



CURVE AND LINEAR TRACK



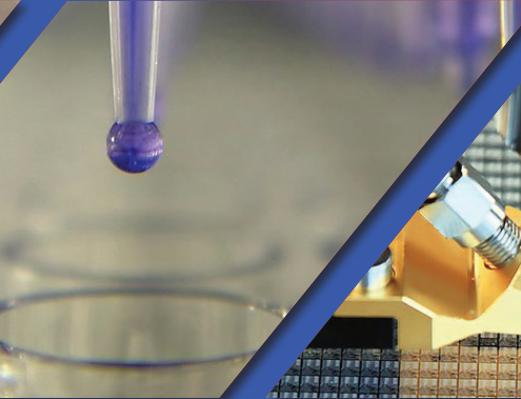


Helix Linear Technologies offers exceptional performance with the highest quality that our customers have come to expect.

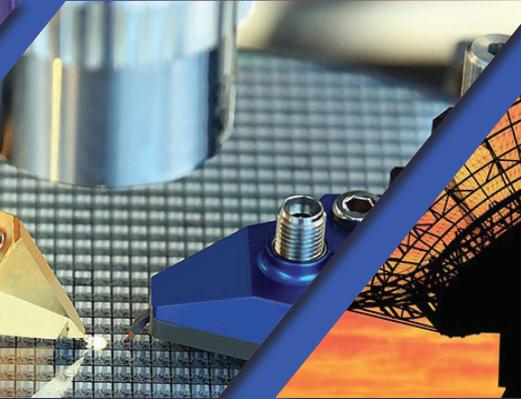
We are proud to serve the following industries:



AEROSPACE & DEFENSE



MEDICAL & LIFE SCIENCE



SEMICONDUCTOR



COMMUNICATIONS



FACTORY AUTOMATION



ELECTRONICS



ADDITIVE MANUFACTURING



PACKAGING



CHEMICAL



FOOD & BEVERAGE



STEEL & METAL MANUFACTURING



AUTOMOTIVE

HELIX LINEAR IS A GLOBAL LEADER IN LINEAR MOTION TECHNOLOGIES.

For nearly 50 years the company has helped its customers engineer their own success in a wide range of markets. Helix Linear leads with its innovative design, engineering, and manufacturing of precision linear motion and power transmission systems. Helix Linear focuses on engineering and manufacturing lead screws and linear actuators.



Strategy

Helix Linear Technologies produces cost-effective, precision linear motion systems and components using leading-edge technology, equipment and production methods.



Collaboration

For nearly 50 years Helix Linear Technologies has been innovating together with our customers to design, engineer and manufacture our wide range of products for a variety of markets.



Solutions

Full range of product solutions to fit all our customers performance needs; whether the application requires an off-the-shelf linear motion component or a custom engineered solution, Helix Linear Technologies offers exceptional performance with the highest quality.



Helix Linear Technologies is one of world recognized leaders in design and manufacturing of low friction linear motion components and precision bearings. Helix products are exported to over 30 countries and regions. We provide not only standard products, but also customized solutions. Helix means "Always reach for higher goals." Helix is committed to excellence and linear motion innovation while guaranteeing its customers the best pricing in our industry.

Helix actively seeks to work with you on your next design and we promise the following:

- The right product for your application
- A quality product you can trust
- Engineering assistance that is proven and world renown.

PARO TRACK SYSTEM

Helix provides a wide choice of sizes and options to build linear, ring and track motion system. All of components including linear guides, ring guides, bearings and lubricate parts are designed standard and modularized. Customer can select and build motion system easy and quickly.

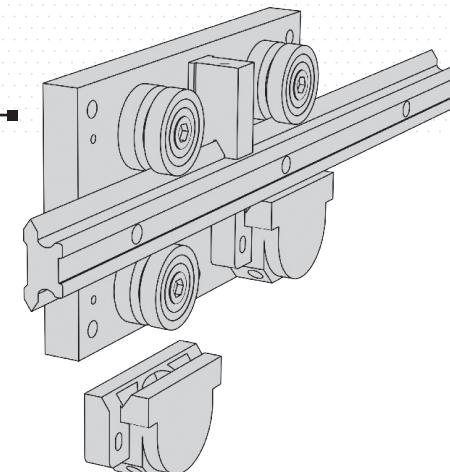




LINEAR MOTION COMPONENTS

Construction

Please see below figure. This system includes Double Edge Space Rail, Concentric Bearing, Eccentric Bearing, Cap Seals and Lubricator. Rail, bearing and other components are designed interchangeable with all of international standard suppliers.

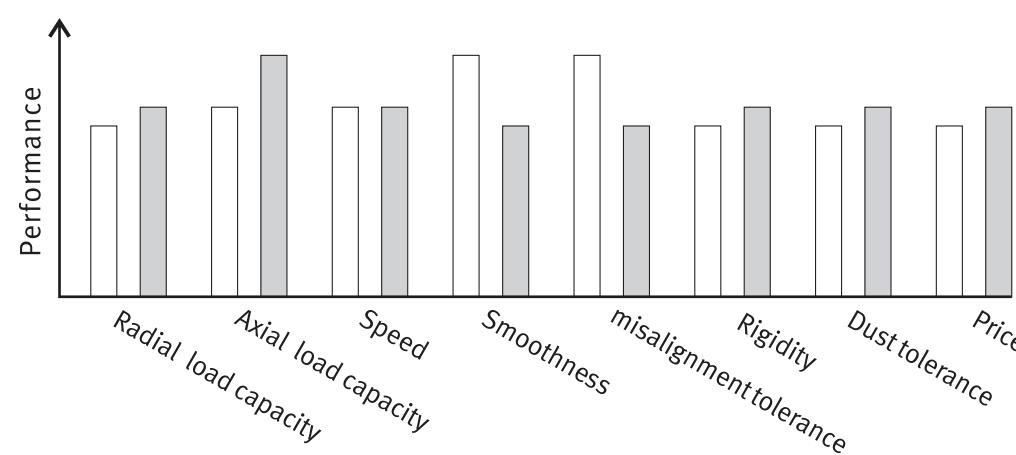
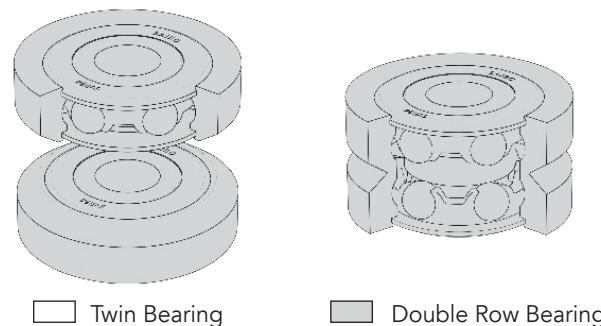


Double Edge Space Rail

- Made of European high quality bearing steel
- Deep hardened in working surfaces for high wear resistance
- Ground Double 70° V working edges together to ensure parallelism
- Soft rail body for customization machining process
- Provide 3 standard sizes for customer's selection
- Any length up to 5.5meters without connection
- Longer length (Unlimited) can be achieved by Connection
- Supply two precision types, ground and un-ground

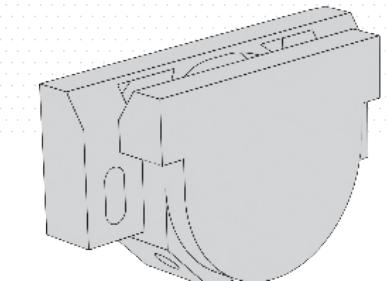
Concentric / Eccentric Bearing

- Made of high quality bearing steel
- Whole body hardened for high wear resistance
- Supply Twin type and Double row type bearings (See figure)
- Long bolt for thick carriage block
- Short bolt for thin carriage block
- Concentric / Eccentric bolt supplied



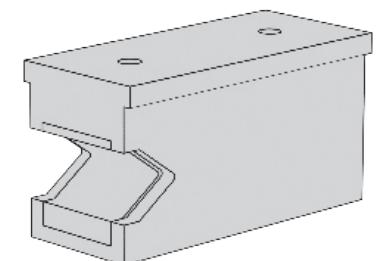
Cap Seal

- Protect bearing against dust
- Protect operator safety
- Lubricated felt wiper contact rail's working surface to increase load capacity and life
- Standard and interchangeable



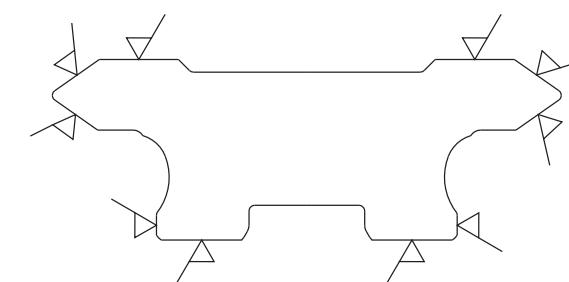
Lubricate Wiper

- Lubricated felt wiper contact rail's working surface to increase load capacity and life
- Lubricated felt wiper is pushed lightly by a small spring to ensure low friction with the rail's working surface
- Easy to fill lubricate oil from its fill hole
- Standard and interchangeable



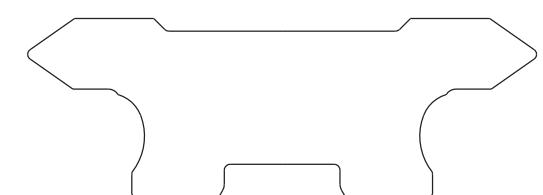
Precision Grade

Helix provides two grades of precision. P1 ground and P3 unground. Here we must emphasize that P3 grade's motion is also very smooth and stable. It is fit for smooth running without very high precision and low cost request. But when linear rail connect ring rail, it must be P1 grade.



P1 Grade

✓ Means Ground Surface

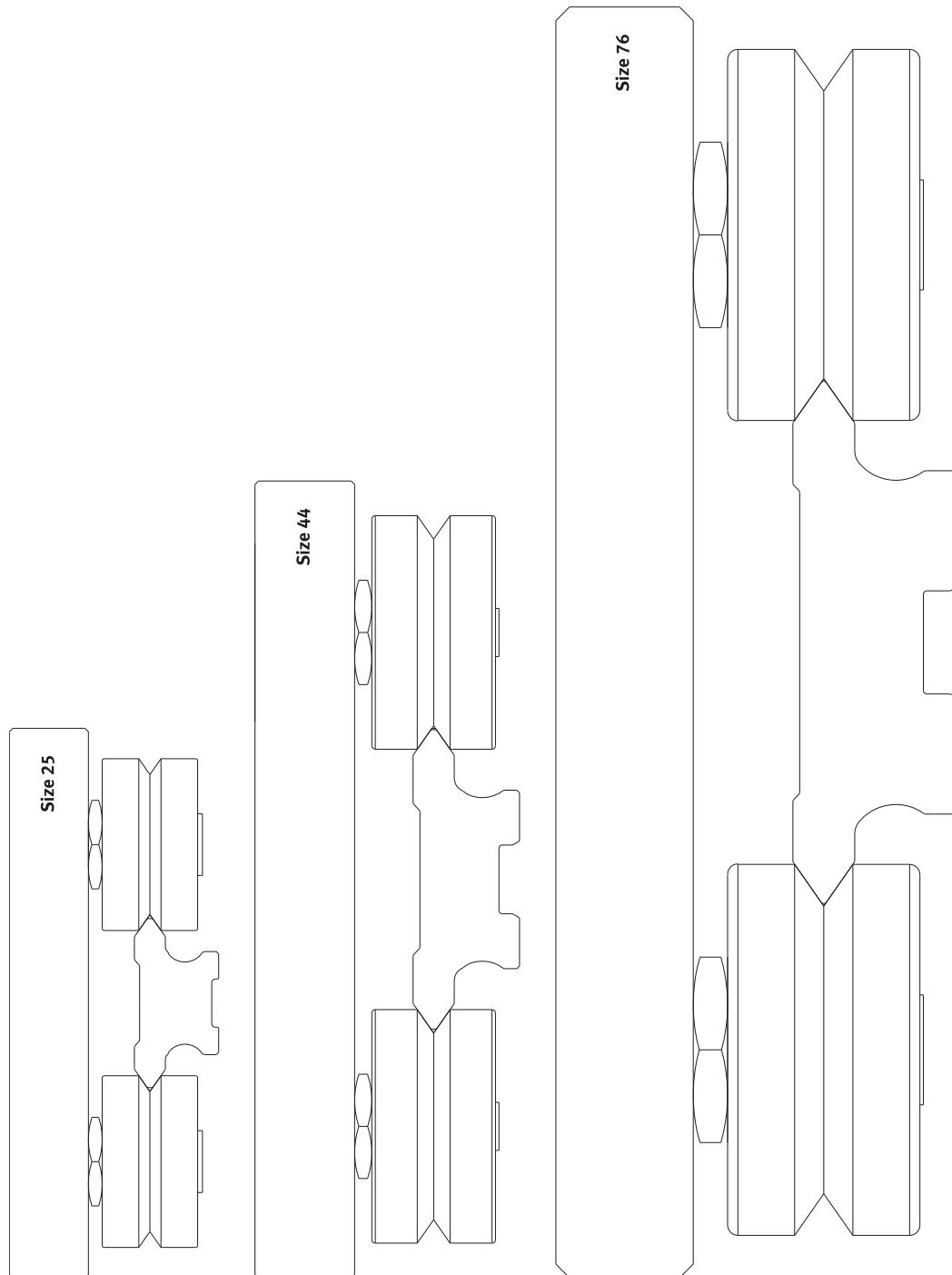


P3 Grade

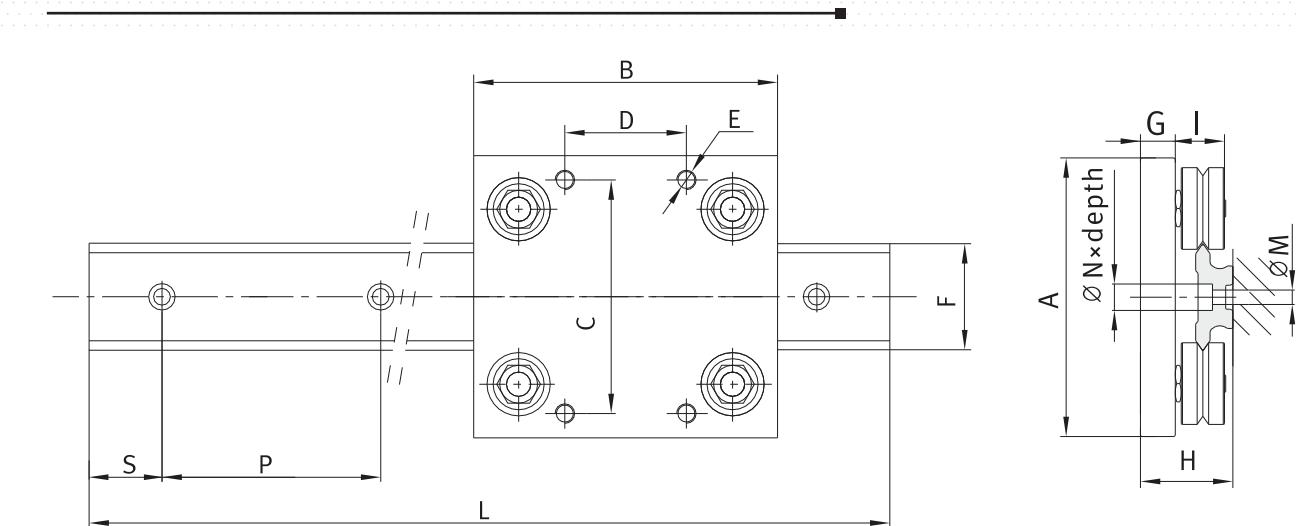
The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



Full Size Overview



Assembly



Railway	Carriage	Dimensions						
		A	B	C	D	E	F	G
SB-LGV25XL	SB-SLC25A SB-SLC25B SB-SLC25C	80 135 180	80 135 180	65	24	4XM6 6XM6 6XM6	25	11.5
SB-LGV44XL	SB-SLC44A SB-SLC44B SB-SLC44C	116	125 180 225	96	50 80 103	4XM8 6XM8 6XM8	44	14.5
SB-LGV76XL	SB-SLC76A SB-SLC76B SB-SLC76C	185	200 300 400	160	90 135 185	4XM10 6XM10 6XM10	76	20

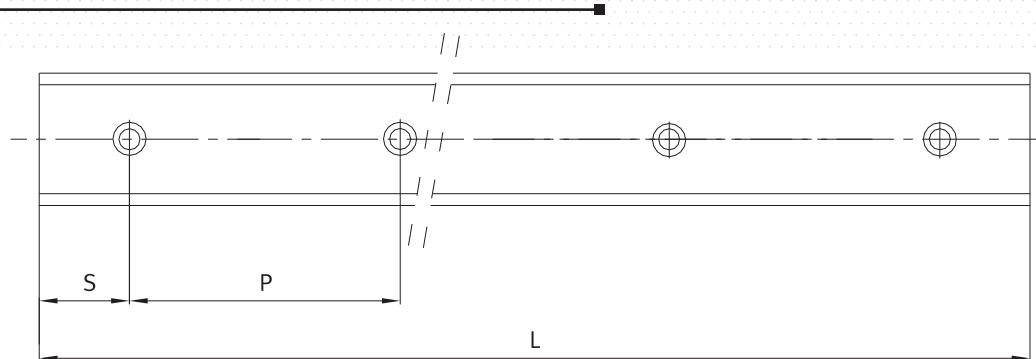
Dimensions								
H		I	M	NxDepth	P	S	P1	P3
30.5	30.85	16.5	5.5	10x5.5	90	45	1500	5500
38.5	38.85	21	7	11x7	90	45	20	4055
58.5	58.85	33.5	11	20x12	90	45	20	4794

The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



COMPONENTS

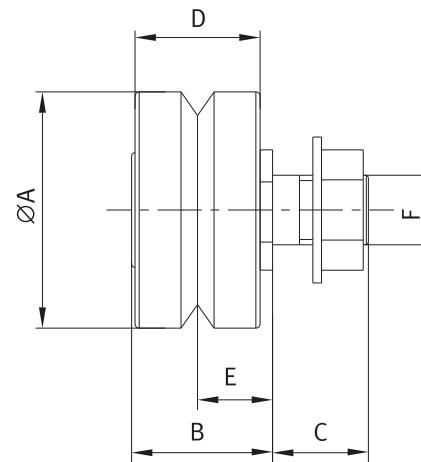
Railway



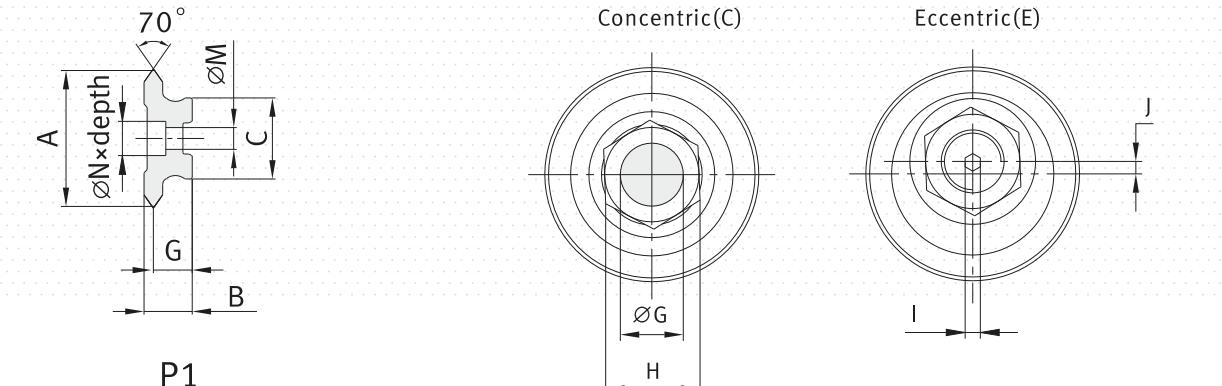
Spacer Railway

Type	A		B		C	
	P1	P3	P1	P3	P1	P3
SB-LGV25XL	25	25.2	12.25	12.9	15	15.5
SB-LGV44XL	44	44.2	15.5	16.2	26	26.5
SB-LGV76XL	76	76.2	24	24.7	50	50.5

Bearing



Type	Dimensions									
	A	B	C	D	E	F	G	H	I	J
SVR-25C	25	16.4	11.3	14	9	M8	8	13	3	—
SVR-25E	25	25.2	12.25	12.9	15	15.5	11	11	11	0.75
SVR-34C	34	21	14.3	18	1.5	M10	10	15	4	—
SVR-34E	34	21	14.3	18	1.5	M10	10	15	4	1
SVR-54C	54	33.5	19.8	28	19	M14	14	27	6	—
SVR-54E	54	33.5	19.8	28	19	M14	14	27	6	1.5

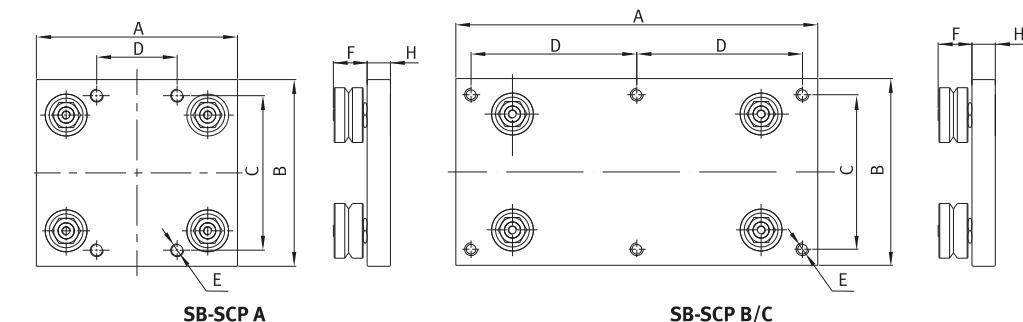


G	P1		P3		M		NxDepth		P		S		P1		P3		Lmax	
	P1	P3	M	NxDepth	P	S	P1	P3	Lmax									
10	10.35	5.5	10x5.5	90	45	1400	5500											
12.5	12.85	7	11x7	90	45	2000	5500											
19.5	19.85	11	20x12	90	45	1900	5500											

Double Row Bearings	Bearing Static (Co) and Dyna ic (C) Load Capacities (N)			
	Twin Bearings		For each of two Twin Bearings	
	Radial	Axial	Radial	Axial
1500	400	600	320	2646
3000	900	1400	800	5018
5000	2500	3200	1800	12899

For Double Row Bearings	Bearin g Static (Co) and Dyna ic (C) Load Capacities (N)			
	For Double Row Bearings		For each of two Twin Bearings	
	Radial	Axial	Radial	Axial
Co	C	Co	C	Co
2646	5214	821	1618	1333
5018	9293	1362	2553	2600
12899	21373	2777	4601	6657

Standard Carriage Dimension



Type	Applicable Railway	Applicable Bearing	Max working load capacities(N)						
			Double Row Bearings				Twin Bearings		
			Fy	Fz	Fy	Fz	Fy	Fz	Fy
SLC25A	LGV25XL	SVR-25C	80	80	65	65	24	24	1600
SLC25B		SVR-25E	135	135	82	82	60	60	3000
SLC25C			180				6xM6	6xM6	1280
SLC44A	LGV44XL	SVR-34C	125	116	96	96	50	50	3600
SLC44B		SVR-34E	180	116	96	96	80	80	6000
SLC44C			225				6xM8	6xM8	3200
SLC76A	LGV76XL	SVR-54C	200	185	160	160	90	90	10000
SLC76B		SVR-54E	300	185	160	160	135	135	7200
SLC76C			400				185	185	6400

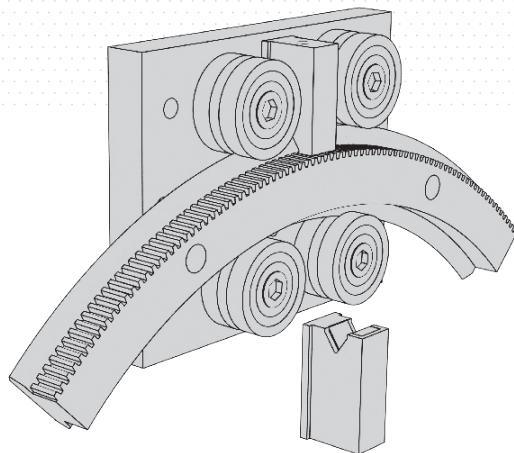
The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



RING MOTION COMPONENTS

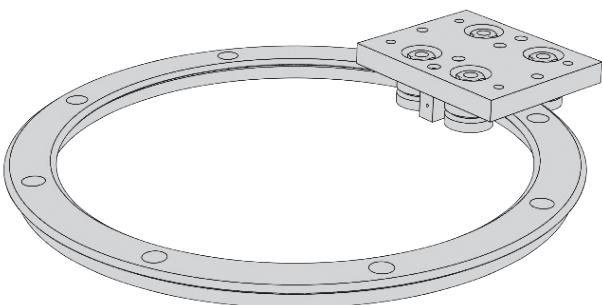
Construction

Please see below figure. This system includes Double edge V RingRail, Concentric Bearing, Eccentric Bearing, Carriage block, Lubricator. Gear teeth can be cut in the rail's space inside or outside of the rings to make drive compact and easy. Rail, bearing and other components are designed interchangeable with all of international standard suppliers.



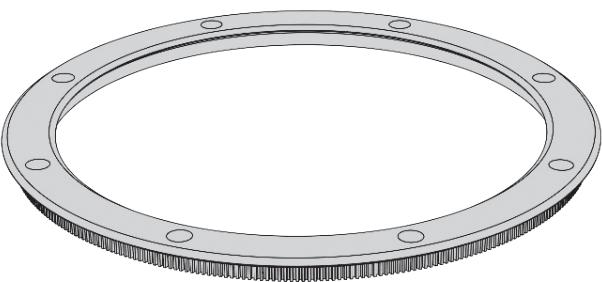
Double V-Edge Ring Rail

- Made of high quality bearing steel
- Deep hardened in working surfaces for high wear resistance
- Ground Double 70° V working edges ensure parallelism
- All surfaces are ground for precision
- Provide wide range of standard sizes for customer's selection
- Customized assembly holes are available



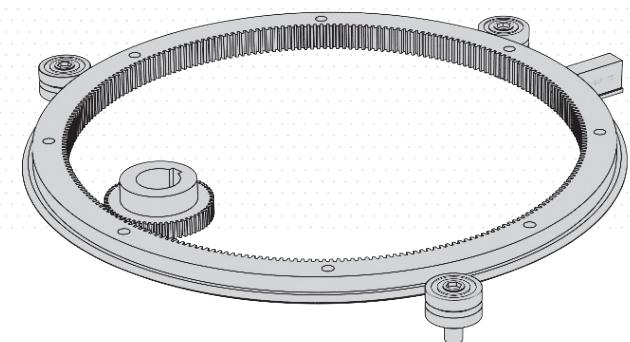
Gear Integrated Double V-Edge Ring Rail

- Made of high quality bearing steel
- Deep hardened in working surfaces for high wear resistance
- Ground Double 70° V working edges ensure parallelism
- All surfaces are ground for precision
- Provide wide range of standard sizes for customer's selection
- Gear teeth are available inside or outside of the ring rail's spacer
- Customized assembly holes are available



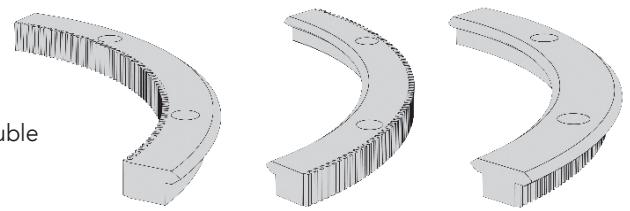
Single V-Edge Ring Rail

- Made of high quality bearing steel
- Deep hardened in working surfaces for high wear resistance
- Ground 70° V working edges
- All surfaces are ground for precision
- Provide wide range of standard sizes for customer's selection
- Gear teeth are available inside or outside of the ring rail's spacer
- Customized assembly holes are available



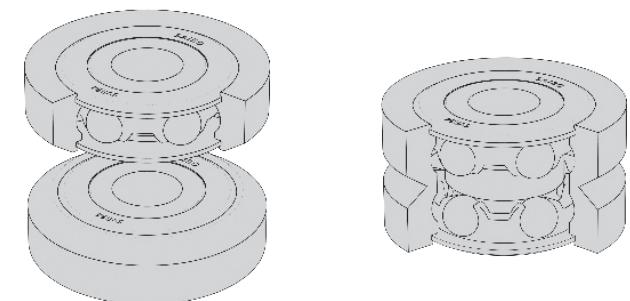
V Ring Rail Segment

- All above mentioned ring rails could be cut to segment
- Segment length could be customized
- Double Edge ring rail Segment could be connected to Linear Double Edge Rail to make circle motion system



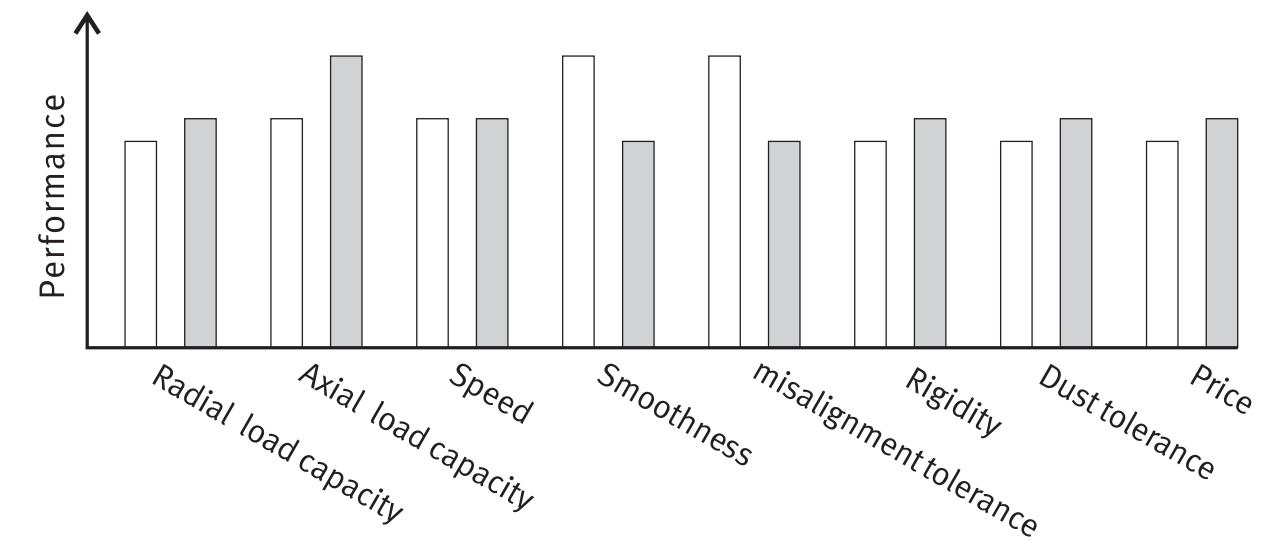
Concentric / Eccentric Bearing

- Made of high quality bearing steel
- Whole body hardened for high wear resistance
- Supply Twin type and Double row type bearings (See figure)
- Long bolt for thick carriage block
- Short bolt for thin carriage block
- Concentric / Eccentric bolt supplied



□ Twin Type Bearing

■ Double Row Type Bearing

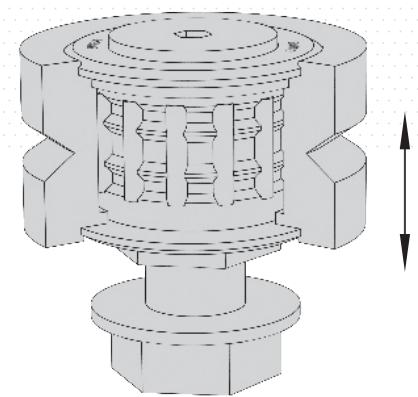


The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



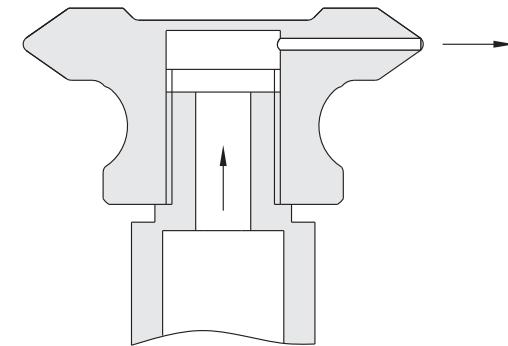
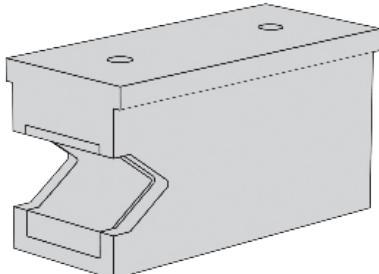
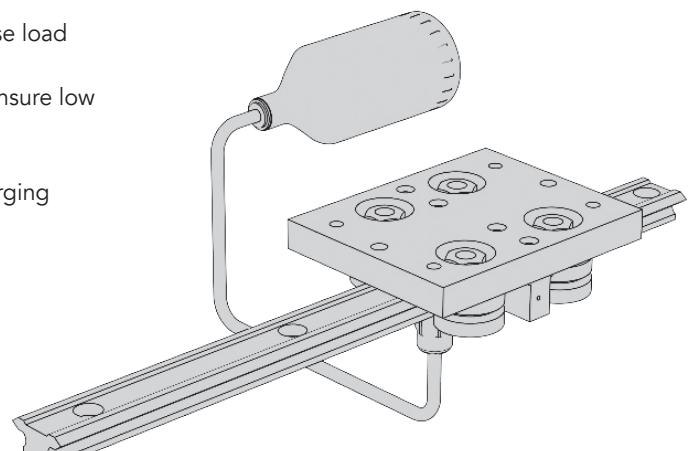
Floating Bearing

- Outer ring could float in axial direction for tolerance of height
- Made of high quality bearing steel
- Whole body hardened for high wear resistance
- Long bolt for thick carriage block
- Short bolt for thin carriage block
- Concentric / Eccentric bolt supplied



Lubricate

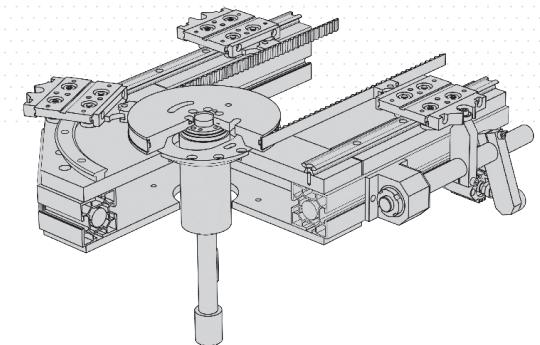
- Lubricated felt wiper contact rail's working surface to increase load capacity and life
- Lubricated felt wiper is pushed lightly by a small spring to ensure low friction with the rail's working surface
- Oil charging holes supplied for the Track Motion System
- Automatic lubricate bleed could connect to the rail's oil charging holes very easily.
- Standard and interchangeable



APPLICATION EXAMPLES

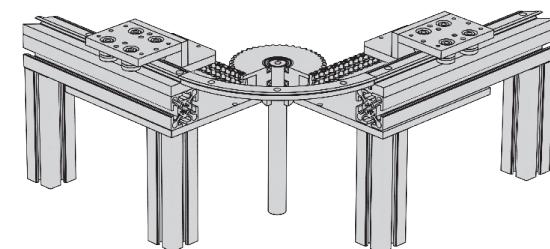
Track Motion System with Belt Driven

- Whole assembled complete machine are available
- Whole drive components are available
- Position and locking system integrated
- Automatic lubricate system integrated
- High-load and high-precision angular contact bearings used in driven shaft.
- Zero axial play for all driven shafts



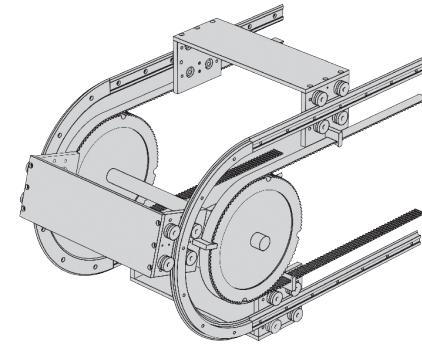
Rectangle Circle System with Chain Driven

- Whole assembled complete machine are available
- Whole drive components are available
- Torque Limiter to protect overload
- Any length available for linear rails in two directions
- Carriage could be add or remove very conveniently



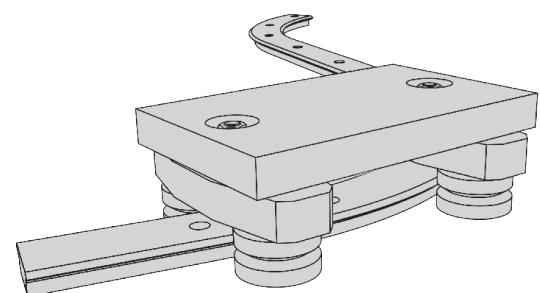
Track Motion System Mounted in Parallel

- Whole assembled complete machine are available
- Whole drive components are available
- Floating bearing used in one side to tolerant axial play
- Fit for long size component and tooling
- Heavy duty teeth belt driven enable motion smooth and quiet



S Bend Track

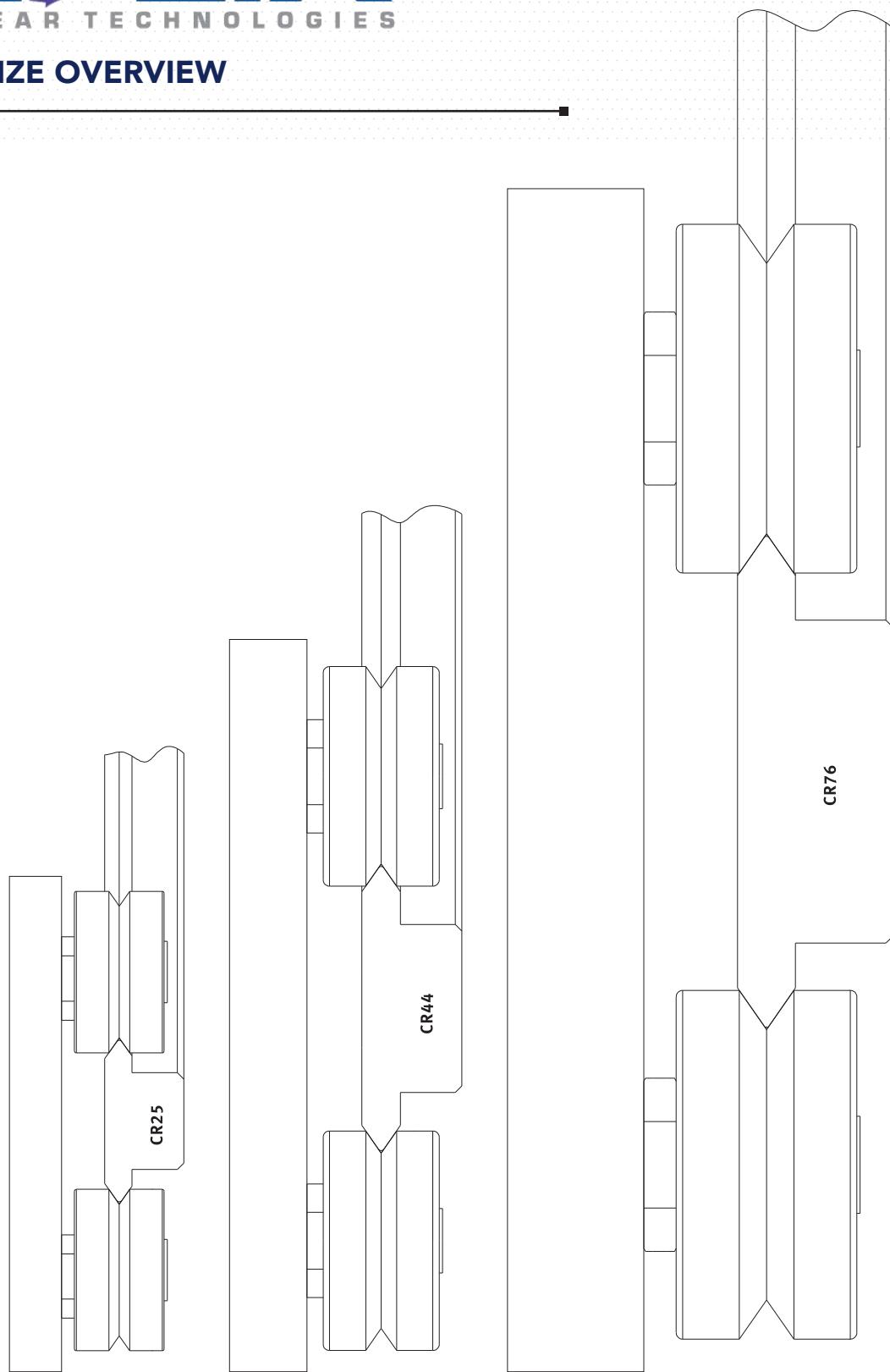
- Bogie frame applied to S bend track and different radii
- Heavy load capacity up to 1000Kg
- Large platform design for big size mounting
- Bogie rotates smooth
- Available for rail size 25, 44, 76
- Customized track design
- Driven equipment could be supplied according to specific bend track



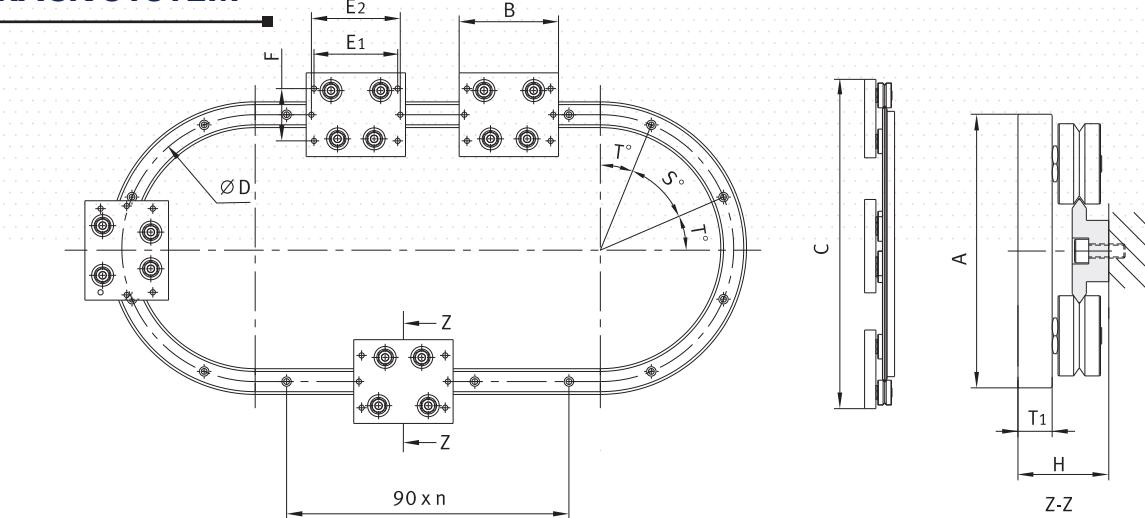
The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



FULL SIZE OVERVIEW



OVAL TRACK SYSTEM



Assembly Type	Components		
	Linear Railway	Ring Railway	Carriage
SB-LGV25XL-CR25 159 R180	SB-LGV25	SB-CR25 159 R180 SB-CR25 255 R180 SB-CR25 351 R180	SB-SRC25 159 SB-SRC25 255 SB-SRC25 351
SB-LGV44XL-CR44 468 R180	SB-LGV44	SB-CR44 468 R180 SB-CR44 612 R180	SB-SRC44 468 SB-SRC44 612
SB-LGV76XL-CR76 799 R180	SB-LGV76	SB-CR76 799 R180 SB-CR76 1033 R180 SB-CR76 1267 R180 SB-CR76 1501 R180	SB-SRC76 799 SB-SRC76 1033 SB-SRC76 1267 SB-SRC76 1501

TYPE CODE DETAILS

SB- LGV 25 X2000 -CR25 159 R180

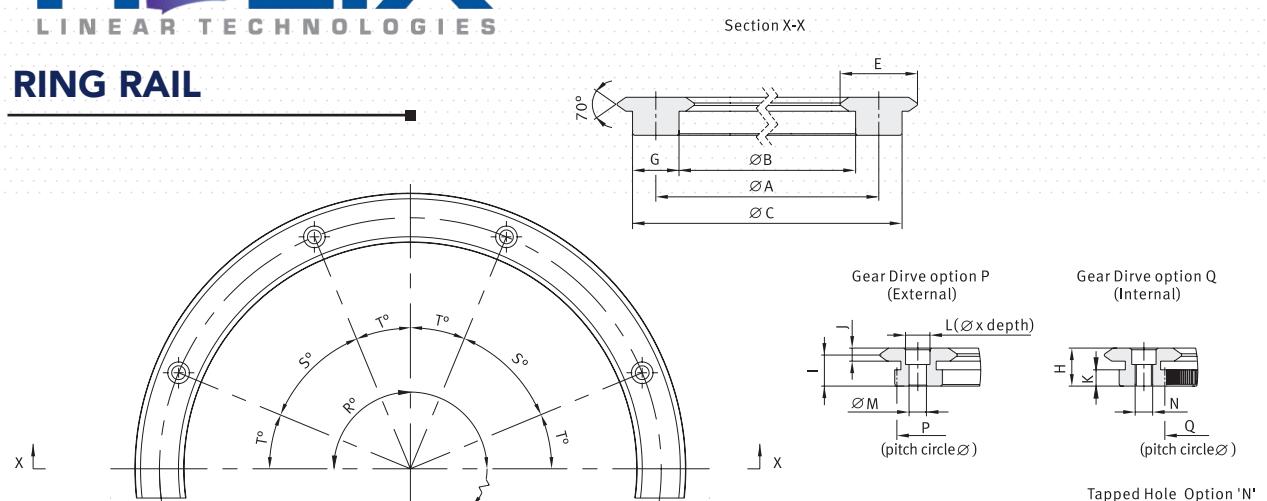
Segment angular: 180°
Ring railway diameter
Ring railway size
Railway length
Railway size
Linear railway
SAIBO motion symbol

Dimension											
A	B	C	D	E1	E2	F	H	T1	S°	T°	
80	95 100 105	239 335 431	159 255 351	85 80 85	80 85 90	50	30.5	11.5	45 45 30	22.5 22.5 15	
116	145 150	584 728	468 612	120 125	125 130	75	38.5	14.5	30 22.5	15 11.25	
185	190 210 250 270	984 1218 1452 1686	799 1033 1267 1501	160 180 205 225	165 185 225 245	100	58.5	20	22.5 18 18 18	11.25 9 9 9	

The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.

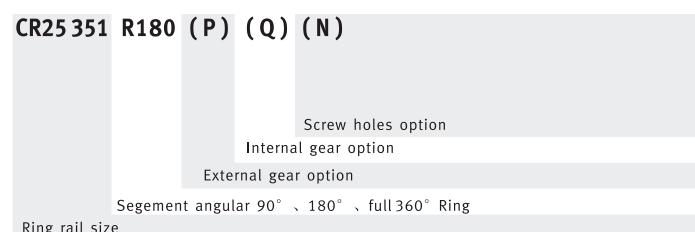


RING RAIL



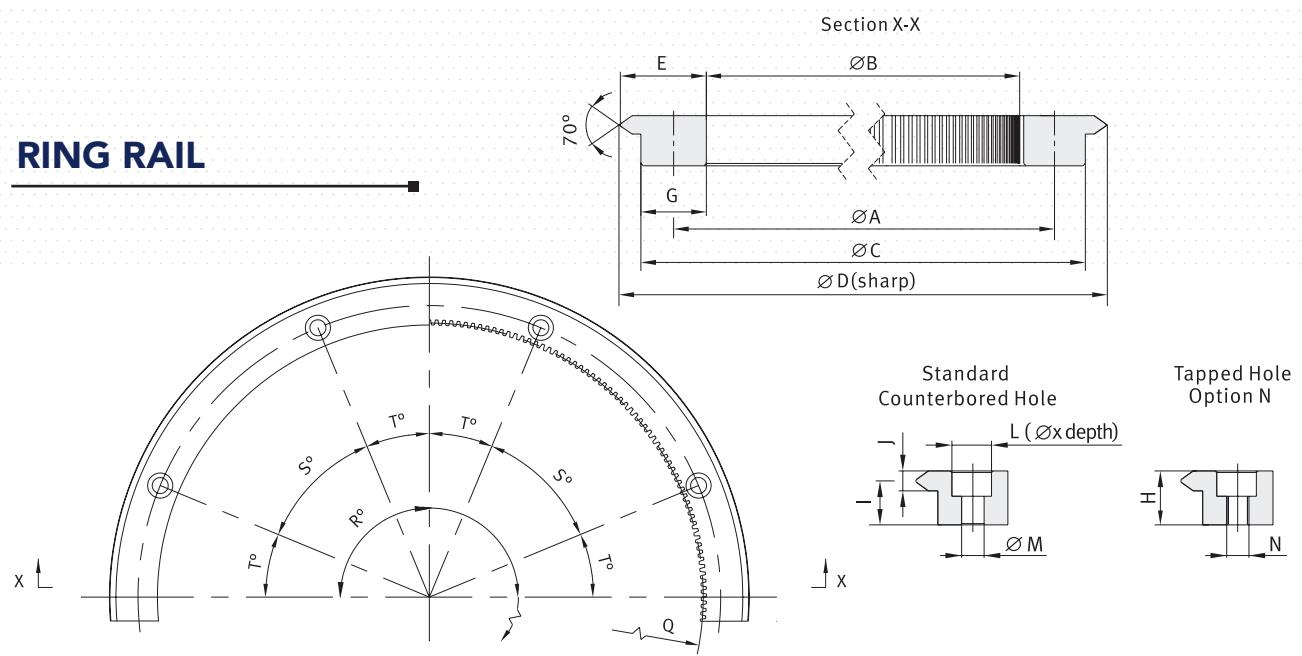
Type	Applicable Bearing	A	B	C	E	G	H	I	J	K (xdepth)
CR25 159	SVR-25	159	143.6	174.4	25	15	12.25	10	4.2	5.25 9x6
CR25 255	SVR-25	255	239.6	270.4	25	15	12.25	10	4.2	5.25 9x6
CR25 351	SVR-25	351	335.6	366.4	25	15	12.25	10	4.2	5.25 9x6
CR44 468	SVR-34	468	442	494	44	26	15.5	12.5	6	7 11x7
CR44 612	SVR-34	612	586	638	44	26	15.5	12.5	6	7 11x7
CR76 799	SVR-54	799	748.5	849.5	76	50	24	19.5	9	12 20x13
CR76 1033	SVR-54	1033	982.5	1083.5	76	50	24	19.5	9	12 20x13
CR76 1267	SVR-54	1267	1216.5	1317.5	76	50	24	19.5	9	12 20x13
CR76 1501	SVR-54	1501	1450.5	1551.5	76	50	24	19.5	9	12 20x13

TYPE CODE DETAILS



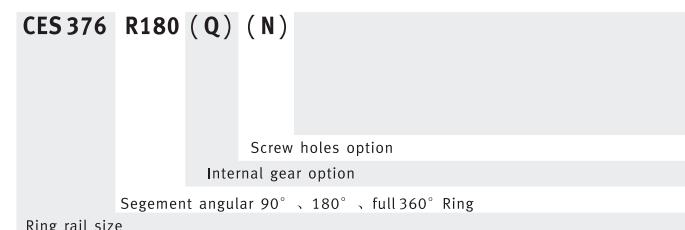
M	N	External Gear		Internal Gear		Holes' Position ±0.2				Weight (kg) (R=360°)
		P	m	Teeth Qty (R=360°)	Q	m	Teeth Qty (R=360°)	Hole number (R=360°)	S°	
5.5	M8	172.8	0.8	216	145.6	0.8	182	8	45	22.5 0.77
5.5	M8	268.8	0.8	336	241.6	0.8	302	8	45	22.5 1.2
5.5	M8	364.8	0.8	456	337.6	0.8	422	12	30	15 1.65
7	M8	492	1	492	444	1	444	12	30	15 5.1
7	M8	636	1	636	588	1	588	16	22.5	11.25 6.7
11	M16	846	1.5	564	751.5	1.5	501	16	22.5	11.25 25
11	M16	1080	1.5	720	985.5	1.5	657	20	18	9 32
11	M16	1314	1.5	876	1219.5	1.5	813	20	18	9 41
11	M16	1548	1.5	1032	1453.5	1.5	969	20	18	9 48.7

RING RAIL



Type	Applicable Bearing	A	B	C	D	E	G	H	I
CES 184	SVR-25	159	142	174	184.74	20.8	16	12.25	10
CES 280	SVR-25	255	238	270	280.74	20.8	16	12.25	10
CES 376	SVR-25	351	334	366	376.74	20.8	16	12.25	10
CEM 505	SVR-34	468.5	447.5	487.5	506.24	28.8	20	15.5	12.5
CEM 655	SVR-34	618.5	597.5	637.5	656.24	28.8	20	15.5	12.5
CEM 874	SVR-54	820	788	848	874.74	42.8	30	24	19.5

TYPE CODE DETAILS

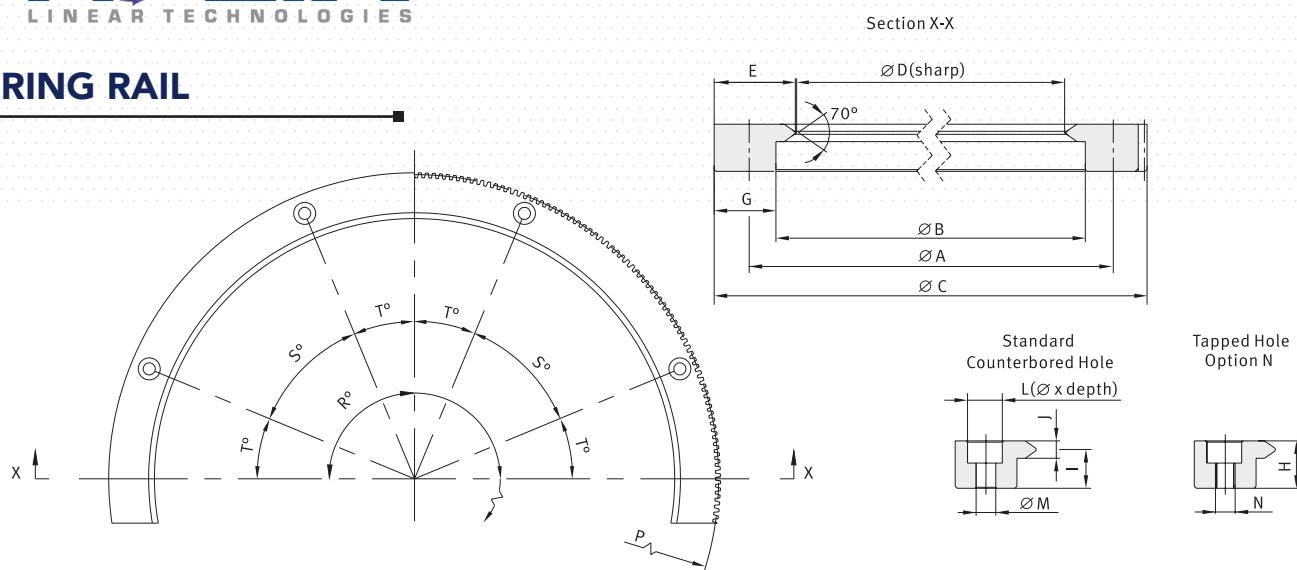


J	L (xdepth)	Internal Gear			Hole number (R=360°)	Holes' Position ±0.2			Weight (kg) (R=360°)
		M	N	Q		m	Teeth Qty (R=360°)	S°	
4.5	10x5.5	5.5	M8	144	1	144	8	45	22.5 0.78
4.5	10x5.5	5.5	M8	240	1	240	8	45	22.5 1.27
4.5	10x5.5	5.5	M8	336	1	336	12	30	15 1.75
6	11x6.5	7	M8	450	1.25	360	12	30	15 3.93
6	11x6.5	7	M8	600	1.25	480	16	22.5	11.25 5.18
9	18x10.5	11	M16	792	2	396	16	22.5	11.25 15.64

The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



RING RAIL



Type	Applicable Bearing	A	B	C	D	E	G	H	I
CIS 182	SVR-25	165	150	182	139.26	20.8	16	12.25	10
CIS 278	SVR-25	261	246	278	235.26	20.8	16	12.25	10
CIS 374	SVR-25	357	342	374	331.26	20.8	16	12.25	10
CIM 482	SVR-34	461.5	442.5	482.5	423.76	28.8	20	15.5	12.5
CIM 627	SVR-34	606.5	587.5	627.5	568.76	28.8	20	15.5	12.5
CIL 820	SVR-54	788	760	820	733.26	42.8	30	24	19.5

TYPE CODE DETAILS

CIS 374 R180 (P) (N)

Screw holes option

External gear option

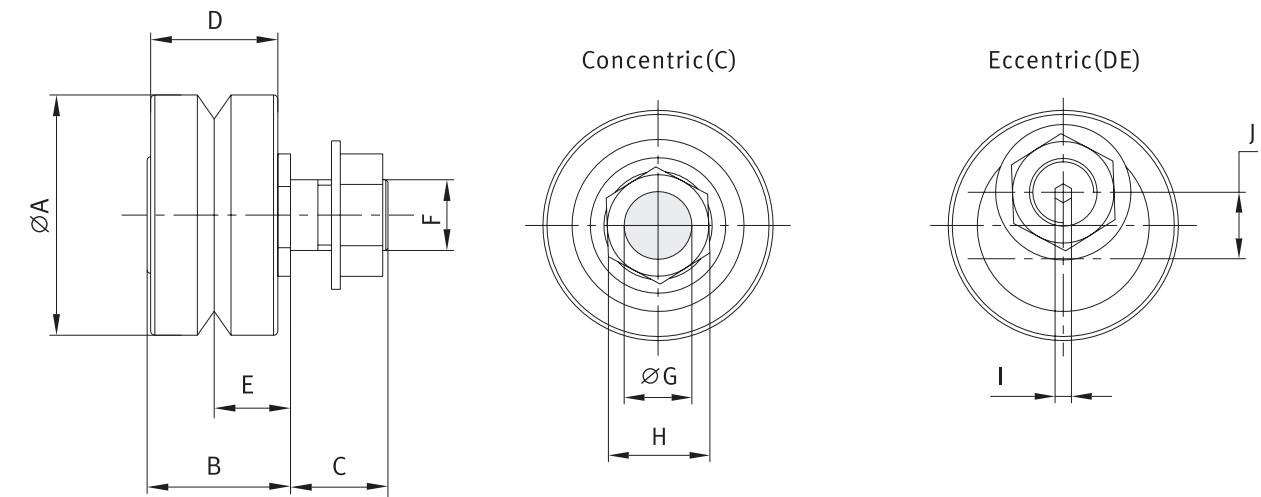
Segment angular 90°, 180°, full 360° Ring

Ring rail size

J	L	M	N	External Gear			Hole number (R=360°)	Holes' Position ±0.2		Weight (kg) (R=360°)
				P	m	Teeth Qty (R=360°)		S°	T°	
4.5	10x5.5	5.5	M8	180	1	180	8	45	22.5	0.78
4.5	10x5.5	5.5	M8	276	1	276	8	45	22.5	1.27
4.5	10x5.5	5.5	M8	372	1	372	12	30	15	1.75
6	11x6.5	6.8	M8	480	1.25	384	12	30	15	3.93
6	11x6.5	6.8	M8	625	1.25	500	16	22.5	11.25	5.18
9	18x10.5	11	M16	816	2	408	16	22.5	11.25	15.64

CONCENTRIC / ECCENTRIC BEARING DIMENSION

Type	Dimension									
	A	B	C	D	E	F	G	H	I	J
SVR-25C SVR-25DE	25	16.5	11.3	14	9	M8	8	13	3	- 2
SVR-34C SVR-34DE	34	21	14.3	18	11.5	M10	10	15	4	- 2.5
SVR-54C SVR-54DE	54	33.5	19.8	28	19	M14	14	27	6	- 5.5



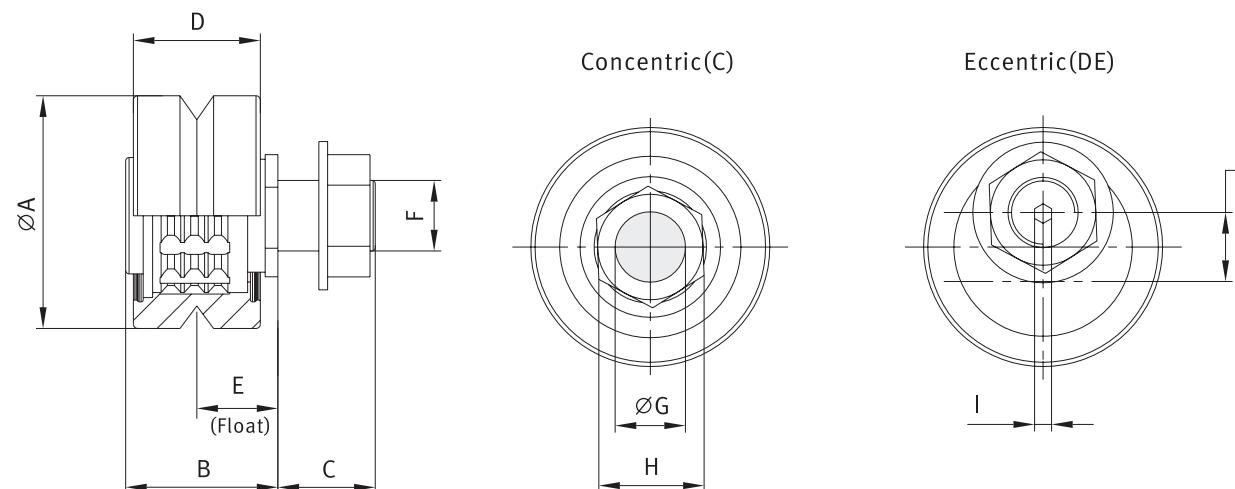
Max working load capacities(N)				Bearing Static(Co)and Dyna ic(C) Load Capacities(N)							
Double Row Bearings		Twin Bearings		For Double Row Bearings				For each of two Twin Bearings			
Radial	Axial	Radial	Axial	Co	C	Co	C	Co	C	Co	C
1500	400	600	320	2646	5214	821	1618	1333	3237	326	791
3000	900	1400	800	5018	9293	1362	2523	2600	5291	557	1270
5000	2500	3200	1800	12899	21373	2777	4601	6657	13595	1136	2320

The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



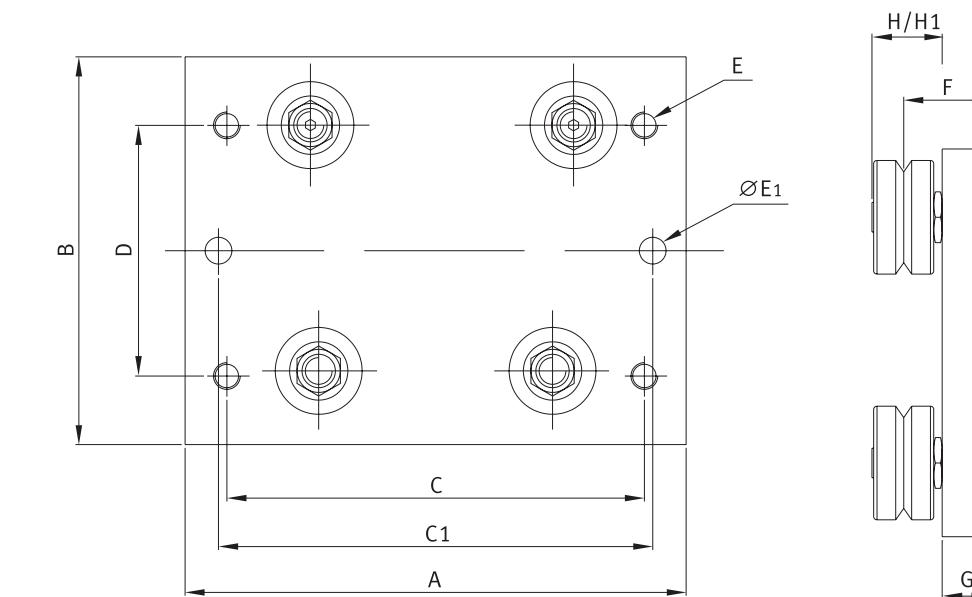
CONCENTRIC / ECCENTRIC BEARING DIMENSION

Type	Dimension					
	A	B	C	D	E	
					Max	Min
FSVR-25C	25	18.1	11.3	14	10.5	9
FSVR-25E						
FSVR-34C	34	23.2	14.3	18	13.5	11.5
FSVR-34E						
FSVR-54C	54	37.2	19.8	28	21.6	19
FSVR-54E						



F	G	H	I	J	Bearing Static(C_o) and Dyna ic(C) Load Capacities(N)		Max working load capacities(N)
					C_o	C	
M8	8	13	3	2	6100	4900	1500
M10	10	15	4	2.5	12500	11500	3000
M14	14	27	6	5.5	28900	21500	5000

STANDARD CARRIAGE DIMENSION



Type	A	B	C	C1	D	E	E1	F	G	H	H1	Weight (kg)
SRC25 159	95	80	85	80	50	4xM6	2x6	20.5	11.5	16.6	18.1	0.4
SRC25 255	100	80	80	85	50	4xM6	2x6	20.5	11.5	16.6	18.1	0.41
SRC25 351	105	80	85	90	50	4xM6	2x6	20.5	11.5	16.6	18.1	0.42
SRC44 468	145	116	120	125	75	4xM8	2x8	26	14.5	21.3	23.2	1.08
SRC44 612	150	116	125	130	75	4xM8	2x8	26	14.5	21.3	23.2	1.1
SRC76 799	190	185	160	165	100	4xM10	2x10	39	20	34.7	37.2	3.46
SRC76 1033	210	185	180	185	100	4xM10	2x10	39	20	34.7	37.2	3.66
SRC76 1267	250	185	205	225	100	4xM10	2x10	39	20	34.7	37.2	4.05
SRC76 1501	270	185	225	245	100	4xM10	2x10	39	20	34.7	37.2	4.25

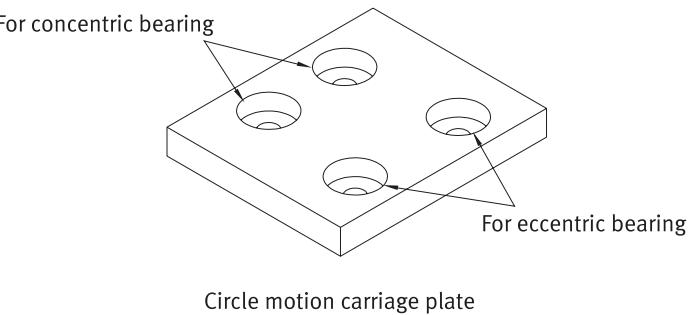
The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



ASSEMBLY MENU

1. V track bearing match carriage plate

Please mount the concentric bearing to one side of carriage plate, and eccentric bearing to the other side following the direction of railway. In case of ring type carriage, the concentric bearing should be mounted to the side where mounting-hole distance is shorter. Please refer to below picture.



2. Mounting to railway

Carriage assembly should be mounted from the end of railway. Please do not put any overstress when mounting.

3. Adjust the clearance between bearing and railway

- Tighten concentric bearings first.
- Then rotate eccentric bearing via rotate hexagonal key at the end of stud to adjust the clearance between railway and bearing.
- Adjust the clearance to zero.
- Slide the carriage by hand and adjust to the extent where there causes a slight slipping resistance.
- Correct condition is where moving power becomes the recommended value as below table by putting load by push-pull gauge to the running direction of carriage.

Recommended pre-load by push-pull gauge

V track bearing size	Pre-load(N)
25	4
44	8
76	12

-Keep eccentric bearing's position and tighten the nut.

Important Note

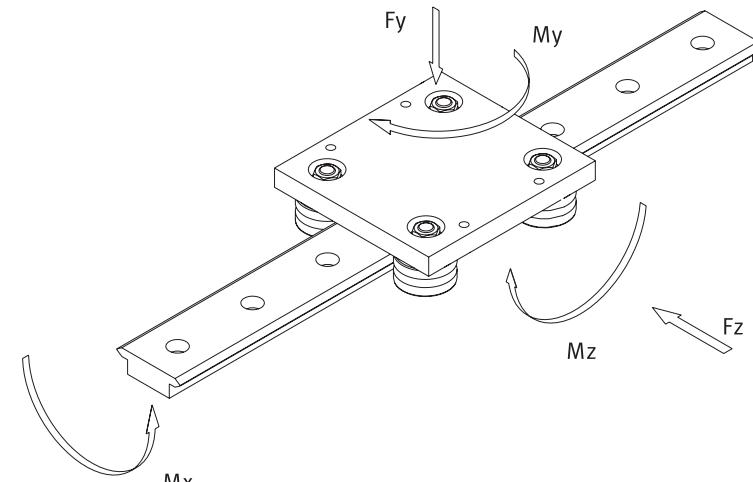
Appropriate pre-load provide the system rigidity. However, over preload will decrease system's life rapidly. Please be careful.

Load / Life calculation

Due to the hardness of the railway and fatigue analysis of railway and roller, the railway's life does not determine the system life. It is determined by roller's life. Load capacity of the motion guide system varies mainly by the size of bearing and railway, lubricated or not, and the load magnitude and direction. Other factors include speed and acceleration and environment etc. To calculate system life, loading factor LF should be calculated firstly. Here we provide two methods to calculate the loading factor.

Standard 4 bearings carriage calculation

If the system use Helix standard 4 bearings carriage, then calculation can use below formula.



$$LF = \frac{F_y}{F_{y\max}} + \frac{F_z}{F_{z\max}} + \frac{M_x}{M_{x\max}} + \frac{M_y}{M_{y\max}} + \frac{M_z}{M_{z\max}}$$

Fy - Actual load in Y direction. (N)

Fy - Actual load in Y direction. (N)

Fz - Actual load in Z direction. (N)

Mx - Actual moment in X direction. (N.m)

My - Actual moment in Y direction. (N.m)

Mz - Actual moment in Z direction. (N.m)

Below parameters can be taken from the table of Load capacity.

Fy max - Max load capacity in Y direction. (N)

Fz max - Max load capacity in Z direction. (N)

Mx max - Max moment capacity in X direction. (N.m)

My max - Max moment capacity in Y direction. (N.m)

Mz max - Max moment capacity in Z direction. (N.m)

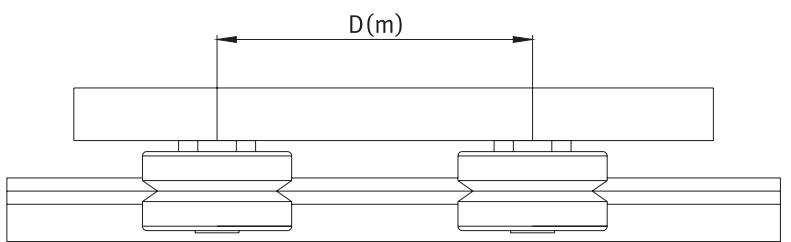
The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



MAXIMUM LOAD CAPACITY

Linear railway's carriage

Carriage Type	Dry system Double Row Bearings and Twin Bearings					Lubricated system/Twin Bearings					Lubricated system/Double Row Bearings				
	Fy	Fz	Mx	My	Mz	Fy	Fz	Mx	My	Mz	Fy	Fz	Mx	My	Mz
	N	N	Nm	Nm	Nm	N	N	Nm	Nm	Nm	N	N	Nm	Nm	Nm
SLC25	400	400	4.5	200xD	200xD	1280	1200	14	600xD	640xD	1600	3000	18	1500xD	800xD
SLC44	800	800	16	400xD	400xD	3200	2800	65	1400xD	1600xD	3600	6000	73	3000xD	1800xD
SLC76	1800	1800	64	900xD	900xD	7200	6400	250	3200xD	3600xD	10000	10000	360	5000xD	5000xD

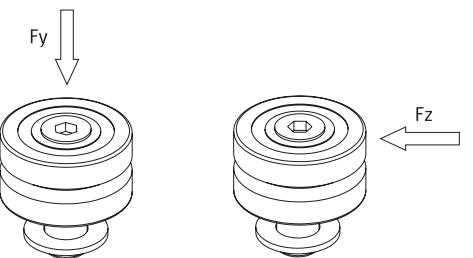


Ring railway's carriage

Carriage Type	Dry system Double Row Bearings and Twin Bearings					Lubricated system/Twin Bearings					Lubricated system/ Double Row Bearings				
	Fy	Fz	Mx	My	Mz	Fy	Fz	Mx	My	Mz	Fy	Fz	Mx	My	Mz
	N	N	Nm	Nm	Nm	N	N	Nm	Nm	Nm	N	N	Nm	Nm	Nm
SRC25 159	400	400	4.5	8.5	8.5	1280	1200	14	25	27	1600	3000	18	64	33
SRC25 255	400	400	4.5	8	8	1280	1200	14	23	25	1600	3000	18	60	31
SRC25 351	400	400	4.5	8.5	8.5	1280	1200	14	24	27	1600	3000	18	63	33
SRC44 468	800	800	16	28	28	3200	2800	64	95	110	3600	6000	73	210	120
SRC44 612	800	800	16	29	29	3200	2800	64	100	115	3600	6000	73	220	130
SRC76 799	1800	1800	64	85	85	7200	6400	250	300	340	10000	10000	360	470	470
SRC76 1033	1800	1800	64	105	105	7200	6400	250	360	410	10000	10000	360	570	570
SRC76 1267	1800	1800	64	120	120	7200	6400	250	420	480	10000	10000	360	670	670
SRC76 1501	1800	1800	64	140	140	7200	6400	250	480	550	10000	10000	360	770	770

Individual V track bearing calculation

If the system does not use Helix standard 4 bearing carriage, It is necessary to calculate each bearing's loading factor. Biggest loaded bearing's load determines the system's life.



$$LF = \frac{Fy}{Fy_{max}} + \frac{Fz}{Fz_{max}}$$

LF - Loading factor

LF should be less than 1.0 for any combination of load

Fy - Actual axial capacity. (N)

Fz - Actual radial capacity. (N)

Below parameters can be taken from below table.

Fy max - Max axial load. (N)

Fz max - Max radial load. (N)

Bearing's load capacity

Bearing type	Double Row Bearings				Each of Two Twin Bearings			
	Radial loads		Axial Loads		Radial loads		Axial Loads	
	Co	C	Co	C	Co	C	Co	C
SVR-25C SVR-25E	2646	5214	821	1618	1333	3237	326	791
SVR-34C SVR-34E	5018	9293	1362	2523	2600	5291	557	1270
SVR-54C SVR-54E	12899	21373	2777	4601	6657	13595	1136	2320

Life calculation

After getting Loading Factor LF, the life in km can be calculated by selecting one of below two formulas. The basic life can be taken from table below.

Dry System

$$\text{Life(km)} = \frac{\text{Basic_life}}{(0.03+0.97LF)^2}$$

Lubricated System

$$\text{Life(km)} = \frac{\text{Basic_life}}{(0.03+0.97LF)^3}$$

The specifications and data in this publication are believed to be accurate and reliable. However, it is the responsibility of the product user to determine the suitability of Helix products for a specific application. While defective products will be replaced without charge if promptly returned, no liability is assumed beyond such replacement.



Basic Life

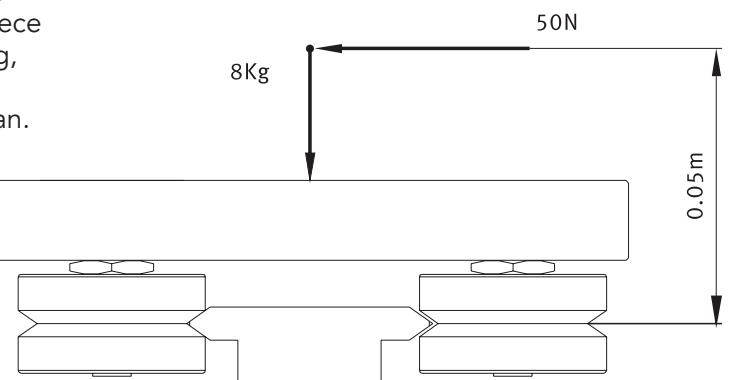
Bearing Type	Dry System	Lubricated System
SVR-25	100	150
SVR-34	100	150
SVR-54	150	250

f - Reduction coefficient of the application and environment.

None vibration or shock, Low speed (< 1m/s), Low frequency shift direction, clean environment.	1 - 1.5
Light vibration or shock, medium speed (1-2.5m/s) medium frequency shift direction, some dirtiness	1.5 - 2
Heavy vibration or shock, high speed (> 2.5m/s) high frequency shift direction, heavy dirty	2 - 3.5

Calculation Example

A machine use SB-LGV25 spacer railway and standard carriage. The carriage and work-piece total weight 8 kg. When the carriage moving, there is an external load of 50 N exerted as below drawing. Working environment is clean. There is none vibration or shock.



The load factor LF is calculated use formula

$$LF = \frac{F_y}{F_{y\max}} + \frac{F_z}{F_{z\max}} + \frac{M_x}{M_{x\max}} + \frac{M_y}{M_{y\max}} + \frac{M_z}{M_{z\max}}$$

$$F_y = 8\text{kg} \times 9.8 \text{ (gravity)} = 78.40 \text{ N}$$

$$F_z = 50 \text{ N}$$

$$M_x = 50 \times 0.05 = 2.5 \text{ N}\cdot\text{m}$$

$$M_y = 0$$

$$M_z = 0$$

Dry System

Take parameters F_y max, F_z max, M_x max, M_y max, M_z max from table and then fill in the formula

$$LF = \frac{78.4}{1280} + \frac{50}{1200} + \frac{2.5}{14} + \frac{0}{M_{y\max}} + \frac{0}{M_{z\max}} = 0.2816$$

Then life (km) calculation can use formula as below:

$$\text{Life(km)} = \frac{\text{Basic_life}}{(0.03+0.97LF*f)^2}$$

Basic life is 100km.

According to the description of working condition, take $f=1.3$.

$$\text{Life(km)} = \frac{100}{(0.03+0.97*0.2816*1.3)^2} = 674 \text{ km}$$

Basic life is 150 km, take $f=1.1$

$$\text{Life(km)} = \frac{\text{Basic_life}}{(0.03+0.97LF*f)^3}$$

$$\text{Life(km)} = \frac{150}{(0.03+0.97*0.2816*1.1)^3} = 4155 \text{ km}$$

From this example, it shows clearly that lubrication is so important for the life. Please pay attention to install the lubrication system for your system.

All rights reserved. Due to constant development of the products,
we reserve the right of modifications without notifications.



HELIX LINEAR TECHNOLOGIES
23200 Commerce Park Road
Beachwood, OH 44122
1-855-HELIXLT or 216-485-2232

www.helixlinear.com
sales@helixlinear.com

