Super Smart Ball Bushing Bearing Products

Thomson Super Smart Ball Bushing Bearing products offer:

- Up to six times the load capacity or 216 times the travel life of conventional linear bearings.
- Twice the load capacity or eight times the travel life of industry standard Thomson Super Ball Bushing Bearings.
- A precision, super finished, dual track bearing plate for optimum system smoothness and performance.
- A universal self-alignment feature that compensates for misalignment of housing bores and 60 Case® LinearRace® shaft deflection, optimizes load distribution between ball tracks and assures uniform ball loading over the entire length of the bearing plate. Installation time and cost is minimized while bearing performance and life is maximized.
- A technologically advanced design that allows the bearing to maintain its diametrical fit-up when installed in a housing that is slightly out-of-round.
- Longer travel life and minimal machine downtime when replacing conventional linear bearings or the industry standard Super Ball Bushing Bearing.
- The RoundRail Advantage combined with universal self-alignment, eliminating the need for derating factors commonly required when using linear guides.
- A coefficient of friction as low as .001. This allows the use of smaller, less expensive motors, belts, gears and ball screws when replacing high-friction, plain bearings.
- Closed and open configurations.
- Double-lip integral wipers that keep out dirt while retaining lubrication. Travel life is maximized.
- Steady state travel speeds up to 10 ft./s and accelerations to 450 ft./s without the use of derating factors.

Super Smart Ball Bushing® Bearings represent a major advancement in linear bearing technology worldwide. These offer twice the load capacity or eight times the travel life of the industry standard Thomson Super Ball Bushing bearing. An enormous technological breakthrough, considering the Super Ball Bushing bearing already offers three times the load capacity or 27 times the travel life of conventional linear bearings.

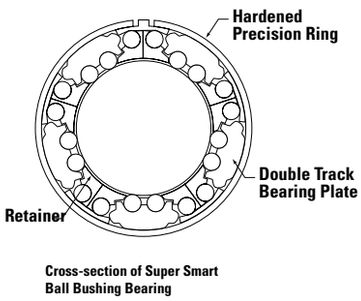


Figure 1

Cross-section of Super Smart Ball Bushing Bearing

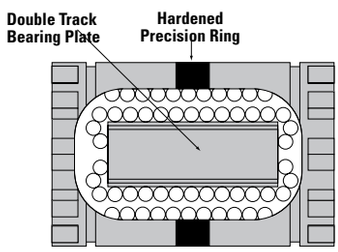


Figure 2

Technologically Advanced Design

The load carrying component of the Super Smart Ball Bushing Bearing is the combination of four hardened bearing quality steel components (Figures 1 & 2).

The first component is the steel outer ring, which allows the bearing to maintain its diametrical fit-up even when installed in a housing that is slightly out-of-round. The unique ring design also allows for bearing adjustment and the removal of diametrical clearance. The second component is the precision, super-finished, double-track bearing plate that provides twice the load capacity and features universal self alignment.

The third component is the rolling element. Each Super Smart Ball Bushing Bearing utilizes precision ground balls manufactured to the highest quality standards for roundness and sphericity. The result is maximum load capacity, travel life and performance.

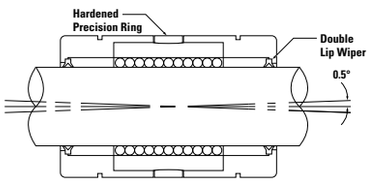
The last component is the 60 Case® LinearRace® shaft that acts as the inner race to the Super Smart Ball Bushing Bearing. Each 60 Case LinearRace shaft is manufactured to the highest quality standards for roundness, straightness, surface finish and hardness. Roundness is held under 80 millionths of an inch; straightness to .001 inches per foot; surface finish under 8 microinch and hardness of 60 HRC minimum. The combination of inner and outer race or 60 Case LinearRace shaft and Super Smart Ball Bushing Bearing provides the basis for the RoundRail Advantage.

The RoundRail Advantage

The RoundRail Advantage is the inherent ability of a Super Smart Ball Bushing Bearing system to accommodate torsional misalignment (caused by inaccuracies in carriage or base machining or by machine deflection) with little increase in stress to bearing components. Installation time and cost are minimized and system performance is maximized.

Universal Self-Alignment

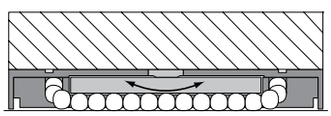
Figure 3



The bearing plate of the Super Smart Ball Bushing Bearing is designed with many unique and technologically advanced features. The universal self-alignment feature assures that the Super Smart Ball Bushing Bearing will achieve maximum performance regarding load capacity, travel life, smooth operation and coefficient of friction. The three components that make up universal self-alignment are **Rock**, **Roll** and **Yaw**.

Rock

Figure 4

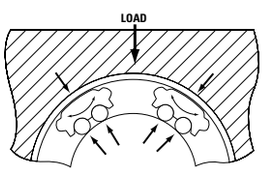


Closeup of hardened precision ring, showing how the bearing plate self aligns (rocks) about the curved surface of the ring.

The bearing plate is designed to rock 0.5° about the hardened precision ground outer ring (Figures 3 & 4). This self-aligning feature allows the Super Smart Ball Bushing Bearing to absorb misalignment caused by inaccuracies in housing bore alignment or 60 Case LinearRace shaft deflection. This rocking capability provides smooth entry and exit of the precision balls into and out of the load zone, assuring a constant low coefficient of friction. By compensating for misalignment, each bearing ball in the load carrying area is uniformly loaded providing maximum load capacity.

Roll

Figure 5

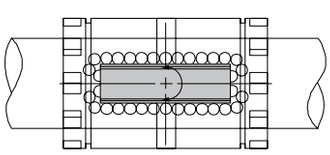


Closeup of double track bearing plates showing how they self align (roll) to evenly distribute the load on each of their two ball tracks.

The second key design feature of the Super Smart Ball Bushing Bearing plate is its ability to **Roll**. The bearing plate is designed with the radius of its outer surface smaller than the inside radius of the precision outer ring (Figure 5). This allows the bearing plate to compensate for torsional misalignment and evenly distribute the load on each of its two ball tracks. The roll component assures maximum load capacity and travel life.

Yaw

Figure 6



Bearing plates rotate about their center to prevent skewing relative to the 60 Case LinearRace shaft.

The shape formed by the **Rock** and **Roll** features allows the Super Smart Ball Bushing Bearing plate to rotate about its center (Figure 6). This allows the Super Smart Ball Bushing Bearing to absorb skew caused by misalignment. The result is a constant low coefficient of friction and maximum bearing performance.

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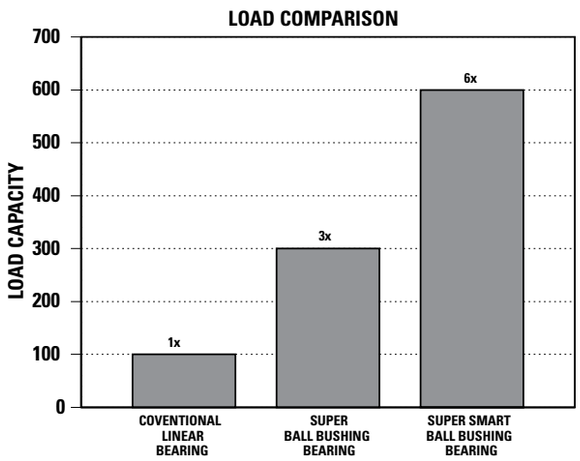
The Super Smart Advantage

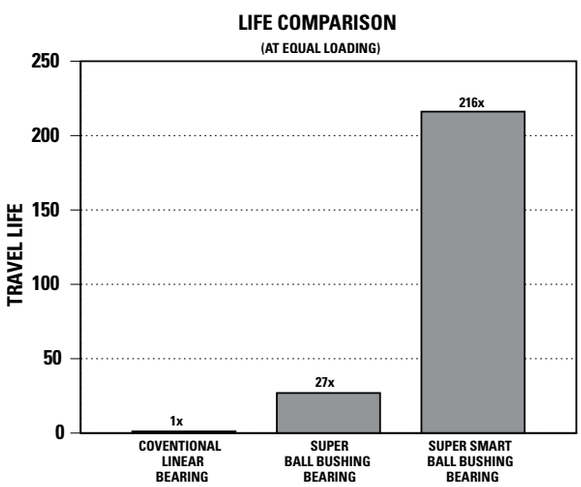
Advantage: Load Capacity

The Super Smart Ball Bushing® Bearing provides twice the load capacity of the industry standard Thomson Super Ball Bushing Bearing and six times the load capacity of conventional linear bearings.



Advantage: Travel Life

The Super Smart Ball Bushing Bearing provides eight times the travel life of the industry standard Thomson Super Ball Bushing bearing and 216 times the travel life of conventional linear bearings.



Part Number Description and Specification

Super Smart Ball Bushing Bearings (Closed Type) for End-Supported Applications

SSU16WW-CR

Type	Description
SSU	Super Smart Ball Bushing bearings

Size	Nominal Diameter
8	.500
10	.625
12	.750
16	1.000
20	1.250
24	1.500

Option	Description
–	No Wipers
W	One Integral Wiper
WW	Two Integral Wipers

Ball Options

Option	Description
CR	Corrosion Resistant
NB	Nylon Balls
NBA	Alternating Nylon Balls

Lube Options

DP	Dry Pack
LL	Lubricated with Thomson Linear Lube

Other Options

RP	Roll Pack (no box)

Super Smart Ball Bushing Pillow Blocks (Closed Type) for End-Supported Applications

SSUPB16-CR

Type	Description
SSUPB	Super Smart Ball Bushing Pillow Blocks
SSUPBA	Super Smart Ball Bushing Adjustable Pillow Blocks
SSUTWN	Super Smart Ball Bushing Twin Pillow Blocks
SSUTWNA	Super Smart Ball Bushing Twin Adjustable Pillow Blocks
SSUFB	Super Smart Ball Bushing Flanged Pillow Blocks
SSUTFB	Super Smart Ball Bushing Flanged Twin Pillow Blocks

Size	Nominal Diameter
8	.500
10	.625
12	.750
16	1.000
20	1.250
24	1.500

Ball Options

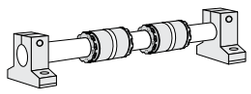
Option	Description
CR	Corrosion Resistant
NB	Nylon Balls
NBA	Alternating Nylon Balls

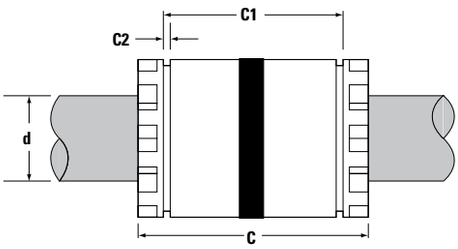
Lube Options

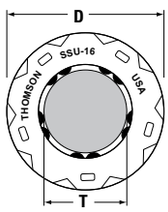
DP	Dry Pack
LL	Lubricated with Thomson Linear Lube
L4L	Lube for Life

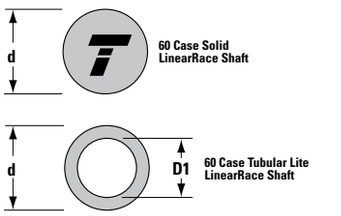
Not all options are available in all sizes.
See catalog pages or contact Thomson Customer Support for combination availability.
For additional information on bearing options, see page 263.

Super Smart Ball Bushing® Bearings
(Closed Type) for End-Supported Applications









Super Smart Ball Bushing Bearings (Closed Type) and 60 Case® LinearRace® Shafting (Dimensions in inches)

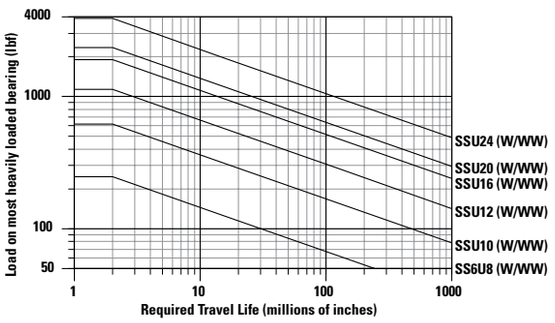
Part Number [2]				Nominal Diameter	Length C	C1	C2 min.	Number of Ball Circuits	Ball Bushing bearing Mass lb	60 Case LinearRace Minimum Depth of Hardness	60 Case Solid LinearRace Mass lb/in	60 Case Tubular Lite LinearRace Mass lb/in	60 Case Tubular Lite LinearRace ID D1
Without Integral Wipers	With one Integral Wiper	With two Integral Wipers	60 Case Linear Race										
SS6U8	SS6U8W	SS6U8WW	1/2 L	.500	1.250/1.230	1.032/1.012	.050	6	.07	.04	.06	–	–
SSU10	SSU10W	SSU10WW	5/8 L	.625	1.500/1.480	1.125/1.095	.055	10	.12	.04	.09	–	–
SSU12	SSU12W	SSU12WW	3/4 L	.750	1.625/1.605	1.285/1.255	.055	10	.16	.06	.13	.08	.46/.41
SSU16	SSU16W	SSU16WW	1 L	1.000	2.250/2.230	1.901/1.871	.068	10	.29	.08	.22	.16	.62/.56
SSU20	SSU20W	SSU20WW	1 1/4 L	1.250	2.625/2.600	2.031/1.991	.068	10	.52	.08	.35	–	–
SSU24	SSU24W	SSU24WW	1 1/2 L	1.500	3.000/2.970	2.442/2.402	.086	10	.99	.08	.50	.33	.93/.84

Part Number [2]			Working Bore Diameter T	Recommended Housing Bore		60 Case LinearRace Diameter d	Ball Bushing bearing/60 Case LinearRace Fit Up ‡		Dynamic [1] Load Capacity lb_f
Without Integral Wipers	With one Integral Wiper	With two Integral Wipers		Fixed D	Adjustable D		Fixed Diameter Housing	Adjustable Diameter Housing (Before Adjustment)	
SS6U8	SS6U8W	SS6U8WW	.5000/.4995	.8755/.8750	.8760/.8750	.4995/.4990	.0015C/.0000	.002C/.0000	265
SSU10	SSU10W	SSU10WW	.6250/.6245	1.1255/1.1250	1.1260/1.1250	.6245/.6240	.0015C/.0000	.002C/.0000	620
SSU12	SSU12W	SSU12WW	.7500/.7495	1.2505/1.2500	1.2510/1.2500	.7495/.7490	.0015C/.0000	.002C/.0000	1130
SSU16	SSU16W	SSU16WW	1.0000/.9995	1.5630/1.5625	1.5635/1.5625	.9995/.9990	.0015C/.0000	.002C/.0000	1900
SSU20	SSU20W	SSU20WW	1.2500/1.2494	2.0008/2.0000	2.0010/2.0000	1.2495/1.2490	.0018C/.0001P	.002C/.0001P	2350
SSU24	SSU24W	SSU24WW	1.5000/1.4994	2.3760/2.3750	2.3760/2.3750	1.4994/1.4989	.0021C/.0000	.0021C/.0000	3880

‡ P = Preload, C = Clearance
(1) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs.
(2) For part number description and specifications, see page 25. For specifications on seals and retaining rings, see the Accessories section.
Note: For additional technical information, see the Engineering section beginning on page 252.

Load/Life Graph

(Lines indicate limiting load for given Ball Bushing Bearing)

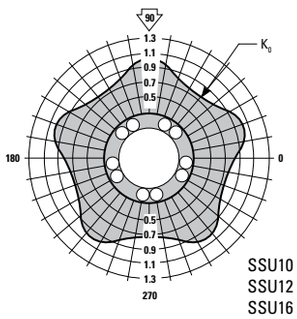


Determining Ball Bushing Bearing Size
To determine the proper Ball Bushing Bearing size, enter the chart with the maximum load of the most heavily loaded bearing and the required travel life. Mark where the two lines intersect. All Ball Bushing Bearing sizes that pass through or above and to the right of this point may be suitable for this application.

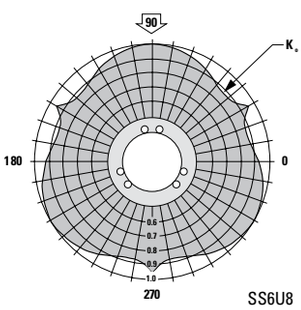
Note: For the purpose of using this chart, load on most heavily loaded bearing = maximum applied load/K_0. Where K_0 can be determined from the Polar Graph to the right.

Polar Graphs

The actual dynamic load capacity of a Ball Bushing Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous page.



SSU10
SSU12
SSU16
SSU20
SSU24



SS6U8

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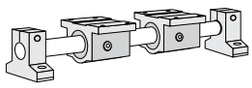
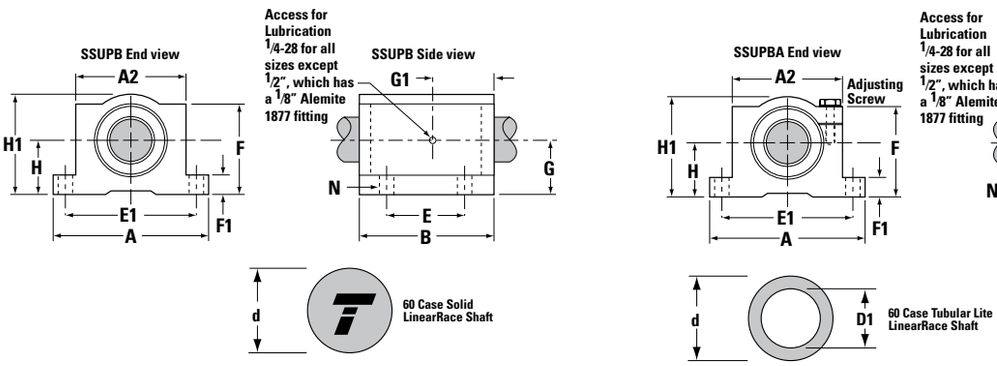
Super Smart Ball Bushing® Pillow Blocks
(Closed and Adjustable Type) for End-Supported Applications





Super Smart Ball Bushing Pillow Blocks (Closed & Adjustable Types, seal at both ends) and LinearRace® (Dim. in inches)

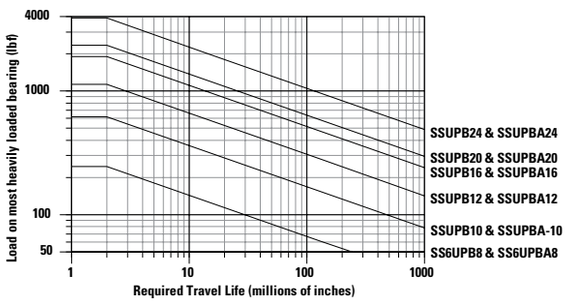
Part Number [2]			Nominal Diameter	H ±.003	H1	60 Case LinearRace Diameter d	60 Case LinearRace Minimum Depth of Hardness	60 Case Solid LinearRace Mass lb/in	60 Case Tubular Lite LinearRace Mass lb/in	60 Case Tubular Lite LinearRace ID D1
Super Smart Ball Bushing Pillow Block		60 Case LinearRace								
Fixed	Adjustable									
SS6UPB8	SS6UPBA8	1/2 L	.500	.687	1.25	.4995/.4990	.04	.06	–	–
SSUPB10	SSUPBA10	5/8 L	.625	.875	1.63	.6245/.6240	.04	.09	–	–
SSUPB12	SSUPBA12	3/4 L	.750	.937	1.75	.7495/.7490	.06	.13	.08	.46/.41
SSUPB16	SSUPBA16	1 L	1.000	1.187	2.19	.9995/.9990	.08	.22	.16	.62/.56
SSUPB20	SSUPBA20	1 1/4 L	1.250	1.500	2.81	1.2495/1.2490	.08	.35	–	–
SSUPB24	SSUPBA24	1 1/2 L	1.500	1.750	3.25	1.4994/1.4989	.08	.50	.33	.93/.84

Part Number [2]		A	A2	B	E ±.010	E1 ±.010	F	F1	G	G1	N		Pillow Block Mass lb	Dynamic[1] Load Capacity lb_f
Super Smart Ball Bushing Pillow Block											Hole	Bolt		
Fixed	Adjustable													
SS6UPB8	SS6UPBA8	2.00	1.38	1.69	1.000	1.688	1.13	.25	.97	.44	.16	#6	.23	265
SSUPB10	SSUPBA10	2.50	1.75	1.94	1.125	2.125	1.44	.28	1.20	.69	.19	#8	.51	620
SSUPB12	SSUPBA12	2.75	1.88	2.06	1.250	2.375	1.56	.31	.94	.78	.19	#8	.62	1130
SSUPB16	SSUPBA16	3.25	2.38	2.81	1.750	2.875	1.94	.38	1.19	.91	.22	#10	1.24	1900
SSUPB20	SSUPBA20	4.00	3.00	3.63	2.000	3.500	2.50	.44	1.50	1.37	.22	#10	2.57	2350
SSUPB24	SSUPBA24	4.75	3.50	4.00	2.500	4.125	2.88	.50	1.75	1.13	.28	.25	3.94	3880

(1) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs.
(2) For part number description and specifications, see page 25.
Note: For additional technical information, see the Engineering section beginning on page 252.

Load/Life Graph

(Lines indicate limiting load for given Ball Bushing Bearing)

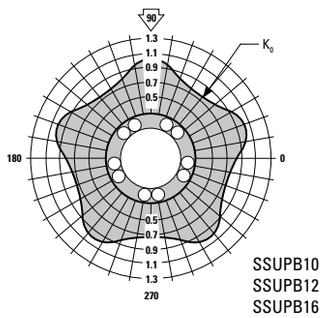


Determining Ball Bushing Bearing Size
To determine the proper Ball Bushing Bearing size, enter the chart with the maximum load of the most heavily loaded bearing and the required travel life. Mark where the two lines intersect. All Ball Bushing Bearing sizes that pass through or above and to the right of this point may be suitable for this application.

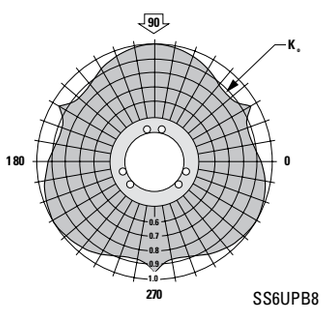
Note: For the purpose of using this chart, load on most heavily loaded bearing = maximum applied load/K_0. Where K_0 can be determined from the Polar Graph to the right.

Polar Graphs

The actual dynamic load capacity of a Ball Bushing Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous .

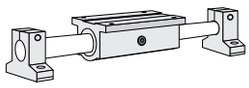


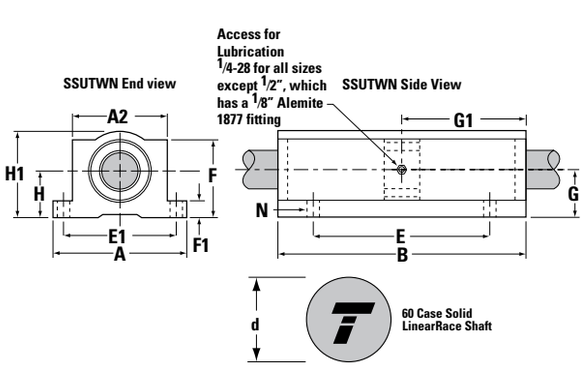
SSUPB10
SSUPB12
SSUPB16
SSUPB20
SSUPB24

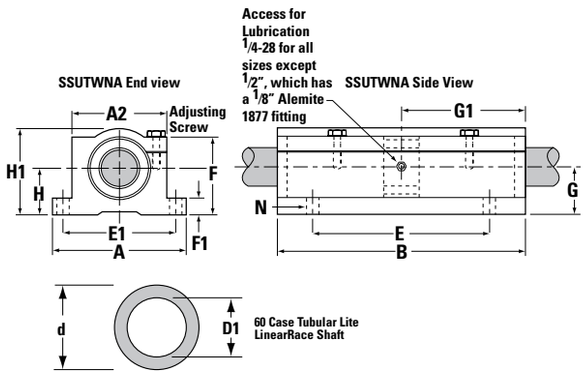


SS6UPB8

Super Smart Ball Bushing® Twin Pillow Blocks
(Closed and Adjustable Type) for End-Supported Applications







Super Smart Ball Bushing Twin Pillow Blocks (Closed Type, seal at both ends) and 60 Case® LinearRace® Shaft (Dim. in in.)

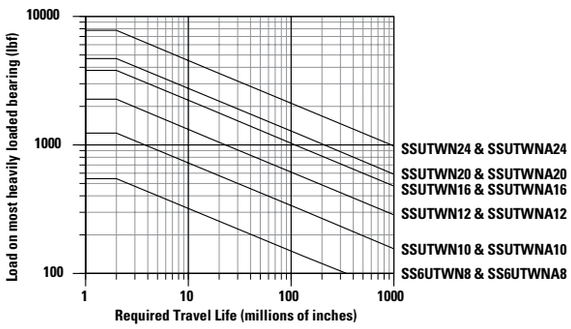
Part Number [2]			Nominal Diameter	H ±.003	H1	60 Case LinearRace Diameter d	60 Case LinearRace Minimum Depth of Hardness	60 Case Solid LinearRace Mass lb/in	60 Case Tubular Lite LinearRace Mass lb/in	60 Case Tubular Lite LinearRace ID D1
Super Smart Ball Bushing Pillow Block		60 Case LinearRace								
Fixed	Adjustable									
SS6UTWN8	SS6UTWNA8	1/2 L	.500	.687	1.25	.4995/.4990	.04	.06	–	–
SSUTWN10	SSUTWNA10	5/8 L	.625	.875	1.63	.6245/.6240	.04	.09	–	–
SSUTWN12	SSUTWNA12	3/4 L	.750	.937	1.75	.7495/.7490	.06	.13	.08	.46/.41
SSUTWN16	SSUTWNA16	1 L	1.000	1.187	2.19	.9995/.9990	.08	.22	.16	.62/.56
SSUTWN20	SSUTWNA20	1 1/4 L	1.250	1.500	2.81	1.2495/1.2490	.08	.35	–	–
SSUTWN24	SSUTWNA24	1 1/2 L	1.500	1.750	3.25	1.4994/1.4989	.08	.50	.33	.93/.84

Part Number [2]		A	A2	B	E ±.010	E1 ±.010	F	F1	G	G1	N		Pillow Block Mass lb	Dynamic[1] Load Capacity lb_f
Super Smart Ball Bushing Pillow Block														
Fixed	Adjustable										Hole	Bolt		
SS6UTWN8	SS6UTWNA8	2.00	1.38	3.50	2.500	1.688	1.13	.25	.59	1.75	.16	#6	.46	530
SSUTWN10	SSUTWNA10	2.50	1.75	4.00	3.000	2.125	1.44	.28	.85	2.00	.19	#8	1.02	1240
SSUTWN12	SSUTWNA12	2.75	1.88	4.50	3.500	2.375	1.56	.31	.94	2.25	.19	#8	1.24	2260
SSUTWN16	SSUTWNA16	3.25	2.38	6.00	4.500	2.875	1.94	.38	1.19	3.00	.22	#10	2.48	3800
SSUTWN20	SSUTWNA20	4.00	3.00	7.50	5.500	3.500	2.50	.44	1.50	3.75	.22	#10	5.14	4700
SSUTWN24	SSUTWNA24	4.75	3.50	9.00	6.500	4.125	2.88	.50	1.75	4.50	.28	.25	8.08	7760

(1) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs. Dynamic load capacity is based on two bearings equally loaded.
(2) For part number description and specifications, see page 25.
Note: For additional technical information, see the Engineering section beginning on page 252.

Load/Life Graph

(Lines indicate limiting load for given Ball Bushing Bearing)

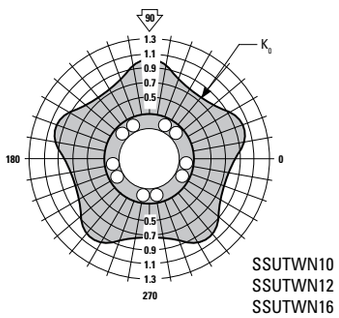


Determining Ball Bushing Bearing Size
To determine the proper Ball Bushing Bearing size, enter the chart with the maximum load of the most heavily loaded bearing and the required travel life. Mark where the two lines intersect. All Ball Bushing Bearing sizes that pass through or above and to the right of this point may be suitable for this application.

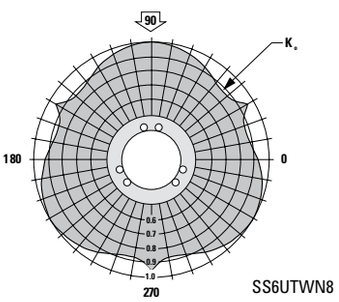
Note: For the purpose of using this chart, load on most heavily loaded bearing = maximum applied load/K_0. Where K_0 can be determined from the Polar Graph to the right.

Polar Graphs

The actual dynamic load capacity of a Ball Bushing Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous page.

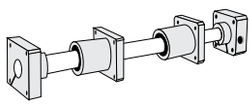


SSUTWN10
SSUTWN12
SSUTWN16
SSUTWN20
SSUTWN24

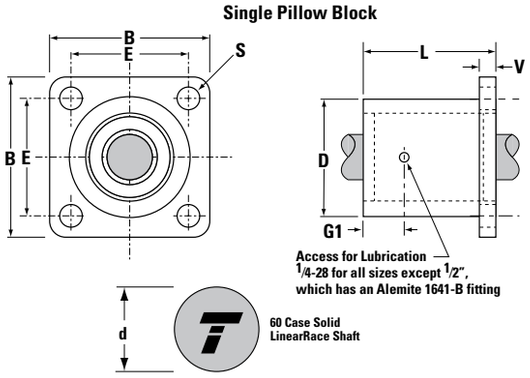


SS6UTWN8

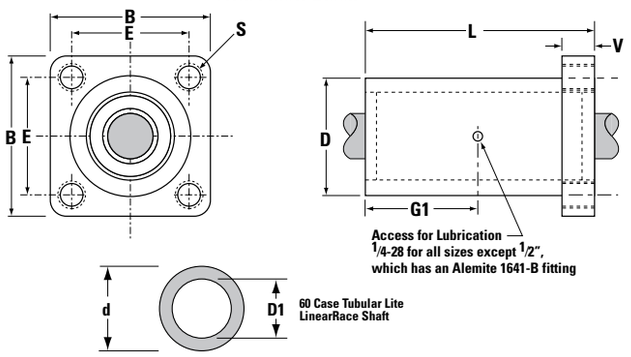
Super Smart Ball Bushing® Flanged Single and Twin Pillow Blocks for End-Supported Applications



Single Pillow Block



Twin Pillow Block



Super Smart Ball Bushing Flanged Pillow Blocks and 60 Case® LinearRace® Shaft (Dimensions in inches)

Part Number [2]		Nominal Diameter	B	E ±.010	L	D	V	G1	S Hole Dia.	60 Case LinearRace Diameter d	60 Case LinearRace Minimum Depth of Hardness	60 Case Solid LinearRace Mass lb/in	60 Case Tubular Lite LinearRace Mass lb/in	60 Case Tubular Lite LinearRace ID D1	Pillow Block Mass lb	Dyn. [1] Load Cap. lb_f
Super Smart Ball Bushing Flanged Pillow Block	60 Case LinearRace															
SS6UFB8	1/2 L	.500	1.63	1.250	1.69	1.25	.25	.72	.19	.4995/.4990	.04	.06	–	–	.23	265
SSUFB12	3/4 L	.750	2.38	1.750	2.06	1.75	.38	.89	.22	.7495/.7490	.06	.13	.08	.460/.416	.52	1130
SSUFB16	1 L	1.000	2.75	2.125	2.81	2.25	.50	1.27	.28	.9995/.9990	.08	.22	.16	.629/.569	1.04	1900
SSUFB20	1 1/4 L	1.250	3.50	2.750	3.63	3.00	.63	1.67	.35	1.2495/1.2490	.08	.35	–	–	2.21	2350
SSUFB24	1 1/2 L	1.500	4.00	3.125	4.00	3.62	.75	1.86	.41	1.4994/1.4989	.08	.50	.33	.93/.84	3.68	3880

Super Smart Ball Bushing Flanged Twin Pillow Blocks and 60 Case LinearRace Shaft (Dimensions in inches)

Part Number [2]		Nominal Diameter	B	E ±.010	L	D	V	G1	S Thread	60 Case LinearRace Diameter d	60 Case LinearRace Minimum Depth of Hardness	60 Case Solid LinearRace Mass lb/in	60 Case Tubular Lite LinearRace Mass lb/in	60 Case Tubular Lite LinearRace ID D1	Pillow Block Mass lb	Dynamic[1] Load Cap. lb_f
Super Smart Ball Bushing Flanged Twin Pillow Block	60 Case LinearRace															
SS6UTFB8	1/2 L	.500	1.63	1.250	3.20	1.25	.90	1.48	1/4-20	.4995/.4990	.04	.06	–	–	.45	530
SSUTFB12	3/4 L	.750	2.38	1.750	3.95	1.75	.90	1.98	1/4-20	.7495/.7490	.06	.13	.08	.460/.416	1.05	2260
SSUTFB16	1 L	1.000	2.75	2.125	5.33	2.25	.90	2.67	5/16-18	.9995/.9990	.08	.22	.16	.629/.569	1.95	3800
SSUTFB20	1 1/4 L	1.250	3.50	2.750	6.70	3.00	.90	3.35	5/16-18	1.2495/1.2490	.08	.35	–	–	4.06	4700
SSUTFB24	1 1/2 L	1.500	4.00	3.125	7.50	3.62	1.00	3.75	3/8-16	1.4994/1.4989	.08	.50	.33	.93/.84	6.84	7760

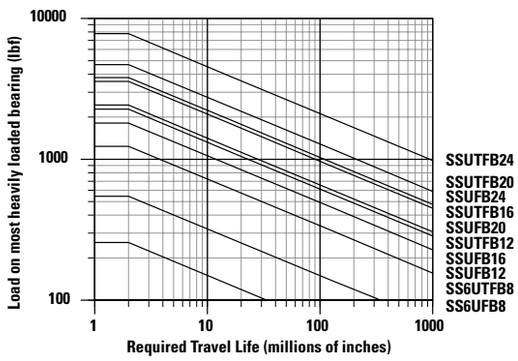
(1) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs. Dynamic load capacity for Twin configuration is based on two bearings equally loaded.

(2) For part number description and specifications, see page 25.

Note: For additional technical information, see the Engineering section beginning on page 252.

Load/Life Graph

(Lines indicate limiting load for given Ball Bushing Bearing)

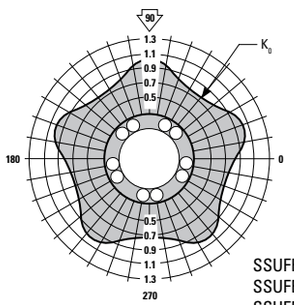


Determining Ball Bushing Bearing Size
To determine the proper Ball Bushing Bearing size, enter the chart with the maximum load of the most heavily loaded bearing and the required travel life. Mark where the two lines intersect. All Ball BushingBearing sizes that pass through or above and to the right of this point may be suitable for this application.

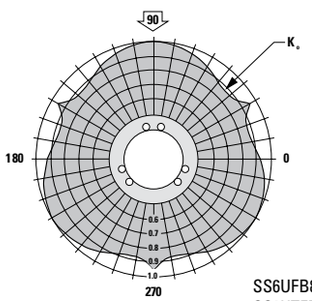
Note: For the purpose of using this chart, load on most heavily loaded bearing = maximum applied load/K_0. Where K_0 can be determined from the Polar Graph to the right.

Polar Graphs

The actual dynamic load capacity of a Ball Bushing Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous page.



SSUFB12
SSUFB16
SSUFB20
SSUFB24
SSUTFB12
SSUTFB16
SSUTFB20
SSUTFB24



SS6UFB8
SS6UTFB8

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Part Number Description and Specification

Super Smart Ball Bushing® Bearings (Open Type) for Continuously Supported Applications

SSU16OPNWW-CR

Type	Description
SSU	Super Smart Ball Bushing bearings

Size	Nominal Diameter
8	.500
10	.625
12	.750
16	1.000
20	1.250
24	1.500

Option	Description
–	No Wipers
W	One Integral Wiper
WW	Two Integral Wipers

Type	Description
OPN	Open for continuously supported applications

Ball Options

Option	Description
CR	Corrosion Resistant
NB	Nylon Balls
NBA	Alternating Nylon Balls

Lube Options

DP	Dry Pack
LL	Lubricated with Thomson Linear Lube

Other Options

RP	Roll Pack (no box)

Super Smart Ball Bushing Pillow Blocks (Open Type) for Continuously Supported Applications

SSUPBO16-CR

Type	Description
SSUPBO	Super Smart Ball Bushing Pillow Blocks (Open Type)
SSUTWNO	Super Smart Ball Bushing Twin Pillow Blocks (Open Type)
SSURPBO	Super Smart Ball Bushing Rigid Steel Pillow Blocks (Open Type)

Size	Nominal Diameter
8	.500
10	.625
12	.750
16	1.000
20	1.250
24	1.500

Ball Options

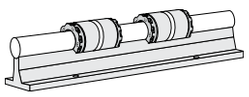
Option	Description
CR	Corrosion Resistant
NB	Nylon Balls
NBA	Alternating Nylon Balls

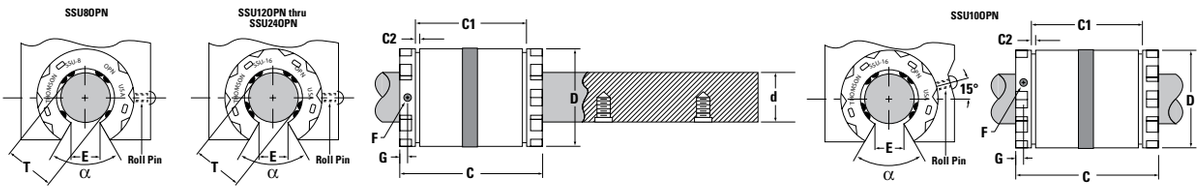
Lube Options

DP	Dry Pack
LL	Lubricated with Thomson Linear Lube
L4L	Lube for Life

Not all options are available in all sizes.
See catalog pages or contact Thomson Customer Support for combination availability.
For additional information on bearing options, see page 264.

Super Smart Ball Bushing Bearings
(Open Type) for Continuously Supported Applications





Super Smart Ball Bushing Bearings (Open Type) and 60 Case® LinearRace® Shafting (Dimensions in inches)

Part Number (1)				Nom. Dia.	Length C	C1	C2 min.	Min. Slot Width E	Retention Hole		Angle deg α	Number of Ball Circuits	Ball Bushing bearing Mass lb
Without Integral Wipers	With one Integral Wiper	With two Integral Wipers	60 Case Linear Race*						Dia. F	Loc. G			
SSU8OPN	SSU8OPNW	SSU8OPNWW	1/2 L PD	.500	1.250/1.230	1.032/1.012	.050	.31	.13	.62	90	6	.07
SSU10OPN	SSU10OPNW	SSU10OPNWW	5/8 L PD	.625	1.500/1.480	1.125/1.095	.055	.34	.11	.13	60	8	.09
SSU12OPN	SSU12OPNW	SSU12OPNWW	3/4 L PD	.750	1.625/1.605	1.285/1.255	.055	.41	.14	.13	60	8	.13
SSU16OPN	SSU16OPNW	SSU16OPNWW	1 L PD	1.000	2.250/2.230	1.901/1.871	.068	.53	.14	.13	60	8	.24
SSU20OPN	SSU20OPNW	SSU20OPNWW	1 1/4 L PD	1.250	2.625/2.600	2.031/1.991	.068	.62	.20	.19	50	8	.43
SSU24OPN	SSU24OPNW	SSU24OPNWW	1 1/2 L PD	1.500	3.000/2.970	2.442/2.402	.086	.74	.20	.19	50	8	.80

* 60 Case begins on page 170.

Part Number (1)			Working Bore Diameter T	Recommended Housing Bore Dia.		60 Case LinearRace Diameter d	Ball Bushing bearing/LinearRace Fit Up ‡		Dynamic(2) Load Capacity lb_f
Without Integral Wipers	With one Integral Wiper	With two Integral Wipers		Fixed D	Adjustable D		Fixed Diameter Housing	Adjustable Diameter Housing (Before Adjustment)	
SSU8OPN	SSU8OPNW	SSU8OPNWW	.5000/.4995	.8755/.8750	.8760/.8750	.4995/.4990	.0015C/.0000	.002C/.0000	360
SSU10OPN	SSU10OPNW	SSU10OPNWW	.6250/.6245	1.1255/1.1250	1.1260/1.1250	.6245/.6240	.0015C/.0000	.002C/.0000	620
SSU12OPN	SSU12OPNW	SSU12OPNWW	.7500/.7495	1.2505/1.2500	1.2510/1.2500	.7495/.7490	.0015C/.0000	.002C/.0000	1130
SSU16OPN	SSU16OPNW	SSU16OPNWW	1.0000/.9995	1.5630/1.5625	1.5635/1.5625	.9995/.9990	.0015C/.0000	.002C/.0000	1900
SSU20OPN	SSU20OPNW	SSU20OPNWW	1.2500/1.2494	2.0008/2.0000	2.0010/2.0000	1.2495/1.2490	.0018C/.0001P	.002C/.0001P	2350
SSU24OPN	SSU24OPNW	SSU24OPNWW	1.5000/1.4994	2.3760/2.3750	2.3760/2.3750	1.4994/1.4989	.0021C/.0000	.0021C/.0000	3880

‡ P = Preload, C = Clearance
(1) For part number description and specifications, see page 34.
(2) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs.

THOMSON
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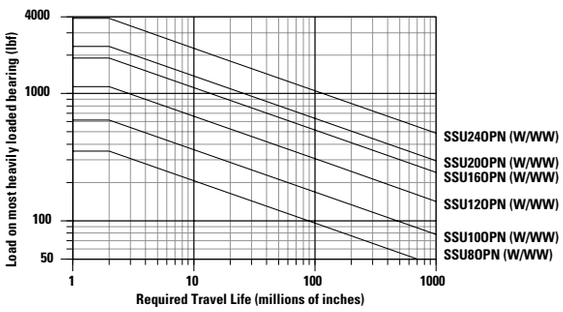
Load/Life Graph

(Lines indicate limiting load for given Ball Bushing® Bearing)



Determining Ball Bushing Bearing Size
To determine the proper Ball Bushing Bearing size, enter the chart with the maximum load of the most heavily loaded bearing and the required travel life. Mark where the two lines intersect. All Ball Bushing Bearing sizes that pass through or above and to the right of this point may be suitable for this application.

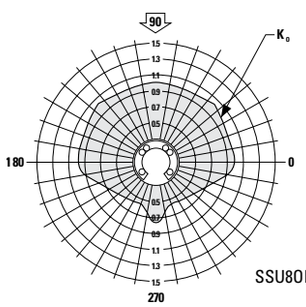
Note: For the purpose of using this chart, load on most heavily loaded bearing = maximum applied load/K_0. Where K_0 can be determined from the Polar Graph to the right.

When using LSRA smart rail assemblies, the dynamic load capacity for side-loaded or pull-off applications must be derated by 75% or .25 times the dynamic load capacity.

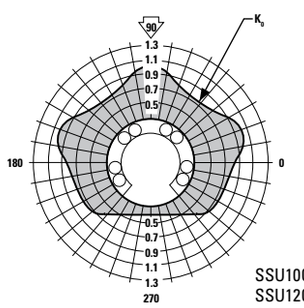
Polar Graphs

The actual dynamic load capacity of a Ball Bushing Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous page.

Note: For Super Smart Ball Bushing® Bearings and other extremely high-load bearings, the bearing load capacity as indicated by the polar charts may be be practically limited by the degree of shaft flexure acceptable or the capacity of the shaft rail assembly fasteners. In such cases, the loads should be kept below these practical limits, however, the full corresponding life capacity benefits are still realized.

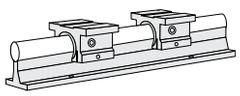


SSU80PN

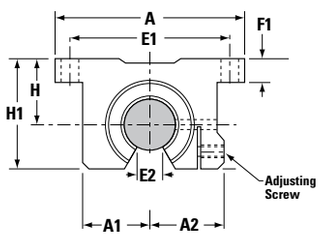


SSU100PN
SSU120PN
SSU160PN
SSU200PN
SSU240PN

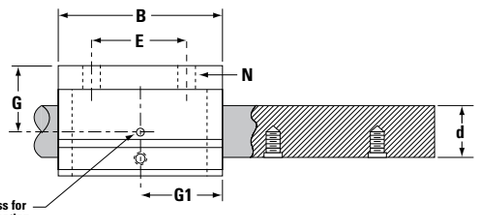
Super Smart Ball Bushing Pillow Blocks
(Open Type) for Continuously Supported Applications



SSUPBO End view



SSUPBO Side view



1/4-28 fitting for all sizes except 1/2", which has a 1/8" Alemite 1877 fitting.

Super Smart Ball Bushing Pillow Blocks (Open Type) and 60 Case® LinearRace® (Dimensions in inches)

Part Number [1]		Nominal Diameter	H ±.003	H1	60 Case LinearRace Diameter d
Super Smart Ball Bushing Pillow Block	60 Case LinearRace				
SSUPBO8	1/2 L PD	.500	.687	1.13	.4995/.4990
SSUPBO10	5/8 L PD	.625	.875	1.44	.6245/.6240
SSUPBO12	3/4 L PD	.750	.937	1.56	.7495/.7490
SSUPBO16	1 L PD	1.000	1.187	2.00	.9995/.9990
SSUPBO20	1 1/4 L PD	1.250	1.500	2.50	1.2495/1.2490
SSUPBO24	1 1/2 L PD	1.500	1.750	2.94	1.4994/1.4989

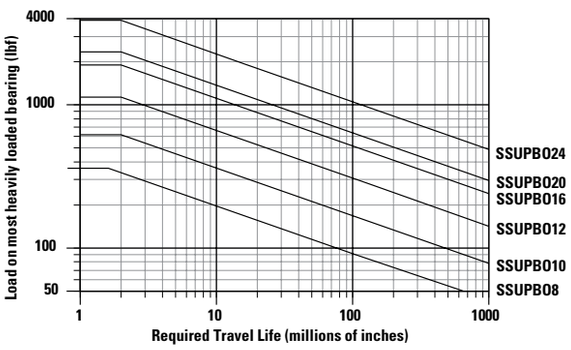
* 60 Case begins on page 170.

Part Number [1]	A	A1	A2	B	E ±.010	E1 ±.010	E2 min.	F1	G	G1	N	N1	Pillow Block Mass lb	Dynamic [2] Load Capacity lb_t
Super Smart Ball Bushing Pillow Block											Hole	Bolt		
SSUPBO8	2.00	.69	.75	1.50	1.000	1.688	.31	.25	.50	.89	.16	#6	.23	360
SSUPBO10	2.50	.88	.94	1.75	1.125	2.125	.34	.28	.55	.95	.19	#8	.41	620
SSUPBO12	2.75	.94	1.00	1.88	1.250	2.375	.41	.31	.67	1.08	.19	#8	.51	1130
SSUPBO16	3.25	1.19	1.25	2.63	1.750	2.875	.53	.38	.87	1.45	.22	#10	1.03	1900
SSUPBO20	4.00	1.50	1.63	3.38	2.000	3.500	.62	.44	1.15	1.83	.22	#10	2.15	2350
SSUPBO24	4.75	1.75	1.88	3.75	2.500	4.125	.74	.50	1.28	2.02	.28	.25	3.29	3880

(1) For part number description and specifications, see page 34.
(2) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs.

Load/Life Graph

(Lines indicate limiting load for given Ball Bushing® Bearing)



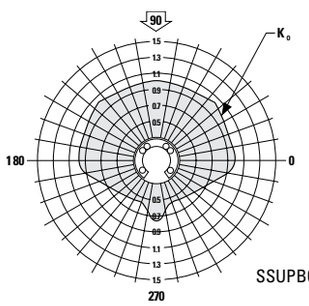
Determining Ball Bushing Bearing Size
To determine the proper Ball Bushing Bearing size, enter the chart with the maximum load of the most heavily loaded bearing and the required travel life. Mark where the two lines intersect. All Ball Bushing Bearing sizes that pass through or above and to the right of this point may be suitable for this application.

Note: For the purpose of using this chart, load on most heavily loaded bearing = maximum applied load/K_0. Where K_0 can be determined from the Polar Graph to the right.

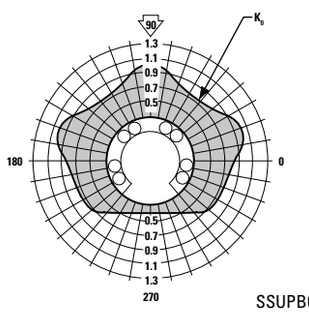
Polar Graphs

The actual dynamic load capacity of a Ball Bushing Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous page.

Note: For Super Smart Ball Bushing® Bearings and other extremely high load bearings, the bearing load capacity as indicated by the polar charts may be practically limited by the degree of shaft flexure acceptable, or the capacity of the shaft rail assembly fasteners. In such cases, the loads should be kept below these practical limits, however, the full corresponding life capacity benefits are still realized.

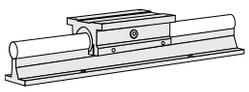


SSUPBO8

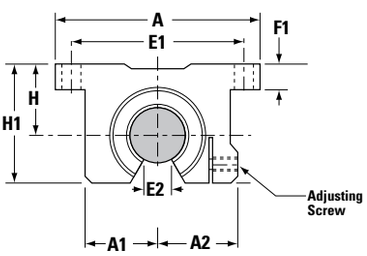


SSUPBO10
SSUPBO12
SSUPBO16
SSUPBO20
SSUPBO24

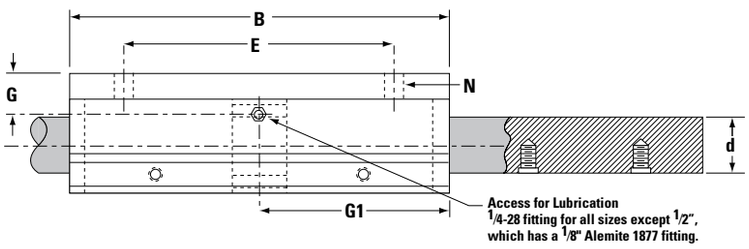
Super Smart Ball Bushing Twin Pillow Blocks
(Open Type) for Continuously Supported Applications



SSUTWNO End view



SSUTWNO Side view



Super Smart Ball Bushing Twin Pillow Blocks (Open Type, seal at both ends) and 60 Case® LinearRace® (Dimensions in inches)

Part Number [1]		Nominal Diameter	H ±.003	H1
Super Smart Ball Bushing Pillow Block	60 Case LinearRace*			
SSUTWNO8	1/2 L PD	.500	.687	1.13
SSUTWNO10	5/8 L PD	.625	.875	1.44
SSUTWNO12	3/4 L PD	.750	.937	1.56
SSUTWNO16	1 L PD	1.000	1.187	2.00
SSUTWNO20	1 1/4 L PD	1.250	1.500	2.50
SSUTWNO24	1 1/2 L PD	1.500	1.750	2.94

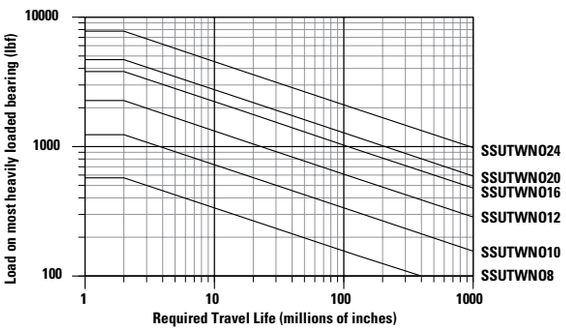
* 60 Case begins on page 170.

Part Number [1]	A	A1	A2	B	E ±.010	E1 ±.010	E2 min.	F1	G	G1	N	N1	Pillow Block Mass lb	Dynamic[2] Load Capacity lb_f
Super Smart Ball Bushing Pillow Block											Hole	Bolt		
SSUTWNO8	2.00	.69	.75	3.50	2.500	1.688	.31	.25	.56	1.75	.16	#6	.46	720
SSUTWNO10	2.50	.88	.94	4.00	3.000	2.125	.34	.28	.67	2.00	.19	#8	.82	1240
SSUTWNO12	2.75	.94	1.00	4.50	3.500	2.375	.41	.31	.94	2.25	.19	#8	1.02	2260
SSUTWNO16	3.25	1.19	1.25	6.00	4.500	2.875	.53	.38	1.20	3.00	.22	#10	2.06	3800
SSUTWNO20	4.00	1.50	1.63	7.50	5.500	3.500	.62	.44	1.50	3.75	.22	#10	4.30	4700
SSUTWNO24	4.75	1.75	1.88	9.00	6.500	4.125	.74	.50	1.75	4.50	.28	.25	6.88	7760

(1) For part number description and specifications, see page 34.
(2) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs. Dynamic load capacity is based on two bearings equally loaded.

Load/Life Graph

(Lines indicate limiting load for given Ball Bushing® Bearing)



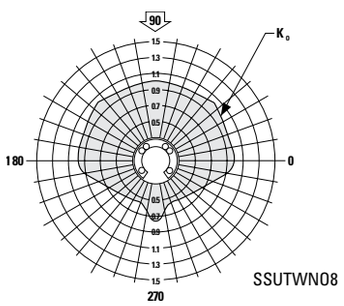
Determining Ball Bushing Bearing Size
To determine the proper Ball Bushing Bearing size, enter the chart with the maximum load of the most heavily loaded bearing and the required travel life. Mark where the two lines intersect. All Ball Bushing Bearing sizes that pass through or above and to the right of this point may be suitable for this application.

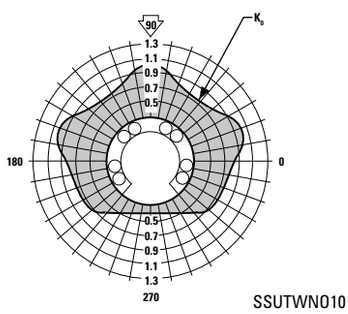
Note: For the purpose of using this chart, load on most heavily loaded bearing = maximum applied load/K_0. Where K_0 can be determined from the Polar Graph to the right.

Polar Graphs

The actual dynamic load capacity of a Ball Bushing Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous page.

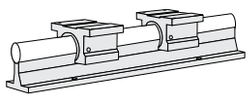
Note: For Super Smart Ball Bushing® Bearings and other extremely high load bearings, the bearing load capacity as indicated by the polar charts may be be practically limited by the degree of shaft flexure acceptable, or the capacity of the shaft rail assembly fasteners. In such cases, the loads should be kept below these practical limits, however, the full corresponding life capacity benefits are still realized.



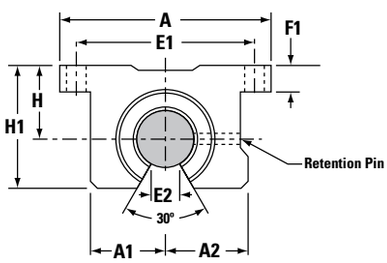


Super Smart Ball Bushing Rigid Steel Pillow Blocks

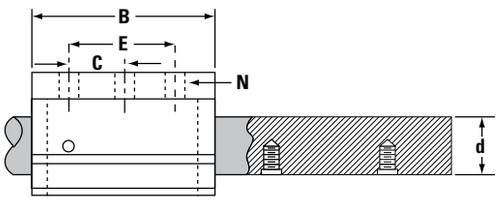
(Open Type) for Continuously Supported Applications



End view



Side view



Rigid steel housing and high performance Super Smart Ball Bushing Bearing combine to reduce deflection and cost up to 66%.

Super Smart Ball Bushing Bearing Rigid Steel Pillow Blocks (Open Type, seal at both ends) and LinearRace® (Dim. in in.)

Part Number (1)		Nominal Diameter	H ±.003	H1	A	A1	A2	B
Super Smart Ball Bushing Rigid Steel Pillow Block	60 Case LinearRace* Shaft							
SSURPBO12	3/4 L PD	.750	.937	1.56	2.75	.94	1.00	1.88
SSURPBO16	1 L PD	1.000	1.187	2.00	3.25	1.19	1.25	2.63
SSURPBO24	1 1/2 L PD	1.500	1.750	2.94	4.75	1.75	1.88	3.75

* 60 Case® begins on page 170.

Part Number (1)	60 Case LinearRace Diameter d	E ±.010	C ±.010	E1 ±.010	E2 min.	F1	N		Pillow Block Mass lb	Dynamic(2) Load Capacity lb_f
Super Smart Ball Bushing Rigid Steel Pillow Block							Hole	Bolt		
SSURPBO12	.7495/.7490	1.250	.625	2.375	.43	.31	.19	#8	1.10	1130
SSURPBO16	.9995/.9990	1.750	.875	2.875	.56	.38	.22	#10	2.30	1900
SSURPBO24	1.4994/1.4989	2.500	1.250	4.125	.81	.50	.28	.25	7.00	3880

(1) For part number description and specifications, see page 34.
(2) The Dynamic Load Capacity is based on a rated travel life of 2 million inches. The actual Dynamic Load Capacity can be affected by the orientation of the bearing or the direction of the applied load. For Dynamic Load Correction Factors, see following polar graphs.

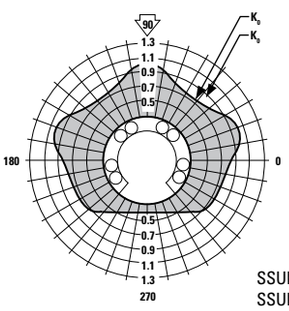
Super Smart Ball Bushing Rigid Steel Pillow Blocks provide:

- **Faster settling time…Greater Productivity**
- **Less deflection…Greater Accuracy**
- **Highest Load Capacity…Smallest Envelope**
- **Longest Bearing Life…Greater Reliability**

Polar Graphs

The actual dynamic load capacity of a Ball Bushing® Bearing is determined by the orientation of the bearing or direction of the applied load. The load correction factor K_0 is found by knowing the direction of the applied load relative to the orientation of the bearings ball tracks and referring to the polar graph. To determine the actual dynamic load capacity, multiply the proper correction factor by the dynamic load capacity listed in the product table on the previous page.

Note: For Super Smart Ball Bushing Bearings and other extremely high load bearings, the bearing load capacity as indicated by the polar charts may be practically limited by the degree of shaft flexure acceptable, or the capacity of the shaft rail assembly fasteners. In such cases, the loads should be kept below these practical limits, however, the full corresponding life capacity benefits are still realized.



SSURPBO12
SSURPBO16
SSURPBO24

Pick and Place X-Y System

Objective
Build an X-Y System that transfers the work piece between two separate machining stations.

Solution
Assemble the X-Y System utilizing Super Smart pillow blocks on end-supported 60 Case® LinearRace® for the X-axis and continuously supported 60 Case LinearRace on the Y-axis. Utilize Thomson ball screw assemblies for high-speed positioning.

Benefits
The 60 Case LinearRace and 60 Case LinearRace end support blocks provide an important bridge between machining stations. The Super Smart Ball Bushing pillow blocks and Thomson ball screws provide uninterrupted high-speed movement of the work piece. Productivity increases by 200%.

Products Specified
X-axis
2 - 1 1⁄2 L CTL x 48.00 in (60 Case LinearRace)
4 - SB24 (60 Case LinearRace End Support Blocks)
4 - SSUPB24 (Super Smart Ball Bushing Pillow Blocks)
1 - 1 1⁄4 x .200 (Thomson Ball Screw Assembly)

Y-axis
2 - LSR-20-PD x 48.00 in (Low-profile 60 Case LinearRace Support Rail)
4 - SSUPBO20 (Super Smart Ball Bushing Pillow Blocks)
1 - 1 1/4 x .200 (Thomson Ball Screw Assembly)
2 - 1 1/4 L PD CTL x 48.00 in (60 Case LinearRace)