

Linear Guides

- Eliminates design work associated with component integration
- Matched assemblies facilitate ease of installation
- Number of purchased parts is minimized, easy bill of material control

Four wheel carriage assemblies and mating track (LoPro® style)

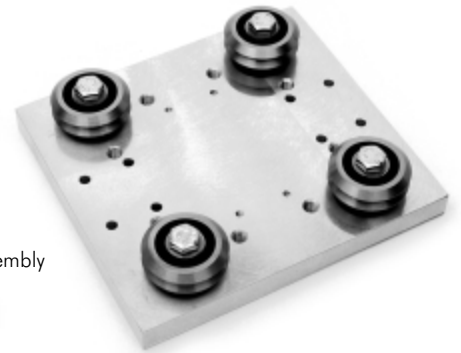
- Alignment of track is guaranteed
- High load capacity
- Carriage and track assemblies are configured to provide good movement capacity
- Available in two standard carriage styles
 - Wiper wheel plate
 - Basic wheel plate



Wiper Wheel Plate Assembly
Page 223



Track Plate Assembly and Mounting Dimensions
Pages 226-228



Basic Wheel Plate Assembly
Pages 224-225

Also available:

Three wheel carriage assemblies and mating track (Utilitrak® style)

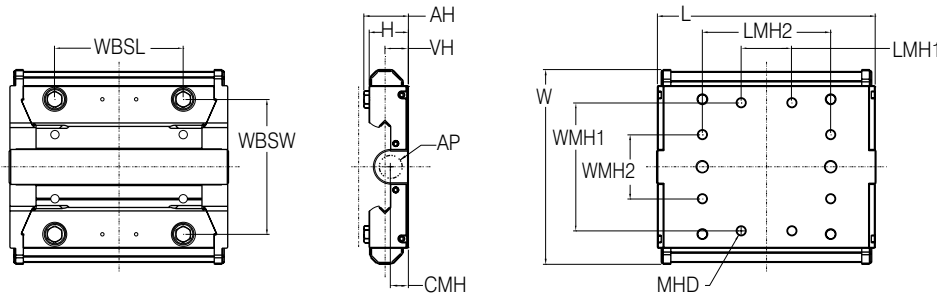
- Low installed cost
- Compact design
- Assemblies available with:
 - Polymer guide wheels riding on aluminum track: low noise, very smooth operation
 - Steel guide wheels riding on steel track: high load capacity, high duty cycle



Please contact T.E.A. for further details

Wiper Wheel Plate Assembly

- Preassembled carriage plate with lubricating wiper caps
- Includes four DualVee® guide wheels and stainless steel low profile bushings
- Includes stainless steel mounting hardware
- Designed as a matched assembly for DualVee track plate assembly (see pages 226-228)
- Wiper wheel plate assemblies available on request



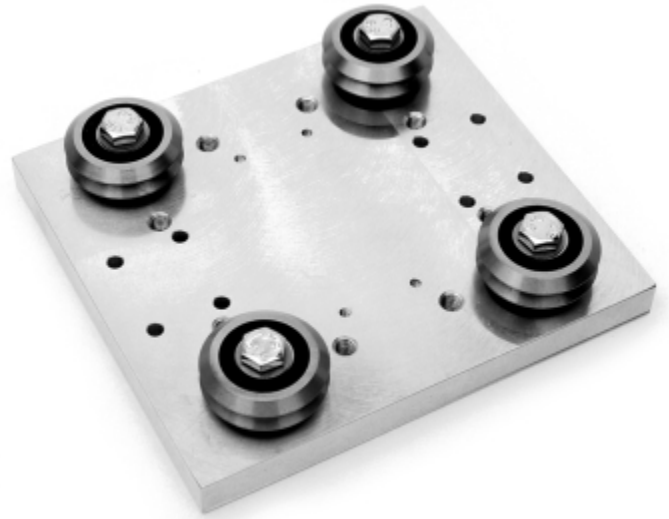
DualVee Size	Part Number	Overall Length	Overall Width	Wheel Plate Assembly Height	Wheel Plate Height	Mounting Hole Pattern # 1 Length	Mounting Hole Pattern # 1 Width	Mounting Hole Pattern # 1 Width
		L	W	AH	H	LMH1 ⁸	WMH1 ⁸	LMH2 ⁸
1	M1AWPW	3.70 (94.0 mm)	3.07 (78.0 mm)	0.730 (18.5 mm)	0.650 (16.5 mm)	-	1.969 (50.0 mm)	1.969 (50.0 mm)
2	M2AWPW	5.11 (129.8 mm)	4.54 (115.3 mm)	1.041 (26.4 mm)	0.916 (23.3 mm)	1.181 (30.0 mm)	2.992 (76.0 mm)	2.992 (76.0 mm)
3	M3AWPW	6.99 (177.5 mm)	6.35 (161.3 mm)	1.403 (35.6 mm)	1.193 (30.3 mm)	1.496 (38.0 mm)	3.937 (100.0 mm)	3.937 (100.0 mm)
4	M4AWPW	9.60 (243.8 mm)	8.39 (213.1 mm)	1.798 (45.7 mm)	1.553 (39.4 mm)	2.598 (66.0 mm)	5.984 (152.0 mm)	5.984 (152.0 mm)
DualVee Size	Part Number	Mounting Hole Pattern # 2 Width	Mounting Hole Thread	Wheel Bolt Spacing Length	Wheel Bolt Spacing Width	Vee Height	Coupler Mounting Hole Height	Coupler Attachment Feature - Max Diameter
		WMH2 ⁸	MHD	WBSL	WBSW	VH	CMH ⁵	AP ⁵
1	M1AWPW	0.984 (25.0 mm)	M4 x .7	2.000 (50.8 mm)	2.098 (53.3 mm)	0.374 (9.5 mm)	0.281 (7.1 mm)	0.433 (11.0 mm)
2	M2AWPW	1.496 (38.0 mm)	M6 x 1.0	3.000 (76.2 mm)	3.150 (80.0 mm)	0.550 (14.0 mm)	0.422 (10.7 mm)	0.669 (17.0 mm)
3	M3AWPW	1.969 (50.0 mm)	M8 x 1.25	4.000 (101.6 mm)	4.300 (109.2 mm)	0.709 (18.0 mm)	0.556 (14.1 mm)	0.866 (22.0 mm)
4	M4AWPW	2.598 (66.0 mm)	M8 x 1.25	6.000 (152.4 mm)	5.774 (146.7 mm)	0.945 (24.0 mm)	0.758 (19.3 mm)	1.260 (32.0 mm)

Notes:

1. Wheel plates are clear anodized, type II, class 1.
2. Wiper wheel plate material is 6061-T6 aluminum (alternate material 6061-T651).
3. Contact T.E.A. for quotation on modified wiper wheel plate assemblies.
4. Add "-SS" to the end of the part number for stainless steel guide wheels.
5. The standard wiper wheel plate is supplied with a blank, unmachined coupling attachment feature. Dimension "AP" shows the maximum hole diameter that can be machined without breaking through.
6. Contact T.E.A. for other non-standard requirements such as clean room compatible guide wheels, high temperature guide wheels, etc.
7. See page 227 for load capacity data.
8. The size 1 wiper wheel plate has only 6 mounting holes (LMH = 0).
9. All dimensions are in inches and (mm) unless otherwise stated.

Basic Wheel Plate Assembly

- Preassembled carriage plate with lubricator and wheel cover options
- Includes four DualVee® guide wheels and stainless steel bushings
- Includes stainless steel mounting hardware
- Designed as a matched assembly for DualVee® track plate assembly (see pages 226-228)
- Available also with wheel covers and lubricators
- Basic wheel plate assemblies available on request

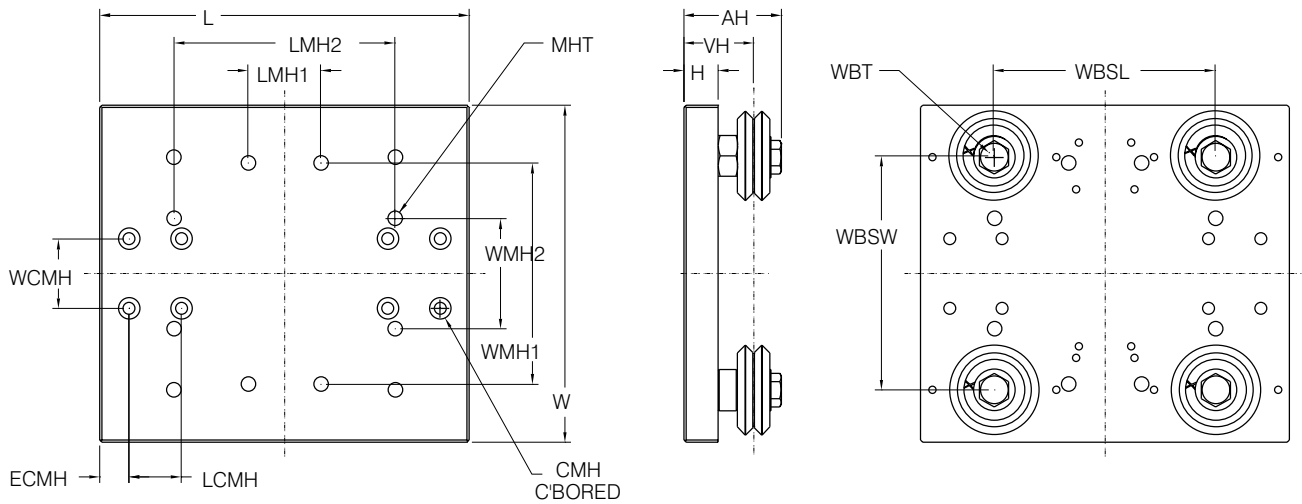


Basic Wheel Plate Profile	DualVee Size	Part Number ¹	Plate Overall Length	Wheel Plate Overall Width	Wheel Assembly Height	Wheel Plate Height	Wheel Hole Vee Height	Mounting Hole Pattern # 1 Length	Mounting Hole Pattern # 1 Width
			L	W	AH	H	VH	LMH ¹	WMH ¹
Standard Height	1	BWP1_DV	3.54 (90.0 mm)	3.15 (80.0 mm)	0.970 (24.6 mm)	0.333 (8.5 mm)	0.718 (18.2 mm)	- -	1.969 (50.0 mm)
	2	BWP2_DV	5.00 (127.0 mm)	4.57 (116.0 mm)	1.338 (34.0 mm)	0.465 (11.8 mm)	0.965 (24.5 mm)	0.984 (25.0 mm)	2.992 (76.0 mm)
	3	BWP3_DV	6.77 (172.0 mm)	6.50 (165.0 mm)	1.844 (46.8 mm)	0.574 (14.6 mm)	1.260 (32.0 mm)	1.378 (35.0 mm)	3.937 (100.0 mm)
	4	BWP4_DV	9.53 (242.0 mm)	8.74 (222.0 mm)	2.189 (55.6 mm)	0.683 (17.3 mm)	1.495 (38.0 mm)	2.205 (56.0 mm)	5.984 (152.0 mm)
Low Profile	1	BWP1_LP	3.54 (90.0 mm)	3.15 (80.0 mm)	0.808 (20.5 mm)	0.333 (8.5 mm)	0.556 (14.1 mm)	- -	1.969 (50.0 mm)
	2	BWP2_LP	5.00 (127.0 mm)	4.57 (116.0 mm)	1.161 (29.5 mm)	0.465 (11.8 mm)	0.788 (20.0 mm)	0.984 (25.0 mm)	2.992 (76.0 mm)
	3	BWP3_LP	6.77 (172.0 mm)	6.50 (165.0 mm)	1.608 (40.8 mm)	0.574 (14.6 mm)	1.024 (26.0 mm)	1.378 (35.0 mm)	3.937 (100.0 mm)
	4	BWP4_LP	9.53 (242.0 mm)	8.74 (222.0 mm)	1.872 (47.5 mm)	0.683 (17.3 mm)	1.180 (30.0 mm)	2.205 (56.0 mm)	5.984 (152.0 mm)

Notes:

1. Coupler mounting holes (CMH) are drilled and counterbored for metric socket head cap screws (size 1/M2; size 2/M3; size 3/M4; size 4/M6).
2. Underscore in part number denotes wheel style ("blank" = shielded, "X" = sealed, "SSX" = stainless steel, sealed).
3. Wheel plates are clear anodized, type II, class 1.
4. Wheel plate material is 6061-T6 aluminum (alternate material 6061-T651).
5. All dimensions are in inches and (mm).

Basic Wheel Plate Assembly



Mounting Hole Pattern # 2 Length	Mounting Hole Pattern # 2 Width	Mounting Hole Thread	Coupler Mounting Hole Length	Coupler Mounting Hole Description	Coupler Mount Hole to Edge	Coupler Mount Hole Width	Wheel Bolt Thread	Wheel Bolt Space Length	Wheel Bolt Space Width
LMH ²	WMH ²	MHT	LCMH	CMH ¹	ECMH	WCMH	WBT	WBSL	WBSW
1.969 (50.0 mm)	0.984 (25.0 mm)	M4 X .7 mm	0.394 (10.0 mm)	0.090 thru Ø 0.173 Ø C'BORE x 0.080 DP	0.236 (6.0 mm)	0.551 (14.0 mm)	M4 X 0.7 mm	2.000 (50.8 mm)	2.098 (53.3 mm)
2.992 (76.0 mm)	1.496 (38.0 mm)	M6 X 1.0 mm	0.709 (18.0 mm)	0.161 thru Ø 0.290 Ø C'BORE x 0.170 DP	0.394 (10.0 mm)	0.944 (24.0 mm)	M6 X 1.0 mm	3.000 (76.2 mm)	3.150 (80.0 mm)
3.937 (100.0 mm)	1.969 (50.0 mm)	M8 X 1.25 mm	0.709 (18.0 mm)	0.177 thru Ø 0.325 Ø C'BORE x 0.157 DP	0.394 (10.0 mm)	1.260 (32.0 mm)	M8 X 1.25 mm	4.000 (101.6 mm)	4.300 (109.2 mm)
5.984 (152.0 mm)	2.599 (66.0 mm)	M10 X 1.5 mm	0.866 (22.0 mm)	0.256 thru Ø 0.430 Ø C'BORE x 0.236 DP	0.472 (12.0 mm)	2.047 (52.0 mm)	M10 X 1.5 mm	6.000 (152.4 mm)	5.774 (146.7 mm)
1.969 (50.0 mm)	0.984 (25.0 mm)	M4 X .7 mm	0.394 (10.0 mm)	0.090 thru Ø 0.173 Ø C'BORE x 0.080 DP	0.236 (6.0 mm)	0.551 (14.0 mm)	M4 X 0.7 mm	2.000 (50.8 mm)	2.098 (53.3 mm)
2.992 (76.0 mm)	1.496 (38.0 mm)	M6 X 1.0 mm	0.709 (18.0 mm)	0.161 thru Ø 0.290 Ø C'BORE x 0.170 DP	0.394 (10.0 mm)	0.944 (24.0 mm)	M6 X 1.0 mm	3.000 (76.2 mm)	3.150 (80.0 mm)
3.937 (100.0 mm)	1.969 (50.0 mm)	M8 X 1.25 mm	0.709 (18.0 mm)	0.177 thru Ø 0.325 Ø C'BORE x 0.157 DP	0.394 (10.0 mm)	1.260 (32.0 mm)	M8 X 1.25 mm	4.000 (101.6 mm)	4.300 (109.2 mm)
5.984 (152.0 mm)	2.599 (66.0 mm)	M10 X 1.5 mm	0.866 (22.0 mm)	0.256 thru Ø 0.430 Ø C'BORE x 0.236 DP	0.472 (12.0 mm)	2.047 (52.0 mm)	M10 X 1.5 mm	6.000 (152.4 mm)	5.774 (146.7 mm)

Notes continued:

5. Contact T.E.A. for quotation on modified basic wheel plate assemblies.

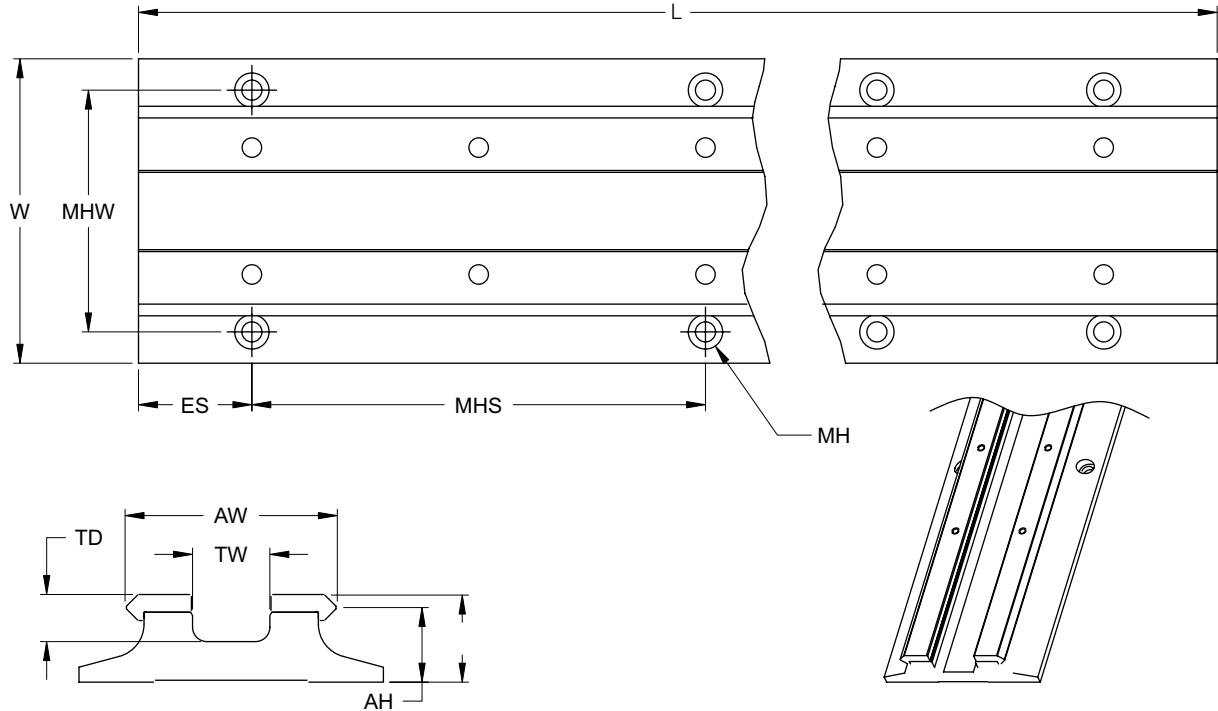
6. Contact T.E.A. for other non-standard requirements such as clean room compatible guide wheels, high temperature guide wheels, etc.

7. See page 227 for load capacity data.

8. The size 1 basic wheel plate has only 6 mounting holes (LMH1 = 0).

Track Plate Assembly

- Premounted track assembly assures Vee way parallelism
- Available with either carbon steel or stainless steel track (hardened)
- Designed as a matched assembly for DualVee® wheel plate assemblies
- Anodized aluminum substrate offers low profile and corrosion resistance
- Easily butt-joinable for long stroke length requirements
- Track plate assemblies available on request



DualVee Size	Part Number	Width	Overall Height	Vee Height	Vee Width	Inner Width	Inner Depth	Mount Hole Width	Mount Hole Length Spacing	Mounting Hardware
		W	H	AH	AW	TW	TD	MHW	MHS	MH
1	M1ATP	1.969 (50.0 mm)	0.625 (15.9 mm)	0.532 (13.5 mm)	1.473 (37.4 mm)	0.500 (12.7 mm)	0.365 (9.3 mm)	1.575 (40.0 mm)	2.992 (76.0 mm)	M3
2	M2ATP	2.835 (72.0 mm)	0.873 (22.2 mm)	0.748 (19.0 mm)	2.150 (54.6 mm)	0.799 (20.3 mm)	0.508 (12.9 mm)	2.323 (59.0 mm)	4.961 (126.0 mm)	M5
3	M3ATP	4.016 (102.0 mm)	1.156 (29.4 mm)	0.985 (25.0 mm)	2.799 (71.1 mm)	1.020 (25.9 mm)	0.622 (15.8 mm)	3.189 (81.0 mm)	5.984 (152.0 mm)	M6
4	M4ATP	5.512 (140.0 mm)	1.440 (36.6 mm)	1.222 (31.0 mm)	3.773 (95.8 mm)	1.550 (39.4 mm)	0.900 (22.9 mm)	4.370 (111.0 mm)	7.008 (178.0 mm)	M8

Notes:

1. Track plate material is 6005-A aluminum (alternate material 6061-T6).
2. Contact T.E.A. for quotation on non-standard lengths or other special requirements.
3. Add "SS" to the end of the part number for stainless steel option (denotes stainless steel track and hardware).
4. Consult T.E.A. for butt-joining considerations.
5. See page 227 for load capacity data.
6. All dimensions are in inches and (mm) unless otherwise stated.

Track Plate Assembly cont.

1		2		3		4	
Track Plate Length	End Hole Spacing	Track Plate Length	End Hole Spacing	Track Plate Length	End Hole Spacing	Track Plate Length	End Hole Spacing
L	ES	L	ES	L	ES	L	ES
7.87 (200.0 mm)	0.94 (24.0 mm)	11.81 (300.0 mm)	0.94 (24.0 mm)	13.78 (350.0 mm)	0.91 (23.0 mm)	15.75 (400.0 mm)	0.87 (22.0 mm)
15.75 (400.0 mm)	0.39 (10.0 mm)	15.75 (400.0 mm)	0.43 (11.0 mm)	19.69 (500.0 mm)	0.87 (22.0 mm)	29.53 (750.0 mm)	0.75 (19.0 mm)
21.65 (550.0 mm)	0.35 (9.0 mm)	25.59 (650.0 mm)	0.39 (10.0 mm)	31.50 (800.0 mm)	0.79 (20.0 mm)	43.31 (1100.0 mm)	0.63 (16.0 mm)
27.56 (700.0 mm)	0.31 (8.0 mm)	31.50 (800.0 mm)	0.87 (22.0 mm)	43.31 (1100.0 mm)	0.71 (18.0 mm)	59.06 (1500.0 mm)	1.50 (38.0 mm)
33.46 (850.0 mm)	0.28 (7.0 mm)	45.28 (1150.0 mm)	0.31 (8.0 mm)	68.90 (1750.0 mm)	1.54 (39.0 mm)	78.74 (2000.0 mm)	0.83 (21.0 mm)
39.37 (1000.0 mm)	0.98 (25.0 mm)	61.02 (1550.0 mm)	0.75 (19.0 mm)	86.61 (2200.0 mm)	1.42 (36.0 mm)	100.39 (2550.0 mm)	1.14 (29.0 mm)
-	-	70.87 (1800.0 mm)	0.71 (18.0 mm)	98.43 (2500.0 mm)	1.34 (34.0 mm)	122.05 (3100.0 mm)	1.46 (37.0 mm)
-	-	80.71 (2050.0 mm)	0.67 (17.0 mm)	-	-	-	-

Part Numbering

M_-ATP-XXXX AISI 1045 hardened carbon steel track (R_C58-60)

M_-ATPSS-XXXX AISI 420 hardened stainless steel track (R_C48-50)

XXXX = length in mm

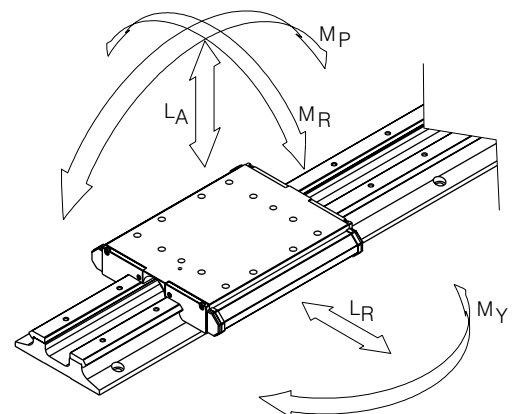
Examples:

M4ATP-2550 represents a 2550 mm length of size 4 track plate assembly with hardened carbon steel track

M2ATPSS-800 represents a 800 mm length of size 2 track plate assembly with hardened stainless steel track

Load Capacity - 4 Wheel LoPro® Style Linear Guide (Wiper Wheel Plate and Basic Wheel Plate Configurations) Based on 100 km Service Life

DualVee Size	Radial Working Load Capacity	Axial Working Load Capacity	Pitch Moment Capacity	Yaw Moment Capacity	Roll Moment Capacity
	L_{Rmax} (N)	L_{Amax} (N)	M_p (Nm)	M_y (Nm)	M_R (Nm)
1	1166	988	25	30	26
2	2805	2449	93	107	98
3	6026	6668	339	306	364
4	9220	15682	1195	703	1150



Mounting Dimensions / Formulas

for DualVee® -basic wheel plate and track plate assemblies

When fabricating a DualVee® linear guide from componentry, the following (formulae) are applicable for mating carriage plate and track plate designs:

For sizes 1 through 4 DualVee® single edge track with equivalent sized guide wheels:

- Inboard Mounting (See Figure 1): $A = B + X$
 - Outboard Mounting (See Figure 2): $A = C - X$
 - Exterior Mounting (See Figure 3): $A = D - Y$
- A = hole centres for wheel plate

DualVee Size	X		Y	
	inch	mm	inch	mm
1	0.874	22.2	0.934	23.7
2	1.374	34.9	1.436	36.5
3	2.000	50.8	2.124	53.9
4	2.624	66.6	2.750	69.9
4XL	3.124	79.3	3.500	88.9

Notes:

1. Information above uses the same size DualVee® track and wheel except for size 4XL which uses W4XXL guide wheel with size T4 track.
2. Side views shown only, length of wheel plates can be any length required.
3. It is recommended that wheel plates be constructed with concentric bushings on one side of the plate and eccentric bushings on the opposing side.
4. "D" dimension is to the theoretical sharp of the 90° angle.

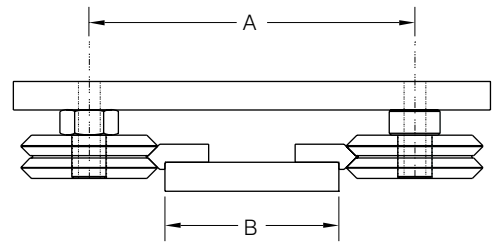


Figure 1 Inboard Mounting

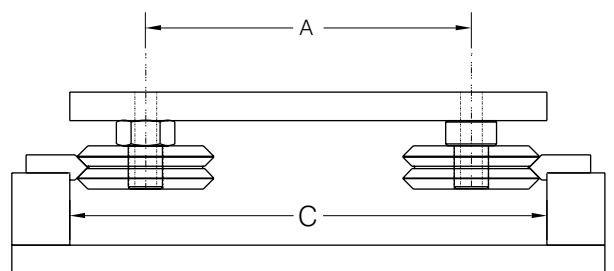


Figure 2 Outboard Mounting

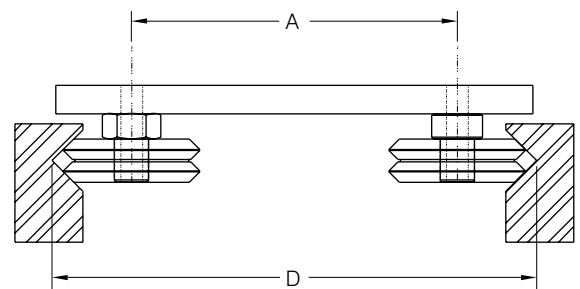


Figure 3 Exterior Mounting

Applications

Clean Room Products

TEA's clean room compatible guide wheels are manufactured from 440C stainless steel bearing elements, and contain stainless steel retainers and shields. They are internally lubricated with synthetic, corrosion resistant, clean room compatible grease.

For clean room operation, it is often desirable to plate the track with thin dense chrome (armoloy), black oxide, or electroless nickel. Stainless steel track can also be specially cleaned prior to heat treat and then passivated. Contact T.E.A. applications engineering for assistance with your clean room linear guidance questions. Higher level assemblies, custom engineered to accommodate specific clean room requirements, can be furnished by T.E.A. Contact T.E.A. for particle emissions data.

High Temperature Products

All T.E.A. high temperature guide wheel products are manufactured from specially processed, thermally stabilised, 440C stainless steel. Lubricated with a specially formulated synthetic grease, these guide wheels are capable of operating in temperatures up to 500°F. Special consideration should be given to guide wheel based designs when operating above temperatures of 300°F. Designers must make sure that a suitable lubricant is used on the wheel track interface, and if lubrication is prohibitive, the appropriate derating of the bearing should be factored in.