
MAC16-50A50H15	1201-X	1.00
MAC32-66A66H15	2202-X	2.00
MAC32-82A66H15	3202-X	2.00

HEAVY DUTY CROSS ROLLER POSITIONING STAGE

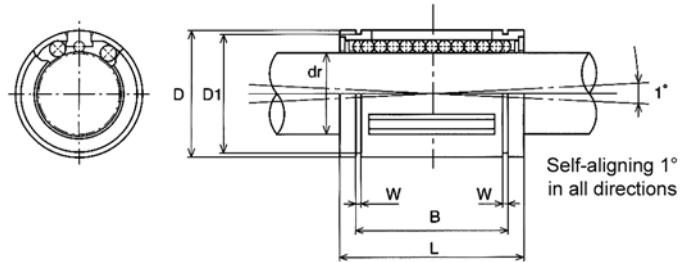
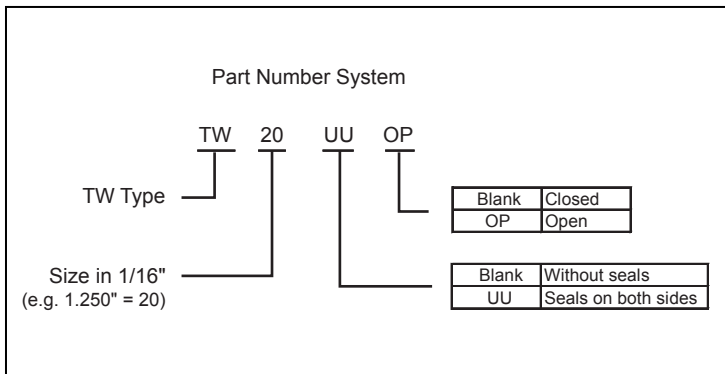
SMI Part No.	Del-Tron Part No.	Travel
MACR8-42A42H16	R750-X	0.50
MACR8-42A42H16T	R753-X	0.50
MACR16-42A42H16	R751-X	1.00

CROSS ROLLER TABLES

SMI Part No.	Del-Tron Part No.	Travel
XRT16-19	NBT-1050A	1.00
XRT32-19	NBT-1080A	2.00
XRT40-19	NBT-1095A	2.50
XRT48-25	NBT-2125A	3.00

TW SERIES CLOSED SELF-ALIGNING TYPE

This closed type self-aligning bushing is considered a high performance bushing with three times the load capacity, and the capability of providing up to 27 times the normal life of a conventional ball bushing. Key features for this product include 1. Increased load capacity, 2. Longer travel life, 3. Self-aligning capability, 4. Floating integral wiper seal, 5. Clearance adjustable, and 6. Cost effective.

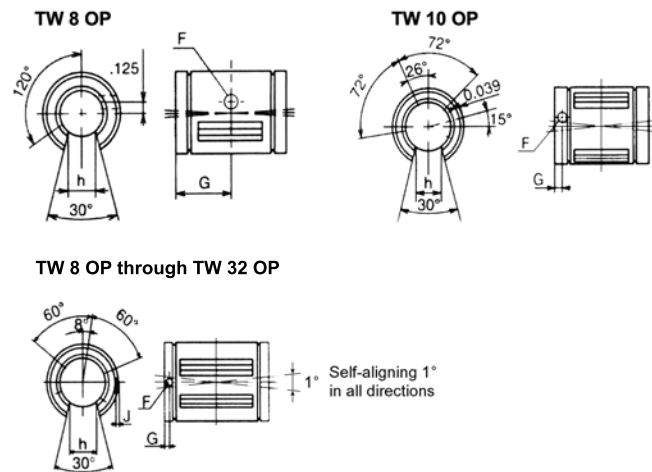
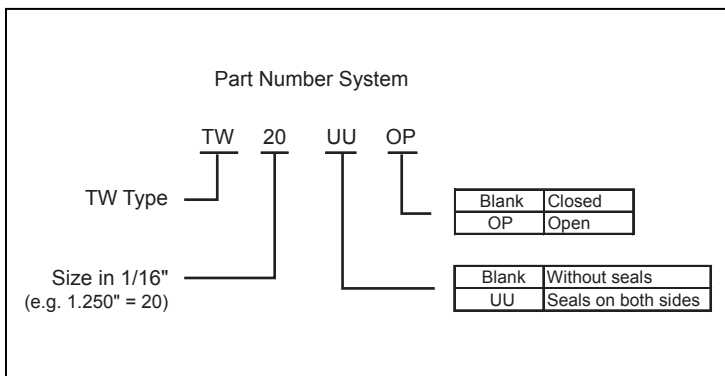


Unit: inch

Part No.	Size	Load Ratings		Working Diameter		Housing Bore		Length		Retaining Rings			
		Dynamic C (lbs.)	Static Co (lbs.)	dr	Tol	Nom. O.D. D	Tol. (H7)	L	Tol	Distance B	Distance Tol	Width W	Dia. D1
TW4 TW4UU	1/4	60	80	0.250	0.0000 -0.0005	0.5000	+ .0007 0	0.750	0.0000 -0.0150	0.515	0.0000 -0.0150	0.039	0.4687
TW6 TW6UU	3/8	95	120	0.375	0.0000 -0.0005	0.6250	+ .0007 0	0.875	0.0000 -0.0150	0.703	0.0000 -0.0150	0.039	0.5880
TW8 TW8UU	1/2	230	290	0.500	0.0000 -0.0005	0.8750	+ .0008 0	1.250	0.0000 -0.0200	1.032	0.0000 -0.0200	0.0459	0.8209
TW10 TW10UU	5/8	400	500	0.625	0.0000 -0.0005	1.1250	+ .0008 0	1.500	0.0000 -0.0200	1.112	0.0000 -0.0200	0.0559	1.0590
TW12 TW12UU	3/4	470	590	0.750	0.0000 -0.0005	1.2500	+ .0010 0	1.625	0.0000 -0.0200	1.272	0.0000 -0.0200	0.0559	1.1760
TW16 TW16UU	1	850	1060	1.000	0.0000 -0.0005	1.5625	+ .0010 0	2.250	0.0000 -0.0200	1.886	0.0000 -0.0200	0.0679	1.4687
TW20 TW20UU	1-1/4	1230	1530	1.250	0.0000 -0.0006	2.0000	+ .0012 0	2.625	0.0000 -0.0250	2.011	0.0000 -0.0250	0.0679	1.8859
TW24 TW24UU	1-1/2	1480	1850	1.500	0.0000 -0.0006	2.3570	+ .0012 0	3.000	0.0000 -0.0300	2.422	0.0000 -0.0300	0.0859	2.2389
TW32 TW32UU	2	2430	3040	2.000	0.0000 -0.0008	3.0000	+ .0012 0	4.000	0.0000 -0.0400	3.206	0.0000 -0.0400	0.1029	2.8379

TW OP SERIES OPEN SELF-ALIGNING TYPE

This open type self-aligning bushing is considered a high performance bushing with three times the load capacity, and the capability of providing up to 27 times the normal life of a conventional ball bushing. Key features for this product include 1. Increased load capacity, 2. Longer travel life, 3. Self-aligning capability, 4. Floating integral wiper seal, 5. Clearance adjustable, and 6. Cost effective.



Unit: inch

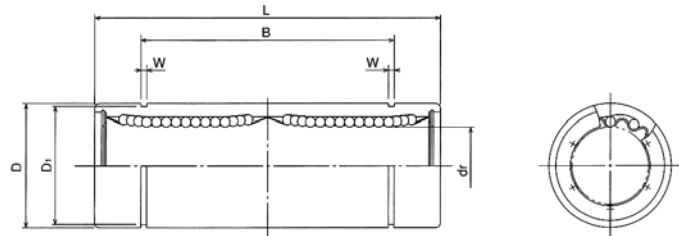
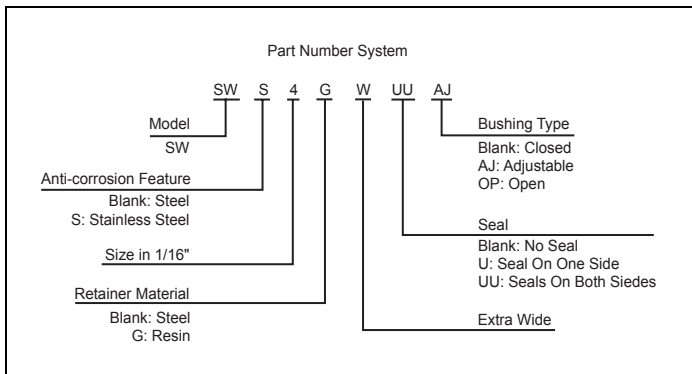
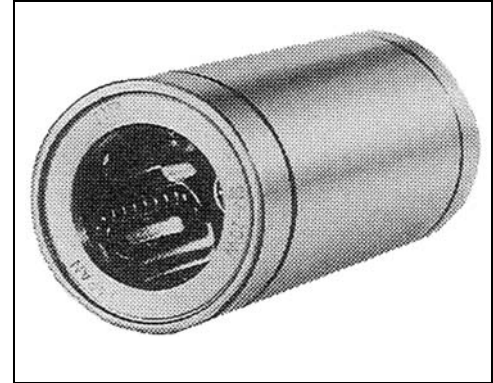
Part No.	Size	Load Ratings		Working Dia.		Housing Bore		Length		Retaining Rings				Slot Width h	Retention Hole		
		Dynamic C (lbs.)	Static Co (lbs.)	dr	Tol	Nom. O.D. D	Tol. (H7)	L	Tol	Distance B	Distance Tol	Width W	Dia. D1		Dia. F	Loc. G	Depth J
TW8-OP TW8UU-OP	1/2	230	290	0.5000	0.0000 -0.0005	0.8750	+ .0008 0	1.250	0.000 -0.020	1.032	0.000 -0.020	0.0459	0.8209	0.3130	0.136	0.6250	Thru Hole
TW10-OP TW10UU-OP	5/8	400	500	0.6250	0.0000 -0.0005	1.1250	+ .0008 0	1.500	0.000 -0.020	1.112	0.000 -0.020	0.0559	1.0590	0.3750	0.105	0.1250	Thru Hole 0.0390
TW12-OP TW12UU-OP	3/4	470	590	0.7500	0.0000 -0.0005	1.2500	+ .0010 0	1.625	0.000 -0.020	1.272	0.000 -0.020	0.0559	1.1760	0.4380	0.136	0.1250	Thru Hole 0.0590
TW16-OP TW16UU-OP	1	850	1060	1.0000	0.0000 -0.0005	1.5625	+ .0010 0	2.250	0.000 -0.020	1.886	0.000 -0.020	0.0679	1.4687	0.5630	0.136	0.1250	Thru Hole 0.0470
TW20-OP TW20UU-OP	1-1/4	1230	1530	1.2500	0.0000 -0.0006	2.0000	+ .0012 0	2.625	0.000 -0.025	2.011	0.000 -0.025	0.0679	1.8859	0.6250	0.201	0.1875	Thru Hole 0.0900
TW24-OP TW24UU-OP	1-1/2	1480	1850	1.5000	0.0000 -0.0006	2.3750	+ .0012 0	3.000	0.000 -0.030	2.422	0.000 -0.030	0.0859	2.2389	0.7500	0.201	0.1875	Thru Hole 0.0900
TW32-OP TW32UU-OP	2	2430	3040	2.0000	0.0000 -0.0008	3.0000	+ .0012 0	4.000	0.000 -0.040	3.206	0.000 -0.040	0.1029	2.8379	1.0000	0.265	0.3125	Thru Hole

BUSHINGS



SWW EXTRA WIDE SERIES NON SELF-ALIGNING TYPE

These extra wide ball bushings are produced from a solid steel outer cylinder. The ball bushings incorporate either a patented all steel hardened seamless ball retainer or an industrial strength resin retainer for quiet operation.



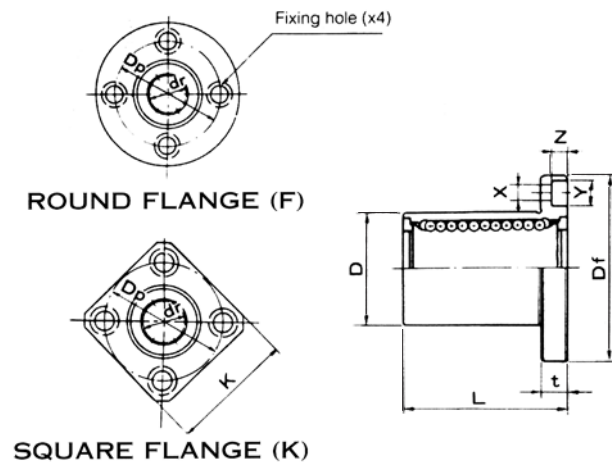
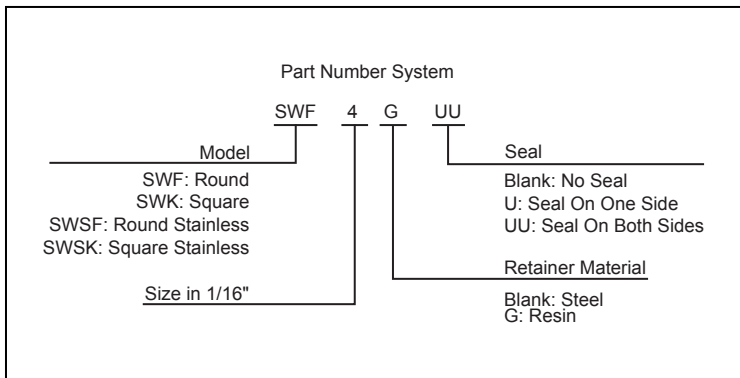
Unit: inch

Part No.	Size	Load Rating		Dimensions and Tolerances									
		Dynamic C (lbs.)	Static Co (lbs.)	dr	Tol	D	Tol	L	Tol	B	Tol	W	D1
SW4..W	1/4	73	119	0.2500	0 -0.00040	0.5000	0 -0.00050	1.3750	0 -0.012	1.0220	0 -0.012	0.0390	0.4687
SW6..W	3/8	79	142	0.3750	0 -0.00040	0.6250	0 -0.00065	1.5938	0 -0.012	1.2716	0 -0.012	0.0390	0.5880
SW8..W	1/2	183	353	0.5000	0 -0.00040	0.8750	0 -0.00065	2.3750	0 -0.012	1.9250	0 -0.012	0.0459	0.8209
SW10..W	5/8	277	529	0.6250	0 -0.00040	1.1250	0 -0.00065	2.8125	0 -0.012	2.2079	0 -0.012	0.0559	1.0590
SW12..W	3/4	308	617	0.7500	0 -0.00050	1.2500	0 -0.00075	3.0937	0 -0.012	2.3314	0 -0.012	0.0559	1.1760
SW16..W	1	353	707	1.0000	0 -0.00050	1.5625	0 -0.00075	4.2813	0 -0.016	3.5094	0 -0.016	0.0679	1.4687
SW20..W	1-1/4	563	1235	1.2500	0 -0.00006	2.0000	0 -0.00090	5.0000	0 -0.016	4.0094	0 -0.016	0.0679	1.8859
SW24..W	1-1/2	772	1809	1.5000	0 -0.00006	2.3750	0 -0.00090	5.6875	0 -0.016	4.8236	0 -0.016	0.0859	2.2389
SW32..W	2	1368	3578	2.0000	0 -0.00006	3.0000	0 -0.00100	7.7500	0 -0.016	6.3834	0 -0.016	0.1029	2.8379

MOTION COMPONENTS

SWF & SWK SERIES ROUND & SQUARE FLANGED TYPES

This design enables various mounting methods other than conventional pillow blocks and press fit ball bushings. They feature a compact design with excellent rigidity and high accuracy. Standard and anti-corrosion options available. Metallic retainers (for use in harsh environments and low acoustic), and low cost resin retainers also available. These bushings are fully compatible with a variety of shaft types. The raceway surface is precision ground providing low friction when compared to other linear motion mechanisms.

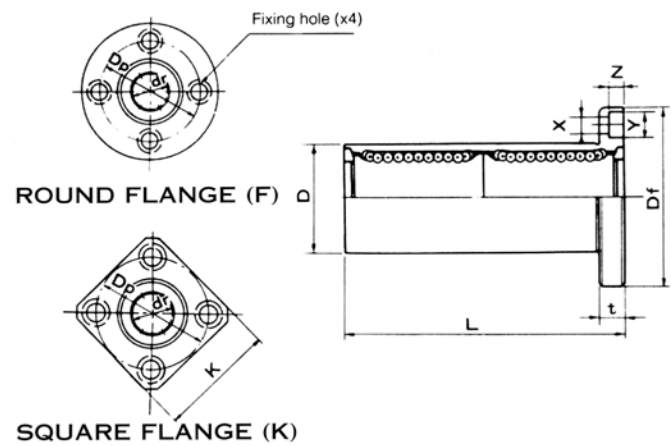
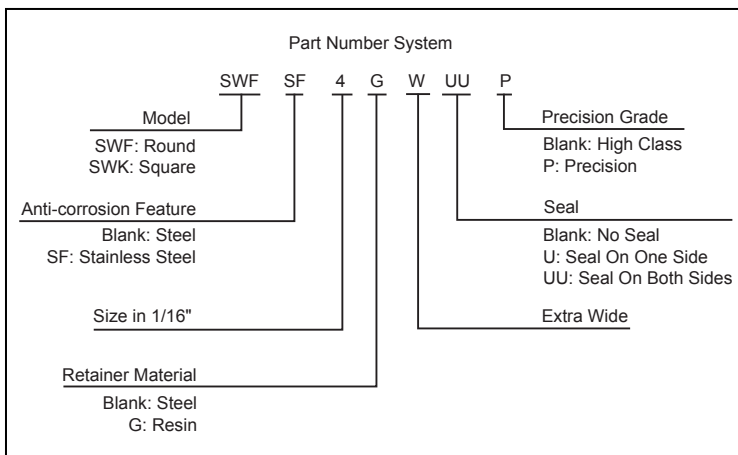
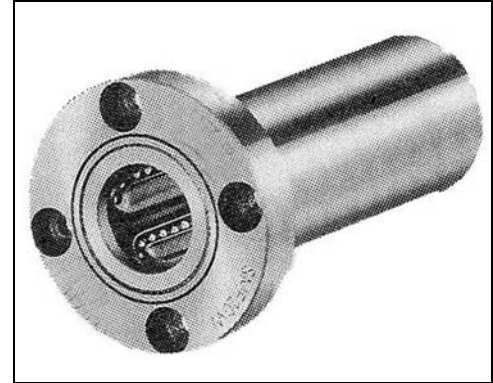


Unit: inch

Part No.		Size	Load Ratings		Dimensions and Tolerances					Flange						
Round (F)	Square (K)		Dynamic C (lbs.)	Static Co (lbs.)	dr	dr Tol	D	D Tol	L ± .012	Df	K	t	Dp	X	Y	Z
SWF4	SWK4	1/4	46	60	0.2500	0 -0.00040	0.5000	0 -0.00050	0.7500	1.2500	1.0000	0.2190	0.8750	0.1560	0.2500	0.1410
SWF6	SWK6	3/8	51	71	0.3750	0 -0.00040	0.6250	0 -0.00065	0.8750	1.5000	1.2500	0.2500	1.0620	0.1875	0.2970	0.1720
SWF8	SWK8	1/2	115	176	0.5000	0 -0.00040	0.8750	0 -0.00065	1.2500	1.7500	1.3750	0.2500	1.3120	0.1875	0.2970	0.1720
SWF10	SWK10	5/8	174	266	0.6250	0 -0.00040	1.1250	0 -0.00065	1.5000	2.0000	1.5000	0.2500	1.5620	0.1875	0.2970	0.1720
SWF12	SWK12	3/4	194	309	0.7500	0 -0.00040	1.2500	0 -0.00075	1.6250	2.1875	1.6875	0.3125	1.7180	0.2187	0.3440	0.2030
SWF16	SWK16	1	221	353	1.0000	0 -0.00040	1.5625	0 -0.00075	2.2500	2.5000	2.0000	0.3125	2.0310	0.2187	0.3440	0.2030
SWF20	SWK20	1-1/4	353	617	1.2500	0 -0.00050	2.0000	0 -0.00090	2.6250	3.1250	2.5000	0.3750	2.5625	0.2812	0.4060	0.2656
SWF24	SWK24	1-1/2	491	905	1.5000	0 -0.00050	2.3750	0 -0.00750	3.0000	3.7500	3.0000	0.5000	3.0625	0.3440	0.5000	0.3280
SWF32	SWK32	2	860	1787	2.0000	0 -0.00050	3.0000	0 -0.00100	4.0000	4.3750	3.5000	0.5000	3.6875	0.3440	0.5000	0.3280

SWFW & SWKW EXTRA WIDE SERIES ROUND & SQUARE FLANGED TYPES

This extra wide design has a greater load capacity than the standard SWF & SWK types and enable various mounting methods other than conventional pillow blocks and press fit ball bushings. They feature a compact design with excellent rigidity and high accuracy. Standard and anti-corrosion options available. Metallic retainers (for use in harsh environments and low acoustic), and low cost resin retainers also available. These bushings are fully compatible with a variety of shaft types. The raceway surface is precision ground providing low friction when compared to other linear motion mechanisms.



Unit: inch

Part No.		Size	Load Ratings		Dimensions and Tolerances					Flange						
Round (F)	Square (K)		Dynamic C (lbs.)	Static Co (lbs.)	dr	dr Tol	D	D Tol	L ±.012	Df	K	t	Dp	X	Y	Z
SWF4W	SWK4W	1/4	73	119	0.2500	0 -0.00040	0.5000	0 -0.00050	1.3750	1.2500	1.0000	0.2188	0.8750	0.1563	0.2500	0.1406
SWF6W	SWK6W	3/8	79	142	0.3750	0 -0.00040	0.6250	0 -0.00065	1.5938	1.5000	1.2500	0.2500	1.0620	0.1875	0.2969	0.1719
SWF8W	SWK8W	1/2	183	353	0.5000	0 -0.00040	0.8750	0 -0.00065	2.3750	1.7500	1.3750	0.2500	1.3125	0.1875	0.2969	0.1719
SWF10W	SWK10W	5/8	277	529	0.6250	0 -0.00040	1.1250	0 -0.00065	2.8125	2.0000	1.5000	0.2500	1.5625	0.1875	0.2969	0.1719
SWF12W	SWK12W	3/4	308	617	0.7500	0 -0.00050	1.2500	0 -0.00075	3.0937	2.1875	1.6875	0.3125	1.7188	0.2188	0.3438	0.2031
SWF16W	SWK16W	1	353	707	1.0000	0 -0.00050	1.5625	0 -0.00075	4.2813	2.5000	2.0000	0.3125	2.0313	0.2188	0.3438	0.2031
SWF20W	SWK20W	1-1/4	563	1235	1.2500	0 -0.00060	2.0000	0 -0.00090	5.0000	3.1250	2.5000	0.3750	2.5625	0.2813	0.4063	0.2656
SWF24W	SWK24W	1-1/2	772	1809	1.5000	0 -0.00060	2.3750	0 -0.00090	5.6875	3.7500	3.0000	0.5000	3.0625	0.3437	0.5000	0.3281
SWF32W	SWK32W	2	1368	3578	2.0000	0 -0.00060	3.0000	0 -0.00100	7.7500	4.3750	3.5000	0.5000	3.6875	0.3437	0.5000	0.3281

INTRODUCTION

SMI pillow blocks include a clear anodized corrosion resistant aluminum block and either one or two self-aligning linear motion bushings. Closed and adjustable clearance styles incorporate machined snap ring grooves in combination with standard retaining rings for bushing retention. The open style incorporates bottom plates and mounting screws to keep the bushing in its proper position. All styles are provided with standard machined reference edges for proper alignment and installation.

Single Pillow Blocks

- Conventional Type
- Self-Aligning Capability
- Aluminum Alloy Construction

Double Wide Pillow Blocks

- Compact Tandem Design
- Oiling Feature Available
- Double Capacity than Single Type

Standard Series

Simple installation



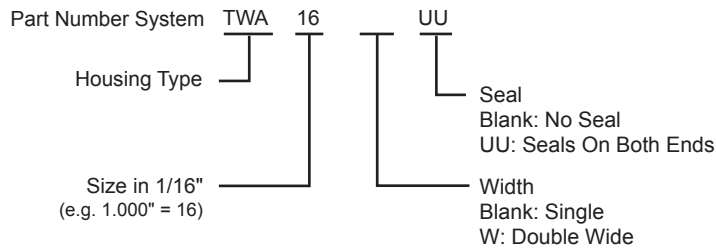
Adjustable Series

Adjustable in clearance



Open Series

Effective for long-stroke applications



Size Table

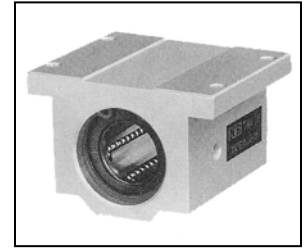
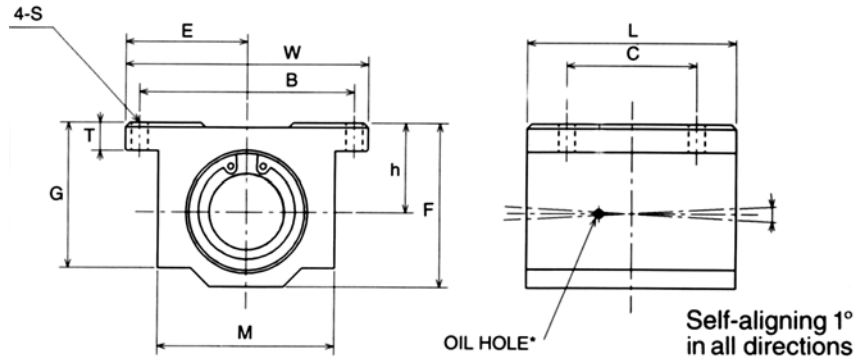
Inscribed Circle Dia.	4	6	8	10	12	16	20	24	32
Corresponding Inch Dia.	0.250	0.375	0.500	0.625	0.750	1.000	1.250	1.500	2.000

PILLOW BLOCKS



TWA & TWA-W SERIES STANDARD SINGLE & DOUBLE WIDE

TWA

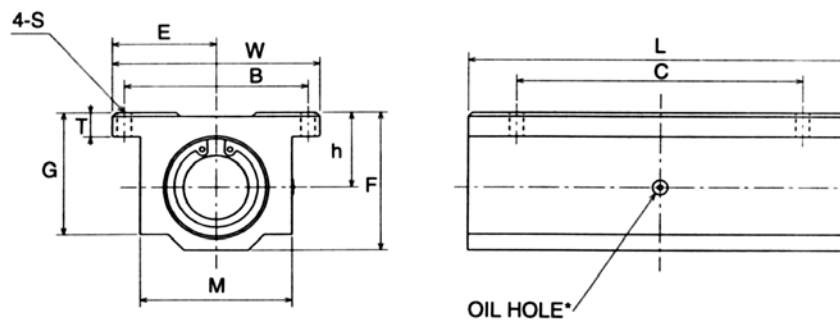


Unit: inch

Part No.	Size	Load Rating		Overall Dimensions								Mounting Dim.			Wt lbs.
		Dynamic C (lbs.)	Static Co (lbs.)	h ±0.0012	E ±0.0012	W	L	F	T	G	M	B ±0.01	C ±0.01	S	
TWA4UU	0.250	60	80	0.4370	0.8125	1.625	1.188	0.813	0.188	0.750	1.000	1.312	0.750	0.156	0.090
TWA6UU	0.375	95	120	0.5000	0.8750	1.750	1.313	0.938	0.188	0.875	1.125	1.437	0.875	0.156	0.120
TWA8UU	0.500	230	290	0.6870	1.0000	2.000	1.688	1.250	0.250	1.125	1.375	1.688	1.000	0.156	0.248
TWA10UU	0.625	400	500	0.8750	1.2500	2.500	1.938	1.625	0.281	1.437	1.750	2.125	1.125	0.188	0.466
TWA12UU	0.750	470	590	0.9370	1.3750	2.750	2.063	1.750	0.313	1.563	1.875	2.375	1.250	0.188	0.553
TWA16UU	1.000	850	1060	1.1870	1.6250	3.250	2.813	2.188	0.375	1.938	2.375	2.875	1.750	0.219	1.120
TWA20UU	1.250	1230	1530	1.5000	2.0000	4.000	3.625	2.813	0.438	2.500	3.000	3.500	2.000	0.219	2.380
TWA24UU	1.500	1480	1850	1.7500	2.3750	4.750	4.000	3.250	0.500	2.875	3.500	4.125	2.500	0.281	3.460
TWA32UU	2.000	2430	3040	2.1250	3.0000	6.000	5.000	4.063	0.625	3.625	4.500	5.200	3.250	0.406	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.

TWA-W



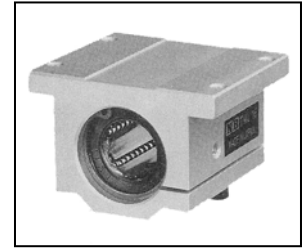
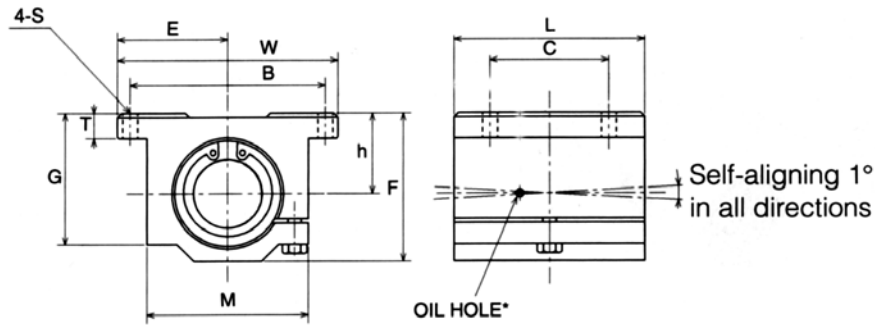
Unit: inch

Part No.	Size	Load Rating		Overall Dimensions								Mounting Dim.			Wt lbs.
		Dynamic C (lbs.)	Static Co (lbs.)	h ±0.0012	E ±0.0012	W	L	F	T	G	M	B ±0.01	C ±0.01	S	
TWA4WUU	0.250	96	160	0.4370	0.8125	1.625	2.50	0.813	0.188	0.750	1.000	1.312	2.000	0.156	0.19
TWA6WUU	0.375	150	240	0.5000	0.8750	1.750	2.75	0.938	0.188	0.875	1.125	1.437	2.250	0.156	0.25
TWA8WUU	0.500	370	580	0.6870	1.0000	2.000	3.50	1.250	0.250	1.125	1.375	1.688	2.500	0.156	0.51
TWA10WUU	0.625	640	1000	0.8750	1.2500	2.500	4.00	1.625	0.281	1.437	1.750	2.125	3.000	0.188	1.00
TWA12WUU	0.750	750	1180	0.9370	1.3750	2.750	4.50	1.750	0.313	1.563	1.875	2.375	3.500	0.188	1.20
TWA16WUU	1.000	1360	2120	1.1870	1.6250	3.250	6.00	2.188	0.375	1.938	2.375	2.875	4.500	0.219	2.40
TWA20WUU	1.250	1970	3060	1.5000	2.0000	4.000	7.50	2.813	0.438	2.500	3.000	3.500	5.500	0.219	5.00
TWA24WUU	1.500	2370	3700	1.7500	2.3750	4.750	9.00	3.250	0.500	2.875	3.500	4.125	6.500	0.281	7.80

* 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.

TWJ & TWJ-W SERIES ADJUSTABLE SINGLE & DOUBLE WIDE

TWJ

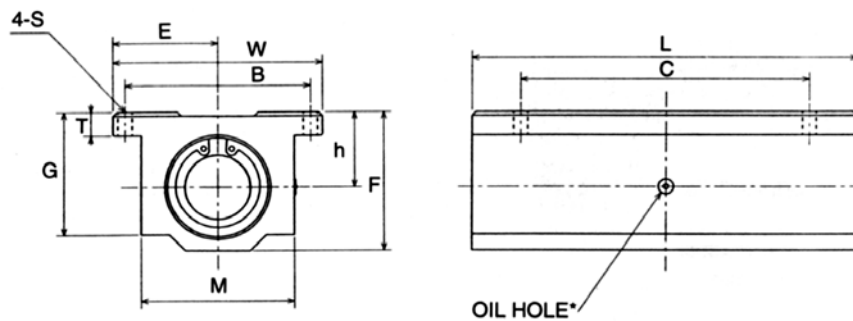


Unit: inch

Part No.	Size	Load Rating		Overall Dimensions								Mounting Dim.			Wt lbs.
		Dynamic C (lbs.)	Static Co (lbs.)	h ±0.0012	E ±0.0012	W	L	F	T	G	M	B ±0.01	C ±0.01	S	
TWJ4UU	0.250	60	80	0.4370	0.8125	1.625	1.188	0.813	0.188	0.750	1.000	1.312	0.750	0.156	0.090
TWJ6UU	0.375	95	120	0.5000	0.8750	1.750	1.313	0.938	0.188	0.875	1.125	1.437	0.875	0.156	0.120
TWJ8UU	0.500	230	290	0.6870	1.0000	2.000	1.688	1.250	0.250	1.125	1.375	1.688	1.000	0.156	0.248
TWJ10UU	0.625	400	500	0.8750	1.2500	2.500	1.938	1.625	0.281	1.437	1.750	2.125	1.125	0.188	0.466
TWJ12UU	0.750	470	590	0.9370	1.3750	2.750	2.063	1.750	0.313	1.563	1.875	2.375	1.250	0.188	0.553
TWJ16UU	1.000	850	1060	1.1870	1.6250	3.250	2.813	2.188	0.375	1.938	2.375	2.875	1.750	0.219	1.200
TWJ20UU	1.250	1230	1530	1.5000	2.0000	4.000	3.625	2.813	0.438	2.500	3.000	3.500	2.000	0.219	2.380
TWJ24UU	1.500	1480	1850	1.7500	2.3750	4.750	4.000	3.250	0.500	2.875	3.500	4.125	2.500	0.281	3.460
TWJ32UU	2.000	2430	3040	2.1250	3.0000	6.000	5.000	4.063	0.625	3.625	4.500	5.250	3.250	0.406	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.

TWJ-W



Unit: inch

Part No.	Size	Load Rating		Overall Dimensions								Mounting Dim.			Wt lbs.
		Dynamic C (lbs.)	Static Co (lbs.)	h ±0.0012	E ±0.0012	W	L	F	T	G	M	B ±0.01	C ±0.01	S	
TWJ4WUU	0.250	96	160	0.4370	0.8125	1.625	2.50	0.813	0.188	0.750	1.000	1.312	2.000	0.156	0.19
TWJ6WUU	0.375	150	240	0.5000	0.8750	1.750	2.75	0.938	0.188	0.875	1.125	1.437	2.250	0.156	0.25
TWJ8WUU	0.500	370	580	0.6870	1.0000	2.000	3.50	1.250	0.250	1.125	1.375	1.688	2.500	0.156	0.51
TWJ10WUU	0.625	640	1000	0.8750	1.2500	2.500	4.00	1.625	0.281	1.437	1.750	2.125	3.000	0.188	1.00
TWJ12WUU	0.750	750	1180	0.9370	1.3750	2.750	4.50	1.750	0.313	1.563	1.875	2.375	3.500	0.188	1.20
TWJ16WUU	1.000	1360	2120	1.1870	1.6250	3.250	6.00	2.188	0.375	1.938	2.375	2.875	4.500	0.219	2.40
TWJ20WUU	1.250	1970	3060	1.5000	2.0000	4.000	7.50	2.813	0.438	2.500	3.000	3.500	5.500	0.219	5.00
TWJ24WUU	1.500	2370	3700	1.7500	2.3750	4.750	9.00	3.250	0.500	2.875	3.500	4.125	6.500	0.281	7.80

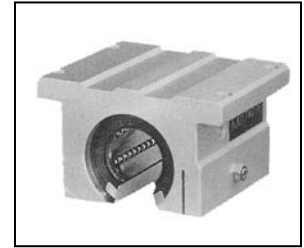
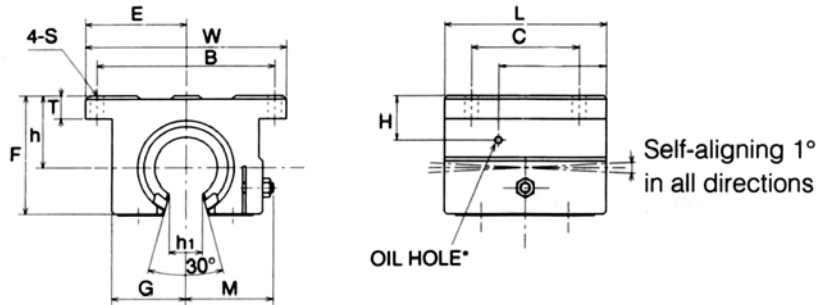
* Provided with push-in oil fitting for 1/4" to 1/2" sizes. Sizes from 5/8" to 2" offer a 1/4-28 tapped hole with a plug for adding a fitting if desired.

PILLOW BLOCKS



TWD & TWD-W SERIES OPEN SINGLE & DOUBLE WIDE

TWD

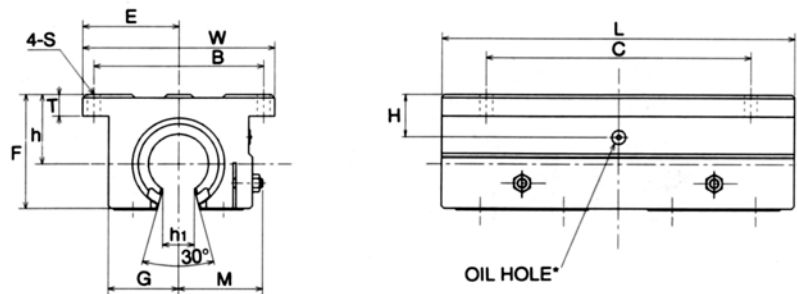


Unit: inch

Part No.	Size	Load Rating		Overall Dimensions									Mounting Dim.			Wt lbs.
		Dynamic C (lbs.)	Static Co (lbs.)	h ±0.0012	E ±0.0012	W	L	F	T	G	M	h1	B ±0.01	C ±0.01	S	
TWD8UU	0.500	230	290	0.6870	1.0000	2.00	1.500	1.100	0.250	0.688	0.98	0.260	1.688	1.000	0.156	0.188
TWD10UU	0.625	400	500	0.8750	1.2500	2.50	1.750	1.405	0.281	0.875	1.15	0.319	2.125	1.125	0.188	0.365
TWD12UU	0.750	470	590	0.9370	1.3750	2.75	1.875	1.535	0.315	0.937	1.23	0.386	2.375	1.250	0.188	0.452
TWD16UU	1.000	850	1060	1.1870	1.6250	3.25	2.625	1.975	0.375	1.188	1.48	0.512	2.875	1.750	0.218	1.010
TWD20UU	1.250	1230	1530	1.5000	2.0000	4.00	3.375	2.485	0.438	1.500	1.88	0.569	3.500	2.000	0.218	1.980
TWD24UU	1.500	1480	1850	1.7500	2.3750	4.75	3.750	2.910	0.500	1.750	2.12	0.681	4.125	2.500	0.281	2.950
TWD32UU	2.000	2430	3040	2.1250	3.0000	6.00	4.750	3.660	0.625	2.250	2.70	0.933	5.250	3.250	0.406	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.

TWD-W

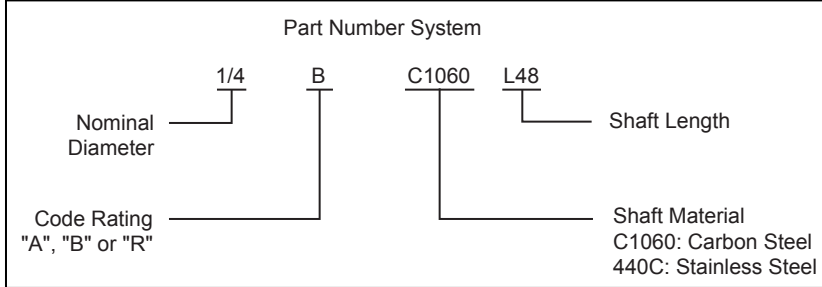


Unit: inch

Part No.	Size	Load Rating		Overall Dimensions									Mounting Dim.			Wt lbs.
		Dynamic C (lbs.)	Static Co (lbs.)	h ±0.0012	E ±0.0012	W	L	F	T	G	M	h1	B ±0.01	C ±0.01	S	
TWD8WUU	0.500	370	580	0.6870	1.0000	2.00	3.50	1.100	0.250	0.688	0.98	0.260	1.688	2.500	0.156	0.40
TWD10WUU	0.625	640	1000	0.8750	1.2500	2.50	4.00	1.405	0.281	0.875	1.15	0.319	2.125	3.000	0.188	0.80
TWD12WUU	0.750	750	1180	0.9370	1.3750	2.75	4.50	1.535	0.315	0.937	1.23	0.386	2.375	3.500	0.188	1.00
TWD16WUU	1.000	1360	2120	1.1870	1.6250	3.25	6.00	1.975	0.375	1.188	1.48	0.512	2.875	4.500	0.218	2.00
TWD20WUU	1.250	1970	3060	1.5000	2.0000	4.00	7.50	2.485	0.437	1.500	1.88	0.569	3.500	5.500	0.218	4.20
TWD24WUU	1.500	2370	3700	1.7500	2.3750	4.75	9.00	2.910	0.500	1.750	2.12	0.681	4.125	6.500	0.281	6.70

* 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.

Our precision linear shafting is uniformly case hardened by the high frequency induction hardening method to Rockwell 60 - 65C. The 440C precision case hardened shafting is hardened to Rockwell 50 - 55C.



C1060 Carbon Steel - Rockwell 60 to 65C

Unit: inch

Nominal Dia.	Minimum Case Depth	Code A	Code B	Code R	Weight / Inch (lbs.)
1/4	0.04	0.2485 / 0.2490	0.2490 / 0.2495	0.2498 / 0.2500	0.014
3/8	0.04	0.3735 / 0.3740	0.3740 / 0.3745	0.3748 / 0.3750	0.031
1/2	0.06	0.4985 / 0.4990	0.4990 / 0.4995	0.4998 / 0.5000	0.055
5/8	0.06	0.6235 / 0.6240	0.6240 / 0.6245	0.6248 / 0.6250	0.086
3/4	0.06	0.7485 / 0.7490	0.7490 / 0.7495	0.7498 / 0.7500	0.125
7/8	0.06	-----	0.8740 / 0.8745	0.8748 / 0.8750	0.170
1	0.08	0.9985 / 0.9990	0.9990 / 0.9995	0.9998 / 1.0000	0.222
1-1/8	0.08	-----	1.1240 / 1.1245	1.1248 / 1.1250	0.281
1-1/4	0.08	1.2485 / 1.2490	1.2490 / 1.2495	1.2498 / 1.2500	0.348
1-3/8	0.08	-----	1.3740 / 1.3745	1.3747 / 1.3750	0.420
1-1/2	0.08	1.4984 / 1.4989	1.4989 / 1.4994	1.4997 / 1.5000	0.500
1-3/4	0.10	-----	1.7490 / 1.7495	1.7497 / 1.7500	0.681
2	0.10	1.9980 / 1.9987	1.9987 / 1.9994	1.9997 / 2.0000	0.890
2-1/2	0.10	2.4977 / 2.4985	2.4985 / 2.4993	2.4996 / 2.5000	1.391
3	0.10	2.9974 / 2.9983	2.9983 / 2.9992	-----	2.003

AISI 440C Stainless Steel - Rockwell 50 to 55C

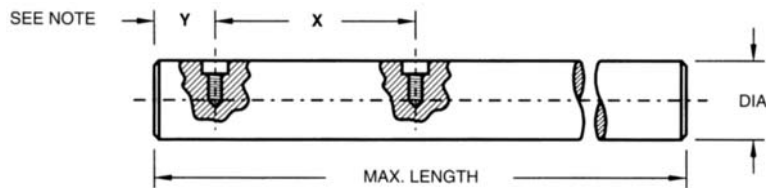
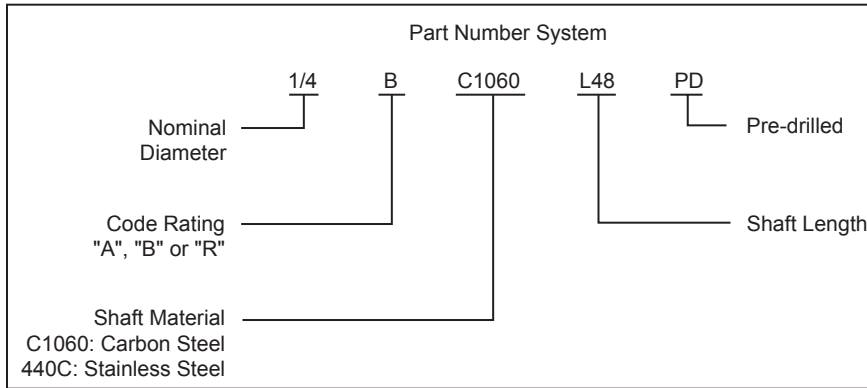
Unit: inch

Nominal Dia.	Minimum Case Depth	Code A	Code B	Weight / Inch (lbs.)
3/8	0.040	0.3735 / 0.3740	0.3740 / 0.3745	0.031
1/2	0.060	0.4985 / 0.4990	0.4990 / 0.4995	0.055
5/8	0.060	0.6235 / 0.6240	0.6240 / 0.6245	0.086
3/4	0.060	0.7485 / 0.7490	0.7490 / 0.7495	0.125
1	0.080	0.9985 / 0.9990	0.9990 / 0.9995	0.222
1-1/4	0.080	1.2485 / 1.2490	1.2490 / 1.2495	0.348
1-1/2	0.080	1.4984 / 1.4989	1.4989 / 1.4994	0.500
2	0.100	1.9980 / 1.9987	1.9987 / 1.9994	0.890

Cross Reference of Common Tolerance Codes	A = S	B = L	R = N	M = D
--	-------	-------	-------	-------

Note: A cut charge will apply for all C1060 & 440C Precision Shafting per diameter / lot.

PRE-DRILLED SHAFTING



Hardened & Ground C1060 & 440C

Unit: inch

Nominal Dia.	X (± 0.015)	Dia. Tolerance	Tap Size
1/2	4	0.4990 / 0.4995	8-32
5/8	4	0.6240 / 0.6245	8-32
3/4	6	0.7490 / 0.7495	10-32
1	6	0.9990 / 0.9995	1/4-20
1-1/4	6	1.2490 / 1.2495	5/16-18
1-1/2	8	1.4989 / 1.4994	3/8-16

Note:

The standard "Y" dimension (of in stock shafts) is 1/2 of the "X" dimension. Custom first hole locations may be specified when ordering, providing the location is different than the "X" hole spacing. Holes are drilled and tapped to center of shaft.

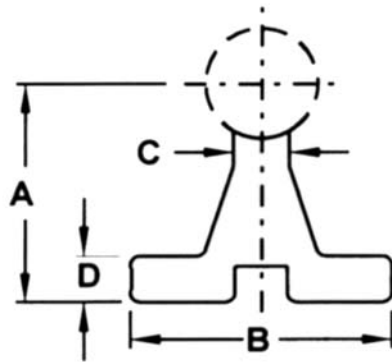
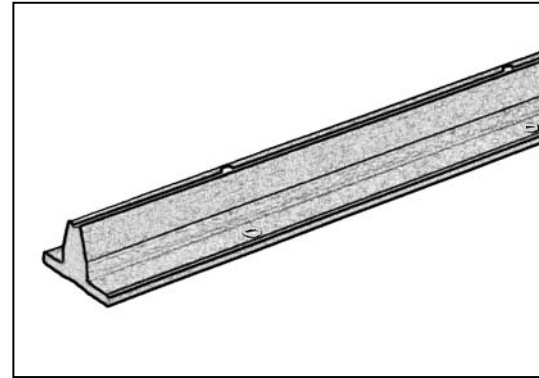
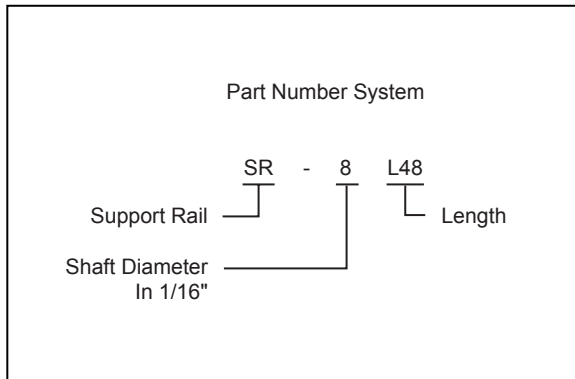
All pre-drilled shafting comes standard in the Code "B" rating, but can be ordered as Code "A" or "R".

SR SERIES

For effective, low cost continuous or intermittent support, these extruded aluminum support rails are available in a full range of sizes to accommodate shafts up to 4" diameter.

These rails can be supplied with or without mounting holes and can be used vertically or horizontally to provide optimum rigidity. Available in lengths of 24" and 48" and can be easily cut to meet shorter length requirements.

Used in conjunction with open style bearings and pillow blocks found on pages 80 through 88.



Unit: inch

Part No.	Nominal Dia.	A (± 0.002)	B	C	D	Weight / 24" (lbs.)
SR-8	1/2	1.125	1-1/2	1/4	3/16	1.2
SR-10	5/8	1.125	1-5/8	5/16	1/4	1.5
SR-12	3/4	1.500	1-3/4	3/8	1/4	2.0
SR-16	1	1.750	2-1/8	1/2	1/4	2.6
SR-20	1-1/4	2.125	2-1/2	9/16	5/16	3.5
SR-24	1-1/2	2.500	3	11/16	3/8	5.1
SR-32	2	3.250	3-3/4	7/8	1/2	8.2
SR-48	3	4.000	6	1-5/8	1-1/4	15.3
SR-64	4	5.000	8	2-1/4	1-3/8	38.9

PRE-DRILLED SUPPORT RAILS

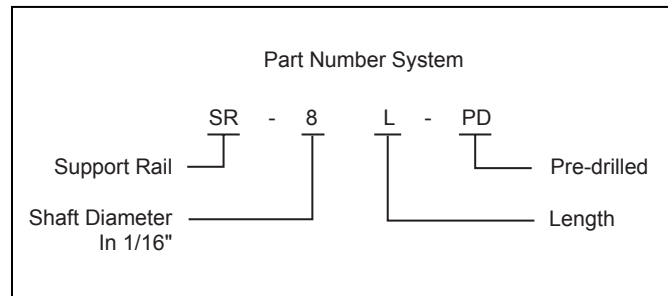


SRPD SERIES

Pre-drilled support rail assemblies from SMI are constructed from hardened and precision ground C1060 carbon steel with a hardness range from 60-65 RC, 6061 Aluminum support system designed to accommodate any open style bushing and pillow block on today's market. SMI's pre-drilled support rails are machined to provide top down mounting and each rail exceeds current competitive manufacture tolerances for straightness, twist and bow. Each SMI assembly is 100% inspected to this higher level and each product is delivered with our assurance for accuracy and conformance.

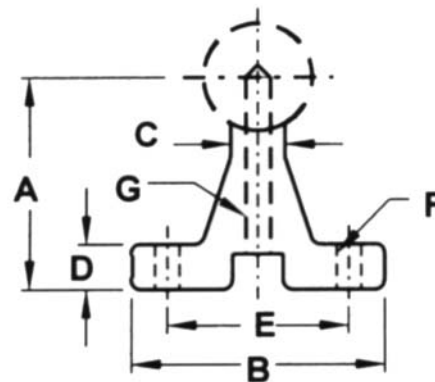
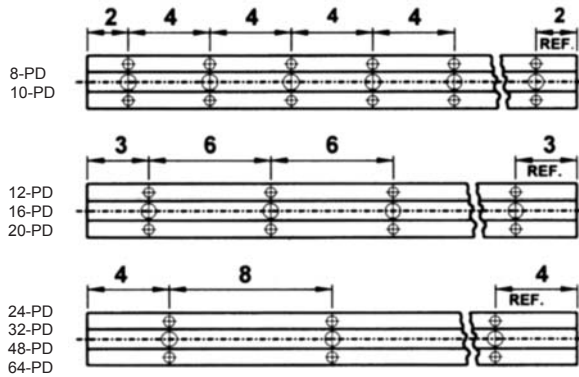
Pre-drilled Support Rail Options:

- **Corrosion Resistant Support Rail Assemblies:** Shafting can be made from 440C with 52-55 RC hardness.
- **Anodization:** Clear, Black or color of your choice. Please allow adequate time for processing.
- **Special mounting holes:** SMI offers standard hole patterns, but if you need something special, just ask.
- **Part Number Identification or Custom engraving** on each rail assembly is no problem.
- **End of travel co-axial bumpers** can be accommodated per your request.
- **Complete Shaft Rail Assemblies with Bearings included:** See SMI LM System Section of this catalog.
- **Creative options** we have not thought of and you might require. We are always looking for good ideas.



Mounting Hole Patterns

for various sizes shown below. The alignment and location of holes are ± 0.010 non-cumulative.



Unit: inch

Part No.	Nominal Dia.	A (± 0.002)	B	C	D	E	F		G		Weight / 24" (lbs.)
							Bolt	Hole	Bolt	Hole	
SR-8-PD	1/2	1.125	1-1/2	1/4	3/16	1	#6	0.169	8-32 x 7/8	0.169	1.2
SR-10-PD	5/8	1.125	1-5/8	5/16	1/4	1-1/8	#8	0.193	8-32 x 7/8	0.193	1.5
SR-12-PD	3/4	1.500	1-3/4	3/8	1/4	1-1/4	#10	0.221	10-32 x 1-1/4	0.221	2.0
SR-16-PD	1	1.750	2-1/8	1/2	1/4	1-1/2	1/4	0.281	1/4-20 x 1-1/2	0.281	2.6
SR-20-PD	1-1/4	2.125	2-1/2	9/16	5/16	1-7/8	5/16	0.343	5/16-18 x 1-3/4	0.343	3.5
SR-24-PD	1-1/2	2.500	3	11/16	3/8	2-1/4	5/16	0.343	3/8-16 x 2	0.406	5.1
SR-32-PD	2	3.250	3-3/4	7/8	1/2	2-3/4	3/8	0.406	1/2-13 x 2-1/2	0.531	8.2
SR-48-PD	3	4.000	6	1-3/8	3/4	4-1/4	5/8	0.656	3/4-10 x 3-1/4	0.781	15.3
SR-64-PD	4	5.000	8	2-1/4	1-3/8	6	5/8	0.656	7/8-9 x 4	0.781	38.9

MOTION COMPONENTS

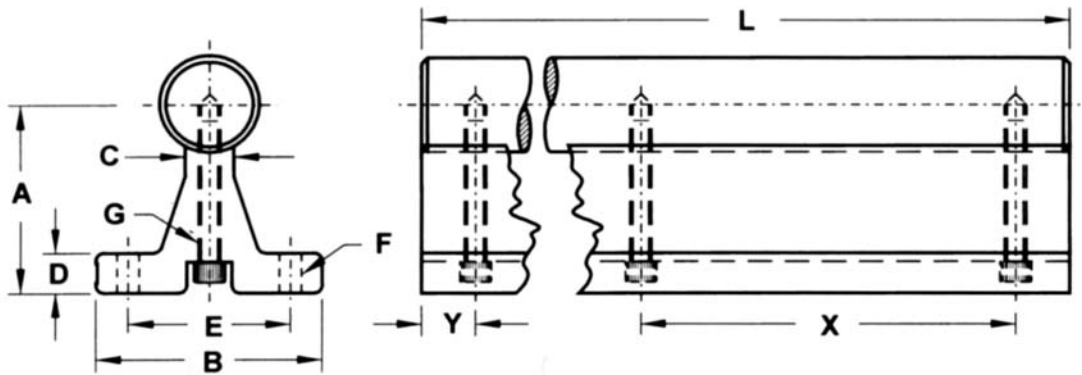
SRA SERIES

Support rail assemblies from SMI are constructed from hardened and precision ground C-1060 carbon steel shafting with a hardness range from 60-65 RC, and 6061 Aluminum support rail system designed to accommodate any open style bushing and pillow block on today's market.

SMI support rail assemblies exceed current competitive manufacture tolerances for straightness, twist and bow. Each SMI assembly is 100% inspected to this higher level and each product is delivered with our assurance for accuracy and conformance.

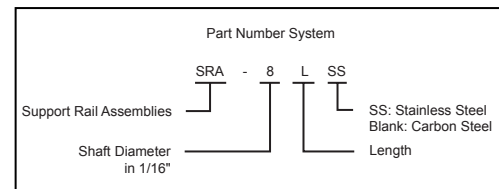
SUPPORT RAIL ASSEMBLY OPTIONS:

- **Corrosion Resistant Support Rail Assemblies:** Shafting can be made from 440C shafting with 52-55 RC hardness.
- **Anodization:** Clear, Black or color of your choice. Please allow adequate time for processing.
- **Mounting holes:** See SMI Pre-Drilled Support Rails in this catalog section.
- **Part Number Identification or Custom engraving** on each rail assembly is no problem.
- **End of travel co-axial bumpers** can be accommodated per your request.
- **Complete Shaft Rail Assemblies with Bearings included:** See SMI LM System Section of this catalog.
- **Creative options** we have not thought of and you might require. We are always looking for good ideas.



Unit: inch

Part No.	Nominal Dia.	A (± 0.002)	B	C	D	E	F		Y	X
							Bolt	Hole		
SRA-8-PD	1/2	1.125	1-1/2	1/4	3/16	1	#6	0.169	2	4
SRA-10-PD	5/8	1.125	1-5/8	5/16	1/4	1-1/8	#8	0.193	2	4
SRA-12-PD	3/4	1.500	1-3/4	3/8	1/4	1-1/4	#10	0.221	3	6
SRA-16-PD	1	1.750	2-1/8	1/2	1/4	1-1/2	1/4	0.281	3	6
SRA-20-PD	1-1/4	2.125	2-1/2	9/16	5/16	1-7/8	5/16	0.343	3	6
SRA-24-PD	1-1/2	2.500	3	11/16	3/8	2-1/4	5/16	0.343	4	8
SRA-32-PD	2	3.250	3-3/4	7/8	1/2	2-3/4	3/8	0.406	4	8
SRA-48-PD	3	4.000	6	1-5/8	1-1/4	4-1/4	5/8	0.656	4	8



Note:

The standard "Y" dimension (of in stock shafts) is 1/2 of the "X" dimension. Custom first hole locations may be specified when ordering, providing the location is different than the "X" hole spacing. Holes are drilled and tapped to center of shaft.

LOW SUPPORT RAILS

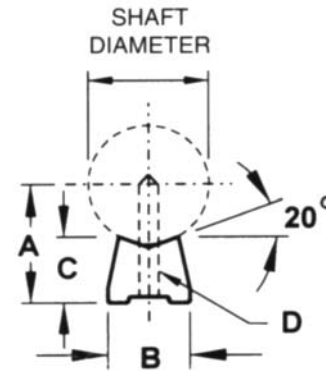
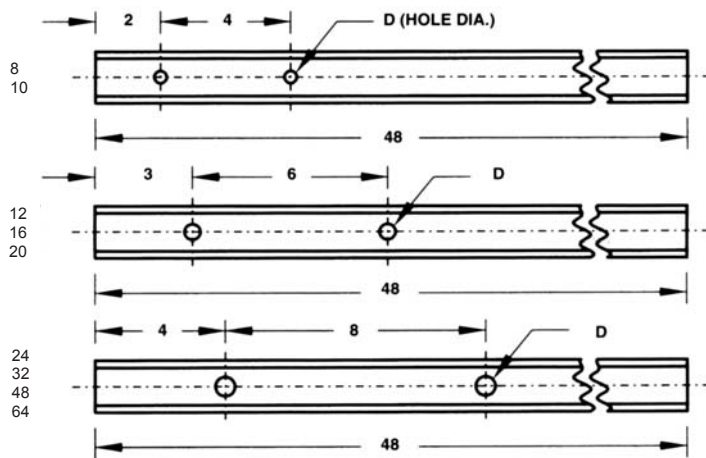
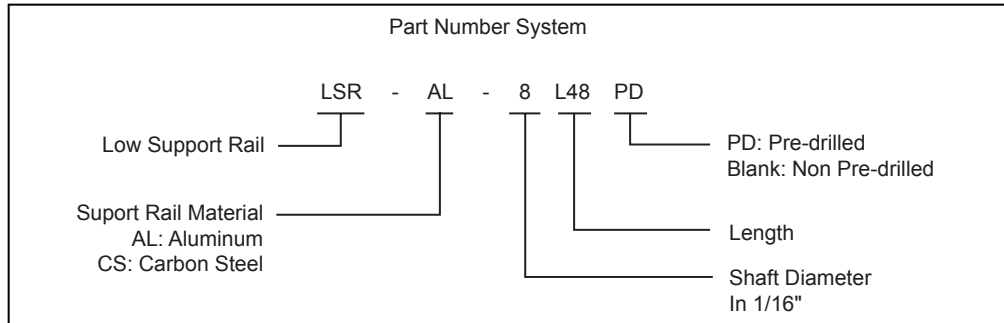


LSR SERIES

Low 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 **6061 aluminum or AISI C1018 steel**. Continuous or intermittent support is permissible when using our pillow blocks. LSR-PD have pre-drilled mounting holes to match the pre-drilled and tapped holes in our pre-drilled shafting or can be ordered without pre-drilled holes. Standard lengths for our low support rails is 48" ($\pm .125$ ").

Low Support Rail Options:

- Longer length systems
- Anodized & plating (please allow necessary processing time when ordering)
- Custom hole patterns



Unit: inch

Part No.	Nominal Dia.	A (± 0.002)	B (± 0.005)	D		Weight / 48" (lbs.)
				Bolt	Hole	
LSR-8	1/2	0.562	0.370	6-32	0.169	1.32
LSR-10	5/8	0.687	0.450	8-32	0.193	1.95
LSR-12	3/4	0.750	0.510	10-32	0.221	2.25
LSR-16	1	1.000	0.690	1/4-20	0.281	4.25
LSR-20	1-1/4	1.870	0.780	5/16-18	0.343	5.08
LSR-24	1-1/2	1.375	0.930	3/8-16	0.406	6.72
LSR-32	2	1.750	1.180	1/2-13	17/32	11.00
LSR-48	3	2.750	1.875	3/4-10	0.812	27.92

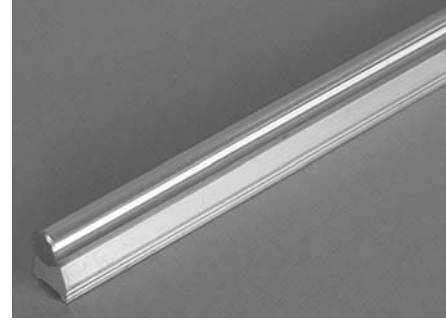
MOTION COMPONENTS

LSRA SERIES

SMI's Low Support Rails come in two varieties: **Aluminum and Steel.**

Aluminum Low Support Rail Assemblies come standard at 48" long (+/- .125") made from 6061 material with no holes for mounting.

Steel Low Support Rails come standard at 48" long (+/- .125") made from AISI C1018 steel with no holes for mounting.



All SMI Low Support Rails are designed to accommodate most open type linear bushing and pillow block available on the market today (except Thomson Industries PB - OPN).

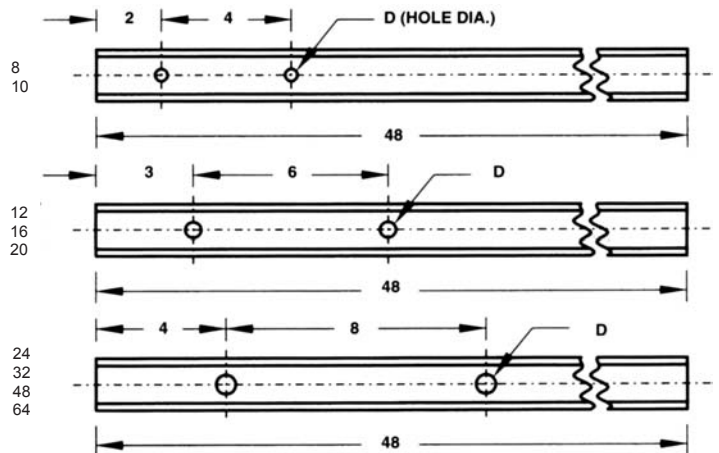
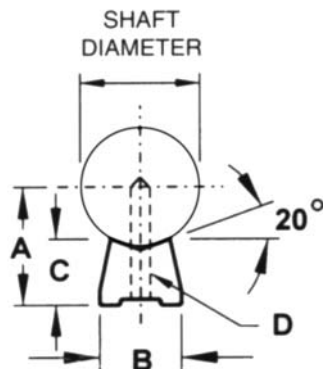
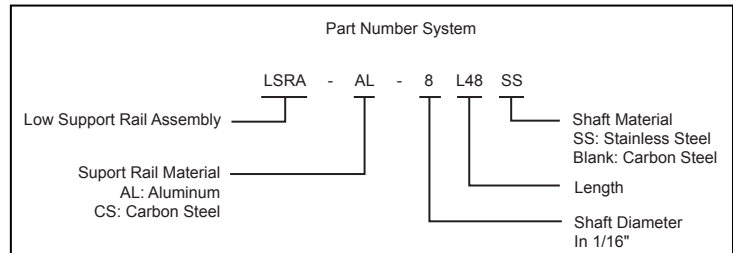
Both steel or aluminum support rails are designed to be used in a bottom up mounting where the fastener would pass through the mounting plate, through the support rail and fasten in the matching pre drilled shafting. See SMI Pre-drilled Shafting section of this catalog for details on thread sizes.

LSRA OPTIONS:

- **Longer length systems:** Order shafting at length required and use more than one LSRA either intermittently or continuous with minor, insignificant gaps between support sections.
- **Pre-Drilled LSR/LSRA:** SMI can machine to your pattern required or chose from Pre-drilled LSR assemblies.
- **Anodization and Plating Available:** Please allow necessary processing time when ordering.

Unit: inch

Part No.	Nominal Dia.	A (± 0.002)	B (± 0.005)	D		Weight / 48" (lbs.)
				Bolt	Hole	
LSRA-8	1/2	0.562	0.370	6-32	0.169	1.32
LSRA-10	5/8	0.687	0.450	8-32	0.193	1.95
LSRA-12	3/4	0.750	0.510	10-32	0.221	2.25
LSRA-16	1	1.000	0.690	1/4-20	0.281	4.25
LSRA-20	1-1/4	1.870	0.780	5/16-18	0.343	5.08
LSRA-24	1-1/2	1.375	0.930	3/8-16	0.406	6.72
LSRA-32	2	1.750	1.180	1/2-13	17/32	11.00
LSRA-48	3	2.750	1.875	3/4-10	0.812	27.92



MOTION COMPONENTS

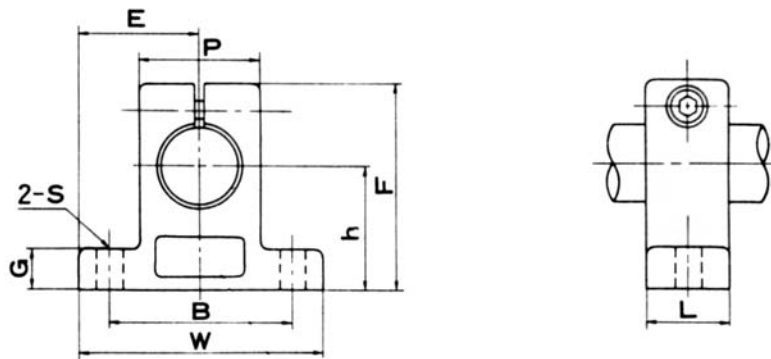
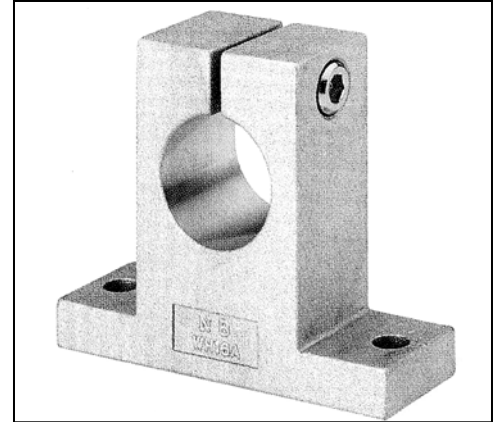
SHAFT END SUPPORTS



WH SERIES

Material: Aluminum alloy

Inner Contact Diameter: $\varnothing 1/4"$ to $2"$



Unit: inch

Part No.	Nominal Dia.	h (± 0.001)	E (± 0.0005)	W	L	F	G	P	B	S	Bolt	Weight (lbs.)
WH4A	1/4	0.6875	0.7500	1.5000	0.500	1.063	0.250	0.500	1.125	0.156	#6	0.033
WH6A	3/8	0.7500	0.8125	1.6250	0.563	1.187	0.250	0.688	1.250	0.156	#6	0.046
WH8A	1/2	1.0000	1.0000	2.0000	0.625	1.625	0.250	0.875	1.500	0.188	#8	0.077
WH10A	5/8	1.0000	1.2500	2.5000	0.688	1.750	0.313	1.000	1.875	0.218	#10	0.115
WH12A	3/4	1.2500	1.2500	2.5000	0.750	2.063	0.313	1.250	2.000	0.218	#10	0.163
WH16A	1	1.5000	1.5315	3.0630	1.000	2.500	0.375	1.500	2.500	0.281	1/4	0.300
WH20A	1-1/4	1.7500	1.8750	3.7500	1.125	3.000	0.438	2.000	3.000	0.346	5/16	0.560
WH24A	1-1/2	2.0000	2.1875	4.3750	1.250	3.437	0.500	2.250	3.500	0.346	5/16	0.750
WH32A	2	2.5000	2.7500	5.5000	1.500	4.375	0.625	3.000	4.500	0.406	3/8	1.477

Profile Rails are linear motion bearings which incorporate a linear guide rail (inner race) with precision ground grooves along the entire length of rail, combined with a precision machined carriage block (outer race) with matched rolling elements tracking the inner race grooves. This combination of precision grooves and matched carriages provides for high load capacities, smooth motion, long predictable life in a small compact work envelope.

SEB Series is our small lightweight series with overall height of only 6mm and rail width of 5 mm. This light series uses a 2 row, 4-point contact configuration to provide static capacities from 720 N to 15700 N.

The SEB Series offers unique features to help you design the correct part for your motion system.

- Standard length blocks as well as a long block for added foot print and increased capacities.
- Three choices of pre-load, (standard, T0 and T1).
- Carbon steel as well as Stainless Steel options on both rail and carriages.
- Standard precision and high precision accuracy classes (see page 99).
- Tapped rail-mounting holes. A unique method of mounting (note, "N" in part #, see page 102).

Specialty Motions also offers a **wide series** ("W") in the light weight category starting with a rail height of 9 mm to 16 mm with widths from 14 mm to 42 mm. (See pages 104 - 107). The same design options apply to this series with stainless steel, tapped rail mounting, pre-load, accuracy classes and block lengths to select.

For the Ultra High end applications requiring extreme load capacity, accuracy and rigidity in a compact package, Specialty Motions offers the **SER series** with 2 row, recirculating crossed roller profile rails in both a standard width and double wide series. Options include two levels of pre-load, all stainless steel components, tapped rail mounting, double wide series ("W") and two accuracy classes.

The **SERS series** is **all stainless steel** providing excellent corrosion resistance and thermal characteristics as well is ideal for clean room and vacuum applications.

The SGL Series is a high rigidity, 4 row, 2-point contact series with flanged and non-flanged carriages, extra long blocks for increased capacities, three levels of pre-load and three levels of accuracy. Maximum rail lengths for this series are from 1000 to 3000 mm with system heights from 24 mm to 48 mm. Capacities range from 5000 N to 37,700 N.

Other styles, systems and configurations are also available from Specialty Motions, Inc. For applications assistance, refer to our web site for updates and product introductions or call our application staff at 800-283-3411.

With basic applications information, part numbers from existing applications or descriptions, we can help with product cross over options and pricing assistance. Other manufacturers of profile rail systems represented by SMI include products from:

Bosch Rexroth	INA Linear	SKF	Schneeberger	THK
NSK	NB Corporation	Hiwin	Thomson Industries	


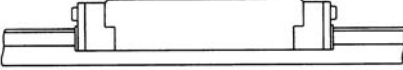
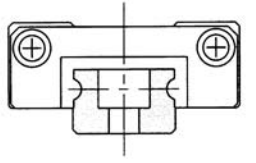
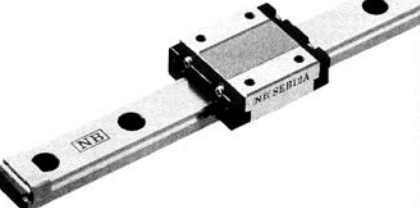
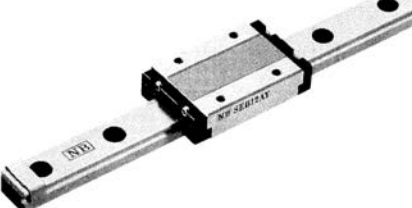
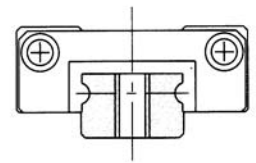
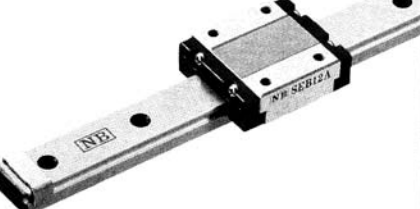
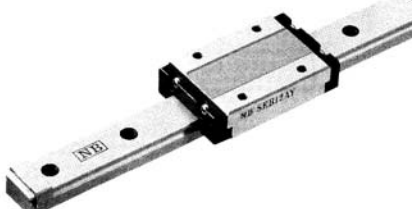
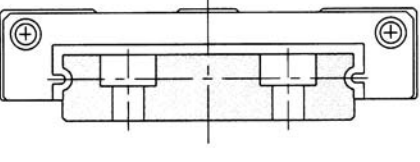
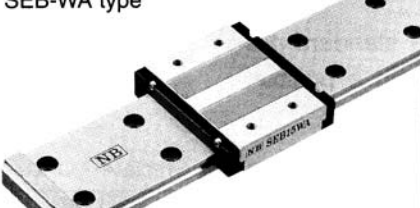
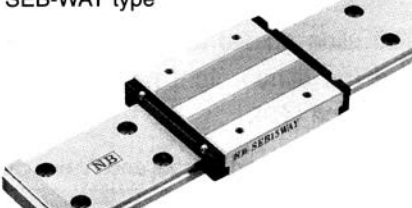
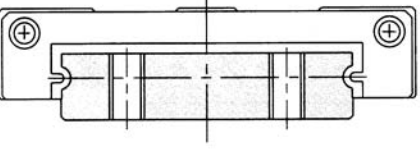
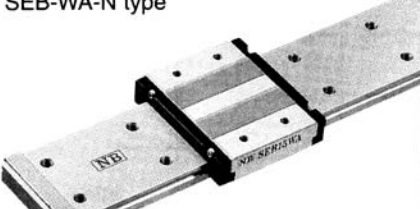
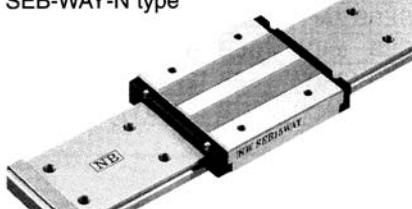
Call SMI for all of your profile rail applications.

PROFILE GUIDE RAILS



SEB SERIES

The SEB type profile guide rails are categorized according to their block shape and the rail installation method. They are also available in stainless steel and with or without optional side-seals.

	<p>standard block</p> 	<p>long block</p> 
<p>standard type</p> 	<p>SEB-A type</p> 	<p>SEB-AY type</p> 
<p>standard type w/tapped hole rail</p> 	<p>SEB-A-N type</p> 	<p>SEB-AY-N type</p> 
<p>wide type</p> 	<p>SEB-WA type</p> 	<p>SEB-WAY type</p> 
<p>wide type w/tapped hole rail</p> 	<p>SEB-WA-N type</p> 	<p>SEB-WAY-N type</p> 

SEB ACCURACY

The SEB profile guide rails are available in two grades of accuracy: high grade and precision grade (P).

Accuracy	Unit: mm	
Accuracy Grade	High	Precision
Accuracy Symbol	None	P
Dimensional tolerance for height H	± 0.020	± 0.010
Difference in height H between paired guides	0.015	0.007
Dimensional tolerance for width W	± 0.025	± 0.015
Difference in width W between paired guides	0.020	0.010
Running parallelism of surface C to surface A	Refer to Figure 2	
Running parallelism of surface D to surface B		

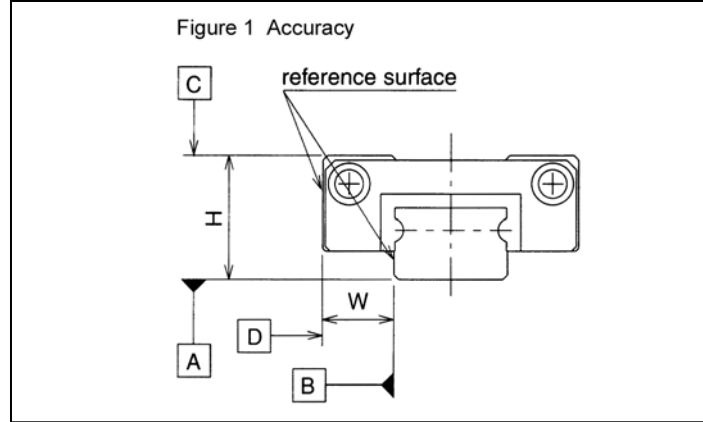
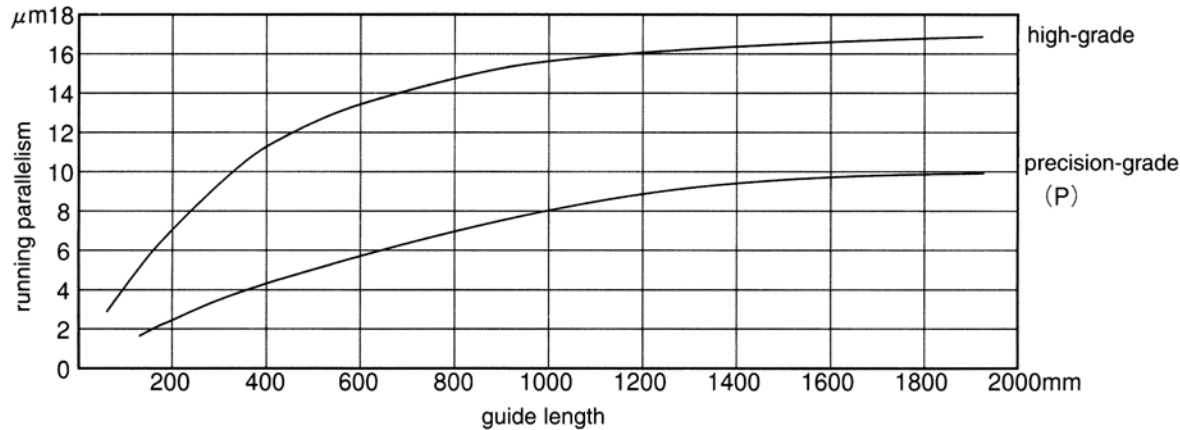


Figure 2 Motion Accuracy



SEB PRE-LOAD

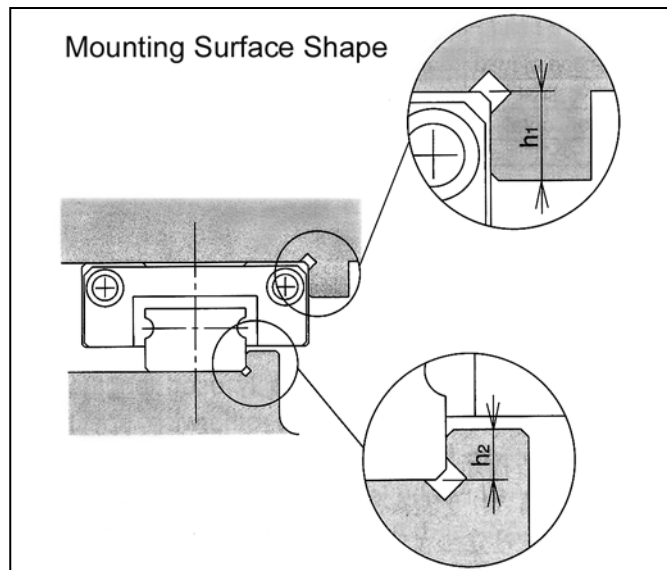
SEB profile guide rails are available with a standard pre-load (no suffix), light pre-load (T1), or a positive clearance (T0).

MOUNTING SURFACE SHAPES

Profile guide rails are mounted by pushing the reference surface of the rail and the block against the shoulder provided on the mounting surface. An escape groove should be provided at the corner of the shoulder to prevent interference.

Mounting Surface Dimensions			Unit: mm
Part No.	h ₁	h ₂	
SEBS5A	2	1	
SEBS7A	2.5	1	
SEB9A	3	1.5	
SEB12A	4	2	
SEB15A	5	3.5	
SEB20A	5	5	
SEBS7WA	3	1.5	
SEB9WA	3	2.5	
SEB12WA	4	2.5	
SEB15WA	5	2.5	

Pre-Load Symbol & Radial Clearance			Unit: µm	
Pre-Load Category	Clearance	Standard	Light	
Pre-Load Symbol	T0	None	T1	
SEBS5A(Y)	-			
SEBS7A(Y)	SEBS7WA(Y)	+6 to +3	0 to -3	-2 to -4
SEB9A(Y)	SEBS9WA(Y)			
SEB12A(Y)	SEB12WA(Y)			
SEB15A(Y)	SEB15WA9(Y)	+8 to +4	0 to -3	-3 to -7
SEB20A(Y)	-			

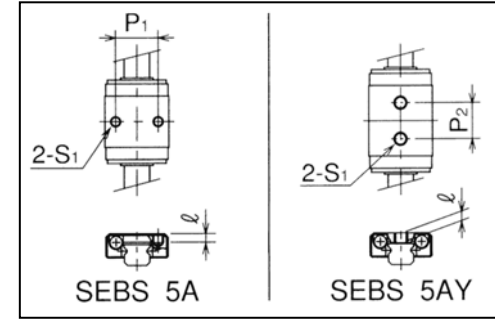
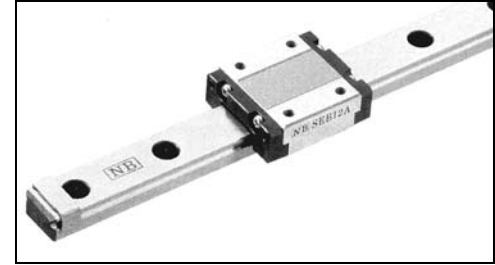
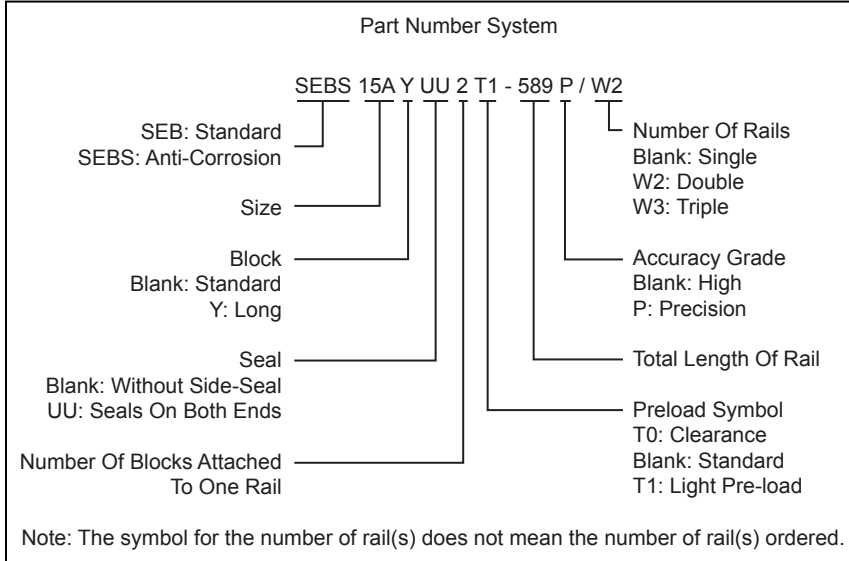


PROFILE GUIDE RAILS



SEB-A / AY TYPE

Standard Type



Part No.		Assembly Dimensions		Block Dimensions									
		H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	ℓ	L ₃	b	
Standard	Anti-Corrosion												
-	SEBS5A SEBS5AY	6	3.5	12	15.6 19.2	17 20.6	8 -	- 7	M2 M2.6	1.5 1.8	9.8 13.4	4.5	
-	SEBS7A SEBS7AY	8	5	17	21.9 31	24 33	12	8 13	M2	2.5	15.1 24.6	6.5	
SEB9A SEB9AY	SEBS9A SEBS9AY	10	5.5	20	28.1 38.1	30 40	15	10 16	M3	3	20.4 30.4	7.8	
SEB12A SEB12AY	SEBS12A SEBS12AY	13	7.5	27	30 42	33.5 45.5	20	15 20			3.5	23 34.7	10
SEB15A SEB15AY	SEBS15A SEBS15AY	16	8.5	32	38.5 54.5	42 58	25	20 25			4	29.5 45.4	12
SEB20A SEB20AY	SEBS20A SEBS20AY	25	13	46	55.7 79.5	61 85	38	38	M4	6	45.7 69.5	17.5	

Part No.		Standard Rail Length										
Standard	Anti-Corrosion	L										
-	SEBS5A	40	55	70	85	100	130	160				
-	SEBS7A	40	55	70	85	100	130	160	190	220	250	280
SEB9A	SEBS9A	55	75	95	115	135	155	175	195	235	275	315
SEB12A	SEBS12A	70	95	120	145	170	195	220	245	270	295	320
SEB15A	SEBS15A	70	110	150	190	230	270	310	350	390	430	470
SEB20A	SEBS20A	220	280	340	400	460	520	580	640	760	880	1,000

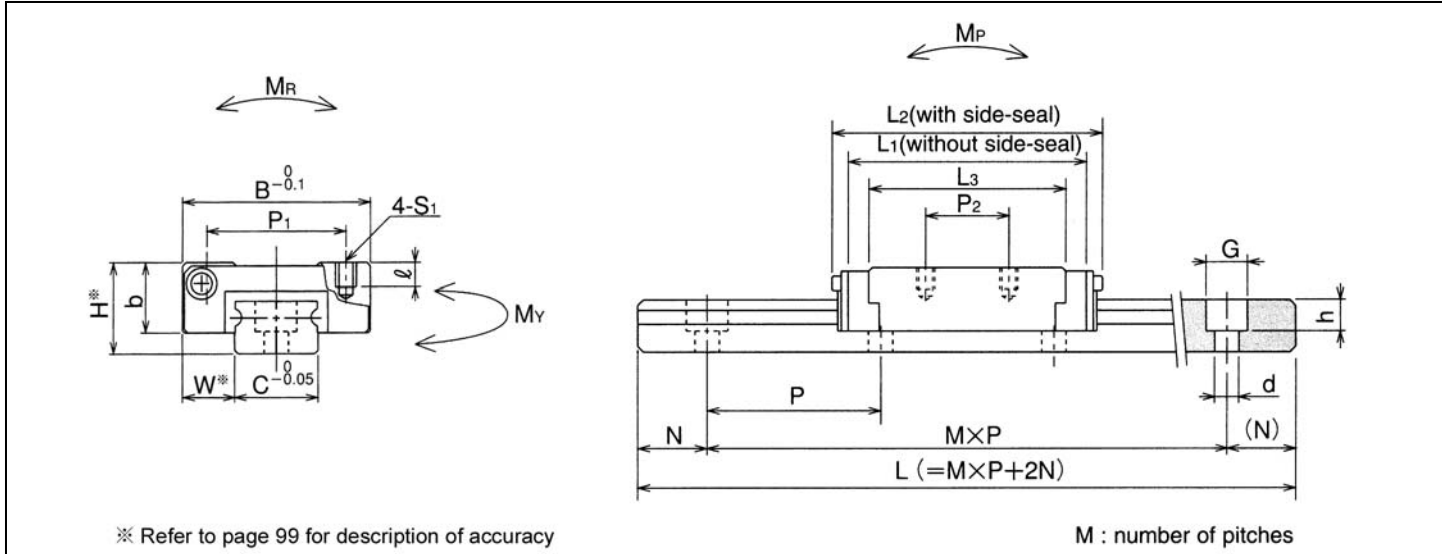
Joint rails are used when the required length exceeds the maximum standard length listed in the dimensional tables. Contact SMI for details.

MOTION COMPONENTS

SEB-A / AY TYPE

1N = 0.102kgf

1N • m = 0.102kgf • m

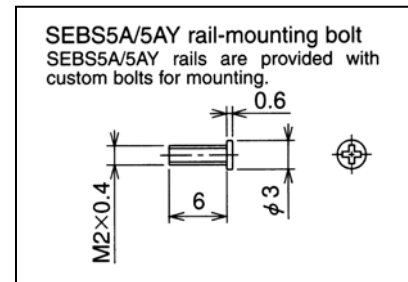


Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size		
C	d x G x h	N	P	Dynamic C N	Static Co N	M _P N • m	M _Y N • m	M _R N • m	Block kg	Guide Rail kg / m			
5	2.4 x 3.5 x 1	5	15	430	720	1.2	1.5	1.9	0.003	0.13	5A		
				590	990	2.2	2.8	2.6			5AY		
7	2.4 x 4.2 x 2.3			1080	1670	4.1	4.9	5.2	0.01	0.19	7A		
				1890	2920	12.0	14.3	9.1			7AY		
9	3.5 x 6 x 3.5	7.5	20	1670	2450	6.9	7.8	11.8	0.02	0.31	9A		
				2550	3820	16.7	19.6	17.6			9AY		
12	3.5 x 6 x 4.5			10	25	2160	3140	8.8	10.8	18.6	0.04	0.61	12A
						3530	5100	24.5	29.4	32.3			12AY
15		15	40	3630	5390	21.6	25.5	40.2	0.06	1.02	15A		
				5880	8720	57.8	68.6	67.6			15AY		
20	6 x 9.5 x 8.5	20	60	6860	9800	51.0	60.8	98.0	0.23	2.14	20A		
				11000	15700	157.0	186.0	157.0			0.34	20AY	

Unit: mm

							Maximum Length	
							Standard	Anti-Corrosion
							-	300
310							-	700
355	395	435	475				500	1,000
345	370	395	420	445	470	495		
510	550	590	630	670			1900	

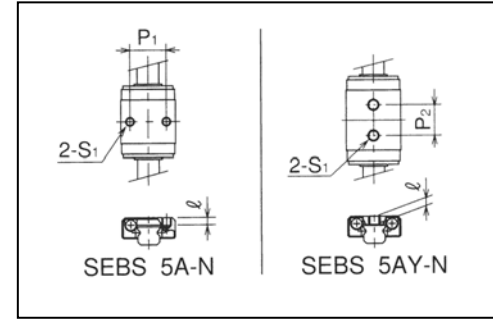
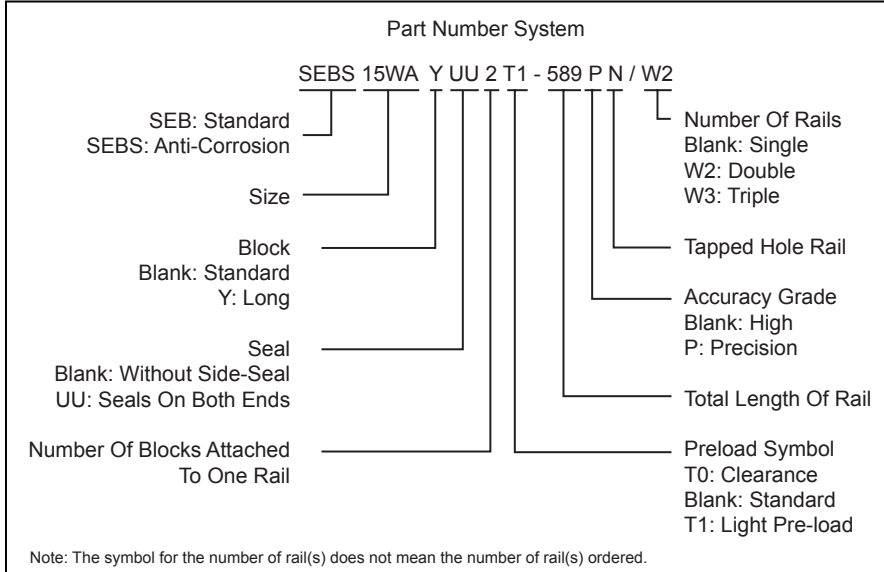
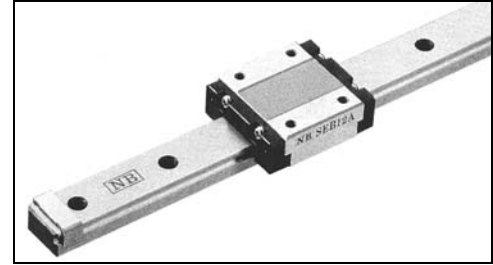


PROFILE GUIDE RAILS



SEB-A-N / AY-N TYPE

Standard Type with Tapped Hole Rail



Part No.		Assembly Dimensions		Block Dimensions										
		H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	l	L ₃	b		
Standard	Anti-Corrosion													
-	SEBS5A-N SEBS5AY-N	6	3.5	12	15.6 19.2	17 20.6	8 -	- 7	M2 M2.6	1.5 1.8	9.8 13.4	4.5		
-	SEBS7A-N SEBS7AY-N	8	5	17	21.9 31	24 33	12	8 13	M2	2.5	15.1 24.6	6.5		
SEB9A-N SEB9AY-N	SEBS9A-N SEBS9AY-N	10	5.5	20	28.1 38.1	30 40	15	10 16	M3	3	20.4 30.4	7.8		
SEB12A-N SEB12AY-N	SEBS12A-N SEBS12AY-N	13	7.5	27	30 42	33.5 45.5	20	15 20			3.5		23 34.7	10
SEB15A-N SEB15AY-N	SEBS15A-N SEBS15AY-N	16	8.5	32	38.5 54.5	42 58	25	20 25			4		29.5 45.4	
SEB20A-N SEB20AY-N	SEBS20A-N SEBS20AY-N	25	13	46	55.7 79.5	61 85	38	38	M4	6	45.7 69.5	17.5		

Part No.		Standard Rail Length											
Standard	Anti-Corrosion	L											
-	SEBS5A-N	40	55	70	85	100	130	160					
-	SEBS7A-N	40	55	70	85	100	130	160	190	220	250	280	
SEB9A-N	SEBS9A-N	55	75	95	115	135	155	175	195	235	275	315	
SEB12A-N	SEBS12A-N	70	95	120	145	170	195	220	245	270	295	320	
SEB15A-N	SEBS15A-N	70	110	150	190	230	270	310	350	390	430	470	
SEB20A-N	SEBS20A-N	220	280	340	400	460	520	580	640	760	880	1,000	

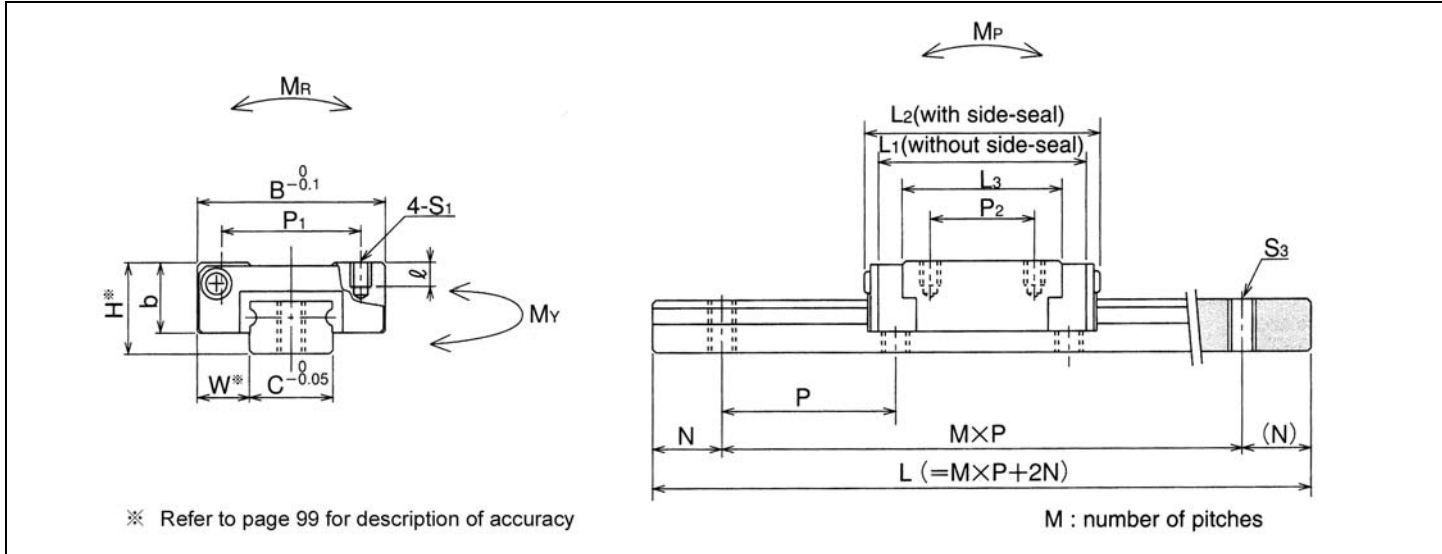
Joint rails are used when the required length exceeds the maximum standard length listed in the dimensional tables. Contact SMI for details.

MOTION COMPONENTS

SEB-A-N / AY-N TYPE

1N = 0.102kgf

1N • m = 0.102kgf • m



Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size
C	S ₃	N	P	Dynamic C N	Static Co N	M _P N • m	M _Y N • m	M _R N • m	Block kg	Guide Rail kg / m	
5	M2.6	5	15	430	720	1.2	1.5	1.9	0.003	0.13	5A-N
				590	990	2.2	2.8	2.6	0.004		5AY-N
7	M3	5	15	1080	1670	4.1	4.9	5.2	0.01	0.19	7A-N
				1890	2920	12.0	14.3	9.1	0.015		7AY-N
9	M4	7.5	20	1670	2450	6.9	7.8	11.8	0.02	0.31	9A-N
				2550	3820	16.7	19.6	17.6	0.03		9AY-N
12	M4	10	25	2160	3140	8.8	10.8	18.6	0.04	0.61	12A-N
				3530	5100	24.5	29.4	32.3	0.06		12AY-N
15	M5	15	40	3630	5390	21.6	25.5	40.2	0.06	1.02	15A-N
				5880	8720	57.8	68.6	67.6	0.10		15AY-N
20	M6	20	60	6860	9800	51.0	60.8	98.0	0.23	2.14	20A-N
				11000	15700	157.0	186.0	157.0	0.34		20AY-N

Unit: mm

							Maximum Length	
							Standard	Anti-Corrosion
							-	300
310							-	700
355	395	435	475				500	1,000
345	370	395	420	445	470	495		
510	550	590	630	670			1900	

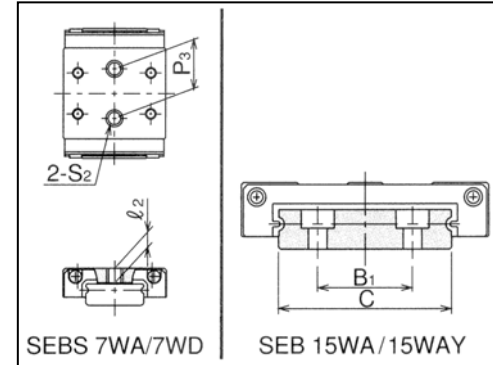
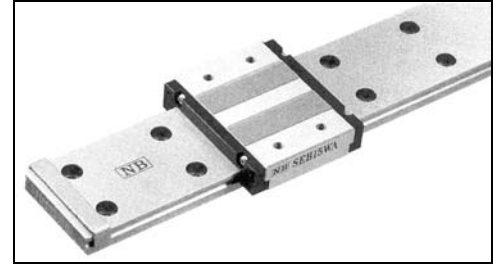
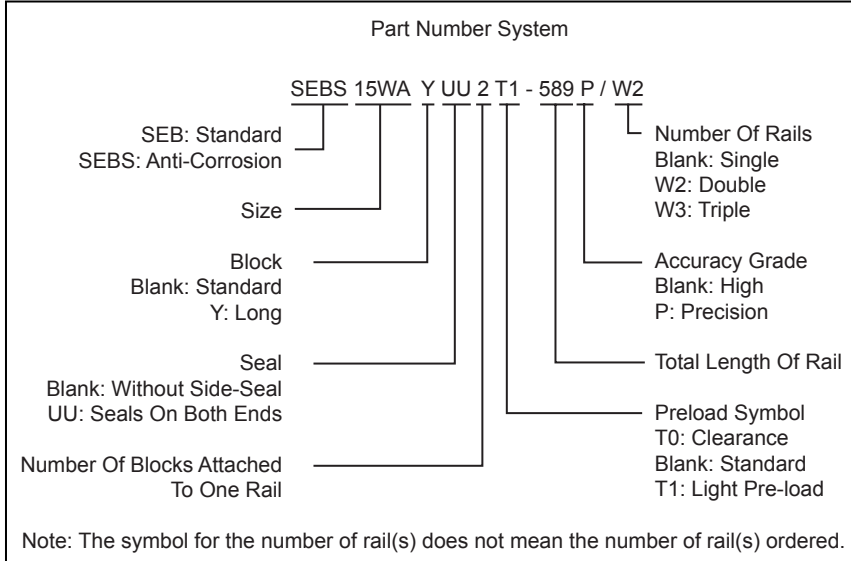
MOTION COMPONENTS

PROFILE GUIDE RAILS



SEB-WA / WAY TYPE

Wide Type



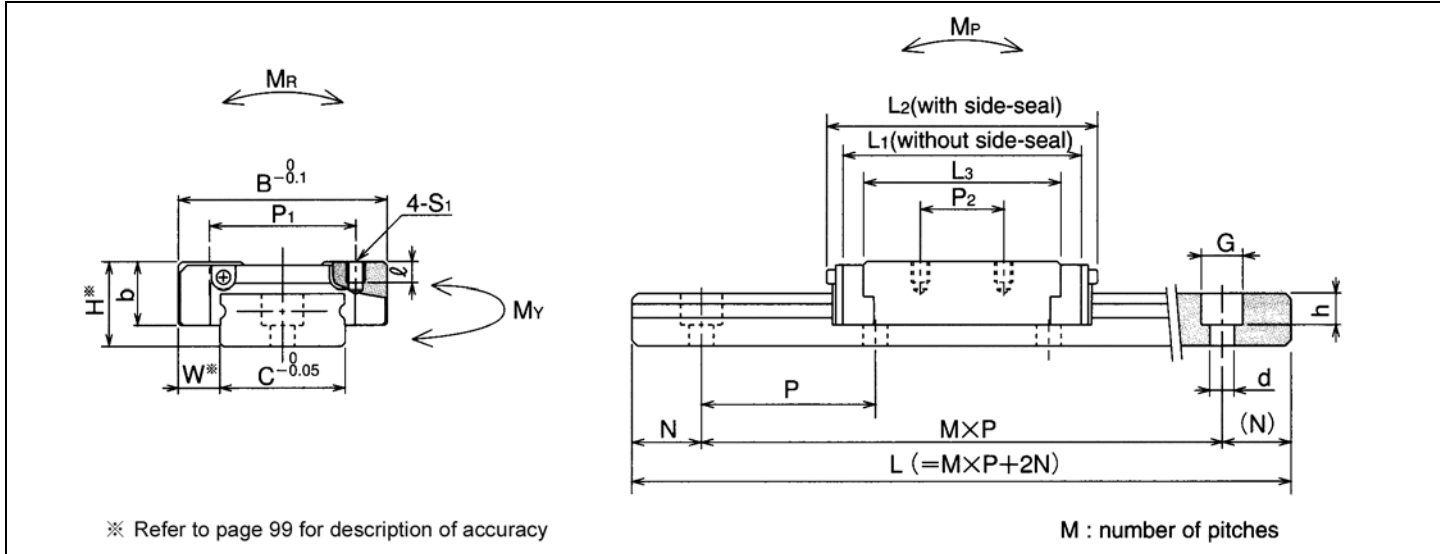
Part No.		Assembly Dimensions		Block Dimensions												
		H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	ℓ	L ₃	P ₃	S ₂	ℓ ₂	b	
Standard	Anti-Corrosion															
-	SEBS7WA SEBS7WD SEBS7WAY	9	5.5	25	30.1 39.6	32 41	18 19	12 19	M2.6 M3	2.5 2.8	22.1 31.6	12 18	M4	3.5	7	
SEB9WA SEB9WD SEB9WAY	SEBS9WA SEBS9WD SEBS9WAY	12	6	30	35.9 48	38 50	21 23	12 24	M2.6 M3	3 2.8 3	28.4 40.4	-	-	-	9	
SEB12WA SEB12WAY	SEBS12WA SEBS12WAY	14	8	40	40.7 55	44 58.5	28	15 28	M3	3.5	33.5 47.8	-	-	-	11	
SEB15WA SEB15WAY	SEBS15WA SEBS15WAY	16	9	60	51.2 70.5	55 74	45	20 35	M4	4.5	42 61.1	-	-	-	13	

MOTION COMPONENTS

Part No.		Standard Rail Length										
Standard	Anti-Corrosion	L										
-	SEBS7WA	50	80	110	140	170	200	230	260	290	350	410
SEB9WA	SEBS9WA	50	80	110	140	170	200	230	260	290	350	410
SEB12WA	SEBS12WA	70	110	150	190	230	270	310	350	390	430	470
SEB15WA	SEBS15WA	70	110	150	190	230	270	310	350	390	430	470

Joint rails are used when the required length exceeds the maximum standard length listed in the dimensional tables. Contact SMI for details.

SEB-WA / WAY TYPE



Unit: mm

Guide Rail Dimensions					Basic Load Rating		Allowable Static Moment			Mass		Size
C	B ₁	d x G x h	N	P	Dynamic C N	Static Co N	M _P N • m	M _Y N • m	M _R N • m	Block kg	Guide Rail kg / m	
14	-	3.5 x 6 x 3.2	10	30	1570	2450	7.8	9.8	15.7	0.02	0.5	7WA 7WD 7WAY
					2360	3680	17.2	21.6	23.6	0.03		
18	-	3.5 x 6 x 4.5	10	30	2250	3330	13.7	16.7	30.4	0.04	0.96	9WA 9WD 9WAY
					3330	4900	29.4	35.3	45.1	0.06		
24	-	4.5 x 8 x 4.5	15	40	2940	4310	20.6	24.5	51.9	0.08	1.40	12WA 12WAY
					4310	6270	44.1	52.9	76.4	0.11		
42	23	4.5 x 8 x 4.5	15	40	4900	7060	40.2	48	148	0.15	2.95	15WA 15WAY
					7350	10600	94.1	108	225	0.22		

1N = 0.102kgf

1N • m = 0.102kgf • m

Unit: mm

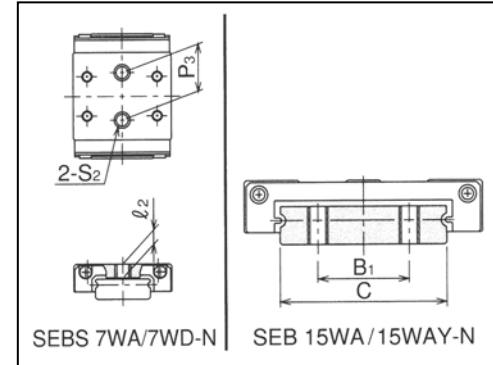
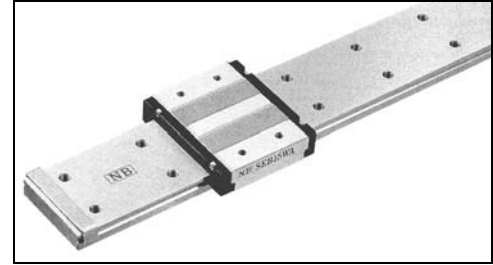
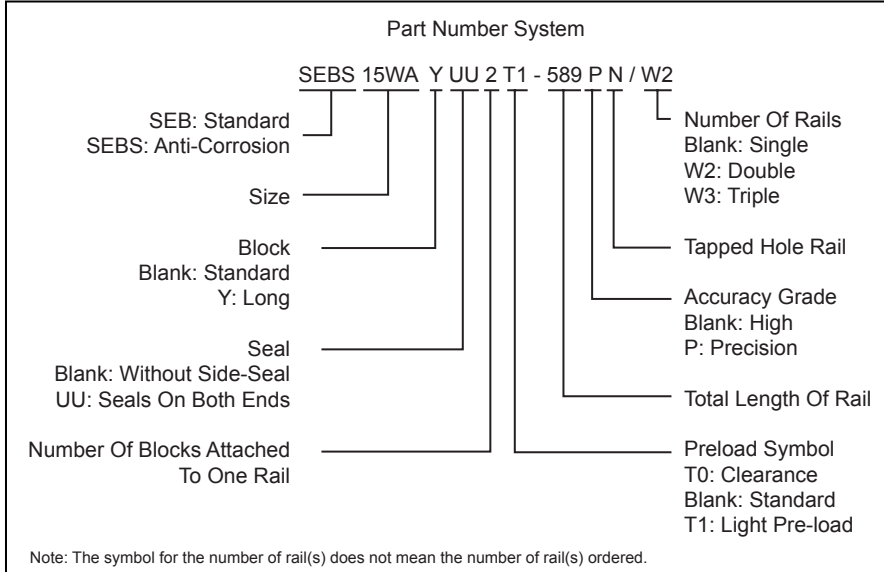
					Maximum Length	
					Standard	Anti-Corrosion
470					-	700
470	530				1000	1,000
550	630	710			1900	
550	630	710	790	870		

PROFILE GUIDE RAILS



SEB-WA-N / WAY-N TYPE

Wide Type with Tapped Hole Rail



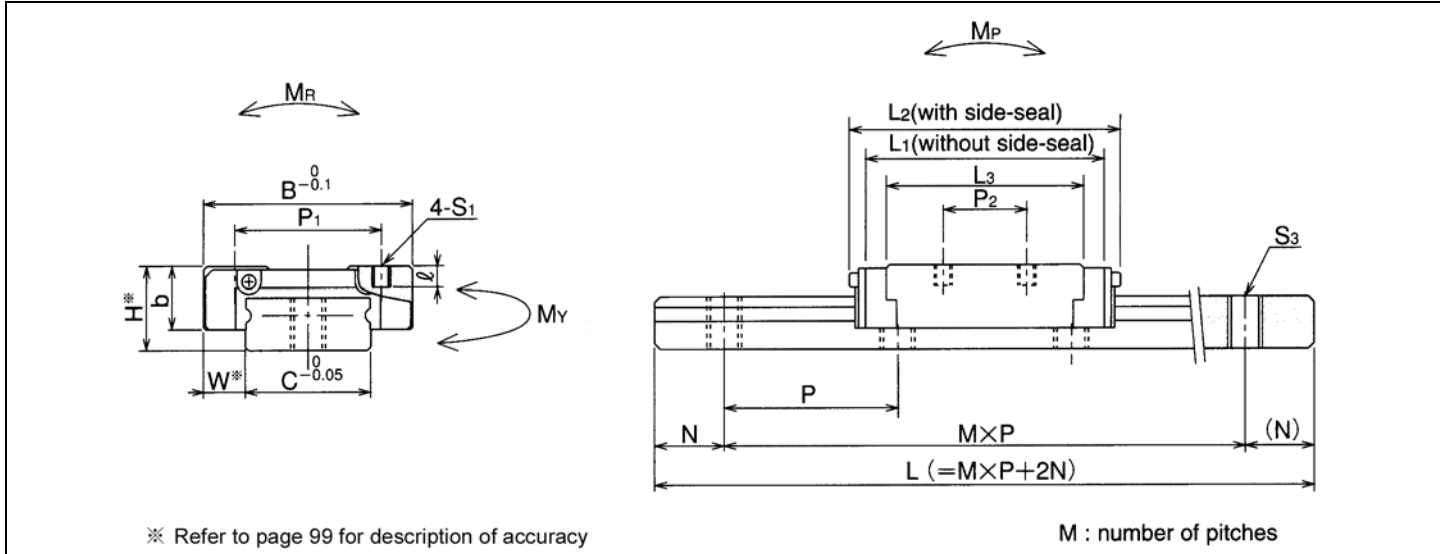
Part No.		Assembly Dimensions		Block Dimensions											
		H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	l	L ₃	P ₃	S ₂	l ₂	b
Standard	Anti-Corrosion														
-	SEBS7WA-N SEBS7WD-N SEBS7WAY-N	9	5.5	25	30.1 39.6	32 41	18 19	12 19	M2.6 M3	2.5 2.8	22.1 31.6	12 18	M4	3.5	7
SEB9WA-N SEB9WD-N SEB9WAY-N	SEBS9WA-N SEBS9WD-N SEBS9WAY-N	12	6	30	35.9 48	38 50	21 23	12 24	M2.6 M3	3 2.8 3	28.4 40.4	-	-	-	9
SEB12WA-N SEB12WAY-N	SEBS12WA-N SEBS12WAY-N	14	8	40	40.7 55	44 58.5	28	15 28	M3	3.5	33.5 47.8	-	-	-	11
SEB15WA-N SEB15WAY-N	SEBS15WA-N SEBS15WAY-N	16	9	60	51.2 70.5	55 74	45	20 35	M4	4.5	42 61.1	-	-	-	13

MOTION COMPONENTS

Part No.		Standard Rail Length											
Standard	Anti-Corrosion	L											
-	SEBS7WA-N	50	80	110	140	170	200	230	260	290	350	410	
SEB9WA-N	SEBS9WA-N	50	80	110	140	170	200	230	260	290	350	410	
SEB12WA-N	SEBS12WA-N	70	110	150	190	230	270	310	350	390	430	470	
SEB15WA-N	SEBS15WA-N	70	110	150	190	230	270	310	350	390	430	470	

Joint rails are used when the required length exceeds the maximum standard length listed in the dimensional tables. Contact SMI for details.

SEB-WA-N / WAY-N TYPE



Unit: mm

Guide Rail Dimensions					Basic Load Rating		Allowable Static Moment			Mass		Size
C	B ₁	S ₃	N	P	Dynamic C N	Static C ₀ N	M _P N • m	M _Y N • m	M _R N • m	Block kg	Guide Rail kg / m	
14	-	M4	10	30	1570	2450	7.8	9.8	15.7	0.02	0.5	7WA-N 7WD-N 7WAY-N
					2360	3680	17.2	21.6	23.6	0.03		
18	-	M4	10	30	2250	3330	13.7	16.7	30.4	0.04	0.96	9WA-N 9WD-N 9WAY-N
					3330	4900	29.4	35.3	45.1	0.06		
24	-	M5	15	40	2940	4310	20.6	24.5	51.9	0.08	1.40	12WA-N 12WAY-N
					4310	6270	44.1	52.9	76.4	0.11		
42	23	M5	15	40	4900	7060	40.2	48	148	0.15	2.95	15WA-N 15WAY-N
					7350	10600	94.1	108	225	0.22		

1N = 0.102kgf

1N • m = 0.102kgf • m

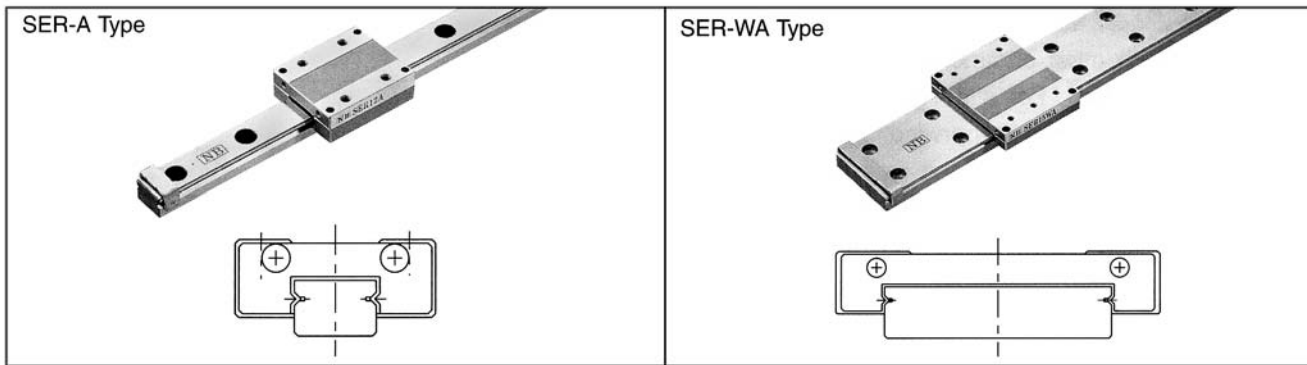
Unit: mm

					Maximum Length	
					Standard	Anti-Corrosion
470					-	700
470	530				1000	1,000
550	630	710			1900	
550	630	710	790	870		

SER SERIES - ALL STAINLESS TYPE

SER type uses roller elements and has a larger contact surface which provides a high load capacity and long life. All stainless steel construction provides excellent anti-corrosion and thermal characteristics. Ideal for clean room or vacuum applications.

SER type profile guide rails are available with a standard or a wide block (WA) configuration. Each type can be used with standard rails with counterbore holes or the optional N-type rails, which is with tapped holes.



SER ACCURACY

The SER profile guide rails are available with high grade or precision grade (P).

Accuracy	Unit: mm	
Accuracy Grade	High	Precision
Accuracy Symbol	None	P
Dimensional tolerance for height H	± 0.015	± 0.008
Difference in height H between paired guides	0.015	0.007
Dimensional tolerance for width W	± 0.020	± 0.010
Difference in width W between paired guides	0.020	0.010
Running parallelism of surface C to surface A	Refer to Figure 4	
Running parallelism of surface D to surface B		

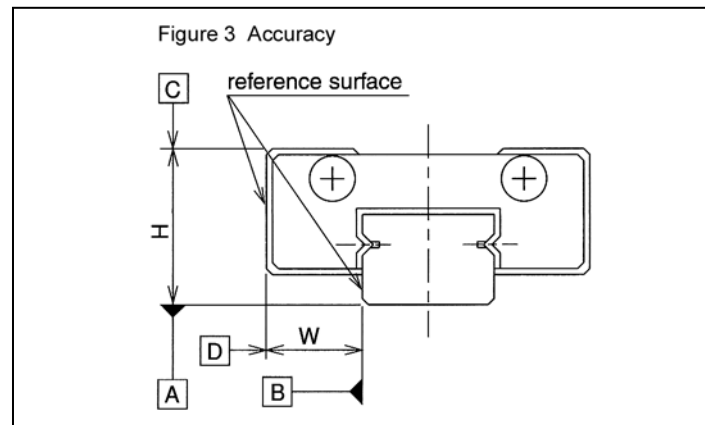
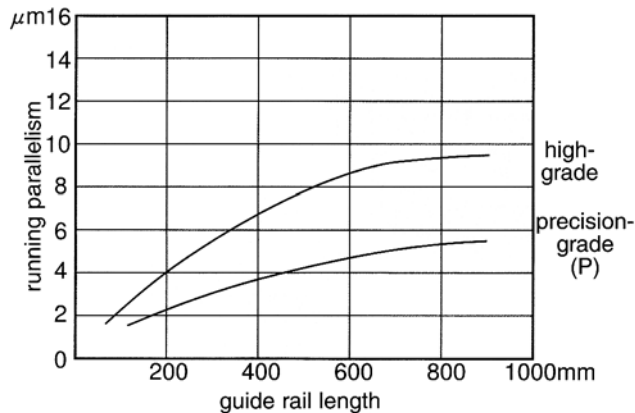


Figure 4 Motion Accuracy



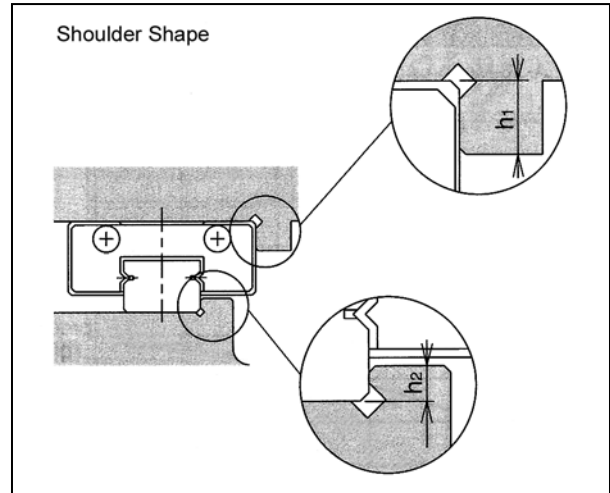
SER PRE-LOAD

The SER profile guide rails has two levels of preload: zero pre-load and an extremely slight pre-load.

MOUNTING SURFACE SHAPES

Profile guide rails are mounted by pushing the reference surface of the rail and block against the shoulder of the mounting surface. An escape groove should be provided at the corner of the shoulder in order to avoid interference with the corner of the rail or the block.

Shoulder Shape Dimensions		Unit: mm
Part No.	h_1	h_2
SER9A	3	1.5
SER9WA	3	2.5
SER12A	4	2
SER12WA	4	2.5
SER15A	5	3.5
SER15WA	5	2.5
SER20A	5	5



RECOMMENDED TORQUE VALUES

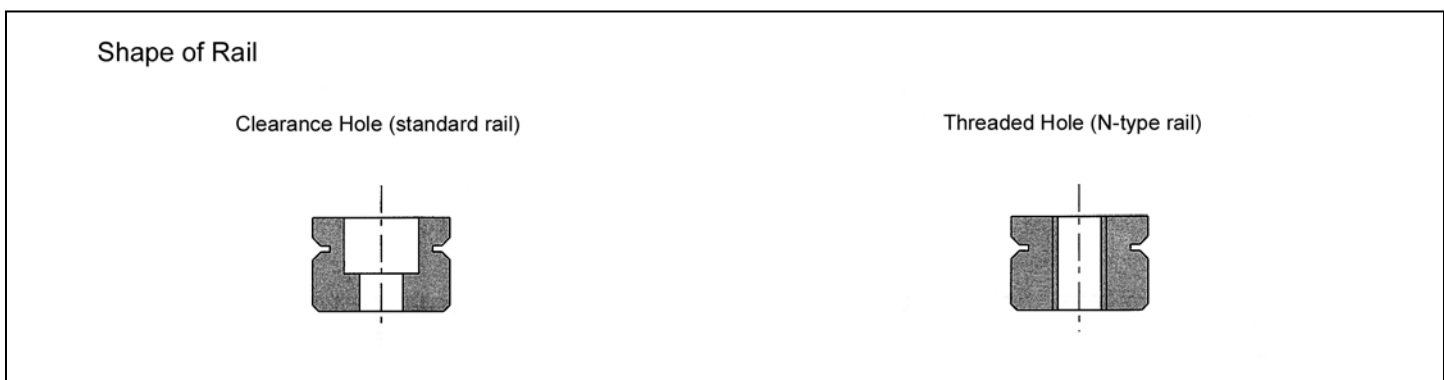
The bolts used to secure the rail should be tightened using a torque wrench. The recommended torque values are listed below.

Recommended Torque for Standard Rail

Part No.	Bolt Size	Torque (N • m)
SER9A	M2	0.4
SER12A, 15A	M3	1.0
SER20A	M5	4.9
SER9WA	M3	1.0
SER12WA, 15A	M4	2.5

Recommended Torque for N-Type Rail

Part No.	Bolt Size	Torque (N • m)
SER9A, 12A-N	M4	2.5
SER15A-N	M5	4.9
SER20A-N	M6	10.0
SER9WA-N	M4	2.5
SER12WA, 15WA-N	M5	4.9

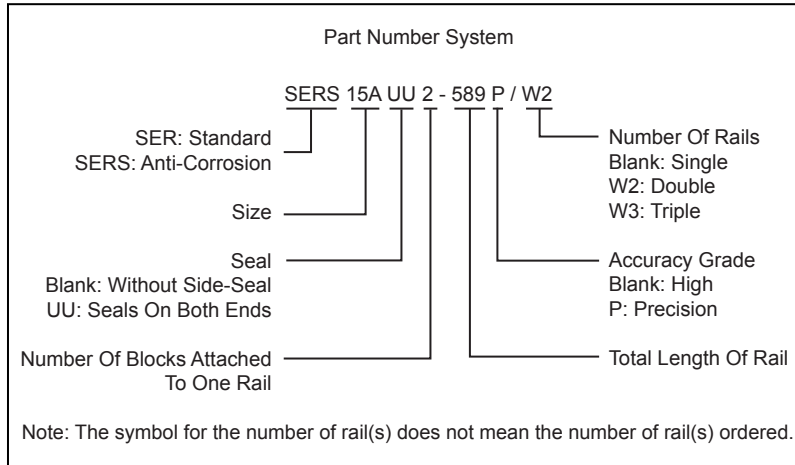
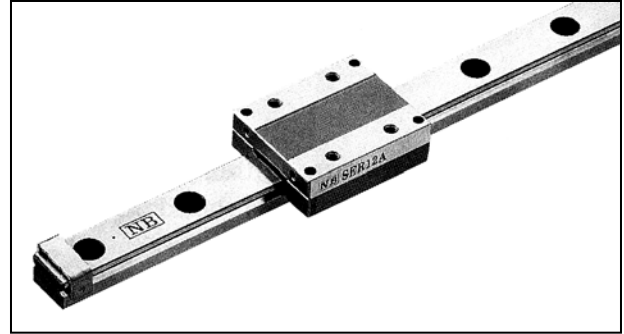


PROFILE GUIDE RAILS



SER-A TYPE

Standard Type



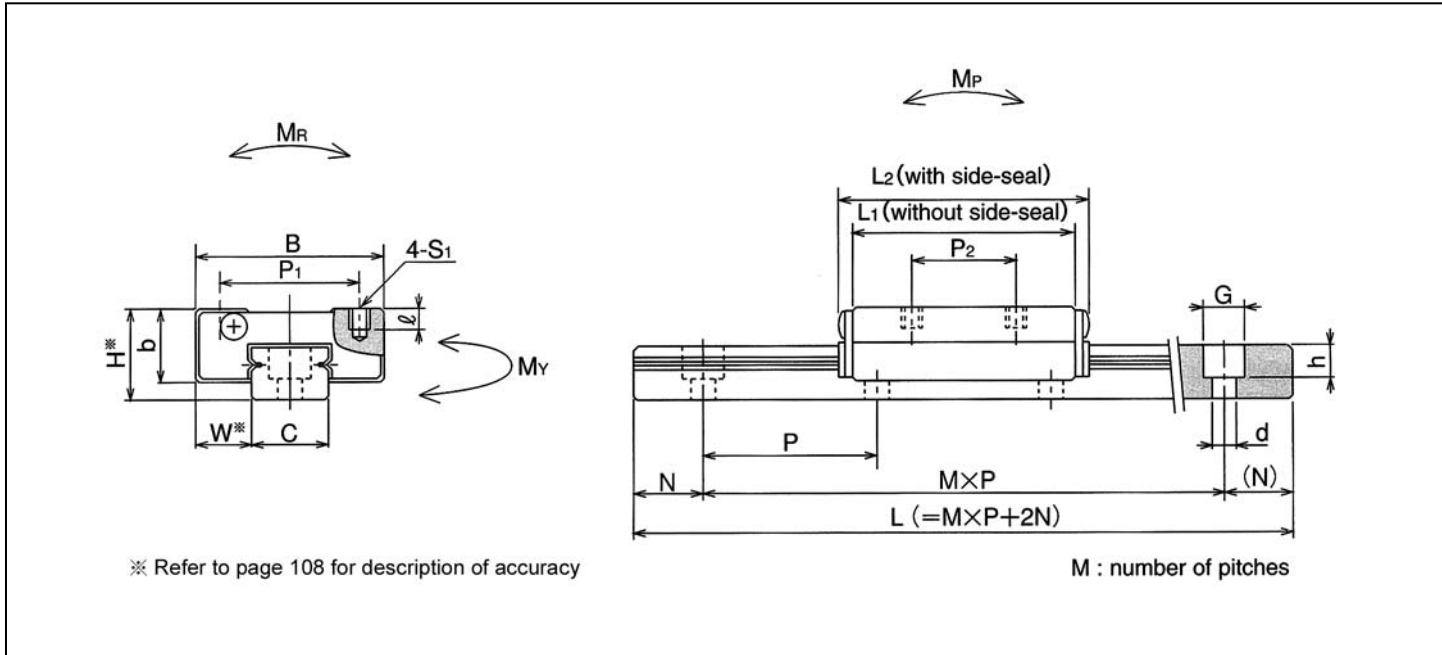
Part No.		Assembly Dimensions		Block Dimensions								
				B	L ₁	L ₂	P ₁	P ₂	S ₁	ℓ	b	
Standard	Anti-Corrosion	H	W									
SER9A	SERS9A	10	5.7	20	28	32	15	13	M2	2.5	7.8	
SER12A	SERS12A	13	8	27	32	36	20	15	M3	3	10.5	
SER15A	SERS15A	16	8.5	32	40	44	25	20		4	11.5	
SER20A	SERS20A	25	13	46	60	66	38	38	M4	6	17.5	

Unit: mm

Part No.		Standard Rail Length							Maximum Length
Standard	Anti-Corrosion	L							
SER9A	SERS9A	55	75	95	115	155	195	275	275
SER12A	SERS12A	120	170	220	270	320	370	470	470
SER15A	SERS15A	150	230	310	430	550	670		670
SER20A	SERS20A	220	280	340	460	640	880		880

MOTION COMPONENTS

SER-A TYPE



Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size
C	d x G x h	N	P	Dynamic C N	Static Co N	M _P N • m	M _Y N • m	M _R N • m	Block kg	Guide Rail kg / m	
8.6	2.6 x 4.5 x 3	7.5	20	2650	2940	11.8	13.7	19.6	0.02	0.35	9A
11	3.5 x 6 x 4.5	10	25	3430	3920	15.7	17.6	29.4	0.05	0.55	12A
15		15	40	4700	5780	29.0	32.3	54.9	0.09	1.0	15A
20	6 x 9.5 x 8.5	20	60	8820	9800	59.0	66.6	151	0.26	2.3	20A

1N = 0.102kgf

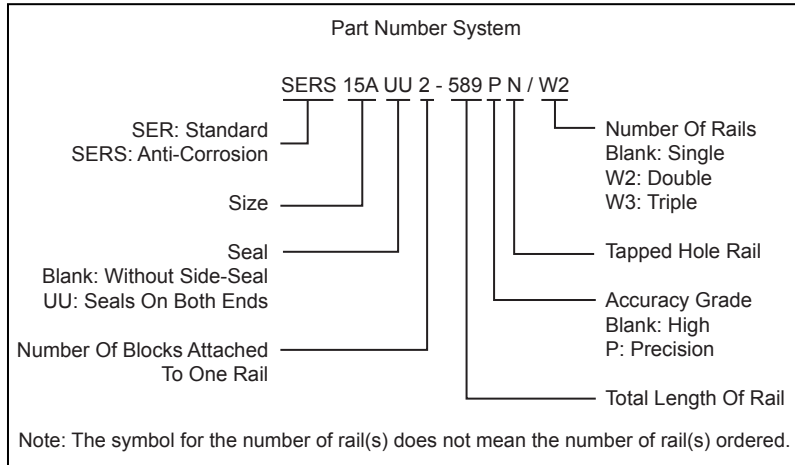
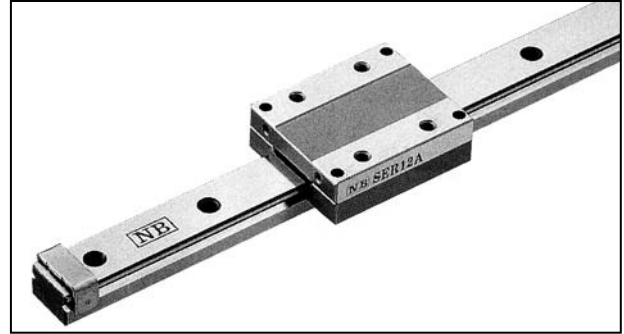
1N • m = 0.102kgf • m

PROFILE GUIDE RAILS



SER-A-N TYPE

Standard Type w/Tapped Hole Rail



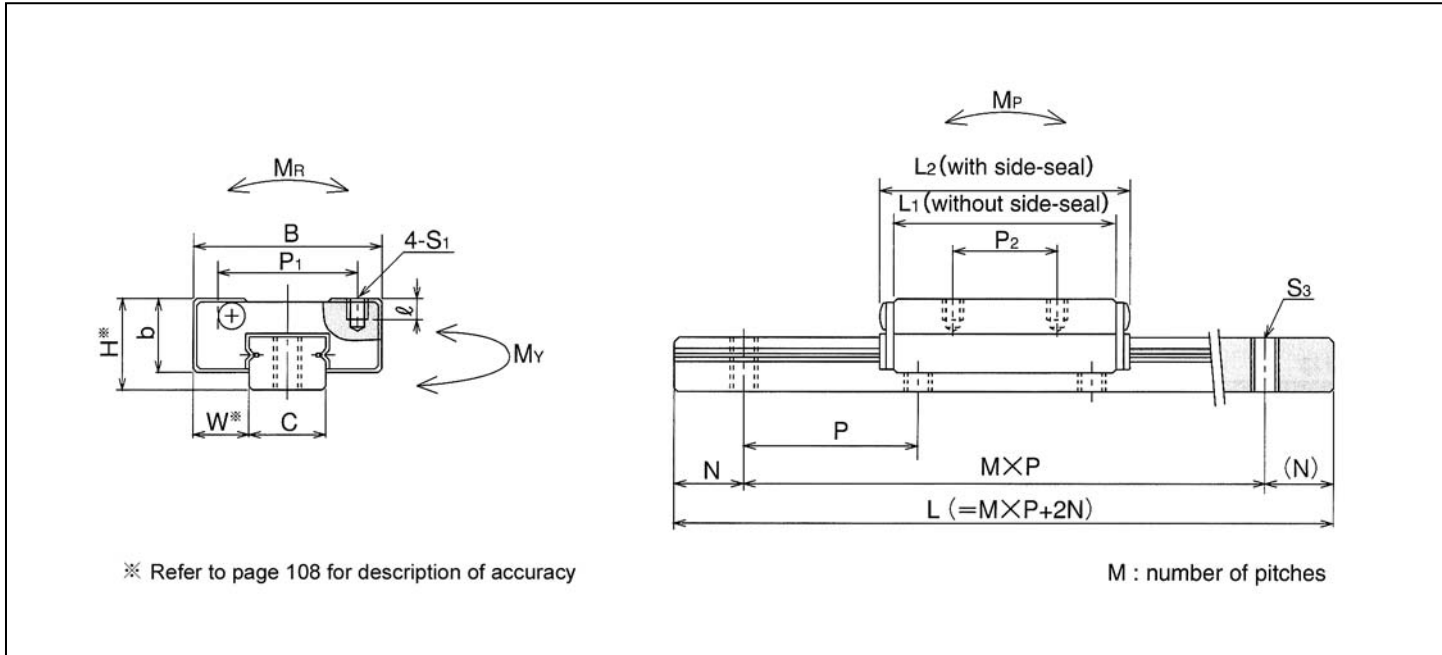
Part No.		Assembly Dimensions		Block Dimensions							
		H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	ℓ	b
Standard	Anti-Corrosion										
SER9A-N	SERS9A-N	10	5.7	20	28	32	15	13	M2	2.5	7.8
SER12A-N	SERS12A-N	13	8	27	32	36	20	15	M3	3	10.5
SER15A-N	SERS15A-N	16	8.5	32	40	44	25	20		4	11.5
SER20A-N	SERS20A-N	25	13	46	60	66	38	38	M4	6	17.5

Unit: mm

Part No.		Standard Rail Length							Maximum Length
Standard	Anti-Corrosion	L							
SER9A-N	SERS9A-N	55	75	95	115	155	195	275	275
SER12A-N	SERS12A-N	120	170	220	270	320	370	470	470
SER15A-N	SERS15A-N	150	230	310	430	550	670		670
SER20A-N	SERS20A-N	220	280	340	460	640	880		880

MOTION COMPONENTS

SER-A-N TYPE



Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size
C	S ₃	N	P	Dynamic C N	Static C ₀ N	M _P N • m	M _Y N • m	M _R N • m	Block kg	Guide Rail kg / m	
8.6	M4	7.5	20	2650	2940	11.8	13.7	19.6	0.02	0.35	9A-N
11		10	25	3430	3920	15.7	17.6	29.4	0.05	0.55	12A-N
15	M5	15	40	4700	5780	29.0	32.3	54.9	0.09	1.0	15A-N
20	M6	20	60	8820	9800	59.0	66.6	151	0.26	2.3	20A-N

1N = 0.102kgf

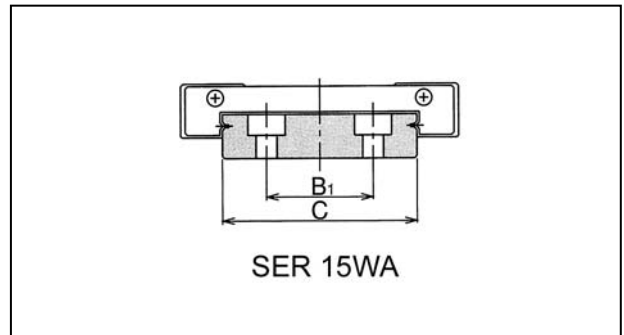
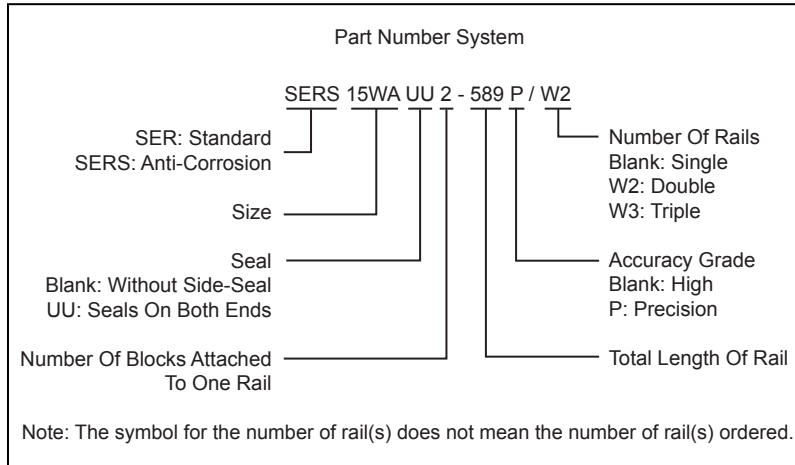
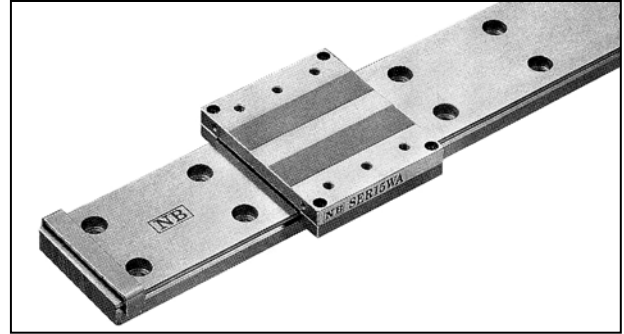
1N • m = 0.102kgf • m

PROFILE GUIDE RAILS



SER-WA TYPE

Wide Type



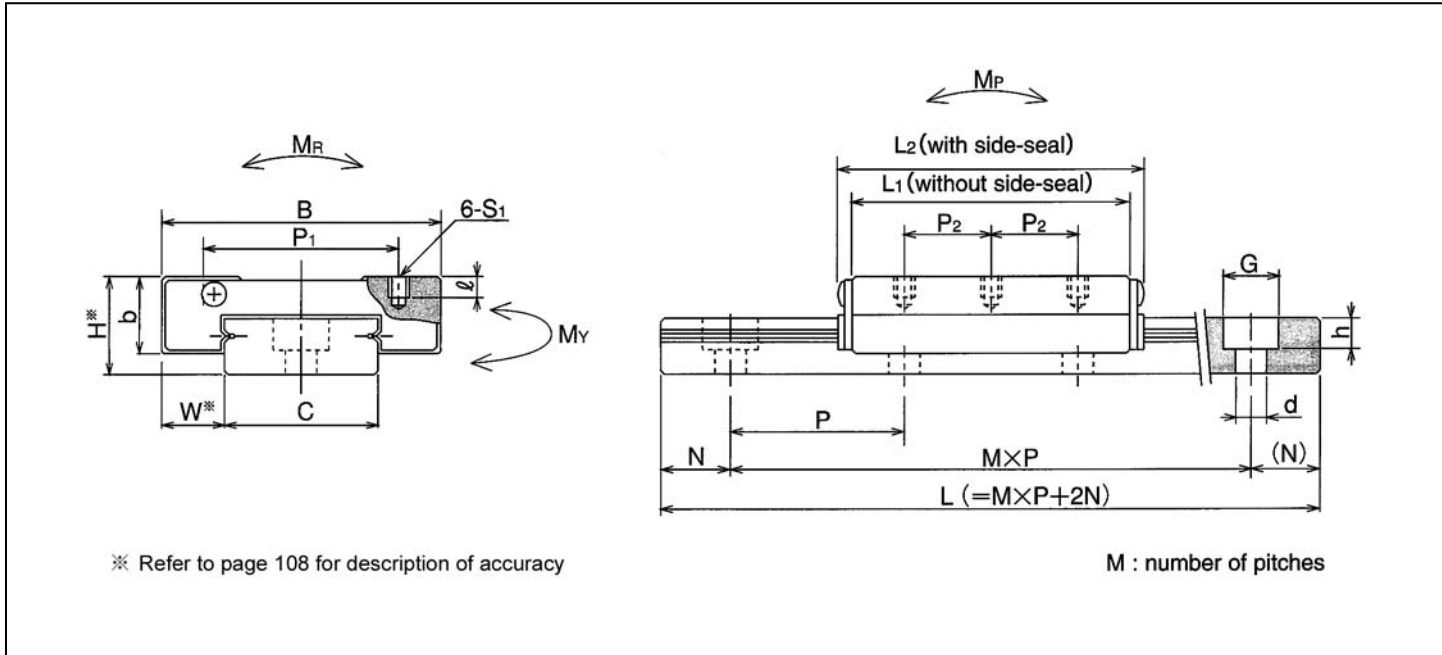
Part No.		Assembly Dimensions		Block Dimensions								
				B	L ₁	L ₂	P ₁	P ₂	S ₁	ℓ	b	
Standard	Anti-Corrosion	H	W									
SER9WA	SERS9WA	12	6.5	30	35	39	21	10	M3	3	8.8	
SER12WA	SERS12WA	14	9	40	40	44	28	12.5			11	
SER15WA	SERS15WA	16		60	50	54	45	15	M4	4.5	11.5	

Unit: mm

Part No.		Standard Rail Length							Maximum Length
Standard	Anti-Corrosion	L							
SER9WA	SERS9WA	80	110	140	170	200	260	290	290
SER12WA	SERS12WA	110	150	190	230	310	390	470	470
SER15WA	SERS15WA	150	230	310	430	550	670		670

MOTION COMPONENTS

SER-WA TYPE



Unit: mm

Guide Rail Dimensions					Basic Load Rating		Allowable Static Moment			Mass		Size
C	B ₁	d x G x h	N	P	Dynamic C N	Static Co N	M _p N • m	M _y N • m	M _R N • m	Block kg	Guide Rail kg / m	
17	-	3.5 x 6 x 4.5	10	30	3430	3720	24.5	27.4	51.9	0.06	0.90	9WA
22	-	4.5 x 8 x 4.5	15	40	4410	5000	35.3	39.2	85.3	0.10	1.22	12WA
42	23				7350	8920	55.9	61.7	215	0.18	2.80	15WA

1N = 0.102kgf

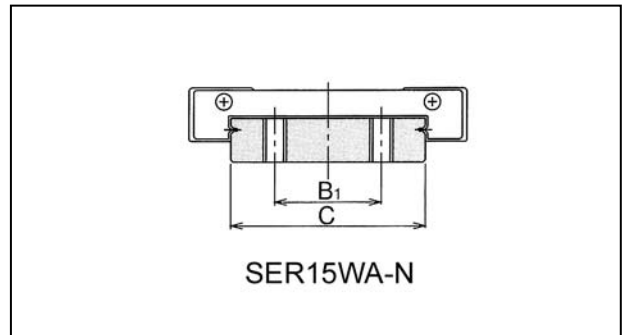
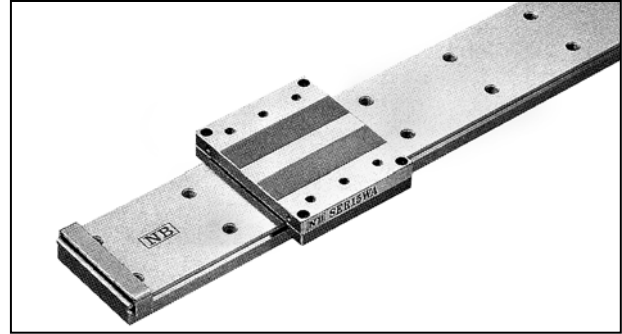
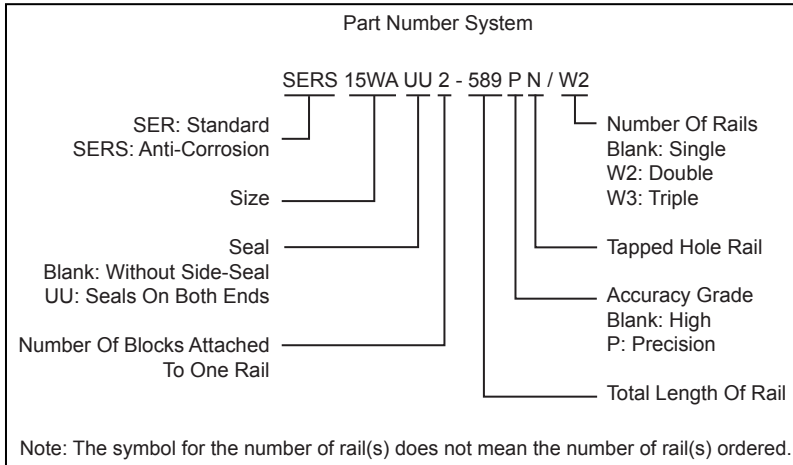
1N • m = 0.102kgf • m

PROFILE GUIDE RAILS



SER-WA-N TYPE

Wide Type with Tapped Hole Rail



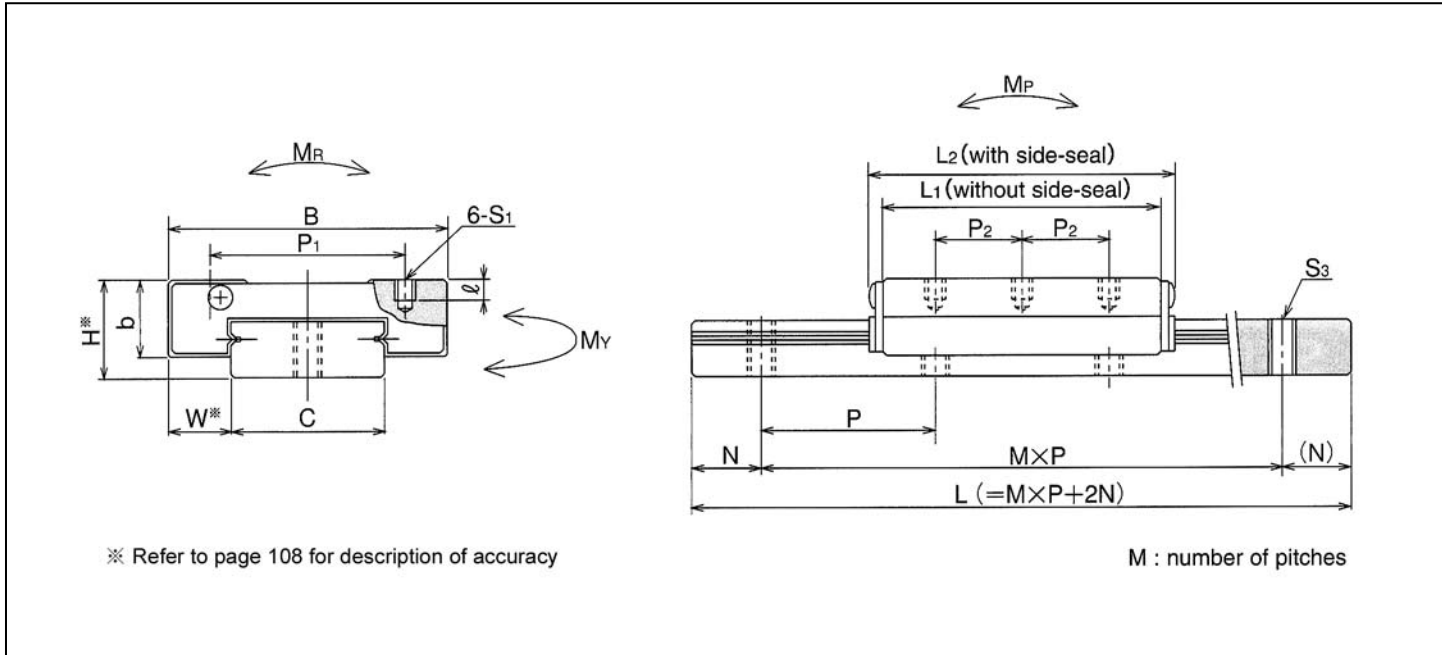
Part No.		Assembly Dimensions		Block Dimensions							
				B	L ₁	L ₂	P ₁	P ₂	S ₁	ℓ	b
Standard	Anti-Corrosion	H	W								
SER9WA-N	SERS9WA-N	12	6.5	30	35	39	21	10	M3	3	8.8
SER12WA-N	SERS12WA-N	14	9	40	40	44	28	12.5			11
SER15WA-N	SERS15WA-N	16		60	50	54	45	15	M4	4.5	11.5

Unit: mm

Part No.		Standard Rail Length							Maximum Length
Standard	Anti-Corrosion	L							
SER9WA-N	SERS9WA-N	80	110	140	170	200	260	290	290
SER12WA-N	SERS12WA-N	110	150	190	230	310	390	470	470
SER15WA-N	SERS15WA-N	150	230	310	430	550	670		670

MOTION COMPONENTS

SER-WA-N TYPE



Unit: mm

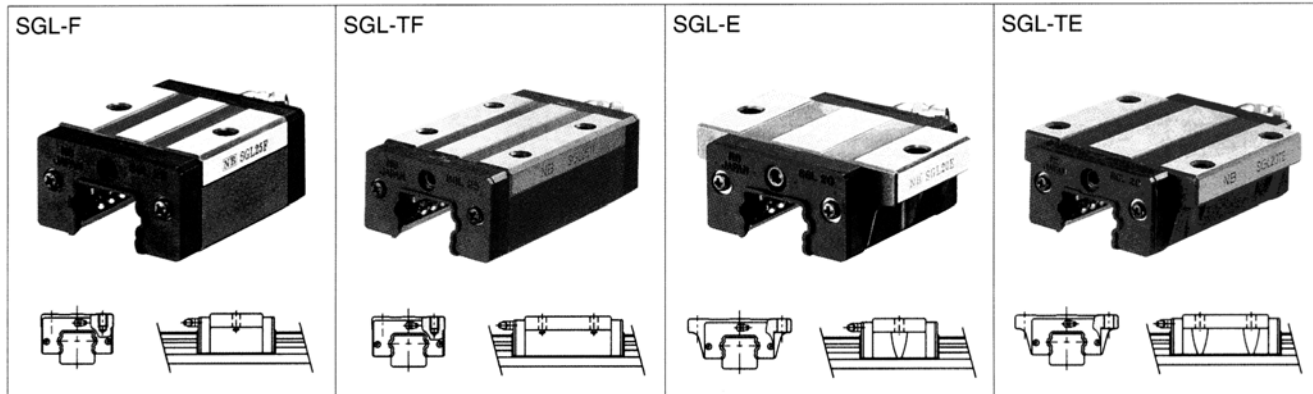
Guide Rail Dimensions					Basic Load Rating		Allowable Static Moment			Mass		Size
C	B ₁	S ₃	N	P	Dynamic C N	Static C ₀ N	M _P N • m	M _Y N • m	M _R N • m	Block kg	Guide Rail kg / m	
17	-	M4	10	30	3430	3720	24.5	27.4	51.9	0.06	0.90	9WA-N
22	-	M5	15	40	4410	5000	35.3	39.2	85.3	0.10	1.22	12WA-N
42	23				7350	8920	55.9	61.7	215	0.18	2.80	15WA-N

1N = 0.102kgf

1N • m = 0.102kgf • m

SGL SERIES - BLOCK TYPES

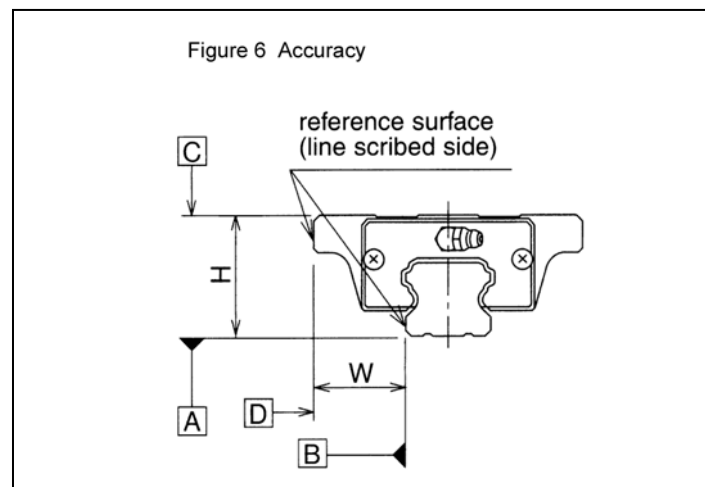
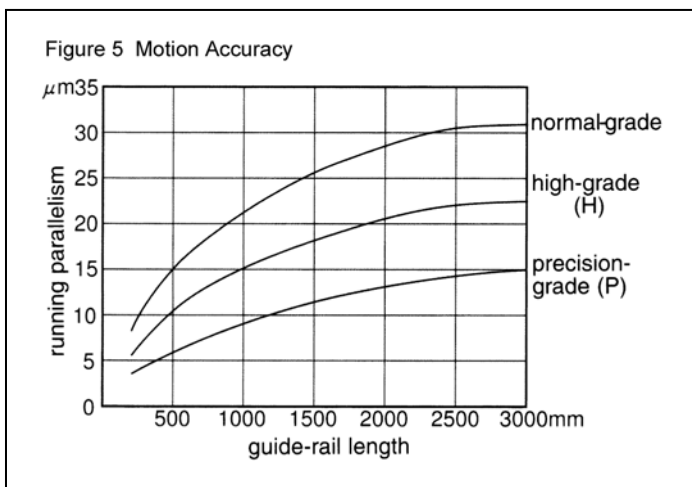
Four different types of blocks are available depending on the mounting space requirements and desired mounting method.



SGL ACCURACY

Three accuracy grades are available: normal grade (no suffix), high grade (H), and precision grade (P).

Part Number	SGL15, 20			SGL25, 30, 35		
	Normal	High	Precision	Normal	High	Precision
Accuracy Grade	Normal	High	Precision	Normal	High	Precision
Accuracy Symbol	None	H	P	None	H	P
Dimensional tolerance for height H	± 0.1	± 0.03	0 to -0.03	± 0.1	± 0.04	0 to -0.04
Difference in height H between paired guides	0.02	0.01	0.006	0.02	0.015	0.007
Dimensional tolerance for width W	± 0.1	± 0.03	0 to -0.03	± 0.1	± 0.04	0 to -0.04
Difference in width W between paired guides	0.02	0.01	0.006	0.03	0.015	0.007
Running parallelism of surface C to surface A	Refer to Figure 5					
Running parallelism of surface D to surface B						



SGL PRE-LOAD

Unit: μm

Pre-Load Category	Standard	Light	Medium
Pre-Load Symbol	Blank	T1	T2
SGL15	+2 to -4	-4 to -12	-
SGL20	+2 to -5	-5 to -14	-14 to -23
SGL25	+6 to +3	-6 to -16	-16 to -26
SGL30	+4 to -7	-7 to -19	-19 to -31
SGL35	+4 to -8	-8 to -22	-22 to -35

Operating Condition and Pre-load

Category	Symbol	Operating Condition
Standard	Blank	Minute vibration is applied. Precision motion is required. Moment in a given direction is applied.
Light	T1	Light vibration is applied. Light moment is applied. Moment is applied.
Medium	T2	Shock / vibration is applied. Over-hang load is applied. Torsional load is applied.

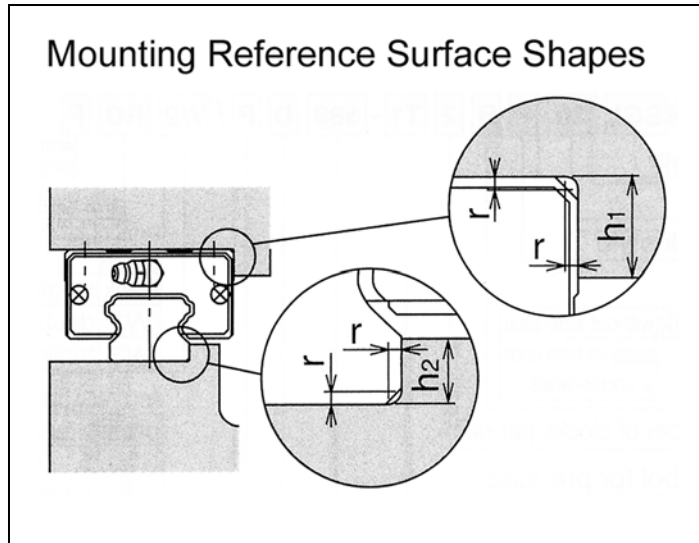
MOUNTING SURFACE SHAPES

Profile guide rails are generally mounted by pushing the reference surface of the rail and block against the shoulder of the mounting surface. An escape groove should be provided at the corner of the shoulder in order to avoid interference with the corner of the rail or block.

The bolts used to secure the rail should be tightened using a torque wrench. The recommended torque values are listed below.

Recommended Torque

Part No.	Bolt Size	Torque (N · m)
SGL15	M3	2.0
SGL15-D	M4	3.9
SGL20	M5	8.8
SGL25	M6	12.7
SGL30	M6	12.7
SGL35	M8	29.4



Mounting Surface Dimensions

Unit: mm

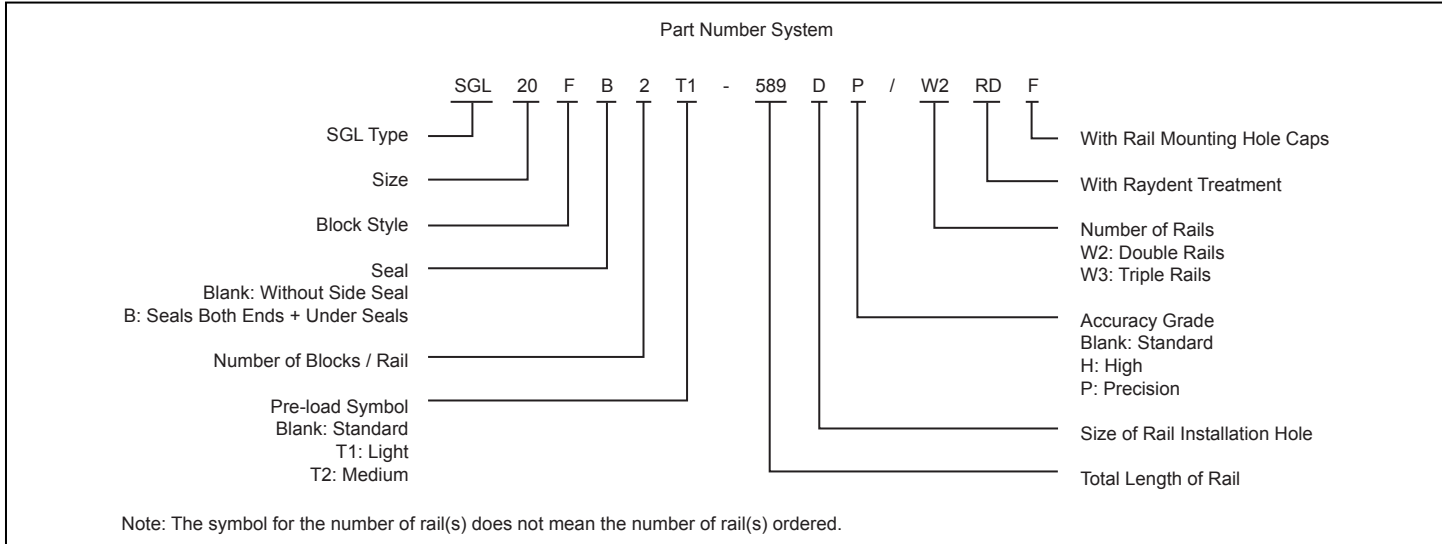
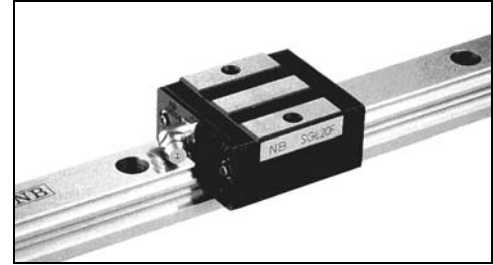
Part No.	h_1	h_2	r_{max}
SGL15	4	3.5	0.5
SGL20	5	5	0.5
SGL25	5	5.5	1
SGL30	6	7.5	1
SGL35	6	8	1

PROFILE GUIDE RAILS



SGL-F TYPE

High Rigidity Non-Flange Type
Short Configuration



Part No.	Assembly Dimensions		Block Dimensions										Grease Fitting
	H	W	B	L ₁	L ₂	P ₁	S ₁	ℓ	T	b	E	T ₁	
SGL15F SGL15F-D	24	9.5	34	40.7	22.7	26	M4	7	6	19.5	6	5	Press Fitting
SGL20F	28	11	42	47.9	29.5	32	M5	8	7.5	22	14	6	B-M6F
SGL25F	33	12.5	48	58.9	37.7	35	M6	9	8	26		6.5	
SGL30F	42	16	60	68	40	40	M8	12	9	32.5		9	
SGL35F	48	18	70	77	46	50			13	38		8.5	

Part No.	Standard Rail Length														
	L														
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL25															
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400
SGL35															

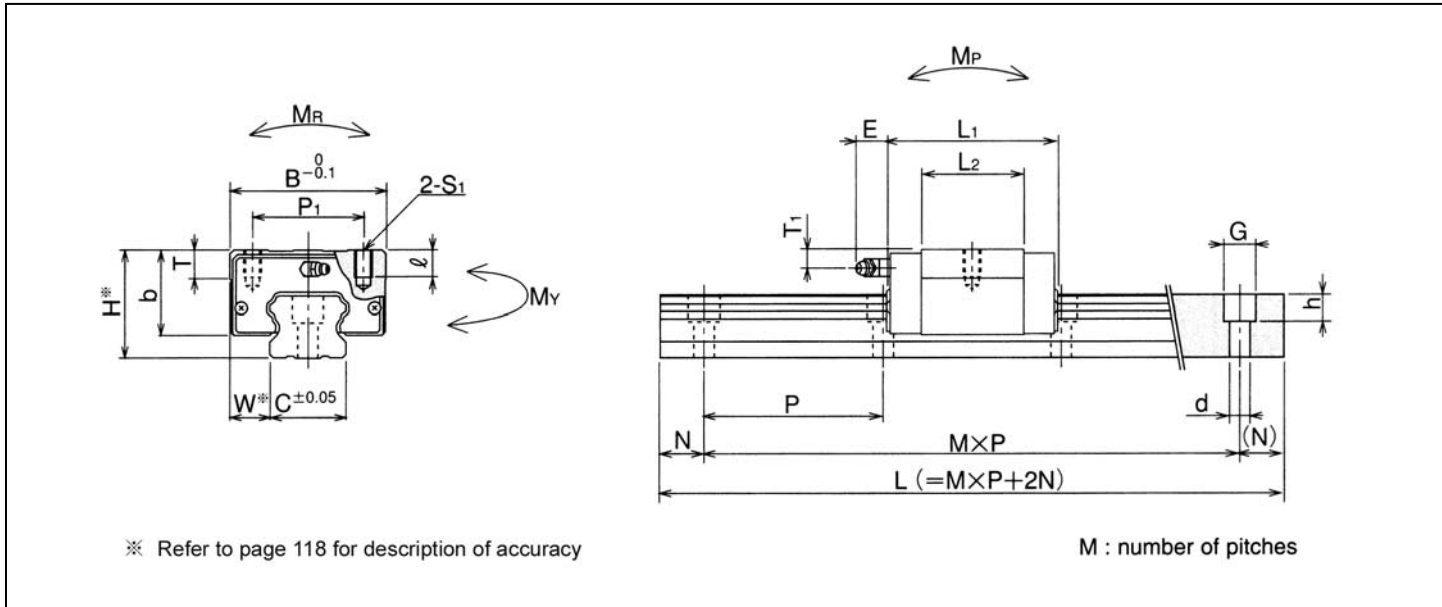
Rails exceeding the maximum specified length may be fabricated if joints are used. Contact SMI for assistance.

MOTION COMPONENTS

SGL-F TYPE

1N = 0.102kgf

1N • m = 0.102kgf • m

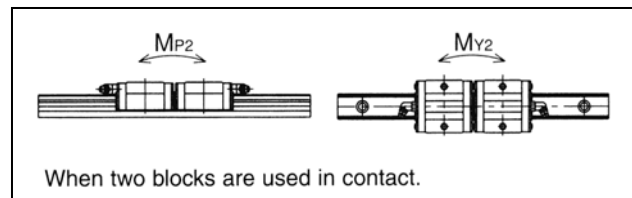


Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size
C	d x G x h	N	P	Dynamic C N	Static Co N	M _P M _{P2} N • m	M _Y M _{Y2} N • m	M _R N • m	Block kg	Guide Rail kg / m	
15	3.5 x 6 x 4.5	20	60	5000	8230	33	33	57	0.1	1.3	15
	196					196					
20	6 x 9.5 x 8.5			7350	12300	59	59	137	0.2	2.1	20
	353					353					
23	7 x 11 x 9		80	11700	19600	109	109	225	0.3	3	25
652						652					
28	13700			22500	123	123	319	0.5	4.6	30	
735					735						
34	9 x 14 x 12	21600	35700	248	248	627	0.8	6.2	35		
				1490	1490						

Unit: mm

							Maximum Length
1,120	1,240	1,360	1,480	-	-	-	2,000
1,240	1,360	1,480	1,600	1,720	1,840	1,960	3,000
1,480	1,640	1,800	1,960	-	-	-	

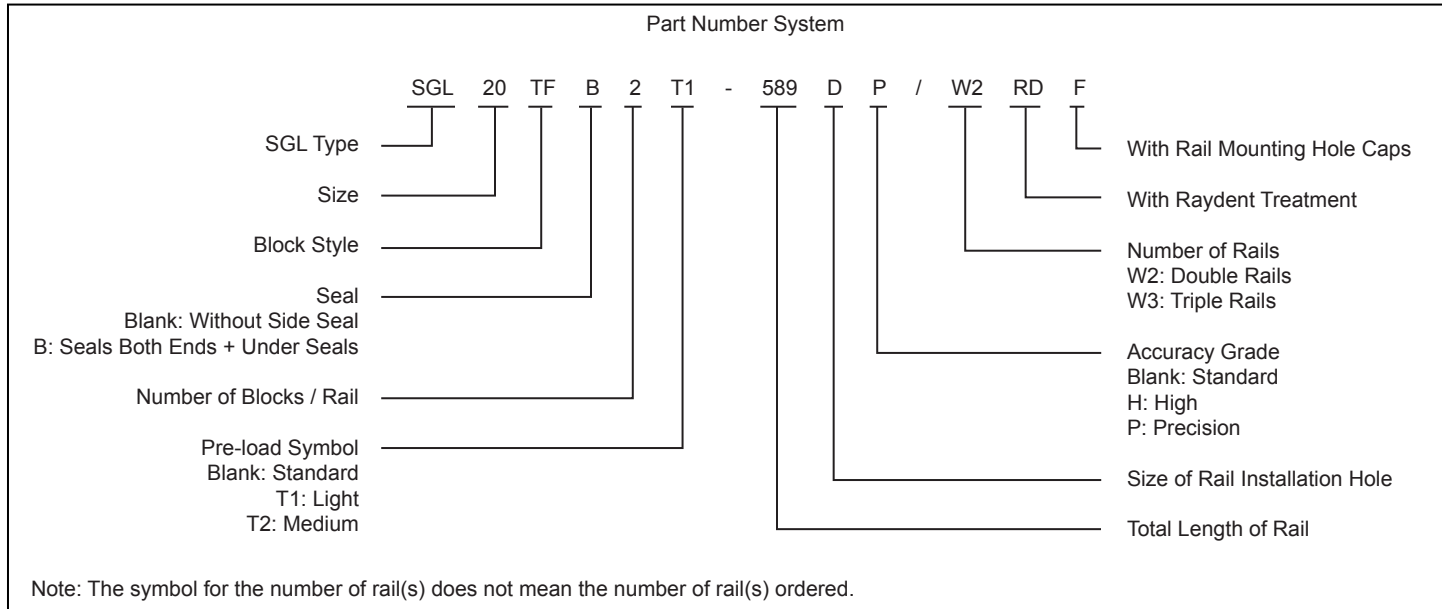
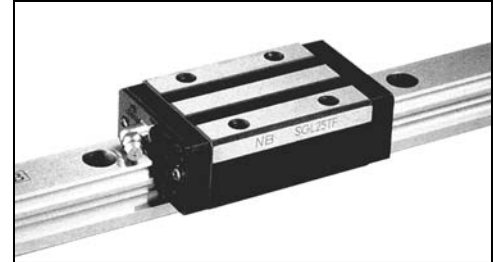


PROFILE GUIDE RAILS



SGL-TF TYPE

High Rigidity Non-Flange Type



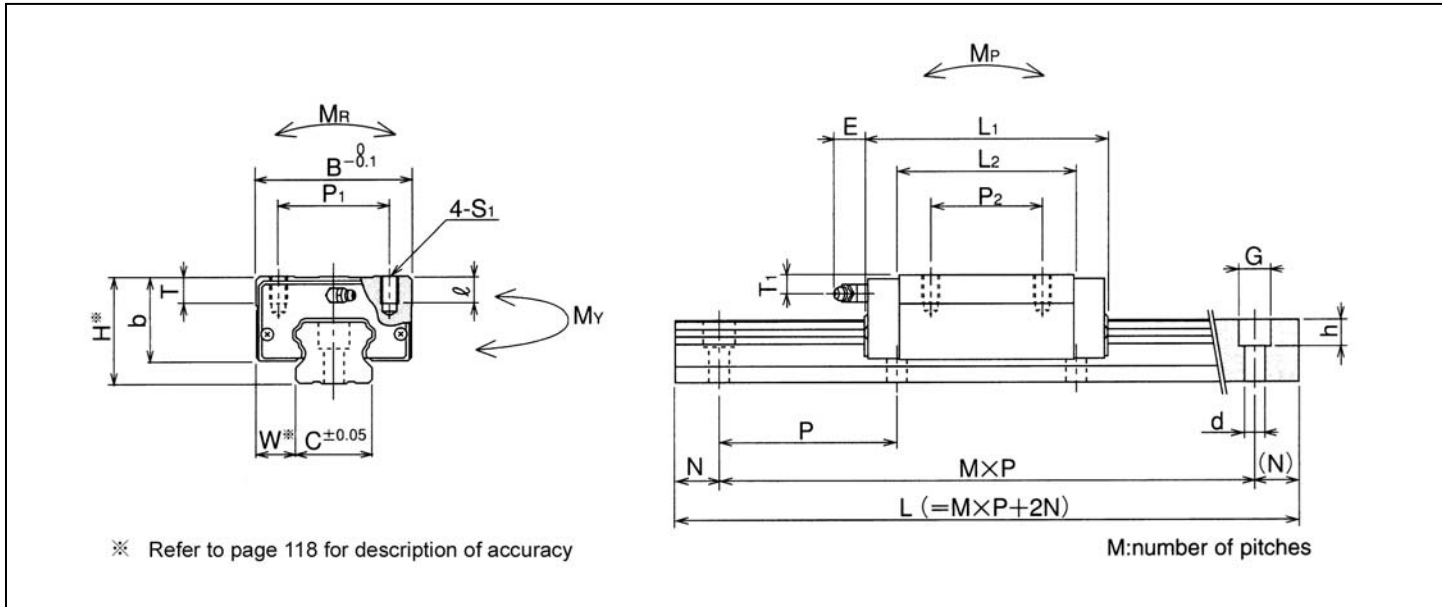
Part No.	Assembly Dimensions		Block Dimensions											Grease Fitting
	H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	ℓ	T	b	E	T ₁	
SGL15TF	24	9.5	34	56.5	38.5	26	26	M4	7	6	19.5	6	5	Press Fitting
SGL15TF-D													5	
SGL20TF	28	11	42	65.8	47.4	32	32	M5	8	7.5	22	14	6	B-M6F
SGL25TF													6.5	
SGL30TF													9	
SGL35TF													8.5	

Part No.	Standard Rail Length														
	L														
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL25															
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400
SGL35															

Rails exceeding the maximum specified length may be fabricated if joints are used. Contact SMI for assistance.

MOTION COMPONENTS

SGL-TF TYPE



Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size
C	d x G x h	N	P	Dynamic C N	Static Co N	M _p N • m	M _y N • m	M _R N • m	Block kg	Guide Rail kg / m	
15	3.5 x 6 x 4.5	20	60	8600	14200	69	69	98	0.2	1.3	15
	4.5 x 7.5 x 5.3			12700	21600	157	157	235	0.3	2.1	20
20	6 x 9.5 x 8.5		20100	34300	274	274	392	0.4	3.0	25	
23	7 x 11 x 9		80	23500	39700	314	314	549	0.8	4.6	30
28				37700	61300	637	637	1080	1.3	6.2	35
34	9 x 14 x 12										

1N = 0.102kgf

1N • m = 0.102kgf • m

Unit: mm

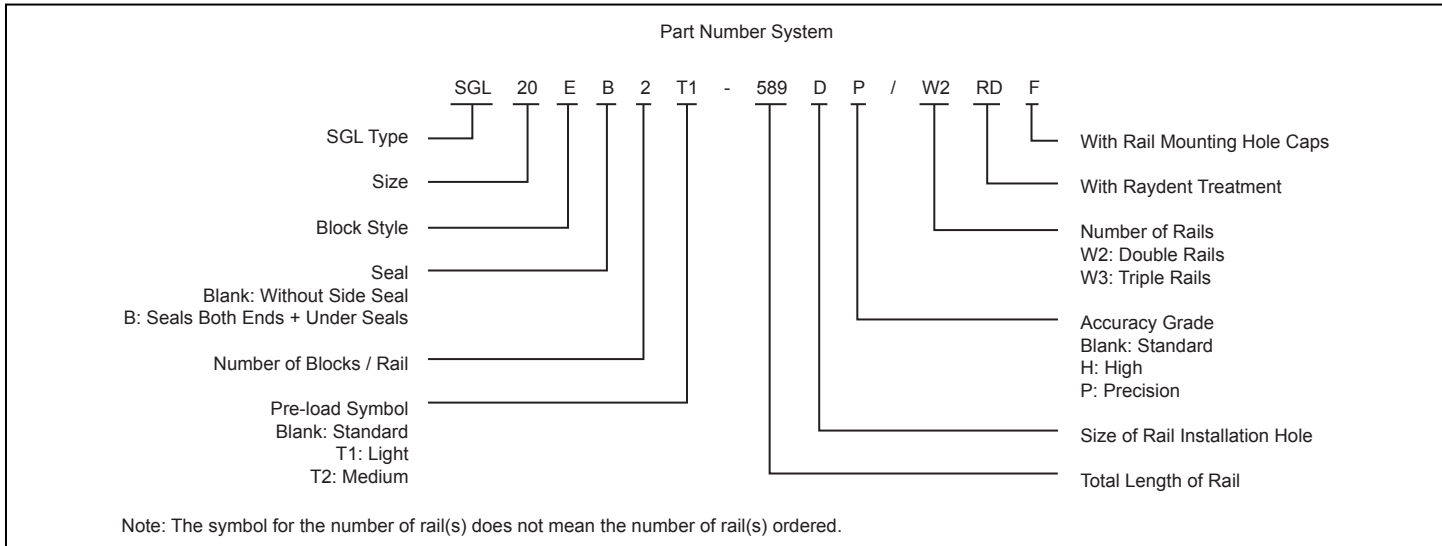
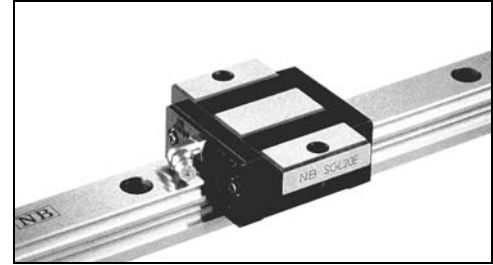
							Maximum Length
1,120	1,240	1,360	1,480	-	-	-	2,000
1,240	1,360	1,480	1,600	1,720	1,840	1,960	3,000
1,480	1,640	1,800	1,960	-	-	-	

PROFILE GUIDE RAILS



SGL-E TYPE

High Rigidity Non-Flange Type
Short Configuration



Part No.	Assembly Dimensions		Block Dimensions									Grease Fitting
	H	W	B	L ₁	L ₂	P ₁	S ₁	T	b	E	T ₁	
SGL15E SGL15E-D	24	18.5	52	40.7	22.7	41	4.5	7	19.5	6	5	Press Fitting
SGL20E	28	19.5	59	47.9	29.5	49	5.5	9	22	14	6	B-M6F
SGL25E	33	25	73	58.9	37.7	60	7	10	26		6.5	
SGL30E	42	31	90	68	40	72	9	13	32.5		9	
SGL35E	48	33	100	77	46	82			8.5			

Part No.	Standard Rail Length L														
	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL25															
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400
SGL35															

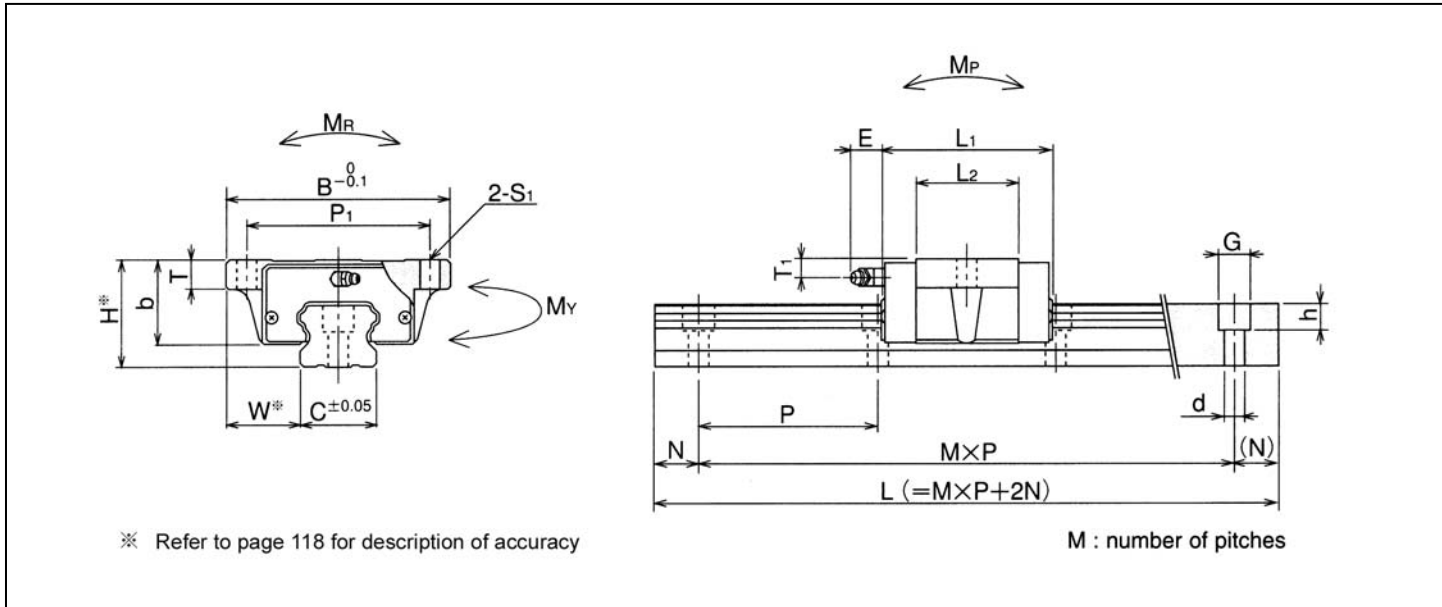
Rails exceeding the maximum specified length may be fabricated if joints are used. Contact SMI for assistance.

MOTION COMPONENTS

SGL-E TYPE

1N = 0.102kgf

1N • m = 0.102kgf • m

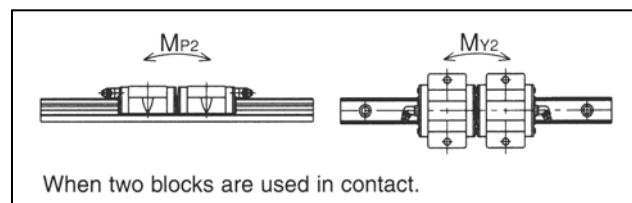


Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size
C	d x G x h	N	P	Dynamic C N	Static Co N	M_P M_{P2} N • m	M_Y M_{Y2} N • m	M_R N • m	Block kg	Guide Rail kg / m	
15	3.5 x 6 x 4.5	20	60	5000	8230	33	33	57	0.1	1.3	15
	4.5 x 7.5 x 5.3					196	196				
20	6 x 9.5 x 8.5			11700	19600	59	59	137	0.2	2.1	20
23	7 x 11 x 9					353	353				
				28	80	123	123	319	0.6	4.6	30
735	735										
34	9 x 14 x 12	21600	35700	248	248	627	0.9	6.2	35		
				1490	1490						

Unit: mm

							Maximum Length
1,120	1,240	1,360	1,480	-	-	-	2,000
1,240	1,360	1,480	1,600	1,720	1,840	1,960	3,000
1,480	1,640	1,800	1,960	-	-	-	

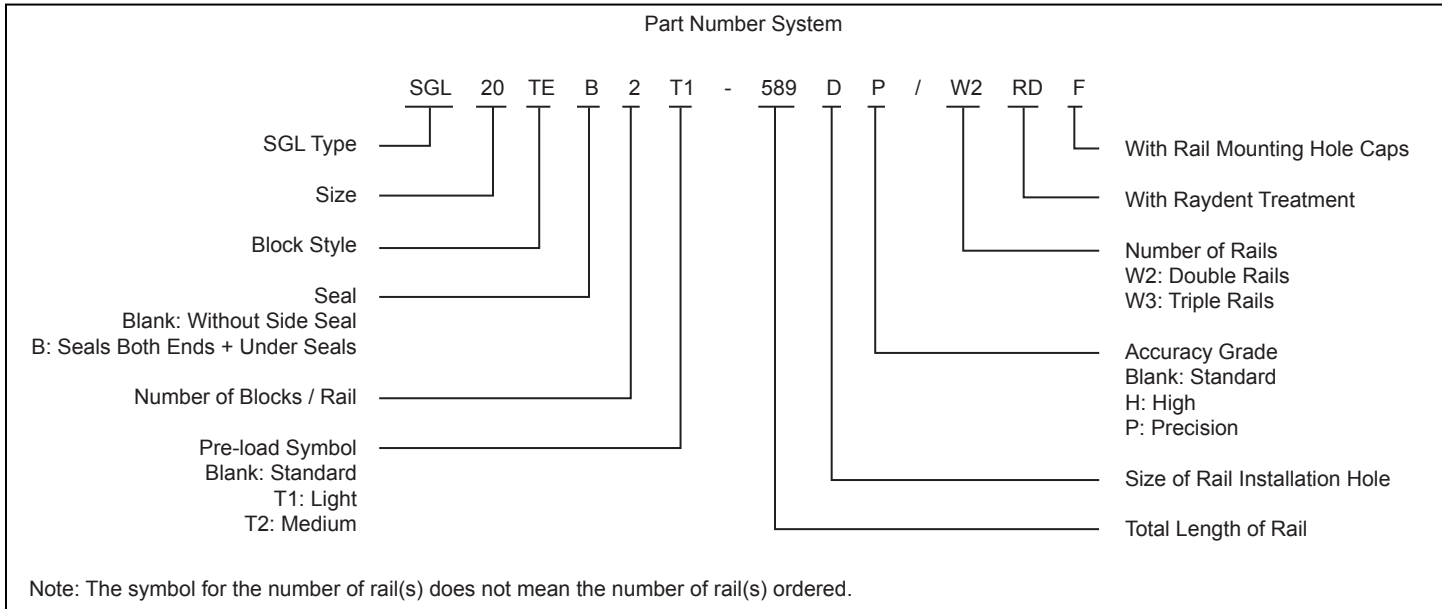
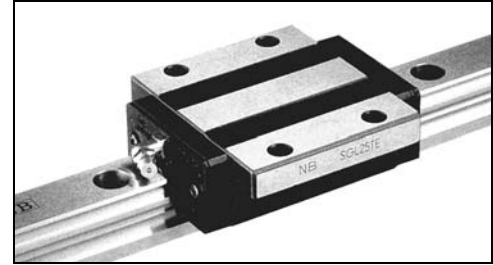


PROFILE GUIDE RAILS



SGL-TE TYPE

High Rigidity Non-Flange Type



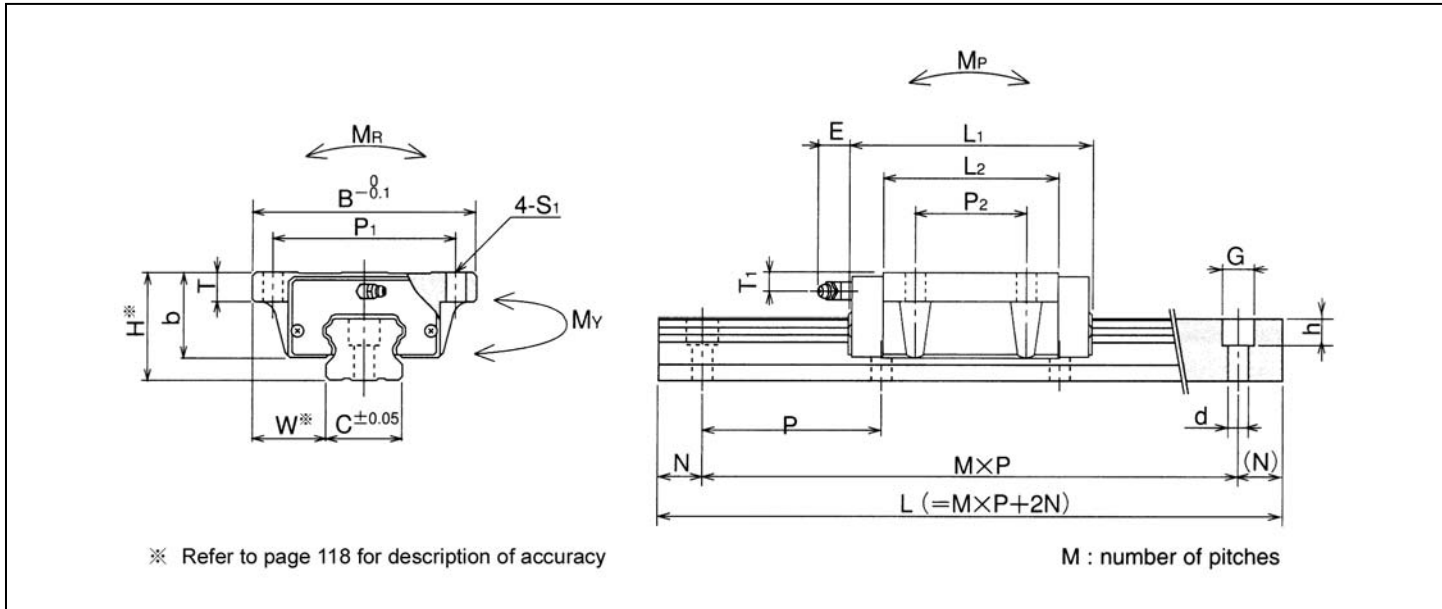
Part No.	Assembly Dimensions		Block Dimensions										Grease Fitting
	H	W	B	L ₁	L ₂	P ₁	P ₂	S ₁	T	b	E	T ₁	
SGL15TE	24	18.5	52	56.5	38.5	41	26	4.5	7	19.5	6	5	Press Fitting
SGL15TE-D													
SGL20TE	28	19.5	59	65.8	47.4	49	32	5.5	9	22	14	6	B-M6F
SGL25TE													
SGL30TE													
SGL35TE													
	33	25	73	80.2	59	60	35	7	10	26	6.5		
	42	31	90	95.7	67.7	72	40	9	10	32.5	9		
	48	33	100	109	78	82	50	9	13	38	8.5		

MOTION COMPONENTS

Part No.	Standard Rail Length														
	L														
SGL15	160	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000
SGL20	220	280	340	400	460	520	580	640	700	760	820	880	940	1,000	1,120
SGL25															
SGL30	280	360	440	520	600	680	760	840	920	1,000	1,080	1,160	1,240	1,320	1,400
SGL35															

Rails exceeding the maximum specified length may be fabricated if joints are used. Contact SMI for assistance.

SGL-TE TYPE



Unit: mm

Guide Rail Dimensions				Basic Load Rating		Allowable Static Moment			Mass		Size
C	d x G x h	N	P	Dynamic C N	Static Co N	Mp N • m	My N • m	MR N • m	Block kg	Guide Rail kg / m	
15	3.5 x 6 x 4.5	20	60	8600	14200	69	69	98	0.2	1.3	15
	4.5 x 7.5 x 5.3			12700	21600	157	157	235	0.3	2.1	20
20	6 x 9.5 x 8.5			20100	34300	274	274	392	0.6	3.0	25
23	7 x 11 x 9			80	23500	39700	314	314	549	1.0	4.6
28			37700		61300	637	637	1080	1.5	6.2	35
34	9 x 14 x 12										

1N = 0.102kgf

1N • m = 0.102kgf • m

Unit: mm

							Maximum Length
1,120	1,240	1,360	1,480	-	-	-	2,000
1,240	1,360	1,480	1,600	1,720	1,840	1,960	3,000
1,480	1,640	1,800	1,960	-	-	-	

MOTION COMPONENTS

BASIC DYNAMIC LOAD (C)

This term is arrived at based upon evaluation of a number of identical linear systems individually run in the same conditions. 90% of them can run with the load (with a constant value in the constant direction) for a distance of 2,000,000 inches without damage caused by rolling fatigue. This is the basis of this rating.

BASIC STATIC LOAD RATING (C₀)

This term defines a static load such that at the contracting position where the maximum stress is exercised, the sum of the permanent deformation of the rolling elements and that of the rolling plane is 0.0001 times the diameter of the rolling element.

AMBIENT WORKING TEMPERATURE

The ambient working temperature range for each linear system depends on the model. Consult SMI on use outside the recommended temperature range.

Notice that the ambient working temperature range for sealed linear systems made of stainless steel is from -20° C to 120° C. Temperature conversion equation:

$$C = \frac{5}{9} (F - 32) \quad F = 32 + \frac{9}{5} C$$

Linear System Type	Models	Ambient Working Temperature
Recirculating Bushing	SW, SWK, SWF	-20 to 100°C
Linear Motion Bushing	TW	-20 to 70°C
Pillow Blocks	TWA, TWJ, TWD	-20 to 70°C

FRICTIONAL RESISTANCE

The frictional resistance is expressed by the following equation:

$$F = \mu \times W + f$$

F: Frictional resistance μ : Coefficient of friction

W: Load weight f: Sealing resistance

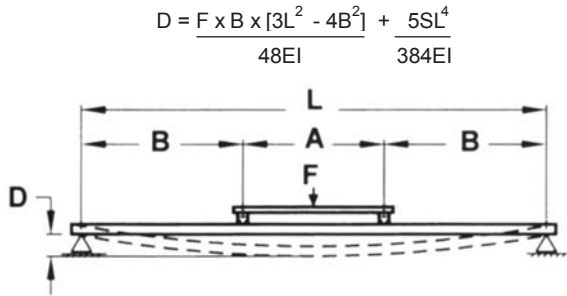
The frictional resistance of each linear system depends upon the model, load weight, speed, and lubricant. The sealing resistance depends on the lip of interference and lubricant, regardless of the load weight. The sealing resistance of one linear system is about 200 to 500gf. The coefficient of friction depends on the load weight, moment load, and preload. The chart below shows the coefficient of kinetic friction of each type of linear system which has been installed and lubricated properly and applied with normal load (P/C = 0.2). P = Applied Load, C = Rated Load.

Coefficient of Friction (μ)

Linear System Type	Models	Coefficient of Friction
Recirculating Bushing	SW, SWK, SWF	0.002 to 0.003
Linear Motion Bushing	TW	0.002 to 0.003

SHAFT DEFLECTION

The function and the service life of a system can be greatly reduced and even cause premature failures if shaft deflection is not observed. We have provided an equation to help calculate the maximum shaft deflection for your selected condition.



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

- D = Deflection (in)
- L = Distance between shaft and 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 carriage bearings (in)
- B = (L - A) / 2 (in)

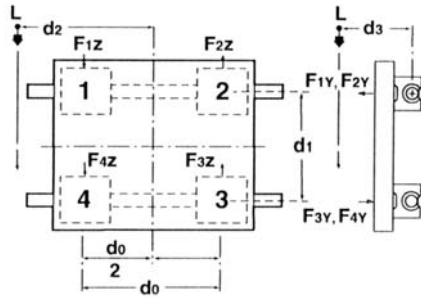
Solid Shaft			Metric Shaft		
Shaft Dia.	EI	S	Shaft Dia.	EI	S
(inch)	(lbf x in ²)	(lbf / in)	(mm)	(lbf x in ²)	(lbf / in)
0.250	5.75 x 10 ³	0.014	8	1.45 x 10 ⁴	0.022
0.375	2.97 x 10 ⁴	0.031	12	7.34 x 10 ⁴	0.050
0.500	9.20 x 10 ⁴	0.055	16	2.32 x 10 ⁵	0.088
0.625	2.25 x 10 ⁵	0.086	20	5.66 x 10 ⁵	0.138
0.750	4.66 x 10 ⁵	0.125	25	1.38 x 10 ⁶	0.216
0.875	8.63 x 10 ⁵	0.170	30	2.87 x 10 ⁶	0.311
1.000	1.47 x 10 ⁶	0.222	40	9.06 x 10 ⁶	0.552
1.125	2.36 x 10 ⁶	0.281	50	2.21 x 10 ⁷	0.863
1.250	3.60 x 10 ⁶	0.348			

LOAD CONSIDERATIONS

The loads acting upon a bearing of a linear motion system are important for the proper system selection. When designing a linear motion system it is necessary to consider these loads and the variables of operation and what affect they will have on performance. The following equations demonstrate how the position of the load and center of gravity can influence the system selection. When evaluating your application, review each of the forces acting on your system and determine the system best for your needs.

Vertical Load

At the time of movement with uniform velocity or at the time of stop. At the time of acceleration, the load varies because of inertia.



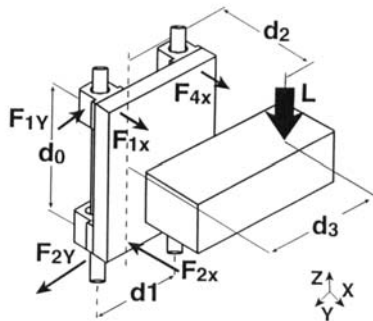
$$F_{1Y} \sim F_{4Y} = \frac{L}{2} \times \frac{d_3}{d_1}$$

$$F_{1Z} \sim F_{4Z} = \frac{L}{4} + \frac{L}{2} \times \frac{d_2}{d_0}$$

$$F_{2Z} \sim F_{3Z} = \frac{L}{4} - \frac{L}{2} \times \frac{d_2}{d_0}$$

Side Mounted Load

At the time of movement with uniform velocity or at the time of stop.



$$F_{1X} \sim F_{4X} = \frac{L}{2} \times \frac{d_2}{d_0}$$

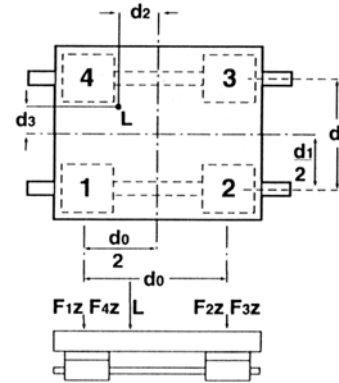
$$F_{1Y} \sim F_{4Y} = \frac{L}{2} \times \frac{d_3}{d_0}$$

$$F_{1X} + F_{4X} \sim F_{2X} + F_{3X}$$

$$F_{1Y} + F_{4Y} \sim F_{2Y} + F_{3Y}$$

Horizontal Load

At the time of movement with uniform velocity or at the time of stop.



$$F_{1Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \left(\frac{L}{2} \times \frac{d_3}{d_1}\right)$$

$$F_{2Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \frac{L}{2} \times \frac{d_3}{d_1}$$

$$F_{3Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \frac{L}{2} \times \frac{d_3}{d_1}$$

$$F_{4Z} = \frac{L}{4} + \left(\frac{L}{2} \times \frac{d_2}{d_0}\right) - \frac{L}{2} \times \frac{d_3}{d_1}$$

EQUATION TERMS:

d_0 = Distance between centerlines of pillowblocks (in)

d_1 = Distance between centerlines of shafts (in)

d_2 = Distance from centerline of carriage to load action point (in)

d_3 = Distance from centerline of carriage to load action point (in)

F_{NX} = force in the X-axis direction (lbf)

F_{NY} = Force in the Y-axis direction (lbf)

F_{NZ} = Force in the Z-axis direction (lbf)

HOW TO ORDER

All products found in this catalog can be ordered by mail, e-mail, fax, phone or from any SMI field representative.

Specialty Motions, Inc.
22343 La Palma Ave., #112
Yorba Linda, CA 92887

Tel: 800 283 3411
Tel: 714 692 7511
Fax: 714 692 7510

sales@smi4motion.com
tech_help@smi4motion.com

Most of the items in this catalog can also be ordered on our e-commerce site at:

www.smi4motion.com
www.specialtymotions.com
www.precisionlinear.com
www.precisionballslides.com
www.precisionmotion.com
www.specialtymotion.com

Please refer to the specific product range for the appropriate part number. If you require additional assistance we have customer service representatives and engineers on staff for your convenience.

SYSTEM HANDLING

Each SMI linear system consists of high precision components and must be handled with meticulous care. When mounting an SMI system pay attention to the following notes:

1. Handle with care.

Be careful in handling the linear system so as not to drop or strike it with anything like a hammer. A strong impact on the linear system may make an impression on the raceway surface, adversely affecting the linear system's performance.

2. Check related parts for dimensions.

For the linear to deliver its full performance, make sure that the housing, shaft, and guide rail mounting surface have proper and accurate dimensions.

3. Keep clear of foreign material.

Foreign matter will adversely affect the linear system causing damage or failure of the system. Be careful in mounting to keep out any foreign matter.

LUBRICATION & DUST PREVENTION

Using SMI linear systems without lubrication increases the abrasion of the rolling elements, shortening the life span. The SMI linear systems therefore require appropriate lubrication. For lubrication we recommend turbine oil conforming to ISO standards G32 to G68 or lithium base soap grease #2.



WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from SMI, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

TERMS AND CONDITIONS

The items described herein are offered for sale at prices to be established by Specialty Motions, Inc. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any item described herein, when communicated to Specialty Motions, Inc. ("Seller") verbally or in writing, shall constitute acceptance of this offer. All items, terms and conditions described herein are subject to change without notice.

1. Offer of Sale: All descriptions, quotations, proposals, offers, acknowledgments, acceptances and sales of Seller's products are subject to and shall be governed exclusively by the terms and conditions stated herein. Buyer's acceptance of any offer to sell is limited to these terms and conditions. Any terms or conditions in addition to, or inconsistent with those stated herein, proposed by the Buyer in any acceptance of any offer by Seller, are hereby objected to. No such additional, different or inconsistent terms and conditions shall become part of the contract between Buyer and Seller unless expressly accepted in writing by Seller. Seller's acceptance of any offer to purchase by Buyer is expressly conditional upon Buyer's assent to all the terms and conditions stated herein, including any terms in addition to, or inconsistent with those contained in Buyer's offer. Acceptance of Seller's products shall in all events constitute such assent.

2. Payment: Payment shall be made by Buyer C.O.D., credit card (Visa or Master Card), or net 30 days (pending credit approval) from date of shipment of the items purchased hereunder in U.S. currency. If Buyer is on terms, large orders may require prepayments at Seller's discretion. Seller reserves the right to require deposit payments on non-standard products or products built to Buyer's designs or specifications. Amounts not timely paid shall bear interest at the rate of 1-1/2% for each month or a portion thereof that Buyer is late in making payment. In the event of default, buyer is responsible for and agrees to pay Seller for all costs of collection such payment to include but not limited to attorney fees and all other legal costs incurred by Seller. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives written notice thereof within 30 days after Seller's ship date. In the event Buyer requires shipment to a location outside the U.S.A., Buyer shall be solely responsible for all customs and import tariffs, duties and similar charges, and for compliance with all import procedures, documentation and legal requirements of any other country, unless specified by the Seller. Buyer hereby grants Seller a continuing security interest in all products sold to Buyer by Seller to secure payment of any outstanding purchase price or charges and any other amounts payable by Buyer to Seller.

3. Delivery & Acceptance: Unless otherwise provided on the face hereof, delivery shall be made FOB Seller's facility. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery. Seller will not insure outgoing shipments unless the Buyer in writing specifically requests insurance. Method of shipment is via United Parcel Service or carrier of our choice unless Buyer specifically requests an alternate. Overnight and Express deliveries are available upon request. Product shall be deemed accepted by Buyer if Buyer does not give Seller written notice of rejection and the reasons therefore within five (5) days after receipt of products by Buyer.

4. Lead Times: Pending availability, standard stocked items will be shipped within 2 to 5 days from receipt of purchase order.

5. Limited Warranty: All products manufactured or private labeled by Seller are guaranteed to be free from defects in material and workmanship, under normal use and maintenance schedules, for a period of one (1) year after the date of shipment to Buyer. This warranty covers the repair or replacement of a product when it is sent prepaid and received by Seller. Seller does not assume liability for installation, conversion, accident, application, storage, abuse, alteration, or misuse of any products. This warranty comprises the sole and entire warranty pertaining to items provided hereunder. Seller makes no other warranty, guarantee, or representation of any kind whatsoever. All other warranties, including but not limited to, merchantability and fitness for purpose, whether express, implied, or arising by operation of law, trade usage, or course of dealing are hereby disclaimed. All products furnished by Seller, but not manufactured by Seller are subject to the manufacturer's standard warranty terms and conditions. Notwithstanding the foregoing, there are no warranties whatsoever on items built or acquired wholly or partially, to Buyer's designs or specifications. No person other than Buyer shall be entitled to any right, claim or benefit under this limited warranty. It is the responsibility of the product user to determine the suitability of the Seller's products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement. The Buyer shall bear the cost of reshipment of the product to Buyer if Seller determines the product is beyond the warranty period or otherwise not entitled to the benefits of this limited warranty. No labor or other cost for removal of any product sold by Seller from Buyer's end product in which it is installed or reinstallation thereof will be provided or allowance given therefore under the provisions of this warranty or otherwise.

6. Returns: All products being returned to Seller must have a Return Authorization Number (RMA). Seller assumes no responsibility for packages returned without proper authorization. A RMA number can be obtained from our customer service department. The RMA number should be clearly marked on the outside of all packages being returned. Products being returned to Seller for any reason should be properly packaged. Seller will not accept responsibility for damages due to poor packaging. Shipping charges are the responsibility of the customer unless authorization is obtained from the customer service department.

7. Limitation of Remedy: Seller's liability arising from or in any way connected with the items sold or this contract shall be limited exclusively to repair or replacement of the items sold or refund of the purchase price paid by Buyer, at Seller's sole option. In no event shall Seller be liable for any incidental, consequential or special damage of any kind or nature whatsoever, including but not limited to lost profits arising from or in any way connected with this agreement or items sold hereunder, whether alleged to arise from breach of contract, express or implied warranty, or in tort, including without limitation, negligence, failure to warn or strict liability. Any controversy or claim arising out of or relating to the products sold by Seller or any agreement relative thereto or the performance or breach thereof shall be settled by arbitration in the domicile of the Seller in accordance with the rules and procedure then obtaining of the American Arbitration Association. Any such arbitration proceeding must be initiated within one (1) year after the accrual of the cause of action or the shipment of the products by Seller, whichever is first to occur.

8. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require. In-process orders, which are terminated by the Buyer prior to delivery are subject to cancellation charges full or in part at Seller's discretion based upon work performed.

9. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, molds, fixtures and patterns acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges therefore by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer therefore. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

10. Buyer's Property: Any designs, tools, materials, patterns, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

11. Ownership of Designs and Inventions: For the purposes of this agreement, "Inventions" shall mean any inventions, original designs, developments, concepts, improvements, and trade secrets, whether or not patentable or registrable under patent, copyright, or similar laws that Seller may solely or jointly discover, conceive, develop, or reduce to practice for items which are produced for Buyer. Buyer agrees to assign to the Seller all rights, title, and interest in and to any Inventions created, designed or otherwise developed for Buyer, whether patentable or registrable under patent, copyright, or similar laws. Buyer understands that the Seller is the sole owner of any and all such rights and Buyer warrants that he/she/it has not previously assigned to any other person or entity any of such interests. The Seller shall be the exclusive owner of any and all rights, including all patent rights, copyrights, and trade secret rights in all inventions, discoveries, technologies, processes, formulae, or information of every description, and all improvements to any Inventions, invented or developed by Seller, whether alone or with others for items which are produced for Buyer.

12. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefor upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

13. Indemnity for Infringement of Intellectual Property Rights: Seller shall have no liability for claims of infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secrets or any similar right.

14. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

15. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of California. No actions arising out of the sale of the items sold hereunder or this Agreement may be brought more than 1 year after the cause of action accrues.

RETURN POLICY

Standard products manufactured or private labeled by Specialty Motions, Inc. (SMI) less than 180 days from factory ship date can be returned for credit with a 15% restocking fee. The product must be complete, in new condition, and with original packaging upon receipt at our factory to be eligible for credit. Any damaged or altered product will be returned to the customer with no credit due. No credit is issued until product is received and inspection complete.

Special products or products built to customer's designs or specifications are not eligible to be returned for credit.

Any products manufactured or private labeled by SMI received in less than satisfactory condition is subject to be repaired or replaced by SMI at our discretion. The customer will be issued a RMA number to return the defective material. SMI will enter a new sales order using the same purchase order as the original order unless the customer requires a new purchase order number. Upon receipt and inspection of damaged product, a credit memo will be issued.

All products furnished by SMI, but not manufactured or private labeled by SMI are subject to the manufacturer's return terms and conditions.

All products returned must include a RMA number, packing list, and a detailed reason for the return.

Repairs and credit returns should be addressed as follows:

Specialty Motions, Inc.
22343 La Palma Ave., Ste #112
Yorba Linda, CA 92887
ATTN: RMA # _____

Phone: 714 692 7511

Catalog Information: The reference material in this catalog is offered as a guide at no charge and is subject to verification by the user. Though every care has been taken to ensure the accuracy of the data contained in this catalog, some errors or omissions may be involved. All items in this catalog are subject to change without notice.



APPLICATION / RFQ FORM

This form may be photocopied. SMI Fax No: 800 283 3410 or 714 692 7510, E-mail: sales@smi4motion.com

CONTACT INFORMATION

Name: _____

Title: _____

Company: _____

Address: _____

City: _____

State: _____

Zip Code: _____

Tel: _____

Fax: _____

E-mail: _____

PRODUCT DETAILS

Manufacturer: _____

Qty: _____

Part Number: _____

Required Date: _____

Special Modifications:

Application Details:

Type of Motor: Manual Motor
(circle)

Style of Motion: Linear Rotary
(circle)

Orientation: Horizontal Vertical
(circle)

Travel Length of Each Axes: _____

Load (specify units): _____

Repeatability: _____

Positional Repeatability: _____

Flatness Accuracy: _____

Maximum Acceleration: _____

Maximum Velocity: _____

Duty Cycle: _____

Comments:

APPLICATION / RFQ FORM



