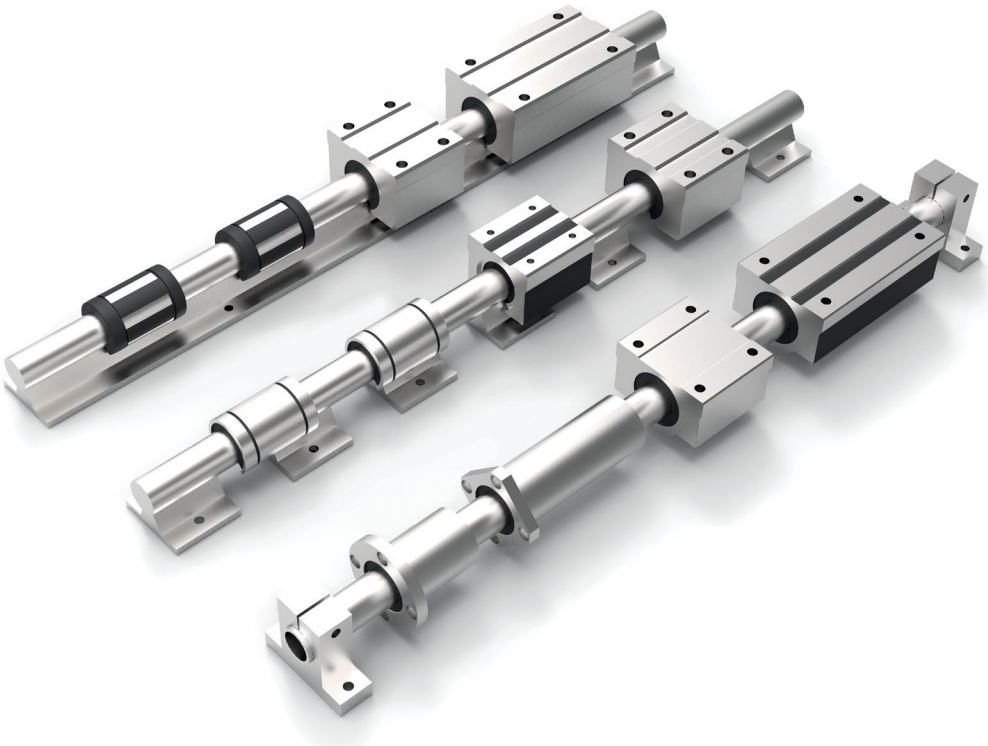
HepcoMotion®

Ball Bushings Range



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HepcoMotion Standard Ball Bushings

Standard ball bushings from HepcoMotion offer dimensional interchangeability with all major manufacturers and incorporate a rigid steel outer sleeve with between 3 and 6 ball circuits depending on size. Ball retainers are made from high grade polyamide for superior performance and low friction.

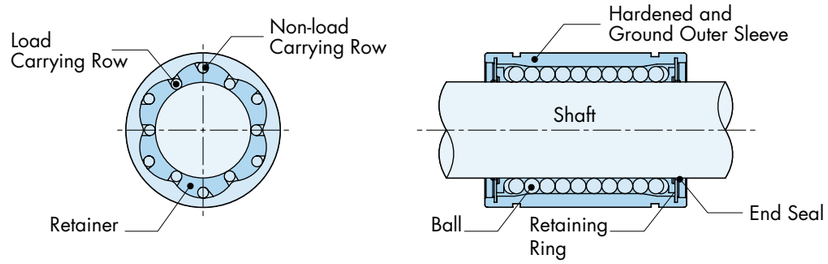


Fig 1. Linear Ball Bushing

HepcoMotion Super Ball Bushings

Super ball bushings from HepcoMotion offer approximately 3 times load capacity which equates to 27 times the life of standard ball bushings with the same overall dimensions. These high quality units consist of hardened steel segmented load bearing plates with precision ground ball tracks combined with a +/- 0.5 degree self alignment feature.
This ensures a uniform load distribution over the entire row of balls, preventing point loading that shortens life.

Self Alignment Feature

The outer surface of the steel load bearing plates are designed with a curved surface that in turn allows the bushing to absorb misalignment caused by inaccuracies between the shaft and ball bushing. In addition to ensuring equal load distribution, the feature provides smooth entry and exit of the balls in and out of the loading area.

The self alignment feature requires two super ball bushings to be mounted to one shaft in a conventional two parallel shaft arrangement.

- Super ball bushings are interchangeable with the ISO standard. (All main dimensions, outside diameter, bore and length are the same).
- Super ball bushings will reduce preparation and assembly time, as any shaft deflection and inaccuracies in the machining process will be accommodated by the self alignment feature.
- Easy entry and exit ball feature.
- Ball retainers are made from a high grade polyamide maintaining low friction over the entire travel length.
- Friction coefficient of 0.001 with oil lubrication.
- Can operate at temperatures up to 100°C and speeds up to 3m/sec.

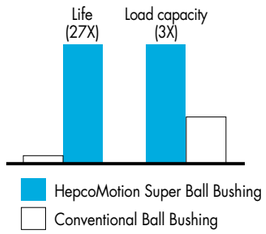


Fig 2. Comparing Life and Load Capacity

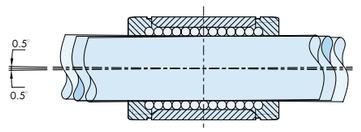
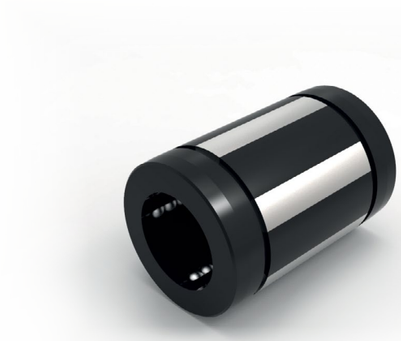
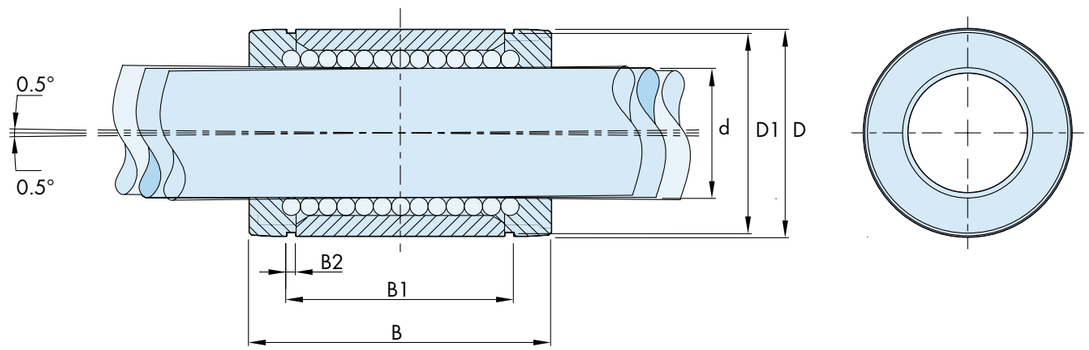


Fig 3. +/- 0.5° of Self-Alignment

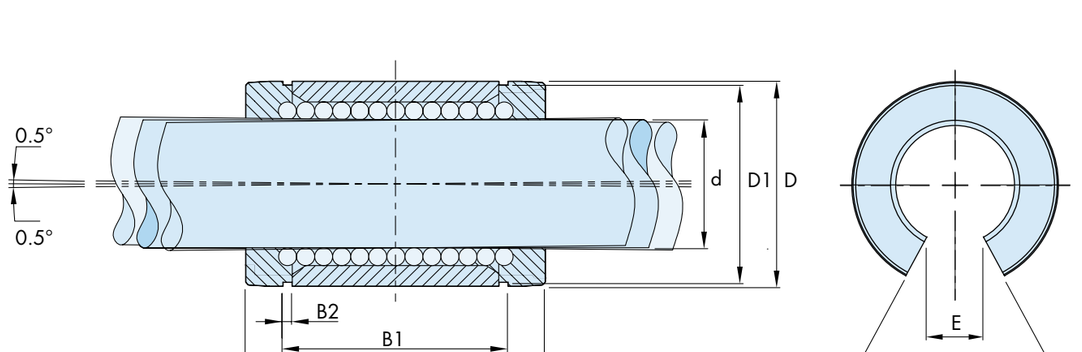
SBE type - Super European Ball Bushing (self aligning) Closed Type





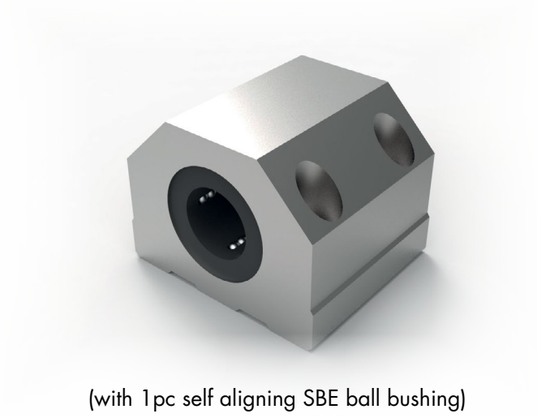
Part No.			Dimensions					Shaft	No. Ball Rows	Basic Load Ratings		Weight (g)
With Two Seals (Stock Range)	With One Seal	Without Seal	D	D1	B	B1	B2	d		dyn. C (N)	stat. Co (N)	
SBE16UU	**SBE16U**	**SBE16**	26	24.9	36	24.6	1.3	16	5	1140	710	26
SBE20UU	**SBE20U**	**SBE20**	32	30.5	45	31.2	1.6	20	6	2280	1400	60
SBE25UU	**SBE25U**	**SBE25**	40	38.5	58	43.7	1.85	25	6	4280	2740	120
SBE30UU	**SBE30U**	**SBE30**	47	44.5	68	51.7	1.85	30	6	5020	3365	184
SBE40UU	**SBE40U**	**SBE40**	62	58.5	80	60.3	2.15	40	6	8980	5460	342
SBE50UU	**SBE50U**	**SBE50**	75	71.5	100	77.3	2.65	50	6	12965	7940	586

SBEO type - Super European Ball Bushing (self aligning) Open Type

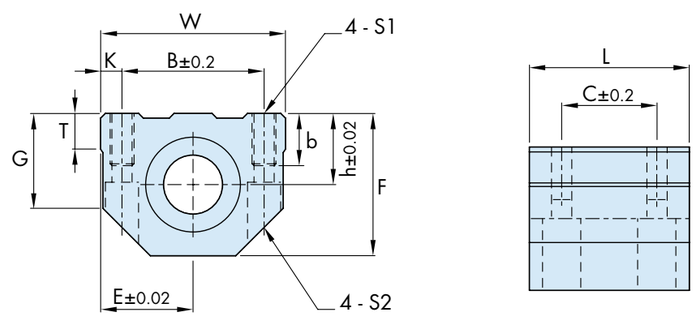


Part No.			Dimensions						Angle	Shaft	No. Ball Rows	Basic Load Ratings		Weight (g)
With Two Seals (Stock Range)	With One Seal	Without Seal	D	D1	B	B1	B2	E	θ	d		dyn. C (N)	stat. Co (N)	
SBEO16UU	**SBEO16U**	**SBEO16**	26	24.9	36	24.6	1.3	9	68°	16	4	1330	910	20
SBEO20UU	**SBEO20U**	**SBEO20**	32	30.5	45	31.2	1.6	9	55°	20	5	2310	1445	50
SBEO25UU	**SBEO25U**	**SBEO25**	40	38.5	58	43.7	1.85	11.5	57°	25	5	4330	2820	100
SBEO30UU	**SBEO30U**	**SBEO30**	47	44.5	68	51.7	1.85	14	57°	30	5	5080	3460	154
SBEO40UU	**SBEO40U**	**SBEO40**	62	58.5	80	60.3	2.15	19.5	56°	40	5	9095	5625	286
SBEO50UU	**SBEO50U**	**SBEO50**	75	71.5	100	77.3	2.65	22.5	54°	50	5	13130	8175	486

CS type - Super European Ball Bushing Pillow Block Closed Type



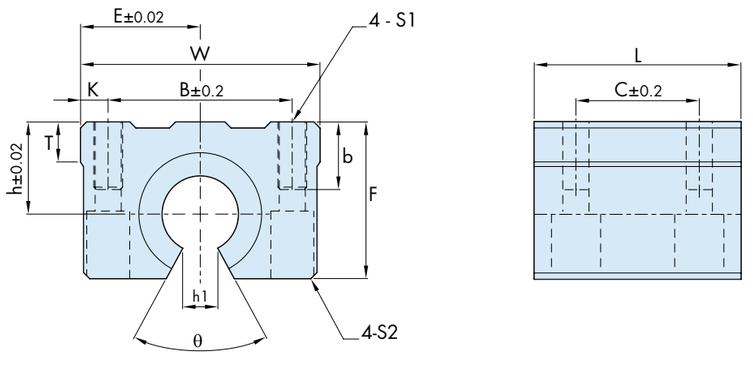
(with 1pc self aligning SBE ball bushing)



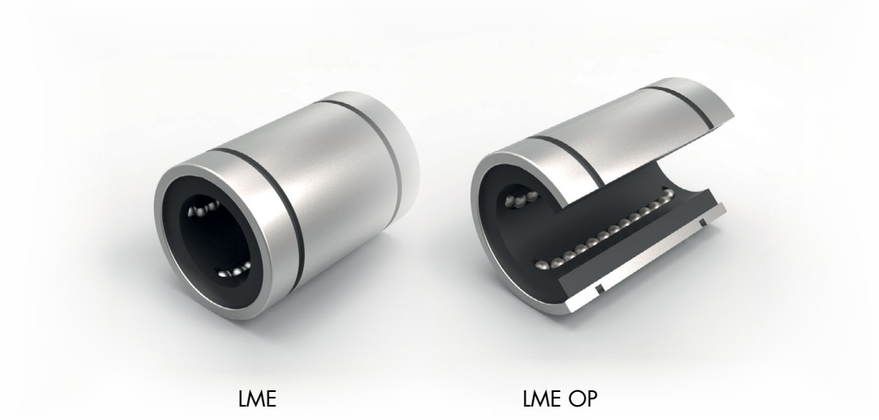
Part No.	Dimensions							Mounting Dimensions						Shaft	No. Ball Rows	Basic Load Ratings		Weight (g)
	h	E	W	L	F	G	T	B	C	K	b	S1	S2			dyn. C (N)	stat. Co (N)	
CS16UUB	22	26.5	53	43	42	29	10	40	26	6.5	13	M6	M5	16	5	1140	710	204
CS20UUB	25	30	60	54	50	34	12	45	32	7.5	18	M8	M6	20	6	2280	1400	340
CS25UUB	30	39	78	67	60	40	15	60	40	9	22	M10	M8	25	6	4280	2740	636
CS30UUB	35	43.5	87	79	70	48	17	68	45	9.5	22	M10	M8	30	6	5020	3365	970
CS40UUB	45	54	108	91	90	62	22	86	58	11	26	M12	M10	40	6	8980	5460	1740
CS50UUB	50	66	132	113	105	68	25	108	50	12	34	M16	M12	50	6	12965	7940	2922

CSO type - Super European Ball Bushing Pillow Block Open Type

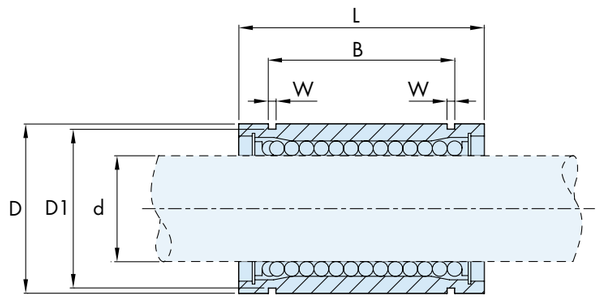
(with 1pc self aligning SBEO ball bushing)



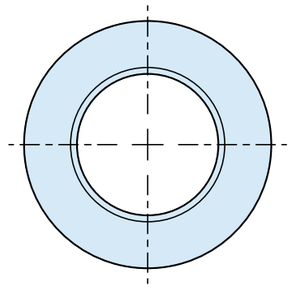
Part No.	Dimensions							Mounting Dimensions							Shaft	No. Ball Rows	Basic Load Ratings		Weight (g)
	h	E	W	L	F	T	h1	θ	B	C	K	b	S1	S2			dyn. C (N)	stat. Co (N)	
CSO16UUB	22	26.5	53	43	35	8	9	68°	40	26	6.5	13	M6	M5	16	4	1330	910	160
CSO20UUB	25	30	60	54	42	10	9	55°	45	32	7.5	18	M8	M6	20	5	2310	1445	280
CSO25UUB	30	39	78	67	51	13	11.5	57°	60	40	9	22	M10	M8	25	5	4330	2820	552
CSO30UUB	35	43.5	87	79	60	15	14	57°	68	45	9.5	22	M10	M8	30	5	5080	3460	846
CSO40UUB	45	54	108	91	77	20	19.5	56°	86	58	11	26	M12	M10	40	5	9095	5625	1516
CSO50UUB	50	66	132	113	88	25	22.5	54°	108	50	12	34	M16	M12	50	5	13130	8175	2546



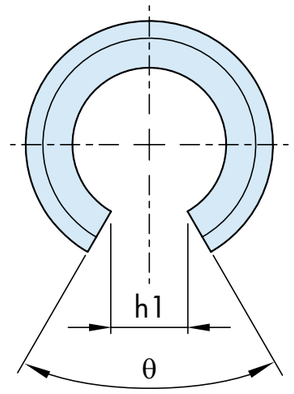
LME LME OP



LME Series				Basic Load Ratings		Working Bore Diameter
Standard Type		Open Type		dyn. C (N)	stat. Co (N)	d (mm)
Part No.	No. of Ball Circuit	Part No.	No. of Ball Circuit			
LME5UU	4	-	-	200	260	5
LME8UU	4	-	-	260	400	8
LME12UU	4	**LME12UUOP**	3	410	590	12
LME16UU	5	**LME16UUOP**	4	770	1170	16
LME20UU	5	**LME20UUOP**	4	860	1370	20
LME25UU	6	**LME25UUOP**	5	980	1560	25
LME30UU	6	**LME30UUOP**	5	1560	2740	30
LME40UU	6	**LME40UUOP**	5	2150	4010	40
LME50UU	6	**LME50UUOP**	5	3280	7930	50
LME60UU	6	**LME60UUOP**	5	4700	9990	60

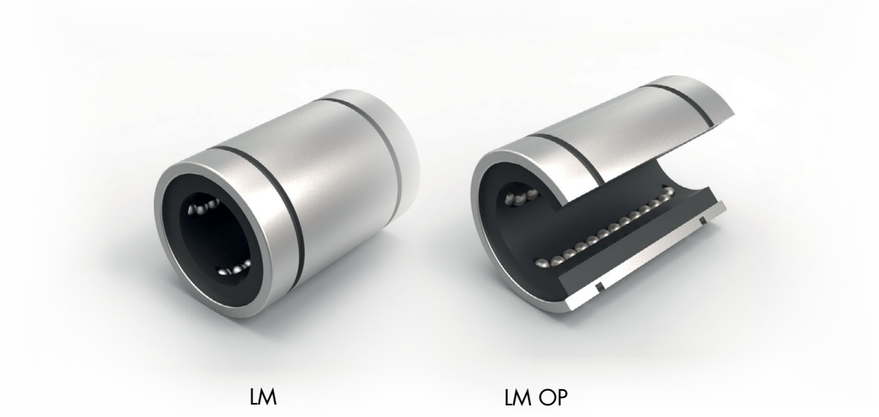


LME

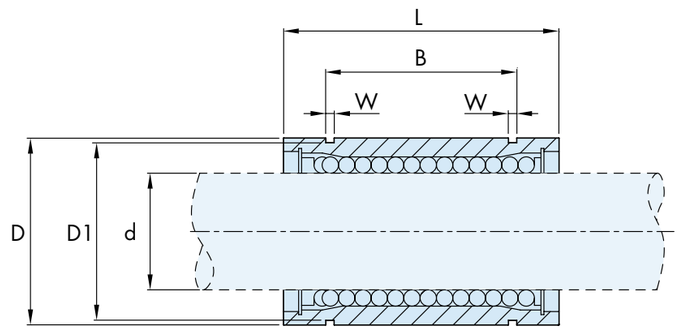


LME OP

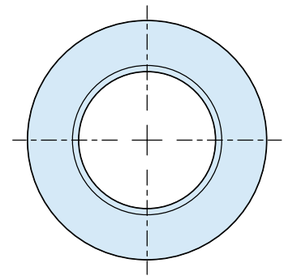
Part No.	Part No.	Dimensions (mm)										Weight (g)
		D		L		B		W	D1	h1	θ	
		(mm)	Tol (µm)	(mm)	Tol (mm)	(mm)	Tol (mm)					
LME5UU	-	12	0 -8	22	0 -0.2	14.5	0 -0.2	1.1	11.5	-	-	12
LME8UU	-	16		25		16.5		1.1	15.2	-	-	20
LME12UU	**LME12UUOP**	22	0 -9	32		22.9		1.3	21	7.5	78°	41
LME16UU	**LME16UUOP**	26		36		24.9		1.3	24.9	10	78°	57
LME20UU	**LME20UUOP**	32	0 -11	45		31.5		1.6	30.3	10	60°	91
LME25UU	**LME25UUOP**	40		58	0 -0.3	44.1	0 -0.3	1.85	37.5	12.5	60°	215
LME30UU	**LME30UUOP**	47		68		52.1		1.85	44.5	12.5	50°	325
LME40UU	**LME40UUOP**	62	0 -13	80		60.6		2.15	59	16.8	50°	705
LME50UU	**LME50UUOP**	75		100		77.6		2.65	72	21	50°	1130
LME60UU	**LME60UUOP**	90	0 -15	125	0 -0.4	101.7	0 -0.4	3.15	86.5	27.2	54°	2220



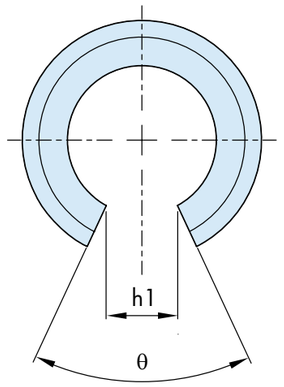
LM LM OP



LM Series				Basic Load Ratings		Working Bore Diameter
Standard Type		Open Type		dyn. C (N)	stat. Co (N)	d (mm)
Part No.	No. of Ball Circuit	Part No.	No. of Ball Circuit			
LM4UU	4	-	-	88	108	4
LM5UU	4	-	-	167	206	5
LM6UU	4	-	-	200	260	6
LM8SUU	4	-	-	170	220	8
LM8UU	4	-	-	260	400	8
LM10UU	4	-	-	370	540	10
LM12UU	4	**LM12UUOP**	3	410	590	12
LM13UU	4	**LM13UUOP**	3	500	770	13
LM16UU	5	**LM16UUOP**	4	770	1170	16
LM20UU	5	**LM20UUOP**	4	860	1370	20
LM25UU	6	**LM25UUOP**	5	980	1560	25
LM30UU	6	**LM30UUOP**	5	1560	2740	30
LM35UU	6	**LM35UUOP**	5	1660	3130	35
LM40UU	6	**LM40UUOP**	5	2150	4010	40
LM50UU	6	**LM50UUOP**	5	3820	7930	50
LM60UU	6	**LM60UUOP**	5	4700	9990	60

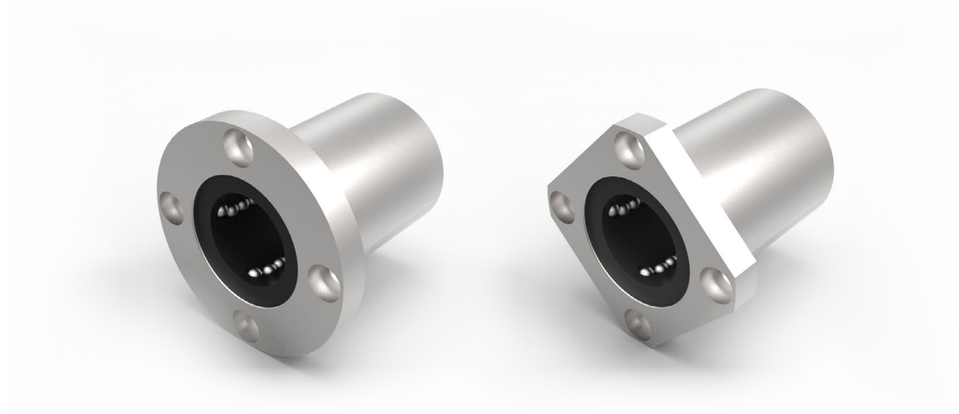


LM

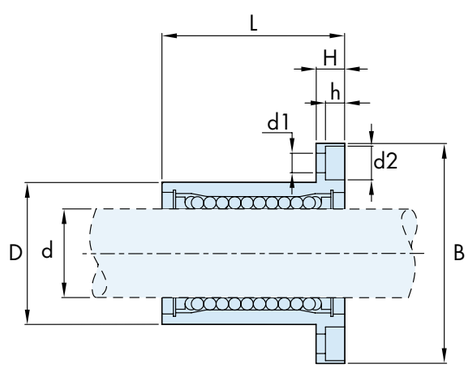


LM OP

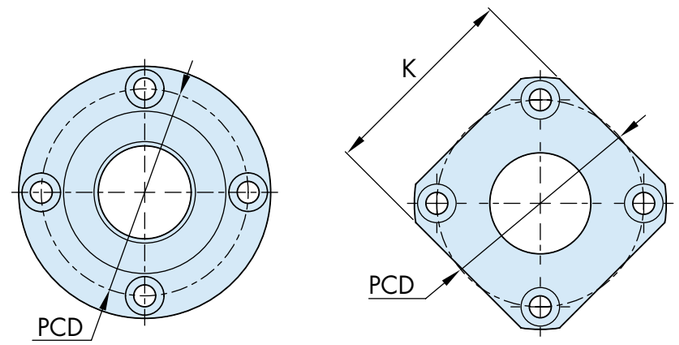
Part No.	Part No.	Dimensions (mm)										Weight (g)
		D		L		B		W	D1	h1	θ	
		(mm)	Tol. (µm)	(mm)	Tol. (mm)	(mm)	Tol. (mm)					
LM4UU	-	8	0 -9	12	0 -0.12	-	-	-	-	-	-	1.9
LM5UU	-	10	0 -8	15	0 -0.12	10.2		1.1	9.6	-	-	4
LM6UU	-	12		19		13.5		1.1	11.5	-	-	8
LM8SUU	-	15	0 -11	17		11.5		1.1	14.3	-	-	11
LM8UU	-	15		24		17.5	0 -0.2	1.1	14.3	-	-	16
LM10UU	-	19		29	0 -0.2	22		1.3	18	-	-	30
LM12UU	**LM12UUOP**	21	0 -13	30		23		1.3	20	8	80°	31.5
LM13UU	**LM13UUOP**	23		32		23		1.3	22	9	80°	43
LM16UU	**LM16UUOP**	28		37		26.5		1.6	27	11	80°	69
LM20UU	**LM20UUOP**	32	0 -16	42		30.5		1.6	30.5	11	60°	87
LM25UU	**LM25UUOP**	40		59		41		1.85	38	12	50°	220
LM30UU	**LM30UUOP**	45		64		44.5		1.85	43	15	50°	250
LM35UU	**LM35UUOP**	52	0 -19	70	0 -0.3	49.5	0 -0.3	2.1	49	17	50°	390
LM40UU	**LM40UUOP**	60		80		60.5		2.1	57	20	50°	585
LM50UU	**LM50UUOP**	80		100		74		2.6	76.5	25	50°	1580
LM60UU	**LM60UUOP**	90	0 -22	110		85		3.15	86.5	30	50°	2000



LMF LMK



Part No.		No. of Ball Circuit	Weight (g)	Basic Load Ratings		Working Bore Diameter
Circular type	Square type			Dyn. C (N)	Stat. Co (N)	d (mm)
LMF6UU	**LMK6UU**	4	26.5	200	260	6
LMF8UU	**LMK8UU**	4	40	260	400	8
LMF10UU	**LMK10UU**	4	78	370	540	10
LMF12UU	**LMK12UU**	4	76	410	590	12
LMF13UU	**LMK13UU**	4	94	500	770	13
LMF16UU	**LMK16UU**	5	134	770	1170	16
LMF20UU	**LMK20UU**	5	180	860	1370	20
LMF25UU	**LMK25UU**	6	340	980	1560	25
LMF30UU	**LMK30UU**	6	460	1560	2740	30
LMF35UU	**LMK35UU**	6	795	1660	3130	35
LMF40UU	**LMK40UU**	6	1054	2150	4010	40
LMF50UU	**LMK50UU**	6	2200	3820	7930	50
LMF60UU	**LMK60UU**	6	2960	4700	9990	60

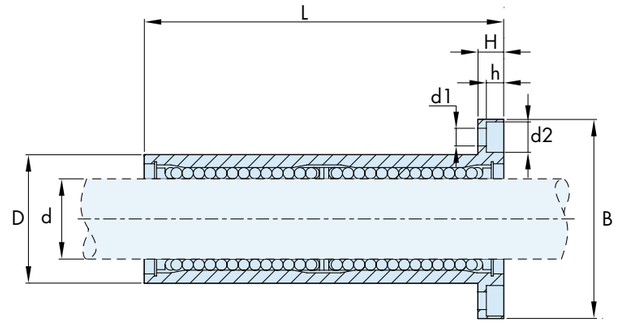


LMF LMK

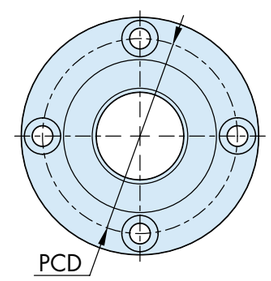
Part No.		Dimensions (mm)								
		D		L		B	H	PCD	K	d1 x d2 x h
Circular type	Square type	(mm)	Tol. (µm)	(mm)	Tol. (mm)	(mm)				
LMF6UU	**LMK6UU**	12	0 -11	19	0 -0.2	28	5	20	22	3.4 x 6.5 x 3.3
LMF8UU	**LMK8UU**	15		24		32	5	24	25	3.4 x 6.5 x 3.3
LMF10UU	**LMK10UU**	19	0 -13	29		40	6	29	30	4.5 x 8 x 4.4
LMF12UU	**LMK12UU**	21		30		42	6	32	32	4.5 x 8 x 4.4
LMF13UU	**LMK13UU**	23		32		43	6	33	34	4.5 x 8 x 4.4
LMF16UU	**LMK16UU**	28		37		48	6	38	37	4.5 x 8 x 4.4
LMF20UU	**LMK20UU**	32	0 -16	42		54	8	43	42	5.5 x 9.5 x 5.4
LMF25UU	**LMK25UU**	40		59	0 -0.3	62	8	51	50	5.5 x 9.5 x 5.4
LMF30UU	**LMK30UU**	45		64		74	10	60	58	6.6 x 11 x 6.5
LMF35UU	**LMK35UU**	52	0 -19	70		82	10	67	64	6.6 x 11 x 6.5
LMF40UU	**LMK40UU**	60		80		96	13	78	75	9 x 14 x 8.6
LMF50UU	**LMK50UU**	80		100		116	13	98	92	9 x 14 x 8.6
LMF60UU	**LMK60UU**	90	0 -22	110		134	18	112	106	11 x 17.5 x 10.8

LMF L

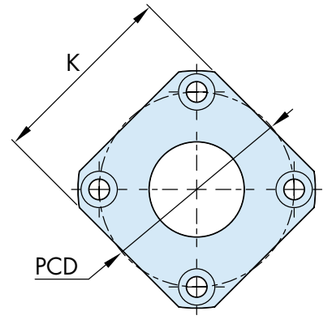
LMK L



Part No.		No. of Ball Circuit	Weight (g)	Basic Load Ratings		Working Bore Diameter
Circular Type	Square Type			dyn. C (N)	stat. Co (N)	d (mm)
LMF6LUU	**LMK6LUU**	4	31	320	520	6
LMF8LUU	**LMK8LUU**	4	53	430	780	8
LMF10LUU	**LMK10LUU**	4	105	580	1100	10
LMF12LUU	**LMK12LUU**	4	100	650	1200	12
LMF13LUU	**LMK13LUU**	4	130	810	1570	13
LMF16LUU	**LMK16LUU**	5	187	1230	2350	16
LMF20LUU	**LMK20LUU**	5	260	1400	2750	20
LMF25LUU	**LMK25LUU**	6	515	1560	3140	25
LMF30LUU	**LMK30LUU**	6	655	2490	5490	30
LMF35LUU	**LMK35LUU**	6	970	2650	6470	35
LMF40LUU	**LMK40LUU**	6	1560	3430	8040	40
LMF50LUU	**LMK50LUU**	6	3500	6080	15900	50
LMF60LUU	**LMK60LUU**	6	4500	7650	20000	60



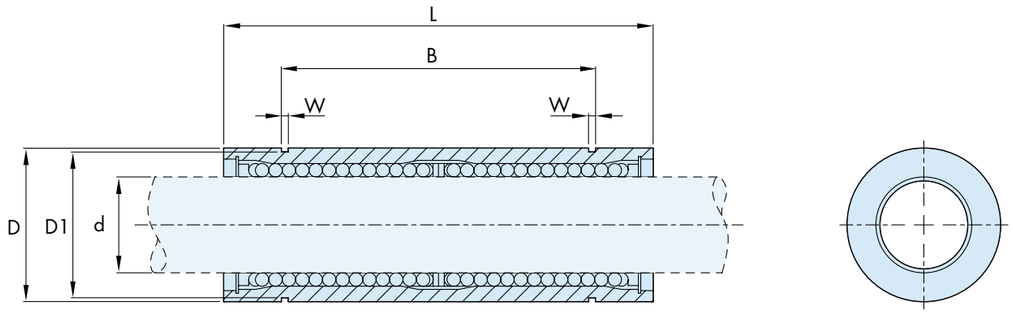
LMFL



LMKL

Part No.		Dimensions (mm)								
Circular Type	Square Type	D		L		B	H	PCD	K	d1 x d2 x h
		(mm)	Tol. (mm)	(mm)	Tol. (mm)	(mm)				
LMF6LUU	**LMK6LUU**	12	0 -13	35	0 -0.3	28	5	20	22	3.4 x 6.5 x 3.3
LMF8LUU	**LMK8LUU**	15		45		32	5	24	25	3.4 x 6.5 x 3.3
LMF10LUU	**LMK10LUU**	19	0 -16	55		40	6	29	30	4.5 x 8 x 4.4
LMF12LUU	**LMK12LUU**	21		57		42	6	32	32	4.5 x 8 x 4.4
LMF13LUU	**LMK13LUU**	23		61		43	6	33	34	4.5 x 8 x 4.4
LMF16LUU	**LMK16LUU**	28		70		48	6	38	37	4.5 x 8 x 4.4
LMF20LUU	**LMK20LUU**	32	0 -16	80		54	8	43	42	5.5 x 9.5 x 5.4
LMF25LUU	**LMK25LUU**	40		112	0 -0.4	62	8	51	50	5.5 x 9.5 x 5.4
LMF30LUU	**LMK30LUU**	45		123		74	10	60	58	6.6 x 11 x 6.5
LMF35LUU	**LMK35LUU**	52	0 -19	135		82	10	67	64	6.6 x 11 x 6.5
LMF40LUU	**LMK40LUU**	60		154		96	13	78	75	9 x 14 x 8.6
LMF50LUU	**LMK50LUU**	80		192		116	13	98	92	9 x 14 x 8.6
LMF60LUU	**LMK60LUU**	90	0 -22	211		134	18	112	106	11 x 17.5 x 10.8

LMEL Series - Extended Length Ball Bushing



LML Series		Working Bore Diameter	Dimensions (mm)								Weight (g)	Basic Load Ratings	
Part No.	No. of Ball Circuit	d (mm)	D (mm)	D Tol. (µm)	L (mm)	L Tol. (mm)	B (mm)	B Tol. (mm)	W	D1		dyn. C (N)	stat. Co (N)
LME8LUU	4	8	16	0 -9	46	0 -0.3	33	0 -0.3	1.1	15.2	40	421	804
LME12LUU	4	12	22	0 -11	61		45.8		1.3	21	80	813	1570
LME16LUU	5	16	26		68		49.8		1.3	24.9	115	921	1780
LME20LUU	5	20	32	0 -13	80		61		1.6	30.3	180	1370	2740
LME25LUU	6	25	40		112	0 -0.4	82	0 -0.4	1.85	38	430	1570	3140
LME30LUU	6	30	47		123		104.2		1.85	44.5	615	2500	5490
LME40LUU	6	40	62	0 -15	151		121.2		2.15	59	1400	3430	8040
LME50LUU	6	50	75		192		155.2		2.65	72	2320	6080	15900
LME60LUU	6	60	90	0 -20	209		170		3.15	86.5	3900	7550	20000

Precision Linear Shaft

Correct shaft selection is vital if maximum performance is to be achieved from our linear system. Hepco Precision Shaft has been developed to provide excellent performance when used with either recirculating ball bushings or plain bearing technology.

An extensive range of shaft materials are available and HepcoMotion offers a full machining facility with fast turnaround.

Other types of shaft available include:
- Specials (up to 150mm Ø).
- Tubing (Please enquire).

Shaft Type: Metric	Part Ref.	Hardness RC	TOL	Diameter Options															
				4	5	6	8	10	12	13	16	20	25	30	35	40	50	60	80
Metric Carbon Steel CK53 Hardened and Ground	NIMxx	60	h6	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Metric Stainless Steel (400 series) Hardened and Ground	NIMxx-SS	50	h6	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Metric Soft Stainless Steel (300 Series) Ground	NIMxx-SS316	X	h6	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Metric Hardcoat Anodised Aluminium	NI-MAxx	X	h6	–	–	–	√	√	√	–	√	√	√	–	–	–	–	–	–

Shaft Type: Imperial	Part Ref.	Hardness RC	TOL	Diameter Options									
				3/16	1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2
Imperial Carbon Steel CK53 Hardened and Ground	NILxx	60	Class L	√	√	√	√	√	√	√	√	√	√
Imperial Stainless Steel (400 Series) Hardened and Ground	NILxx-SS	50	Class L	√	√	√	√	√	√	√	√	√	√
Imperial Soft Stainless Steel (300 Series) Ground	NILxx-SS316	X	Class L	√	√	√	√	√	√	√	√	√	√
Imperial Hardcoat Anodised Aluminium	NILAxx	X	Class L	√	√	√	√	√	√	√	√	√	√

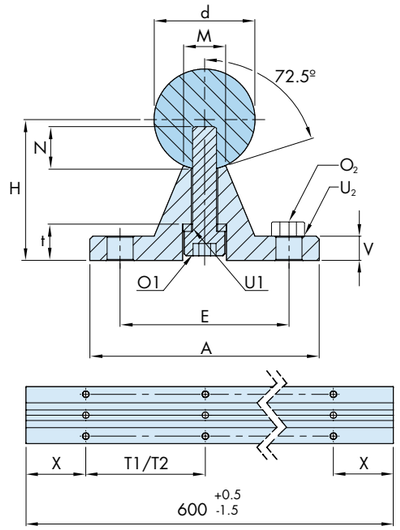
Metric Shaft Support Rails

Shaft support rails will prevent shaft deflection under load and provide a high level of rigidity in order to achieve optimum performance from your open type Hepco Ball Bushing or any other open recirculating or plain linear bushing.

Support Rails are of low overall height making them particularly suitable for use with Hepco Pillow Blocks. The standard support rail is manufactured from aluminium alloy and comes in 600mm lengths only. These are then cut/butted together to fit to the overall length of the one piece shaft.

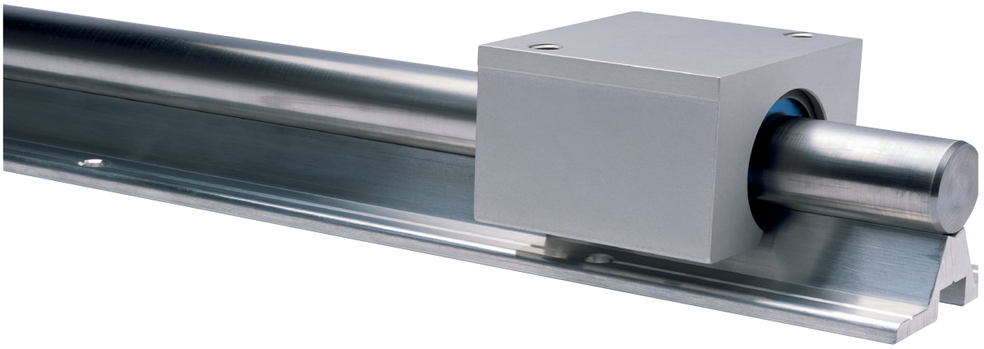
All types of shaft can be supplied drilled for customer assembly or fitted to the support rails for ease of supply.

For standard 600mm aluminium support rails, X = half of T1 or T2. For support rails which require cutting/butting, please confirm Dimension X when ordering.



X = 1/2 hole pitch T_1 or T_2

For Shaft Diameter	d	H_1 ±0.01	A	V	M	O_1	U_1	N	E	t	O_2	U_2	T1	T2
12	12	22	40	5	5.8	M4x20	5	8	29	4.5	M4	4.5	75	120
16	16	26	45	5	7	M5x20	5.5	9	33	7.6	M5	5.5	100	150
20	20	32	52	6	8.3	M6x25	6.6	11	37	8.6	M6	6.6	100	150
25	25	36	57	6	10.8	M8x30	8.5	15	42	9	M6	6.5	120	200
30	30	42	69	7	11	M10x35	10.5	17	51	10	M8	9	150	200
40	40	50	73	8	15	M10x40	10.5	19	55	9.5	M8	9	200	300
50	50	60	84	9	19	M12x45	14	21	63	11.2	M10	11	200	300



Ordering Shaft

Shaft & Support Rail Fully Assembled

Simply prefix the shaft reference with AU.

Example – AU NIM 20 X L2000 T2

Drilled Shaft Only

Simply state the shaft reference and add T1 or T2 depending upon shaft hole centres required.

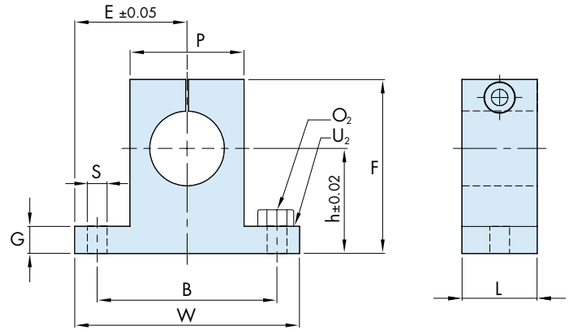
Example – NIM 20 X L2000 T2

Support Rails Only

Aluminium Support Rails (SR) supplied in lengths up to 2000mm. Simply state whether T1 or T2 mounting hole spacing is required.

Example – Support Rail for 20mm Shaft T2
Hole Centre – SR20 – T2

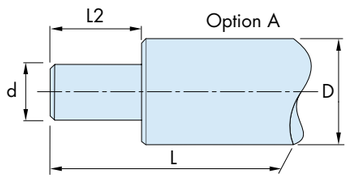
Aluminium Shaft Supports



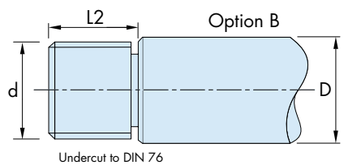
Part No.	Nominal Shaft Diameter	Major Dimensions									O_2	U_2	Weight (g)
		h	E	W	L	F	G	P	B	S			
ASS10	10	17	18.5	37	10	30	5	18	28	4.5	M4	4	24
ASS12	12	20	21	42	15	35	5.5	20	32	5.5	M5	5	30
ASS16	16	25	25	50	15	42	6	26	40	5.5	M5	5	40
ASS20	20	30	30	60	20	50	8	32	45	5.5	M5	5	70
ASS25	25	35	37	75	25	58	9	38	60	6.6	M6	6	130
ASS30	30	40	42	84	30	68	10	45	68	9	M8	8	180
ASS40	40	50	54	108	30	86	12	56	86	11	M10	10	420
ASS50	50	60	65	130	40	100	14	80	108	11	M10	10	750

Machined Ends

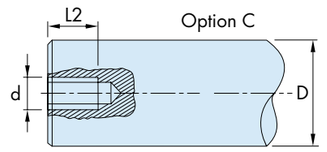
HepcoMotion can undertake shaft machining to standard ends as shown below or specials to customers' drawings.



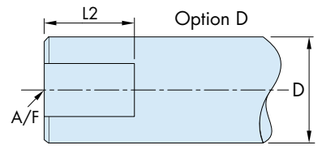
Spigot
One end ☐ Both ends ☐



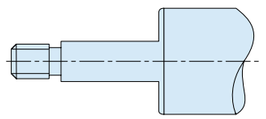
Threaded Spigot
One end ☐ Both ends ☐



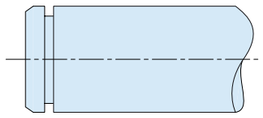
Drilled and Tapped
One end ☐ Both ends ☐



Single Flat ☐ Double Flat ☐
One end ☐ Both ends ☐



Please send drawing



Please send drawing

Housing and Shaft Tolerance - Super Ball Bushing

The recommended housing and shaft tolerances for Super Ball Bushings are shown in table 1.

Table 1. Super Ball Bushing SBE/SBEO

Part No.	16	20	25	30	40	50
Outer Diameter (D)	26	32	40	47	62	75
Housing Bore (H7)	+0.021 0	+0.025 0			+0.030 0	
Shaft Tol (h6)	✔	✔			✔	

Assembly - Super Ball Bushing

Use of a jig (see figure 5) is recommended for insertion into a housing. Care should be taken not to exert pressure on the ball retainer or seals.

The edge of the housing bore must be chamfered. Correct alignment is essential in order to prevent damage.

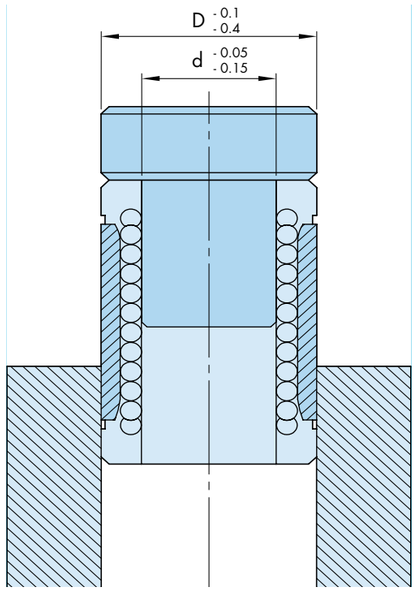


Fig 5. Use of a Jig

Housing and Shaft Tolerance - Standard Ball Bushing

The recommended housing and shaft tolerances for Standard Ball Bushings are shown in table 2.

Table 2. Standard Ball Bushing LME/LME-OP

Part No.	5	8	12	16	20	25	30	40	50	60
Outer Diameter (D)	12	16	22	26	32	40	47	62	75	90
Housing Bore (H7)	+0.018 0		+0.021 0		+0.025 0			+0.030 0		+0.035 0
Shaft Tol (h6)	✔		✔		✔			✔		✔

Assembly - Standard Bull Bushing

Possible mounting methods are illustrated in Figure 6. and Figure 7. with retaining rings and cover plates.

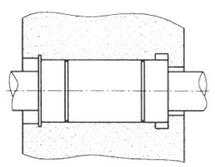


Fig 6. Mounting With Retaining Rings

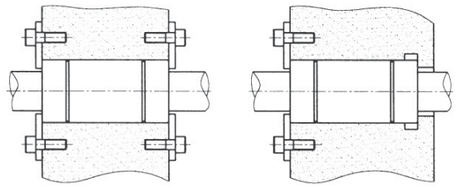


Fig 7. Mounting With Cover Plates

Load / Life Calculation

Basic Dynamic Rating (C)
The basic Dynamic Load Rating (C) is the maximum continuous load that can be applied to a bearing with a 90% probability that a working life of 50 km will be achieved.

There are two key factors to the load calculation that may need to be applied depending on the application conditions.

Shaft hardness factor (FH)
The hardness of the shaft should be 60 RC +/- 2, refer to figure 8 for shaft hardness factors.

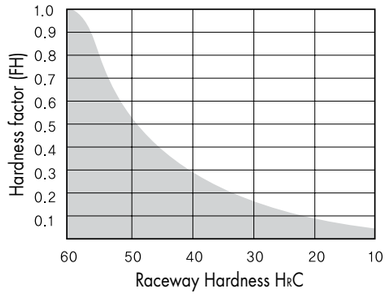


Fig 8. Hardness Factor (FH)

Temperature factor (FT)

$$L = \left(\frac{C}{P} \cdot FH \cdot FT\right)^3 \cdot 50 \text{ (km)}$$

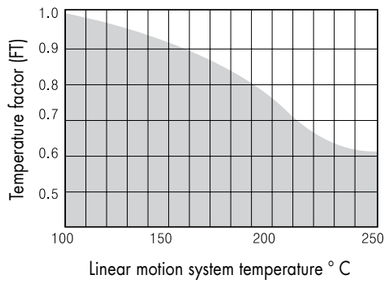


Fig 9. Temperature Factor (FT)

L : Running distance life (km)
C : Basic dynamic load rating (N)
P : Applied load (N)
FH : Hardness factor (figure 8)
FT : Temperature factor (figure 9)

Ball bushings in this range are designed to work at a maximum temperature of 100 degrees C, for temperatures higher than this please apply the temperature factor as indicated in figure 9.

Basic Static Load Rating (Co)
The Basic Static Load Rating (Co) is the static load that will permanently cause deformation of the bushing ball track equivalent to 0.01% of the ball diameter. It is good practice to limit the maximum static force to a maximum of 80%.

Short Stroke Life Reduction
Where the stroke distance is less than a Ball Bushing length the calculated life will be reduced by up to 70%.

Lubrication

For best performance, and to achieve a long and trouble free life, ball bushings require lubrication with either oil or grease.

Grease Lubrication
For grease lubrication the anticorrosive protection oil should be removed prior to assembly ensuring that the bearing is dry before applying grease.

Grease should be applied directly to the ball circuits prior to fitting, generally a lithium soap grease ISO viscosity grade 2 is recommended for general use.

Oil Lubrication
For oil lubrication it is not necessary to remove the anticorrosive protection from the bushing. The viscosity grade will be dependent on the operating temperature, please see the chart below.

Operating Temp.	Viscosity
-30° C ~ 50° C	VG 15 ~ 46
50° C ~ 80° C	VG 46 ~ 100

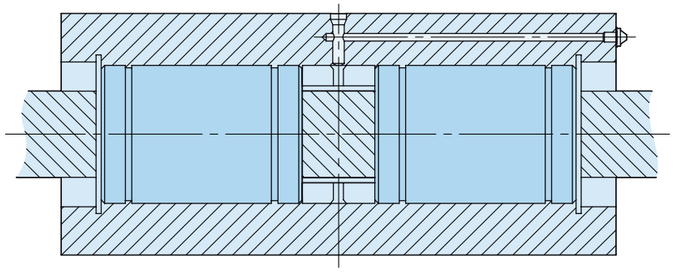


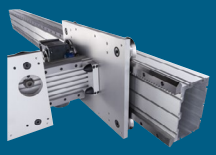
Fig 10. Two Assembled Bushings

For most effective lubrication oil should be applied between two assembled bushings as shown in Figure 10 where seals are fitted only to the outside of each bearing.

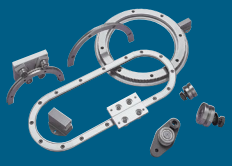
Periodic checking of the installation is recommended whether oil or grease is used, in order to check that the bushing is not running dry.

HepcoMotion® Product Range

GV3
Linear Guidance and Transmission System



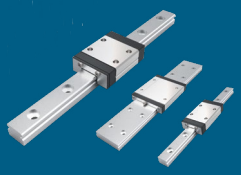
HDS2
Heavy Duty Slide System



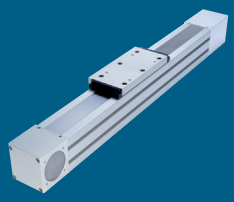
PRT2
Precision Ring and Track System

HDRT
Heavy Duty Ring Slides and Track System

SL2
Stainless Steel Based Slide System

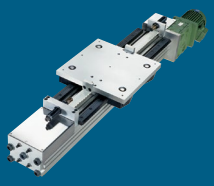


HLG
Hepco Linear Guides



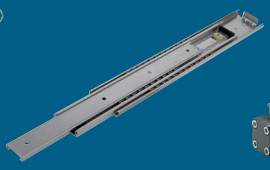
SBD
Sealed Belt Drive

MCS
Aluminium Frame and Machine Construction System

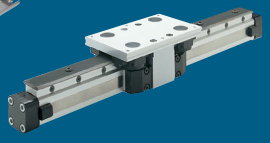


HDLS
Heavy Duty Driven Linear System

DLS
Linear Transmission and Positioning System

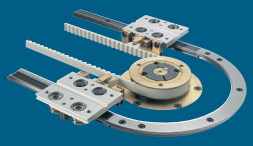


HTS
Telescopic Ball Bearing Slides



HPS
Powerslide-2 Guided Rodless Cylinder

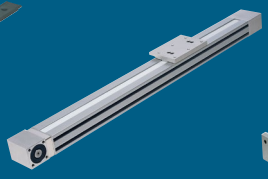
MHD
Heavy Duty Track Roller Guidance System



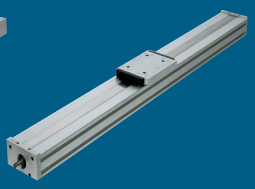
DTS
Driven Track System

BSP
Ballscrew Premier

Vee Slide Linear Guidance Systems



PDU2
Profile Driven Unit



PSD120
Profile Screw Driven Unit

For further information on HepcoMotion® products – please request our leaflet 'FPL'

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