Design...
Solution

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LM76

Designers & Manufacturers of Linear Bearings and Linear Slides

Linear bearings that EXCEED the Challenge

1-800-513-3163

Self Lubricating Linear Bearings
Ceramic Coated Linear Bearings
FDA/USDA Washdown Bearings
Linear Shafting: RC60 - 300SS
Linear Slides

LM76 has 5 out of the 6 lowest coefficient of friction linear bearings made today.

Air Bearings
Frictionless
Require Air
Low Loads

Linear Ball
Bearings
As Low as
CofF to .001

Linear Roller Blocks
As Low as
CofF to .003

Black Racer
Ceramic Coated
Linear Bearing
As low as
CofF.04
(Lubricated)

Minuteman PTFE
Self-Lubricating
Linear Bearing
As Low as .19
CofF - Dry

WDX Non-Metallic
Self Lubricating
Linear Bearing
As low as .20
CofF Dry

If you have any questions about what linear bearing will work best for your application, call Mike Quinn today 1-800-513-3163 or email: mquinn@LM76.com

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Linear Bearings that EXCEED the Challenge!

Product image-to-page links are active.

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

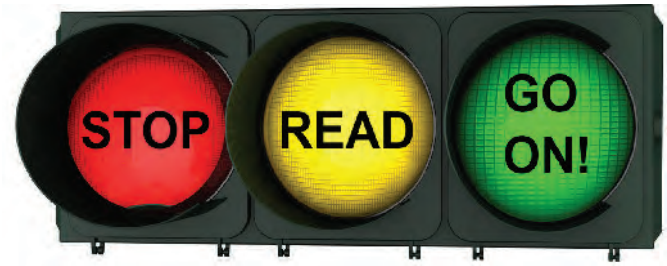
Black Racer Ceramic Coated Linear Bearings offer a 1 piece design employing a file hard (FDA Compliant) ceramic coating over an aluminum shell. Our ceramic coating is not a surface anodize like Black Oxide or Zinc. It has a depth of .001" penetration and a .001" surface build-up for a total of .002". 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 harderned 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.



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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LM76

Designers & Manufacturers of Linear Bearings and Linear Slides

Linear bearings that EXCEED the Challenge

Self-Lubricating Minuteman Linear Bearings

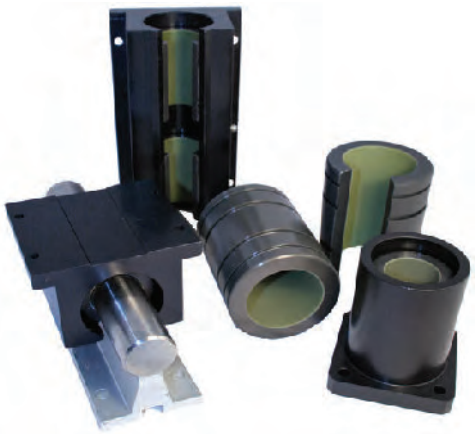
PSI	PV	C of F	Shafting	MAX Speed	MAX Temp
5000	30,000	.09 - .12	RB 25	400 SFM	385 F

LM76 GOLD POINTS

- LM76 Self Lube, Teflon® composite bearings can take 10 X's the load of comparable Linear Ball Bearings
- LM76 Self Lube, Teflon® composite bearings are chemically inert and are great in washdown applications
- LM76 Self Lube, Teflon® composite bearings are very suitable for debris and contaminated environments
- Since our bearing shells are machined aluminum, LM76 can machine features into bearings or housings that will allow for unitized bearing assemblies, eliminating 2 or more assembly components
- Because LM76 uses no abrasive fillers, our bearings run as well on hardened (RC60 Steel) as they do on soft 300 series stainless
- LM76 Teflon® Composite linear bearings can take a punch! We perform well where shock and vibration send balls scattering
- Several variations are available: FDA/USDA compliant, 300 series stainless shell with a white Teflon® composite, self lube liner. Our ceramic coated bearing (requires lubrication) is both FDA/USDA compliant and has no known MAX speed or MAX acceration limit

Call *The PRO's* when you need TEFLON® COMPOSITE linear bearings!

Linear Bearings that EXCEED the Challenge!



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!

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

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

Rotating, self lubricating, high temp metering valve

Automotive bearing that provides cam actuated linear motion

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

Washdown

SELF LUBRICATING LINEAR SPECIALS

1-800-513-3163

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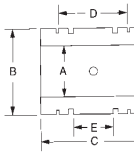
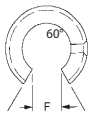
Minuteman Closed and Open, Self-Lubricating PTFE Linear Bearings

L

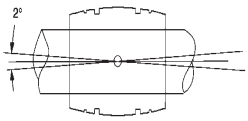
LX





SA

Self Aligning



INCH SIZES

BEARING NUMBER (L OR LX)	WORKING BORE		OUTSIDE DIAMETER		LENGTH		DISTANCE BETWEEN RETAINING RINGS	DISTANCE BETWEEN O-RING GROOVES	SLOT WIDT +.020 -.000	RETAINING HOLE DIAMETER	HOLE LOCATION TO BRG. END
	INCHES A	TOL. -.0000 +	INCHES B	TOL. +.0000 -	INCHES C	TOL. +.000 -	D	E	F	H	I
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

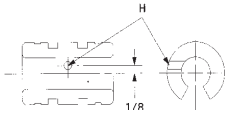
Ordering Information:

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

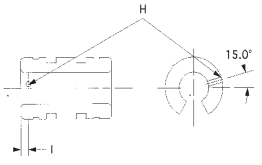
BEARING NUMBER (L OR LX)	MAX. SHAFT DIA.	HOUSING BORE	TOL. -.0000 +	BEARING WEIGHT LBS (L)	BEARING WEIGHT LBS. (LX)	MAX STATIC LOAD LBS.
408-6	0.2495	0.5000	0.0005	0.010	0.008	939
610-7	0.3745	0.6250	0.0005	0.015	0.013	1643
610-7SU	0.3745	0.6250	0.0005	0.015	0.013	1643
814-10	0.4995	0.8750	0.0005	0.046	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.

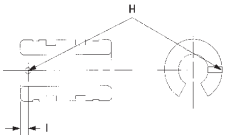
Retaining Pin Location, LX inch series Bearings



LX 814-10



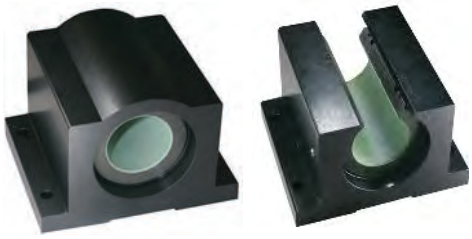
LX 1018-12



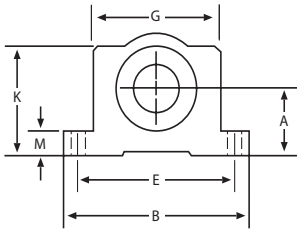
LX 1220-13 THRU LX 6496-64

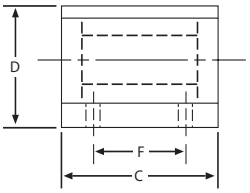
SELF LUBRICATING LINEAR BEARINGS

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

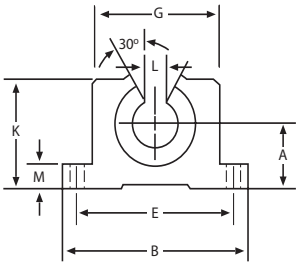


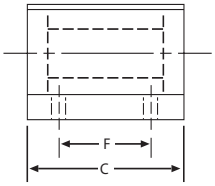
(L)
Closed





(LX)
Open

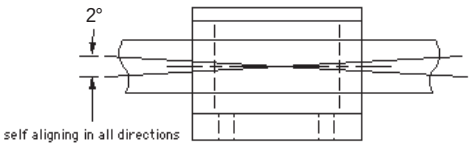




Inch (Imperial) Sizes

PART NUMBER (L) (LX)	SHAFT DIA. NOM.	SHAFT DIA. MAX.	A +/- .003	B	C	D	E +/- .010	F +/- .010	G	BOLT/ HOLE	K	L MIN.	M MIN.
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.

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

Ordering Information

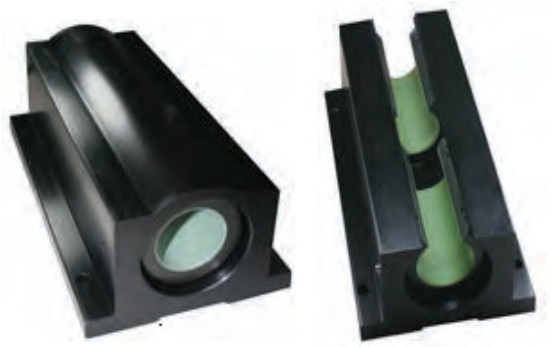
For Self Aligning Pillow Blocks, add the Suffix SA to part number. Example: LPB1625-18 SL**SA**

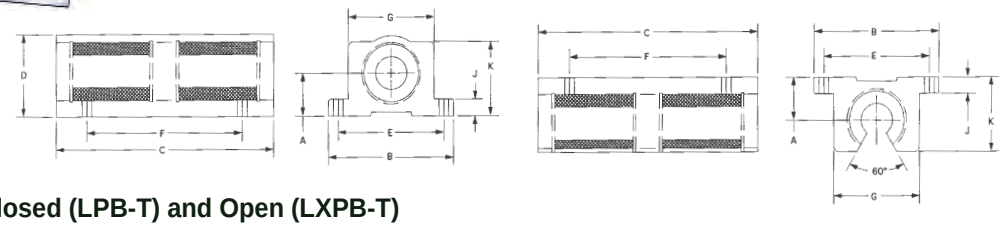
For Self Lubricated Pillow Blocks, add the Suffix SL to part number. Example: LPB1625-18 **SL**

For Closed Pillow Blocks Begin P/N with LPB

For Open Pillow Blocks Begin P/N with LXPB

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

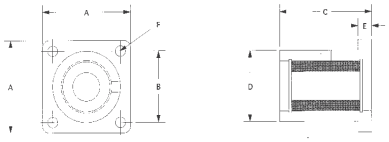




Closed (LPB-T) and Open (LXPB-T)

PART NUMBER	WORKING BORE INCHES	TOLERANCE	A +/-.002	B	C	D	E +/- .010	F +/- .010	G	BOLT	HOLE	J MIN.	K
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	9/3 2	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	3/1 6	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	7/3 2	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

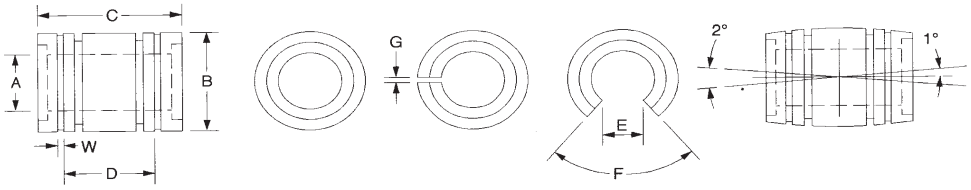


Part Number	Shaft Diameter Nom	Max	A	B	C	D	E	F Bolt	Hole
LF6SL	3/8"	.3745	1-1/4"	0.875	1-5/16"	7/8"	3/16"	# 6	5/32"
LF8SL	1/2"	.4995	1-5/8'	1.250	1-11/16"	1-1/4"	1/4"	# 8	3/16"
LF10SL	5/8"	.6245	2"	1.500	1-15/16"	1-1/2"	1/4"	# 8	3/16"
LF12SL	3/4"	.7495	2-3/8"	1.750	2-1/16"	1-3/4"	3/8"	# 10	7/32"
LF16SL	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									

SELF LUBRICATING LINEAR BEARINGS

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

L LX

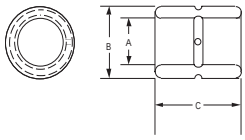


European Closed and Open PTFE Self-Lubricating Bearings

PART NUMBER add prefix L, LX or LA	WORy ING BORE	Tolerance -,000	OUTSIDE DIA. h7 Tolerance	LENGTH h14 Tolerance	RETAINING RING		MAX. SHAFT DIA.	HOUSING BORE DIA.	OPEN(LX) SLOT WIDTH	OPEN (LX) SLOT ANGLE	ADJ (LA) SLOT WIDTH
	A	+	B	C	D	W	(h6 or h7)	H7	E	F	G
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= Adjuatable Slot Bearing
Part Number Suffix
SA=Self-Aligning L50SLSA= Closwd, Self-Aligning Bearing

TWM PTFE Self-Lubricating Thin Wall Bearings



PART NUMBER	WORKING BORE	TOL. -,000	OUTSIDE DIAMETER	LENGTH h14 Tolerance	MAX. SHAFT DIA.	HOUSING BORE DIA.
	A	+	B	C	(h6 or h7)	H7
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

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.

SELF LUBRICATING LINEAR BEARINGS

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.

SELF LUBRICATING LINEAR BEARINGS

Linear/Rotary 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	Bear-ing Size Inch A	ID Tol	OD B	OD Tolerance	Housing Bore Min	Housing Bore Max	Bearing Length	Bearing Length Tolerance	Distance bewtween 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

LM76 BullDog Linear/Rotary Bearings are ideal for construction equipment where dirt, debris, weather, shock, and vibration present formidable challenges.

1-800-513-3163

www.LM76.com

SELF LUBRICATING LINEAR BEARINGS

FDA/USDA LINEAR

www.LM76.com

LM76

Designers & Manufacturers of Linear Bearings and Linear Slides

Linear bearings that EXCEED the Challenge

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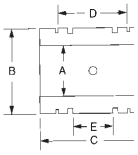
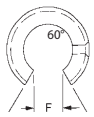
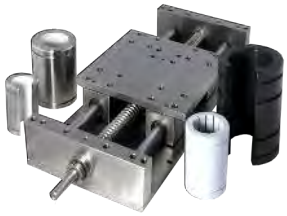
Closed and Open, FDA Self-Lubricating PTFE Linear Bearings

L LX







INCH SIZES

BEARING NUMBER (L OR LX)	WORKING BORE		OUTSIDE DIAMETER		LENGTH		DISTANCE BETWEEN RETAINING RINGS	DISTANCE BETWEEN O-RING GROOVES	SLOT WIDT +.020 -.000	RETAINING HOLE DIAMETER	HOLE LOCATION TO BRG. END
	INCHES A	TOL. -.0000 +	INCHES B	TOL. +.0000 -	INCHES C	TOL. +.000 -	D	E	F	H	I
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.

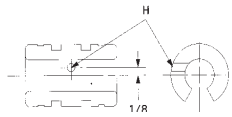
Ordering Information:

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

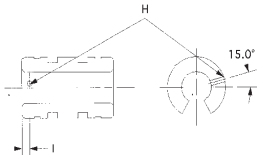
BEARING NUMBER (L OR LX)	MAX. SHAFT DIA.	HOUSING BORE	TOL. -.0000 +	BEARING WEIGHT LBS (L)	BEARING WEIGHT LBS. (LX)	MAX STATIC LOAD LBS.
408-6	0.2495	0.5000	0.0005	0.010	0.008	939
610-7	0.3745	0.6250	0.0005	0.015	0.013	1643
814-10	0.4995	0.8750	0.0005	0.046	0.034	3128
1018-12	0.6245	1.1250	0.0005	0.096	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

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.

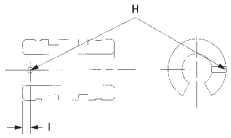
Retaining Pin Location, LX inch series Bearings



LX 814-FDA

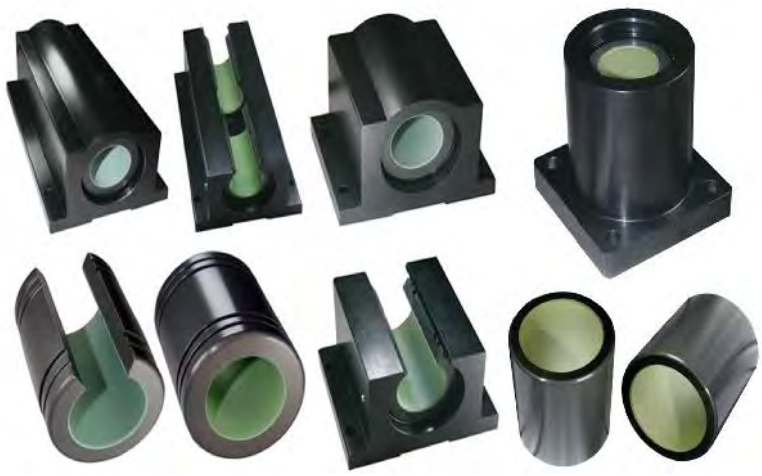


LX 1018-FDA



LX 1220-13 THRU LX 2438-FDA

STAINLESS FDA SELF LUBRICATING

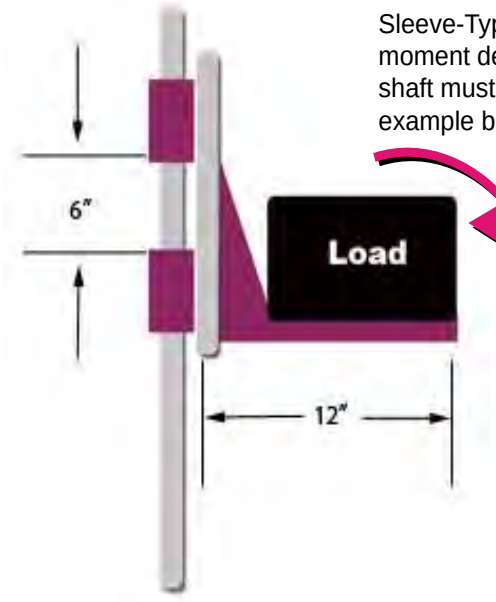


Engineering Data

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

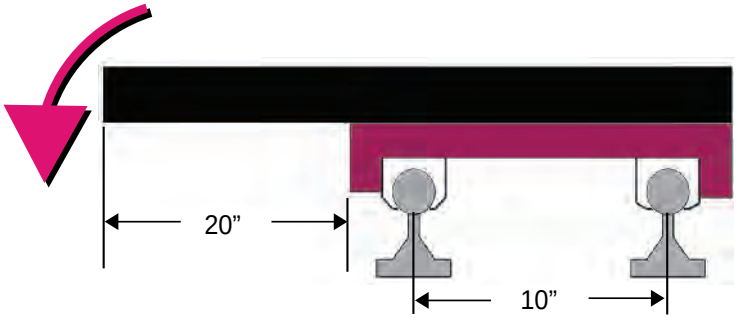
2:1 Ratio for Moment Loading Vertical “Z” Axis



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.

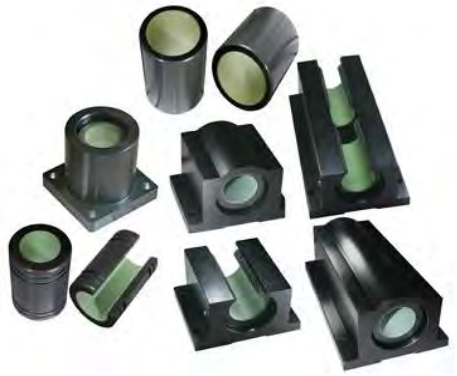
2:1 Ratio for Moment Loading Horizontal “X,Y”Axis

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.

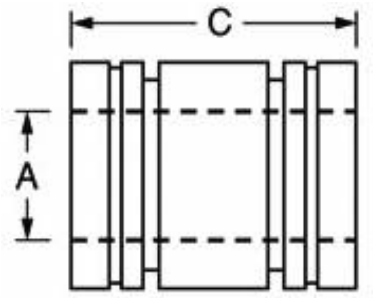


SELF LUBRICATING LINEAR BEARINGS

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 x 2.25 = 2.25" of Load Area
2.25 x 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 phenomana 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 x 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 x 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

M-SRBT

Minuteman Twin Pillow Block Linear Rail Assembly

Pre-assembled Shaft, Rail, and Matched Centerline[1] 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.
[1]Multiple 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

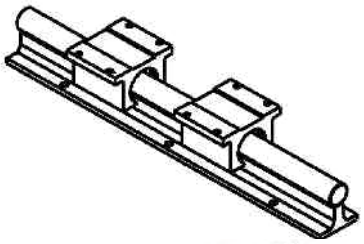
Note: For specifying fractional lengths, carry two digits after the decimal point.

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

[2]Non-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

SELF LUBRICATING LINEAR SLIDES



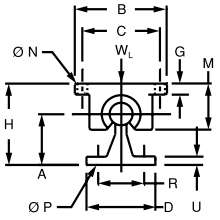
M-SRB2

Minuteman Single Open Pillow Block Linear Rail Assembly

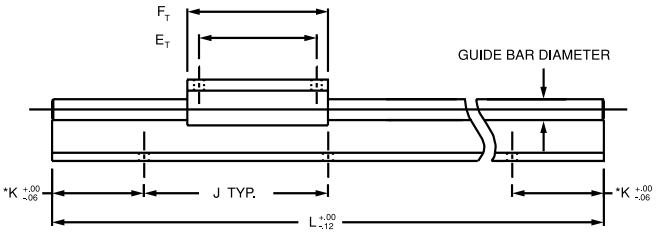
Preassembled Shaft, Rail, and Matched Centerline[1]. LM76SL Linear Bearing(s)

SELF LUBRICATING LINEAR SLIDES

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

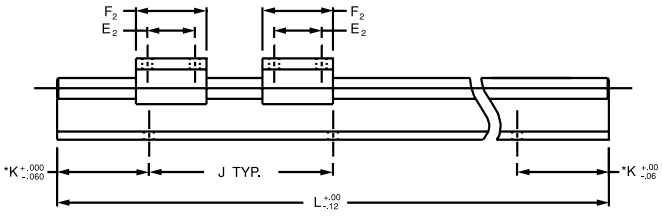


LM76SL MINUTEMAN LINEAR BEARING PROFILE
(END VIEW FOR BOTH SINGLE AND TWIN COMPOSITE LINEAR BEARINGS)



M-SRBT (Shown)

*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(NON-STANDARD) = (K (FROM CHART) - (ΔL/2)).
WHERE ΔL = NEXT LONGER STANDARD LENGTH - DESIRED LENGTH



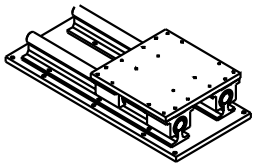
M-SRB2 (Shown)

[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

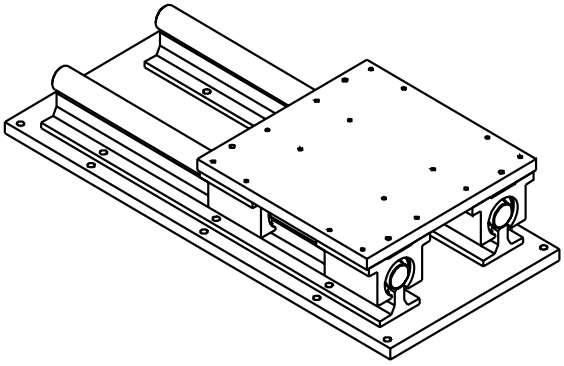
Substitute “L” from standard length table for “???”.
Guide bar diameter diameter in 1/16” increments (for example 10/16 = .625” diameter).
“M” for LM76SL, Minuteman linear bearings.

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		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		

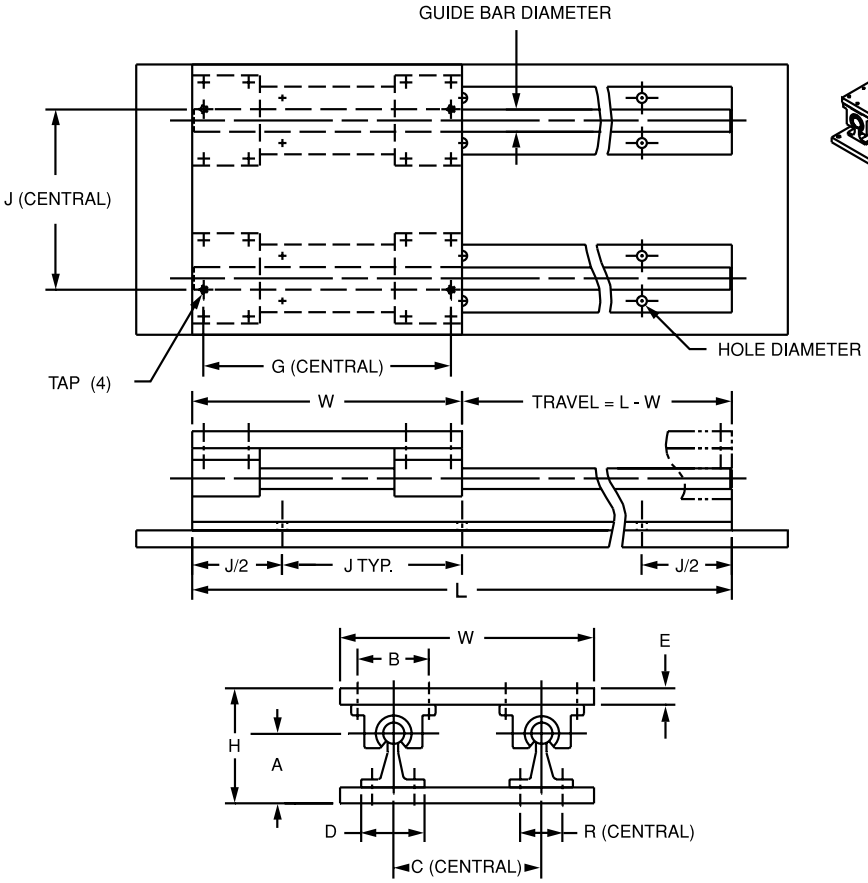
SELF LUBRICATING LINEAR SLIDES

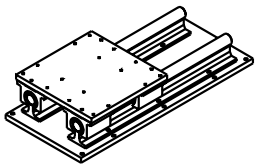
M-RPS

Minuteman Rail Mounted Plate Supported Slide Assembly

SELF LUBRICATING LINEAR SLIDES

DIMENSIONS (Continued)							
D	E	F	G	J	TAP	HOLES	SIZE
1.50	.375	.75	5.50	4.00	10-24	.22	08
1.650	.375	.75	6.31	4.00	1/4-20	.28	10
1.750	.500	1.00	7.12	6.00	1/4-20	.28	12
2.125	.500	1.00	8.31	6.00	1/4-20	.28	16
2.500	.750	1.25	10.00	6.00	5/16-18	.34	20
3.00	.750	1.25	12.00	8.00	5/16-18	.34	24
3.750	1.000	1.50	15.88	8.00	3/8-16	.41	32





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

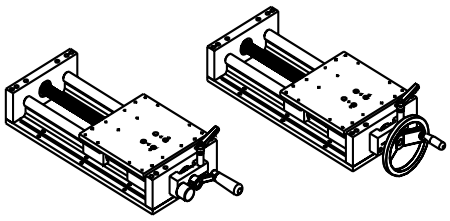
Guide bar diameter in 1/16" increments (10/16 = .625")

"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							
08	AR?	AL?						
10	AR?	AL?						
12	AR?	AL?						
16			BR?	BL?	CR?	DR?		
20			BR?	BL?	CR?	DR?		
24			BR?	BL?	CR?	DR?	DL?	ER?
32			BR?	BL?	CR?	DR?	DL?	ER?

REPLACE ? WITH 0 FOR STANDARD LEAD-LESS THAN .007" PER FOOT ACCUMULATIVE

REPLACE ? WITH 1 FOR SELECT LEAD-LESS THAN .003" PER FOOT ACCUMULATIVE

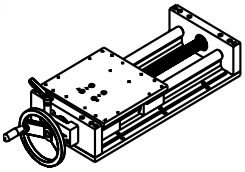
LEAD CODES
AR?= .200 RIGHT HAND
AL?= .200 LEFT HAND
BR?= .250 RIGHT HAND
BL?= .250 LEFT HAND
CR?= .500 RIGHT HAND
DR?=1.000 RIGHT HAND
DK?=1.000 LEFT HAND
ER?=1.875 RIGHT HAND

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

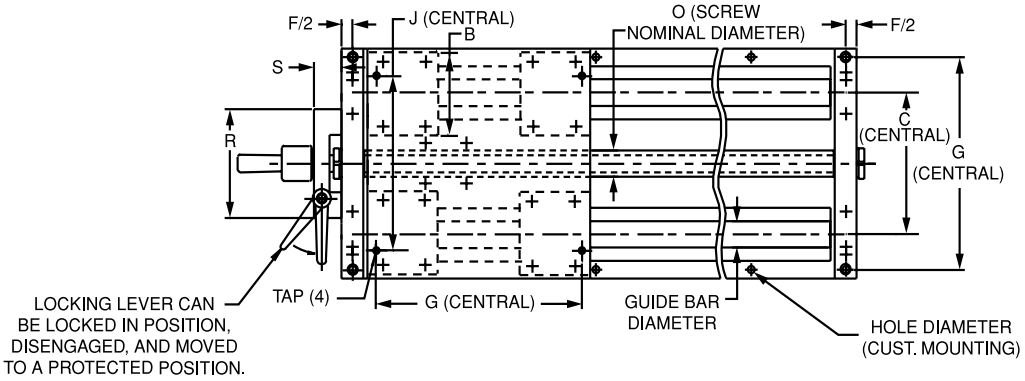
SELF LUBRICATING LINEAR SLIDES

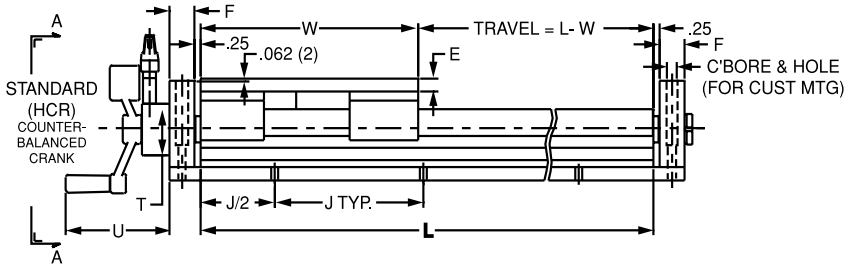
M-2HCR **M-2HWL**

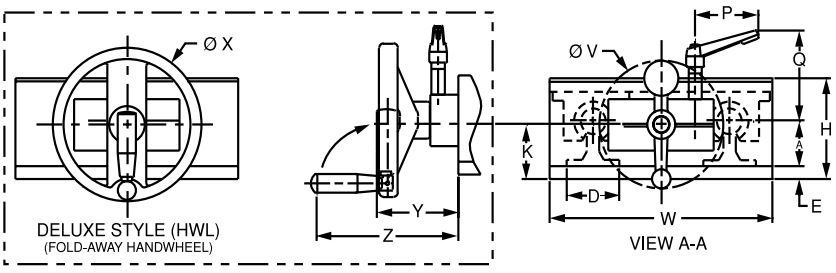
Minuteman Slide Assembly with
Handcrank and Lock



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
www.LM76.com

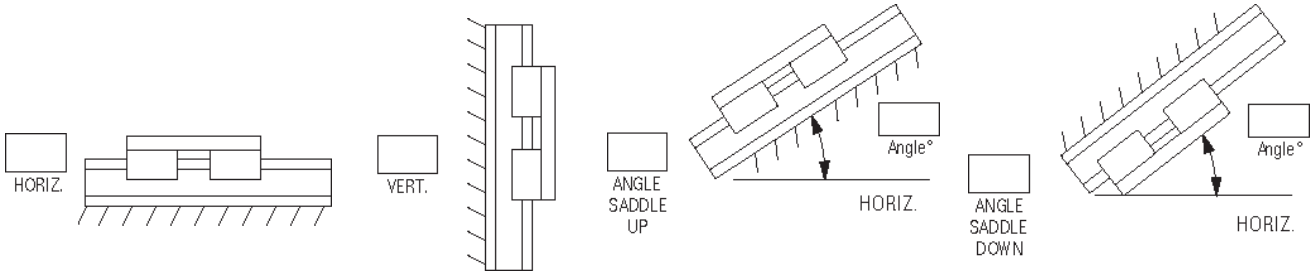
1. Determine the size and stroke of slide required.
2. Is a lube system required?
3. Please furnish the following to the factory:
   a. Model designation
   b. Lube system requirements
   c. Mounting orientation, saddle position if mounted at an angle
   d. Load to be carried and approximate center of 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

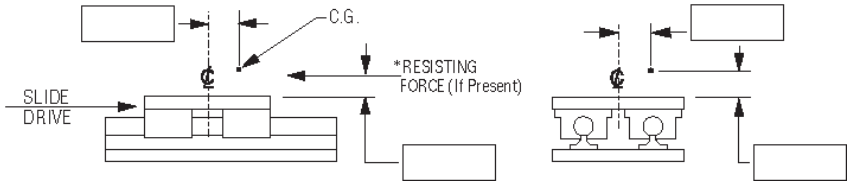
Acceleration Rate: _____ Inches/Second²

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

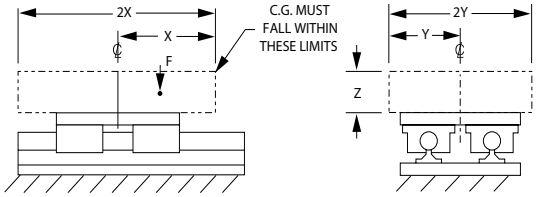
PTFE Self Lubricating Composite Bearing Slides

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

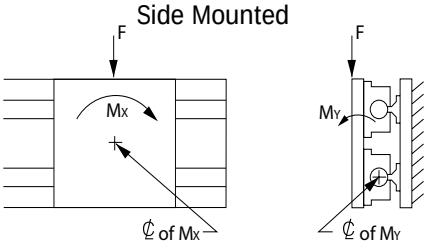
Standard Mounting



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

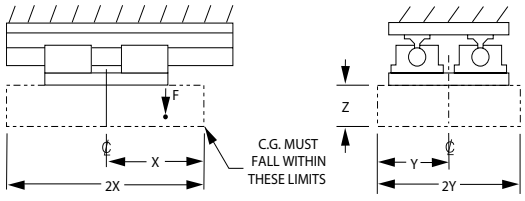
Side Mounted



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

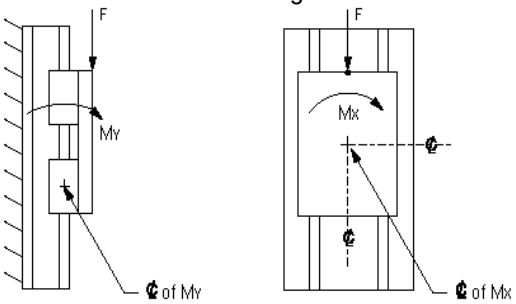
Inverted Mounting



Recommended Safe Loading

Size	FMax (Lbs.)	X Inch	Y Inch	Z Inch
08	195	485	291	390
10	285	569	333	350
12	315	652	375	400
16	450	731	458	450
20	712	884	542	550
24	900	1050	667	650
32	1425	1467	833	900

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

Black Racer Ceramic Coated Linear Motion Bearings

Champion of high loads,
low friction and wear life.

Direct drop-In Replacements for Linear Ball Bearings

No Acceleration or System Speed where they have failed when properly employed - Over 120G's!

Longest Life Test we know of: 19000 Miles with only .00004" Wear!

Engineer's choice for high speed crash test systems

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www.LM76.com

Black Racer Family

Linear Ball Bearing Family

Mike Quinn is VP Sales & Marketing at LM76
Please call me with any questions: 617-538-8756

Since 1976 LM76 has been helping engineers solve their most desperate linear applications. Our Black Racer Ceramic Coated linear bearings are without equal when compared to PTFE, plastic and linear ball bearings. Case in point, linear ball bearings must be greased - the same with our Black Racer Ceramic Coated Bearings. Do linear ball bearings offer a lower coefficient of friction - yes - but so low they blow the Black Racer out - **NO**. The Black Racer will take 10x's plus the load of what a linear ball bearing can take. Do Black Racer bearings blow out linear ball bearings load wise - **YES!** What about life testing? Black Racer has the longest life test we know of. How about some more facts:

VS.

Linear Speed - *Unlimited	**10 feet per second**
Acceleration - *Unlimited	**acceleration to 450 fps2**
Max Load: 1" Black Racer Bearing 6000+ lbs.	**650 lbs.**
Coefficient of Friction - .09 - .12 Lubricated **(A factor Lower Than PTFE/Teflon® Composite Bearings)**	**as low as .001**
Shock/Vibration: OK	**NO**
Rapid Oscillation: OK	**NO**
Contamination: OK	**NO**
Cost: Lower	**Moderate**
In Stock: YES	**YES**
Life/Wear: 19,000 miles @ .00004" wear	**2 million linear inches**
Noise: Quiet/Smooth	**Generates Noise and Resonance**
Mechanical Failure Mode: None/One Piece Unit	**Balls/Races/Shaft Brinelling**

* To date we have not experienced any failures due to acceleration or system speeds when properly employed.

Need a special ID?
A special OD?
A special Length?
A special geometry?

LM76 Black Racer Ceramic Coated Special Designs are found on howitzer breach loading mechanisms, high speed mattress making systems, rocket sleds, vehicle crash test systems, hamburger patty presses, biohazard equipment, space shuttles, HPLC systems, and countless more applications where load, rapid oscillation, shock, high acceleration and environmental issues are prevalent.

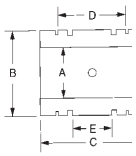
Then you came to the right place...LM76

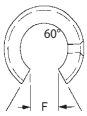
email: mquinn@LM76.com

Closed and Open, Ceramic Coated Linear Bearings

L

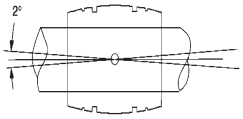
LX





SA

Self Aligning



INCH SIZES

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

BLACK RACER

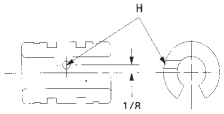
Ordering Information:

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

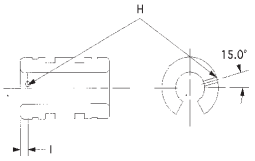
BEARING NUMBER (L OR LX)	MAX. SHAFT DIA.	HOUSING BORE	TOL. -.0000 +	BEARING WEIGHT LBS (L)	BEARING WEIGHT LBS. (LX)	MAX STATIC LOAD LBS.
408-6	0.2495	0.5000	0.0005	0.010	0.008	939
610-7	0.3745	0.6250	0.0005	0.015	0.013	1643
610-7SU	0.3745	0.6250	0.0005	0.015	0.013	1643
814-10	0.4995	0.8750	0.0005	0.046	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.

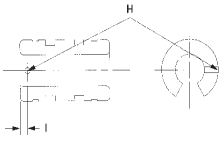
Retaining Pin Location, LX inch series Bearings



LX 814-10



LX 1018-12



LX 1220-13 THRU LX 6496-64

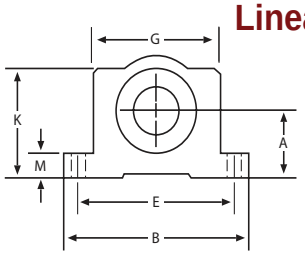
1-800-513-3163

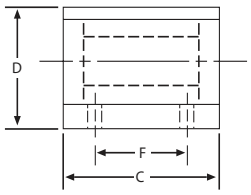
www.LM76.com

CERAMIC COATED BEARINGS

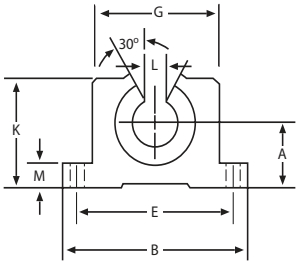
Closed and Open, Single Ceramic Coated Pillow Block Linear Bearings

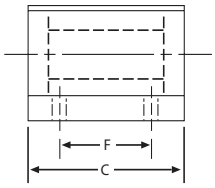
(L) Closed





(LX) Open



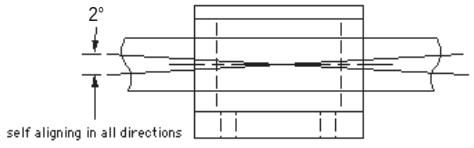


BLACK RACER

INCH Sizes

PART NUMBER (L) (LX)	SHAFT DIA. NOM.	SHAFT DIA. MAX.	A +/- .003	B	C	D	E +/- .010	F +/- .010	G	BOLT/ HOLE	K	L MIN.	M MIN.
PB 408-6	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 610-7	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 814-10	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 1018-12	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 1220-13	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 1625-18	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 2032-21	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 2438-24	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 3248-32	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

Complete Pillow Block Units include Bearing, Grease Fitting, Retention Pin and Seals.



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.

PILLOW BLOCK HOUSINGS

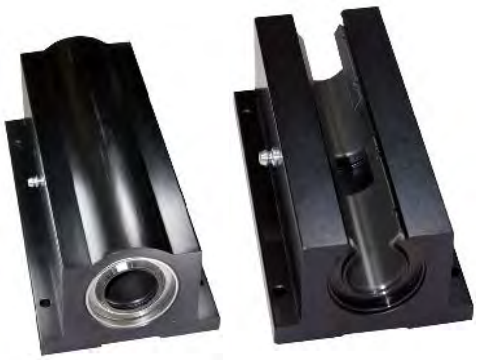
PART NUMBER PREFIXES (L) (LX)		HOUSING BORE
PBH	408-6	.5000/.5005
PBH	610-7	.6250/.6255
PBH	814-10	.8750/.8755
PBH	1018-12	1.1250/1.1255
PBH	1220-13	1.2500/1.2505
PBH	1625-18	1.5625/1.5635
PBH	2032-21	2.0000/2.0010
PBH	2438-24	2.3750/2.3760
PBH	3248-32	3.0000/3.0010

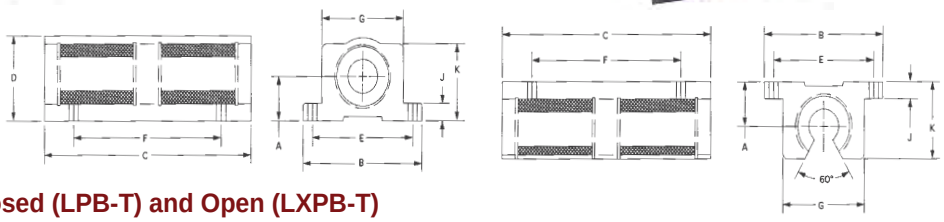
Ordering Information

For Open Pillow Blocks , use Prefix LX before number. Example: LXPB1625-18
For Closed Pillow Blocks , use Prefix L before number. Example: LPB1625-18
For Self Aligning Pillow Blocks, add the Suffix SA to part number. Example: LPB1625-18SA

CERAMIC COATED BEARINGS

Ceramic Coated Twin, Closed and Open Pillow Blocks



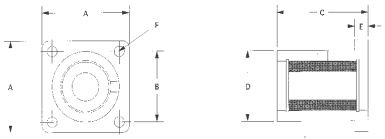


Closed (LPB-T) and Open (LXPB-T)

PART NUMBER	WORKING BORE INCHES	WORKING BORE TOLERANCE	A +/-.002	B	C	D	E +/- .010	F +/- .010	G	BOLT	HOLE	J MIN.	K
LPB-4 T	.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	.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	.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 T	.6255	+.001	.875	2 1/2	4	1 5/8	2.125	3.000	1 3/4	#8	3/16	9/3 2	1 7/16
L or LXPB-12 T	.7505	+.001	.937	2 3/4	4 1/2	1 3/4	2.375	3.500	1 7/8	#8	3/1 6	5/16	1 9/16
L or LXPB-16 T	1.0008	+.001	1.187	3 1/4	6	2 3/16	2.875	4.500	2 3/8	#10	7/3 2	3/8	1 15/16
L or LXPB-20 T	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 T	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-32T	2.0012	+.0015	2.125	6	10	4.063	5.250	8.250	4.500	3/8	13/32	5/8	3.625

Complete Pillow Block Units include Bearing, Grease Fitting, Retention Pin and Seals.

Flange Blocks



Part Number	Shaft Diameter Nom	Shaft Diameter Max	A	B	C	D	E	F Bolt	F Hole
LF6	3/8"	.3745	1-1/4"	0.875	1-5/16"	7/8"	3/16"	# 6	5/32"
LF8	1/2"	.4995	1-5/8'	1.250	1-11/16"	1-1/4"	1/4"	# 8	3/16"
LF10	5/8"	.6245	2"	1.500	1-15/16"	1-1/2"	1/4"	# 8	3/16"
LF12	3/4"	.7495	2-3/8"	1.750	2-1/16"	1-3/4"	3/8"	# 10	7/32"
LF16	1"	.9995	2-3/4"	2.125	2-13/16"	2-1/4"	1/2"	1/4"	9/32"
LF20	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

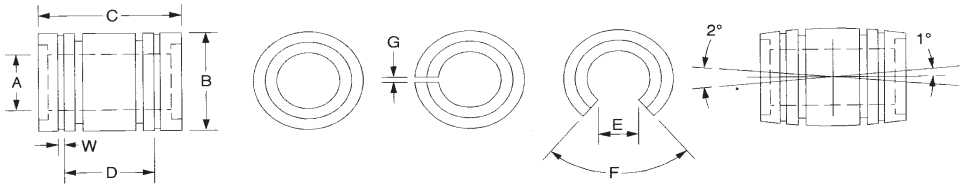
Complete Pillow Block Units include Bearing, Grease Fitting, Retention Pin and Seals.

BLACK RACER

CERAMIC COATED BEARINGS

Ceramic Coated European Metric Closed and Open Bearings

L LX



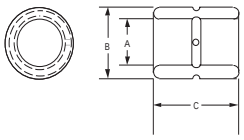
Ceramic Coated European Closed and Open Bearings

PART NUMBER add prefix L, LX or LA	WORKING BORE		OUTSIDE DIA. h7 Tolerance	LENGTH h14 Tolerance	RETAINING RING		MAX. SHAFT DIA.	HOUSING BORE DIA.	OPEN(LX) SLOT WIDTH	OPEN (LX) SLOT ANGLE	ADJ (LA) SLOT WIDTH
		Tolerance -,000									
	A	+	B	C	D	W	(h6 or h7)	H7	E	F	G
L /LX/LA 5	5	0,038-0,065	12	22	12	1,1	5	12	-	-	2
8	8	"	16	25	14	1,1	8	16	-	-	2
12	12	"	22	32	20	1,3	12	22	7,6	78	2,5
16	16	"	26	36	22	1,3	16	26	10,8	78	3
20	20	0,047-0,074	32	45	28	1,6	20	32	10,8	60	3,5
25	25	"	40	58	40	1,85	25	40	13,2	60	4,5
30	30	"	47	68	48	1,85	30	47	14,2	50	5
40	40	0,049-0,089	62	80	56	2,15	40	62	18,7	50	7
50	50	"	75	100	72	2,65	50	75	23,6	50	8
60	60	"	90	125	95	3,2	60	90	29,6	54	10
80	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= Adjuatable Slot Bearing
Part Number Suffix
SA=Self-Aligning L50SLSA= Closed, Self-Aligning Bearing

BLACK RACER

Ceramic TWM Thin Wall Bearings



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

CERAMIC COATED BEARINGS

Black Racer Ceramic Coated Linear/Rotary Thin Wall Bushings

Designed to replace a variety of thin wall bearings used in linear, rotary and oscillatory applications. They have all the advantages of our standard ceramic coated linear bearings, and may be used to replace a variety of other materials, including sintered bronze, cast bronze, various non-metallic materials and needle bearings. Each bearing has an internal and external grease groove for simplified lubrication. Note: the LM76 ceramic coated bearing must be lubricated by at least a thin film. SILICON SPRAY LUBRICANTS MUST NOT BE USED.

Several of the sizes are specifically designed as die and mold replacement bushings. These are marked with an asterisk for ease of identification.

BLACK RACER

Thin Wall Sleeve Bearings

Part Number Sleeve Series	ID inches A	OD inches B	Length inches C	Recommended Shaft Size +.000/-.0005	Recommended Housing Bore +.000/-.0005
LS0203-03	.2535	.377	3/8	.2490	.3750
LS0204-04	.2530	.502	1/2	.2490	.5000
LS0304-04	.3785	.502	1/2	.3740	.5000
LS0305-05	.378	.627	5/8	.3745	.6250
LS0405-05	.503	.627	5/8	.4990	.6250
LS0406-06	.503	.752	3/4	.4990	.7500
LS0407-08	.503	.814	1	.4990	.8125
LS0506-06	.628	.752	3/4	.6240	.7500
LS0508-08	.628	1.002	1	.6240	1.0000
LS0607-07	.753	.877	7/8	.7490	.8750
LS0609-11*	.751	1.126	1 3/8	.7485	1.1245
LS0710-11*	.876	1.251	1 3/8	.8740	1.2495
LS0709-10	.878	1.127	1 1/4	.8740	1.1250
LS0712-12	.877	1.502	1 1/2	.8740	1.5000
LS0811-11*	1.001	1.376	1 3/8	.9990	1.3750
LS0810-10	1.003	1.252	1 1/4	.9990	1.2500
LS0812-12	1.003	1.502	1 1/2	.9990	1.5000
LS0912-12	1.128	1.502	1 1/2	1.1240	1.5000
LS0913-14	1.127	1.627	1 3/4	1.1240	1.6250
LS1013-11*	1.251	1.626	1 3/8	1.2490	1.6245
LS1012-12	1.253	1.502	1 1/2	1.2490	1.5000
LS1014-14	1.253	1.752	1 3/4	1.2490	1.7500
LS1216-11*	1.501	2.001	1 3/8	1.4990	1.9995
LS1214-14	1.503	1.752	1 3/4	1.4990	1.7500
LS1216-15	1.502	2.002	1 7/8	1.4990	2.0000
LS1416-16	1.753	2.002	2	1.7490	2.0000
LS1418-18	1.752	2.252	2 1/4	1.7490	2.2500
LS1620-31*	2.001	2.501	3 7/8	1.9980	2.4985
LS1618-18	2.004	2.253	2 1/4	1.9990	2.2500
LS2026-39*	2.501	3.251	4 7/8	2.4980	3.2485
LS2430-39*	3.001	3.751	4 7/8	2.9980	3.7485

* These sizes are used for die and mold replacement bushings

Bearings are dimensioned to allow for ID close-in based on recommended housing bore. Proper running clearance is achieved after press fit.

Thin Wall Flange Bearings

Part Number Flange Series	ID inches A	OD inches B	Length inches C	Flange Diameter D	Flange Thickness E	Recommended Shaft Size +.000/-.0005	Recommended Bore Size +.000/-.0005
LF0607-08	.753	.877	1	1.125	.125	.7485	.8750
LF0609-15*	.751	1.126	1 7/8	1.302	.187	.7485	1.1245
LF0710-15*	.876	1.251	1 7/8	1.427	.187	.8740	1.2495
LF0709-14	.878	1.127	1 3/4	1.500	.125	.8740	1.1250
LF0712-14	.877	1.502	1 3/4	1.750	.125	.8740	1.5000
LF0811-15*	1.001	1.376	1 7/8	1.552	.187	.9990	1.3750
LF0810-14	1.003	1.252	1 3/4	1.625	.125	.9990	1.2500
LF0812-14	1.003	1.502	1 3/4	1.750	.125	.9990	1.5000
LF0912-14	1.128	1.502	1 3/4	1.687	.125	1.1240	1.5000
LF0913-15	1.127	1.627	1 7/8	1.875	.125	1.1240	1.6250
LF1013-15*	1.251	1.626	1 7/8	1.802	.187	1.2490	1.6245
LF1012-14	1.253	1.502	1 3/4	1.687	.125	1.2490	1.5000
LF1014-15	1.253	1.752	1 7/8	2.000	.125	1.2490	1.7500
LF1216-19*	1.501	2.001	2 3/8	2.177	.187	1.4990	1.9995
LF1214-15	1.503	1.752	1 7/8	2.000	.125	1.4990	1.7500
LF1216-15	1.502	2.002	1 7/8	2.250	.125	1.4990	2.0000
LF1416-19	1.753	2.002	2 3/8	2.250	.125	1.7490	2.0000
LF1418-13	1.752	2.252	2 3/8	2.500	.125	1.7490	2.2500
LF1620-19*	2.001	2.501	2 3/8	2.677	.187	1.9980	2.4985
LF1618-19*	2.004	2.253	2 3/8	2.500	.187	1.9990	2.2500
LF2026-33*	2.501	3.251	4 7/8	3.427	187	2.4980	3.2485
LF2430-39*	3.001	3.751	4 7/8	3.990	.500	2.9980	3.7485

* These sizes are used for die and mold replacement bushings

TOLERANCES FOR THIN WALL BUSHINGS

ID & OD

.252 ID to 1.752 - +.000/-.001

2.003 ID to 3.003 - +.000/-.002

LENGTH

Up to 1 1/2" long - +.000/-.010

1 1/2" to 3" long - +.000/-.015

CONCENTRICITY

Up to and including

1.252 ID - .0005 TIR

1.502 to 2.002 ID - .001 TIR

FLANGE DIAMETER

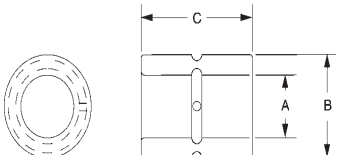
Up to 2" - +.000/-.010

2" and over - +.000/-.020

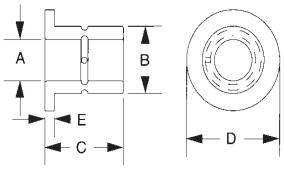
FLANGE THICy NESS

+/- .005

Thin Wall Sleeve



Thin Wall Flange



CERAMIC COATED BEARINGS

1-800-513-3163

www.LM76.com

CHEMICAL RESISTANCE OF LM76 BLACK RACER CERAMIC COATED LINEAR BEARINGS

Note: Black Racer Ceramic Coated Bearings are FDA Compliant for direct food contact

The data shown below is based on laboratory tests and actual service records. Because factors such as turbulence, temperature, PV, degree of contact, etc. are variables which can affect performance, it is always advisable to test the material under service conditions before specifying LM76 for new applications. If this is impractical, a test should be devised to simulate service conditions as closely as possible. For advice, consult factory.

A—Fluid has little or no effect
B—Fluid has minor to moderate effect
C—Fluid has severe effect
Unless otherwise noted, concentrations or aqueous solutions are saturated. All ratings are at room temperature unless specified. Should the coating wear through to the aluminum substrate, this chart is no longer applicable.

BLACK RACER

Chemical	
Acetaldehyde	A
Acetic acid, 20%	A
Acetic acid, 30%	A
Acetic acid, glacial	A
Acetic anhydride	A
Acetone	A
Acetylene	A
Aluminum chloride solutions	B
Aluminum sulfate solutions	A
Ammonia, anhydrous	A
Ammonium hydroxide solutions	C
Ammonium chloride solutions	C
Ammonium sulfate solutions	B
Amyl acetate	A (122°F) (50°C)
Amyl Alcohol	A
Aniline	A
ASTM oil #1	A (158°F) (70°C)
ASTM oil #3	A (158°F) (70°C)
ASTM reference fuel A	A
ASTM reference fuel B	A (122°F) (50°C)
ASTM reference fuel C	A
Asphalt	A
Barium hydroxide solutions	C
Beer	A
Benzaldehyde	A
Benzene	A (158°F) (70°C)
Benzoyl chloride anhydrous	A
Benzoyl chloride boiling	C
Borax solutions	A (to 176°F)
Boric acid solutions	A
Bromine, anhydrous liquid	A
Butane	A
Butyl acetate	A
Butyraldehyde	A
Butyric acid	A
Calcium bisulfite solutions	B
Calcium chloride solutions	C
Calcium hydroxide solutions	B
Calcium hypochlorite, 5%	B
Calcium hypochlorite, 20%	B
Carbon bisulfide	A
Carbon dioxide	A
Carbon monoxide	A
Carbon tetrachloride, dry	A (122°F) (50°C)
Carbon tetrachloride, wet	B
Castor oil	A
Chlorine gas, dry	A
Chlorine gas, wet	C
Chlorosulfonic acid	A
Chromic acid, 10-15%	B
Citric acid solutions	A
Copper chloride solutions	B
Copper sulfate solutions	B
Cottonseed oil	A
Creosote oil	A
Cyclohexane	A

Chemical	
Ethyl acetate	A (122°F) (50°C)
Ethyl alcohol	A
Ethyl chloride, dry	A
Ethyl glycol	A
Ferric chloride solutions	C
Formaldehyde	A
Formic acid	A
FREON-11	A
FREON-11	A (130°F) (54°C)
FREON-12	A
FREON-12	A (130°F) (54°C)
FREON-22	A
FREON-22	A (130°F) (54°C)
FREON-113	A
FREON-113	A (130°F) (54°C)
FREON-114	A
FREON-114	A (130°F) (54°C)
Furfural	A
Gasoline	A
Glue	A
Glycerin	A
n-Hexane	A (122°F) (50°C)
Hydrazine	A
Hydrochloric acid, 20%	B
Hydrochloric acid, 37%	B
Hydrocyanic acid	C
Hydroflouric acid, 48%	C
Hydroflouric acid, 75%	C
Hydroflouric acid, anhydrous	C
Hydrogen	A
Hydrogen peroxide, 90%	A
Hydrogen sulfide	A
JP-4	A
JP-5	A
JP-6	A
Kerosene	A
Lacquer solvents	A
Lactic acid	A
Linseed Oil	A
Lubricating oils	A
Magnesium chloride solutions	B
Mercuric chloride solutions	C
Mercury	C
Methyl alcohol	A
Methyl ethyl ketone	A (122°F) (50°C)
Methylene chloride	B
Mineral oil	A
Naptha	A
Nathalene	A
Nitric acid, 10%	A
Nitric acid, 30%	A
Nitric acid, 60%	A
Nitric acid, 70%	A
Nitric acid, red fuming	A
Nitrobenzene	A
Oleic acid	A

Chemical	
Palmitic acid	A
Perchloroethylene	A
Phenol	A
Phosphoric acid, 20%	C
Phosphoric acid, 60%	C
Phosphoric acid, 70%	C
Phosphoric acid, 85%	C
Pickling solution (20% nitric acid, 4% HF)	B
Pickling solution (17% nitric acid, 4% HF)	B
Potassium dichromate solutions	A
Potassium hydroxide solutions	C
Pyridine	A
SAE #10 oil	A (158°F) (70°C)
Sea Water	A
Silicone grease	A
Soap solutions	A
Sodium chloride solutions	A
Sodium dichromate, 20%	A
Sodium hydroxide, 20%	C
Sodium hydroxide, 461/2%	C
Sodium hydroxide, 50%	C
Sodium hydroxide, 73%	C
Sodium hypochlorite, 5%	C
Sodium hypochlorite, 20%	C
Sodium peroxide solutions	A
Soybean oil	A
Steam (see water)	A
Stearic acid	A
Styrene	A
Sulfur, molten	A
Sulfur dioxide, liquid	C
Sulfur dioxide, gas	C
Sulfur trioxide	C
Sulfuric acid, up to 50%	C
Sulfuric acid, 50%-80%	C
Sulfuric acid, 60%	C
Sulfuric acid, 90%	C
Sulfuric acid, 95%	C
Sulfuric acid, fuming (20% oleum)	C
Sulfurous acid	B
Tannic acid, 10%	A
Tartaric acid	A
Toluene	A (122°F) (50°C)
Trichloroethylene	A
Tricresyl phosphate	A
Triethanolamene	A
Tung oil	A
Turpentine	A
Water	A (122°F) (50°C)
Water (100°C)	A (212°F)
Xylene	A
Zinc chloride solutions	B

CERAMIC COATED BEARINGS

Black Racer Ceramic Coated Bearing Data

Life Testing

Ceramic LM76

Test Parameters: Dynamic Test Load: 100 PSI
Speed During Test: 100 feet per minute
Lubrication: Lithium Stearate Grease

Results: Run-in Wear (10 Hours) .00001" Total Wear
Constant Wear Rate After Run-in 3.0×10^{-13} inches per linear foot of travel

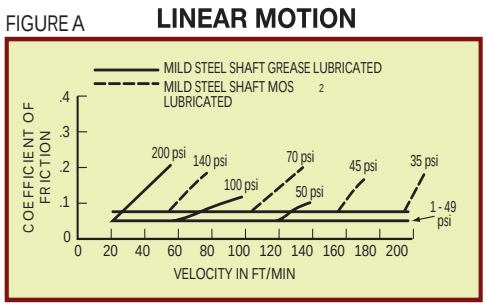
e.g. Total wear for 100,000,000 linear feet of travel is .00004".

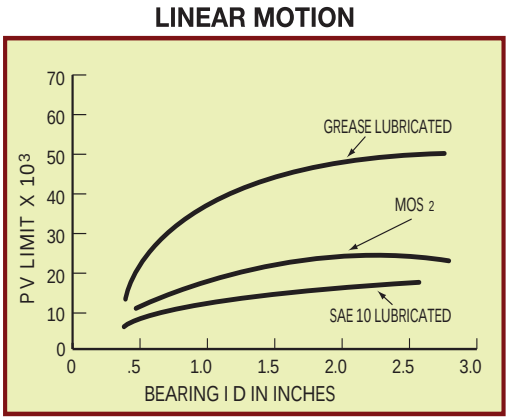
BLACK RACER

Optimum performance of the LM76 Ceramic Bearing is achieved when standard hardened and ground "S" or "L" type precision shafting is used. Mild steel shafting or drill rod ground to the same tolerances and finish may also be used. Testing has determined that the LM76 ceramic bearing, when run against these softer shaft materials, and lubricated at a frequency of one-hour intervals, results in a coefficient of friction of .05-.06 at a PV limit of 6000. Examination of the shaft after testing indicated that with the exception of light score marks on the shaft, there was no measureable wear to either the shaft or the bearing surfaces. Please note Figure A for actual test data.

In order to achieve maximum performance of the LM76 Ceramic bearing, a lubrication method is essential. The proper amount of lubrication required is that amount which maintains a constant thin film during operation. The method selected will depend on the speed-load-coefficient of friction requirements of the application. Approved (tested) lubrication methods include lithium stearate grease, MOS_2 Dry Film, most oils, greases and moly pastes. We do not recommend using any silicon based spray lubricants. The following charts illustrate the results of various speed/load and lubricant tests.

FIGURE A





CERAMIC COATED BEARINGS

Performance Data (Ceramic Series)

Linear Motion Performance Data

Maximum Velocity ..... Unlimited
Maximum Load (static) ..... 5000 PSI
Coefficient of Friction as low as ..... .04

Rotar Motion Performance Data

Maximum Velocity ..... Unlimited
Maximum Load (static) ..... 10,000 PSI
Coefficient of Friction as low as ..... .04

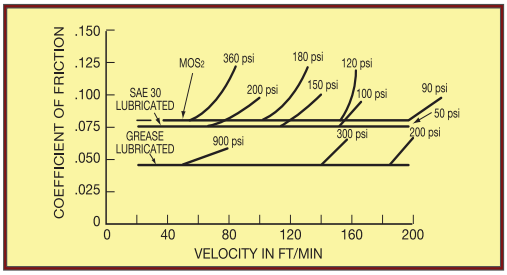
Temperature Limitation

Low Temp ..... -200°F
High Temp ..... +400°F

PV Limits-Linear Motion

PV limits as applied to plane bearings vary depending upon the manufacturer's testing procedures. The PV limit for the LM76 bearing was determined to be that point in the testing where the constant coefficient of friction (e.g. .04 increased to .05) remained at that level or higher. At that point, the test was terminated and that load and speed was determined to be the PV limit. Therefore, it should be noted that the PV limit only signifies an increase in friction, and NOT SIGNIFICANT SURFACE DAMAGE OR WEAR. Please refer to Figures D and E to determine PV values at various speeds and loads.

1" BEARING TEST



Lubricant	Linear PV Limit 1" Dia. Bearing	Friction Coefficient
SAE 10	15,000	.08
MOS_2	18,000	.08
SAE 30	25,000	.06
Lithium Stearate Grease	40,000	.04

PRESS FIT I.D. CLOSE IN

Wall thickness	% Close in (Approx.)
1/16"	100%
3/32"	90%
1/8"	75%
3/16"	60%
1/4"	50%
3/8"	30%
1/2"	20%

FIGURE D

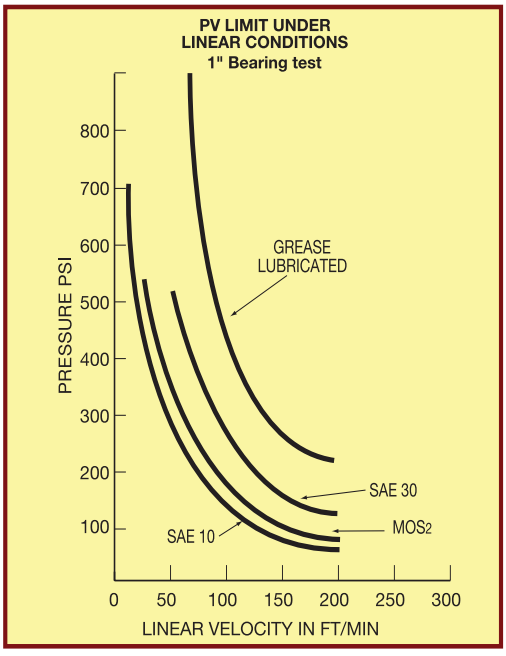
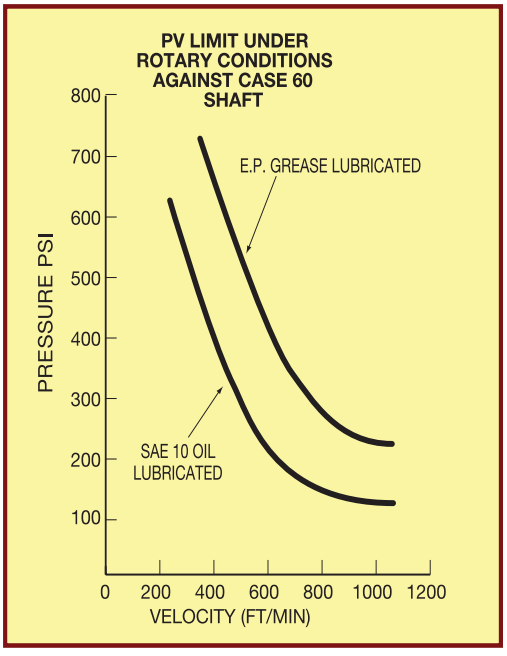


FIGURE E



BLACK RACER

CERAMIC COATED BEARINGS

Performance Data: Linear and Rotary

Ceramic Metric Bearing Performance

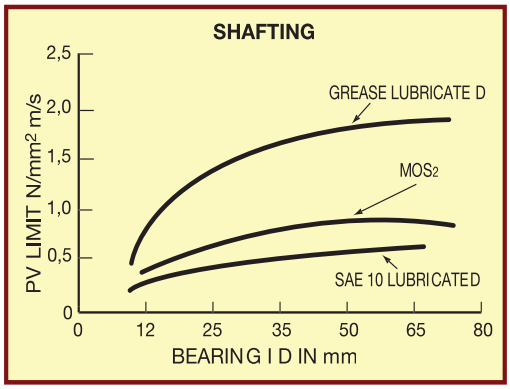
Linear motion performance data

Maximum Velocity	Unlimited
Maximum Load (static)	34,4 N/mm²
Coefficient of Friction as low as	0.04

PV Limits-Linear Motion

PV limits as applied to plane bearings vary depending upon the manufacturer's testing procedures. The PV limit for the LM76 bearing was determined to be that point in the testing where the constant coefficient of friction (e.g. .04 increased to .05) remained at that level or higher. At that point, the test was terminated and that load and speed was determined to be the PV limit. Therefore, it should be noted that the PV limit only signifies an increase in friction, and NOT SIGNIFICANT SURFACE DAMAGE OR WEAR. Please refer to Figures D and E to determine PV values at various speeds and loads.

LINEAR MOTION



Rotary Motion Performance

Maximum Velocity	Unlimited
Maximum Load (static)	70 N/mm²
Coefficient of Friction as low as	.04
Temperature Limitation	
Low Temp.	-130°C
High Temp.	+200°C

	LM76 SL Series	LM76 Ceramic
Maximum PV (continuous)	0,26 N/mm² m/s	1,4 N/mm ² m/s
Maximum P-(static)	5,2 N/mm²	34,4 N/mm²
Maximum V (no load)	2 m/s	unlimited
Shaft Hardness (minimum)	RB 25	RC 35-63
Shaft Finish (RMS)	8-1	8-16
Coe□cient of Friction	.10-.1	.04-.08
Temperature Limits-typical range	-240°C to +190°	-130°C to +200°C

FIGURE D

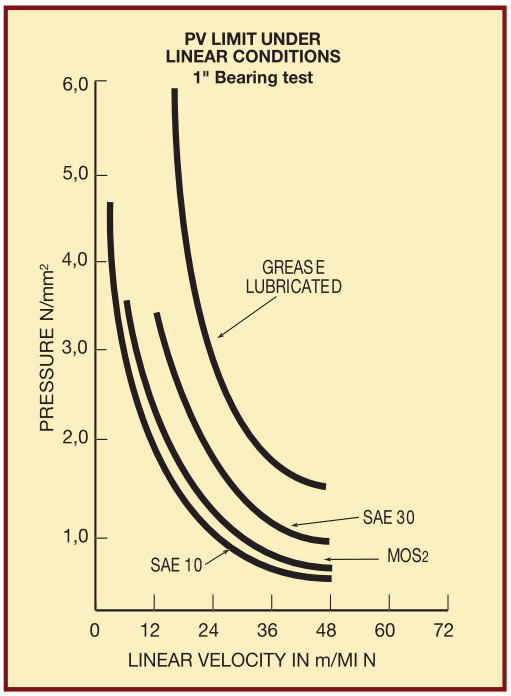
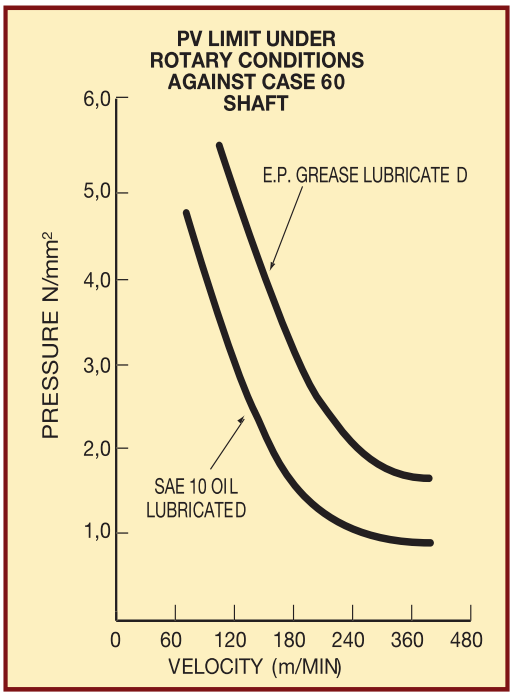
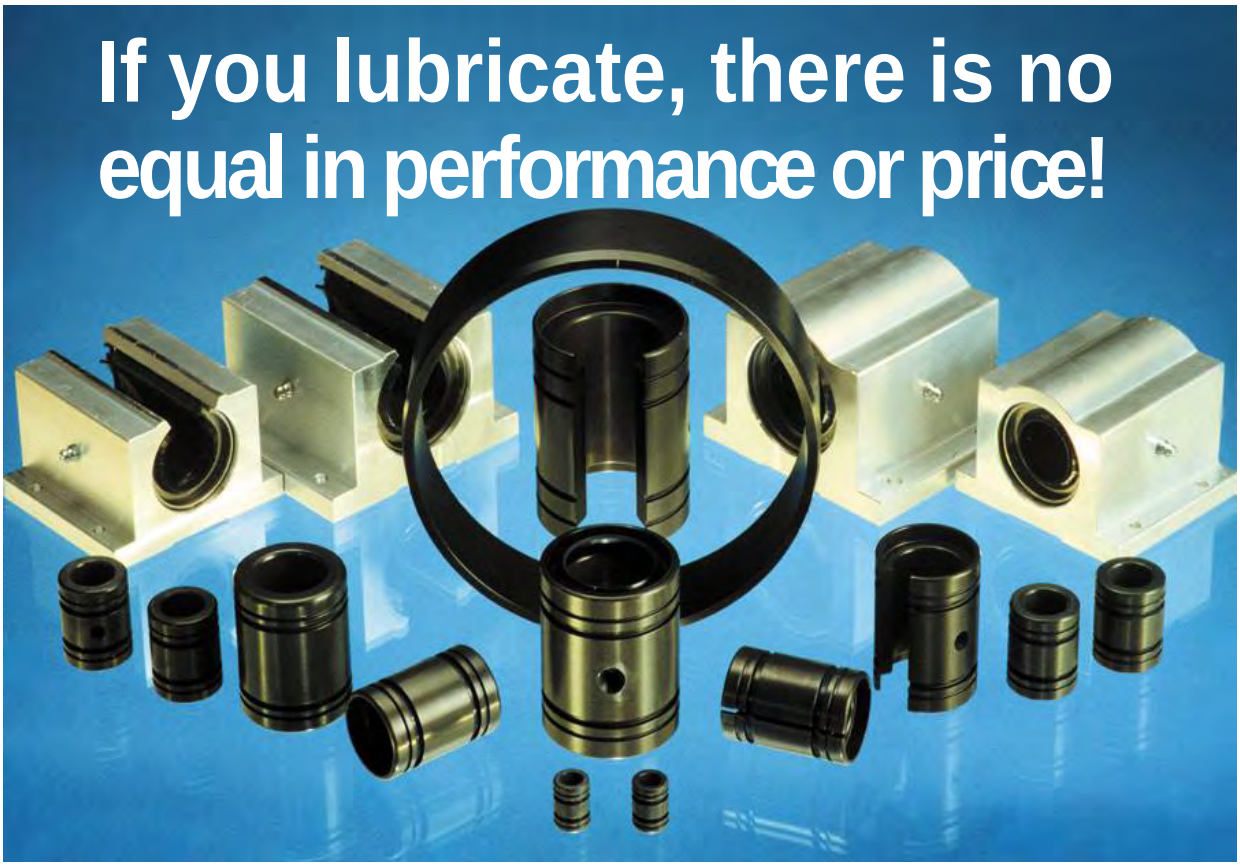


FIGURE E



BLACK RACER

CERAMIC COATED BEARINGS



BLACK RACER, CERAMIC COATED LINEAR BEARINGS™

The "original" drop-in replacement for linear ball bushings, our Ceramic Coated bearing is simply awesome in applications where traditional linear ball bushings fail. Ceramic Coated bearings require lubrication - either a grease or light oil. They excel in " Hellish " environments, operate with a low Coefficient of friction (.04 - .08) and outlast any comparable product: .00004" wear after 100 million linear FEET!

OVER 100 G's Acceleration!

To date, we are not aware of any application where Black Racer Ceramic Coated Bearings™ have failed due to Acceleration or system speed when properly employed.
We have seen accelerations over 100G's!

LM76

LM76 Linear Motion Bearings
140 Industrial Drive
East Longmeadow, Massachusetts 01028
1-800-513-3163
www.LM76.com

FANTASTIC PRICING IN STOCK

A Series Open and Closed

Self-Aligning Open and Closed

Self-Aligning Open and Closed Pillow Blocks

LINEAR BALL BEARINGS

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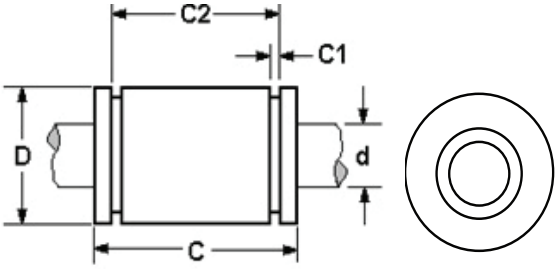
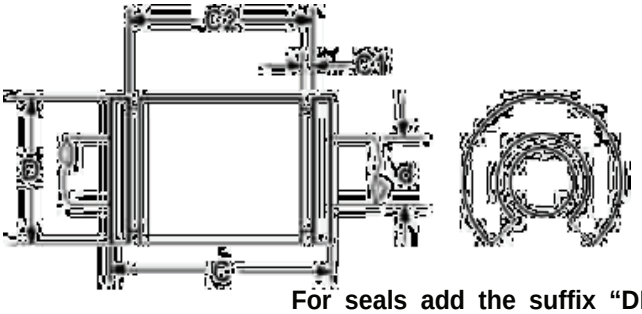
A Series Closed and Open Linear Ball Bearings



CLOSED BEARINGS

For seals add the suffix "DD"

Part Number	d Shaft Diameter	D Outside Diameter	C Length	C1 Retaining Ring Groove Width	C2 Distance Between Retaining Grooves	No. of Ball Circuits	Bearing Mass (Lb)	Housing Bore Diameter Normal Fit	Dynamic Load Capacity (Lb (1))
A4812	.2485/.2490	.4996/.5000	0.75	0.039	.499/.515	3	0.02	.5000/.5005	19
A61014	.3735/.3740	.6246/.6250	0.875	0.039	.640/.624	4	0.06	.6250/.6255	36
A81420	.4985/.4990	.8746/.8750	1.25	0.046	.951/.967	4	0.08	.8750/.8755	85
A122026	.7485/.7490	1.2496/1.2500	1.625	0.056	1.154/1.170	5	0.21	1.2500/1.2505	200
A162536	.9985/.9990	1.5621/1.5625	2.25	0.068	1.741/1.759	5	0.38	1.5624/1.5630	350
A203242	1.2485/1.2490	1.9995/2.0000	2.625	0.068	1.991/2.009	6	1.1	2.0000/2.0010	520
A243848	1.4984/4.4989	2.3745/2.3750	3	0.086	2.397/2.415	6	1.43	2.3740/2.3760	770
A324864	1.9980/1.9987	2.9994/3.0000	4	0.103	3.177/3.195	6	2.75	3.0000/3.0010	1100

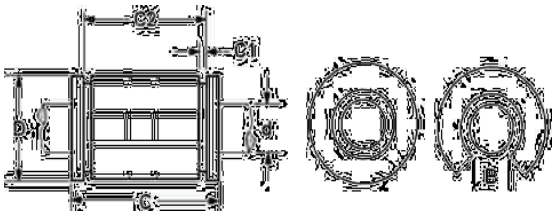


OPEN BEARINGS

For seals add the suffix "DD"

Part Number	d Shaft Diameter	D Outside Diameter	C Length	C1 Retaining Ring Groove Width	C2 Distance Between Retaining Grooves	No. of Ball Circuits	Bearing Mass (Lb)	Housing Bore Diameter Normal Fit	Dynamic Load Capacity (Lb (1))
OPN81420	.4985/.4990	.8746/.8750	1.25	0.046	.951/.967	3	0.08	.8750/.8755	85
OPN122026	.7485/.7490	1.2496/1.2500	1.625	0.056	1.154/1.170	4	0.21	1.2500/1.2505	200
OPN162536	.9985/.9990	1.5621/1.5625	2.25	0.068	1.741/1.759	4	0.38	1.5624/1.5630	350
OPN203242	1.2485/1.2490	1.9995/2.0000	2.625	0.068	1.991/2.009	5	1.1	2.0000/2.0010	520
OPN243848	1.4984/4.4989	2.3745/2.3750	3	0.086	2.397/2.415	5	1.43	2.3740/2.3760	770
OPN324864	1.9980/1.9987	2.9994/3.0000	4	0.103	3.177/3.195	5	2.75	3.0000/3.0010	1100

A SERIES LINEAR BALL BEARINGS



Self-Aligning
Closed and Open Linear Ball Bearings

CLOSED BEARINGS - SU_ _B

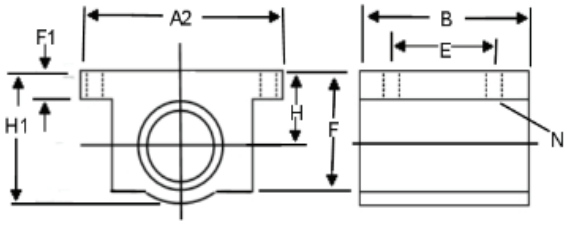
Part Number	Nominal Shaft Diameter d	Number of Ball Circuits	Housing Bore Dia. D	C	C2	C1	Maximum Load Capacity (Lbf)
SU06B	0.375	4	.6250/.6255	0.875/0.860	.689/.699	0.039	105
SU08B	0.5	4	.8750/.8755	1.250/1.230	1.012/1.032	0.05	265
SU10B	0.625	5	1.1250/1.1255	1.500/1.480	1.095/1.105	0.056	420
SU12B	0.75	6	1.2500/1.2505	1.625/1.605	1.250/1.270	0.056	640
SU16B	1	6	1.5625/1.5630	2.250/2.230	1.864/1.884	0.068	1045
SU20B	1.25	6	2.0000/2.0008	2.625/2.600	1.984/2.004	0.068	1585
SU24B	1.5	6	2.3750/2.3760	3.000/2.970	2.390/2.410	0.086	1930

OPEN BEARINGS SU _ _OPB

Part Number	Nominal Shaft Diameter d	Number of Ball Circuits	Housing Bore Dia. D	C	B	C2	C1	Maximum Load Capacity (Lbf)
SU8OPB	0.5	4	0.8755/0.8750	1.250/1.230	0.32	1.032/1.012	0.05	265
SU10OPB	0.625	5	1.1255/1.1250	1.500/1.480	0.38	1.105/1.095	0.056	420
SU12OPB	0.75	6	1.2505/1.2500	1.625/1.605	0.43	1.270/1.250	0.056	640
SU16OPB	1	6	1.5630/1.5625	2.250/2.230	0.56	1.884/1.864	0.068	1045
SU20OPB	1.25	6	2.0008/2.0000	2.625/2.600	0.63	2.004/1.984	0.068	1585
SU24OPB	1.5	6	2.3760/2.3750	3.000/2.970	0.75	2.410/2.390	0.086	1930

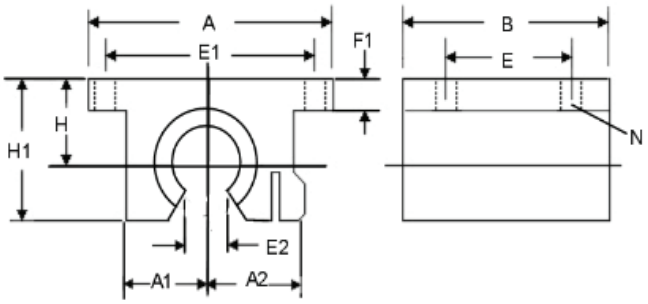
Self-Aligning Closed and Open Single Pillow Block Bearing Assemblies

CLOSED PILLOW BLOCKS - SPB_ _B



Part Number	Shaft Dia.	H +/- .003	H1	A	A2	B	E +/- .010	E1 +/- .010	F	F1	Hole	Bolt	Mass (lb)	Load Rating (lbf)
SPB8B	0.500	0.687	1.25	2.00	1.38	1.69	1.000	1.688	1.13	0.25	0.16	#6	0.2	255
SPB10B	0.625	0.875	1.63	2.50	1.75	1.94	1.125	2.125	1.44	0.28	0.19	#8	0.5	450
SPB12B	0.750	0.937	1.75	2.75	1.88	2.06	1.250	2.375	1.56	0.31	0.19	#8	0.6	600
SPB16B	1.000	1.187	2.19	3.25	2.38	2.81	1.750	2.875	1.94	0.38	0.22	#10	1.2	1050
SPB20B	1.250	1.500	2.81	4.00	3.00	3.63	2.000	3.500	2.50	0.44	0.22	#10	2.5	1500
SPB24B	1.500	1.750	3.25	4.75	3.50	4.00	2.500	4.125	2.88	0.5	0.28	1/4	3.8	2000

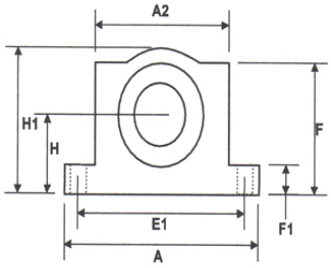
OPEN PILLOW BLOCKS SPB_ _OPB

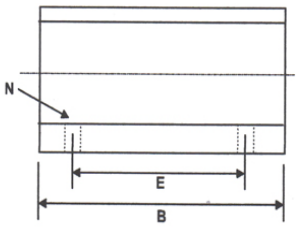


Part Number	Shaft Dia.	H +/- .003	H1	A	A1	A2	B	E +/- .010	E1 +/- .010	E2	F1	N Hole	N Bolt	Mass (lb)	Load Rating (lbf)
SPB8OPB	0.5	0.687	1.13	2.00	0.69	0.75	1.50	1.000	1.688	0.31	0.25	0.16	#6	0.2	230
SPB10OPB	0.625	0.875	1.44	2.50	0.88	0.94	1.75	1.125	2.125	0.37	0.28	0.19	#8	0.4	320
SPB12OPB	0.75	0.937	1.56	2.75	0.94	1.00	1.88	1.250	2.375	0.43	0.31	0.19	#8	0.5	470
SPB16OPB	1	1.187	2.00	3.25	1.19	1.25	2.63	1.750	2.875	0.56	0.38	0.22	#10	1.0	780
SPB20OPB	1.25	1.500	2.56	4.00	1.50	1.63	3.38	2.000	3.500	0.62	0.44	0.22	#10	2.1	1170
SPB24OPB	1.5	1.750	2.94	4.75	1.75	1.88	3.75	2.50	4.125	0.75	0.50	0.28	1/4	3.2	1560

Self-Aligning Closed and Open Twin Pillow Block Bearing Assemblies

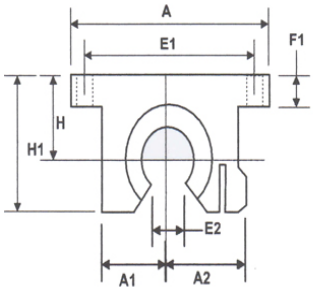
CLOSED TWIN PILLOW BLOCKS

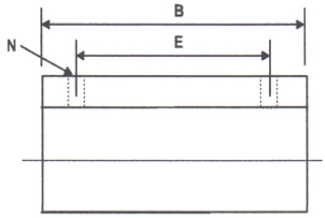




Part Number	Shaft Dia.	H +/- .003	H1	A	A2	B	E +/- .010	E1 +/- .010	F	F1	Hole	Bolt	Mass (lb)	Load Rating (lbf)
TWN8B	0.500	0.687	1.25	2.00	1.38	3.50	2.50	1.688	1.13	0.25	0.16	#6	.40	510
TWN10B	0.625	0.875	1.63	2.50	1.75	4.00	3.00	2.125	1.44	0.28	0.19	#8	1.00	900
TWN12B	0.750	0.937	1.75	2.75	1.88	4.50	3.50	2.375	1.56	0.31	0.19	#8	1.20	1200
TWN16B	1.000	1.187	2.19	3.25	2.38	6.00	4.50	2.875	1.94	0.38	0.22	#10	2.40	2100
TWN20B	1.250	1.500	2.81	4.00	3.00	7.500	5.50	3.500	2.50	0.44	0.22	#10	5.00	3000
TWN24B	1.500	1.750	3.25	4.75	3.50	9.00	6.50	4.125	2.88	0.5	0.28	1/4	7.80	4000

OPEN TWIN PILLOW BLOCKS



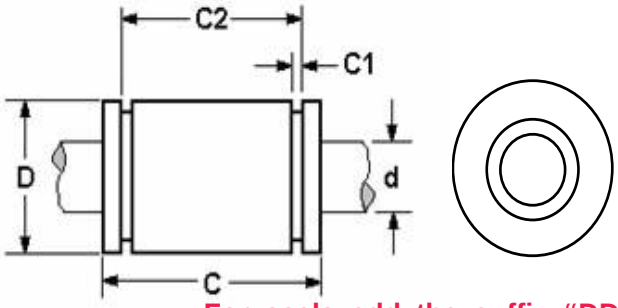


Part Number	Shaft Dia.	H +/- .003	H1	A	A1	A2	B	E +/- .010	E1 +/- .010	E2	F1	N Hole	N Bolt	Mass (lb)	Load Rating (lbf)
TWN8OPB	0.5	0.687	1.13	2.00	0.69	0.75	3.50	2.50	1.688	0.31	0.25	0.16	#6	.4	460
TWN10OPB	0.625	0.875	1.44	2.50	0.88	0.94	4.00	3.00	2.125	0.37	0.28	0.19	#8	0.8	640
TWN12OPB	0.75	0.937	1.56	2.75	0.94	1.00	4.50	3.50	2.375	0.43	0.31	0.19	#8	1.0	940
TWN16OPB	1	1.187	2.00	3.25	1.19	1.25	6.00	4.50	2.875	0.56	0.38	0.22	#10	2.0	1560
TWN20OPB	1.25	1.500	2.56	4.00	1.50	1.63	7.50	5.50	3.500	0.62	0.44	0.22	#10	4.2	2340
TWN24OPB	1.5	1.750	2.94	4.75	1.75	1.88	9.00	6.50	4.125	0.75	0.50	0.28	1/4	6.7	3120

LINEAR BALL BEARING PILLOW BLOCKS

LM76 440C Stainless Linear Ball Bearings

All retainers are 440C Stainless Steel. For a resin retainer use the suffix “G” Example: SS 6 OPN DD - G

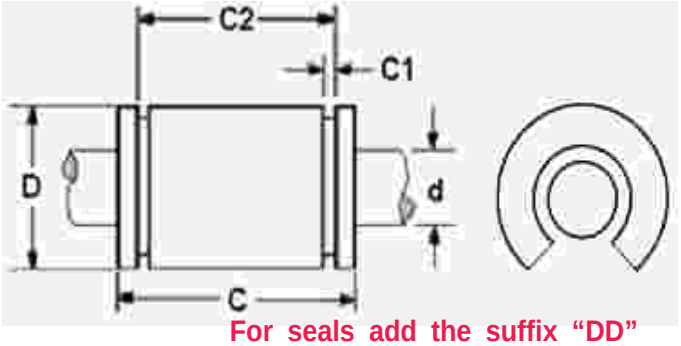


CLOSED BEARINGS

For seals add the suffix “DD”

Part Number	d Shaft Diameter	D Outside Diameter	C Length	C1 Retaining Ring Groove Width	C2 Distance Between Retaining Grooves	No. of Ball Circuits	Bearing Mass (Lb)	Housing Bore Diameter Normal Fit	Dynamic Load Capacity (Lb (1))
SS 4	.2485/.2490	.4996/.5000	0.75	0.039	.499/.515	3	0.02	.5000/.5005	19
SS 6	.3735/.3740	.6246/.6250	0.875	0.039	.640/.624	4	0.06	.6250/.6255	36
SS 8	.4985/.4990	.8746/.8750	1.25	0.046	.951/.967	4	0.08	.8750/.8755	85
SS 12	.7485/.7490	1.2496/1.2500	1.625	0.056	1.154/1.170	5	0.21	1.2500/1.2505	200
SS 16	.9985/.9990	1.5621/1.5625	2.25	0.068	1.741/1.759	5	0.38	1.5624/1.5630	350
SS 20	1.2485/1.2490	1.9995/2.0000	2.625	0.068	1.991/2.009	6	1.1	2.0000/2.0010	520
SS 24	1.4984/4.4989	2.3745/2.3750	3	0.086	2.397/2.415	6	1.43	2.3740/2.3760	770
SS 32	1.9980/1.9987	2.9994/3.0000	4	0.103	3.177/3.195	6	2.75	3.0000/3.0010	1100

OPEN BEARINGS



For seals add the suffix “DD”

Part Number	d Shaft Diameter	D Outside Diameter	C Length	C1 Retaining Ring Groove Width	C2 Distance Between Retaining Grooves	No. of Ball Circuits	Bearing Mass (Lb)	Housing Bore Diameter Normal Fit	Dynamic Load Capacity (Lb (1))
SS 8 OPN	.4985/.4990	.8746/.8750	1.25	0.046	.951/.967	3	0.08	.8750/.8755	85
SS 12 OPN	.7485/.7490	1.2496/1.2500	1.625	0.056	1.154/1.170	4	0.21	1.2500/1.2505	200
SS 16 OPN	.9985/.9990	1.5621/1.5625	2.25	0.068	1.741/1.759	4	0.38	1.5624/1.5630	350
SS 20 OPN	1.2485/1.2490	1.9995/2.0000	2.625	0.068	1.991/2.009	5	1.1	2.0000/2.0010	520
SS 24 OPN	1.4984/4.4989	2.3745/2.3750	3	0.086	2.397/2.415	5	1.43	2.3740/2.3760	770
SS 32 OPN	1.9980/1.9987	2.9994/3.0000	4	0.103	3.177/3.195	5	2.75	3.0000/3.0010	1100

STAINLESS LINEAR BALL BEARINGS

LM76 JET Rail

LM76 Linear Bearings JET RAIL

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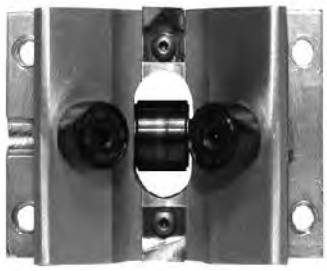

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Balls

VS

Rollers

HIGHER SPEEDS –
The design of the JET Rail Roller Bearing Pillow Block incorporates a larger "rolling" diameter than ball bearing pillow blocks. This allows operation at significantly higher speeds and acceleration than the equivalent size recirculating ball pillow blocks.

SHAFT PARALLELISM –
JET Rail Roller Bearing Pillow Blocks feature a "Floating Option" which will permit shafts to be out of parallelism. JET Rail Roller Bearing Pillow Blocks are the only linear motion pillow blocks with this patented option to compensate for non-parallel shafts. For instance, a 1" JET Rail Bearing can float 3/32".

LOW FRICTION –
JET Rail Roller Bearing Pillow Blocks have a very low "rolling" dynamic coefficient of friction (0.004 on average) and a very low resistance to motion. Unlike ball bearing pillow blocks which require shaft seals for proper operation, the JET Rail Roller Bearing Pillow Blocks have individually sealed rollers, and does not require shaft seals that generate resistance to motion.

LONGER LIFE AND SHAFT PROTECTION –
Unlike recirculating ball pillow blocks which create a point contact between the ball and the shaft, the main roller outer race of JET Rail Roller Bearing Pillow Blocks feature a concave groove to match the shaft diameter. This creates a line contact versus a point contact. The point contact associated with recirculating ball bearings generates very high stress, is prone to shaft grooving, and premature shaft failure.

CORROSION RESISTANCE –
JET Rail Roller Bearing Pillow Blocks are constructed with an aluminum body. The exposed surfaces of the rollers have a black oxide finish to resist corrosion. Special rollers of stainless steel or chrome plated are available in some sizes.

Scrapers clear a pathway for top rollers when debris is an issue.

LM76 Linear Motion Bearings
140 Industrial Drive
E. Longmeadow, Ma 01028
1-800-513-3163 Fax: 413-525-3735 www.LM76.com
Sales@LM76.com

LM76 Linear Bearings

Designed to overcome the limitations of linear bearings with multiple re-circulating ball circuits and to provide a product with trouble free operation, LM76 Roller Bearing Pillow Blocks provide the following advantages:

ADVANTAGES:

ADJUSTMENT -
LM76 Roller Bearing Pillow Blocks constructed with an adjustable eccentric stud feature to allow easy radial clearance adjustment. The clearance is set at the factory for optimum shaft clearance for LM76 Bearings 60 RC shaft tolerance "B". This shaft clearance can easily be adjusted to provide for "very loose" to "preload" conditions.

ALIGNMENT –
LM76 Single Roller Bearing Pillow Blocks are self aligning due to the unique design. This Roller Bearing Pillow Block has a higher tolerance to shaft deflection than the recirculating ball pillow block . In most applications, the double and twin models also either match or exceed the tolerances for misalignment offered by recirculating ball pillow block.

CORROSION RESISTANCE –
LM76 Roller Bearing Pillow Blocks are constructed with an aluminum body. The exposed surfaces of the rollers have a black oxide finish to resist corrosion. Special rollers of stainless steel or chrome plated are available in some sizes.

HIGHER SPEEDS –
The design of the LM76 Roller Bearing Pillow Block incorporates a larger "rolling" diameter than ball bushing pillow blocks. This allows operation at significantly higher speeds and acceleration than the equivalent size recirculating ball pillow blocks.

INTERCHANGEABILITY –
LM76 Roller Bearing Pillow Blocks mounting hole locations and shaft center to mounting surface dimensions are identical to all of the other popular linear pillow blocks of the same size.

LONGER LIFE AND SHAFT PROTECTION –
Unlike recirculating ball pillow blocks which create a point contact between the ball and the shaft, the main roller outer race of the LM76 Roller Bearing Pillow Block has a concave groove to match the shaft diameter. This creates a line contact versus a point contact. The point contact associated with recirculating ball bushings generates very high stress, is prone to shaft grooving, and premature shaft failure.

REBUILDABLE –
Each roller component can be easily replaced without replacing the entire pillow block. For information regarding rebuild kits see page 5.

LOW FRICTION –
LM76 Roller Bearing Pillow Block s have a very low "rolling" dynamic coefficient of friction (0.004 on average) and a very low resistance to motion. Unlike ball bushing pillow blocks which require shaft seals for proper operation, the LM76 Roller Bearing Pillow Block s have individually sealed rollers, and does not require shaft seals that generate resistance to motion.

LUBRICATION –
Each roller bearing is individually lubricated with a lithium base grease and sealed. This minimizes the need for periodic lubrication. Lithium base grease is preferred in this type of application because it has the ability to stand up under churning action in a confined space. This type of grease is also designed to run on an oiled shaft for optimum travel life. The bearings can run on a dry shaft, but a shorter travel life will result.

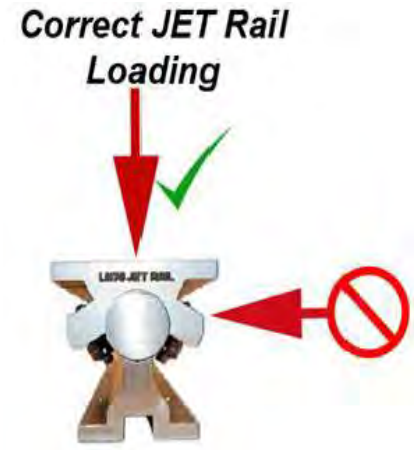
OPERATING TEMPERATURE –
The operating temperature of the LM76 Roller Bearing Pillow Block is determined by the temperature limit of the lubrication and seals. The normal operating temperature range is –60F to 250F.

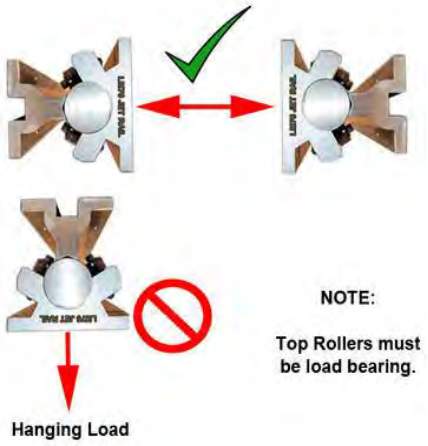
SHAFT PARALLELISM –
The LM76 Roller Bearing Pillow Block s feature a "Floating Option" will permit shafts to be out of parallelism. The LM76 Roller Bearing Pillow Block is the only linear motion pillow block with this patented option to compensate for non-parallel shafts.

For applications that exceed normal bearing requirements or for applications that are unusual or abnormal, please contact the factory.

JET RAIL ROLLER BLOCKS

JET Rail Loading Data





Jet Rail Rail Roller Blocks offer smooth, very quiet and solid linear motion. Their design dictates that the load fall on the top rollers which have a center radius which meets the crown of the shaft. Thus a straight and uniform compressive load is ideal for their construction. They are not designed for side loading - where the side rollers are being loaded. Nor are they to be inverted (upside down/ceiling mounted) , again loading the side rollers.

Since the cam follower is a needle bearing with an inner and outer race, we do not want a load scenario where the inner and outer races are put in shear.

JET RAIL ROLLER BLOCKS

Inch Sizes

LM76 Linear Bearings

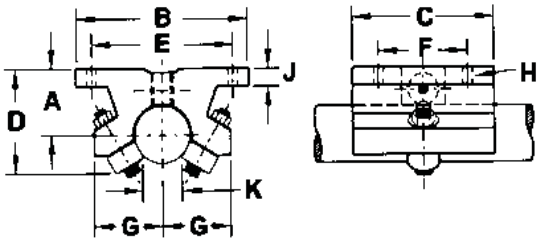


TABLE #1
DIMENSIONS & LOAD RATINGS FOR SINGLE PILLOW BLOCKS

MODEL	SHAFT DIA	DYN. LOAD	WGT.	+-0.003 A	B	C	D	E	F	G	BOLT	HOLE	J	K
JRS-8-OPN	1/2	400	0.4	0.687	2	1-1/2	1-5/32	1.688	1.000	1	#6	5/32	0.240	5/16
JRS-10-OPN	5/8	500	0.5	0.875	2-1/2	1-3/4	1-13/32	2.125	1.125	1-1/16	#8	3/16	0.270	3/8
JRS-12-OPN	3/4	600	0.6	0.937	2-3/4	1-7/8	1-9/16	2.375	1.250	1-1/16	#8	3/16	0.300	7/16
JRS-16-OPN	1	955	1.0	1.187	3-1/4	2-5/8	2	2.875	1.750	1-3/8	#10	7/32	0.360	11/16
JRS-20-OPN	1 1/4	1400	2.0	1.500	4	3-3/8	2-9/16	3.500	2.000	1-3/4	#10	7/32	0.424	13/16
JRS-24-OPN	1 1/2	1660	2.8	1.750	4-3/4	3-3/4	2-7/8	4.125	2.500	1-7/8	1/4	9/32	0.474	1-1/16
JRS-32-OPN	2	2400	5.0	2.125	6	4-3/4	3-1/2	5.250	3.250	2-1/2	3/8	13/32	0.600	1-3/8
JRS-48-OPN	3	6260	14.0	3.500	8-3/8	5-1/2	5-1/2	7.000	4.000	3-5/8	5/8	21/32	1.000	2-1/8
JRS-64-OPN	4	10500	31.0	4.500	10-1/4	6-1/4	7-1/2	8.875	4.500	5-1/8	3/4	25/32	1.125	2-3/4

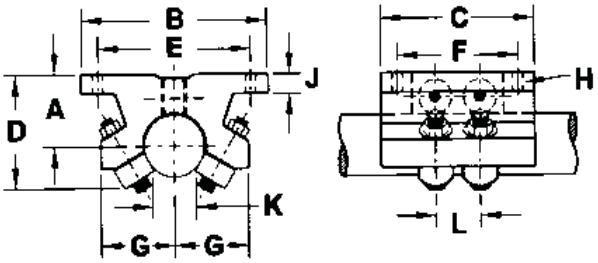


TABLE #2
DIMENSIONS & LOAD RATINGS FOR DOUBLE PILLOW BLOCKS

MODEL #	SHAFT DIA	DYN. LOAD	WGT.	+-0.003 A	B	C	D	E	F	G	BOLT	HOLE	J	K	L
JRD-8-OPN	1/2	800	0.50	0.69	2	2	1-5/32	1.688	1.625	1	#6	5/32	0.240	5/16	.562
JRD-10-OPN	5/8	1000	0.70	0.88	2-1/2	2-1/2	1-13/32	2.125	2	1-1/16	#8	3/16	0.270	3/8	0.562
JRD-12-OPN	3/4	1200	0.80	0.94	2-3/4	2-5/8	1-9/16	2.375	1.25	1-1/16	#8	3/16	0.300	7/16	0.562
JRD-16-OPN	1.0	1910	1.20	1.19	3-1/4	2-5/8	2	2.875	1.75	1-3/8	#10	7/32	0.360	11/16	0.720
JRD-20-OPN	1-1/4	2800	2.30	1.50	4	3-3/8	2-9/16	3.5	2	1-3/4	#10	7/32	0.424	13/16	0.937
JRD-24-OPN	1-1/2	3320	3.00	1.75	4-3/4	3-3/4	2-7/8	4.125	2.5	1-7/8	1/4	9/32	0.474	1-1/16	0.937
JRD-32-OPN	2.0	4800	5.50	2.13	6	4-3/4	3-1/2	5.25	3.25	2-1/2	3/8	13/32	0.600	1-3/8	1.187
JRD-48-OPN	3.0	12500	20.00	3.50	8-3/8	7-1/4	5-1/2	7	5.875	3-5/8	5/8	21/32	1.000	2-1/8	2.080
JRD-64-OPN	4.0	21000	51.00	4.50	10-1/4	9.0	7-1/2	8.875	7.25	5-1/8	3/4	25/32	1.125	2-3/4	2.600

JET RAIL ROLLER BLOCKS

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Inch Twin Sizes

LM76 Linear Bearings

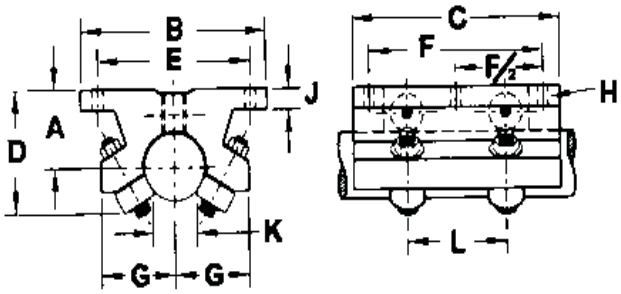

TABLE #3
DIMENSIONS & LOAD RATINGS FOR TWIN PILLOW BLOCKS

MODEL #	SHAFT DIA.	DYN. LOAD	WGT.	+-.003 A	B	C	D	E	F	G	BOLT	HOLE	J	K	L
JRT-8-OPN	1/2	800	0.80	0.69	2	3-1/2	1-5/32	1.69	2.5	1	#6	5/32	0.24	5/16	1.500
JRT-10-OPN	5/8	1000	1.00	0.88	2-1/2	4	1-13/32	2.13	3	1-1/16	#8	3/16	0.27	3/8	2.125
JRT-12-OPN	3/4	1200	1.20	0.94	2-3/4	4-1/2	1-9/16	2.38	3.5	1-1/16	#8	3/16	0.30	7/16	2.500
JRT-16-OPN	1.0	1910	2.30	1.19	3-1/4	6	2	2.88	4.5	1-3/8	#10	7/32	0.36	11/16	3.750
JRT-20-OPN	1-1/4	2800	4.40	1.50	4	7-1/2	2-9/16	3.50	5.5	1-3/4	#10	7/32	0.42	13/16	4.625
JRT-24-OPN	1-1/2	3320	6.50	1.75	4-3/4	9	2-7/8	4.13	6.5	1-7/8	1/4	9/32	0.47	1-1/16	5.500
JRT-32-OPN	2.0	4800	12.40	2.13	6	12	3-1/2	5.25	10.5	2-1/2	3/8	13/32	0.60	1-3/8	8.250

Metric Single Sizes

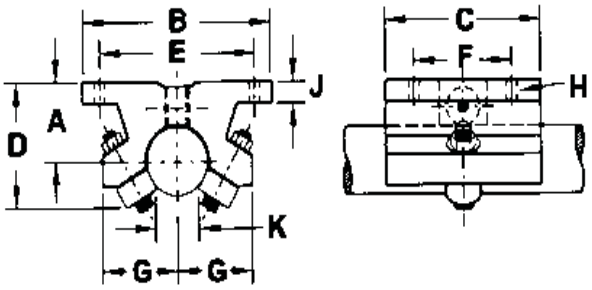

TABLE #4
DIMENSIONS & LOAD RATINGS FOR METRIC SINGLE PILLOW BLOCKS

MODEL #	SHAFT DIA.	DYN. LOAD	WGT.	+-.003 A	B	C	D	E	F	G	BOLT	HOLE	J	K
JRMS-16-0PN	16 MM	500	0.50	0.877	2-1/2	1-3/4	1-13/32	2.125	1.125	15/16	#8	3/16	0.270	3/8
JRMS-20-OPN	20 MM	600	0.60	0.956	2-3/4	1-7/8	1-9/16	2.375	1.250	1-1/16	#8	3/16	0.300	7/16
JRMS-25-OPN	25 MM	955	1.00	1.179	3-1/4	2-5/8	2	2.875	1.750	1-3/8	#10	7/32	0.360	11/16
JRMS-30-OPN	30 MM	1400	2.00	1.465	4	3-3/8	2-9/16	3.500	2.000	1-3/4	#10	7/32	0.424	13/16

JET RAIL ROLLER BLOCKS

1-800-513-3163

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Metric Double Sizes

LM76 Linear Bearings

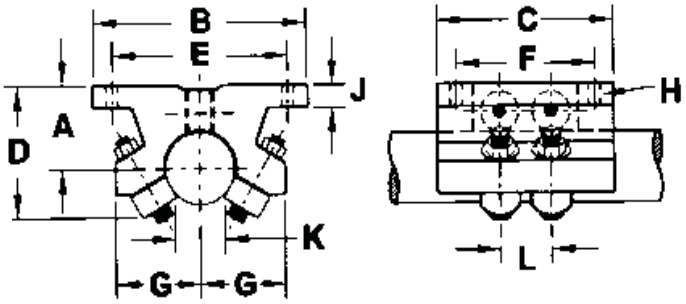


TABLE #5
DIMENSIONS & LOAD RATINGS FOR
METRIC DOUBLE PILLOW BLOCKS

MODEL #	SHAFT DIA.	DYN. LOAD	WGT.	A	B	C	D	E	F	G	BOLT HOLE		J	K	L
JRMD-16-OPN	16 MM	1000	0.7	0.877	2-1/2	2-1/2	1-13/32	2.125	2.000	15/16	#8	3/16	0.270	3/8	0.562
JRMD-20-OPN	20 MM	1200	0.8	0.956	2-3/4	2-5/8	1-9/16	2.375	1.250	1-1/16	#8	3/16	0.300	7/16	0.562
JRMD-25-OPN	25 MM	1910	1.2	1.179	3-1/4	2-5/8	2	2.875	1.750	1-3/8	#10	7/32	0.360	11/16	0.720
JRMD-30-OPN	30 MM	2800	3	1.465	4	3-3/8	2-9/16	3.500	2.000	1-3/4	#10	7/32	0.424	13/16	0.812

Metric Twin Sizes

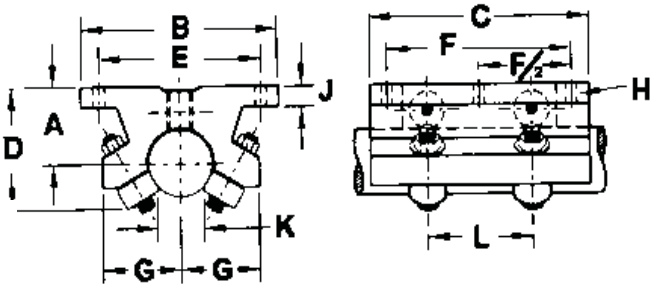


TABLE #6
DIMENSIONS & LOAD RATINGS FOR
METRIC TWIN PILLOW BLOCKS

MODEL #	SHAFT DIA.	DYN. LOAD	WGT.	A	B	C	D	E	F	G	BOLT HOLE		J	K	L
JRMT-16-OPN	16 MM	1000	1	0.877	2-1/2	4	1-13/32	2.125	3.000	15/16	#8	3/16	0.270	3/8	2.125
JRMT-20-OPN	20 MM	1200	1.2	0.956	2-3/4	4-1/2	1-9/16	2.375	3.500	1-1/16	#8	3/16	0.300	7/16	2.500
JRMT-25-OPN	25 MM	1910	2.3	1.179	3-1/4	6	2	2.875	4.500	1-3/8	#10	7/32	0.360	11/16	3.750
JRMT-30-OPN	30 MM	2800	4.4	1.465	4	7-1/2	2-9/16	3.500	5.500	1-3/4	#10	7/32	0.424	13/16	4.625

JET RAIL ROLLER BLOCKS

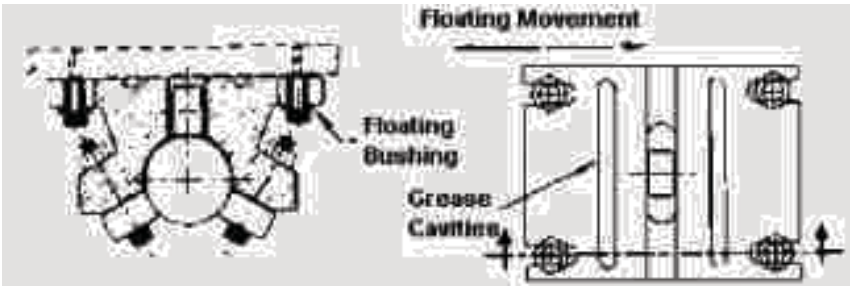
1-800-513-3163

www.LM76.com

Our new High Temp bearings have been used in temperatures up to 200C (398F) and incorporate a high temperature grease typically used on oven conveyors or rotisseries. Developed around a specific high temperature application for a major corporation, JET Rail HT linear roller blocks have been operating successfully for over 2 years and have outlasted the original linear ball bearings by 6:1.

P/N	Description
JRS 8 OPN-HT	Single 1/2” Roller Block
JRD 8 OPN-HT	Double 1/2” Roller Block
JRT 8 OPN-HT	Twin 1/2” Roller Block
JRS 12 OPN-HT	Single 3/4” Roller Block
JRD 12 OPN-HT	Double 3/4” Roller Block
JRT 12 OPN-HT	Twin 3/4” Roller Block

JET Rail roller blocks are available with fixed and floating configurations. This patented option is the only product on the market that provides a real solution for shafting that is out of parallel. This option is particularly effective with long shaft runs that are inherently difficult to install with precision parallelism.



JET RAIL ROLLER BLOCKS

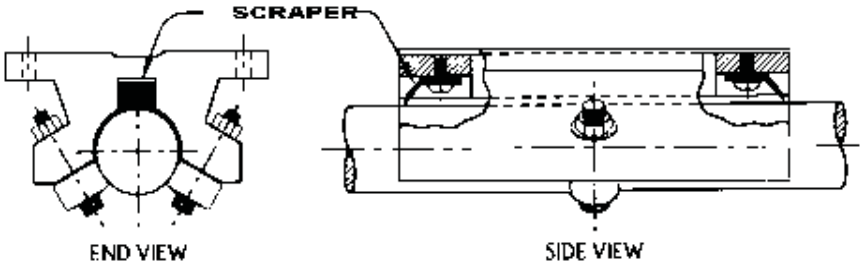
Roller Bearing Pillow Block
Options

LM76 Linear Bearings

SCRAPER OPTION

When pillow blocks run in an environment where chips or sludge accumulate on the top of the linear shaft, select the "scraper option". The scraper is made from spring steel – tempered phosphor bronze and conforms to the shaft diameter. A scraper is mounted to each end of the bearing assembly which cleans the top of the shaft in either direction.

The "scraper option" requires a specially machined pillow block, and cannot be added as a retrofit to a pillow block originally ordered without this option. This option may temporarily increase resistance to motion, but after a short break-in period this increase will be insignificant.



To order the "scraper option", add the suffix "-S" after the pillow block model number.
For example SPB-16-OPN-S

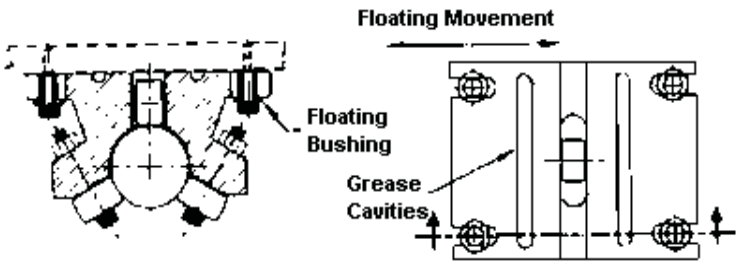
FLOATING OPTION

The floating option is available on all models of the Roller Bearing Pillow Block. This patented option is the only product on the market that provides a real solution for shafting that is out of parallel.This option is beneficial when trying to align long shafts, or when the system does not meet the required parallelism.

"Floating" pillow blocks should be used in conjunction with standard pillow blocks which ride on one shaft and the "floating" on the other shaft. On the top of each "floating" pillow block are two grooves which should be filled with the special grease that is supplied. When installing, care should be taken not to over tighten the mounting screws or bolts, causing the floating bushings to bind.

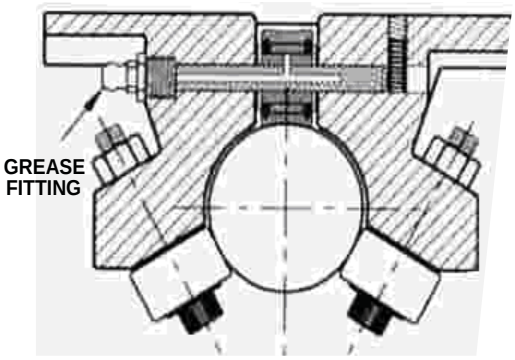
To order "floating" pillow blocks add the prefix "F" to the single, double, or twin bearing.
For example FSPB-16-OPN

Pillow Block Size	8,10,12	16	20,24	32	48,64
Floating Movement	1/16"	3/32"	1/8"	5/32"	3/16"



TOP GREASE OPTION

The LM76 Roller Bearing Pillow Block rollers are lubricated and sealed, but in some applications it is desired to re-grease the main support roller. The "top grease option" can help achieve full bearing life in applications that reduce or contaminant the grease inside the roller. Such Conditions may exist in applications where solvents or contaminants leach out the grease through the vents in the seals, or where contaminants are so fine or extreme that they must be purged out of the roller with fresh grease. The "top grease option" is also recommended when high speeds or extreme temperatures are present.



TOP GREASE OPTION DETAIL

To order the "top grease option". Add the suffix "-TG" after the pillow block model number. For Example SPB-24-OPN-TG. Available in 1-1/4" Pillow Blocks and larger.

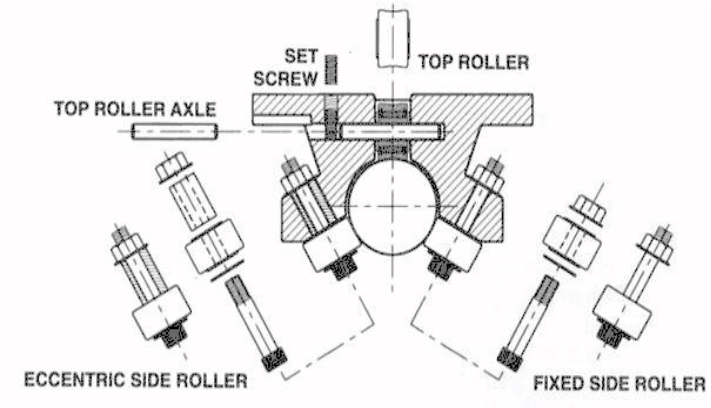
PILLOW BLOCK REBUILD KITS

Rebuild kits for LM76 Roller Bearing Pillow Blocks are available with all the required parts to completely rebuild each unit. For single units order one kit. For Double or Twins, order two kits.

When ordering a rebuild kit, you must advise the factory of the run number that is stamped on the end face of the pillow block. This run number assures you will get the correct parts needed to rebuild your unit.

For example: #BK 16-1047.
This would be one kit for a 1" pillow block with a run number of 1047. Each kit contains one fixed side roller, one eccentric side roller, one top roller, one top roller axle and one set screw.

Individual Parts are also available. However, it is recommended when a pillow block is removed for parts replacement, all components should be replaced before the pillow block is re-installed.



REBUILD KIT	NOM DIA.	REBUILD KIT	NOM. DIA.
BK08	1/2"	BK20	1-1/4"
BK10	5/8"	BK24	1-1/2"
BK12	3/4"	BK32	2"
BK16	1"	BK48	3"

Engineering

The following information will aid in selecting the proper pill ow block under normal conditions. For applications where unusual or abnormal conditions exist, such a misalignment, cantilever load, high temperature, corrosive or high contaminant environment, etc., consult the factory 1-800-513-3163.

BEARING TYPE

SINGLE PILLOW BLOCK -
This is the most widely used pillow block and is an excellent choice for standard linear movement or in applications where there is severe shaft deflection. The Single Pillow Block can handle severe misalignment applications and can even travel a radius.

DOUBLE PILLOW BLOCK -
The dynamic load rating of the Double Pillow Block is twice that of the Single Pillow Block. The Double Pillow Block can be mounted in place of the single pillow blocks in most applications due to the similar footprints. They also provide a solution for applications that were under engineered and now require a greater load capacity pillow block to fit into the same area or, in cases that require longer travel life.

TWIN PILLOW BLOCKS –
The twin pillow block load rating is the same as the Double Pillow Block and is a good choice when using only one pillow block or in applications subjected to cantilever load or moment, The twin model also offers an additional pair of mounting holes if needed.

SHAFT LUBRICATION
LM76 Roller Bearing Pillow Blocks are designed to run on a lubricated shaft. However, it is possible to run them on a dry shaft, but shorter travel life will result. The shortness of life will vary depending on speed, adjustment, and contaminant involved. The recommended oil for lubrication of the shaft would be a heavy weight oil similar to 600 weight cylinder oil. This type of oil has the characteristic to stay where placed, whereas the lighter oils tend to roll to the bottom of the shaft leaving no lubrication on top where it is needed.

ADJUSTMENTS

LM76 Roller Bearing Pillow Blocks are set at the factory for RC60 linear shafting tolerance code “B”. Adjustment is provided to either increase or decrease the clearance of the shaft by means of an adjustable eccentric cam follower.

The adjustable eccentric roller is located on the same side of the pillow block as the set screw holding the dowel pin for the main support roller. Adjusting the eccentric cam follower can be accomplished by the use of a feeler gauge between the shaft and eccentric roller (the fixed side must be in contact with the shaft) and a stubby allen wrench to turn the cam follower. A feeler gauge of .001” should be able to slide between the roller and shaft with little force. Pre-load is possible, but great care should be taken not to overload the roller. Never adjust rollers so tight that they can not turn freely.

CANTILEVER LOADS AND MOMENTS
If a system has a cantilever load and/or moment, the designer should avoid rigid connections to the bearing housing, and the use of recirculating ball pillow block bearings with the self aligning feature. Recirculating ball systems subjected to moment will rotate the bearing housing to the maximum deflection and concentrate the forces on a single ball, thus creating very high pressure on the point contact, considerably shortening the expected life of the recirculating ball pillow block and shaft. The Twin Roller Bearing Pillow Block and/or pivot floating design will provide for a more reliable system. A pivot floating design is one featuring a pin connection from the carriage to the pillow block, rather than a bolt connection, preventing the transmission of carriage moment to the bearing.

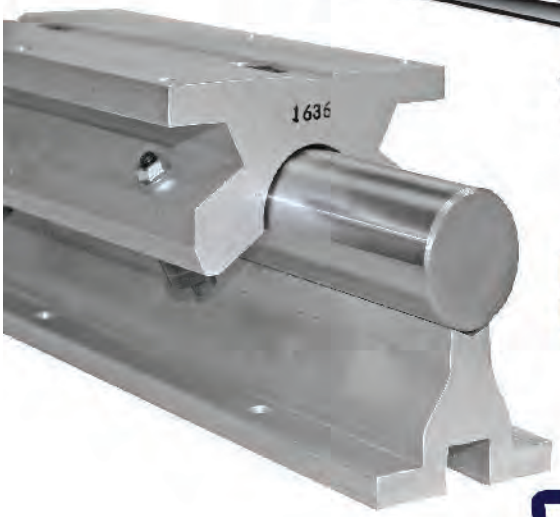
Pillow Blocks being used in a “pull-off” condition may have a shortened life due to mechanical failure and should be reviewed by the factory prior to design.

TURNING RADIUS
The Single Roller Bearing Pillow Block has the ability to turn a radius or run on a non-linear system. The radius track will vary from 6” to 60” depending on the size of the pillow block.

JET Rail

LM76 Linear Bearings JET RAIL

Fly with the Best



Smooth
Quiet
Versatile

The drop-in replacement for linear ball bearings. **JET RAIL** offers single and twin pillow block replacements when you need low friction, ***ROLLING***, linear motion.

Functionality to the MAX

LM76 Gold Points

JET Rail offers the following Advantages:

- Direct Drop-in Replacement for all standard linear Pillow Blocks
- Floating option allows for misaligned shafting (Optional)
- Debris scraper clears path for top rollers (Optional)
- Open architecture does not provide areas for debris to collect
- Rebuild kits allow for field rebuiding

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Linear Shafting

Linear Shafting
Pre-Drilled Shafting
Fully Supported Shaft Assemblies
Low Supports
Metric Shafting
Shaft Support Blocks

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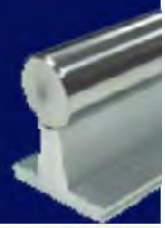

300 SS

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LM76
Designers & Manufacturers of Linear Bearings and Linear Slides
Linear bearings that EXCEED the Challenge

Rc60

440c

Machined Specials

Ceramic Coated Aluminum

HARDENED AND PRECISION GROUND LINEAR SHAFTING

1060 STEEL CASE HARDENED AND PRECISION GROUND LINEAR SHAFTING

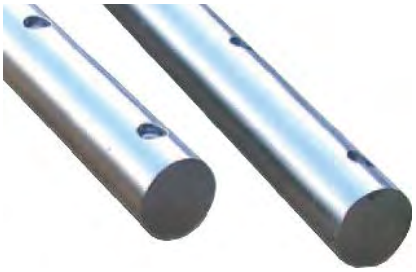
NOMINAL DIA. (IN)	CLASS "L" DIA. (IN)	CLASS "S" DIA. (IN)	CLASS "D" DIA. (IN)	CLASS "N" DIA. (IN)	MIN. DEPTH OF 60-65 Rc (IN)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (FT)	NOMINAL DIA. (IN)
3/16	.1870/.1865	-	-	-	.027	.008	5	3/16
1/4	.2495/.2490	.2490/.2485	-	.2500/.2498	.027	.014	8	1/4
3/8	.3745/.3740	.3740/.3735	-	.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

PRECISION LINEAR SHAFTING



HARDENED AND PRECISION GROUND PRE-DRILLED SHAFTING

PRECISION LINEAR 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

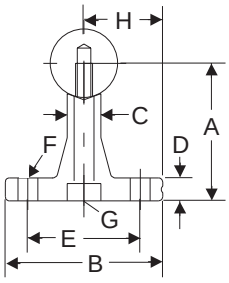
52100 STEEL CASE HARDENED AND PRECISION GROUND TUBULAR LINEAR SHAFTING

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

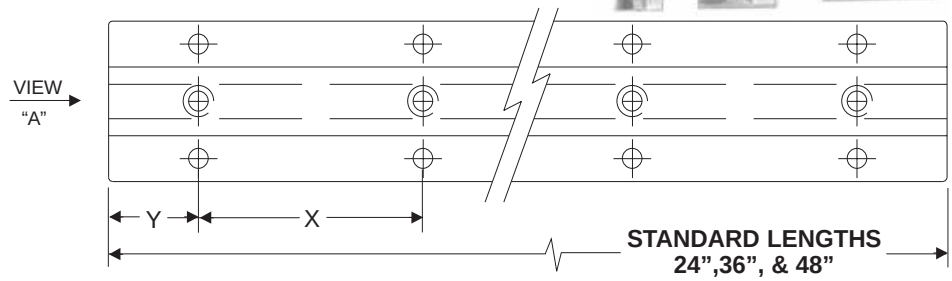
NOTES:

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

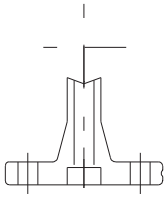
SHAFT SUPPORT ASSEMBLIES



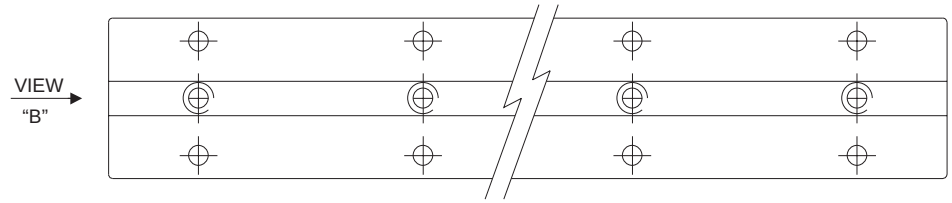
VIEW "A"



PREDRILLED SHAFT SUPPORT RAILS



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

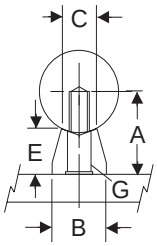
NOTES:
- (*) DOES NOT INCLUDE ANY HOLES IN SHAFT SUPPORT
- (**) LMSA-24-PD-36" & SMR-32-PD-36" (Y=2")
- MANUFACTURED FROM EXTRUDED 6061-T6 ALUMINUM FOR ENGINEERED PERFORMANCE

CUSTOM SHAFT SUPPORT AND ASSEMBLY INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

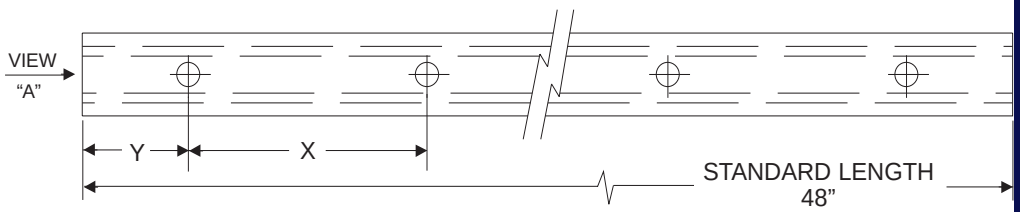
1-800-513-3163 **www.LM76.com**

PRECISION LINEAR SHAFTING

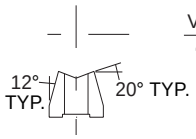
LOW SHAFT SUPPORT ASSEMBLIES



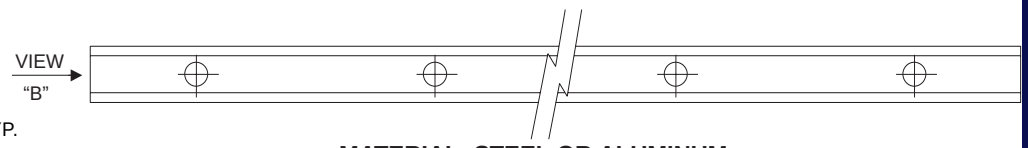
VIEW "A"



PRE-DRILLED LOW SHAFT SUPPORT RAILS



VIEW "B"



MATERIAL: STEEL OR ALUMINUM
Suffix for Aluminum A
Suffix for Steel S

SHAFT DIA.	SHAFT SUPPORT ASSEMBLY	PREDRILLED SHAFT SUPPORT RAIL	*PLAIN SHAFT SUPPORT RAIL	A +/-.001	B	C
1/2	LSRA-8	LSR-8-PD	LSR-8	.562	.370	1/4
5/8	LSRA-10	LSR-10-PD	LSR-10	.687	.450	5/16
3/4	LSRA-12	LSR-12-PD	LSR-12	.750	.510	3/8
1	LSRA-16	LSR-16-PD	LSR-16	1.000	.690	1/2
1-1/4	LSRA-20	LSR-20-PD	LSR-20	1.187	.780	9/16
1-1/2	LSRA-24	LSR-24-PD	LSR-24	1.375	.930	11/16
2	LSRA-32	LSR-32-PD	LSR-32	1.750	1.180	7/8

SHAFT DIA.	E (REF.)	G SCREW	G HOLE	X	Y	WT/FT LBS
1/2	.341	6-32	.169	4	2	.32
5/8	.412	8-32	.193	4	2	.49
3/4	.420	10-32	.221	6	3	.59
1	.560	1/4-20	.281	6	3	1.01
1-1/4	.626	5/16-18	.343	6	3	1.27
1-1/2	.703	3/8-16	.406	8	4	1.68
2	.845	1/2-13	.531	8	4	2.59

NOTES:

- (*) DOES NOT INCLUDE ANY HOLES IN SHAFT SUPPORT
- CUSTOM SHAFT SUPPORT AND ASSEMBLY INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

PRECISION LINEAR SHAFTING

HARDENED AND PRECISION GROUND METRIC LINEAR SHAFTING

PRECISION LINEAR SHAFTING

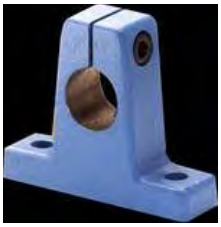
1060 STEEL CASE HARDENED AND PRECISION GROUND METRIC LINEAR SHAFTING					
NOMINAL DIA. (MM)	TOLERANCES CLASS "M" (h6) (IN)	MIN. DEPTH OF 60-65 Rc (MM)	WEIGHT PER IN. (LBS/IN)	MAX LENGTH (MM)	NOMINAL DIA. (MM)
5	.1969/.1965	0.4	.008	3600	5
6	.2362/.2359	0.4	.012	4000	6
8	.3150/.3146	0.4	.022	4000	8
10	.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:

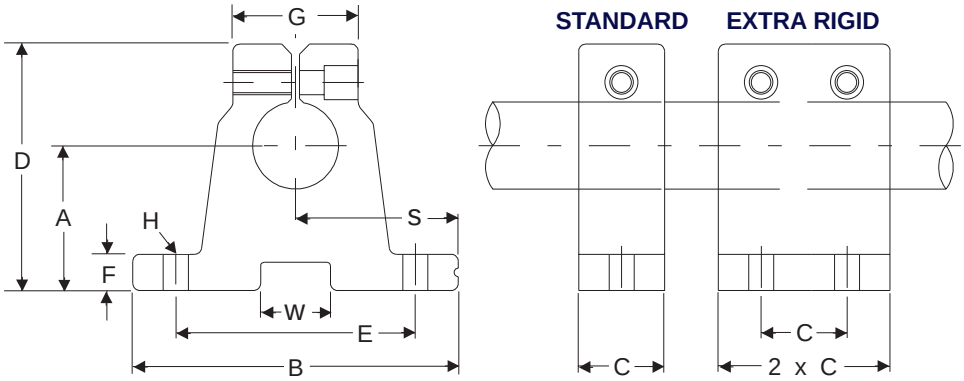
- PREDRILLED AND ASSEMBLED METRIC LINEAR SHAFTING AVAILABLE UPON REQUEST
- CUSTOM METRIC LINEAR SHAFTING INQUIRES CAN BE FAXED OR EMAILED TO: 413-525-3735 mquinn@LM76.com

Aluminum = A



Steel = S

STANDARD AND EXTRA RIGIDSHAFT 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

PRECISION LINEAR SHAFTING

CERAMIC COATED ALUMINUM SHAFTING

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

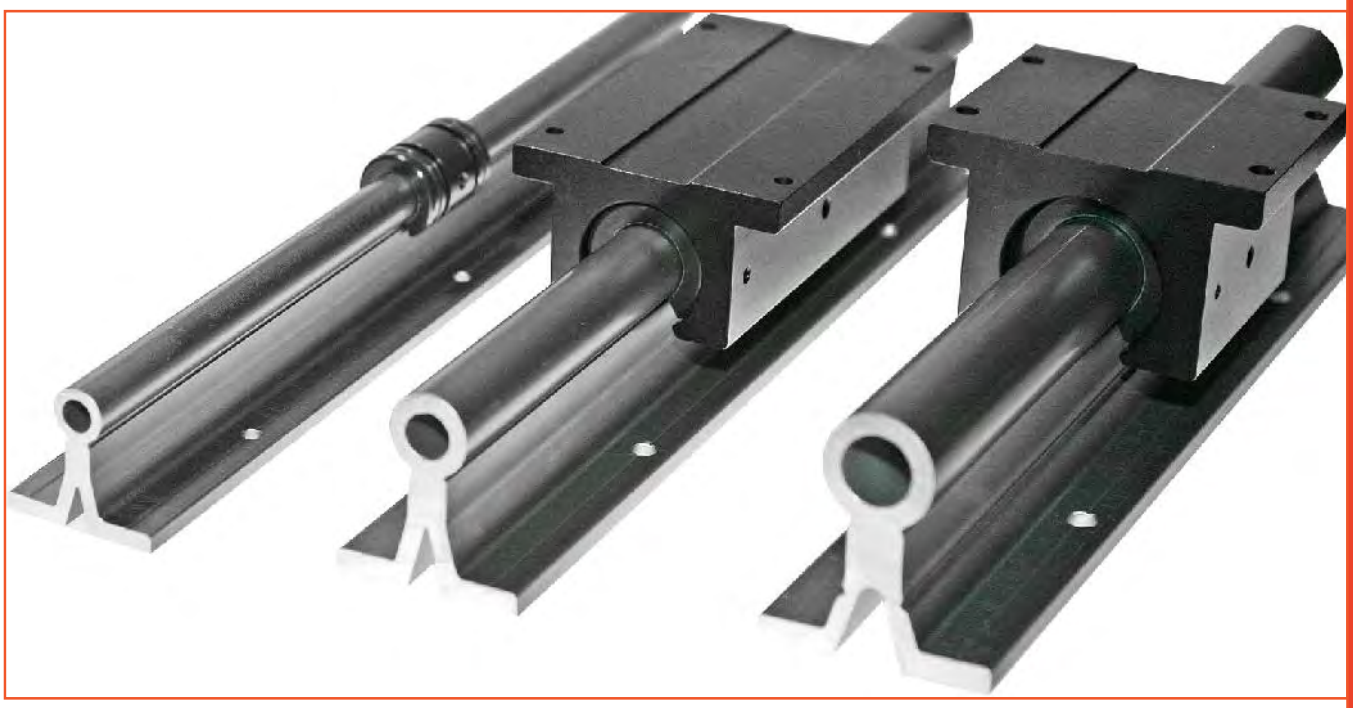
Machining to Blue Print

NOTE:

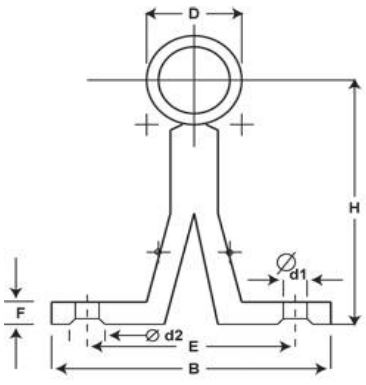
Cut-to-length shafting will not have coated ends. Fully coated specials are available upon request.

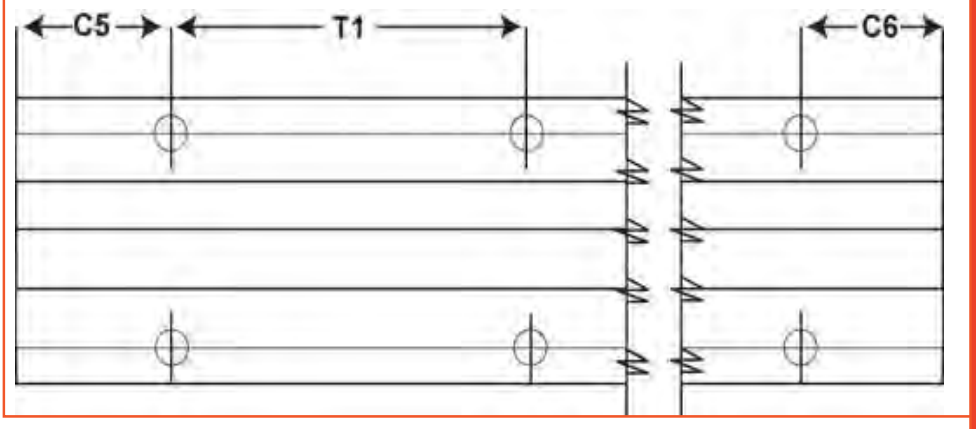
PRECISION LINEAR SHAFTING

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	30º	1.000	.200	4.00	1	2.95	144	.6
LMSC-12	.750	1.75	1.500	2.52	.220	.276	30º	1.250	.250	6.00	1	3.95	144	1.2
LMSC-16	1.000	2.126	1.750	.252	.280	.335	30º	1.500	.250	6.00	1	3.95	144	1.5





PRECISION LINEAR SHAFTING

Basic Motion Systems

Basic Slides
from *LM76*

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Designers & Manufacturers of Linear Bearings and Linear Slides

Linear bearings that EXCEED the Challenge

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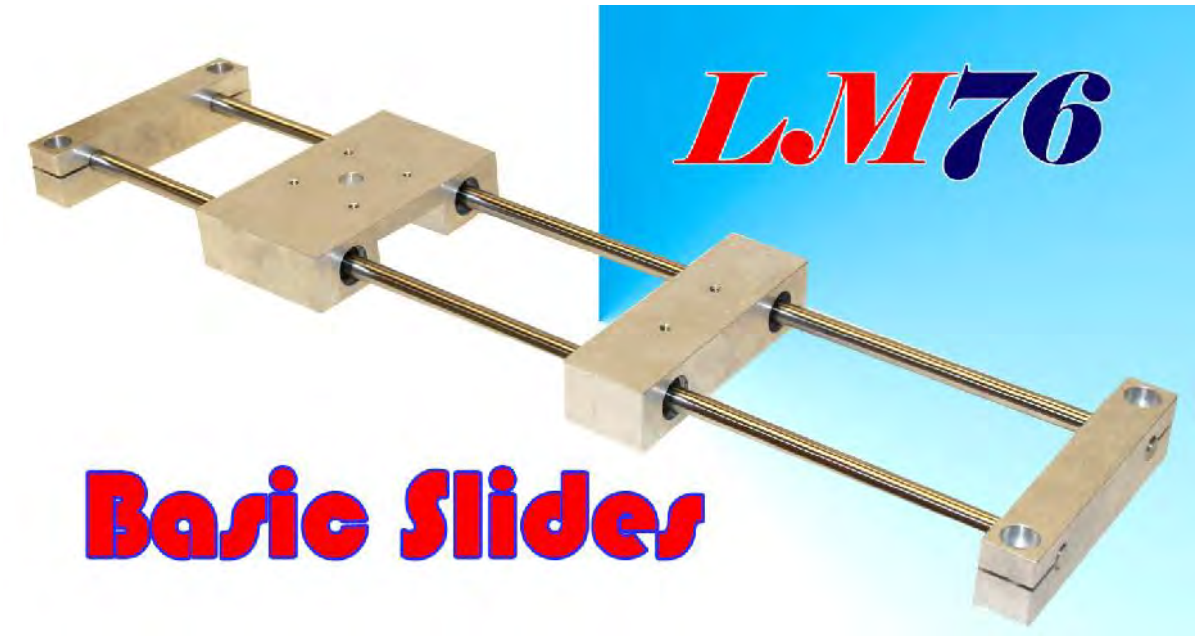


Basic linear slides are just that...basic. They are easy to understand, install and get the job done. Basic Slides come in 3 sizes and offer 2 carriage sizes: single (2 bearings) and double (4 bearings). The end support blocks offer a simple clamping and mounting design in one. Lastly, you can choose between 2 bearing packages: steel linear ball bearings or our Minuteman Teflon Composite, Self-Lube linear bearings. Basic slides offer some special options:

- Lightweight ceramic coated aluminum shafting (only when used with Minuteman Teflon Composite Bearings™)
- FDA/USDA/Washdown Compliant Ceramic Coated Aluminum Carriage Plate, Shafting, End Support Blocks and Minuteman White Teflon Composite Bearings™

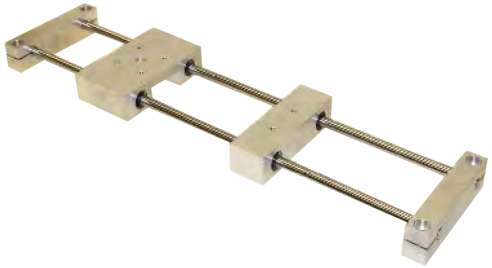
Bearing Package:

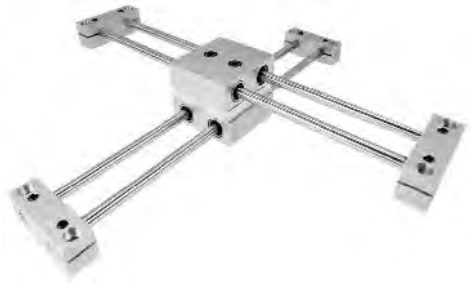
You have the option of using a steel jacketed linear ball bearing or our Minuteman Composite, Self-Lube bearing. To see the difference between them,visit: http://www.lm76.com/minuteman_vs__linear_ball.htm

Basic Linear Slides come standard with hard chrome plated shafting so corrosion is never an issue.

Basic Slides can be easily mounted in multiple axis configurations. Ask our engineering staff for more details.

BASIC LINEAR SLIDES





Loading:

P/N	Load N	Load lbs.
BS6-S x?	44.5	10
BS6-D x?	89	20
BS8-S x?	47	10.5
BS8-D x?	95	21
0BS12-S x?	110	24.5
BS12-D x?	127	28.5

Basic Slides employ unsupported shafting and are more prone to shaft deflection than fully supported shaft assemblies – particularly with longer travels. Therefore, we recommend you design around the above load values.

Ordering P/N

Part Number Key:

BS 8 - S - Bearing Style - Max Stroke - EB2

Slide OAL Length = Width of End Blocks x 2 + Carriage Block Length + Stroke

BS	6	S	D	MAX Stoke	Bearing Style
Basic Slide	8mm Shaft Hard Chrome Plated Steel	Single Block	Double Block	2 inches	M = Minuteman Teflon Composite Linear Bearing B = Linear Ball Bearing

Basic Slides come in kit form. LM76 will cut shafting to the length needed.

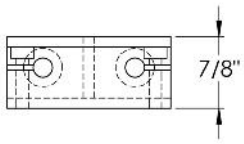
SolidWorks 3D Models are available upon request: Patrick@LM76.com

BASIC LINEAR SLIDES

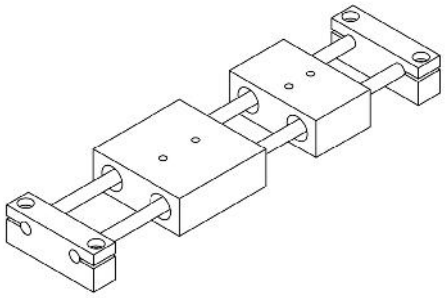
Off-the-Shelf and Easy!

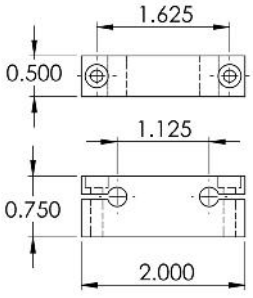
- ***Linear Ball Bearing or PTFE Composite Bearing***
- ***Single or Double Carriage Block***

BS 6 Linear Slide

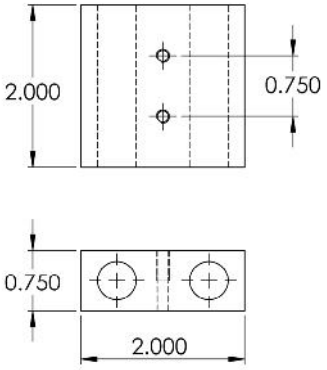


Assembled

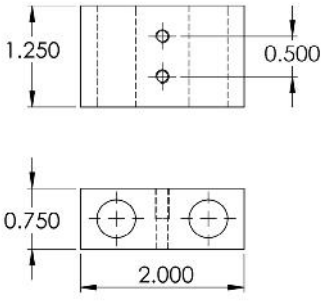




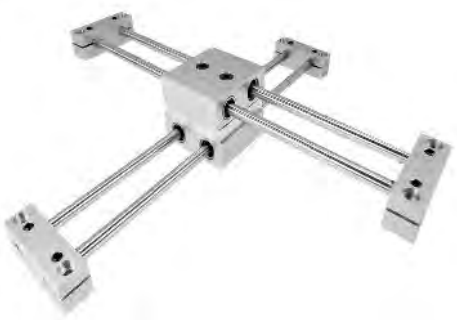
End Block



Double Block



Single Block



BASIC LINEAR SLIDES

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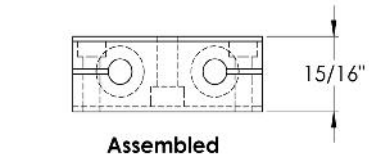
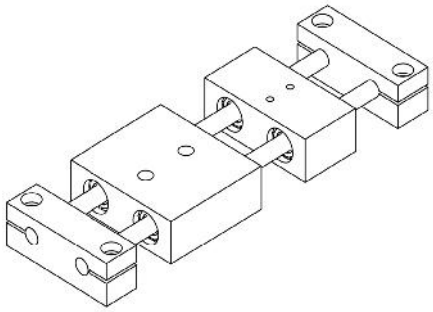
Off-the-Shelf and Easy!

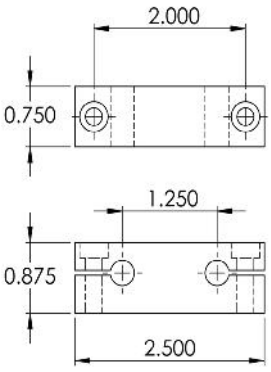
- ***Linear Ball Bearing or PTFE Composite Bearing***
- ***Single or Double Carriage Block***

BS 8 Linear Slide

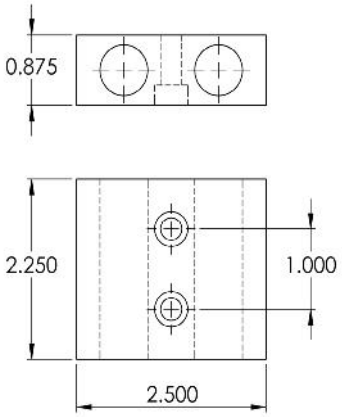


Assembled

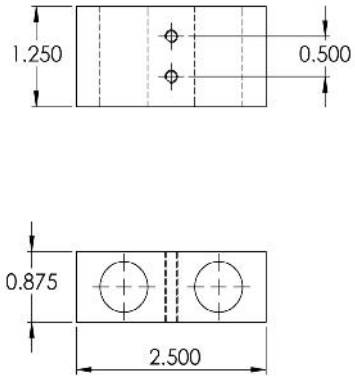




End Block



Double Block



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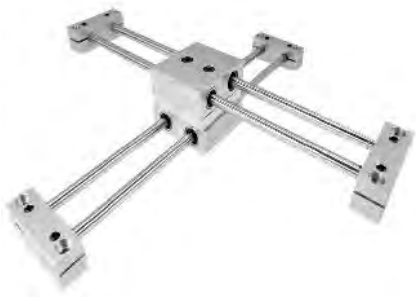

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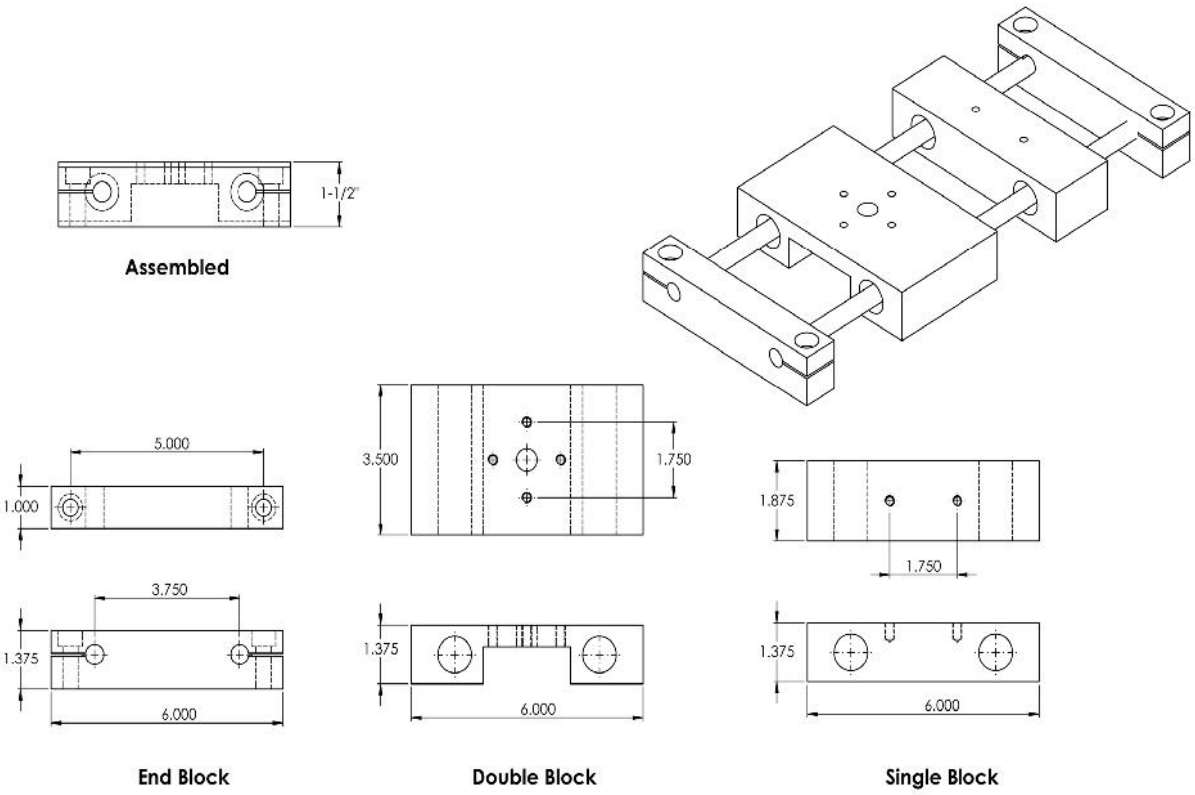

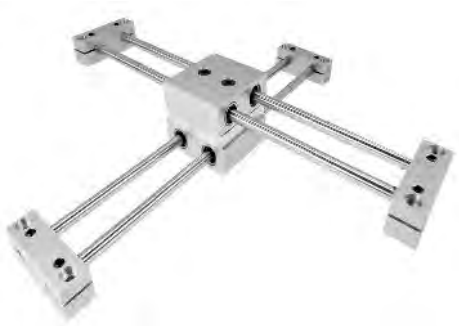

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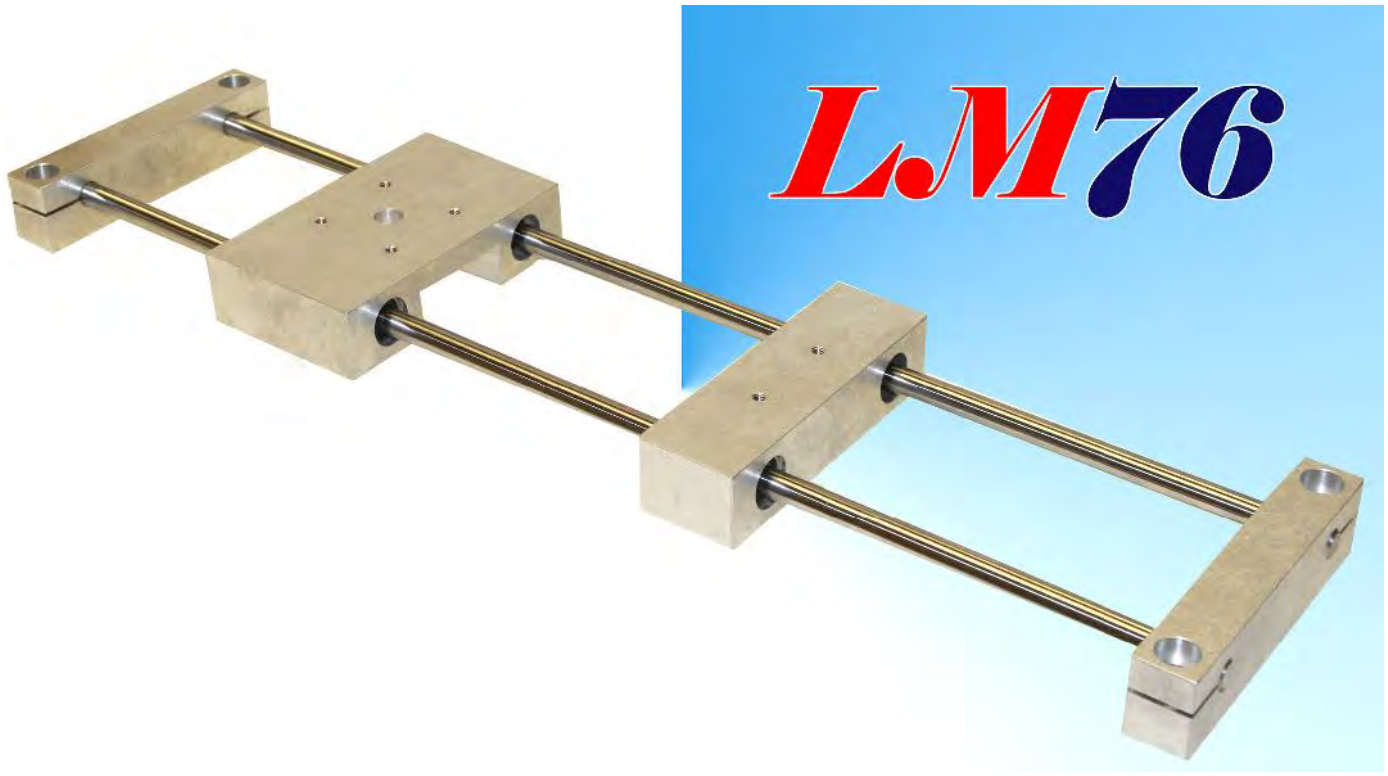

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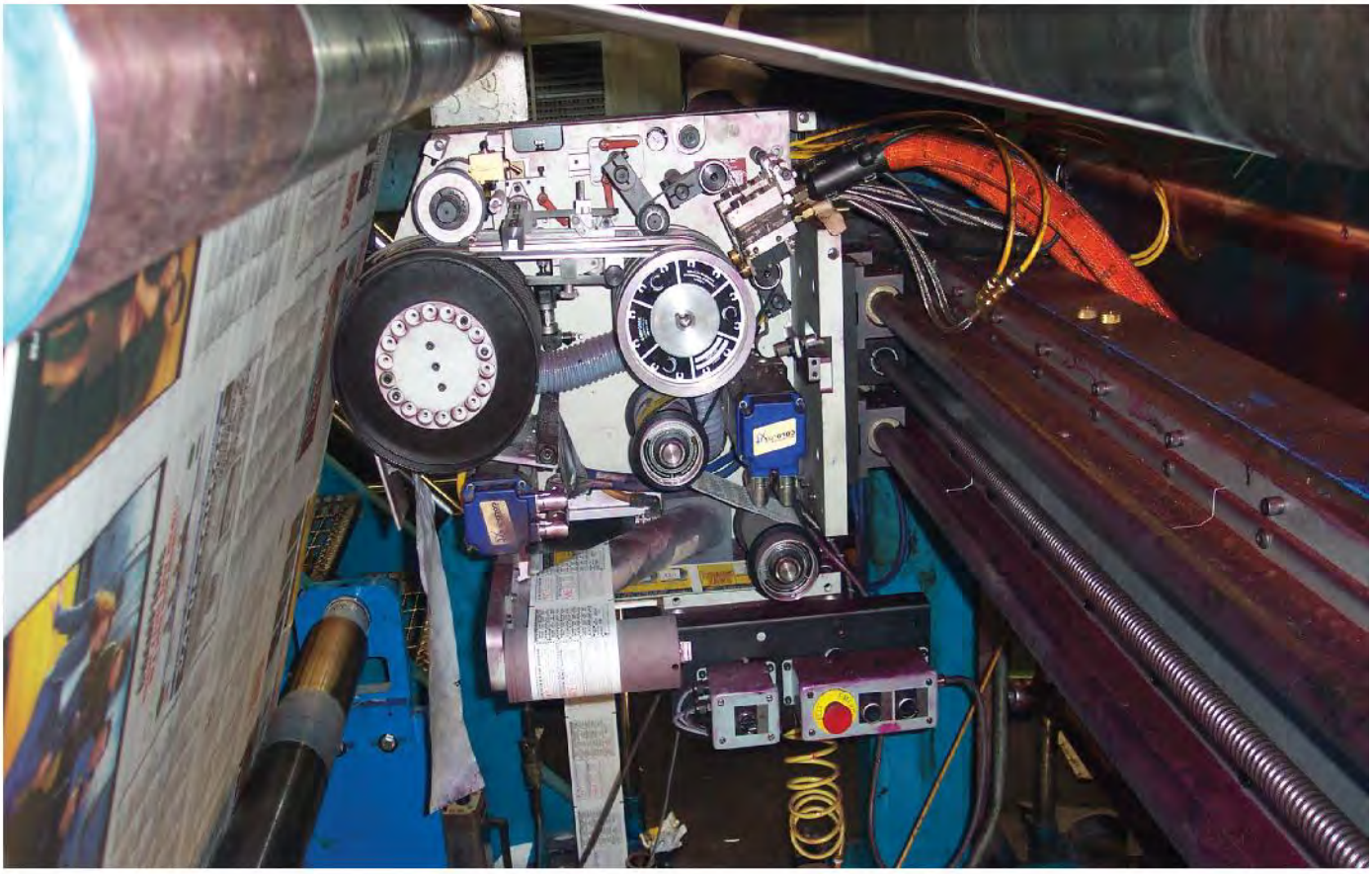

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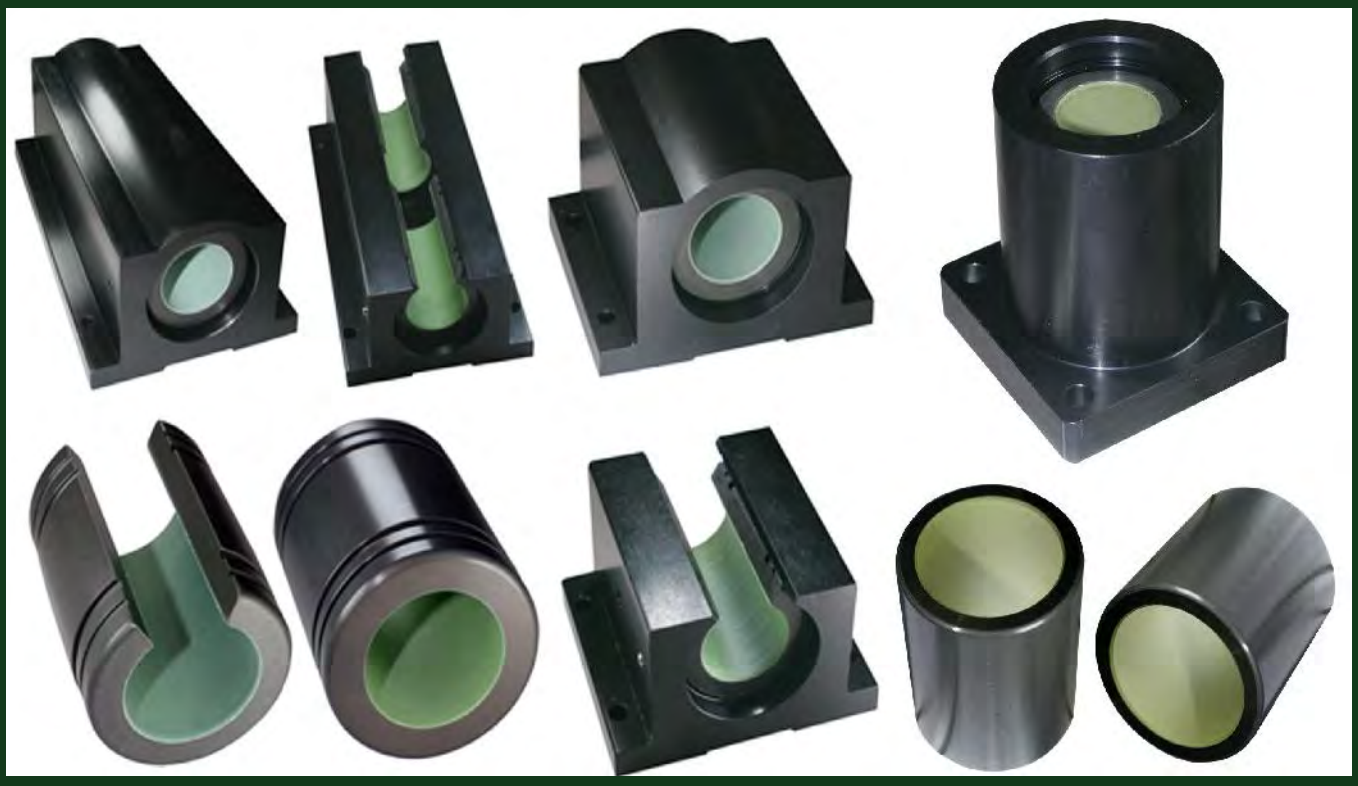

LM-Tarbell's modern facility in East Longmeadow Massachusetts
Home of the MINUTEMAN Linear/Rotary Bearing

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.

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