

Minuteman Self-Lubricating Linear/Rotary Bearings

Standard Drop-ins for
Linear Ball Bearings

Special Designs

Linear Shafting



When it's 11:00 in your linear design schedule, who should you turn to for the linear bearing you really need as opposed to settling for an "almost ok" catalog option? LM76...of course.

**More knowledge. More Options.
More Solutions.**



1-800-513-3163
www.LM76.com





Minuteman PTFE composite linear bearings offer a tough, hard ceramic coated aluminum shell which does not chip, flake or generate debris. Bonded to the bearing shell ID is our Minuteman - Green - PTFE , self-lubricating liner which ranges from .025" - .035" thickness depending on bearing size. Minuteman's self-lube PTFE linear is not filled with abrasive materials like glass or metallics that require hardened steel or 440c stainless shafting. Rather, our blend employs high load, non-abrasive polyimide fillers which are able to run on soft, 300 series stainless steels- 303, 304 and 316 SS. Our white, FDA linear is very similar but takes a lesser load.



PSI = 5000

Max Velocity = 400 SFM

Max PV = 30,000

Required Shafting = Class L Rc60/440c

300 SS (303, 304, 316)

Coefficient of Friction = .09 - .12

Self-Lubricating

Minuteman FDA Compliant Self-Lube Bearings



PSI = 1000

Max Velocity = 400 SFM

Max PV = 10,000

Shell: 300 SS

Required Shafting = Class L Rc60/440c

300 SS (303, 304, 316)

Coefficient of Friction = .09 - .12

Self-Lubricating



Black Racer Ceramic Coated Linear Bearings offer a 1 piece design employing a file hard (FDA Compliant) ceramic coating over an aluminum shell. Our ceramic coating is not a surface anodize like Black Oxide or Zinc. It has a depth of .001" penetration and a .001" surface build-up for a total of .002". Our ceramic coating does not fracture, flake, chip or wash off in most chemical (see chemical resistance chart - Page 27) environments.

Black Racer requires lubrication and must be run on case hardened shafting: Rc60 Steel or 440c stainless.

Black Racer bearings were the "original" drop-in replacements for Linear Ball Bearings in 1976 and were hailed as a design innovation among mechanical engineers.



PSI = 5000

Max Velocity = *Unlimited

Max PV = 40,000

Required Shafting = Class L Rc60/440c

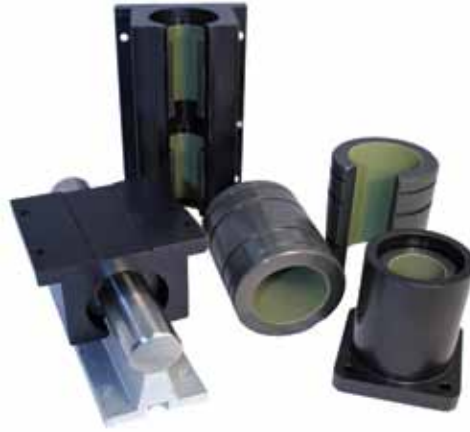
Coefficient of Friction = .04 -.08 (Lower than PTFE)

Requires Lubrication

* To date, LM76 have not experienced a failure due to high acceleration or system speed when properly employed.

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Special Bearing Design and Manufacture

LM76 specializes in the design and manufacture of special linear bearings. Our many years of plain bearing experience make us the go-to company for short and long run special designs. We love to go "Off Catalog" to give you the linear bearing you really need. Don't settle for catalog options - we're here for you. Don't settle for high prices, minimums and crazy lead times!

Ceramic Coated Aluminum Twin Pillow Block with 300 series stainless, PTFE, FDA Food Process Bearing Assembly.



Special 2" all stainless shaft, pillow block and linear ball bearings



Self-Aligning Self Lubricating linear bearing with special ETX scraper seal

Washdown

Rotating, self lubricating, high temp metering valve



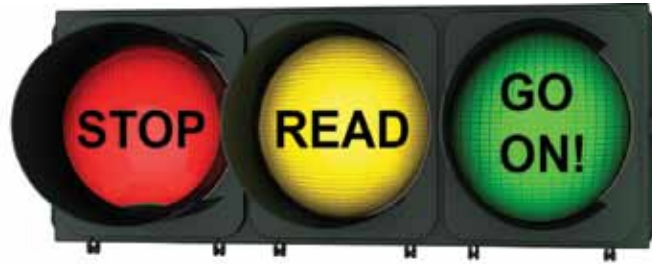
Automotive bearing that provides cam actuated linear motion



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SELF LUBRICATING LINEAR SPECIALS



**Comparison chart for LM76 Ceramic Coated,
Minuteman Self Lube and FDA/USDA Bearings**

LINEAR BEARING CATAGORIES	MINUTEMAN SELF LUBE BEARINGS	CERAMIC COATED BEARINGS	FDA/USDA LINEAR BEARINGS
Max PV (continuous)	30,000	40,000	10,000
Max P-PSI (static)	5,000	5,000	1,000
Max V SFM (no load)	400	unlimited!	400
Shaft Hardness (minum)	RB 25	RC 35	RB 25
Shaft Finish (RMS)	8-16	8-16	8-16
Coefficient of Friction	.09-.12	.04-.08	.12-.20
Temperature Limits- typical range	-400 to +375F	-200 to +400F	-400 to +375F

BEARING “Quick Look Chart”

QUICK LOOK	HIGH LOADS	DEBRIS	SHOCK/ VIBRATION	WASHDOWN	CHEMICALS	LUBRICA- TION	SHAFTING
MINUTEMAN	Yes	Yes	Yes	Yes	*Yes	Not Required	Soft RB25
CERAMIC	Yes	Yes	Yes	Yes	*Yes	Required	Hard RC35
FDA/USDA	No	No	Yes	Yes	*Yes	Not Required	Soft RB25

NOTES:

*See chemical resistance chart page

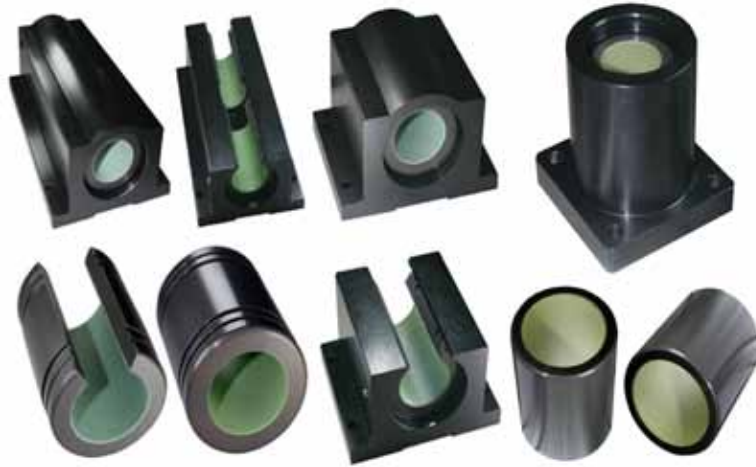
LM76 Minuteman and FDA/USDA bearings run successfully on soft 300 series stainless steel shafting as well as hardened shafting. LM76 Ceramic Coated bearings require hardened shafting RC35 or better.

All LM76 bearings provide quiet, smooth and vibration free operation.

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Minuteman PTFE Self-Lubricating Bearings

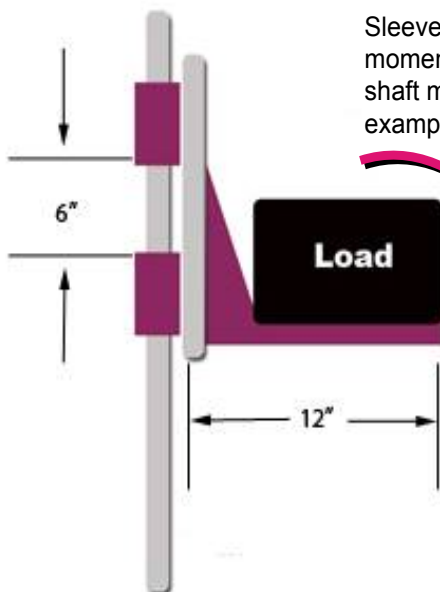


Engineering Data

Mechanicals

PSI	PV	Coefficient of Friction	Operating Temp	SFM	Shafting
5000	30,000	.09 -.12	-400 / +385 F	400	Class L 300SS 440C Rc60 OK

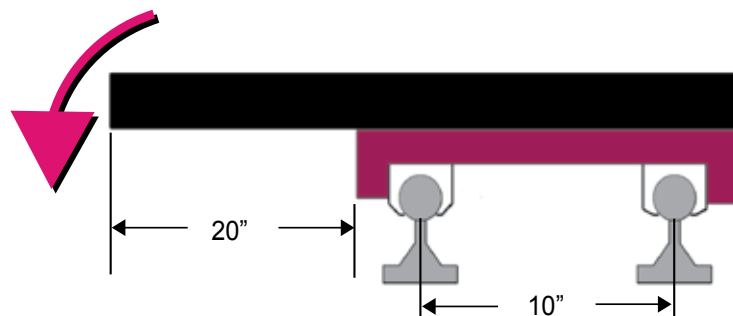
2:1 Ratio for Moment Loading Vertical "Z" Axis



Sleeve-Type linear bearings can suffer from "edge loading" in over-turning moment designs. In the vertical "Z" axis, the distance between bearings on 1 shaft must be spaced a minimum of 1/2 the distance of the moment arm. See the example below for clarification. The optimal ratio is 1:1.

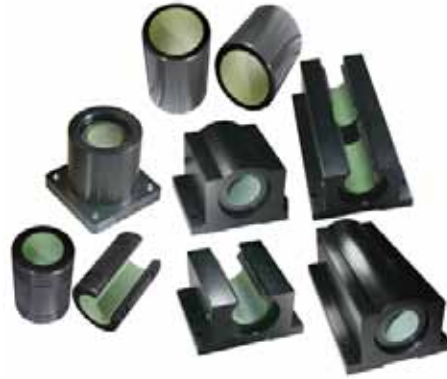
2:1 Ratio for Moment Loading Horizontal "X,Y" Axis

Sleeve-Type linear bearings can suffer from "edge loading" in over-turning moment designs. In the horizontal "X" axis, the distance between shafts must be spaced a minimum of 1/2 the distance of the moment arm. See the example below for clarification. The optimal ratio is 1:1.

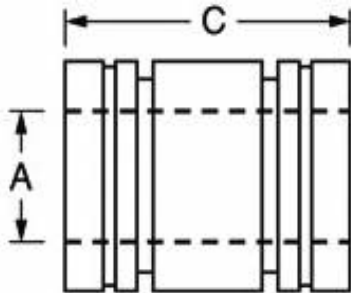


SELF LUBRICATING LINEAR BEARINGS

Engineering Data (Cont.)



Calculating Load Capacity



Bearing ID x Length = Sq. Inches of potential loading (A)
 A x PSI (5000) = (B)
 *60% of B = Max Static Load

Example:
 Part Number L 1625-18SL (1" Diameter)

$1 \times 2.25 = 2.25$ " of Load Area
 $2.25 \times 5000 = 11250$ pounds
 60% of 11250 = 6750 Max Static Load

* Some bearing manufacturers use the Sq Inches x PSI as their final load value. We consider the fact that sleeve bearings have a running clearance - in our case .001 total, .0005 either side. Thus, the shaft is never in total contact with the ID or totally loaded. We use 60% as our true contact area. Keep in mind that these are Max Static loads, not Dynamic loads which are typically 1/2 of the Max Static load.

Characterizing Rolling vs. and Sliding Friction

If you take a quarter and roll it across a table on its edge it will go a long way - freely. If you take a quarter, lay it flat on the table and push it, you will notice the difference immediately.

Sizing Motors and Drives - Friction Factor

When using PTFE linear bearings in a sliding application, you have to allow for "sticktion". This is another phenomena of sliding bearings. We suggest a .3 multiplier to develop enough force to break the bearings free - going from static to dynamic operation. Once your system is in motion, the friction factor lowers to .15 and becomes uniform. Use the .3 multiplier when choosing your motor or drive.

Example:

If you have a load of 100 pounds, you will need 30 pounds of force to get the system under way.

$$.3 \times 100 = 30$$

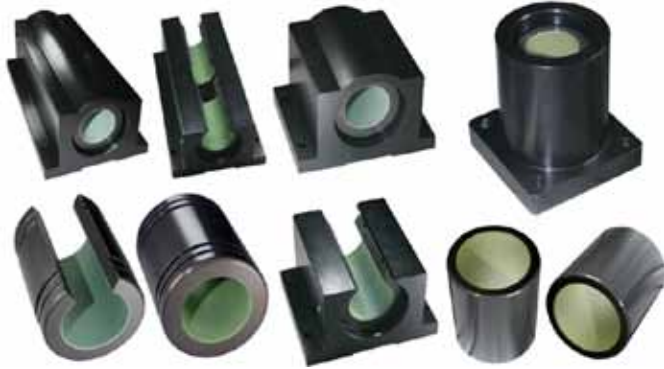
Once the system transistions from static to dynamic motion it will take 15 pounds of force to continue moving the carriage plate in a flat horizontal plane.

$$.15 \times 100 = 15$$

Engineering Data (Cont.)



Edge Loading



Edge loading is a phenomena associated with sleeve bearings. If there are side loads and moment loads which have not been taken into consideration relative to bearing or shaft spacing, you may experience at least one of these issues:

1. Binding
2. Sticking
3. Excessive system friction and bearing wear.

The difference between linear ball bearings and LM76 Minuteman PTFE Self-Lubricating Linear Bearings.



Coefficient of Friction: .015 - .001

Running Clearance: Zero Clearance

Operation: Noisy and Produces Resonance

Requires Lubrication

Motion: Linear Only

Fails in applications which feature:
contamination, washdown, shock,
rapid oscillation,
high loads

Shafting: RC60 Hardened Shafting ONLY

Magnetic

Misaligned Shafting: OK

Moment Loading: OK

Mechanical Failure Mode: Extreme - balls
can fall out of the housing - shafting can
become grooved

Chemical/Washdown Resistance: Fails



Coefficient of Friction: .09 - .15

Running Clearance: + .001

Operation: Quiet & Smooth

Motion: Linear & Rotary

Thrives in applications which feature:
contamination, washdown, shock, rapid oscillation,
high loads

Shafting: Hardened & Soft 300 Series Stainless Steel

Non-Magnetic

Misaligned Shafting: Problematic

Moment Loading: Problematic -
particularly in Z axis (vertical operation)

Failure Mode: Mild - increased running clearance due
to wear - no loss of mechanical components

Chemical Resistance: EXCELLENT

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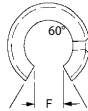
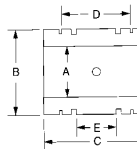
Minuteman Closed and Open, Self-Lubricating PTFE Linear Bearings



L

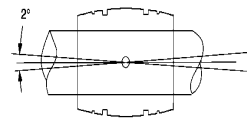


LX



SA

Self Aligning



INCH SIZES

BEARING NUMBER (L OR LX)	WORKING BORE		OUTSIDE DIAMETER		LENGTH		DISTANCE BETWEEN RETAINING RINGS D	DISTANCE BETWEEN O-RING GROOVES E	SLOT WIDT +.020 -.000 F	RETAINING HOLE DIAMETER H	HOLE LOCATION TO BRG. END I
	INCHES A	TOL. -.0000 +	INCHES B	TOL. +.0000 -	INCHES C	TOL. +.000 -					
408-6SL	0.2505	0.0010	0.5000	0.0010	0.750	0.015	0.437	0.018	0.094	0.094	on center
610-7SL	0.3755	0.0010	0.6250	0.0010	0.875	0.015	0.562	0.260	0.156	0.094	on center
610-7SUSL	0.3755	0.0010	0.6250	0.0010	0.875	0.015	0.625	0.260	0.156	0.094	on center
814-10SL	0.5005	0.0010	0.8750	0.0010	1.250	0.015	0.875	0.490	0.312	0.133	5/8
814-10SUSL	0.5005	0.0010	0.8750	0.0010	1.250	0.015	0.940	0.490	0.312	0.133	5/8
1018-12SL	0.6255	0.0010	1.1250	0.0010	1.500	0.015	1.000	0.550	0.375	0.133	1/8
1220-13SL	0.7508	0.0010	1.2500	0.0010	1.625	0.015	1.062	0.612	0.438	0.133	1/8
1220-13SUSL	0.7508	0.0010	1.2500	0.0010	1.625	0.015	1.160	0.612	0.438	0.133	1/8
1625-18SL	1.0008	0.0010	1.5625	0.0010	2.250	0.015	1.625	1.180	0.563	0.133	1/8
1625-18SUSL	1.0008	0.0010	1.5625	0.0010	2.250	0.015	1.750	1.180	0.563	0.133	1/8
2032-21SL	1.2508	0.0010	2.0000	0.0010	2.625	0.020	1.875	1.425	0.625	0.201	3/16
2438-24SL	1.5008	0.0015	2.3750	0.0015	3.000	0.020	2.250	1.670	0.750	0.201	3/16
3248-32SL	2.0012	0.0015	3.0000	0.0015	4.000	0.020	3.000	1.450	1.000	0.275	5/16
4060-40SL	2.5012	0.0015	3.7500	0.0015	5.000	0.025	3.750	1.600	1.250	0.275	5/16
4872-48SL	3.0012	0.0020	4.5000	0.0020	6.000	0.030	4.500	2.190	1.500	0.275	5/16
6496-64SL	4.0012	0.0020	6.0000	0.0020	8.000	0.040	6.000		2.000	0.275	5/16

Ordering Information:

For Closed Bearings use Prefix L Example: L1625-18SL

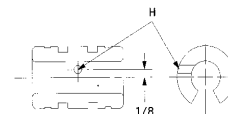
For Open Bearings use Prefix LX LX1625-18SL

For Self Aligning Bearings, add SA to part number. Example: L1625-18 SLSA

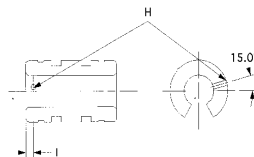
BEARING NUMBER (L OR LX)	MAX. SHAFT DIA.	HOUSING BORE		BEARING WEIGHT LBS (L)	BEARING WEIGHT LBS. (LX)	MAX STATIC LOAD LBS.
		TOL. -.0000 +				
408-6	0.2495	0.5000	0.0005	0.010	0.008	939
610-7	0.3745	0.6250	0.0005	0.015	0.013	1643
610-7SU	0.3745	0.6250	0.0005	0.015	0.013	1643
814-10	0.4995	0.8750	0.0005	0.046	0.034	3128
814-10SU	0.4995	0.8750	0.0005	0.046	0.034	3128
1018-12	0.6245	1.1250	0.0005	0.096	0.072	4691
1220-13	0.7495	1.2500	0.0005	0.125	0.091	6100
1220-13SU	0.7495	1.2500	0.0005	0.125	0.091	6100
1625-18	0.9995	1.5625	0.0005	0.247	0.184	11259
1625-18SU	0.9995	1.5625	0.0005	0.247	0.184	11259
2032-21	1.2495	2.0000	0.0010	0.500	0.381	16417
2438-24	1.4994	2.3750	0.0010	0.780	0.603	22512
3248-32	1.9994	3.0000	0.0010	1.540	1.190	40024
4060-40	2.4993	3.7500	0.0010	3.000	2.334	62518
4872-48	2.9992	4.5000	0.0010	5.060	4.080	90009
6496-64	3.9988	6.0000	0.0010	12.100	9.870	160048

LM76 Bearings can be press fit, held in place with snap rings or pinned in housing with a retaining pin. Retaining pin location is illustrated above.
NOTE: Oil hole centrally located on the "C" dimension on all standard bearings.

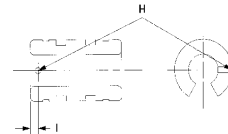
Retaining Pin Location, LX inch series Bearings



LX 814-10



LX 1018-12



LX 1220-13 THRU LX 6496-64

SELF LUBRICATING LINEAR BEARINGS

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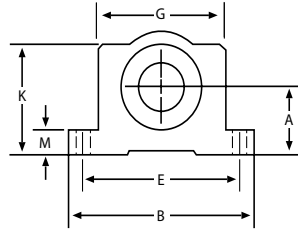
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Minuteman Single,Closed and Open, PTFE Self-Lubricating Pillow Blocks



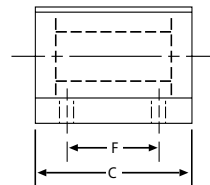
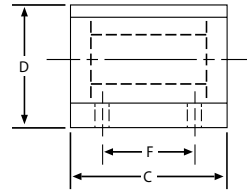
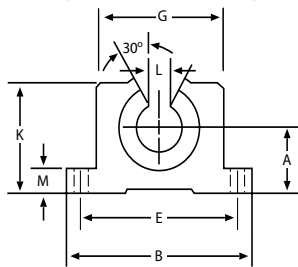
(L)

Closed



(LX)

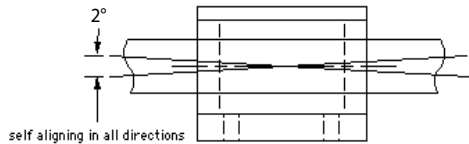
Open



Inch (Imperial) Sizes

PART NUMBER (L) (LX)	SHAFT DIA.		A +/- .003	B	C	D	E +/- .010	F +/- .010	G	BOLT/ HOLE	K	L MIN.	M MIN.
	NOM.	MAX.											
PB 408-6SL	1/4	.2495	.437	1 5/8	1 3/16	13/16	1.312	.750	1	#6-5/32	3/4	3/32	3/16
PB 610-7SL	3/8	.3745	.500	1 3/4	1 5/16	15/16	1.437	.875	1 1/8	#6-5/32	7/8	9/64	3/16
PB 814-10SL	1/2	.4995	.687	2	1 11/16	1 1/4	1.688	1.000	1 3/8	#6-5/32	1 1/8	5/16	1/4
PB 1018-12SL	5/8	.6245	.875	2 1/2	1 15/16	1 5/8	2.125	1.125	1 3/4	#8-3/16	1 7/16	3/8	9/32
PB 1220-13SL	3/4	.7495	.937	2 3/4	2 1/16	1 3/4	2.375	1.250	1 7/8	#8-3/16	1 9/16	7/16	5/16
PB 1625-18SL	1	.9995	1.187	3 1/4	2 13/16	2 3/16	2.875	1.750	2 3/8	#10-7/32	2	9/16	3/8
PB 2032-21SL	1 1/4	1.2495	1.500	4	3 5/8	2 13/16	3.500	2.000	3	#10-7/32	2 1/2	5/8	7/16
PB 2438-24SL	1 1/2	1.4994	1.750	4 3/4	4	3 1/4	4.125	2.500	3 1/2	1/4-9/32	2 7/8	3/4	1/2
PB 3248-32SL	2	1.9994	2.125	6	5	4 1/16	5.250	3.250	4 1/2	3/8-13/32	3 5/8	1	5/8

Self Lubricated Pillow Blocks normally supplied without seals unless requested.



Self aligning Pillow Blocks allow 360° misalignment of 1° from shaft centerline, 2° total misalignment for applications where proper alignment is difficult or self alignment desirable.

Ordering Information

For Self Aligning Pillow Blocks, add the Suffix SA to part number. Example: LPB1625-18 SL**SA**

For Self Lubricated Pillow Blocks, add the Suffix SL to part number. Example: LPB1625-18 **SL**

For Closed Pillow Blocks Begin P/N with LPB

For Open Pillow Blocks Begin P/N with LXPB

PILLOW BLOCK HOUSINGS

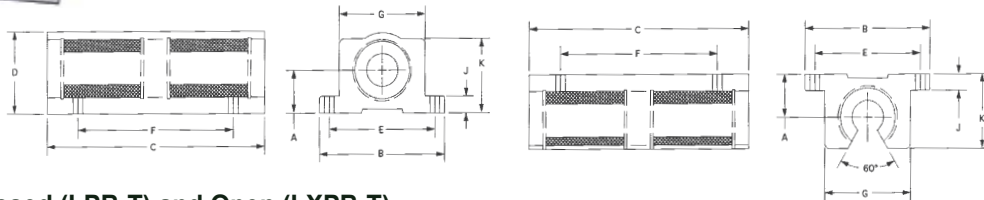
PART NUMBER		
PREFIXES (L) (LX)	HOUSING BORE	
PBH 408-6	.5000/.5005	
PBH 610-7	.6250/.6255	
PBH 814-10	.8750/.8755	
PBH 1018-12	1.1250/1.1255	
PBH 1220-13	1.2500/1.2505	
PBH 1625-18	1.5625/1.5635	
PBH 2032-21	2.0000/2.0010	
PBH 2438-24	2.3750/2.3760	
PBH 3248-32	3.0000/3.0010	

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SELF LUBRICATING LINEAR BEARINGS

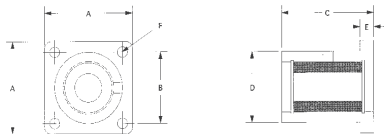
Minuteman Twin, Closed and Open, PTFE Self-Lubricating Pillow Blocks



Closed (LPB-T) and Open (LXPB-T)

PART NUMBER	WORKING BORE			A	B	C	D	E	F	G	BOLT	HOLE	J	K
	INCHES	TOLERANCE	+/- .002					+/- .010	+/- .010					
LPB-4 T SL	.2505	+.001	.437	1 5/8	2 1/2	13/16	1.312	2.000	1	#6	5/32	3/16	3/4	
LPB-6 T SL	.3755	+.001	.500	1 3/4	2 3/4	15/16	1.437	2.250	1 1/8	#6	5/32	3/16	7/ 8	
L or LXPB-8 T SL	.5005	+.001	.687	2	3 1/2	1 1/4	1.688	2.500	1 3/8	#6	5/32	1/4	1 1/8	
L or LXPB-10 TSL	.6255	+.001	.875	2 1/2	4	1 5/8	2.125	3.000	1 3/4	#8	3/16	9/32	1 7/16	
L or LXPB-12 TSL	.7505	+.001	.937	2 3/4	4 1/2	1 3/4	2.375	3.500	1 7/8	#8	3/16	5/16	1 9/16	
L or LXPB-16 TSL	1.0008	+.001	1.187	3 1/4	6	2 3/16	2.875	4.500	2 3/8	#10	7/32	3/8	1 15/16	
L or LXPB-20 TSL	1.2508	+.001	1.500	4	7 1/2	2 13/16	3.500	5.500	3	#10	7/32	7/16	2 1/2	
L or LXPB-24 TSL	1.5008	+.0015	1.750	4 3/4	9	3 1/4	4.125	6.500	3 1/2	1/4"	9/32	1/2	2 7/8	
L or LXPB-32TSL	2.0012	+.0015	2.125	6	10	4.063	5.250	8.250	4.500	3/8	13/32	5/8	3.625	

Flange Blocks



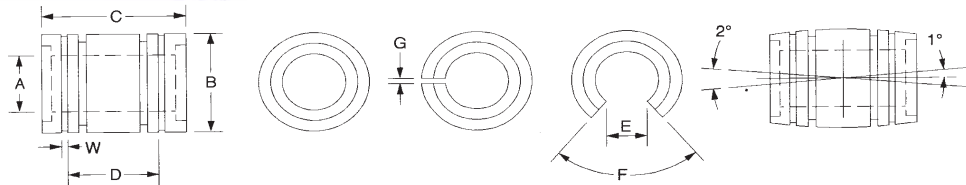
Part Number	Shaft Diameter		A	B	C	D	E	F	
	Nom	Max						Bolt	Hole
LF6SL	3/8"	.3745	1-1/4"	0.875	1-5/16"	7/8"	3/16"	# 6	5/32"
LF8SL	1/2"	.4995	1-5/8"	1.250	1-11/16"	1-1/4"	1/4"	# 8	3/16"
LF10SL	5/8"	.6245	2"	1.500	1-15/16"	1-1/2"	1/4"	# 8	3/16"
LF12SL	3/4"	.7495	2-3/8"	1.750	2-1/16"	1-3/4"	3/8"	# 10	7/32"
LF16SL	1"	.9995	2-3/4"	2.125	2-13/16"	2-1/4"	1/2"	1/4"	9/32"
LF20SL	1-1/4"	1.2495	3"	2.250	3-5/8"	2-1/2"	1/2"	1/4"	9/32"
LM76 will design and manufacture special twin flange blocks upon request									

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SELF LUBRICATING LINEAR BEARINGS

Minuteman European Metric Closed and Open, PTFE Self-Lubricating Bearings

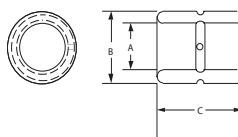


European Closed and Open PTFE Self-Lubricating Bearings

PART NUMBER add prefix L, LX or LA	WORKING BORE		OUTSIDE DIA. h7 Tolerance	LENGTH h14 Tolerance	RETAINING RING		MAX. SHAFT DIA. (h6 or h7)	HOUSING BORE DIA. H7	OPEN(LX) SLOT WIDTH E	OPEN (LX) SLOT ANGLE F	ADJ (LA) SLOT WIDTH G
	A	Tolerance -0,000									
		+	B	C	D	W					
L / LX / LA 5 SL	5	0,038-0,065	12	22	12	1,1	5	12	-	-	2
8 SL	8	"	16	25	14	1,1	8	16	-	-	2
12 SL	12	"	22	32	20	1,3	12	22	7,6	78	2,5
16 SL	16	"	26	36	22	1,3	16	26	10,8	78	3
20 SL	20	0,047-0,074	32	45	28	1,6	20	32	10,8	60	3,5
25 SL	25	"	40	58	40	1,85	25	40	13,2	60	4,5
30 SL	30	"	47	68	48	1,85	30	47	14,2	50	5
40 SL	40	0,049-0,089	62	80	56	2,15	40	62	18,7	50	7
50 SL	50	"	75	100	72	2,65	50	75	23,6	50	8
60 SL	60	"	90	125	95	3,2	60	90	29,6	54	10
80 SL	80	0,122-0,173	120	165	125	4,2	80	120	38,4	54	14

Part Number Prefix
L = Closed LX = Open LA = Adjustable Slot L50SL = Closed Bearing LX50SL = Open Bearing LA50SL = Adjustable Slot Bearing
Part Number Suffix
SA = Self-Aligning L50SLSA = Closwd, Self-Aligning Bearing

TWM PTFE Self-Lubricating Thin Wall Bearings



PART NUMBER	WORKING BORE		OUTSIDE DIAMETER	LENGTH h14 Tolerance	MAX. SHAFT DIA. (h6 or h7)	HOUSING BORE DIA. H7
	A	TOL. -0,000				
		+	B	C		
L6 TWMSL	6	0,038-0,065	12	22	6	12
L8 TWMSL	8	"	15	24	8	15
L10 TWMSL	10	"	17	26	10	17
L12 TWMSL	12	"	19	28	12	19
L14 TWMSL	14	"	21	28	14	21
L16 TWMSL	16	"	24	30	16	24
L20 TWMSL	20	0,047-0,074	28	30	20	28
L25 TWMSL	25	"	35	40	25	35
L30 TWMSL	30	"	40	50	30	40
L40 TWMSL	40	0,049-0,089	52	60	40	52
L50 TWMSL	50	"	62	70	50	62

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SELF LUBRICATING LINEAR BEARINGS



ALI SERIES - INCH

Aluminum Shell/Self Lubricating Linear/Rotary Bearings

Part Number	Bearing Size			A Bearing ID		B Bearing OD		C Length	
	ID	OD	Length	Min	Max	Min	Max	Min	Max
ALI-040602	1/4"	3/8"	1/4"	.2515	.2525	.3760	.3770	.230	.250
ALI-040603	1/4"	3/8"	3/8"	.2515	.2525	.3760	.3770	.355	.375
ALI-040604	1/4"	3/8"	1/2"	.2515	.2525	.3760	.3770	.480	.500
ALI-061004	3/8"	5/8"	1/2"	.3765	.3775	.6260	.6270	.480	.500
ALI-061006	3/8"	5/8"	3/4"	.3765	.3775	.6260	.6270	.730	.750
ALI-071006	7/16"	5/8"	3/4"	.4390	.4400	.6260	.6270	.730	.750
ALI-081204	1/2"	3/4"	1/2"	.5015	.5025	.7510	.7520	.480	.500
ALI-081206	1/2"	3/4"	3/4"	.5015	.5025	.7510	.752	.730	.750
ALI-081208	1/2"	3/4"	1"	.5010	.5025	.7510	.7520	.980	1.000
ALI-101406	5/8"	7/8"	3/4"	.6265	.6275	.8760	.8770	.730	.750
ALI-101408	5/8"	7/8"	1"	.6265	.6275	.8760	.8770	.980	1.000
ALI-121608	3/4"	1"	1"	.7515	.7525	1.0010	1.0020	.980	1.000
ALI-162012	1"	1 1/4"	1 1/2"	1.0015	1.0025	1.2510	1.2520	1.480	1.500
ALI-202416	1 1/4"	1 1/2"	2"	1.2515	1.2525	1.5010	1.5020	1.980	2.000
ALI-2428-16	1 1/2"	1 3/4"	2"	1.5015	1.5025	1.7510	1.7520	1.980	2.000
ALI-283224	1 3/4"	2"	3"	1.7515	1.7525	2.0010	2.0020	2.980	3.000
ALI-3236-24	2"	2 1/4"	3"	2.0015	2.0025	2.2510	2.2520	2.980	3.000
ALI-4044-24	2 1/2"	2 3/4"	3"	2.5015	2.505	2.7510	2.7520	2.980	3.000
ALI-4852-28	3"	3 1/4"	3 1/2"	3.0015	3.0025	3.2510	3.2520	3.480	3.500

LM76 ALI (Inch) linear/rotary, self lubricating bearings offer a thin wall T6061 aluminum shell with a bonded Minuteman™ Self Lubricating PTFE liner. The PTFE liner has no abrasive fillers and runs on both hardened steel as well as soft 300 series stainless shafting. These bearings are pressed or bonded into a housing bore for low friction, high load, low cost linear/rotary motion. Call LM76 for recommended press-fit or slip fit housing bore dimensions.



ALM SERIES - METRIC

Aluminum Shell/Self Lubricating Linear/Rotary Bearings

Part Number	Bearing Size			A Bearing ID		B Bearing OD		C Length	
	ID	OD	Length	Min	Max	Min	Max	Min	Max
ALM 081208	8	12	8	8.033	8.066	12.028	12.046	7.75	8
ALM 081212	8	12	12	8.033	8.066	12.028	12.046	11.75	12
ALM 081408	8	14	8	8.033	8.066	14.028	14.046	7.75	8
ALM 081412	8	14	12	8.033	8.066	14.028	14.046	11.75	12
ALM 101410	10	14	10	10.033	10.066	14.028	14.046	9.75	10
ALM 101416	10	14	16	10.033	10.066	14.028	14.046	15.75	16
ALM 121612	12	16	12	12.034	12.070	16.028	16.046	11.75	12
ALM 121616	12	16	16	12.034	12.070	16.028	16.046	15.75	16
ALM162012	16	20	12	16.041	16.080	20.035	20.056	11.50	12
ALM162016	16	20	16	16.041	16.080	20.035	20.056	15.50	16
ALM162025	16	20	25	16.041	16.080	20.035	20.056	24.50	25
ALM 202516	20	25	16	20.042	20.084	25.035	25.056	15.50	16
ALM 202520	20	25	20	20.042	20.084	25.035	25.056	19.50	20
ALM 202525	20	25	25	20.042	20.084	25.035	25.056	24.50	25
ALM 202530	20	25	30	20.042	20.084	25.035	25.056	29.50	30

LM76 ALM (Metric) linear/rotary, self lubricating bearings offer a thin wall T6061 aluminum shell with a bonded Minuteman™ Self Lubricating PTFE liner. The PTFE liner has no abrasive fillers and runs on both hardened steel as well as soft 300 series stainless shafting. These bearings are pressed or bonded into a housing bore for low friction, high load, low cost linear/rotary motion. Call LM76 for recommended press-fit or slip fit housing bore dimensions.

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SELF LUBRICATING LINEAR BEARINGS

Minuteman Closed, PTFE Self-Lubricating Bull Dog Bearings



LM76 Minuteman PTFE Self-Lubricating Bearings are built for tough jobs where shock, debris and impact strength is required



Part Number	Bearing Size Inch A	ID Tol	OD B	OD Tolerance	Housing Bore Min	Housing Bore Max	Bearing Length	Bearing Length Tolerance	Distance between O-ring Grooves
LFG-8SL	1/2	.5015/.5005	7/8	.87500/.87350	0.8750	.8757	1.250	1.2500/1.2350	1.012
LFG-10SL	5/8	.6255/.6265	1-1/8	1.1250/1.2350	1.1250	1.1258	1.500	1.5000/1.4850	1.095
LFG-12SL	3/4	.7515/.7505	1-1/4	1.2500/1.2480	1.2500	1.2510	1.625	1.6250/1.6100	1.250
LFG-16SL	1	1.0015/1.0005	1-9/16	1.5625/1.5605	1.5625	1.5635	2.250	2.2500/2.2350	1.864

- High load capacity/high-shock load capability
Incredible compression loads that literally crush competing composite materials.
- Self-lubricating design
Provides maintenance-free operation and eliminates the need for costly lubrication systems.
- Low coefficient of friction
Reduces wear and extends operating life. Coefficients as low as 0.05 in dry applications and <0.009 in lubricated environments.
- Temperature resistant
Operates flawlessly in temperatures ranging from cryogenic levels to a high of 300Â°F (149C)
- Dimensionally stable in fluids (water, corrosive liquids, and chemical solutions)
Absorption rates are negligible, providing near-zero swell
- Flexible material design
Suitable for press fit, freeze fit, epoxy bonding, as well as conventional mechanical retention.
- Low weight/high strength
Accommodates high-load with a compact strength to weight ratio



SELF LUBRICATING LINEAR BEARINGS

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M-SRBT



Minuteman Twin Pillow Block Linear Rail Assembly
Pre-assembled Shaft, Rail, and Matched Centerline¹ LM76SL Linear Bearing(s)

PART NUMBER					
LINEAR BEARING		SERIES	SIZE	LENGTH	SST
M	-	SRB ?	- 08	- XXX	SST
M	-	SRB ?	- 10	- XXX	SST
M	-	SRB ?	- 12	- XXX	SST
M	-	SRB ?	- 16	- XXX	SST
M	-	SRB ?	- 20	- XXX	SST
M	-	SRB ?	- 24	- XXX	SST
M	-	SRB ?	- 32	- XXX	SST

DIMENSIONS						
GUIDE BAR DIAMETER	A	B	C	D	E _T	F _T
.500	1.125	2.00	1.688	1.50	2.500	3.500
.625	1.125	2.50	2.125	1.62	3.000	4.000
.750	1.500	2.75	2.375	1.75	3.500	4.500
1.000	1.750	3.25	2.875	2.12	4.500	6.000
1.250	2.125	4.00	3.500	2.50	5.500	7.500
1.500	2.500	4.75	4.125	3.00	6.500	9.000
2.000	3.250	6.00	5.250	3.75	8.250	10.00

- For "XXX" substitute "L" from standard length table, or for non-standard length (see example).
- Guide bar diameter dimension in 1/16" increments (for example 10/16 = .625" diameter).
- Pillow block style and quantity - Substitute "1", "2", or "3" etc. for the number of single bearings or "T", "T2", or "T3" etc. for the number of twin bearings per rail assembly.
- ¹Multiple bearings on an assembly will have matched centerline (H) dimensions.
- "M" for LM76SL, Minuteman linear bearings.
- 303 Stainless Steel with jet finish.

Material:

Rail supports, pillow blocks - aluminum alloy. Screws, retaining rings, spring pins - steel.
Guide shafts - RC60 case hardened steel or 303 stainless steel with jet finish (SST).
Bearings - composite Teflon® and aluminum Alloy

Ordering Examples:

Standard Lengths -

To order a shaft, rail and linear bearing assembly with a .750" diameter stainless shaft, support rail, and one twin bearing, with a length over all of 96" ----- Specify part number: M-SRBT-12-096SST

Non-standard Lengths -

To order a shaft, rail and linear bearing assembly with a .625" diameter shaft, support rail, and two single open bearings, with a length over all of 73.25" ----- Specify part number: M-SRB2-10-73.25

Note: For specifying fractional lengths, carry two digits after the decimal point.

Note: For maximum standard lengths and under, shafts will be continuous, but rail supports will have a minimum of one break every 48".

²Non-standard lengths are also available - see non-standard lengths ordering example

STANDARD LENGTH TABLE																									
SIZE	AVAILABLE LENGTHS - L ² (IN INCHES)																								
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076		080
12		012		018		024		030		036		042		048		054		060		066		072		078	
16		012		018		024		030		036		042		048		054		060		066		072		078	
20		012		018		024		030		036		042		048		054		060		066		072		078	
24			016			024			032		040			048			056		064			072			080
32						024			032		040			048			056		064			072			080

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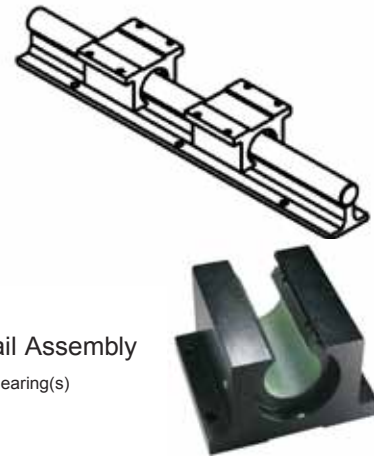
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SELF LUBRICATING LINEAR SLIDES

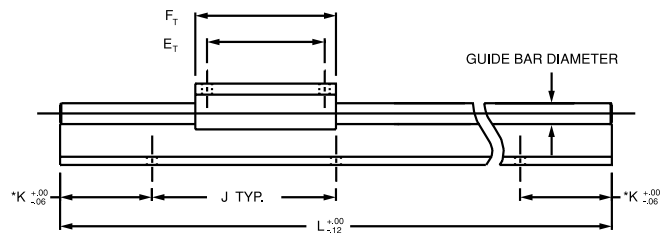
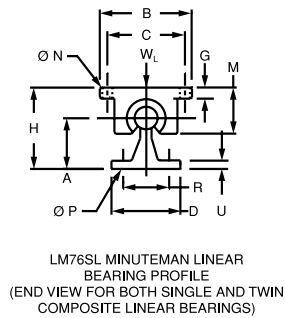


M-SRB2

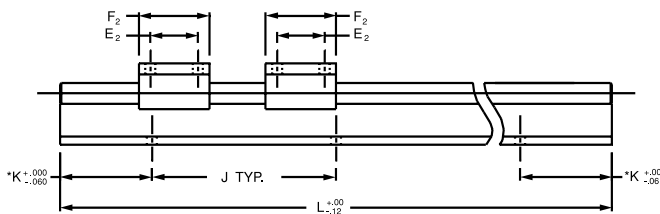
Minuteman Single Open Pillow Block Linear Rail Assembly
Preassembled Shaft, Rail, and Matched Centerline¹. LM76SL Linear Bearing(s)



DIMENSIONS (Continued)										
E ₂	F ₂	G	H	J	K	M	N	P	R	U
1.000	1-11/16	.250	1.812	4.00	2.00	1-1/8	.156	.169	1.000	.188
1.125	1-15/16	.281	2.000	4.00	2.00	1-7/16	.188	.193	1.125	.250
1.250	2-1/16	.312	2.438	6.00	3.00	1-9/16	.188	.221	1.250	.250
1.750	2-13/16	.375	2.938	6.00	3.00	2	.219	.281	1.500	.250
2.000	3-5/8	.437	3.625	6.00	3.00	2-1/2	.219	.343	1.875	.312
2.500	4	.500	4.250	8.00	4.00	2-7/8	.281	.343	2.250	.375
3.250	5	.625	5.375	8.00	4.00	2-5/8	.406	.406	2.750	.500



*FOR STANDARD LENGTH DIMENSIONS CONSULT THE CHART FOR "K".
*FOR NON-STANDARD LENGTH DIMENSIONS "K" CAN BE CALCULATED WITH THE FOLLOWING FORMULA (IN ALL CASES EQUAL ON BOTH ENDS).
 $K(\text{NON-STANDARD}) = (K(\text{FROM CHART}) - (\Delta L/2))$
WHERE ΔL = NEXT LONGER STANDARD LENGTH - DESIRED LENGTH



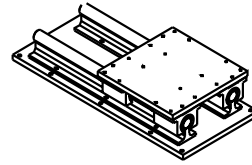
³ Longer lengths are also available - Consult Factory

STANDARD LENGTH TABLE (Continued)																								
SIZE	AVAILABLE LENGTHS - L ³ (IN INCHES)																							
08	084	088		092	096	100		104	108	112		116	120	124		128	132	136		140	144	148		152
10	084	088		092	096	100		104	108	112		116	120	124		128	132	136		140	144	148		152
12	084		090		096		102		108		114		120		126		132		138		144		150	
16	084		090		096		102		108		114		120		126		132		138		144		150	
20	084		090		096		102		108		114		120		126		132		138		144		150	
24		088			096			104		112			120			128		136			144			152
32		088			096			104		112			120			128		136			144			152



M-RPS

Minuteman Linear Rail Mounted Plate Supported Slide Assembly



PART NUMBER				
LINEAR BEARING	SERIES	SIZE		L
M	-	RPS	-	08 - ???
M	-	RPS	-	10 - ???
M	-	RPS	-	12 - ???
M	-	RPS	-	16 - ???
M	-	RPS	-	20 - ???
M	-	RPS	-	24 - ???
M	-	RPS	-	32 - ???

DIMENSIONS					
GUIDE BAR DIAMETER	W	H	A	B	C
.500	6.00	2.000	.563	2.00	3.500
.625	7.00	2.313	.688	2.50	4.000
.750	8.00	2.688	.750	2.75	4.500
1.000	9.00	3.188	1.000	3.25	5.500
1.250	11.00	4.188	1.188	4.00	6.500
1.500	13.00	4.625	1.375	4.75	8.000
2.000	18.00	5.875	1.750	6.00	10.00

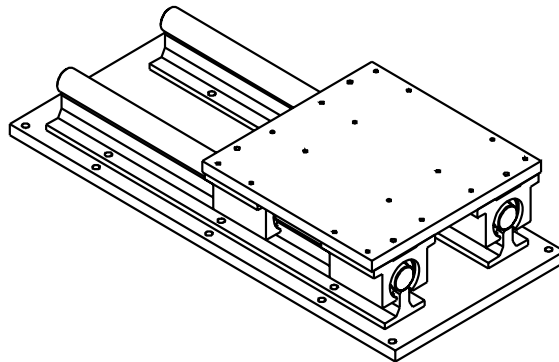
Substitute "L" from standard length table for "???".
 Guide bar diameter in 1/16" increments (for example 10/16 = .625" diameter).
 "M" for LM76SL, Minuteman linear bearings.

Material:

Aluminum Alloy: Top plate, bottom plate, rail supports, pillow blocks
 Guide shafts: RC60 case hardened steel or 303 stainless steel with jet finish (SST).

Ordering Examples:

To order a slide with LM76SL, Minuteman, linear bearings, .625" diameter shafting, 21.00" travel, without a ball screw ----- Specify part number: M-RPS-10-028



STANDARD LENGTH TABLE																							
SIZE	AVAILABLE LENGTHS - L ² (IN INCHES)																						
08	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076
10	008	012	016		020	024	028		032	036	040		044	048	052		056	060	064		068	072	076
12		012	018		024		030		036		042		048	054	060		066		072		078	084	090
16		012	018		024		030		036		042		048	054	060		066		072		078	084	090
20		012	018		024		030		036		042		048	054	060		066		072		078	084	090
24			016		024		032		040		048		056	064		072		080		088		096	
32					024		032		040		048		056	064		072		080		088		096	



M-2HCR



M-2HWL

Minuteman Screw Driven Slides with Crank and Hand Lock

PART NUMBER					
LINEAR BEARING	SERIES	SIZE	L	LEAD	
M	- 2H??	- 08	- ???	- ???	
M	- 2H??	- 10	- ???	- ???	
M	- 2H??	- 12	- ???	- ???	
M	- 2H??	- 16	- ???	- ???	
M	- 2H??	- 20	- ???	- ???	
M	- 2H??	- 24	- ???	- ???	
M	- 2H??	- 32	- ???	- ???	

DIMENSIONS										
GUIDE BAR DIA	W	H	A	B	C	D	E	F	G	J
.500	6.00	2.562	1.125	2.00	3.500	1.50	.375	.75	5.50	4.00
.625	7.00	2.750	1.125	2.50	4.000	1.62	.375	.75	6.31	4.00
.750	8.00	3.438	1.500	2.75	4.500	1.75	.500	1.00	7.12	6.00
1.000	9.00	3.938	1.750	3.25	5.500	2.12	.500	1.00	8.31	6.00
1.250	11.00	5.125	2.125	4.00	6.500	2.50	.750	1.25	10.00	6.00
1.500	13.00	5.750	2.500	4.75	8.000	3.00	.750	1.25	12.00	8.00
2.000	18.00	7.375	3.250	6.00	10.00	3.75	1.000	1.50	15.88	8.00

Material
Aluminum Alloy: Top & bottom plates, rail supports, pillow blocks, and coupling
Guide shafts: 303 Stainless Steel with jet finish, rolled ball screw and ball nut assembly.

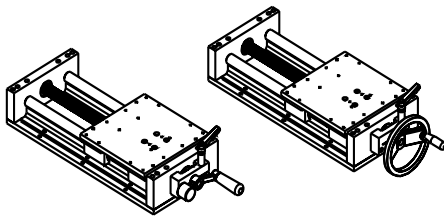
Ordering Example: M 2HWL-10-056-AR1

Guide bar diameter in 1/16" increments (10/16 = .625")
"M" for LM76SL, Minuteman, liner bearings.

SERIES	HANDLE DESCRIPTION
HCR	-STANDARD MODEL -CAST ALUMINUM COUNTERBALANCED HAND CRANK
HWL	-DELUXE MODEL - ALUMINUM HANDWHEEL WITH FOLD-AWAY HANDLE

Ordering Example:

To order a slide assembly with 1/2" diameter guide bars, 90" stroke, a standard model handcrank, and a .200" lead right handed select ball screw-----Specify part number: M-2HCR-08-096-AR1



M-2HCR-16-024-BR0 M-2HWL-16-024-BR0

* Longer lengths are available - Consult Factory

LEAD CODE TABLE												
SIZE	AVAILABLE LEAD CODE										LEAD CODES	
08	AR?	AL?									AR?	.200 RIGHT HAND
10	AR?	AL?									AL?	.200 LEFT HAND
12	AR?	AL?									BR?	.250 RIGHT HAND
16			BR?	BL?	CR?	DR?					BL?	.250 LEFT HAND
20			BR?	BL?	CR?	DR?					CR?	.500 RIGHT HAND
24			BR?	BL?	CR?	DR?	DL?	ER?			DR?	1.000 RIGHT HAND
32			BR?	BL?	CR?	DR?	DL?	ER?			DK?	1.000 LEFT HAND
REPLACE ? WITH 0 FOR STANDARD LEAD- LESS THAN .007" PER FOOT ACCUMULATIVE											ER?	1.875 RIGHT HAND
REPLACE ? WITH 1 FOR SELECT LEAD- LESS THAN .003" PER FOOT ACCUMULATIVE												

STANDARD LENGTH TABLE																											
SIZE	AVAILABLE LENGTHS - L* (IN INCHES)																										
08	008	012	016	020	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	084	088	092	096				
10	008	012	016	020	024	028	032	036	040	044	048	052	056	060	064	068	072	076	080	084	088	092	096				
12		012	018	024	030	036	042	048	054	060	066	072	078	084	090	096											
16		012	018	024	030	036	042	048	054	060	066	072	078	084	090	096											
20		012	018	024	030	036	042	048	054	060	066	072	078	084	090	096											
24			016	024	032	040	048	056	064	072	080	088	096														
32				024	032	040	048	056	064	072	080	088	096														

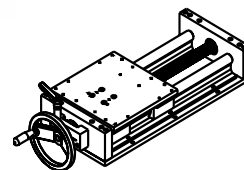


M-2HCR

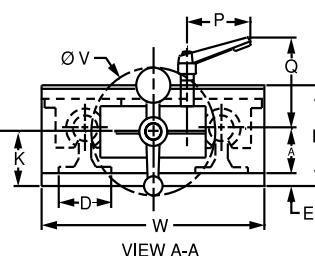
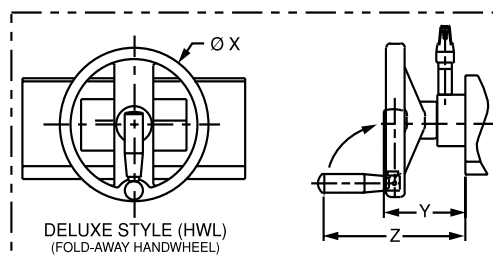
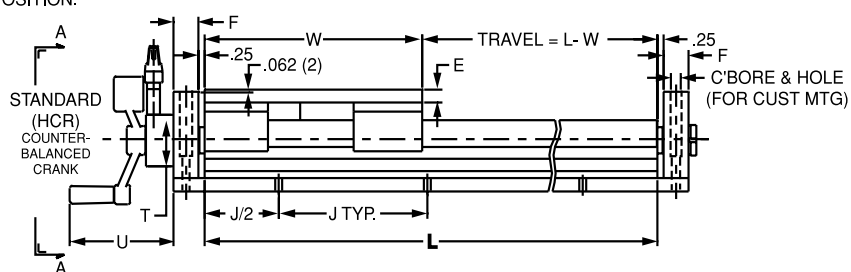
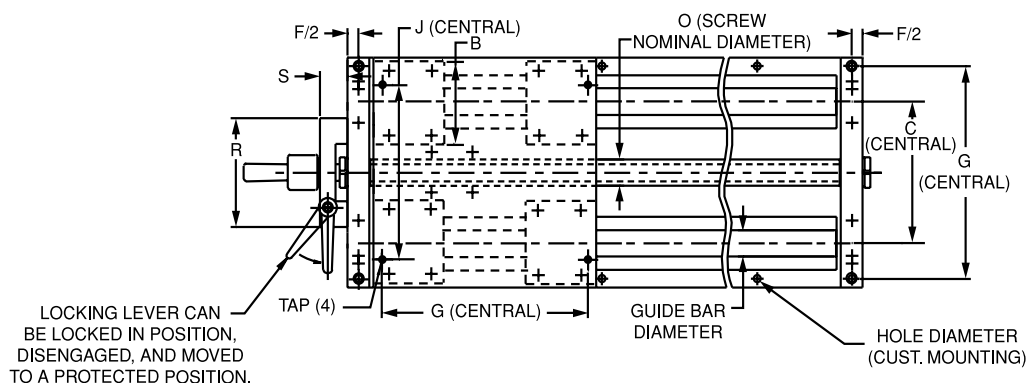
Minuteman Slide Assembly with
Handcrank and Lock



M-2HWL



DIMENSIONS (Continued)																
K	M	N	O	P	Q	R	S	T	U	V	X	Y	Z	TAP	HOLE	SIZE
1.38	.375	1.45	.631	2.56	2.66	3.000	.875	1.312	3.885	4.000	4.00	2.655	4.855	10-24	.22	08
1.38	.375	1.45	.631	2.56	2.48	3.000	.875	1.312	3.885	4.000	4.00	2.655	4.855	1/4-20	.28	10
1.50	.375	1.45	.631	2.56	1.91	3.000	.875	1.312	3.885	4.000	4.00	2.655	4.855	1/4-20	.28	12
2.12	.625	1.76	1.000	2.56	1.87	4.250	1.125	2.000	4.180	5.000	6.00	3.185	5.745	1/4-20	.28	16
2.38	.625	1.76	1.000	2.56	.95	4.250	1.125	2.000	4.180	5.000	6.00	3.185	5.745	5/16-18	.34	20
2.88	1.000	2.31	1.500	3.15	2.54	6.500	1.500	3.000	5.455	7.000	10.00	4.310	7.460	5/16-18	.34	24
3.88	1.000	2.31	1.500	3.15	1.92	6.500	1.500	3.000	5.455	7.000	10.00	4.310	7.460	3/8-16	.41	32



SELF LUBRICATING LINEAR SLIDES

Slide Selection

Determining Specifications and Requirements

LM76 - 1-800-513-3163

Fax: 413-525-3735

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1. Determine the size and stroke of slide required.

2. Is a lube system required?

3. Please furnish the following to the factory:

a. Model designation

b. Lube system requirements

c. Mounting orientation, saddle position if mounted at an angle

d. Load to be carried and approximate center of gravity from saddle center

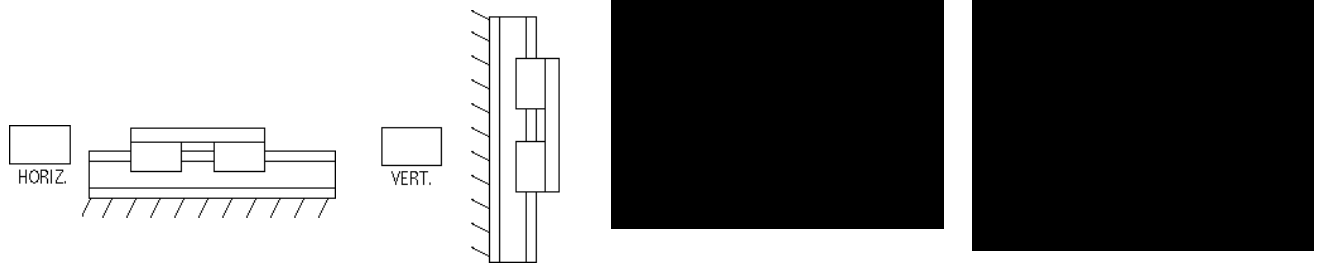
e. The location and magnitude of any force which resists the motion of the slide

f. Acceleration rate and maximum velocity of the saddle

Model Number

____ TRPS - ____ - ____ - ____
| | | |
Series Code Size Code Length Ball

Mounting Orientation:



Please fill in the boxes for your application.

Cycle Rate: _____ Per Hour _____ Per Minute
Max Saddle Velocity: _____ Inches/Second
Acceleration Rate: _____ Inches/Second²
Deceleration Rate: _____ Inches/Second²
Load: _____ Lbs.

Location of Center of Gravity from Saddle Center

Please fill in the boxes for your application.



* Example of Resisting Force would be tool thrust for a drill head mounted on slide.

Resisting Force: _____ Lbs.

Life Requirement : _____ Strokes _____ Hours

PTFE Self Lubricating Composite Bearing Slides

Engineering Data (Cont.)

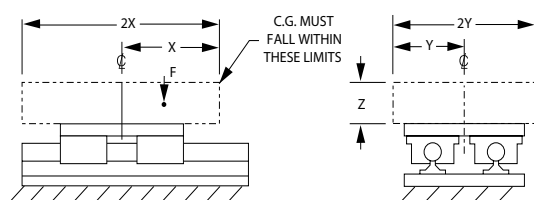


For Linear Slides where speeds are under
90 Feet per Minute/18 inches per second



Minuteman 4 Pillow Block Linear Slide Loading

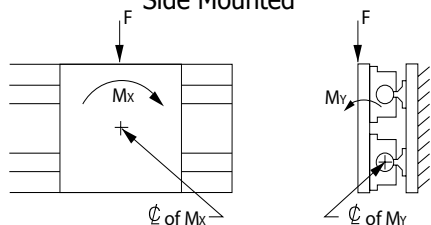
Standard Mounting



Recommended Safe Loading

Size	FMax (Lbs.)	X Inch	Y Inch	Z Inch
08	1450	4.00	2.37	3.00
10	2200	4.75	2.76	3.50
12	2850	5.00	2.85	4.00
16	5275	5.50	3.37	4.50
20	7750	6.75	4.05	5.50
24	10600	7.86	4.90	6.50
32	18750	10.75	6.00	9.00

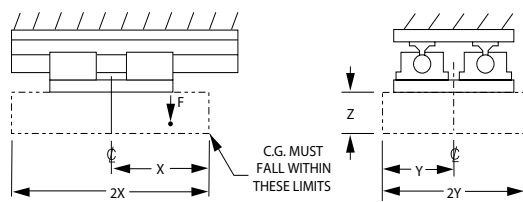
Side Mounted



Recommended Safe Loading

Size	FMax (Lbs.)	Mx (In-Lbs.)	My (In-Lbs.)
08	540	910	1500
10	760	1680	2750
12	840	1710	2875
16	1050	3300	4430
20	1750	6175	8750
24	2100	9600	12600
32	3300	19000	28050

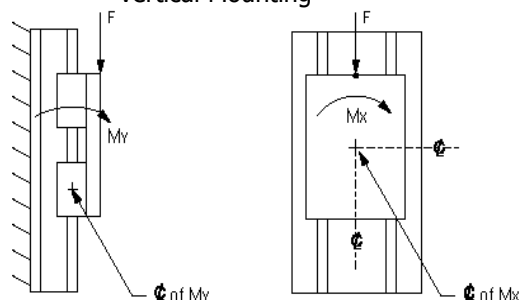
Inverted Mounting



Recommended Safe Loading

Size	FMax (Lbs.)	X Inch	Y Inch	Z Inch
08	195	4.85	2.91	3.00
10	285	5.69	3.33	3.50
12	315	6.52	3.75	4.00
16	450	7.31	4.58	4.50
20	712	8.84	5.42	5.50
24	900	10.50	6.67	6.50
32	1425	14.67	8.33	9.00

Vertical Mounting



Recommended Safe Loading

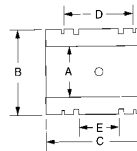
Size	FMax (Lbs.)	Mx (In-Lbs.)	My (In-Lbs.)
08	260	1445	1500
10	300	2750	2750
12	300	2875	2875
16	600	5000	4430
20	675	9500	8750
24	710	14400	12600
32	900	32300	28050

Closed and Open, FDA Self-Lubricating PTFE Linear Bearings



L

LX



INCH SIZES

BEARING NUMBER (L OR LX)	WORKING BORE		OUTSIDE DIAMETER		LENGTH		DISTANCE BETWEEN RETAINING RINGS D	DISTANCE BETWEEN O-RING GROOVES E	SLOT WIDT +0.02 -0.00 F	RETAINING HOLE DIAMETER H	HOLE LOCATION TO B.R.G. END I
	INCHES A	TOL. -0.000 +	INCHES B	TOL. +0.000 -	INCHES C	TOL. +0.00 -					
408-FDA	0.2505	0.0010	0.5000	0.0010	0.750	0.015	0.437	0.018	0.094	0.094	on center
610-FDA	0.3755	0.0010	0.6250	0.0010	0.875	0.015	0.562	0.260	0.156	0.094	on center
814-FDA	0.5005	0.0010	0.8750	0.0010	1.250	0.015	0.875	0.490	0.31	0.133	5/8
1018-FDA	0.6255	0.0010	1.1250	0.0010	1.500	0.015	1.000	0.550	0.3725	0.133	1/8
1220-FDA	0.7508	0.0010	1.2500	0.0010	1.625	0.015	1.062	0.612	0.438	0.133	1/8
1625-FDA	1.0008	0.0010	1.5625	0.0010	2.250	0.015	1.625	1.180	0.563	0.133	1/8
2032-FDA	1.2508	0.0010	2.0000	0.0010	2.625	0.020	1.875	1.425	0.625	0.201	3/16
2438-FDA	1.5008	0.0015	2.3750	0.0015	3.000	0.020	2.250	1.670	0.750	0.201	3/16

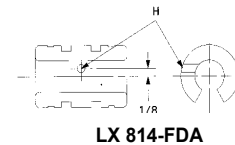
Material: The FDA bearing shell is manufactured from 300 series stainless steel. The FDA compliant PTFE, Self-Lubricating Liner is made to run on soft 300 series stainless steel. Washdown Tested.

Ordering Information:

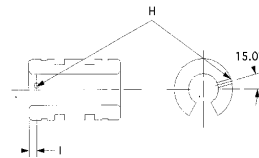
For Closed Bearings use Prefix L Example: L1625-FDA
For Open Bearings use Prefix LX LX1625-FDA

BEARING NUMBER (L OR LX)	MAX. SHAFT DIA.	HOUSING BORE		BEARING WEIGHT LBS (L)	BEARING WEIGHT LBS. (LX)	MAX STATIC LOAD LBS.
		TOL. -0.000 +	TOL. -0.000 +			
408-6	0.2495	0.5000	0.0005	0.010	0.008	939
610-7	0.3745	0.6250	0.0005	0.015	0.013	1643
814-10	0.4995	0.8750	0.0005	0.046	0.034	3128
1018-12	0.6245	1.1250	0.0005	0.096	0.072	4691
1220-13	0.7495	1.2500	0.0005	0.125	0.091	6100
1625-18	0.9995	1.5625	0.0005	0.247	0.184	11259
2032-21	1.2495	2.0000	0.0010	0.500	0.381	16417
2438-24	1.4994	2.3750	0.0010	0.780	0.603	22512

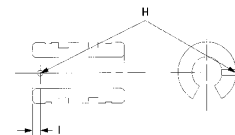
Retaining Pin Location, LX inch series Bearings



LX 814-FDA



LX 1018-FDA



LX 1220-13 THRU LX 2438-FDA

LM76 Bearings can be press fit, held in place with snap rings or pinned in housing with a retaining pin. Retaining pin location is illustrated above.

1-800-513-3163

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STAINLESS
FDA
SELF
LUBRICATING



HARDENED AND PRECISION GROUND LINEAR SHAFTING

1060 STEEL CASE HARDENED AND PRECISION GROUND LINEAR SHAFTING								
NOMINAL DIA. (IN)	CLASS "L" DIA. (IN)	CLASS "S" DIA. (IN)	CLASS "D" DIA. (IN)	CLASS "N" DIA. (IN)	MIN. DEPTH OF 60-65 Rc (IN)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (FT)	NOMINAL DIA. (IN)
3/16	.1870/.1865	-	-	-	.027	.008	5	3/16
1/4	.2495/.2490	.2490/.2485	-	.2500/.2498	.027	.014	8	1/4
3/8	.3745/.3740	.3740/.3735	-	.3750/.3748	.027	.031	14	3/8
1/2	.4995/.4990	.4990/.4985	-	.5000/.4998	.040	.055	14	1/2
5/8	.6245/.6240	.6240/.6235	-	.6250/.6248	.040	.086	15	5/8
3/4	.7495/.7490	.7490/.7485	-	.7500/.7498	.060	.125	15 or 17*	3/4
7/8	.8745/.8740	-	-	.8750/.8748	.060	.170	15	7/8
1	.9995/.9990	.9990/.9985	1.0000/1.003	1.0000/.9998	.060	.222	15 or 17*	1
1-1/8	1.1245/1.1240	-	-	1.1250/1.1248	.080	.281	15	1-1/8
1-1/4	1.2495/1.2490	1.2490/1.2485	1.2500/1.2503	1.2500/1.2498	.080	.348	17	1-1/4
1-3/8	1.3745/1.3740	-	-	1.3750/1.3747	.080	.420	15	1-3/8
1-1/2	1.4994/1.4989	1.4989/1.4984	1.5000/1.5003	1.5000/1.4997	.080	.500	17	1-1/2
1-5/8	1.6245/1.6240	-	-	1.6250/1.6247	.080	.587	15	1-5/8
1-3/4	1.7495/1.7490	-	-	1.7500/1.7497	.100	.681	15	1-3/4
2	1.9994/1.9987	1.9987/1.9980	2.0000/2.0003	2.0000/1.9997	.100	.890	17	2
2-1/2	2.4993/2.4985	2.4985/2.4977	-	2.5000/2.4996	.100	1.391	17	2-1/2
3	2.9992/2.9983	2.9983/2.9974	-	3.0000/2.9996	.100	2.003	15 or 17*	3
3-1/2	3.4990/3.4980	-	-	-	.100	2.726	17	3-1/2
4	3.9988/3.9976	3.9976/3.9964	-	-	.100	3.560	17	4

440C STAINLESS STEEL CASE HARDENED AND PRECISION GROUND LINEAR SHAFTING							
NOMINAL DIA. (IN)	CLASS "L" DIA. (IN)	CLASS "S" DIA. (IN)	MIN. DEPTH OF 50-60 Rc (IN)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (FT)	NOMINAL DIA. (IN)	
1/4	.2495/.2490	.2490/.2485	.027	.014	5	1/4	
3/8	.3745/.3740	.3740/.3735	.027	.031	14	3/8	
1/2	.4995/.4990	.4990/.4985	.040	.055	14	1/2	
5/8	.6245/.6240	.6240/.6235	.040	.086	14	5/8	
3/4	.7495/.7490	.7490/.7485	.060	.125	15 or 17*	3/4	
1	.9995/.9990	.9990/.9985	.080	.222	15 or 17*	1	
1-1/4	1.2495/1.2490	1.2490/1.2485	.080	.348	17	1-1/4	
1-1/2	1.4994/1.4989	1.4989/1.4984	.080	.500	17	1-1/2	
2	1.9994/1.9987	1.9987/1.9980	.100	.890	17	2	
2-1/2	2.4993/2.4985	2.4985/2.4977	.100	1.391	17	2-1/2	

NOTES:

- (*) 17 FT. LENGTHS AVAILABLE IN CLASS "L" ONLY
- 303 AND 316 STAINLESS STEEL (UNHARDENED CLASS "L") AVAILABLE UPON REQUEST
- CUSTOM LINEAR SHAFTING INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

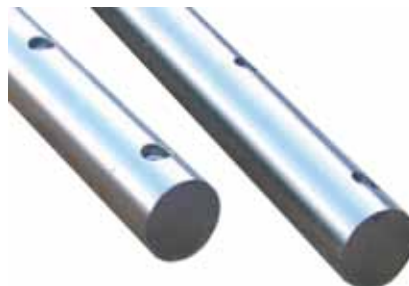
1-800-513-3163

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HARDENED AND PRECISION GROUND PRE-DRILLED SHAFTING

1060 STEEL CASE HARDENED AND PRECISION GROUND PREDRILLED LINEAR SHAFTING								
NOMINAL DIA. (IN)	CLASS "L" DIA. (IN)	STANDARD THREAD SIZE	X (IN)	Y (IN)	MIN. DEPTH OF 60-65 Rc (IN)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (IN)	NOMINAL DIA. (IN)
1/2	.4995/.4990	#6-32	4	2	.040	.055	166	1/2
5/8	.6245/.6240	#8-32	4	2	.040	.086	178	5/8
3/4	.7495/.7490	#10-32	6	3	.060	.125	178	3/4
1	.9995/.9990	1/4-20	6	3	.080	.222	178	1
1-1/4	1.2495/1.2490	5/16-18	6	3	.080	.348	178	1-1/4
1-1/2	1.4994/1.4989	3/8-16	8	4	.080	.500	178	1-1/2
2	1.9994/1.9987	1/2-13	8	4	.100	.890	178	2

440C STAINLESS STEEL CASE HARDENED AND PRECISION GROUND PREDRILLED LINEAR SHAFTING								
NOMINAL DIA. (IN)	CLASS "L" DIA. (IN)	STANDARD THREAD SIZE	X (IN)	Y (IN)	MIN. DEPTH OF 50-60 Rc (IN)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (IN)	NOMINAL DIA. (IN)
1/2	.4995/.4990	#6-32	4	2	.040	.055	166	1/2
5/8	.6245/.6240	#8-32	4	2	.040	.086	178	5/8
3/4	.7495/.7490	#10-32	6	3	.060	.125	178	3/4
1	.9995/.9990	1/4-20	6	3	.080	.222	178	1
1-1/4	1.2495/1.2490	5/16-18	6	3	.080	.348	178	1-1/4
1-1/2	1.4994/1.4989	3/8-16	8	4	.080	.500	178	1-1/2
2	1.9994/1.9987	1/2-13	8	4	.100	.890	178	2

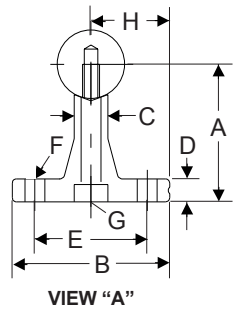
52100 STEEL CASE HARDENED AND PRECISION GROUND TUBULAR LINEAR SHAFTING							
NOMINAL DIA. (IN)	NOMINAL I.D. (IN)	CLASS "L" DIA. (IN)	CLASS "S" DIA. (IN)	MIN. DEPTH OF 58 Rc (IN)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (FT)	NOMINAL DIA. (IN)
3/4	.438 ± 5%	.7495/.7490	.7490/.7485	.060	.075	15	3/4
1	.599 ± 5%	.9995/.9990	.9990/.9985	.060	.158	15	1
1-1/2	.890 ± 5%	1.4994/1.4989	1.4989/1.4984	.080	.328	15	1-1/2
2	1.250 ± 5%	1.9994/1.9987	1.9987/1.9980	.100	.542	15	2
2-1/2	1.750 ± 5%	2.4993/2.4985	2.4985/2.4977	.100	.749	15	2-1/2
3	2.000 ± 10%	2.9992/2.9983	2.9983/2.9974	.100	1.112	15	3
4	3.000 ± 10%	3.9988/3.9976	3.9976/3.9964	.100	1.558	15	4

NOTES:

- CUSTOM PREDRILLED OR TUBULAR LINEAR SHAFTING INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

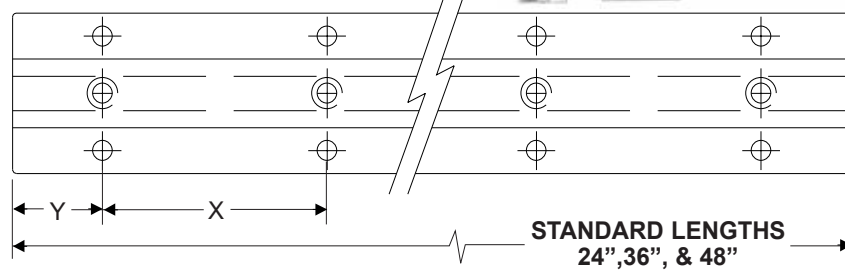


SHAFT SUPPORT ASSEMBLIES

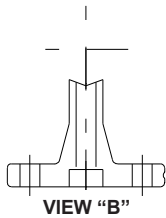


VIEW "A"

VIEW
"A"

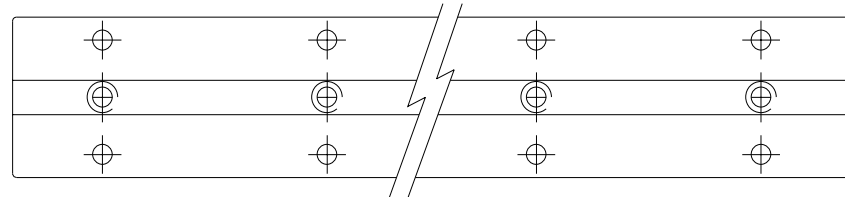


PREDRILLED SHAFT SUPPORT RAILS



VIEW "B"

VIEW
"B"



SHAFT DIA.	SHAFT SUPPORT ASSEMBLY	PREDRILLED SHAFT SUPPORT RAIL	*PLAIN SHAFT SUPPORT RAIL	A +/- .001	B	C	D	E +/- .005
1/2	LMSA-8	SR-8-PD	SMR-8	1.125	1-1/2	1/4	3/16	1.000
5/8	LMSA-10	SR-10-PD	SMR-10	1.125	1-5/8	5/16	1/4	1.125
3/4	LMSA-12	SR-12-PD	SMR-12	1.500	1-3/4	3/8	1/4	1.250
1	LMSA-16	SR-16-PD	SMR-16	1.750	2-1/8	1/2	1/4	1.500
1-1/4	LMSA-20	SR-20-PD	SMR-20	2.125	2-1/2	9/16	5/16	1.875
1-1/2	LMSA-24	SR-24-PD	SMR-24	2.500	3	11/16	3/8	2.250
2	LMSA-32	SR-32-PD	SMR-32	3.250	3-3/4	7/8	1/2	2.750

SHAFT DIA.	F BOLT	F HOLE	G SCREW	G HOLE	H +/- .001	X	Y	WT/FT LBS
1/2	6	.169	6-32 x 7/8	.169	.750	4	2	.6
5/8	8	.193	8-32 x 7/8	.193	.812	4	2	.8
3/4	10	.221	10-32 x 1-1/4	.221	.875	6	3	1.0
1	1/4	.281	1/4-20 x 1-1/2	.281	1.062	6	3	1.4
1-1/4	5/16	.343	5/16-18 x 1-3/4	.343	1.250	6	3	2.1
1-1/2	5/16	.343	3/8-16 x 2	.406	1.500	8	4**	2.6
2	3/8	.406	1/2-13 x 2-1/2	.531	1.875	8	4**	4.2

NOTES:

- (*) DOES NOT INCLUDE ANY HOLES IN SHAFT SUPPORT
 - (**) LMSA-24-PD-36" & SMR-32-PD-36" (Y=2")
 - MANUFACTURED FROM EXTRUDED 6061-T6 ALUMINUM FOR ENGINEERED PERFORMANCE
- CUSTOM SHAFT SUPPORT AND ASSEMBLY INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

P R E C I S I O N L I N E A R S H A F T I N G

1-800-513-3163

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HARDENED AND PRECISION GROUND METRIC LINEAR SHAFTING

1060 STEEL CASE HARDENED AND PRECISION GROUND METRIC LINEAR SHAFTING					
NOMINAL DIA. (MM)	TOLERANCES CLASS "M" (h6) (IN)	MIN. DEPTH OF 60-65 Rc (MM)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (MM)	NOMINAL DIA. (MM)
5	.1969/.1965	0.4	.008	3600	5
6	.2362/.2359	0.4	.012	4000	6
8	.3150/.3146	0.4	.022	4000	8
10	.3937/.3933	0.4	.034	4000	10
12	.4724/.4720	0.6	.050	6000	12
14	.5512/.5507	0.6	.068	6000	14
15	.5906/.5901	0.6	.076	6000	15
16	.6299/.6295	0.6	.088	6000	16
18	.7087/.7082	0.6	.111	6000	18
20	.7874/.7869	0.9	.137	6000	20
24	.9449/.9444	0.9	.198	6000	24
25	.9843/.9838	0.9	.214	6000	25
30	1.1811/1.1806	0.9	.308	6000	30
35	1.3780/1.3773	1.5	.419	6000	32
40	1.5748/1.5743	1.5	.548	6000	40
50	1.9685/1.9679	1.5	.855	6000	50
60	2.3622/2.3615	2.2	1.23	6000	60
80	3.1496/3.1489	2.2	2.19	6000	80

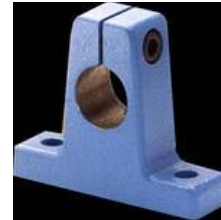
440C STAINLESS STEEL CASE HARDENED AND PRECISION GROUND METRIC LINEAR SHAFTING					
NOMINAL DIA. (MM)	TOLERANCES CLASS "M" (h6) (IN)	MIN. DEPTH OF 50-60 Rc (MM)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (MM)	NOMINAL DIA. (MM)
5	.1969/.1965	0.4	.008	3600	5
8	.3150/.3146	0.4	.022	4000	8
10	.3937/.3933	0.4	.034	4000	10
12	.4724/.4720	0.6	.050	6000	12
16	.6299/.6295	0.6	.088	6000	16
20	.7874/.7869	0.9	.137	6000	20
25	.9843/.9838	0.9	.214	6000	25
30	1.1811/1.1806	0.9	.308	6000	30
40	1.5748/1.5743	1.5	.548	6000	40
50	1.9685/1.9679	1.5	.855	6000	50
60	2.3622/2.3615	2.2	1.23	6000	60

NOTES:

- PREDRILLED AND ASSEMBLED METRIC LINEAR SHAFTING AVAILABLE UPON REQUEST
- CUSTOM METRIC LINEAR SHAFTING INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

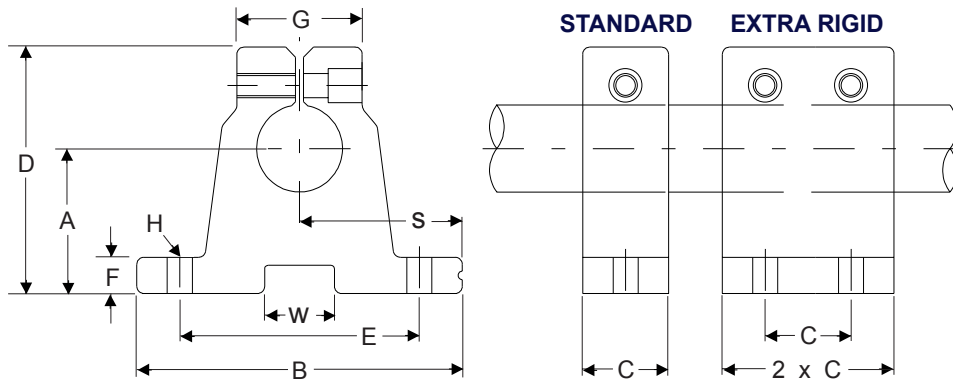


Aluminum = A



Steel = S

STANDARD AND EXTRA RIGID SHAFT END SUPPORTS



SHAFT DIA.	STANDARD SHAFT END SUPPORT	EXTRA RIGID SHAFT END SUPPORT	A +/- .001	B	C	D	E +/- .005
1/4	LMSB-4-A or S	RSB-4	.750	1-5/8	9/16	1-3/16	1.250
3/8	LMSB-6-A or S	RSB-6	.750	1-5/8	9/16	1-3/16	1.250
1/2	LMSB-8-A or S	RSB-8	1.000	2	5/8	1-5/8	1.500
5/8	LMSB-10-A or S	RSB-10	1.000	2-1/2	11/16	1-3/4	1.875
3/4	LMSB-12-A or S	RSB-12	1.250	2-3/4	3/4	2-1/8	2.000
1	LMSB-16-A or S	RSB-16	1.500	3-1/4	1	2-9/16	2.500
1-1/4	LMSB-20-A or S	RSB-20	1.750	4	1-1/8	3	3.000
1-1/2	LMSB-24-A or S	RSB-24	2.000	4-3/4	1-1/4	3-1/2	3.500
2	LMSB-32-A or B	RSB-32	2.500	6	1-1/2	4-1/2	4.500

SHAFT DIA.	F	G	H BOLT	H HOLE	S +/- .001	*W + .00/- .01	T
1/4	1/4	11/16	6	5/32	.812	1/4	1/8
3/8	1/4	11/16	6	5/32	.812	1/4	1/8
1/2	1/4	3/4	8	3/16	1.000	1/2	3/16
5/8	5/16	7/8	10	7/32	1.250	1/2	3/16
3/4	5/16	1	10	7/32	1.375	5/8	1/4
1	3/8	1-3/8	1/4	9/32	1.625	5/8	1/4
1-1/4	7/16	1-3/4	5/16	11/32	2.000	5/8	1/4
1-1/2	1/2	2	5/16	11/32	2.375	3/4	5/16
2	5/8	2-5/8	3/8	13/32	3.000	1	3/8

NOTES:

- (*) THE DIMENSION "W" IS NOT MACHINED (PROVISION CAN BE MADE FOR THIS DIMENSION TO BE MACHINED)
- MANUFACTURED FROM EXTRUDED 6061-T6 ALUMINUM FOR ENGINEERED PERFORMANCE
- CUSTOM SHAFT END SUPPORTS INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

1-800-513-3163

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P R E C I S I O N
L I N E A R
S H A F T I N G

CERAMIC COATED ALUMINUM SHAFTING

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CERAMIC COATED ALUMINUM SHAFTING - INCH			
Part Number	Shaft Diameter	OD Diameter Tolerance Min/Max	Weight Per Inch
CCS3 - xx	3/16"	0.1863/0.1871	0.003
CCS4 - xx	1/4"	0.2488/0.2496	0.005
CCS6 - xx	3/8"	0.3738/0.3746	0.010
CCS8 - xx	1/2"	0.4988/0.4996	0.019
CCS10- xx	5/8"	0.6238/0.6246	0.030
CCS12 - xx	3/4"	0.7488/0.7496	0.043
CCS16 - xx	1"	0.9988/0.9996	0.077
CCS20 - xx	1-1/4"	1.2488/1.2496	0.120
CCS24 - xx	1-1/2"	1.4987/1.4995	0.173
CCS32 - xx	2"	1.9985/1.9995	0.308

- Lightweight
- Non-magnetic
- FDA/USDA compliant
- Contaminants will not stick
- Designed to run with LM76 Composite bearings
- Welding slag, paints, inks will not stick

CERAMIC COATED ALUMINUM SHAFTING - METRIC	
Part Number	Shaft Diameter
CCSM8 - xx	8mm
CCSM10 - xx	10mm
CCSM12- xx	12mm
CCSM16 - xx	16mm
CCSM20- xx	20mm
CCSM25 - xx	25mm
CCSM30 - xx	30mm
CCSM40 - xx	40mm
CCSM50 - xx	50mm

**Pre-Drilled
Machining to Blue Print**

NOTE:

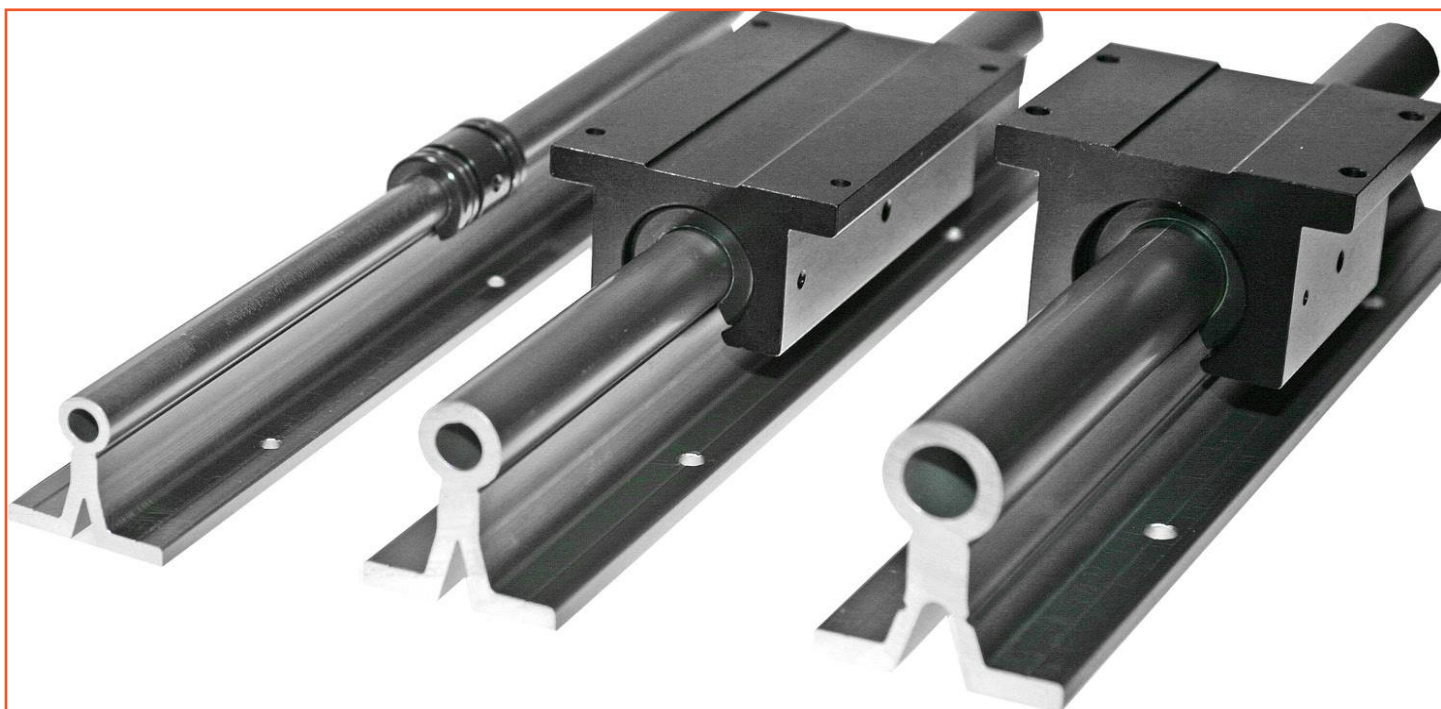
Cut-to-length shafting will not have coated ends. Fully coated specials are available upon request.



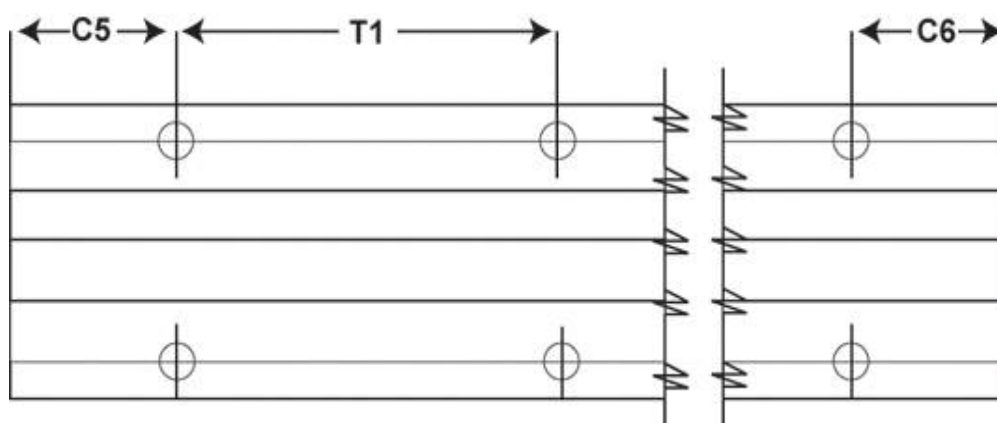
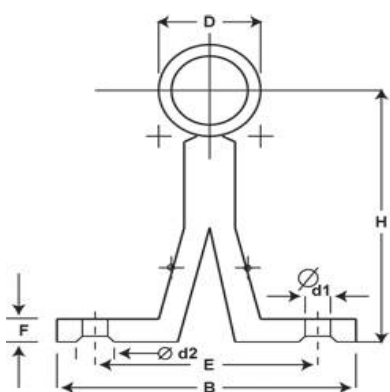
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Ceramic Coated Aluminum Fully Supported - Shafting



P/N	D -.007	B	H ± .008	V	d1	d2	(°)	E	F	T1 Bore Spacing	C5 Min	C6 Max	Max Length	Weight (lbs/ft)
LMSC-08	.500	1.50	1.125	.190	.169	.271	30°	1.000	.200	4.00	1	2.95	144	.6
LMSC-12	.750	1.75	1.500	2.52	.220	.276	30°	1.250	.250	6.00	1	3.95	144	1.2
LMSC-16	1.000	2.126	1.750	.252	.280	.335	30°	1.500	.250	6.00	1	3.95	144	1.5



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Linear Bearings that EXCEED the Challenge!



For more linear solutions: www.LM76.com



LM-Tarbell's modern facility in East Longmeadow Massachusetts
Home of the MINUTEMAN Linear/Rotary Bearing

LM-Tarbell is the combination of two internationally prominent manufacturers of sleeve bearings:

J.C. Tarbell Associates

Founded in 1938, J.C. Tarbell Associates was one of the first exclusive regional distributors for Chrysler's oil impregnated bronze bearing line - a technological innovation at the time. Over the past 60 years, Tarbell has engineered this material into every product conceivable from sewing machines to jet engines. Today, Tarbell supplies engineering expertise, standard products and machined specials to companies throughout the world.

LM76

Founded in 1976, LM76 found its genesis in combating traditional problems which plagued linear ball bushings: mechanical cage/ball failure and shaft brinelling or grooving. LM76's response was their ceramic coated, direct drop-in replacement linear bearing line which was hailed as a genuine innovation by engineers and maintenance personnel alike. LM76's latest product innovation is its **MINUTEMAN Self Lubricating Linear/Rotary bearing line**. This line offers outstanding load carrying capability coupled with a remarkably low coefficient of friction.

Add these two companies together and you get a singular wealth of sleeve bearing experience. Moreover, you can be confident that our recommendations/products are solid, proven and the best your company can purchase.

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