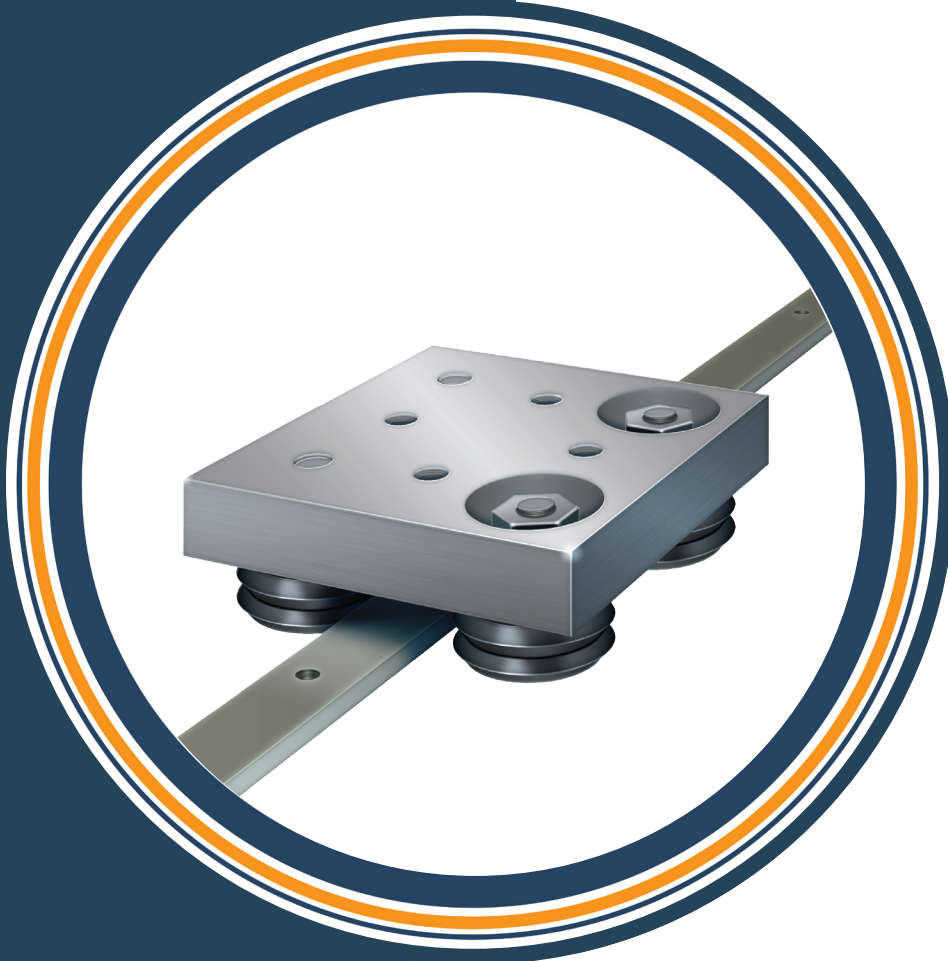


BWC

Motion Without Limits®



MINVEE®

The **MinVee®** miniature linear slide system is built on DualVee® Motion Technology. It is a low profile, miniature slide system with high load capabilities that is ideal for laboratory, medical, semi-conductor, and packaging applications.

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BISHOPWISECARVER GROUP
A FAMILY OF SOLUTIONS

Located in the historic California steel town of Pittsburg, today's bustling 85,000 square-foot facility is a far cry from the humble Oakland machine shop where the company's founder got his start in the 1950s.

Bishop-Wisecarver Group is a woman-owned family of WBENC certified companies who works with manufacturers to engineer, produce, and build custom complex assemblies, linear motion solutions and optimal embedded intelligence systems. Through the integration of our mechanical, electronic, software, control and systems design engineering expertise (mechatronics), 60+ years of experience, and 20,000+ unique clients, we continue to provide a single point of service that results in custom designs, increased efficiencies, and accelerated time to market.

BWC

Bishop-Wisecarver Corporation helps manufacturers and automation solution providers engineer linear and rotary motion solutions. With 60+ years of engineering expertise and manufacturing best practices working with over 20,000 customers, we understand our customers' design and application requirements which enables us to develop unique solutions that typically ship within 2 to 3 weeks. Customers achieve 50% faster time to market, up to 50-75% lower maintenance and installed costs, product differentiation, and longer product life.

{ info@bwc.com }

WRW

WRW Engineering helps companies integrate mechanical, electrical and software engineering to deliver custom mechatronic solutions. By understanding the interplay between these three disciplines, we design and develop optimal embedded intelligence systems such as automated flexible testing stations, smart products, and autonomous machines. Through this holistic approach, our customers realize higher production efficiencies, faster time to market, and increased revenues.

{ www.wrweg.com
info@wrweg.com }

BDM

Black Diamond Manufacturing is a specialty contract manufacturer of custom complex electro-mechanical sub-assemblies that provides a single source solution from prototype to full production, resulting in lower overall costs. Offerings include product lifecycle services such as prototyping, kitting, support machining, and full scale production with the ability to manage customer supply chains and hold consignment inventory. With 60+ years of in-house manufacturing experiences and capabilities, our clients experience upward of 35% reduction in manufacturing and labor costs.

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APPLICATION DATA SHEET

Company Name: _____

Contact Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____

E-Mail: _____

I would like to receive the monthly e-newsletter (please check): Y N

System Orientation: _____ horizontal vertical

Load: _____ lbs N

Stroke Length: _____ in m

Velocity: _____ in/s m/s

Accel/Decel: _____ in/s² m/s²

Linear Accuracy: _____ in/ft mm/m

Repeatability: _____ in m

Duty Cycle: _____ in/day m/day

Environment: _____

Temperature: _____ °F °C

Additional Forces: _____ lbs N

Application Description: _____

Design Challenge/Issues to Solve: _____

Current Design Strengths to be Reinforced/Maximized: _____

Market/Competitive Advantage Opportunities to be Gained: _____

Expected Volume: _____

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Deadline: _____
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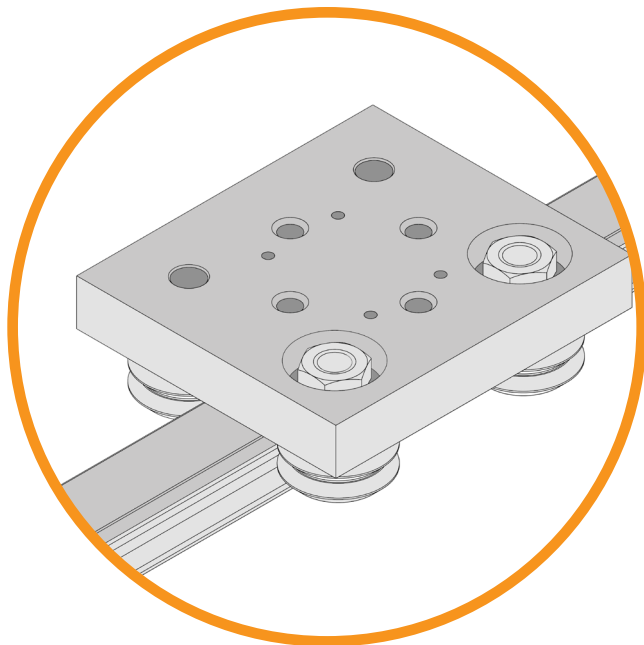


MinVee® Product Overview

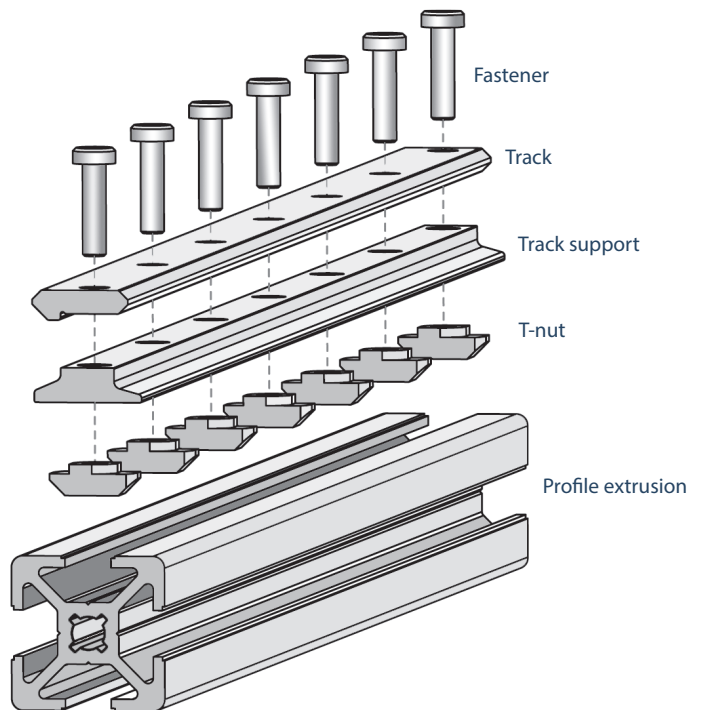
MinVee® linear slide systems from Bishop-Wisecarver Corporation are miniature guides consisting of a compact 1.75" wide by 2.00" long wheel plate with AISI 52100 carbon steel or polymer wheels and double vee-edge guide tracks.

When used with available 6063-T6 aluminum track support extrusion, assembled height is 0.788". MinVee® double edge track is available in AISI 1045 carbon steel in six standard lengths up to 36.5" with mounting holes predrilled. Axial working capacities are 121.4 lbf for steel wheels and 15 lbf for polymer wheel versions.

MinVee® is ideal for use in semiconductor, laboratory, and medical applications with compact space requirements.



Standard MinVee® assembly



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MinVee® mounting suggestion



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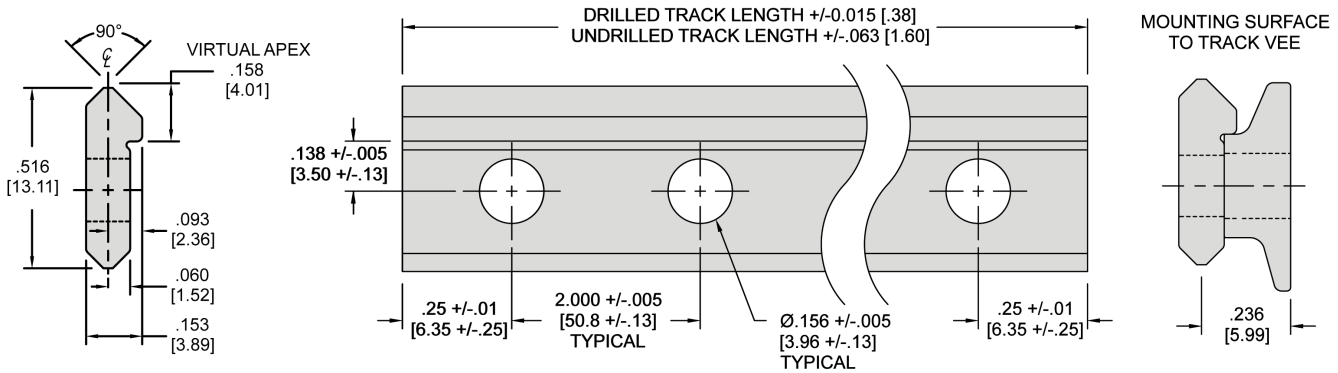
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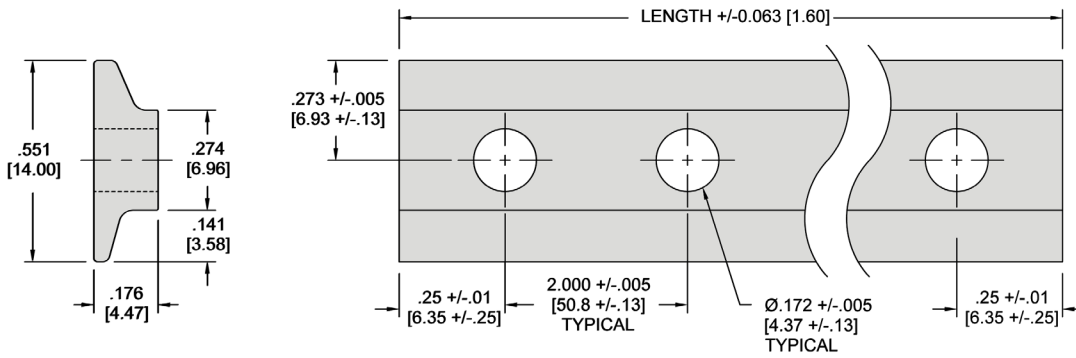
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MinVee® Track

Size 0 — Drilled or Undrilled



Track Support



STOCK CODE	TRACK HARDENED & DRILLED	TRACK SOFT & DRILLED	TRACK SUPPORT DRILLED	STANDARD LENGTHS (in)	# OF HOLES
	TD0-650-4	TDS0-650-4	MV0TS-650-4	6.50	4
TD0-1250-7	TDS0-1250-7	MV0TS-1250-7	12.50	7	
TD0-1850-10	TDS0-1850-10	MV0TS-1850-10	18.50	10	
TD0-2450-13	TDS0-2450-13	MV0TS-2450-13	24.50	13	
TD0-3050-16	TDS0-3050-16	MV0TS-3050-16	30.50	16	
TD0-3650-19	TDS0-3650-19	MV0TS-3650-19	36.50	19	

Available made-to-order with user specified length, hole spacing, and machining

STOCK CODE PREFIX	MATERIAL	DESCRIPTION	HARDNESS	MAXIMUM LENGTH (ft)	WEIGHT (lbs./ft)	FINISHING
TD0-	1045 Carbon	Hardened	HRC 53 min.	18	.171	Polished & oiled
TDS0-		Soft	HRC 25-28	20		
MV0TS-	6063-T6 Aluminum	Track support	60	10	.079	Anodized

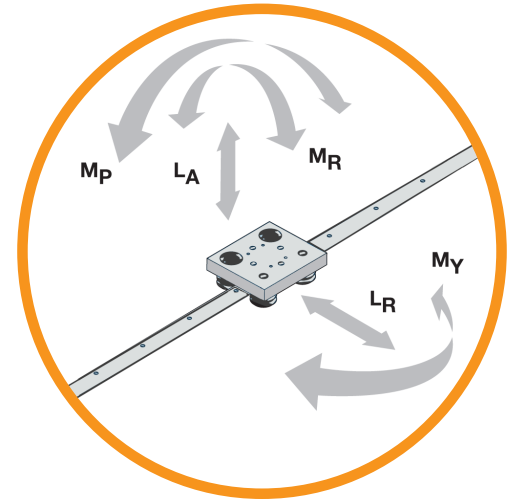
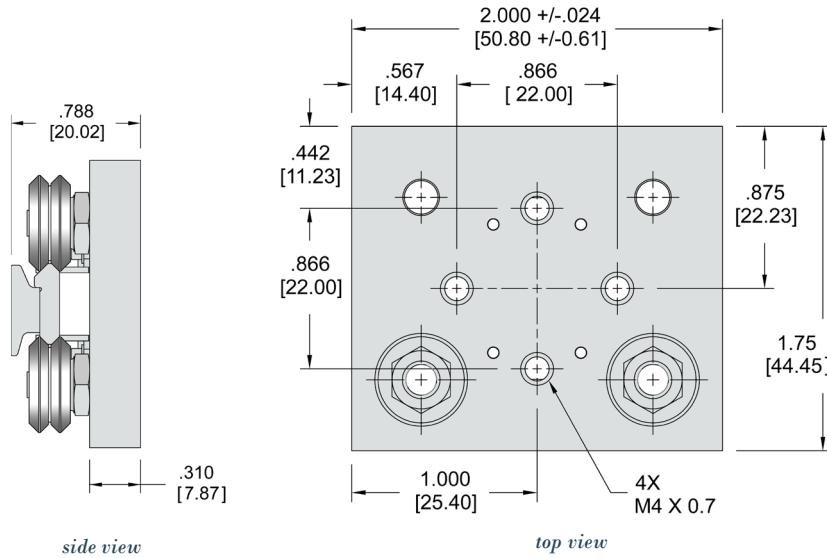
Hardened track is induction hardened and polished on the vee surfaces
Track without holes is available by the foot

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MinVee®

Wheel Plates

- 6061-T6 clear anodized aluminum carriage with stainless steel lubricator housing and felt lubrication pads
- Two (2) concentric and two (2) eccentric DualVee® studed wheels
- Carbon steel or polymer over-molded wheels with stainless steel bearings.



STOCK CODE	WHEEL TYPE	TEMPERATURE RANGE	MAXIMUM SPEED	MAXIMUM ACCELERATION	PITCH MOMENT (M _p)	YAW MOMENT (M _y)	ROLL MOMENT (M _r)	WORKING AXIAL LOAD CAPACITY (L _a)	WORKING RADIAL LOAD CAPACITY (L _r)	WEIGHT IN GRAMS (g)
MV0WPAP	Polymer Overmolded AISI 440C Stainless Steel, Shielded	-4°F to 248°F [-20°C to 120°C]	1m / sec.	3 g [29 m/sec./sec.]	1.4 Nm [12.4 lbf-in]	4.5 Nm [39.8 lbf-in]	1 Nm [8.8 lbf-in]	66.7 N [15 lbf]	65 N [14.6 lbf]	71.7
MV0WPA	AISI 52100 Carbon Steel, Shielded	-31°F to 248°F [-35°C to 120°C]	5 m / sec.	5g [49 m/sec./sec.]	7.9 Nm [69.9 lbf-in]	8.6 Nm [76.1 lbf-in]	6.2 Nm [54.9 lbf-in]	540 N [121.4 lbf]	490 N [110.2 lbf]	84.3
MV0WPAX	AISI 52100 Carbon Steel, Sealed	-22°F to 212°F [-30°C to 100°C]			6.5 Nm [57.4 lbf-in]	7.1 Nm [63.2 lbf-in]	5.1 Nm [45.1 lbf-in]	444 N [99.8 lbf]	408 N [91.7 lbf]	
MV0WPA-227	AISI 440C Stainless Steel, Shielded	-22°F to 500°F [-30°C to 260°C]			6.5 Nm [57.4 lbf-in]	7.1 Nm [63.2 lbf-in]	5.1 Nm [45.1 lbf-in]	444 N [99.8 lbf]	408 N [91.7 lbf]	

Wheel plate assemblies are made from clear anodized 6061-T6 aluminum and include stainless steel lubricator housings with felt track wipers
Working load capacities are based on 100 km service life (62.1 miles at 23°C or 73°F and 50% humidity)

Life Calculation

Load Factor L_F

$$L_F = \frac{L_R}{L_{R\max}} + \frac{L_A}{L_{A\max}} + \frac{M_P}{M_{P\max}} + \frac{M_Y}{M_{Y\max}} + \frac{M_R}{M_{R\max}}$$

$$\text{Service Interval (km)} = \frac{100}{.9L_F + 1} @ L_F < 1$$

Working Load Capacities

Working load capacities are based on empirical data on guide wheels used in general applications with dynamic load conditions.

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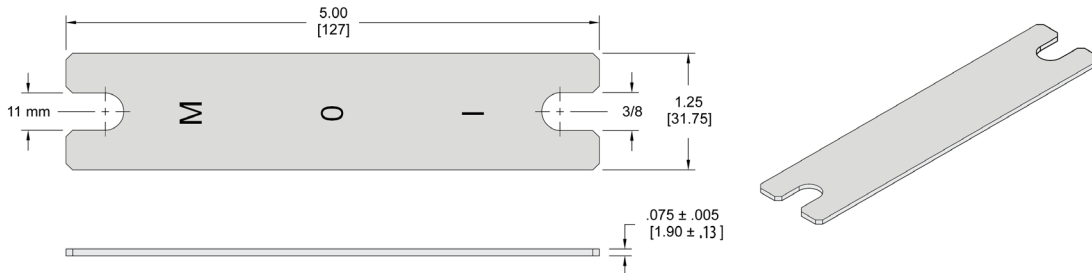
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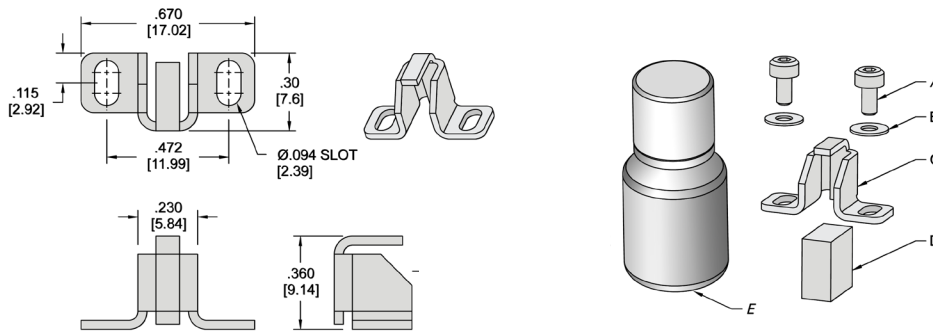
MinVee®

Adjustment Wrench



STOCK CODE	COMPATIBLE WITH	MATERIAL	HARDNESS	FINISH	WEIGHT (g)
BAW0	MinVee® Studded wheels	4130 Steel	HRC 46 - 56	Black oxide	52

Replacement Track Lubricators

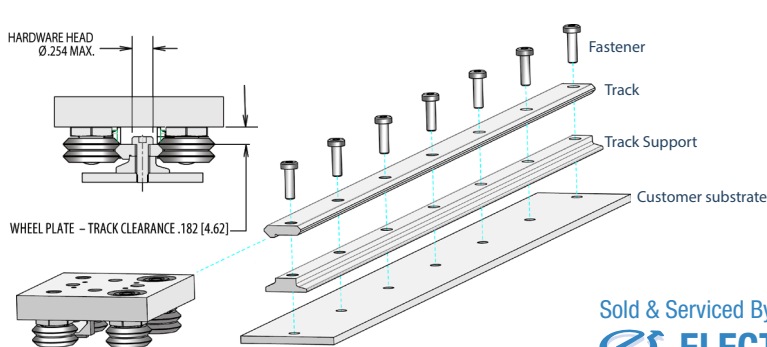


STOCK CODE	SCREWS (A)	WASHERS (B)	FELT HOLDER (C)	FELTS (D)	BOTTLE OF LUBRICANT (E)	WEIGHT (g)
MV0TLA	M2x0.4x4mm Stainless	M2 Stainless	300 Series stainless	White wool	Synthetic oil	2

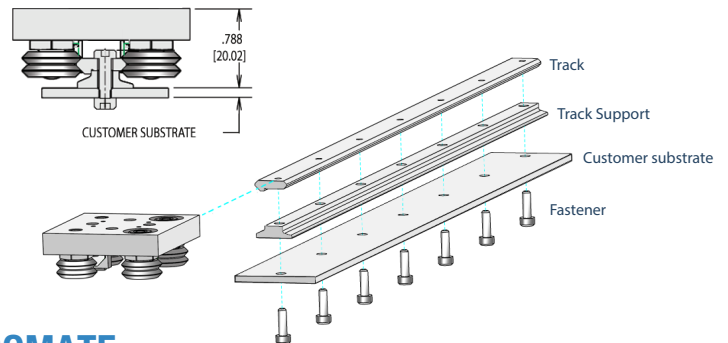
Values are in inches [millimeters]

Mounting Suggestions

TOP MOUNT

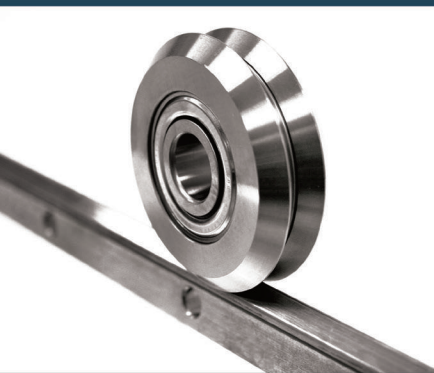


BOTTOM MOUNT



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Bishop-Wisecarver Corporation is a WBENC certified woman-owned manufacturer of the original DualVee® guide wheel and industry leader in linear and curvilinear motion solutions. Exclusive North and Central American partner and distributor for HepcoMotion® products since 1984.

- DualVee® Guide Wheels
- LoPro® Linear Motion System
- MadeWell® Crown Rollers
- MadeWell® Radial Wheels
- MinVee® Linear Slide System
- UtiliTrak® Linear Motion Guide
- UTCSK Camera Slider Kit
- QuickTrak® Modular Linear Guide Kit

- HepcoMotion®
- ALR Aluminum Rings
- DAPDU2 Double Acting Profile Driven Unit
- DLS Driven Linear System
- DTS2 Driven Track System
- GV3 Linear Guidance and Transmission System
- HDCB Heavy Duty Compact Beam
- HDCS Heavy Duty Compact Screw
- HDLS Heavy Duty Driven Linear System
- HDRT Heavy Duty Ring Slides and Track System
- HDS2 Heavy Duty Slide System
- MHD Heavy Duty Track Roller Guidance System
- MCS Machine Construction System
- PDU2 Profile Driven Unit
- PDU2M Belt Driven Unit
- PRT2 Precision Ring and Track System
- PSD80 Screw Driven Linear Actuator
- PSD120 Profile Screw Driven Unit
- SBD Sealed Belt Drive
- Simple-Select®
- SL2 Stainless Steel Based Slide System

3D CAD DRAWINGS

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PRODUCT ORDERS

Please call Bishop-Wisecarver Corporation at [redacted] with your specific application requirements — our technical staff will be available to assist with your custom solution.

Complete terms, conditions, and warranty information is available at [redacted]

WHAT MAKES US DIFFERENT

Our engineering and manufacturing facility provides expert development support and quick turnaround time. We tackle all engineering challenges with a novel approach — we have the patents to prove it and are majority sourced USA. We offer custom engineering services and technical expertise in motion, sensor and actuator integration, real-time software development, and electromechanical modeling and design.

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