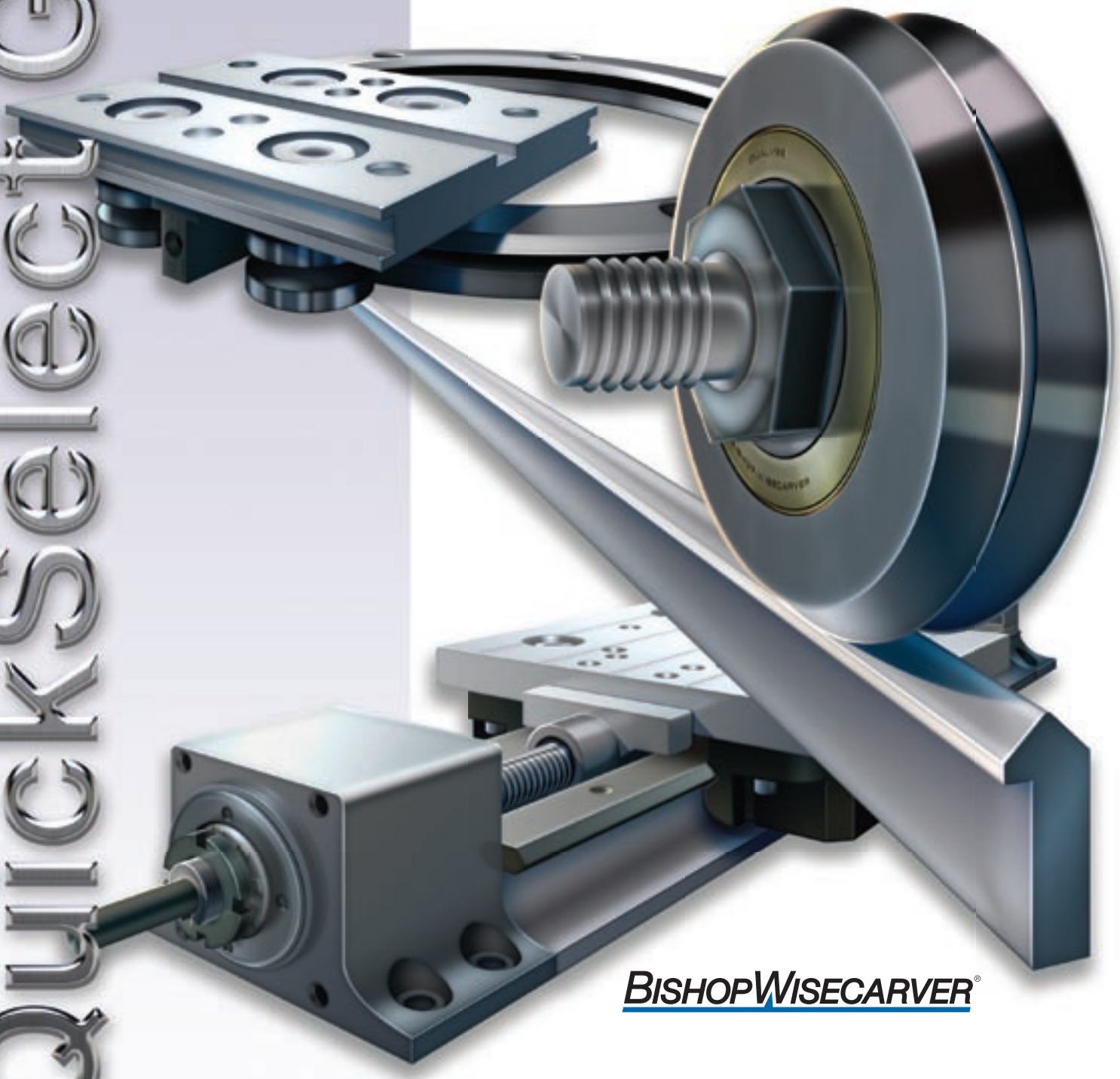
QuickSelect Guide

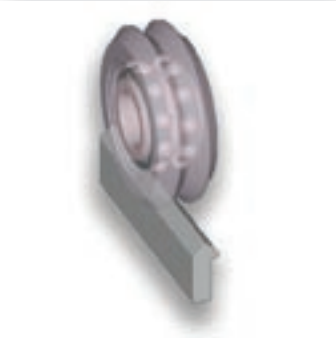
Guided Linear Motion Components & Systems

Widest Selection of Guide Wheel Technology



BISHOPWISECARVER®

Linear Technology Comparison








Characteristic	Guide Wheels	Round Rail	Square Rail	Teflon Bushing
Anti-friction	**Yes**	Yes	Yes	No
High Speed	**Excellent**	Good	Good	Excellent
High Load	**Good**	Good	Excellent	Good
Accuracy	**Good**	Good	Excellent	Fair
High Temperature	**Excellent**	Good	Poor	Poor
Dirty Environment	**Excellent**	Poor	Poor	Good
Clean Environment	**Good**	Good	Good	Poor
Ease of Assembly	**Excellent**	Good	Good	Good
Noise	**Excellent**	Good	Good	Excellent
Long Lengths	**Excellent**	Good	Poor	Good
Rotary Capability	**Yes**	No	No	No
Compliance	**Excellent**	Good	Poor	Fair
Rigidity	**Good**	Good	Excellent	Fair
Low Profile	**Excellent**	Poor	Excellent	Fair
Cost	**Excellent**	Good	Poor	Excellent

Bishop-Wisecarver, a family owned manufacturing company incorporated in 1950, remains the recognized expert and most trusted name in guide wheel technology, with the widest range of guide wheel based linear motion components and systems in the world. Delivering quality, innovative and custom designed products has provided the foundation to celebrate our 60 years in business. Bishop-Wisecarver strives to exceed our customers' expectations by providing exceptional custom engineering solutions for the toughest linear and rotary motion application problems.

History

In 1968, Bud Wisecarver, while designing fertilizer packaging equipment for Standard Oil, invented and patented DualVee Motion Technology® to provide a solution for harsh environment applications where existing technologies were ineffective. DualVee® also proved excellent for high speed, smooth motion, low noise, and long length requirements.

Motion Without Limits®

Our innovative products, world-class engineering and custom manufacturing capabilities offer unsurpassed design flexibility. Guided motion solutions from Bishop-Wisecarver are limited only by your imagination.

- **High speeds**
- **Fast acceleration**
- **High accuracy and repeatability**
- **Low noise**
- **Smooth, low friction motion**
- **Long lengths**
- **Critical and extreme environments**

– Dirt	– Dust
– Metal Chips	– Wood Chips
– Textile Fiber	– Slurry
– Deionized Water	– Vacuum
– Clean Room	– High Temperature
– Low Temperature	– Washdown

Using the QuickSelect Guide

With the countless options available today, choosing the best linear motion solution for your application can be an overwhelming task. This guide is designed as a general overview to assist you with your initial selection. Complete specifications, 3D CAD drawings, frequently asked questions (FAQ), and application examples can be downloaded at:

Product Catalogs:
www.bwc.com/library_download_documents.php

3D CAD Files:
www.bwc.com/3dcad.php

FAQs:
www.bwc.com/faq.vp.html

Application Examples:
www.bwc.com/app_stories.php

Guide wheel technology provides unmatched reliability in harsh environments. The wheel's inner vee diameter travels at a slower rate than the outer vee diameter, resulting in a velocity gradient that sweeps aside any debris that has settled on the track.

Table of Contents

Application and Design Assistance:

6am to 4:30pm Pacific Time
888.580.8272 925.439.8272

Thank you for considering Bishop-Wisecarver for your project.
We look forward to the opportunity to assist you!

Integral Wheels

Original DualVee Wheel

DualVee Bushings

LoPro Basic Wheel Plate with Lubricators or Wheel Covers (shown)

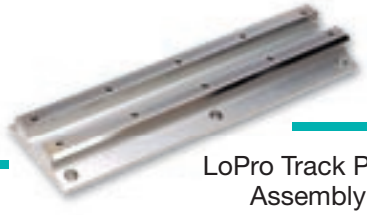
MadeWell Crown Rollers

UtiliTrak Vee Assemblies

UtiliTrak Crown Roller Assemblies

DualVee Track

LoPro Wiper Wheel Plate with Lubricators



LoPro Track Plate Assembly

Un-driven Systems

Bearing Assemblies

Un-driven Systems; Fixed Ring or Rotating Ring

Bogie Carriage

HepcoMotion® PRT Ring Slides

Rack Driven Systems; Gearcut Options - Inner or Outer Diameter

Fixed Center Carriage

Un-driven Ring Systems

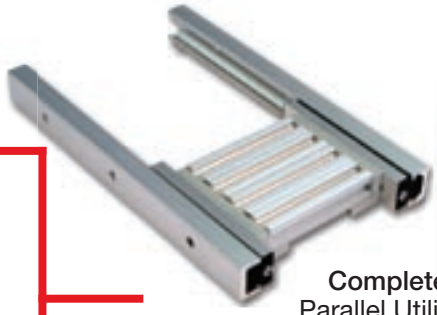
To COMPLETE SOLUTIONS

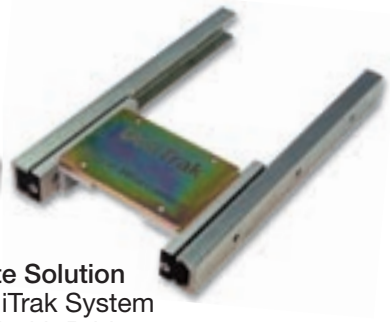
Vee Channel

Open Channel

Vee System

Crown Roller System

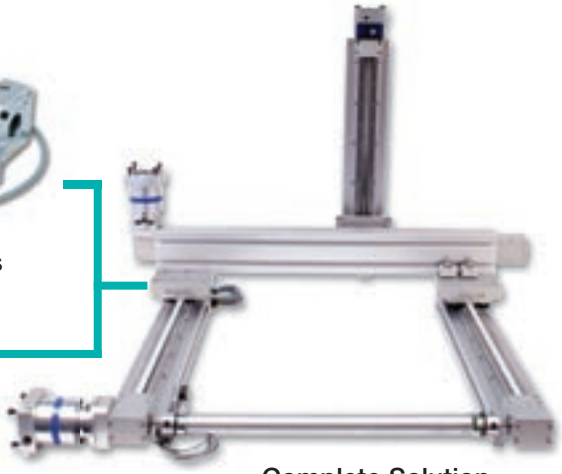




Complete Solution
Parallel UtiliTrak System
PW or SW with Bridge

Driven Systems:
Belt, Lead Screw, Ball Screw, Chain

Accessories



Complete Solution
LoPro X-Y-Z Gantry System
Belt and Lead Screw

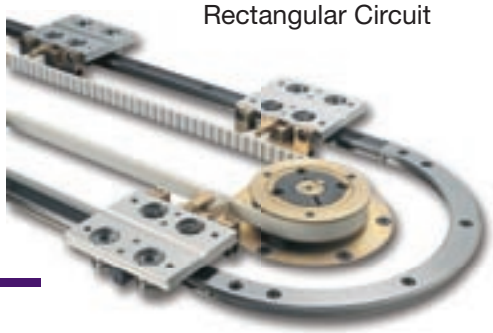
Double Edge Straight Slides

Gearcut Options - Inner or Outer Diameter

Ring Segments

Un-driven
Oval/Rectangular and
Curved Track Systems

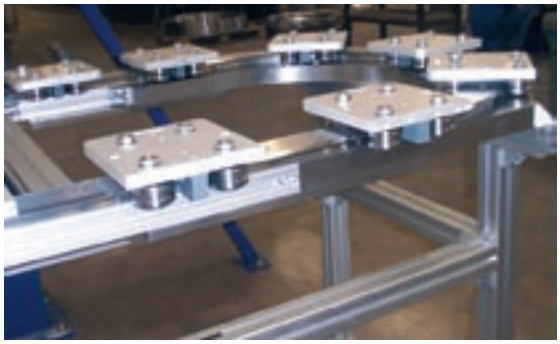
Complete Solution
DTS Driven Track System;
Oval Circuit,
Rectangular Circuit



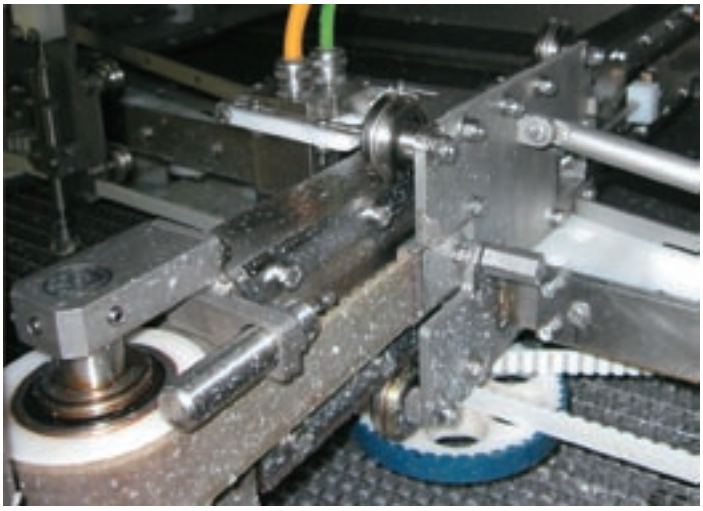
Application Examples

Bishop-Wisecarver offers a broad range of guide wheel based linear motion components and systems that are used worldwide in a variety of industries. From the clean room to the sawmill, our products are built to withstand most operating environments.

- Packaging
- Biomedical
- Food and beverage
- Printing
- Electronics
- Aerospace
- Automotive
- Textile
- Semiconductor
- Industrial automation
- Material handling
- Machine tool
- Welding
- Wood processing
- Paper processing and converting



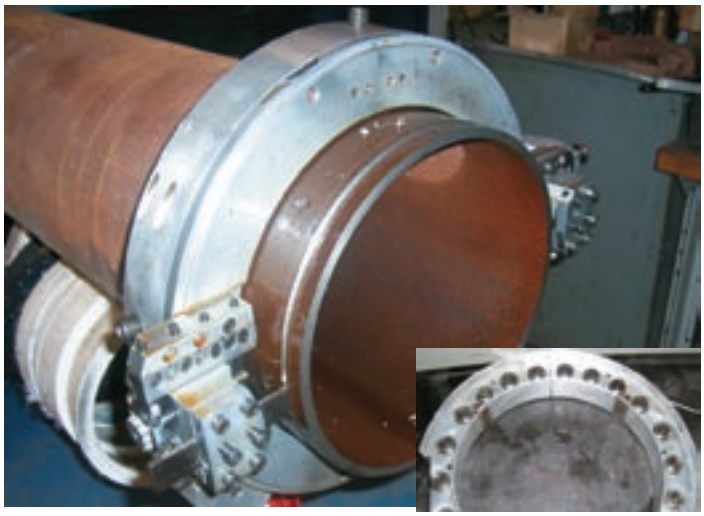
The stainless steel HepcoMotion PRT provides smooth motion and high stopping accuracy and reliability for this continuously indexing automated filling line. The PRT operates 24 hours per day and runs completely dry to avoid contamination.



The patented DualVee washdown wheel, ideal for food processing applications, has a unique double seal that prevents the ingress of liquid and contaminated particulates.

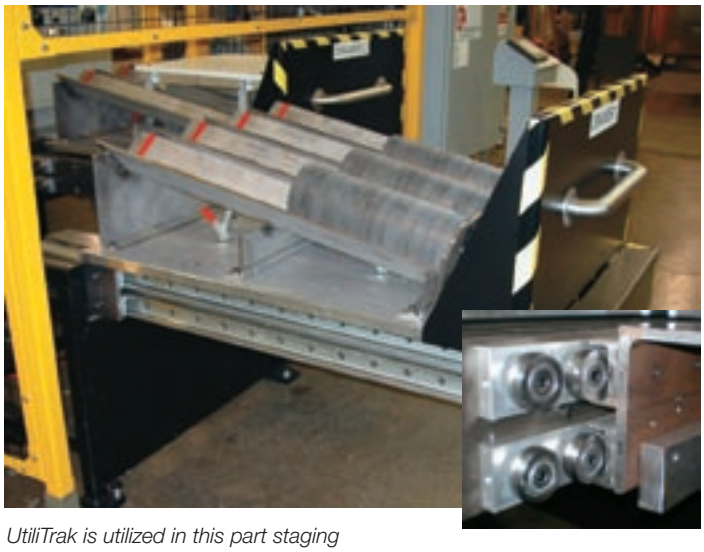
This handling & assembly system uses HepcoMotion DTS and PRT to cut, sort and transport washing machine hoses to an assembly station.

Designed for extreme environments and caked in cement dust, this size 4, belt-driven LoPro reliably drives a water jet cross cutter on a cement fiberboard plank siding line.



DualVee guide wheels offer a rigid circular bearing support for this portable pipe cutting application. DualVee easily withstands the heat and metal debris buildup during the cutting process.

Two nail guns mounted to DualVee wheels and track, travel smoothly and accurately along this 60 ft. wall framing assembly station. The nail guns attach sheets of plywood to 2x4 beams every 16" in one pass.



UtiliTrak is utilized in this part staging area for a CNC lathe. Two pullout part drawers ride along size 3 UtiliTrak which supports up to 1,000 lbs and is cantilevered up to 48".

HepcoMotion HDS Heavy Duty Slide system provides rigidity and accuracy for an automated multi-head drilling machine. HDS handles the high load requirements and every day pounding with ease.

This variable media printer utilizes a horizontally mounted un-driven LoPro to manually position print heads and a pneumatically driven UtiliTrak to vertically position UV curing heads.

DualVee wheels and pre-mounted track plates provide an effective and compact method to raise, lower and guide a bucket full of products from one conveyor line to another for this pharmaceutical, cosmetic and personal care packaging machinery.

Components Quick Comparison

		DualVee®						MadeWell®				Vee - Standard				
Wheel/Bearing Sizes		**0**	**1**	**2**	**3**	**4**	**4XL**	**0**	**1**	**2**	**3**	**13**	**18**	**25**	**34**	**54**
Diameter	mm	14.83	19.58	30.73	45.80	59.94	75.39	14.83	19.58	30.73	45.80	12.7	18	25	34	54
	in	0.58	0.77	1.21	1.80	2.36	2.97	0.58	0.77	1.21	1.80	0.50	0.71	0.98	1.34	2.13
Bearings: Dynamic Load Capacity Max Range (Smallest to Largest Size)																
Axial (L_A)	N	12 - 6552						Axial Loading not Recommended				60 - 2500				
	lbf	3 - 1473										13 - 562				
Radial (L_R)	N	28 - 14300						28 - 5900				120 - 5000				
	lbf	6 - 3215						6 - 1326				27 - 1124				
Carriages: Dynamic Load Capacity Max Range (Smallest to Largest Size) ** NOTE: For moment load capacities, see individual product detail pages shown at bottom of column																
Axial (L_A)	N	66 - 26208						Axial Loading not Recommended				240 - 10000				
	lbf	15 - 5892										54 - 2248				
Radial (L_R)	N	65 - 28660						55 - 14040**				240 - 10000				
	lbf	14 - 6430						12 - 3156**				54 - 2248				
Max Linear Speed (m/s)		5.5						5.5				8				
Max Acceleration (m/s^2)		49						49				20				
Track/Slide Length Max	Single Piece	6.7m (22 ft)						3.6m (11.8 ft)				6m (19.6 ft)				
	Jointed	Unlimited*						Unlimited*				Unlimited*				
Track/Slide Type																
Dual Edge DualVee Track		✓ Size 0 Only														
Single Edge DualVee Track		✓ Sizes 1 - 4														
One Piece Vee Channel (See Pg 19)		✓ Sizes 1 - 3														
One Piece Open Channel (See Pg 19)								✓ Sizes 0 - 3								
Vee Spacer Slide, Single Edge												✓				
Vee Spacer Slide, Dual Edge												✓				
Vee Slide, Single Edge												✓				
Vee Slide, Dual Edge												✓				
Flat Track, Narrow																
Flat Track, Wide																
Track Material and Options																
Steel		✓ Sizes 0 - 4						✓ Sizes 1 - 3				✓				
Stainless Steel		✓ Sizes 1 - 4														
Aluminum Channel (UtiliTrak)		✓ Sizes 1 - 3						✓ Sizes 0 - 2								
Track Options		Hardened or Un-Hardened: Drilled or Un-Drilled; Plating/Coating										Rack Cut, P1, P2, P3 Counterbored, Tapped or				
Wheel/Linear Technology																
DualVee 90 Degree (Double Row Bearing)***		✓														
MadeWell Crown Rollers (Double Row Bearing)***								✓								
V Groove 70 Degree												✓				
V Groove 90 Degree																
Flat Rollers																
Wheel/Bearing Material and Options																
Steel		✓						✓ Sizes 1 - 3				✓				
Stainless Steel		✓														
Polymer Overmolded Stainless Steel Bearing		✓ Sizes 0 - 2						✓ Sizes 0 - 2								
Wheel/Bearing Options (in addition to seal/shield options)		High/Low Temp, Washdown, Cleanroom Compatible, Integral (One-Piece Design)										Double Row, Twin Single Row, Through Hole or Blind Hole				
More Information		**Pages 8 - 9**						**Pages 8 - 9**								

All calculations assume lubricated, relatively clean environment

* Longer lengths are achieved by joining more than one piece

** MadeWell crown roller carriage loads are based on 3 to 5-wheel inline UtiliTrak carriages (see page 19). All other carriage loads are based on a 4 wheel standard carriage.

*** Size 0 polymer wheels have single row bearings

GV3								HDS2								
Vee - Slimline				Roller				Vee					Roller			
195	**265**	**360**	**580**	**18**	**25**	**34**	**54**	**64**	**95**	**120**	**128**	**150**	**58**	**89**	**122**	**144**
19.5	26.5	36	58	18	25	34	54	64	95	120	128	150	58	89	122	144
0.77	1.04	1.42	2.28	0.71	0.98	1.34	2.13	2.52	3.74	4.72	5.04	5.91	2.28	3.50	4.80	5.67
100 - 1060				Axial Loading not Recommended				2500 - 17000					Axial Loading not Permitted			
22 - 238								562 - 3822								
240 - 2600				400 - 8000				8000 - 50000					5000 - 80000			
54 - 585				90 - 1798				1798 - 11240					1124 - 17984			
400 - 4240				N/A				10000 - 68000					N/A			
90 - 953								2248 - 15286								
480 - 5200								16000 - 100000								
108 - 259								3597 - 22480								
				8				8					8			
				20				20					20			
				4m (13 ft)				4m (13 ft)					4m (13 ft)			
				Unlimited*				Unlimited*					Unlimited*			
								✓								
								✓								
				✓									✓			
													✓			
				✓				✓					✓			
								✓					✓			
Precision Grades, No Mounting Holes				Rack Cut, P1, P2A/B, P3 Precision Grades				Rack Cut, Commercial, Precision or SS Grades								
								✓								
				✓									✓			
				✓				✓					✓			
								✓					✓			
Slimline Single Row Bearing				Narrow or Wide Versions, Through Hole or Blind Hole				Through Hole or Blind Hole					Through Hole or Blind Hole			
Pages 10 -13								**Pages 14 - 15**								

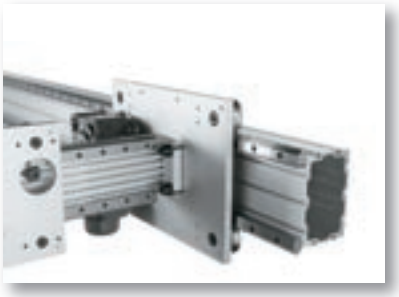
✓ **standard**
◆ **optional**

DualVee

MadeWell

GV3

HDS2



Components

DualVee® Guide Wheels & MadeWell® Crown Rollers

- Ideal for critical and extreme environments
- Self cleaning
- Lubricated for life
- Carbon, stainless steel, and polymer versions from stock
- Ground mounting surfaces not required

Load Capacities (Max)

		Steel & Stainless Steel (All Wheels Except Washdown)						Washdown Wheels		Polymer		
		0	1	2	3	4	4XL	2	3	0	1	2
Axial L_A†	N	123	252	625	1701	4001	6552	400	580	12	27.5	42
	lbf	28	57	141	382	900	1473	90	130	3	6	9
Radial L_R	N	650	1220	2650	5900	9700	14300	2420	5200	28	55	70
	lbf	146	274	596	1326	2181	3215	544	1169	6	12	16

† MadeWell crown rollers not intended for axial loading

DualVee Wheels/MadeWell Crown Roller Details

Part #	Wheel Type									Available Sizes						Seal/ Shield			Material			Lubricant			
	Original DualVee	High Temperature	Low Temperature	Washdown Wheel	Studded Integral Wheel	Bushed Integral Wheel	Swaged Wheel Assembly	Swaged Studded Wheel	MadeWell Crown Roller*	0 14.83mm/.584" dia.	1 19.58mm/.771" dia.	2 30.73mm/1.210" dia.	3 45.80mm/1.803" dia.	4 59.94mm/2.360" dia.	4XL 75.39mm/2.968" dia.	Seal	Shield	Double Seal	52100 Carbon Steel	440C Stainless Steel	Polymer Overmolded SS	Standard Grease	Low Temperature	High Temperature	FDA Approved
W_	✓									✓	✓	✓	✓	✓			✓		✓			✓			
W_X	✓									✓	✓	✓	✓	✓	✓	✓			✓			✓			
W_SSX**	✓										✓	✓	✓	✓	✓	✓				✓		✓			
W_SS227		✓								✓	✓	✓	✓	✓			✓			✓				✓	
W_SS300			✓								✓	✓	✓	✓			✓			✓			✓		
WDW_SSX				✓								✓	✓					✓		✓					✓
SWI C/E _					✓					✓	✓	✓	✓	✓			✓		✓			✓			
SWI C/E _ X					✓					✓	✓	✓	✓	✓		✓			✓			✓			
SWI C/E _ P					✓					✓	✓	✓					✓				✓	✓			
BWI C/E _M						✓						✓	✓	✓			✓		✓			✓			
BWI C/E _ XM						✓						✓	✓	✓		✓			✓			✓			
CSWI C/E _									✓		✓	✓	✓				✓		✓			✓			
CSWI C/E _ X									✓		✓	✓	✓			✓			✓			✓			
CSWI C/E _ P									✓	✓	✓	✓					✓				✓	✓			
SWA C/E _							✓			✓	✓	✓	✓				✓		✓			✓			
SWA C/E_X							✓			✓	✓	✓	✓			✓			✓			✓			
SWA C/E_SSX							✓				✓	✓	✓			✓				✓		✓			
SWA C/E_SS227		✓					✓			✓	✓	✓	✓				✓			✓				✓	
SWA C/E_SS300			✓				✓				✓	✓	✓				✓			✓			✓		
SWS C/E_								✓		✓	✓	✓	✓	✓			✓		✓			✓			
SWS C/E_X								✓		✓	✓	✓	✓	✓		✓			✓			✓			
SWS C/E_SSX								✓		✓	✓	✓	✓	✓		✓				✓		✓			
SWS C/E_SS227								✓		✓	✓	✓	✓	✓			✓			✓				✓	
SWS C/E_SS300								✓			✓	✓	✓	✓			✓			✓			✓		
SWS C/E_WDSSX								✓				✓	✓					✓		✓					✓

* MadeWell crown rollers are intended to run on UtiliTrak Open Channel. See page 19 for details.

** Standard stainless steel wheels are also available with a combination seal/shield. Specify when ordering, if required.

How To Order:

Sizes 0-4: Part # (From Table Above, Replace the Underscore with Wheel Size), Select **C** (Concentric) or **E** (Eccentric) Where Applicable
Example 1: **W2X** = Original DualVee Wheel, Size 2, Steel, Standard Grease, Seals
Example 2: **SWIC0P** = Studded Integral Wheel, Concentric, Size 0, Polymer, Standard Grease, Shields
Example 3: **SWAE2SS227** = Studded Wheel Assembly, Eccentric, Size 2, Stainless Steel, High Temperature Grease, Shields

Size 4XL: **W4XXL** = Original DualVee Wheel, Steel, Size 4 Extra Large, Standard Grease, Seals
W4SSXXL = Original DualVee Wheel, Stainless Steel, Size 4 Extra Large, Standard Grease, Seals

Temperature Range

Wheel Types	Part #'s	Fahrenheit	Celsius
All Steel Wheels, Shield	W, SWI, BWI, CSWI	-31° to +248°	-35° to +120°
All Steel and Stainless Steel Wheels, Seal	W_X, SWI_X, BWI_X, W_SSX, CSWI_X	-22° to +212°	-30° to +100°
All Polymer Wheels, Shield	SWI_P, CSWI_P	-4° to +248°	-20° to +120°
Washdown Wheels (Stainless Steel), Double Seal	WDW_SSX	-22° to +212°	-30° to +100°
High Temperature (Stainless Steel), Shield	W_SS227	-22° to +500°	-30° to +260°
Low Temperature (Stainless Steel), Shield	W_SS300	-94° to +230°	-70° to +110°

DualVee Track

Part #				Size					Material			Length‡		
												Drilled	Undrilled	
(T) Single Edge, Hardened; Steel = 53 HRC Min, Stainless Steel = 40 HRC Min	(TD) Double Edge, Hardened; Steel = 53 HRC Min, Stainless Steel = 40 HRC Min	(TS) Single Edge, Unhardened; Steel=22-25 HRC, Stainless Steel = 20-22 HRC	(TDS) Double Edge, Unhardened; Steel=22-25 HRC, Stainless Steel = 20-22 HRC	0 (.156" hole diameter, 2.000" hole spacing; drilled track)	1 (.156" hole diameter, 2.000" hole spacing; drilled track)	2 (.203" hole diameter, 3.000" hole spacing; drilled track)	3 (.281" hole diameter, 3.000" hole spacing;drilled track)	4 (.344" hole diameter, 4.000" hole spacing; drilled track)	Stainless Steel (SS)	Carbon Steel (Blank)	Coatings	Length in Inches (omit decimal point) - # of Holes	Length in Feet up to Max, Below; Hardened	Length in Feet up to Max, Below; Unhardened
✓		✓			✓	✓	✓	✓	✓	✓	✓	See Table	20ft	22ft
	✓		✓	✓						✓	✓		18ft	20ft
Standard Lengths - # of Holes (Drilled Track)				6.50-4	12.50-7	12.63-5	12.75-5	13.00-4						
				12.50-7	24.50-13	24.63-9	24.75-9	25.00-7						
				18.50-10	36.50-19	36.63-13	36.75-13	37.00-10						
				24.50-13	48.50-25	48.63-17	48.75-17	49.00-13						
				30.50-16	60.50-31	60.63-21	60.75-21	61.00-16						
				36.50-19	72.50-37	72.63-25	72.75-25	73.00-19						

‡ Unlimited lengths are possible by joining more than one piece. For non-standard lengths and hole spacing, contact Bishop-Wisecarver.

✓ standard
◆ optional

How To Order: Part # Size Material Length (in) - #/Holes (Drilled) OR Length (ft) (Undrilled)
Example 1: **TS2-SS-12** = Single Edge Track, Unhardened, Size 2, Stainless Steel, Undrilled, 12 Feet Long
Example 2: **T3-6075-21** = Single Edge Track, Hardened, Size 3, Carbon Steel, Drilled, 60.75 Inches Long, 21 Holes

Bushings and Journals (For Use with all W_ or WDW_ Wheels)

How To Order:

Standard Profile Bushing: Inch **(Blank)** or Metric **(M)** **B** Size **(1, 2, 3 or 4)** Concentric **(Blank)** or Eccentric **(X)** 303 Stainless Steel **(-SS)**
Example: **B1X-SS** = Inch, Standard Profile Bushing, Size 1, Eccentric, Stainless Steel

Low Profile Bushing: Inch **(Blank)** or Metric **(M)** Size **(1, 2, 3 or 4)** **PWB** Concentric **(C)** or Eccentric **(X)**
Example: **M2PWBC** = Metric, Size 2, Low Profile Bushing, Concentric, 303 Stainless Steel

Journal: **MJ** Concentric **(C)** or Eccentric **(X)** Size **(0, 1, 2, 3 or 4)** **A**
Example: **MJC0A** = Metric Journal, Concentric, Size 0, 303 Stainless Steel, Assembly

NOTE: Low profile bushings and journals are only available in 303 stainless steel

Components

GV3 Linear Guidance and Transmission System

- Available as an assembled unit or in component form with a wide array of sizes, types and options to choose from, providing maximum flexibility of design
- Rugged construction is ideal for high duty applications and harsh environments
- Accurate, high speed, friction free motion

Bearing Load Capacities (Max)

		SJ, LJ, BHJ									GSJ, GLJ, GBHJ				LRN				SR, LR, BHR			
		Double Row (DR)				Twin (Blank)																
Bearing Ø		**18**	**25**	**34**	**54**	**13**	**18**	**25**	**34**	**54**	**19.5**	**26.5**	**36.0**	**58.0**	**18**	**25**	**34**	**54**	**18**	**25**	**34**	**54**
Axial L_A	N	190	400	900	2500	60	125	320	800	1800	100	235	500	1060	N/A †				N/A †			
	lbf	43	90	202	562	13	28	72	180	405	22	53	112	238								
Radial L_R	N	600	1500	3000	5000	120	200	600	1400	3200	240	575	1200	2600	400	1000	2000	5000	600	1600	3200	8000
	lbf	135	337	674	1124	27	45	135	315	719	54	129	270	585	90	225	450	1124	135	360	719	1798

†Axial loading not recommended for LRN, SR, LR or BHR bearings

Carriage Load Capacities (Max)

		Standard/Removable, Twin Type					Standard/Removable, DR Type				Slimline			
Bearing Ø		**13**	**18**	**25**	**34**	**54**	**18**	**25**	**34**	**54**	**19.5**	**26.5**	**36.0**	**58.0**
Axial L_A	N	240	500	1280	3200	7200	760	1600	3600	10000	400	940	2000	4240
	lbf	54	112	288	719	1619	171	360	809	2248	90	211	450	953
Radial L_R	N	240	400	1200	2800	6400	1200	3000	6000	10000	480	1150	2400	5200
	lbf	54	90	270	629	1439	270	674	1349	2248	108	259	540	1169

Note: Moment load capacities differ for each carriage length option, and are available at **www.bwc.com/products/gv3.html.**

Carriage & Assembled Units

	Unit Type			Part # (Slide Width - Bearing Diameter)																				
				Standard and Removable Carriages											Slimline Carriages									
	Assembled Unit **(AU)**	Kit of Parts **(K)**	Carriage Plate Only **(CP)**	12mm - Ø12.7mm (**12P1/P2 13** or **12P3 13** for Standard Type, **1213** for Removable Type) *, **, ***	20mm - Ø18mm **(2018)****	25mm - Ø25mm **(2525)**	28mm - Ø18mm **(2818)****	35mm - Ø25mm **(3525)**	44mm - Ø34mm **(4434)**	50mm - Ø25mm **(5025)**	60mm - Ø34mm **(6034)**	76mm - Ø34mm **(7634)**	76mm - Ø54mm **(7654)**	120mm - Ø54mm **(12054)**	20mm - Ø19.5 **(20195)****	25mm - Ø26.5 **(25265)**	28mm - Ø19.5 **(28195)****	35mm - Ø26.5mm **(35265)**	44mm - Ø36mm **(44360)**	50mm - Ø26.5mm **(50265)**	60mm - Ø36mm **(60360)**	76mm - Ø360mm **(76360)**	76mm - Ø58mm **(76580)**	120mm - Ø58mm **(120580)**
Standard	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A									
Removable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓										
Slimline	✓	✓	✓	N/A											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Standard Lengths				50	65	85****	75	100	125	110	150	170	200	240	65	85	75	100	125	110	150	170	200	240
				75	100	135	125	150	180	160	200	240	300	360	100	135	125	150	180	160	200	240	300	360
				100	140	180	175	200	225	220	280	340	400	480	140	180	175	200	225	220	280	340	400	480

* Standard 1213 carriage is available to suit either P1/P2 or P3 slides. All other carriages suit any grade slide.

** Cap seals **(CS)**, Double Row **(DR)** bearings, and Tamper Proof **(T)** option not available on size 1213 carriage

*** Metal shields not available on 1213, 2018, 2818, 20195, 28195 carriages

**** 2525R (removable type) length is 80

Bearings

		Type										Part # (Bearing Diameter)									Fixed/ Adjustable			Bearing Type		Seal / Shield		Height Options	
		Through Hole, Short Stud **(SJ)**	Through Hole, Long Stud **(LJ)**	Blind Hole **(BHJ)**	Through Hole, Short Stud **(GSJ)**	Through Hole, Long Stud **(GLJ)**	Blind Hole **(GBHJ)**	Through Hole, Narrow **(LRN)**	Through Hole, Short Stud **(SR)**	Through Hole, Long Stud **(LR)**	Blind Hole **(BHR)**	Ø12.7mm **(13)**	Ø18mm **(18)**	Ø25mm **(25)**	Ø34mm **(34)**	Ø54mm **(54)**	Ø19.5mm **(195)**	Ø26.5mm **(265)**	Ø36.0mm **(360)**	Ø58.0mm **(580)**	Concentric **(C)**	Eccentric **(E)**	Double Eccentric **(DE)**	Twin Row Bearings **(Blank)**	Double Row Bearings **(DR)**	Metal Shield **(Blank)**‡	Nitrile Sealed **(NS)**	Standard **(Blank)**	Controlled Height **(CH)**
	Standard Bearing 70 Degree Twin or Double Row	✓	✓	✓								✓	✓	✓	✓	✓					✓	✓	◆	✓	◆	✓	◆	✓	◆
	Slimline Bearing 70 Degree Single Row				✓	✓	✓										✓	✓	✓	✓	✓	✓				✓	◆		
	Narrow Track Roller Single Row							✓					✓	✓	✓	✓					✓	✓	N/A	N/A		✓	◆	N/A	
	Wide Track Roller Twin Row								✓	✓	✓		✓	✓	✓	✓					✓	✓				✓	◆		

‡ Metal shields are not available on Ø19.5mm slimline bearings, or Ø18mm Track Rollers

	Length	Carriage Type		Lubrication				Bearing Type		Seal/ Shield		Height Options		Tamper-Proof	
	Length in mm **(L_ _ _)** (See Standard Lengths Table)	Removable **(R)**	Standard or Slimline **(Blank)**	Cap Seals **(CS)****	Lubricators **(LB)**	Cap Wipers **(CW)**	Not Required **(Blank)**	Twin Bearing: **Standard (Blank)**	Double Row Bearing **(DR)****	Metal Shield, Std **(Blank)*****	Nitrile Sealed **(NS)**	Standard **(Blank)**	Controlled Height **(CH)**	Tamper Proof Option **(T)****	Not Required **(Blank)**
	✓		✓	◆	◆		✓	✓	◆	✓	◆	✓	◆	◆	✓
	✓	✓			◆		✓	✓	◆	✓	◆	N/A		N/A	
	✓		✓		◆	◆	✓	✓	N/A	✓	◆			◆	✓

✓ standard
◆ optional

How To Order:

Bearings: Type Size C/E/DE - Bearing Type - Seal/Shield - Controlled Height
Example: **SJ34C NS** = Standard Bearing, Through Hole, Short Stud, Size 34, Concentric, Twin Row Bearings, Nitrile Seal

Carriages & Assembled Units: Qty/Systems x Qty Carriages per System x Unit Type Part # Length Carriage Type Lubrication Bearing Type Seal/Shield Height Option Tamperproof + Slide Part Number *Omit Slide Part Number for CP Carriage Plate Only*
Example: **2 x (3 x AU4434 L180 R LB NS + NM44 L3146 P2)** = 2 Assembled Unit Systems, each with 3 Carriages, Part #4434, 180mm Long, Removable Type, Lubricators, Twin Row Bearings (Blank), Nitrile Seal, Standard Height + NM44 Spacer Slide, 3146mm Long, Grade P2 (See Slides Table)

Slides

	Type			Part Number															
				Spacer and Flat Slides (Slide Width)															
	Flat Slide **(Blank)**	Spacer Slide **(N)**	Flat Track **(FT)**	11mm **(MSE)**	12mm **(MS12)**	16mm **(VE)**	20mm **(V20)**	21mm Spacer, 19mm Flat **(SE)**	25mm **(S25)**	28mm **(V28)**	29mm Spacer, 25mm Flat **(ME)**	35mm **(S35)**	43mm Spacer, 32mm Flat **(LE)**	44mm **(M44)**	50mm **(S50)**	60mm **(M60)**	76mm for Ø34 Bearing **(M76)**	76mm for Ø54 Bearing **(L76)**	120mm **(L120)**
Double Edge Spacer		✓			✓		✓		✓	✓		✓		✓	✓	✓	✓	✓	✓
Max Length P1/P2					1976		4020		4020	4020		4020		4020	4020	4020	4020	4020	4020
Max Length P3				N/A	1976	N/A	4020	N/A	4020	4020	N/A	4020	N/A	6000	4020	6000	6000	6000	6000
C&D (Std. End Hole Spacing-No Rack)					20.5		43		43	43		43		43	43	43	43	88	88
C&D (Std. End Hole Spacing-With Rack)					N/A		15		15	15		15		15	15	15	15	30	30
Std E Dimension					45		90		90	90		90		90	90	90	90	180	180
Single Edge Spacer		✓		✓		✓		✓			✓		✓						
Max Length P1/P2				1976		4020		4020			4020		4020						
Max Length P3				4020	N/A	4020	N/A	4020	N/A		6000	N/A	6000	N/A					
C&D (Std. End Hole Spacing)				20.5		43		43			43		88						
E (Hole Spacing)				45		90		90			90		180						
Double Edge Flat	✓				✓		✓		✓	✓		✓		✓	✓	✓	✓	✓	✓
Max Length P1/P2					1000		4020		4020	4020		4020		4020	4020	4020	4020	4020	4020
Max Length P3				N/A	1976	N/A	4020	N/A	6000	4020	N/A	6000	N/A	6000	6000	6000	6000	6000	6000
C&D (Std. End Hole Spacing)					13		43		43	43		43		43	43	43	43	43	88
E (Hole Spacing)					30		90		90	90		90		90	90	90	90	90	180
Single Edge Flat	✓			✓		✓		✓			✓		✓						
Max Length P1/P2				1000		4020		4020			4020		4020						
Max Length P3				1976	N/A	5500	N/A	5500	N/A		6000	N/A	6000	N/A					
C&D (Std. End Hole Spacing)				20.5		43		43			43		43						
E (Hole Spacing)				45		90		90			90		90						
Flat Track			✓																
Max Length All Grades																			
C&D (Std. End Hole Spacing)														N/A					
E (Hole Spacing)																			
Use With: Standard Bearing				J13	J13	J18	J18	J25	J25	J18	J34	J25	J54	J34	J25	J34	J34	J54	J54
Slimline Bearing				N/A	N/A	J195	J195	J265	J265	J195	J360	J265	J580	J360	J265	J360	J360	J580	J580
Std or Removable Carriage†				N/A	1213	N/A	2018	N/A	2525	2818	N/A	3525	N/A	4434	5025	6034	7634	7654	12054
Slimline Carriage††							20195		25265	28195		35265		44360	50265	60360	76360	76580	120580
Narrow Track Roller (LRN)																			
Wide Track Roller (R)														N/A					

* Any length of slide up to maximum length can be supplied, but for optimum price and delivery time, slide lengths should be specified which maintain the standard C&D (End Hole Spacing) dimensions. Refer to the GV3 catalog or contact Bishop-Wisecarver.

** Rack option **(R)** not available on MS12 spacer slide

*** Counterbored hole option not available on MS12 or MSE flat slides

**** Tapped hole **(T)** and no holes **(N)** options for spacer slides available only with rack option **(R)**; no holes option **(N)** for flat slides only available with P3 grade

† Pinions and rack-driven carriages are also available. Refer to the GV3 catalog or contact Bishop-Wisecarver.

†† Slimline carriages cannot be used with the double edge slides if the rack option **(R)** is selected.

Flat Tracks (W x H)				Length	Grade ✓Indicates Ground Surfaces					Rack Option		Fixing Hole Options				C&D Values	
24mm x 12mm **(2412)**	32mm x 16mm **(3216)**	40mm x 20mm **(4020)**	66mm x 33mm **(6633)**	Length in mm **(L_ _ _)***	**P1**	**P2**	**P2A**	**P2B**	**P3 (unground)**	No Rack **(Blank)**	Rack Cut Slide **(R)****, ††	Std Hole **(Blank)** for Flat Slides	Counterbored (**Blank** for Spacer Slides, **C**** for Flat Slides)	Tapped Fixing Holes **(T)*****	No Holes **(N)*****	Standard Values **(Blank)***	Custom Values **(C_ _) (D_ _)***
N/A				Length (mm) = C+D + multiples of E for slides with holes, any length for slides without holes E= Hole Spacing, C&D=End Hole Spacing*			N/A	N/A		✓	◆	N/A	✓	◆	◆	See table	For Custom Values, Contact Bishop-Wisecarver
							N/A	N/A		✓	◆	N/A	✓	◆	◆		
							N/A	N/A		✓	N/A	✓	◆	N/A	◆		
							N/A	N/A		✓		✓	◆		◆		
✓	✓	✓	✓			N/A				N/A		✓	◆	N/A	◆		
2000	4020	4020	4020														
20.5	43	43	88														
45	90	90	180														
N/A																	
18	25	34	54														
18	25	34	54														

NOTE: The preferred pairing of bearing/carriage and slides are shown. However, other combinations are possible. See the mix and match tables at **www.bwc.com/products/gv3.html.**

✓ standard
◆ optional

How To Order: Type Part Number Length Grade Rack Option Fixing Hole Style 'C' & 'D' Custom Dimensions

Example 1: **NS35 L1290 P1 R T** = Double Edge Spacer Slide, 35mm Width, 1290mm Long, P1 Grade, Rack Mounted, Tapped Hole Option, Standard C&D Dimensions

Example 2: **FT4020 L1886 P2A** = Flat Track, 40mm x 20mm, 1886mm Long, Grade P2A, Standard C&D Dimensions

Components

HDS2 Heavy Duty Slide System

- Available as assembled units or in component form
- Slides and tracks available in single piece construction up to 4 meters long
- Can operate without lubrication; ideal for food machinery and clean applications

Load Capacities (Max)**

		Vee Bearings				Track Roller Bearings					Carriage Assemblies***			
		THJR & BHJR				THRR & BHRR				THRN & BHRN				
Bearing Ø		64	95	120/128	150	58	89	122	144	58	64	95	120/128	150
Axial L_A*	N	2500	7000	10000	17000	N/A				N/A	10000	28000	40000	68000
	lbf	562	1574	2248	3822						2248	6294	8992	15286
Radial L_R	N	8000	20000	30000	50000	10000	20000	30000	80000	5000	16000	40000	60000	100000
	lbf	1798	4496	6744	11240	2248	4496	6744	17984	1124	3597	8992	13488	22480

* Axial loading not recommended for Track Roller type bearings
** Loads shown are for steel bearings. Loads for stainless steel bearings are 25% less.
*** Moment load capacities differ for each carriage type option, and are available at **www.bwc.com/products/hds.html**.

Bearings

Material		Part Number						Diameter/Size									Journal Type		Seal		Plate Thickness
		Vee		Rollers																	
Stainless Steel **(SS)**	Steel **(Blank)**	Through Hole **(THJR)**	Blind Hole **(BHJR)**	Through Hole **(THRR)**	Blind Hole **(BHRR)**	Through Hole Narrow **(THRN)**	Blind Hole Narrow **(BHRN)**	Ø58mm **(58)**	Ø64mm **(64)**	Ø89mm **(89)**	Ø95mm **(95)**	Ø120mm **(120)**	Ø122mm **(122)**	Ø128mm **(128)**	Ø144mm **(144)***	Ø150mm **(150)***	Concentric **(C)**	Eccentric **(E)**	Metal **(Blank)**	Nitrile **(NS)**	Choose from table below, and enter value shown in this column
◆	✓	✓	✓						✓		✓	✓		✓		✓	✓	✓	✓	◆	
◆	✓			✓	✓			✓		✓			✓		✓		✓	✓	✓	◆	
	✓					✓	✓	✓									✓	✓	✓	◆	

Plate Thickness Min - Max (mm)	Ø58 / Ø64	Ø89 / Ø95	Ø120 / Ø122 / Ø128	Ø144 / Ø150	Plate Thickness
	6.5 - 12.5				**12**
		9 - 16			**16**
	11.5 - 17.5		6.5 - 17		**17**
	16.5 - 22.5	16 - 22			**22**
				6.5 - 25	**25**
	21.5 - 27.5	21 - 27	16.5 - 27		**27**
		26 - 32			**32**
			26.5 - 37		**37**
				21.5 - 40	**40**

* B/THJR 150 vee bearings and B/THRR 144 track rollers use a twin taper roller bearing. B/THRN narrow track rollers use a single row ball bearing, and is ideally suited to run on the back edge of a single edge vee slide (HSS25 or HSS33). All other bearings use double row ball bearings.

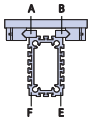
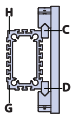
How to Order:

Bearings: Material Part Number Diameter Journal Type Seal Plate Thickness
Example: **SS THRR 89 C NS 16** - Stainless Steel, Track Roller, Through Hole, Ø89, Concentric, Nitrile Seal, 16 to 22 Plate Thickness

Carriage Assembly: Material Part Number Type Lubricators/Cap Wipers
Example: **SS AU6425C CW** = Carriage Assembly with Ø64mm Bearings, Suitable for 25mm Single Edge Slides Mounted to Compact Beam, Cap Wipers Required

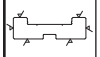
Slides: Grade Part Number Length Keyway Rack Option C & D Dimensions
Example: **P HSS25 L2040 NK R C30 D30** = Precision Grade, HSS25, Length 2040, Non-keyway Version, Spur Rack, C=30, D=30

Assembled Carriages

Material		Part Number (Bearing Ø - Slide)					Carriage Type				Lubricators		Cap Wipers		
Stainless Steel **(SS)**	Steel **(Blank)**	Ø64mm - 25mm **(AU6425)**	Ø95mm - 25mm **(AU9525)**	Ø120mm - 25mm **(AU12025)**	Ø128mm - 33mm **(AU12833)**	Ø150mm - 33mm **(AU15033)**	Double Edge Slide **(D)**	Compact **(C)**	Narrow **(N)**	Wide **(W)**	Not Required **(Blank)**	Required **(LB)**	Not Required **(Blank)**	Cap Wipers **(CW)**	Cap Wipers + Outboard Scraper **(CW4S)**
◆	✓	✓	✓	✓	✓	✓					✓	◆	✓	◆	◆

Slide	HSD25	HSS25	HSS25/33	HSS25/33
Beam	N/A	HB25C	HB25/33	HB25/33
Position	N/A	AB or CD	AB or EF	CD or GH

Vee Slide and Flat Tracks

Grade ✓ Indicates Ground Surfaces			Part #						Length	Keyway		Rack Option			C&D Values	
Precision **(P)**	Commercial **(C)**	Stainless Steel **(SS)**	Single Edge Vee, 25mm Width **(HSS25)**	Single Edge Vee, 33mm Width **(HSS33)**	Double Edge Vee, 25mm Width **(HSD25)**	Narrow Flat Track, 25mm Width **(HTS25)**	Narrow Flat Track, 33mm Width **(HTS33)**	Wide Flat Track, 25mm Width **(HTD25)**	Length in mm **(L_ _ _)***	Keyway, Std **(Blank)**	No Keyways **(NK)****	None **(Blank)**	Spur **(R)****	Helical **(HR)*****	Standard Values **(Blank)***	Custom Values **(C_) (D_)***
			✓	✓					Length (mm) = C+D + multiples of E	✓	◆	✓	✓	✓	See Table	For Custom Values, contact Bishop-Wisecarver
					✓					✓	◆					
						✓	✓			✓	◆	✓	✓	✓		
								✓		✓	◆					
Max Length			4046	3956	4046	4046	3956	4046								
C&D (Std. End Hole Spacing)			43	58	43	43	58	43								
E (Hole Spacing)			90	120	90	90	120	90								
Use With Bearings:			B/THJR 64,95, 120	B/THJR 128,150, B/THRN 58	B/THJR 64,95, 120	B/THRR 58,89	B/THRR 120,144	B/THRR 58,89								

✓ standard
◆ optional

* Any length of slide up to maximum length can be supplied, but for optimum price and delivery time, slide lengths should be specified which maintain the standard **C&D** (End Hole Spacing) dimensions. Refer to the HDS2 Catalog or contact Bishop-Wisecarver.

** HSS & HST 25 have an option or 2.5 or 3 module spur rack. 2.5 is standard. If 3 is required, add "3" after the R

*** Helical Racks **(HR)** not available on stainless steel grade

**** PHSD, CHSD, CHTD, PHTD not available in NK version

Manual Linear Guide Systems Quick Comparison

		MinVee®		UtiliTrak®								
		Polymer	Steel	PW			SW			CR		
Wheel/Bearing Sizes		0	0	0	1	2	1	2	3	1	2	3
Diameter	mm	14.83	14.83	14.83	19.58	30.73	19.58	30.73	45.80	19.58	30.73	45.80
	in	0.58	0.58	0.58	0.77	1.21	0.77	1.21	1.80	0.77	1.21	1.80
Dynamic Load Capacity Max Range (Smallest to Largest Size)												
Axial (L_A)	N	66.7	540	88 - 311			719 - 7140			705 - 4763		
	lbf	15.0	121.4	19.8 - 69.9			161.6 - 1605.1			158.5 - 1070.8		
Radial (L_R)	N	65	490	55 - 165			2440 - 14040			1111 - 5739		
	lbf	14.6	110.2	12.4 - 37.1			548.5 - 3156.3			249.8 - 1290.2		
Pitch Moment (M_P)	Nm	1.4	7.9	3 - 18			18 - 229			14 - 146		
	ft•lbf	1	5.8	2.2 - 13.3			13.3 - 168.9			10.3 - 107.7		
Yaw Moment (M_Y)	Nm	4.5	8.6	1.5 - 8			30.5 - 519			21 - 176		
	ft•lbf	3.3	6.3	1.1 - 5.9			22.5 - 382.8			15.5 - 129.8		
Roll Moment (M_R)	Nm	1	6.2	1 - 4			7 - 212.4			3 - 35		
	ft•lbf	0.7	4.6	0.7 - 2.9			5.2 - 156.5			2.2 - 25.8		
Number of Wheels per Carriage Assembly		4	4	3			3, 4 or 5			3		
Max Linear Speed (m/s)		1	5.5	1			5.5			5.5		
Max Acceleration (m/s^2)		29.4	49	29.4			49			49		
Track Length Max	Single Piece	6.1m (20 ft)		3.6m (12 ft)			3.6m (11.7 ft)			3.5m (11.45 ft)		
	Jointed	Unlimited*		Unlimited*			Unlimited*			Unlimited*		
Track/Slide Type												
Dual Edge DualVee Track		✓										
One Piece Vee Channel				✓			✓					
One Piece Open Channel				✓			✓					
Single Edge DualVee Track on Aluminum Channel										✓		
Single Edge DualVee Track Plate Assembly												
Vee Slide, Dual Edge												
Vee Spacer Slide, Dual Edge												
Track Material												
Steel		✓					✓					
Stainless Steel												
Aluminum Channel				✓								
Steel (on Aluminum Base)												
Stainless Steel (on Aluminum Base)										✓		
Wheel/Linear Technology												
DualVee 90 Degree (Double Row Bearing)**		✓		✓			✓			✓		
MadeWell Crown Rollers (Double Row Bearing)**				✓			✓					
V Groove 70 Degree												
Wheel/Bearing Material												
Steel			✓				✓					
Stainless Steel										✓		
Polymer Overmolded Stainless Steel		✓		✓								
More Information		**Pages 18 - 19**								**Pages 18 - 19**		

Note: All calculations assume lubricated, relatively clean environment

* Longer lengths are achieved by joining more than one piece

** Size 0 polymer wheels have single row bearings

	SL2				Simple Select®				LoPro® (Un-driven)			
	13	**25**	**34**	**54**	**18**	**25**	**34**	**54**	**1**	**2S/2L**	**3**	**4**
	12.7	25	34	54	18	25	34	54	19.58	30.73	45.80	59.94
	0.50	0.98	1.34	2.13	0.71	0.98	1.34	2.13	0.77	1.21	1.80	2.36
	240 - 8000				435 - 10000				988 - 15684			
	54 - 1798.5				97.8 - 2248.1				222 - 3526			
	240 - 10000				685 - 10000				2391 - 19012			
	54 - 2248.1				154.0 - 2248.1				538 - 4274			
	4.2 - 1192				12 - 990				26 - 1220			
	3.1 - 879.2				8.9 - 730.2				18.9 - 899.5			
	4.2 - 1490				19 - 990				62 - 1478			
	3.1 - 1099				14.0 - 730.2				45.7 - 1090.3			
	1.3 - 280				4 - 360				27 - 1174			
	1 - 206.5				3.0 - 265.5				19.8 - 865.6			
	4				4				4			
	8				8				5.5			
	29				29				49			
	4m (13 ft)				1.976m (6.5 ft)				3.026m (9.9 ft)			
	Unlimited*				Unlimited*				Unlimited*			
									✓			
	✓											
	✓				✓							
					✓							
	✓											
									✓			
									◆			
									✓			
	✓				✓							
					✓				✓			
	✓								◆			
	Pages 20-21				**Page 22**				**Page 23**			

✓ standard
◆ optional

MinVee

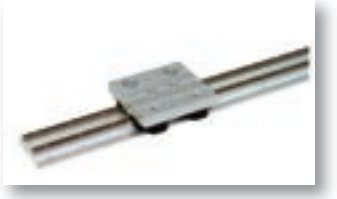
UtiliTrak PW Series

UtiliTrak SW Series

UtiliTrak CR Series

SL2

Simple Select



LoPro Un-driven

Manual Linear Guide Systems

MinVee® Linear Slide and UtiliTrak® Linear Guide

MinVee

- Low profile, cost efficient, compact linear slide
- 2” x 2” wheel plate consists of two (2) concentric and two (2) eccentric DualVee integral wheels (page 8)
- Double edged track features a patented self-aligning mounting shoulder to accurately position vee ways
- Ideal for semiconductor, laboratory, medical and packaging applications

UtiliTrak

- Ideal for running two systems in parallel, where one side uses DualVee integral wheels, and the other uses MadeWell crown rollers (page 8). Design compensates for mounting errors, and does not require absolute parallelism for proper operation.
- Standard bridge connections available for running parallel systems while providing a stable mounting surface
- Low noise, smooth motion, antifriction operation
- Cost efficient, easy to install, with minimal maintenance required
- Sleek, compact design well suited for a variety of environments, including transport type and drawer applications

Carriage Assembly Load Capacities (Max)

		MinVee*	
		Polymer	Steel
Wheel/Bearing Size		0	0
Axial (L_A)	N	66.7	540
	lbf	15	121.4
Radial (L_R)	N	65	490
	lbf	14.6	110.2
Pitch (M_P)	Nm	1.4	7.9
	ft•lbf	1	5.8
Yaw (M_Y)	Nm	4.5	8.6
	ft•lbf	3.3	6.3
Roll (M_R)	Nm	1	6.2
	ft•lbf	0.7	4.6

*Based on 100km Service Life

MinVee

Double Edge Track

	Part #		Size	Length (in)/ # Holes						
	Hardened - 53 HRC **(TD)**	Unhardened - HRC 22-25 **(TDS)**	Size 0, .561 inches Wide **(0)**	6.5 long, 4 holes **(650-4)**	12.5 long, 7 holes **(1250-7)**	18.5 long, 10 holes **(1850-10)**	24.5 long, 13 holes **(2450-13)**	30.5 long, 16 holes **(3050-16)**	36.5 long, 19 holes **(3650-19)**	Customer Specified - inches **(xxx.xx)**
Drilled	✓	✓	✓	✓	✓	✓	✓	✓	✓	◆*
Undrilled	✓	✓	✓							✓

* For non-standard, drilled lengths, or non-standard hole locations, contact Bishop-Wisecarver

Size 0 Wheel Plate Assemblies

Part #	Wheel Carriage Type		
MinVee Size 0 Wheel Plate Assembly **(MV0WPA)**	Steel DualVee Integral Wheels, Shielded **(Blank)**	Steel DualVee Integral Wheels, Sealed **(X)**	Polymer Overmolded Stainless Steel Integral DualVee Wheels, Shielded **(P)**
✓	✓	✓	✓

✓ standard
◆ optional

How To Order:

Carriage: Part # Carriage Type
Example : **MVOWPAX** = MinVee Size 0 Wheel Plate Assembly, Steel, Sealed

Track: Part # Size Length - # Holes (leave # Holes blank for custom length)
Example 1: **TD0-650-4** = Hardened, Drilled Size 0 Track, 6.5 inches long, 4 holes
Example 2: **TDS0-52.5** = Unhardened, Undrilled Size 0 Track, 52.5 inches long

UtiliTrak PW Series			UtiliTrak SW Series									UtiliTrak CR Series		
3-Wheel Assembly			3-Wheel Assembly			4-Wheel Assembly			5-Wheel Assembly			3-Wheel Assembly		
0	1	2	1	2	3	1	2	3	1	2	3	1	2	3
88	155	311	719	1475	5100	862	1770	6122	1014	2080	7140	705	1749	4763
19.8	34.8	69.9	161.6	331.6	1146.5	193.8	397.9	1376.3	228.0	467.6	1605.1	158.5	393.2	1070.8
55	110	165	2440	5300	11800	2440	5300	11800	2900	6300	14040	1111	2671	5739
12.4	24.7	37.1	548.5	1191.5	2652.7	548.5	1191.5	2652.7	651.9	1416.3	3156.3	249.8	600.5	1290.2
3	8	18	18	58	229	18	58	229	18	58	229	14	40	146
2.2	5.9	13.3	13.3	42.8	168.9	13.3	42.8	168.9	13.3	42.8	168.9	10.3	29.5	107.7
1.5	3	8	30.5	100	346	45.8	150	519	45.8	150	519	21	61	176
1.1	2.2	5.9	22.5	73.8	255.2	33.8	110.6	382.8	33.8	110.6	382.8	15.5	45.0	129.8
1	2	4	7	22.7	118	9.8	31.8	165.2	12.6	40.9	212.4	3	9	35.0
0.7	1.4	2.9	5.2	16.7	87.0	7.2	23.5	121.8	9.3	30.2	156.7	2.2	6.6	25.8

UtiliTrak® Carriage Assemblies

	Prefix		Size				Series			Wheel Type		# of Wheels		
Series	SW and PW Series **(UT)**	CR Series **(UTCCA)**	**0**	**1**	**2**	**3**	SW **(WPA)**	PW **(WPAP)**	CR **(-SS)**	Vee **(Blank)**	MadeWell **(R)**	3-Wheel Assembly **(Blank)**	4-Wheel Assembly **(-4A)**	5-Wheel Assembly **(-5A)**
SW	✓			✓	✓	✓	✓			✓	✓	✓	◆	◆
PW	✓		✓	✓	✓			✓		✓	✓	✓		
CR		✓		✓	✓	✓			✓	✓		✓		

* Longer lengths are possible by joining more than one piece

✓ standard
◆ optional

Channel

Prefix		Type		Material			Size				Length (mm)	
UTT	**UTCTPA**	Vee **(Blank)**	Open **(R)**	SW/Steel Channel **(S)**	PW/Aluminum Channel **(A)**	Stainless Steel **(SS)**	**0**	**1**	**2**	**3**	Standard Lengths (See 'Dimensions' table below)	Enter any length up to 3600 **(L _ _ _ _)***
✓		✓	✓	✓				✓	✓	✓		✓
✓		✓	✓		✓		✓	✓	✓			✓
	✓	✓				✓		✓	✓	✓	✓	◆

Dimensions

	Size			
	0	1	2	3
Dimensions SW & PW				
System Width	20	26	40	58
System Height Vee	22	26.3	35	50
System Height Crown (Min)	22	25.3	34.7	46.9
System Height Crown (Max)	23.1	27.6	37.4	53.4
Dimensions CR				
System Width		40	60	85
System Height CR		28	36	50
Standard Lengths		190	240	415
		290	390	665
		390	540	915
		490	690	1165
		590	840	1415
		690	990	1665
		790	1140	1915
		890	1290	2165
		990	1440	2415
		1090	1590	2665
		1990	2190	2915
		2990	2790	3165
		3490	3390	3415

How To Order:

Carriage Assemblies: Prefix Size Series Wheel Type #/Wheels
Example 1: **UT1WPA-4A** = Size 1, SW Series, Vee Assembly, 4 Wheels
Example 2: **UTCCA2-SS** = Size 2, CR Series, 3 Wheels

PW/SW Channel: Prefix Size Type Material Size, Length
Example: **UT0WPAPR, 450mm** = Size 0, Aluminum Channel (PW Series), Open Channel 450mm Long

CR Channel: Prefix Size Length Material
Example: **UTCTPA3-2165-SS** = Size 3, CR Series, 1650mm long

SL2 Stainless Steel Slide System

- Corrosion resistant system with aluminum alloy carriages and ground stainless steel slides and bearing assemblies
- Smooth, precise, low friction for long, maintenance-free life; interchangeable with GV3 components (pages 10-13)
- Suitable for a variety of clean room and food processing applications; USDA approved

Carriage Plates and Assembled Systems

	Part #		For Use With Slide																										
	Assembled System (**AUSS**)	Carriage Plate Only (**SSCP**)	MS/NMS 25 (**MS12**)*			S/NS 25 (**S25**)			S 35 (**S35**)			S 50 (**S50**)			M/NM 44 (**M44**)			M 60 (**M60**)			M 76 (**M76**)								
Length	✓	✓	N/A			130	180		150	200		160	220		175	225		200	280		240	340							
	✓	✓	50	75	100			80			100			110			125			150			170						
Carriage Load Capacity (Max) Twin Bearing**																													
Axial (L_A)	N		240			960			960			960			3000			3000			3000								
	lbs		54			215.8			215.8			215.8			674.4			674.4			674.4								
Radial (L_R)	N		240			960			960			960			3000			3000			3000								
	lbs		54			215.8			215.8			215.8			674.4			674.4			674.4								
Pitch (M_P)	Nm		120xY			480xY			480xY			480xY			1500xY			1500xY			1500xY								
	ft•lbf		88.5xY			354xY			354xY			354xY			1106.4xY			1106.4xY			1106.4xY								
Yaw (M_Y)	Nm		120xY			480xY			480xY			480xY			1500xY			1500xY			1500xY								
	ft•lbf		88.5xY			354xY			354xY			354xY			1106.4xY			1106.4xY			1106.4xY								
Roll (M_R)	Nm		1.3			11			15			22			60			84			108								
	ft•lbf		1			8.1			11.1			16.2			44.3			62			80								
Carriage Load Capacity (Max) Double Row Bearing**																													
Axial (L_A)	N					1600			1600			1600			3600			3600			3600								
	lbs					359.7			359.7			359.7			809.3			809.3			809.3								
Radial (L_R)	N					3000			3000			3000			6000			6000			6000								
	lbs					674.4			674.4			674.4			1348.8			1348.8			1348.8								
Pitch (M_P)	Nm					800xY			800xY			800xY			1800xY			1800xY			1800xY								
	ft•lbf					590xY			590xY			590xY			1327.7xY			1327.7xY			1327.7xY								
Yaw (M_Y)	Nm					1500xY			1500xY			1500xY			3000xY			3000xY			3000xY								
	ft•lbf					1106.4xY			1106.4xY			1106.4xY			2212.8xY			2212.8xY			2212.8xY								
Roll (M_R)	Nm					17			25			37			72			100			129								
	ft•lbf					12.5			18.4			27.3			53.1			73.8			95.2								
Value of Y***			.035	.060	.085	.072	.120	.051	.090	.140	.070	.100	.160	.080	.103	.153	.088	.125	.205	.110	.165	.265	.130						
Use With Bearings**			13			25			25			25			34			34			34								

*Double row bearing assemblies not available on size MS12 (size 13 bearings)

**Load capacities shown are for lubricated systems, contact Bishop-Wisecarver for dry system load capacities

*** Y dimension = Spacing between bearing centers in meters

****Order bearings separately for SSCP (carriage plates only)

				SSCP		AUSS			
			Length	Type		Lubrication		Bearings	
	L/NL 76 (L76)		See Table For Available Lengths	Accommodates Lubricators & Cap Seals (A)	Accommodates Lubricators Only (B)	Lubricators (L)	Cap Seals (CS)	Twin Bearing (Blank)	Double Row (DR)*
	300	400		✓		✓	✓	✓	◆
			200		✓			✓	◆
	6000								
	1348.8								
	6000								
	1348.8								
	3000xY								
	2212.8xY								
	3000xY								
	2212.8xY								
	210								
	155								
	8000								
	1798.4								
	10000								
	2248								
	4000xY								
	2950.4xY								
	5000xY								
	3688.0xY								
	280								
	206.5								
	.198	.298	.140						
	54								

✓ standard
◆ optional

Bearing Assemblies - Standard 70 Degree

Part #			Diameter/Size				Fixed/ Adjust-able		Type		Seal
Through Hole, Short Stud (SS SJ)	Through Hole, Long Stud (SS LJ)	Blind Hole (SS BHJ)	12.7mm (13)	25mm (25)	34mm (34)	54mm (54)	Concentric (C)	Eccentric (E)	Twin Row Bearings (Blank)	Double Row Bearings (DR)*	Nitrile Seal, Standard (NS)
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	◆	✓

*Double row bearing assemblies not available on size 13

Slides

	Type		Part # - Width								Length	Holes	
	Spacer Slide (SS N)	Flat Slide (SS)	12mm (MS 12)	25mm (S 25)	35mm (S 35)	50mm (S 50)	44mm (M 44)	60mm (M 60)	76mm (M 76)	76mm (L 76)	Length (mm); multiples of E + 2xC&D for slides with holes, any length for slides without holes	With Holes (Blank)	Without Holes (P)*
Spacer Slide	✓		✓	✓			✓			✓	✓	✓	◆
Max Length (mm)			1976	4020			4020			4020			
C&D (End Hole Spacing)			20.5	43			43			88			
E (Hole Spacing)			45	90			90			180			
Flat Slide		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Max Length (mm)			1016	4020	4020	4020	4020	4020	4020	4020			
C&D (End Hole Spacing)			13	43	43	43	43	43	43	43			
E (Hole Spacing)			30	90	90	90	90	90	90	90			

* Slides with no holes may be specified at any length, up to the maximum

How To Order:

Bearings: Part # - Diameter/Size - Fixed/Adjustable - Type - Seal
Example: **SSSJ34C NS** = Stainless Steel, Through Hole, Short Stud, 34mm, Concentric, Twin Row, Nitrile Seal

Slides: Type - Part # - Length - Holes/NoHoles
Example: **SSNM44 626** = Stainless Steel Spacer Slide, 25mm wide, 626mm Long, with Holes

Carriage Plates: Part # - Length - Type A or B
Example: **SSCPM60 200 A** = Carriage Type A for M 60 slide, 200mm in length

Assembled Systems: Part # - Slide Reference Carriage Plate Length Lubrication Bearing + Slide Part Number
Example: **AUSSM44 225 CS DR + SSNM44 626** = Assembled Unit, 225mm Carriage Length, with Cap Seals, Double Row Bearings, with SSNM44 626 Slide (Spacer Slide, 44mm Wide, 626mm Long)

Manual Linear Guide Systems

Simple Select® Linear Guide

- Simple, ready-to-mount linear guide using GV3 components (pages 10-13) from a standard range of four popular sizes
- P2 grade steel spacer slides, precision cold drawn and hardened on the vee running surfaces for low wear
- Carriages fitted with double row bearings and cap seals for long system life and low maintenance
- Includes blanking plugs to eliminate dirt traps

Carriage Assembly Load Capacities (Max)

		Size			
		20	**25**	**44**	**76**
Axial (L_A)	N	435	800	2800	10000
	lbs	97.8	179.8	629.5	2248.1
Radial (L_R)	N	685	1500	4700	10000
	lbs	154.0	337.2	1056.6	2248.1
Pitch (M_P)	Nm	12	30	146	990
	ft•lbf	8.9	22.1	107.7	730.2
Yaw (M_Y)	Nm	19	56	243	990
	ft•lbf	14.0	41.3	179.2	730.2
Roll (M_R)	Nm	4	9	57	360
	ft•lbf	3.0	6.6	42.0	265.5

Slide Width (Size)				**Aluminum Carriage Plate**			**Spacer Slide Lengths (in mm)**											
20mm **(20)**	25mm **(25)**	44mm **(44)**	76mm **(76)**	Width **(mm)**	Length **(mm)**	# of Fitted Carriages (xx)	**266**	**356**	**536**	**716**	**896**	**1076**	**1256**	**1436**	**1616**	**1796**	**1976**	**Other***
✓				64	100	Any	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	◆
	✓			80	135	Any	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	◆
		✓		116	180	Any	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	◆
			✓	185	300	Any			✓	✓	✓	✓	✓	✓	✓	✓	✓	◆

*Other lengths available on request up to 4m (please refer to GV3 slides, Pages 12-13)

✓ standard
◆ optional

How To Order: Slide Size Number of Fitted Carriages - Slide Length
Example: **25 1 - 1796** = 25mm Wide x 1796mm Long Slide, 1 Carriage Plate

LoPro® Un-Driven Linear Guide

- Based on proven DualVee technology (pages 8-9)
- Complete non-actuated linear system, ready for immediate installation
- Long stroke length capability, track can be butt-joined to create systems of virtually any length
- High speed and acceleration capabilities
- See pages 28-29 for driven LoPro systems

Carriage Assembly Load Capacities (Max)

		Size			
		1	2S/2L	3	4
Axial (L_A)	N	988	2450	6668	15684
	lbf	222	551	1499	3526
Radial (L_R)	N	2391	5194	11564	19012
	lbf	538.0	1168	2600	4274
Pitch (M_P)	Nm	26	95	346	1220
	ft•lbf	18.9	70.3	254.9	899.5
Yaw (M_Y)	Nm	62	202	599	1478
	ft•lbf	45.7	148.9	442.1	1090.3
Roll (M_R)	Nm	27	100	372	1174
	ft•lbf	19.8	73.8	274.1	865.6

Size	Wheel Plate			Support Beam			Corrosion Resistance		Version	Travel Length**	
	Wiper Wheel Plate* **(W)**	Basic Wheel Plate w/ Track Lubricators **(BL)**	Basic Wheel Plate w/ Wheel Covers **(BC)**	Aluminum Beam **(A)**	Steel Beam **(S)**	Un-mounted **(Blank)**	Standard Steel Components **(Blank)**	Corrosion Resistant Components* **(CR)**	**V5** for Wiper Wheel Plate, **Blank** for Basic Wheel Plate	Max Travel Length Single Piece **(mm)**	Max Travel Length **(Joined)**
1	✓	✓	✓	✓	✓	✓	✓	◆	✓	3026	Unlimited
2***				No	No	✓				3023	
2S/2L***				✓	✓	No				3023	
3				✓	✓	✓				3020	
4				No	✓	✓				2962	

* Corrosion resistant systems available with wiper wheel plate only

** For beam length please see LoPro catalog

*** 2S/2L denotes beam sizes (small or large) and apply to beam mounted systems only. See LoPro catalog.

✓ standard
◆ optional

How To Order: LP Size Wheel Plate System Beam Corrosion Resistance Version (Wiper Wheel Plate Only), Travel Length
Example 1: **LP3WBACRV5, 2500** = LoPro Un-Driven Size 3, Wiper Wheel Plate, Aluminum Support Beam, Corrosion Resistant, 2500mm Travel

Actuated Linear Guides Quick Comparison

		PDU2	PDU2M	PSD80	PSD120	LoPro® 1	LoPro® 2	LoPro® 2S / 2L	LoPro® 3	LoPro® 4	DLS 3S	DLS 3L
System Drive Types - Max Dynamic Linear Force												
Belt	N	280	280			315		672 / 1407	1761	2818	560	560
	lbf	63	63			71		151 / 316	396	634	126	126
Chain	N					431		1036	1975	3261		
	lbf					97		233	444	733		
Lead Screw	N			300		222	334		1000	1556		
	lbf			67		50	75		225	350		
Ball Screw	N				7600		2800		2300	8600		
	lbf				1709		629		517	1933		
Carriage Dynamic Load Capacity Max												
Axial (L_A)	N	500	750	500	700	988	2450	2450	6668	15684	1600	1600
	lbf	112	169	112	157	222	551	551	1499	3526	360	360
Radial (L_R)	N	500	500	500	700	2391	5194	5194	11564	19012	3000	3000
	lbf	112	112	112	157	538	1168	1168	2600	4274	674	674
Pitch Moment (M_P)	Nm	14	21	14	33	26	95	95	346	1220	56	120
	ft•lbf	10.3	15.5	10.3	24.3	18.9	70.3	70.3	254.9	899.5	41.3	88.5
Yaw Moment (M_Y)	Nm	14	14	14	30	62	202	202	599	1478	105	225
	ft•lbf	10.3	10.3	10.3	22.1	45.7	148.9	148.9	442.1	1090.3	77.4	165.9
Roll Moment (M_R)	Nm	5	15	7.5	30	27	100	100	372	1174	24	24
	ft•lbf	3.69	11.1	5.5	22.1	19.8	73.8	73.8	274.1	865.6	17.7	17.7
Max Linear Speed (m/s)		6		1	.83	5.5					5+	
Max Acceleration (m/sec^2)		29		15		49					29	
Travel Length Max	Single Piece	5825mm		2635mm	1253mm	See pages 28-29					7770mm	7850mm
	Jointed	5825mm		2635mm	1253mm	Unlimited*					Unlimited*	
Track Material												
Steel						✓	✓	✓	✓	✓	✓	✓
Stainless Steel						◆	◆	◆	◆	◆	✓	✓
Aluminum		✓		✓								
Wheel/Linear Technology												
DualVee 90 Degree						✓	✓	✓	✓	✓		
V Groove 70 Degree											✓	✓
V Groove 90 Degree												
Roller		✓		✓								
LBG Caged Linear Ball Guide												
Wheel/Bearing Material												
Herculane® (Polymer)		✓		✓	✓							
Steel						✓	✓	✓	✓	✓	✓	✓
Stainless Steel						◆	◆	◆	◆	◆	✓	✓
Corrosion Resistant		◆	N/A	◆	N/A	◆	◆	◆	◆	◆		
Clean Room Compatible						◆	◆	◆	◆	◆		
More Information		Page 26		Page 26		Pages 28 - 29					Page 27	

Note: All calculations assume lubricated, relatively clean environment
*Unlimited travel length applies to belt and chain systems only. Lead screw/ball screw systems are limited by available screw lengths.

✓ standard
◆ optional

PDU2

PSD120

LoPro Belt

LoPro Screw

	DLS				HDLS				HDCS		SBD	
	3C	4S	4L	5	64N	64W	95N	95W	64	95	20-80	30-100
					50mm belt	50 / 75mm belt	50mm belt	50 / 75mm belt	5mm / 10mm Pitch			
	560	1225	1225	2450	4900	4900 / 7350	4900	4900 / 7350			1000	3300
	126	275	275	551	1101	1101 / 1652	1101	1101 / 1652			225	742
									12800 / 19400	12800 / 19400		
									2878 / 4361	2878 / 4361		
	1600	3500	3500	10000	10000	10000	28000	28000	10000	28000	21200	52100
	360	787	787	2248	2248	2248	6294	6294	2248	6294	4766	11712
	3000	6000	6000	10000	16000	16000	40000	40000	16000	40000	21200	52100
	674	1349	1349	2248	3597	3597	8992	8992	3597	8992	4766	11712
	108	165	300	990	1000	1300	3220	4060	1125	3780	175	755
	79.7	121.7	221.3	730.2	737.6	958.9	2375	2994.7	829.8	2787.9	129.1	556.9
	200	280	510	990	1600	2080	4600	5800	1800	5400	175	755
	147.5	206.5	376.2	730.2	1180.1	1534.2	3393	4278	1327.6	3982.8	129.1	556.9
	24	70	70	360	610	1060	1708	2968	900	2520	189	639
	17.7	51.6	51.6	265.5	449.9	781.8	1259.8	2189.1	663.8	1858.7	139.4	471.3
	5+			6	Over 6				0.25 to 0.5		4	
	29			29	29				29		29	
	7669mm	7800mm	7720mm	5442mm	5234mm	5174mm	5174mm	5114mm	2660mm	2580mm	5650mm	5575mm
	Unlimited* (DLS3C limited by belt strength)				Unlimited*				N/A		N/A	
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓				
	✓	✓	✓	✓								
					✓	✓	✓	✓	✓	✓		
											✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	✓	✓	✓	✓								
											◆	◆
											◆	◆
	Page 27				Page 30				Page 30		Page 31	

LoPro Chain

DLS

HDLS

HDCS

SBD

Actuated Linear Guides

PDU2 Profile Belt Driven Unit

- Compact, ready to mount unit delivers high speeds, high load capacity, and long life using Herculane® wheel technology
- Single unit accommodates multiple carriages
- Corrosion resistant version has USDA approved aluminum components
- Ideal for food and pharmaceutical packaging applications

PSD80 and PSD120 Profile Screw Driven Unit

- High strength aluminum compact beam available in standard lengths
- Single or multi-axis solutions available
- Herculane wheel technology allows smooth, low friction movement
- Pre-adjusted and pre-lubricated for practically maintenance-free operation
- Continuous stainless steel sealing strip prevents ingress of dirt and debris

Carriage Assembly Load Capacities (Max)

		PDU2	PDU2M	PSD80	PSD120
Axial (L_A)	N	500	750	500	700
	lbs	112.4	169	112.4	157.3
Radial (L_R)	N	500	500	500	700
	lbs	112.4	112	112.4	157.3
Pitch (M_P)	Nm	14	21	14	33
	ft•lbf	10.3	15.5	10.3	24.3
Yaw (M_Y)	Nm	14	14	14	30
	ft•lbf	10.3	10.3	10.3	22.1
Roll (M_R)	Nm	5	15	7.5	30
	ft•lbf	3.6	11.1	5.5	22.1

* Travel length is shorter than beam length
**Specify when using for a Y-Z connection to a PDU2M

PSD80																				
Unit Type			Beam Length*			Beam Slots	Unit Config.		Drive Type				Screw Lead							
													Right				Left			Carriage Details
Standard	Double Acting	Slave	Length in mm (L___) Up to 2850mm Max	Length in mm (L___) Up to 5770mm Max	Length in mm (L___) Up to 6000mm Max	With T Slots (T)	Closed (C)	Open (P)	Driven (D)	Double Acting (DA)	Slave (S)	Slave without nut (SW)	4	15	25	70	L15	L25	L70	Special Carriage ** (CP1) Leave (Blank) for standard version	Corrosion Resistant Version (C) Leave (Blank) for standard version
✓			Any			✓	✓	◆	✓				✓	✓	✓	✓	◆	◆	◆	◆	◆
	✓			Any		✓	✓	◆		✓				✓	✓	✓	◆	◆	◆	◆	◆
		◆			Any	✓	✓	◆			◆	◆	N/A				N/A			◆	◆

PDU2															
Unit Type		Beam Length*	Shaft			Beam Slots		CR		Carriage Details (PDU2M Only)					
										Type	Number			Hand	
Standard (PDU2)	For Moment Loads (PDU2M)	Length in mm (L_ _ _) Up to 6m Max	Left (L)	Right (R)	Double Shaft (D)	With T Slots (T)	Without Slots (P)	Corrosion Resistant (C)	Not Required (Blank)	Belt Driven Carriage (DC)	General Purpose; wraps around beam, limit switches are mounted under the beam (1)	Designed for X-Y or Y-Z connection with raised key portions to locate in T-Slots (3)	Does not extend below underside of beam, no switch cam facility (5)	Right (R)	Left (L)
✓		Any	✓	✓	✓	✓	✓	◆	✓	N/A (leave blank for PDU2)					
	✓	Any	✓	✓	✓	✓	N/A			✓	✓	✓	✓	✓	✓

PSD120			
Beam Length*		Screw Pitch	
Length in mm (L_ _ _) 400mm to 1500mm Max			
Standard Length	Special Length	5mm Screw Pitch (P05)	10mm Screw Pitch (P10)	16mm Screw Pitch (P16)
400 to 1500 in 100 increments	Any number from 400 to 1500	✓	✓	✓

*Travel length is 175mm shorter than beam length

✓ standard
◆ optional

*Travel length is 247mm shorter than beam length

How To Order:

PDU2/M: Model Beam Length* Shaft Beam Slots Corrosion Resistant Carriage Type/Number/Hand
Example 1: **PDU2 L2400 R T C** = PDU2, Beam Length 2400mm, Right Shaft, With T Slots, Corrosion Resistant
Example 2: **PDU2M L2468 R T DC 3 L** = PDU2M, Beam Length 2468mm, Right Shaft, T Slots, Belt Driven Carriage Number 3 Left-Hand

PSD80: PSD80 Beam Length* Beam Slots Unit Config. Drive Type Screw Lead/Hand Type
Example: **PDS80 L1246 T C D 25 (CP1) (C)** = PSD80, 1246mm Beam Length, beam with T-slots, Closed Unit, Driven, 25mm Screw Lead Right Hand, Special Carriage for Y-Z Connection to PDU2M. Corrosion Resistant Version

PSD120: PSD120 Beam Length* Screw Pitch
Example: **PDS120 L1000 P05** = PSD120, 1000mm Beam Length, 5mm Screw Pitch

DLS Driven Linear System - Belt Driven

- Complete, off-the-shelf package ideally suited for almost any linear positioning application
- Hardened and precision ground slides and double row cap sealed vee bearings allow for smooth motion, low maintenance, and long system life
- Polyurethane steel-reinforced belt for minimum stretch and high speed capability
- Cantilever axis with lightweight beam option provides ideal low inertia vertical axis for pick and place applications

Carriage Assembly Load Capacities (Max)

		Size					
		3...S	3...L	3C	4...S	4...L	5
Axial (L_A)	N	1600	1600	1600	3500	3500	10000
	lbs	360	360	360	787	787	2248
Radial (L_R)	N	3000	3000	3000	6000	6000	10000
	lbs	674	674	674	1349	1349	2248
Pitch (M_P)	Nm	56	120	108	165	300	990
	ft•lbf	41.3	88.5	79.6	121.7	221.2	730.2
Yaw (M_Y)	Nm	105	225	200	280	510	990
	ft•lbf	77.4	166	147.5	206.5	376.1	730.2
Roll (M_R)	Nm	24	24	24	70	70	360
	ft•lbf	17.7	17.7	17.7	51.6	51.6	265.5

Size	Beam Length*	Carriage Length			Drive Input Type				Drive Output Type		Input Handing			Beam Option		T Slot Windows
	Any length up to 8000 in single piece on DLS3, DLS3C and DLS4, 6000 on DLS5 (unlimited with joints)	Short **(S)**	Long **(L)**	Cantilever **(Blank)**	Keyed Shaft **(K)**	Fitted Precision Planetary Gearbox - No Motor **(G)****	Fitted Worm Gearbox **(W)****	Special Gearbox Flange **(F)****	Keyed Shaft **(K)**	No Shaft **(O)**	Right Hand **(R)**	Left Hand **(L)**	Fitted Worm Gearbox **(Blank)**	Standard **(Blank)**	Lightweight **(L)** (Standard on DLS3C)	Required **(W)** (Required to fit heavy duty type t-nuts; not required on DLS3C)
3	Unlimited	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	◆	◆
3C	Unlimited			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
4	Unlimited	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		◆
5	Unlimited	N/A			✓		✓		✓	✓	✓	✓		✓		

*Travel Length is shorter than beam length: DLS3S - 174mm DLS3L - 254mm DLS3C - 331.3mm
DLS4S - 224mm DLS4L - 304MM
DLS5 - 558mm

✓ standard
◆ optional

**For detailed discussion on drive input options, please refer to the DLS catalog

How To Order: DLS Size Beam Length* Carriage Length Drive Input Type Input Handling Beam Option T-Slot Windows
Example: **DLS 3 1885 S F K R L W** = DLS, Size 3, 1885mm Beam Length, Short Carriage, Special Gearbox, Keyed Shaft, Right Hand, Lightweight, T Slot Windows

Actuated Linear Guides

LoPro® Actuated Linear Guidance System

Belt Driven

- Ideal for long lengths and high speeds
- AT style reinforced polyurethane belting
- Repeatable within .004 in. (0.1mm)
- Linear accuracy of .008 in/ft (0.2mm/300mm)

Chain Driven

- Standard or corrosion resistant ANSI roller chain
- Ideal for vertical hoisting and large load actuation over long lengths
- Repeatable within .008 in. (0.2mm)
- Linear accuracy of .015 in/ft (0.4mm/300mm)

Lead Screw Driven

- Standard (BY) or anti-backlash (NTBY & VHDY) nuts Metric and inch leads available in lead accuracies to .0006 in/in (mm/mm)
- Repeatable within .0005 in. (0.1mm)

Size	Wheel Plate			System Type				Nut Config	Shaft Config		Support Beam			Corrosion Resistance		Version	Travel Length		Shaft Position	
	Wiper Wheel Plate* **(W)**	Basic Wheel Plate w/ Track Lubricators **(BL)**	Basic Wheel Plate w/ Wheel Covers **(BC)**	Belt **(B)**	Chain **(C)**	Lead Screw **(LS)**	Ball Screw **(BS)**	See Table Opposite Page	Dual Drive Shaft **(D)**	Single Drive Shaft **(Blank)**	Aluminum Beam **(A)**	Steel Beam **(S)**	Un-mounted **(Blank)**	Standard Steel Components **(Blank)**	Corrosion Resistant Components* **(CR)**	**V5**	Max Travel Length Single Piece **(mm)**** ***	Max Travel Length, Joined **(mm)**	Left **(L)**	Right **(R)**
1	✓	✓	✓	✓				N/A (Blank)	✓	✓	✓	✓	✓	✓	◆	✓	3026	Unlimited	✓	✓
2S/2L											✓	✓	✓				3023			
3											✓	✓	✓				3020			
4											No	✓	✓				2962			
1	✓	✓	✓		✓			N/A (Blank)	✓	✓	✓	✓	✓	✓	◆	✓	3026	Unlimited	✓	✓
2S/2L											✓	✓	✓				3023			
3											✓	✓	✓				3020			
4											No	✓	✓				2962			
1	✓	✓	✓			✓		✓	N/A (Blank)		✓	✓	✓	✓	◆	✓	814	N/A (Blank)	N/A (Blank)	
2											✓	✓	✓				1080			
3											✓	✓	✓				1966			
4											No	✓	✓				2153			
2	✓	✓	✓				✓	✓	N/A (Blank)		✓	✓	✓	✓	◆	✓	1083	N/A (Blank)	N/A (Blank)	
3											✓	✓	✓				1109			
4											No	✓	✓				1301			

* Corrosion resistant systems available with wiper wheel plate only. Call for custom system options.
** For beam length please see LoPro catalog
*** Maximum travel length single piece varies depending on system configuration

✓ standard
◆ optional

Non-actuated LoPro systems also available. See page 23.

Ball Screw Driven

- Ball screws are available in standard and corrosion resistant versions to meet environmental constraints
- Metric leads available in lead accuracies to .004 in/ft (100µm/300mm)
- Repeatable within .003 in. (0.07mm)

Carriage Assembly Load Capacities (Max)

		Size			
		1	2/ 2S/2L	3	4
Axial (L_A)	N	988	2450	6668	15684
	lbs	222	551	1499	3526
Radial L_R)	N	2391	5194	11564	19012
	lbs	538	1168	2600	4274
Pitch (M_P)	Nm	26	95	346	1220
	ft•lbf	18.9	70.3	254.9	899.5
Yaw (M_Y)	Nm	62	202	599	1478
	ft•lbf	45.7	148.9	442.1	1090.3
Roll (M_R)	Nm	27	100	372	1174
	ft•lbf	19.8	73.8	274.1	865.6

Nut Configuration (Lead Screw)

Size 1	Ø Screw	Lead	Nut Style
2CB:	1/4"	2mm	BY
2CN:	1/4"	2mm	NTBY
2IB:	1/4"	10mm	BY
2IN:	1/4"	10mm	NTBY

Size 2	Ø Screw	Lead	Nut Style
3GB:	3/8"	5mm	BY
3GN:	3/8"	5mm	NTBY
3JB:	3/8"	12mm	BY
3JN:	3/8"	12mm	NTBY
3PB:	3/8"	25mm	BY
3PN:	3/8"	25mm	NTBY

Size 3	Ø Screw	Lead	Nut Style
4GN:	1/2"	5mm	NTBY
4IN:	1/2"	10mm	NTBY
4PN:	1/2"	25mm	NTBY
5GB:	5/8"	8mm	BY
5LB:	5/8"	16mm	BY

Size 4	Ø Screw	Lead	Nut Style
6GB:	3/4"	5mm	BY
6GV:	3/4"	5mm	VHDY
6IB:	3/4"	10mm	BY
6IV:	3/4"	10mm	VHDY
6OB:	3/4"	24mm	BY
6OV:	3/4"	24mm	VHDY
6QB:	3/4"	50mm	BY
6QV:	3/4"	50mm	VHDY

Nut Configuration (Ball Screw)

Size 2	Ø Screw	Lead	Nut Style
CCN:	10mm	2.0mm	Non Preloaded
CEN:	10mm	3.0mm	Non Preloaded

Size 3	Ø Screw	Lead	Nut Style
DGN:	12mm	5.0mm	FEM -E-B Mod. Flange Non Preloaded
DIN:	12mm	10.0mm	FEM -E-B Mod. Flange Non Preloaded

Size 4	Ø Screw	Lead	Nut Style
GGN:	16mm	5.0mm	FEM -E-B Mod. Flange Non Preloaded
GIN:	16mm	10.0mm	FEM -E-B Mod. Flange Non Preloaded
HGN:	20mm	5.0mm	FEM -E-B Mod. Flange Non Preloaded

How To Order: LP Size Wheel Plate System Type Nut or Shaft Configuration Beam Corrosion Resistance Version Travel Length Shaft Position

Example 1: **LP 3 W B (Blank) A CR V5, 2500, L = LP3WBACRV5, 2500, L**
LoPro Size 3, Wiper Wheel Plate, Belt Driven, Single Shaft, Aluminum Support Beam, Corrosion Resistant, 2500mm Travel, Shaft Position Left

Example 2: **LP 2 BL LS 3GB S (Blank) V5, 500 = LP2BLLS3GBSV5,500**
LoPro Size 2, Basic Wheel Plate with Track Lubricator, Lead Screw Driven, 3/8" x 5.0mm BY NUT, Steel Support Beam, Standard Steel Components, 500mm Travel

Actuated Linear Guides

HDLS Heavy Duty Driven Linear System
HDCS Heavy Duty Compact Screw Unit

- HDLS and HDS use HDS2 (pages 14-15) components for a very strong, efficient range of heavy duty linear systems
- HDLS narrow unit is taller and provides rigid stiffness. The wide unit is better suited for high moment load applications
- HDCS unit offers a play-free ball screw for accurate positioning and low maintenance cap wipers for prolonged performance in a compact design

Carriage Assembly Load Capacities (Max)

		HDLS 64N	HDLS 64W	HDLS 95N	HDLS 95W	HDCS 64	HDCS 95
Axial (L_A)	N	10000	10000	28000	28000	10000	28000
	lbs	2248	2248	6294	6294	2248	6294
Radial (L_R)	N	16000	16000	40000	40000	16000	40000
	lbs	3597	3597	8992	8992	3597	8992
Pitch (M_P)	Nm	1000	1300	3220	4060	1125	3780
	ft•lbf	737.6	958.9	2375	2994.7	829.8	2788
Yaw (M_Y)	Nm	1600	2080	4600	5800	1800	5400
	ft•lbf	1180	1534.2	3393	4278	1327.7	3393
Roll (M_R)	Nm	610	1060	1708	2968	900	2520
	ft•lbf	449.9	781.8	1259.8	2189.1	663.8	1858.8

Part #		Unit Format Options			Bearing Size		Slides (Grade)		Beam Length*	Belt Width		End of Stroke Protection		Drive Shaft			Pitch (HDCS Only)	
HDLS	**HDCS**	Narrow **(N)**	Wide **(W)**	Angled **(A)**	Ø64mm **(64)**	Ø95mm **(95)**	Precision Ground **(P1)**	Unground **(P3)**	**(L_ _ _ _)***	50mm **(50)**	75mm **(75)** Wide Units Only	Shock Absorbers **(SH)**	Rubber Bumpers **(BU)**	Right Handed **(RS)**	Left Handed **(LS)**	Double Drive **(DS)**	5mm Pitch **(P5)**	10mm Pitch **(P10)**
✓		✓	✓	✓	✓	✓	✓	✓	6,000mm Max. Single Piece, Unlimited with Joints	✓	✓	✓	✓	✓	✓	✓	N/A	
	✓	N/A			✓	✓	✓	✓	Up to 5,940mm	N/A		N/A		N/A			✓	✓

*Travel Length is shorter than beam length

How To Choose: Key Differences
Wide - Slides spaced farther apart for increased moment load capacity, larger carriage for attaching big components
Narrow - Slides mounted on narrow face allows greater dimension of the beam to resist deflection. Ideal for high direct loads and long spans. Alternative configuration useful where two axes work in parallel.
Ball Screw - Ideal for vertical applications

How To Order: Part # Format Options Bearing Size Slides Beam Length Belt Width End of Stroke Protection Drive Shaft or Pitch
Example 1: **HDLS N 95 P1 L3648 50 SH RS =** HDLS, Narrow Unit, 95mm, Precision Ground, 3648mm Beam Length, 50mm Belt Width, Shock Absorbers, Right Handed
Example 2: **HDCS 64 P1 L1850 P10** = HDCS, 64mm, Precision Ground, 1850mm Beam Length, Screw Pitch Size 10mm

SBD Sealed Belt Driven Unit

- Rugged, quiet and precise linear unit offers a higher level of performance compared to similar sized systems
- High strength polyurethane steel reinforced belt provides zero backlash
- High capacity LGB precision caged linear ball guides provide quiet, smooth motion and long life in high duty applications
- Internal mechanism is completely sealed with a stainless steel band for exceptional protection from dirt and debris
- Clean room versions are certified by the Fraunhofer IPA Institute for clean room compatibility
- Internal bumpers for end of stroke protection
- Suitable for single or multi-axis applications
- Wide range of options and accessories

Carriage Assembly Load Capacities (Max)

		SBD 20-80	SBD 30-100
Axial (L_A)	N	21200	52100
	lbs	4766	11712
Radial (L_R)	N	21200	52100
	lbs	4766	11712
Pitch (M_P)	Nm	175	755
	ft•lbf	129.1	556.9
Yaw (M_Y)	Nm	175	755
	ft•lbf	129.1	556.9
Roll (M_R)	Nm	189	639
	ft•lbf	139.4	471.3

	Unit Size		Length*, **	Unit Type			Drive Shaft		
	20-80	**30-100**	Beam Length in mm **(L_ _ _)**	Corrosion Resistant **(C1)**	Clean Room **(C2)**	Standard **(Blank)**	Left Hand **(LS)**	Right Hand **(RS)**	Double Shaft **(DS)**
	✓	✓	✓	◆	◆	✓	✓	✓	✓
Min Beam Length (mm)	550	580							
Max Beam Length (mm)*	5950	5940							
Increments of (mm)	60	80							

✓ standard
◆ optional

*Longer lengths available with joints
**Travel length is 300mm shorter than Beam Length on SBD 20-80, 365mm shorter on SBD 30-100

How To Order: SBD Unit Size Beam Length Unit Type Drive Shaft
Example: **SBD 20-80 L1750 C2 RS** = SBD, Size 20-80, Beam Length 1750, Cleanroom, Right Handed

Ring and Track System Quick Comparison

Maximum Load Capacities

	Carriage/ Bearing		Axial L_A		Radial L_R		Pitch Moment M_P		Yaw Moment M_Y		Roll Moment M_R	
			N	lbs	N	lbs	N•m	ft•lbf	N•m	ft•lbf	N•m	ft•lbf
PRT/DTS Series Carriages	FCP-12-93		120	26.98	120	26.98	1.25	0.92	1.25	0.92	0.6	0.44
	FCP-12-127		120	26.98	120	26.98	1.2	0.89	1.2	0.89	0.6	0.44
	BCP-12		120	26.98	120	26.98	1.7	1.25	1.7	1.25	0.6	0.44
	FCP-25-159		800	179.85	800	179.85	16	11.80	16	11.80	9	6.64
	FCP-25-255		800	179.85	800	179.85	15	11.06	15	11.06	9	6.64
	FCP-25-351		800	179.85	800	179.85	17	12.54	17	12.54	9	6.64
	BCP-25		800	179.85	800	179.85	27	19.91	27	19.91	9	6.64
	FCP-44-468		1600	359.69	1600	359.69	57	42.04	57	42.04	35	25.81
	FCP-44-612		1600	359.69	1600	359.69	65	47.94	65	47.94	35	25.81
	BCP-44		1600	359.69	1600	359.69	75	55.32	75	55.32	35	25.81
	FCP-76-799		3800	854.27	3800	854.27	165	121.70	165	121.70	140	103.26
	FCP-76-1033		3800	854.27	3800	854.27	210	154.89	210	154.89	140	103.26
	BCP-76		3800	854.27	3800	854.27	220	162.26	220	162.26	140	103.26
HDRT Series Carriages	FCP64		10000	2248.09	16000	3596.94	700	516.29	1160	855.57	440	324.53
	BCP64		10000	2248.09	10000	2248.09	950	700.68	950	700.68	440	324.53
	FCP95		28000	6294.65	40000	8992.36	2290	1689.02	3280	2419.20	1230	907.20
	BCP95		14000	3147.32	13000	2922.52	1680	1239.10	1560	1150.60	550	405.66
PRT Series Bearings	**RSJ/BHJ-13**	(3 each)	90	20.23	52	11.69	18xØc*	For English Pitch Moment loads, the metric load capacity must first be calculated; then converted to English using a multiplier of .737561				
		(4 each)	113	25.40	60	13.49	22.5xØc*					
		(Each additional 1)	23	5.17	15	3.37	4.5xØc*					
	RSJ/BHJ-25	(3 each)	600	134.89	350	78.68	150xØc*					
		(4 each)	750	168.61	400	89.92	187xØc*					
		(Each additional 1)	150	33.72	100	22.48	37xØc*					
	RSJ/BHJ-34	(3 each)	1200	269.77	700	157.37	300xØc*					
		(4 each)	1500	337.21	800	179.85	375xØc*					
		(Each additional 1)	300	67.44	200	44.96	75xØc*					
	RSJ/BHJ-54	(3 each)	2850	640.71	1650	370.93	750xØc*					
		(4 each)	3600	809.31	1900	427.14	875xØc*					
		(Each additional 1)	700	157.37	470	105.66	175xØc*					
HDRT Series Bearings	**BHJR/THJR64**	(3 each)	7200	1618.62	7000	1573.66	1500xØc*					
		(4 each)	9000	2023.28	8000	1798.47	1875xØc*					
		(Each Additional 1)	1800	404.66	2000	449.62	375xØc*					
	BHJR/THJR95	(3 each)	20000	4496.18	17500	3934.16	4200xØc*					
		(4 each)	25000	5620.22	20000	4496.18	5250xØc*					
		(Each Additional 1)	5000	1124.04	5000	1124.04	1050xØc*					
	BHJR/THJR120	(3 each)	30000	6744.27	26000	5845.03	6300xØc*					
		(4 each)	37500	8430.33	30000	6744.27	7875xØc*					
		(Each Additional 1)	7500	1686.07	7500	1686.07	1575xØc*					

Note: All calculations assume lubricated, relatively clean environment

*Øc is the contact diameter, i.e. the diameter of the circle which passes through the points of contact between bearing assemblies and ring, and is dependent on whether the bearing assemblies are running on the inside or outside of the ring

PRT Ring/Segment		**12-93**	**12-127**	**25-159**	**25-255**	**25-351**	**44-468**	**44-612**	**76-799**	**76-1033**
Inside	Øc =	84	118	139	235	331	431	575	735	969
Outside	Øc =	102	136	179	275	371	505	649	863	1097
HDRT Ring/Segment		**512**	**640**	**768**	**896**	**1120**	**1280**	**1456**	**1656**	
HDRE*	Øc =	555.5	683.5	811.5	939.5	N/A	1323.5	1499.5	1699.5	
HDR*	Øc =	364.5	492.5	620.5	748.5		1100.5	1260.5	1436.5	
HDRD* (Inside)	Øc =	N/A				876.58	N/A			
HDRD* (Outside)	Øc =					1163.42				

*With 64mm bearings

		PRT	HDRT	DTS
Straight Slides				
Width	12	✓		
	25	✓	✓	✓
	44	✓		✓
	76	✓		
Type	Dual Edge	✓	✓	✓
Precision Grade	SS	✓	✓	✓
	P1	✓	✓	✓
Material	Steel	✓	✓	✓
	Stainless Steel	✓	✓	✓
Length		4m (13 ft) Single Piece Unlimited by Joining		
Drive Options	Manual	✓	✓	
	Rack Cut	◆	◆	
	Belt			✓
Carriages*	Fixed	✓	✓	✓
	Bogie	✓	✓	
Bearings				
Diameter	13	✓		
	25	✓		✓
	34	✓		✓
	54	✓		
	64		✓	
	95		✓	
	120		✓	
Type	Through Hole**		✓	
	Through Hole Short/Long Stud Options	✓		
	Blind Hole	✓	✓	
Material	Steel	✓	✓	
	Stainless Steel	✓	✓	
Technology	90 Degree Vee		✓	
	70 Degree Vee	✓		✓

		PRT	HDRT	DTS
Rings/Segments				
Diameter	93	✓		
	127	✓		
	159	✓		
	255	✓		
	351	✓		✓
	468	✓		
	512		✓	
	612	✓		
	640		✓	
	768		✓	
	799	✓		
	896		✓	
	1033	✓		
	1120		✓	
	1280		✓	
	1456		✓	
	1656		✓	
Type	Outer Vee		✓	
	Inner Vee		✓	
	Dual Edge	✓	✓	✓
Gear Cut Option	Inner Ring	◆	◆	
	Outer Ring	◆	◆	
Precision Grade	SS	✓	✓	
	P1	✓	✓	✓
	P2		✓	
Configuration	90°	✓	✓***	
	180°	✓	✓***	
	360°	✓	✓	
	Oval System	✓	✓	✓
	Rectangular System	✓	✓	✓
More Information:		**Page 34-35**	**Page 36-37**	**Page 38-39**

* Fixed Center Carriages are designed to run on systems with common bends and radii. Bogie carriages can travel across S bends or bends of varying radii
**Various stud lengths available for HDRT bearings. See Pages 36-37.
***Single edge ring slides (HDR and HDRE) are not available in 90° and 180° segments

✓ standard
◆ optional

PRT

HDRT

DTS

Ring and Track Systems

PRT Ring Slides and Track System

Ring Systems

- Precision ground rings and corresponding bearing assemblies ensure smooth, silent motion, accuracy and concentricity
- Hardened 70 degree vee faces for maximum wear resistance
- Gear cut option on the inner or outer diameter for ease of actuation
- Ideal for custom rotary table applications and medical equipment

Track Systems

- Ring segments combined with straight slides allow continuous movement of carriages that follows virtually any path over unlimited lengths
- Straight slides are precision ground for easy and precise installation; hardened 70 degree vee faces allow maximum wear resistance
- Accommodates any number of fixed or bogie carriages

Bearings (70 Degree)

Type						Diameter/Size				Fixed/ Adjustable		Seal/ Shield	
Stainless Steel, Through Fixing - Short Stud **(SSSJ)**	Steel, Through Fixing - Short Stud **(SJ)**	Stainless Steel, Through Fixing - Long Stud **(SSLJ)**	Steel, Through Fixing - Long Stud **(LJ)**	Stainless Steel, Blind Hole Fixing **(SSBHJ)**	Steel, Blind Hole Fixing **(BHJ)**	12.7mm dia **(13)**	25mm dia **(25)**	34mm dia **(34)**	54mm dia **(54)**	Concentric **(C)**	Eccentric **(E)**	Metal Shield **(Blank)**	Neoprene Seal **(NS)**
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	◆
Use with Ring/Slide Size*						12	25	44	76				

* Each size of bearing is designed for use with a specific size of ring/slide section. However, any bearing assembly may be used with any ring/slide larger than that for which it was designed if required by the application.
Size 34 bearing assemblies may also be used with Size 25 ring/slide sections.
Size 54 bearing assemblies may be used with Size 44 ring/slide sections.

How to Order:

Bearings: Type Diameter/Size C/E Seal
Example: **RSJ25ENS** = Steel, Through Fixing, Short Stud, 25mm, Eccentric, Neoprene Seal

Rings/Segments: Material Part # - Width - Diameter Type Gear Option Tapped Hole Option
Example 1: **R12-93-R180-P** = Standard Steel, 12mm Width x 93mm Diameter, 180° Segment, External Gear Option
Example 2: **SSR-25-159-R360** = Stainless Steel, 25mm Width x 159mm Diameter, 360° Ring

Carriages: Material Part # - Width - Diameter
Example 1: **BCP-12-93** = Standard Steel, Bogie Carriage Plate, 12mm Width x 93mm Diameter
Example 2: **CRFCP-25-159** = Stainless Steel, Fixed Center Carriage Plate, 25mm Width x 159mm Diameter

Assembled Systems:

Example:
ASSEMBLED
Quantity x Ring/Segment (see above)
Quantity x Carriage (see above)

ASSEMBLED
1 x R25-159-R180
1 x FCP-25-159

Lubricators: Quantity x Part - Width Only Type
Example: **6 X LB-44 F** = 6 Lubricators, 44mm, Flanged

Rings, Segments, Straight Slides, Carriages, and Lubricators

Material			Part						Width - Diameter								Type					Gear Option			Tapped Hole Option		Bend	
																	Ring/ Segment			Lubricator								
Steel **(Blank)**	Stainless Steel, Rings & Straight Slides **(SS)**	Stainless Steel, Carriages **(CR)**	**Ring/Segment (R)**	**Track System Curved Segments (TR)***	**Fixed Center Carriage (FCP)**	**Bogie Carriage (BCP)**	**Lubricator (LB)**	**Straight Slides (TN)****	12mm - 93mm **(12-93)**	12mm - 127mm **(12-127)**	25mm - 159mm **(25-159)**	25mm - 255mm **(25-255)**	25mm - 351mm **(25-351)**	44mm - 468mm **(44-468)**	44mm - 612mm **(44-612)**	76mm - 799mm **(76-799)**	76mm - 1033mm **(76-1033)**	90° Segment **(R90)**	180° Segment **(R180)**	360° Full Ring **(R360)**	Flanged **(F)**	Compact **(C)**	None **(Blank)**	External Gear **(P)**	Internal Gear **(Q)**	None **(Blank)**	Tapped Hole Option **(N)**	Clockwise **(C)**	Counter-clockwise **(A)**
✓	◆		✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A		✓	◆	◆	✓	◆	N/A	
✓	◆			✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	N/A		✓	◆	✓	✓
✓		◆			✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	N/A			N/A	✓	N/A					
✓		◆				✓			✓	✓	✓	✓	✓	✓	✓	✓	✓				N/A							
N/A							✓		✓		✓		✓		✓		N/A			✓	✓	N/A						

✓ standard
◆ optional

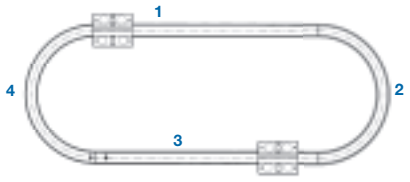
Straight Slides

Material			Part					Size-Width				Length	Adjustment Keys			Dowel Pins**
Steel **(Blank)**	Stainless Steel, Rings & Straight Slides **(SS)**	Stainless Steel, Carriages **(CR)**	**Ring/Segment (R)**	**Track System Curved Segments (TR)***	**Fixed Center Carriage (FCP)**	**Bogie Carriage (BCP)**	**Lubricator (LB)**	**Straight Slides (TN)****	12mm **(M-12)**	25mm **(S-25)**	44mm **(M-44)**	76mm **(L-76)**	**(B+mm)** up to Max Length	One **(1xAK)**	Two **(2xAK)**	(Required at every joint between straight & curved slide)	**QtyxSDP**
✓		◆					✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
								1020	4020	4020	4020	→ Max Length				

Track System Curved Segments: Material Part # Width-Diameter Type Tapped Hole Option / Bend
Example: **TR12-93-R90/C** = Standard Steel, 12mm Width x 93mm Diameter, 90° Segment, Clockwise
*TR curved segments are used for **Track Systems** in conjunction with straight slides, and are modified from standard 90° and 180° slide ring segments. The segment ends are ground square to a specified dimension relative to the true shape of the segment, and a clearance keyway and tapped hole facility are incorporated onto each end to provide a method of alignment when assembled together with the mating key of the track system straight slide.

Straight Slides: Part Number+Size - 'B'+Length of Slide - Adjustment Key or Dowel Pins
Example: **TNM-44-B1500-2xAK** = 44mm Slide, 1500mm Length, 2 Adjustment Keys
**Dowel Pins positioned at regular intervals along the slide keyway provide easy location and alignment

Track Systems: List the Track System Curved Segments **(TR)** and Straight Slides **(TN)** in sequential order in a clockwise direction followed by the number and type of carriage required.
Example: (1) TNM-44-B1020-2xAK
(2) TR-44-468-R180/C
(3) TNM-44-B1020-2xAK
(4) TR-44-468-R180/C
6 x FCP-44



Ring and Track Systems

HDRT Heavy Duty Ring Slides and Track System

- Combines the flexibility and function of the PRT rings and ring segments with the size and strength of the HDS2 straight slides (pages 14-15)
- High load capacity
- Broad range of sizes
- Fully adjustable bearings for ease of installation
- Ideal for pallet systems, spool handling units, and turbine handling fixtures

Bearings (70 degree)

Material		Type		Ø/Size			Fixed/ Adjustable		Seal/ Shield		Plate Thickness, See below for Min/Max Values (THJR Type Only)							
Stainless Steel **(SS)**	Steel **(Blank)**	Through Hole **(THJR)**	Blind Hole **(BHJR)**	64mm **(64)**	95mm **(95)**	120mm **(120)**	Concentric **(C)**	Eccentric **(E)**	Steel Shield **(Blank)**	Nitrile Seal **(NS)**		**(12)**	**(16)**	**(17)**	**(22)**	**(27)**	**(32)**	**(37)**
◆	✓	✓	✓	✓			✓	✓	✓	◆	Min Max	6.5 12.5		11.5 17.5	16.5 22.5	21.5 27.5		
◆	✓	✓	✓		✓		✓	✓		✓	Min Max		9 16		16 22	21 27	26 32	
◆	✓	✓	✓			✓	✓	✓		✓	Min Max			6.5 17		16.5 27		26.5 37

✓ standard
◆ optional

Carriage Plate Assembly

Corrosion Resistant		Part		Bearing Ø		Lubricator Option	
Required **(CR)**	Not Required **(Blank)**	**Fixed Center Carriage (FCP)**	**Bogie Carriage (BCP)**	64mm **(64)**	95mm **(95)**	Required **(LB)**	Not Required **(Blank)**
◆	✓	✓		✓	✓	◆	✓
N/A			✓	✓	✓	◆	✓

How to Order:

Bearings: Material Type Diameter/Size C/E Seal Plate Thickness
Example: **THJR64CNS17** = Steel, Through Hole Fixing Type, Ø64mm, Concentric, Nitrile Seal, Plate Thickness 11.5 to 17.5mm

Fixed Center Carriage: Corrosion Resistant Part Bearing Ø Lubricator Option
Example: **CRFCP64LB** = Corrosion Resistant Fixed Center Carriage Plate, 64mm Diameter Bearings, With Lubricators

Bogie Carriage: Part Bearing Ø Lubricator Option
Example: **BCP95LB** = Bogie Carriage Plate, 95mm Diameter Bearings, With Lubricators

Lubricators: Part **(HDLB)** Type (**J**=Bearing Lubricator, **S**=Ring Lubricator)
Example: **HDLB25J** = Heavy Duty Lubricator for Bearing

Pinions: Material (**SS**=Stainless Steel, **Blank**=Steel) Part **(HP4X24)**
Example: **SSHP4X24** = Stainless Steel Pinion with MOD 4, 24 teeth *(Not available on HDRE or HDR Ring Slides)*

Ring Slides and Straight Slides

Part				Thickness - Diameter								Gear Option		Precision Grade ✓ Indicates Ground Surfaces			Ring/ Segment			Tapped Hole Option		Ring Spacers		Pillars		Length
Ring - External V (HDRE)	Ring - Internal V (HDR)	Ring/Segment - Double Edged (HDRD)	Straight Slide (HSDT25)**	25 - 512mm (512)	25 -640mm (640)	25 - 768mm (768)	25 - 896mm (896)	25 - 1120mm (1120)	25 - 1280mm (1280)	25 - 1456mm (1456)	25 - 1656mm (1656)	Gear Cut with 4 MOD Teeth (G4)	Not Required (Blank)	Stainless Steel (SS)	Precision Grade 1 (P1)	Precision Grade 2 (P2)*	90° Segment (R90 - HDRD Only)	180° Segment (R180 - HDRD Only)	360° Full Ring (R360), HDRE & HDR (Blank)	Tapped Hole Option (N)	Not Required (Blank)	Set of Ring Spacers (SP)	Not Required (Blank)	Set of Pillars (P)	Not Required (Blank)	(L+mm) up to 4m maximum in one piece. Unlimited lengths can be achieved by butting.
✓				✓	✓	✓	✓		✓	✓	✓	◆	✓				360° Only (Leave Blank)			◆	✓	◆	✓	N/A		
	✓			✓	✓	✓	✓		✓	✓	✓	◆	✓							◆	✓	◆	✓			
		✓						✓				N/A					✓	✓	✓	◆	✓	N/A		◆	✓	N/A
			✓	N/A												N/A	N/A									✓

*HDRD - P2 not available for track systems

**Straight Slides are supplied with joint blocks (one per straight-to-curve joint) and back plates according to system layout

Ring Slides: Part Diameter - Gear Option - Precision Grade - Type - Tapped Hole Option Ring Spacer - Pillars

Example 1: **HDRE896-G4-P2-NSP** = External V Ring, 896mm Diameter, MOD 4 Gear, Grade P2, Tapped Hole, Spacers

Example 2: **HDRD1120-P1-R180-NP** = Double Edged, 1120 Diameter, Grade P1, 180° Segment, Tapped Hole, Pillars

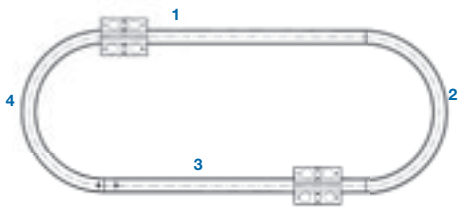
Straight Slides: Part - Precision Grade L+Length

Example: **HSDT25-P1 L1840** = Straight Slide, Grade P1, 1840mm Length

Track Systems: List the Track System Curved Segments **(HDRD)** and Straight Slides **(HSDT25)** in sequential order in a clockwise direction followed by the number and type of carriage required.

Designate clockwise curved segments by adding **/C**; counterclockwise add **/A**

Example: (1) HDRD1120-P1-R180 / C
(2) HSDT25-P1 L1840
(3) HDRD1120-P1-R180 / C
(4) HSDT25-P1 L1840
2 x FCP95LB



Ring and Track Systems
DTS Driven Track System

The HepcoMotion® DTS uses components from the PRT precision ring and track (see pages 34-35) product line to provide an easily assembled unit with the capability to drive carriages around a track circuit under continuous or intermittent motion. DTS is supplied as a complete unit.

Standard Features
- 10mm pitch timing belt
- Multiple carriages positioned at equal pitches in 10mm increments as specified by the customer
- Trip latch mechanism disengages carriages from the drive belt in the event motion is impeded
- Aluminum support beams; unit can also be supplied as free-standing to incorporate into the customer's machine or framework
- Aluminum profile cross members for large systems
- Pulley bearing units greased for life; drive pulleys have teeth, idler pulleys are plain
- Available in steel or stainless steel

Optional Accessories
- AC geared motor, or gearbox with IEC flange to fit customer's own motor
- Fixed belt/carriage connectors provide an alternative to trip latches
- Carriage locking system along straight sections of the circuit hold carriages stationary, repeatable to +/- 0.05mm
- Proximity sensors and sensor mounting brackets
- T-slot cover strip closes beam T-slots and provide routing for wiring
- T-nuts and T-bolts

Two Sizes:
DTS25-351 uses 25mm wide slides and ring segments, and FCP25-351 fixed center carriage plates
DTS44-612 uses 44mm wide slides and ring segments, and FCP44-612 fixed center carriage plates

Two Circuit Formats:

	Oval		Rectangular		Carriage Spacing Increments (Minimum)
	Length (Minimum) Pulleys Center to Center	Width (Fixed) Overall	Length (Minimum) Pulleys Center to Center	Width (Minimum) Pulleys Center to Center	
DTS25-351	250mm	411mm	250mm	250mm	110mm
DTS44-612	450mm	672mm	450mm	450mm	160mm

	Nominal Linear Speed @ 50Hz (m/s)	Working Speed Range (m/s)	Nominal Linear Force (N)	Motor Power (kW)	Motor Type	Gearbox Ratio	Gearbox Rated Linear Force
DTS25-351 with AC Geared Motor	0.19	0.02 - 0.3	726	0.25	71L/6	48	829
	0.41	0.04 - 0.65	829	0.55	80S/4	34	889
	0.73	0.07 - 1.15	754	0.75	80L/4	19	862
	1.52	0.15 - 2.4	584	1.1	90L/6	6	877
DTS44-612 with AC Geared Motor	0.31	0.03 - 0.5	300	0.18	71S/6	63	321
	0.42	0.04 - 0.68	330	0.25	71L/6	48	377
	0.64	0.07 - 1.0	330	0.37	71L/4	48	377
	1.06	0.11 - 1.7	381	0.55	80L/6	19	409
	1.61	0.16 - 2.5	343	0.75	80L/4	19	392

Considerably higher linear forces can be achieved by incorporating more than one drive unit

Selection and Specification

1. Specify Dynamic Parameters
Carriage load, external forces, full velocity profile including accelerations, dwells, speeds, duty cycle and required life.

2. Make an Initial Selection
Consider the physical size and weight of the components and make an initial selection of system size. As a guide, a size 25 carriage would typically be used up to 20kg (44 lbs); size 44 would be used up to 40kg (88 lbs). Both systems can carry higher loads than this (see load capacity comparison chart, page 32).

3. Calculate the Carriage Static and Dynamic Loadings
Complete instructions for calculating are available in the PRT full line catalog available at **www.bwc.com/products/prt.html.**

4. Lay Out the Track
Choose the track shape required (Oval or Rectangular), and specify the drive unit position(s) 1 to 4.

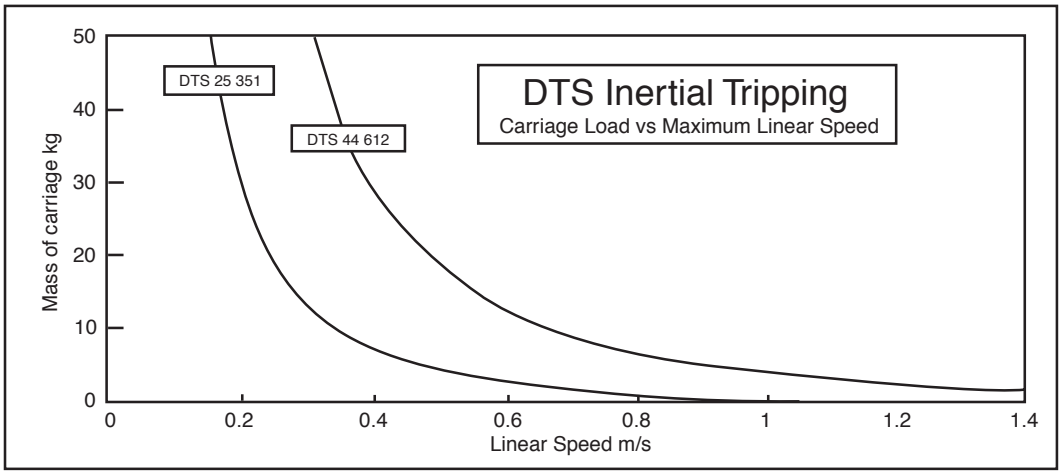
5. Choose the Number of Carriages Required
An even number is typically specified to produce a symmetrical layout.

6. Select the Carriage Spacing
The spacing must be in 10mm increments. Carriages are usually equally spaced.

7. Calculate the Approximate System Dimensions
N = number of carriages; S = carriage spacing; L = system length and W = system width (between centers of pulleys)

	Oval	Rectangular
DTS25-351	NS = 0.998 x (2L + 600)	NS = 0.998 x (2L + 2W + 600)
DTS44-612	NS = 0.998 x (2L + 1320)	NS = 0.998 x (2L + 2W + 1320)

8. Check the Trip Load of Each Carriage
Using conventional mechanical calculations, allowing for friction, external load and acceleration (linear force), ensure that the linear force on any single carriage does not exceed 60N. The carriages on a DTS travel faster on the curved sections than on the straights. As each carriage moves between straight and curve, acceleration produces an inertial reaction on the trip latch. Therefore, there is a maximum speed beyond which carriages may disengage (see chart below).



9. Select a Drive Source
Bishop-Wisecarver can supply, as an option, geared AC motors and drives and worm gearboxes. Performance data is shown on the table at left for some common selections.

Contact Our Applications Engineers for Design Assistance
Our application engineering team is available to assist you with designing the best system for your application.

Value Add Services

Engineering Assistance

YOU CAN COUNT ON 40 years of expertise that only the original DualVee inventor can provide. Whatever your unique application requires, no other company has more experience customizing our technology than we do. Our highly trained engineering team, consisting of over 30 years of experience, includes California state licensed P.E.'s (Professional Engineers), Application, Mechanical, Materials and Manufacturing Engineers, as well as a bilingual Application Engineer who is available to help our Spanish speaking customers. We are equipped with the latest in engineering tools, including computer aided design and engineering software, research and development testing equipment, and inspection and measurement equipment.

Engineering Tools

- Pro/Engineer® Wildfire 4.0
- AutoCAD®
- SolidWorks®
- 3D Modeling
- Finite Element Analysis (FEA)
- Production Drawing

Assembly Services and Packaging

Assembly services are available prior to shipping, even when finished work includes products not supplied by Bishop-Wisecarver. Utilizing our skilled production staff not only shortens your lead time, but it also eliminates costs associated with specialized tools, equipment, and resources dedicated to assembly and project management.

Assembly Operations

- Welding
- Mechanical Assembly

Packaging

- Labeling/Bar Coding
- Bag Sealing
- Boxing
- Crating
- Palletizing

Manufacturing Capabilities

Located in Pittsburg, California, Bishop-Wisecarver's manufacturing facility is home to a variety of modern equipment and processes. Our in-house machine shop utilizes state-of-the-art CNC equipment capable of high speed machining and close tolerances to provide superior custom work. From small quantity part runs for complex parts to high volume production, Bishop-Wisecarver's advanced equipment and extensive history in innovative design and manufacturing enable us to bring unique solutions to a wide range of customers.

Machining Capabilities

- Prototype Machining
  - – Manual Machining
  - – CNC Machining
- Production Machining
  - – Palletized CNC Milling
  - – Bar Feed CNC
  - – Twin Spindle Turning

Custom Capabilities

Custom solutions are Bishop-Wisecarver's specialty. Our investment in high performance equipment together with our highly experienced staff enables Bishop-Wisecarver to provide custom engineered solutions ranging from slight product modifications such as non-standard length, bearing or grease requirements to complete ground-up system designs using DualVee components, linear guides and accessories.

Custom Wheels – Custom diameter wheels, custom swaged integral style studded wheels, and customer-specified lubricants are all possible.

Custom Wheel Plates – Extra large sizes, steel, extra wheels, custom configurations.

Long Lengths – DualVee and UtiliTrak lengths are virtually unlimited, as are LoPro belt and chain systems, which have been fabricated up to 80 feet. Screw driven systems are limited only by the length of the screw.

Custom Machining – Our in-house machine shop is equipped to accommodate special machining from non-standard hole locations to custom parts from steel or aluminum blanks as seen in this custom 8-wheel, steel wheel plate assembly.

To suit your exact linear motion requirement, we offer the following options:

Materials:

- 304 Stainless
- 420 Stainless
- 440 Stainless
- 1045 AISI
- Aluminum
- Acetyl

Coatings:

- Electrolus Nickel
- Decorative Plating
- Electrolytic Nickel
- Passivation
- Powder Coating
- Zinc
- Armoloy®
- Black Oxide
- Electropolish
- Painted Finishes

Grease:

- FDA Approved
- Vacuum
- Low Temperature (-94°F)
- High Temperature (+500°F)

EXPECT MORE when you partner with the recognized expert and most trusted name in guide wheel technology. MEETING YOUR NEEDS SIMPLY ISN'T ENOUGH at Bishop-Wisecarver. Each and every one of our personnel strives to anticipate and surpass them from design phase through project completion. Beyond just a promise, it's our passion, one that has earned us our reputation of excellent quality, superior design and performance, and the ability to deliver custom and standard solutions to meet your toughest application challenge. Experience for yourself how Bishop-Wisecarver can help lower overall costs and attain features that are unique to your solution, giving you a clear competitive advantage.

Application Data Sheet

Sent to:_____ Page 1 of_____

Contact Information: Date:_____

Company Name: _____ Contact: _____

Title & Department: _____ Telephone: _____ Ext: _____

Fax Number: _____ Email: _____

Address: _____

Distributor/Rep: _____

Industry/Market Served: _____ SIC:_____

Project Information: (Attach Sketch) Date Needed By:_____

Application Information / Product or Machine Description Target Price:_____

_____

_____

Special Design Criteria: _____

Desired Life (Distance, Cycles, Hours/Day, Days/Year):_____

Environment (Factory, Shop, Food Grade, Clean Room):_____ Temperature:_____

Project Name: _____ Volume/Qty:_____

Bishop-Wisecarver to Select or Interested in (Check and Circle the Below)

Components: Manual Linear Guides Linear Actuated:	☐ DualVee®	☐ GV3	☐ HDS2				
	☐ UtiliTrak®	☐ Undriven LoPro®	☐ Simple Select	☐ SL2	☐ MinVee®	☐ QuickTrak®	
	☐ PDU2/PDU2M	☐ PSD120	☐ LoPro®	☐ DLS	☐ HDLS	☐ HDCS	
	☐ SBD						
Type of Unit:	☐ Belt	☐ Chain	☐ Lead Screw	☐ Ball Screw			
Rotary or Other:	☐ PRT/HDRT	☐ DTS	☐ MCS	☐ Other			

Specific Application Details:

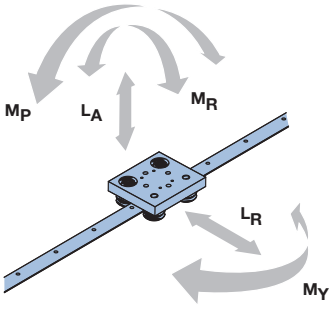
Maximum Load:	_____	(lb= Pounds of Mass)
Orientation of Load:	_____	(Horizontal, Vertical, Inverted Gantry, Other)
Maximum Speed:	_____	(ft/sec = Feet/Second, m/sec = Meters/Second)
Maximum Acceleration:	_____	(ft/sec^2 = Feet/Second^2, m/sec^2 = Meters/Second^2)
Stroke/Travel Length:	_____	(Inch, Meter)
Complete Cycle Time:	_____	(seconds, minutes, hours)
Dwell Time:	_____	(seconds, minutes, hours)
Motion Profile:	_____	(Trapezoidal, Triangular or Other)
Accuracy Needed:	_____	(+ or - X in/in, in/ft, mm/mm, mm/M)
Repeatability:	_____	(+ or - blank inches, mm)
Additional Information:	_____	

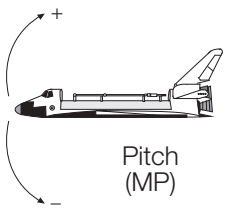
Please remember to attach a sketch of your application.

Bishop-Wisecarver provides a written one year limited warranty assuring the customer that its products conform to published specifications and are free from defects in material or workmanship.

Complete terms and conditions and warranty information is available at:

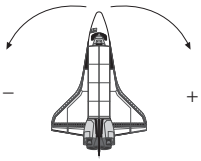
www.bwc.com/about_conditions.vp.html.





Pitch (MP)


Roll (MR)



Yaw (MY)

Bishop-Wisecarver Corporation: Manufacturer of the original DualVee® guide wheel and industry leader in guided motion technology and exclusive North and Central American partner and distributor for HepcoMotion products since 1984.

HEPCO® www.HepcoMotion.com

BISHOPWISECARVER®

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