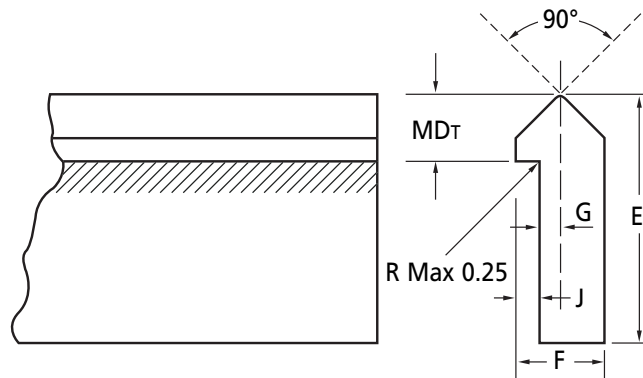
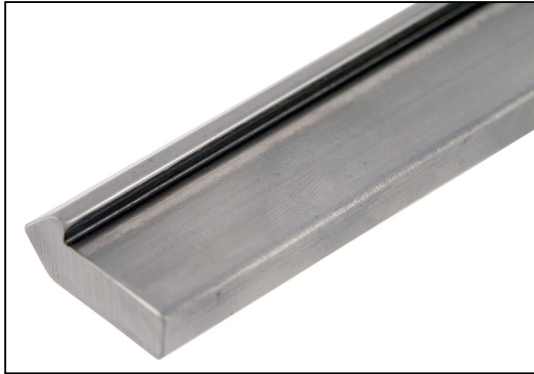


T
T-SS

LINEAR MOTION

Dual Vee™ Single Edge Slide System

Single Edge Track (Undrilled)



Part Number		Length	E	F	G	J	MD _T	Kg/m	Price Each	
Steel	Stainless								Steel	Stainless
T1-500	T1-500SS	500	11.09	4.74	0.78	1.57	3.17	0.272	£28.99	£58.82
T1-1000	T1-1000SS	1000	11.09	4.74	0.78	1.57	3.17	0.272	£58.01	£117.62
T2-500	T2-500SS	500	15.87	6.35	0.78	2.36	4.75	0.509	£42.70	£85.45
T2-1000	T2-1000SS	1000	15.87	6.35	0.78	2.36	4.75	0.509	£85.41	£170.95
T3-500	T3-500SS	500	22.22	8.71	1.57	2.76	6.35	1.020	£75.05	£150.17
T3-1000	T3-1000SS	1000	22.22	8.71	1.57	2.76	6.35	1.020	£150.09	£300.33
T4-500	T4-500SS	500	26.97	11.09	2.36	3.17	7.92	1.630	£112.79	£225.44
T4-1000	T4-1000SS	1000	26.97	11.09	2.36	3.17	7.92	1.630	£225.58	£450.88

Material

T: AISI 1045 steel, top contact surfaces hardened 58 Rockwell C minimum, polished, oiled. Portion below indexing shoulder is left soft so it may be drilled for mounting.
T-SS: AISI 400 series stainless steel, top contact surfaces hardened 48 Rockwell C minimum, polished, oiled. Portion below indexing is left soft so it may be drilled for mounting.

Features (General)

- Proven technology/high reliability
- Flexibility and simplicity in design
- Low installed cost
- Smooth, antifriction operation
- Low noise/low vibration
- High speed capacity
- Impervious to contaminated environments
- Long stroke lengths
- Easy installation and maintenance
- Low profile

Features (Track)

- Single edge design allows for flexible track pair spacing
- Patented mounting shoulder allows for accurate positioning of Vee ways
- Available induction hardened and polished as standard
- Induction hardened track remains soft below the mounting shoulder, allowing for drilling or other machining
- Available undrilled as standard, pre-drilled on request
- Can be easily butt-joined for stroke lengths exceeding maximum single piece lengths (6096mm). Maximum length available 6096mm (except T4SS maximum length 5790mm). Any length cut to a tolerance of ±1.5mm. (Cutting charge applies)

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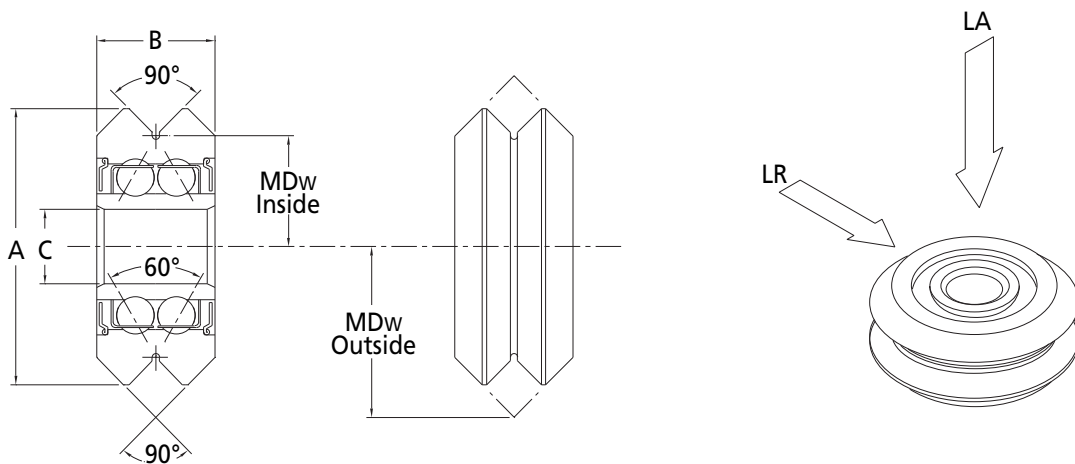
Product information updated 1st April 2011 and subject to change. Please contact Sales for the latest prices and availability.

LINEAR MOTION

Dual Vee™ Single Edge Slide System

Guide Wheels

W
W-SSX



Part Number		Radial Working Load Capacity LRmax (N) ²	Axial Working Load Capacity LAmax (N) ²	BDLR* Radial (N)	BSLR* Radial (N)	BDLR* Axial (N)	BSLR* Axial (N)
Steel	Stainless						
W1	W1-SSX	595	252	2180	1110	1090	1040
W2	W2-SSX	1431	625	4700	2780	2380	2630
W3	W3-SSX	3074	1701	9150	5050	4500	4800
W4	W4-SSX	4704	4001	12800	7900	6350	7450

Part Number		Outside Diameter A	Width B	Bore Size C	Inside Vee Radius MDw Inside	Outside Vee Radius MDw Outside	Price Each	
Steel	Stainless						Steel	Stainless
W1	W1-SSX	19.58	7.87	4.76	7.95	11.89	£55.11	£93.25
W2	W2-SSX	30.73	11.13	9.53	12.70	18.26	£62.38	£104.31
W3	W3-SSX	45.80	15.88	12.00	19.05	27.00	£82.44	£151.08
W4	W4-SSX	59.94	19.05	15.00	25.40	34.93	£105.04	£178.66

* Note: The BDLR (Basic Dynamic Load Rating) and BSLR (Basic Static Load Rating) are according to AFBMA STD 9-1990. These ratings are based on industry standard bearing calculations and are for comparison to other products as measured against the same standard. Working load capacities should be used for component sizing and selection.

Material

Ball Bearings: Ground, ABEC-1, pre-lubricated, external surfaces lightly oiled.
W: SAE 52100 Steel, hardened 60-62 Rockwell C, shielded.
W SSX: AISI 440C, hardened 58-60 Rockwell C, sealed.

Features (Guide Wheels)

- Double row angular contact bearing arrangement.
- Available in 4 different sizes as standard.
- Available in carbon or stainless steel.
- Suitable for clean room and high temperature applications.
- Available shielded or sealed to accommodate the required level of protection.
- Either inside or outside vee surface can be employed to suit loads.
- Re-circulating elements are self-contained and isolated from the environment. Rolling contact between wheel and track sweeps debris aside making Dual Vee™ ideal for use in contaminated applications.

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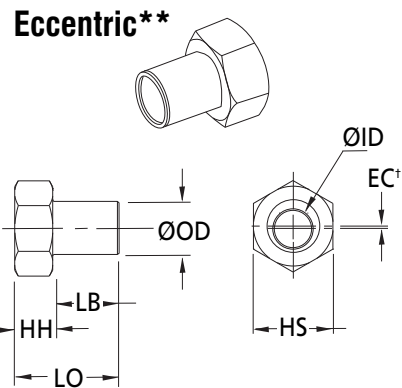
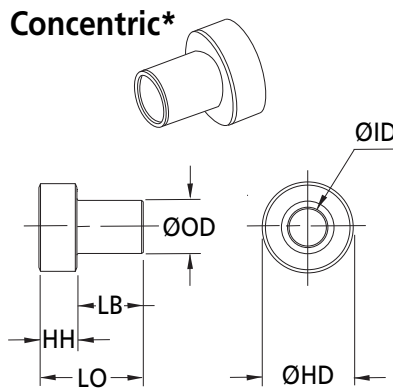
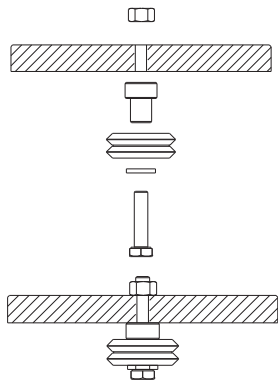
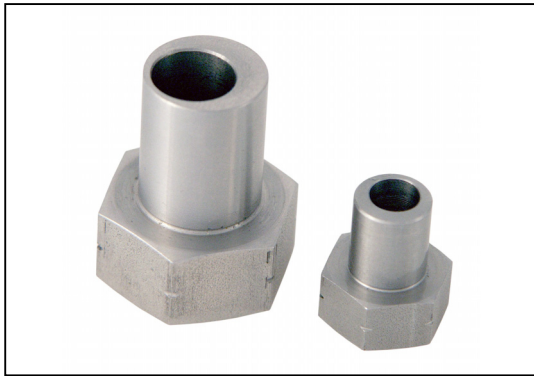
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BM
BMX

LINEAR MOTION

Dual Vee™ Single Edge Slide System

Support Bushings (Standard Profile)



Part Number		Dual Vee Size	Fastener Size	Hex Size HS	Offset EC†	Head Height HH(1)	Length Body LB	Length Overall LO	Outside Dia. OD(2)	Inside Dia. ID	Head Dia. HD	Price Each	
Steel	Stainless											Steel	Stainless
Concentric:													
BM-1	BM-1SS	1	M4	-	-	6.22	7.6	13.8	4.76	4.01	11.2	£4.67	£8.09
BM-2	BM-2SS	2	M6	-	-	6.65	10.8	17.9	9.52	6.10	14.2	£5.35	£10.71
BM-3	BM-3SS	3	M8	-	-	9.47	15.6	25.1	11.99	8.10	19.1	£8.28	£15.47
BM-4	BM-4SS	4	M10	-	-	11.10	18.8	29.9	15.00	10.11	22.4	£9.05	£24.32
Eccentric:													
BMX-1	BMX-1SS	1	M4	12	0.18	6.22	7.6	13.8	4.76	4.01	-	£8.76	£16.53
BMX-2	BMX-2SS	2	M6	14	0.61	6.65	10.8	17.9	9.52	6.10	-	£9.53	£19.82
BMX-3	BMX-3SS	3	M8	19	1.07	9.47	15.6	25.1	11.99	8.10	-	£13.51	£27.26
BMX-4	BMX-4SS	4	M10	22	1.52	11.10	18.8	29.9	15.00	10.11	-	£14.92	£36.46

Notes:

- * Concentric (stationary) bushing - since concentrically mounted wheels have a fixed position, these bushings set the alignment of the carriage assembly to the rail. Concentrically mounted wheels should be configured to carry the majority of the load whenever possible.
- ** Eccentric (adjustable) bushing - rotation of eccentric allows adjustment between track and guide wheels.
- † All mounting information assumes a central position of the eccentric bushing, thus allowing wheel position adjustment from "+EC" to "-EC".
- (1) Head height (HH) Tolerance is ±0.05mm.
- (2) The bushing's outside diameter is designed to fit the corresponding size Dual Vee™ guide wheel.

Material

Bushings: Leaded screw stock, plated finish or stainless steel.
BMX: Adjustable bushing. Eccentric mounting hole. By rotating the BMX bushing on its mounting bolt, the clearance between the wheel and the track can be adjusted.
BM: Stationary bushing. Concentric mounting hole. The major load should be carried on the stationary bushing.

Features (Support Bushings)

- Rigidly affixes guide wheels to a mounting surface precisely.
- Material options include 303 stainless steel or nickel plated carbon steel.
- Concentric and eccentric configurations allow for system adjustment.
- Customer to supply screw/bolt to fix wheel bush assembly to mounting surface.
- Standard and low profile head height configurations are available to suit space requirements.
- Head Height (HH) Tolerance is ±0.05mm.
- Outside diameter of bushing is designed to fit the corresponding size Dual Vee™ guide wheel.

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LINEAR MOTION

Dual Vee™ Single Edge Slide System

Overview

Load/Life Relationship

Several factors influence the service life of a Dual Vee™ linear system.

Through research and development a simple method has been devised to estimate the load/life relationship for a specific Dual Vee™ guide mechanism under defined loading conditions.

The methodology accounts for the size of the Dual Vee™ bearing elements, relative spacing, and the orientation, location and magnitude of the load.

The curve is based upon clean, well lubricated track conditions, so for applications where lubrication is prohibited, a derating factor must be applied.

It is important to note that considerations such as maximum velocity, acceleration rates, duty cycle, stroke length, environmental conditions, the presence of shock, vibration and extreme temperature ranges can all impact service life to varying degrees.

As such, the sizing method outlined below should be used conservatively, and considered only as a guideline for the sizing of Dual Vee™ components and assemblies.

When time and budget permits, the prototyping of a Dual Vee™ arrangement is recommended to confirm service life expectations.

The Load/Life Equation – Sizing and Selection

The life of a Dual Vee™ guide will be limited to the life of the most heavily loaded bearing in the design.

Step 1: Calculate the resultant radial and axial loads reflected to each bearing element in the linear guide design.

If assistance is required in resolving specific loads into the resultant reaction forces at the guide wheel interface, contact Technical.

It is recommended that the Application Data Sheet be submitted beforehand (ask sales for details), with as much application information detailed as possible.

Step 2: Calculate the load factor for the most heavily loaded bearing.

$$LF = LA / LA_{max} + LR / LR_{max}$$

Where;

LF	= Load factor
LA	= Resultant axial load on the guide wheel
LA _{max}	= The maximum axial working load capacity of the guide wheel
LR	= Resultant radial load on the guide wheel
LR _{max}	= The maximum radial working load capacity of the guide wheel

- Bearings should be sized such that $LF \leq 1$
- The most heavily loaded bearing will have the highest load factor

Due to varying application load and speed parameters and environmental conditions, the appropriate adjustment factor must be applied to the maximum axial and radial working load capacities (LA_{max} and LR_{max}) as follows:

Adjustment Factor Application Conditions

- | | |
|---------|---|
| 1.0-0.7 | Clean, low speed, low shock, low duty |
| 0.7-0.4 | Moderate contaminants, medium duty, low to medium vibration, moderate speed |
| 0.4-0.1 | Heavy contamination, high acceleration, high speed, medium to high shock, high vibration, high duty cycle, dry running. |

Oscillating motion resulting in less than one full revolution of the wheel under load can cause accelerated wear on the internal bearing elements.

Testing of such systems is recommended to verify compatibility of the design with load/life requirements.

In lightly loaded applications bearing preload can be higher than the working load.

A figure equivalent to 3% of the radial working load capacity should therefore be included in the LR figure when calculating life.

Lubrication

Lubrication is the key to maximising the life of a Dual Vee™ linear guide. Internally, Dual Vee™ guide wheels are lubricated for life with an extreme pressure, corrosion resistant grease. However, lubrication of the wheel/track interface is the responsibility of the user. A light machine oil or an extreme pressure grease will serve well in minimising wear, stick slip, and corrosion on the guide ways in a Dual Vee™ based design. Lubrication will maximise the load capacity of an individual bearing element. As such, for any specific application loading condition, the presence of lubrication on the guide ways will significantly increase the service life over a non-lubricated configuration under the same loads. Lubrication will also increase the maximum linear velocity that a Dual Vee™ bearing arrangement can endure. In applications where high speed or high acceleration rates are present, lubrication of the wheel/track interface is highly recommended. Lastly, lubrication will reduce the overall coefficient of friction of the guide, which, depending on the level of preload, can fall anywhere from 0.008 to 0.015. The availability of lubricators and wheel covers gives design engineers an opportunity to design lubrication right into the Dual Vee™ mechanism with little effort (ask sales for details).

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