

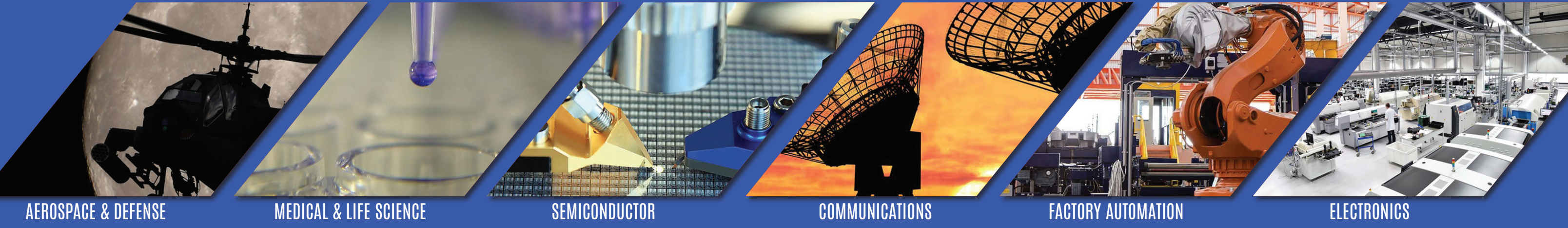


TELESCOPIC RAILS



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 Telescopic Rails are designed for heavy duty industrial applications which require smooth telescopic sliding with no play. These applications include such as Automated Warehousing systems, Electric Vehicle's Battery Boxes.

The structure of these rails is very simple and compact. There is one C-shaped external rail, one internal slider, two rows of steel balls and a ball cage total. Limit Stoppers are fixed both in external rail and internal slider to preset the extension ranges. From cross section, there are V-shaped concaves in external rail and internal slider, balls run in the concaves with 4 points contact. Zero clearance is set between balls and concaves during assembling and this is most important for precise sliding. This 4-points contact structure achieve very small displacement forces and acceleration forces. It also could get a very good stiffness.

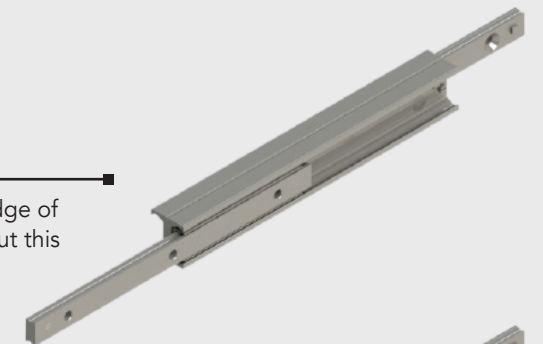
Both external rail and internal slider are made of cold draw steel with induction hardening in the ball races. Thus, these products achieve a high wear resistance, heavy load capacity and good durability.

The simplest type of these series products is one internal slider runs in an external rail. We call this Partial Extension. This is the base component and could be built to another Full Extension slides flexibly. At present, there are two sizes are available, size 28 and size 43.

TPE

Partial Extension Rails

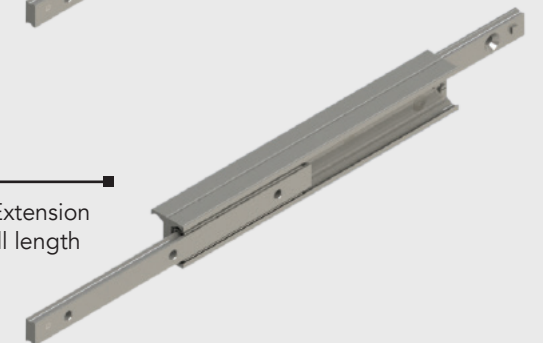
The internal slider could extract for more than half of its length from the edge of the external rail. Using shorter ball cage could get longer extract length. But this will reduce load capacity.



TBD

Full Extension Rails

This series products permit full extension. It is assembled with two Partial Extension Rails which are bolted back to back. This rail's stroke could reach slider's full length and even more.



TLB

Ball-Caged Linear Guides

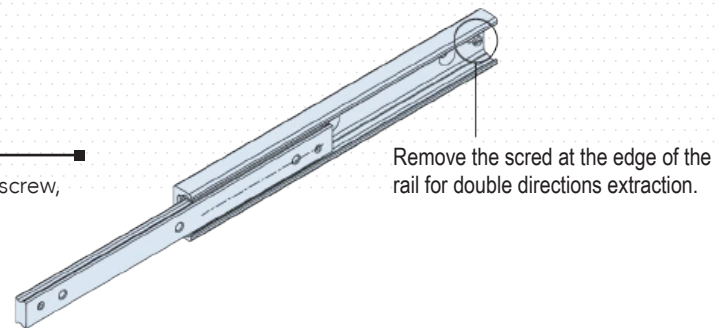
This series products' ball cage and internal slider are limited in the external C-shaped rail. Then the internal slider can not extract out external C-shaped rail.





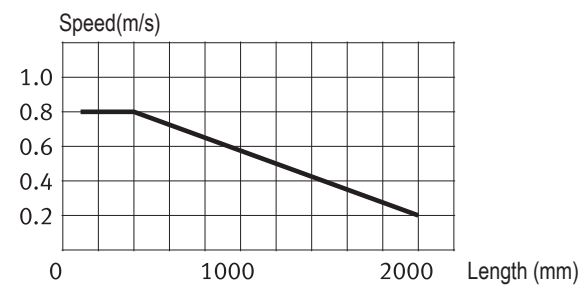
Double Directions

If need double directions extraction, just remove the stop screw, Then the internal slider could extract in both directions.



Working Speed

The maximum working speed is 0.8m/s. But this maximum speed could reduce influenced by the length of ball cage and internal slider, installation and application. If application condition is good and installation is perfect, the most influence factor is rail's length. Please refer the maximum speed as below chart.



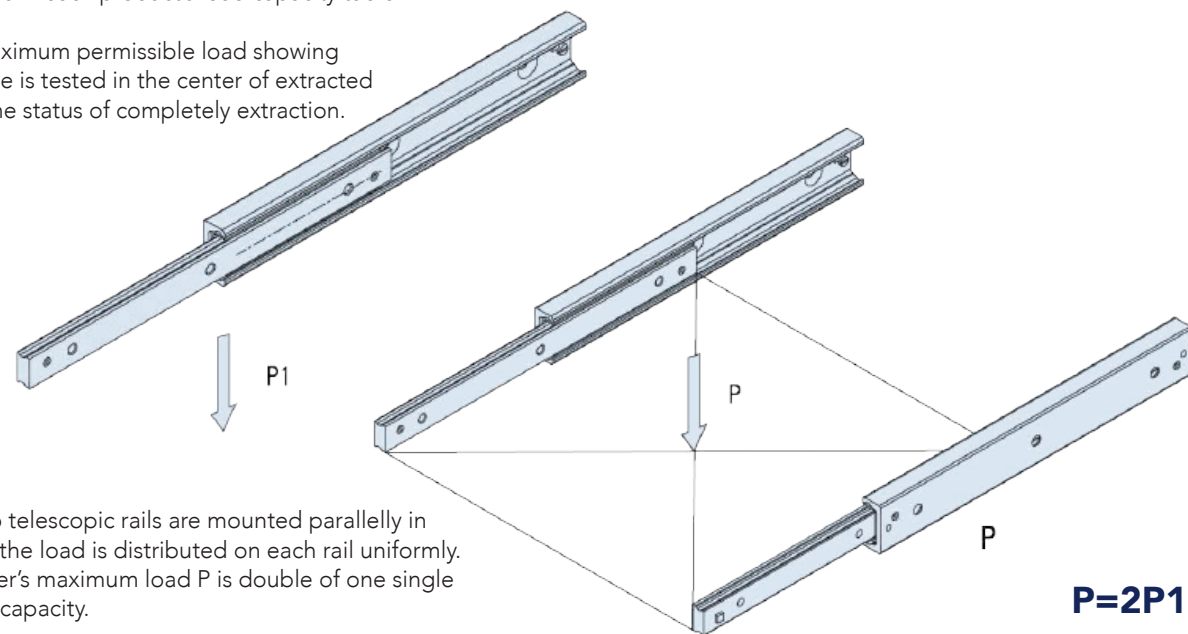
Lubrication and Temperature

High quality lubrication is helpful for rail's working life. It also could reduce running noise. In delivery status, all products are filled lubricate in the ball races which allows to work in the temperature between -20°C and 120°C . It is commended to re-lubricate each 100Km running. The rail steel bodies' maximum working temperature is 170°C. In higher temperature working conditions, the ball races' hardness will be reduced undergo the tempering process. Then the load capacity would reduce. For extreme working temperature, please contact our technical service.

Load Capacity

These Cold-drawn Steel Rails are designed for heavy load capacity. The load capacity is most different to those steel sheet bended drawer rails. Please check detailed parameters in each product's load capacity table.

All the maximum permissible load showing in the table is tested in the center of extracted slider in the status of completely extraction.



When two telescopic rails are mounted parallelly in ideal and the load is distributed on each rail uniformly. This drawer's maximum load P is double of one single rail's load capacity.

Life Calculation

Telescopic Rail's life is determined by several factors. These factors include effective load, running direction change frequency, running speed, installation precision, vibration or shock, working condition and temperature, lubricate etc.

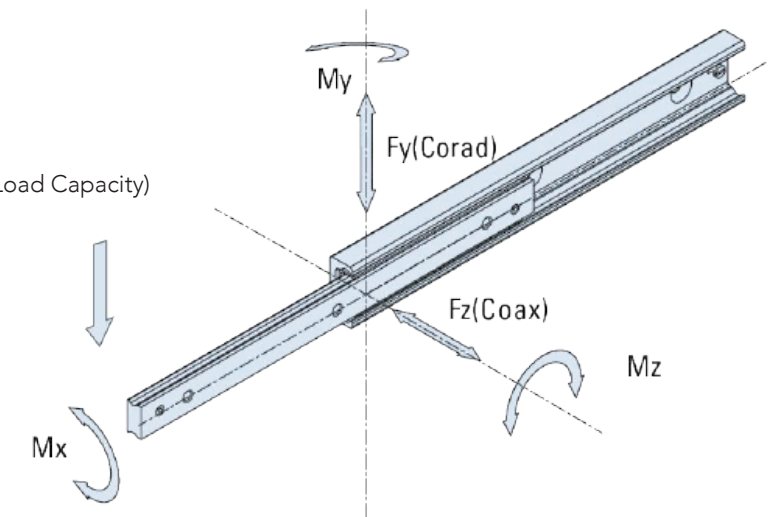
Equivalent Load LF

$$LF = Fy + \left(\frac{Fz}{Coax} + \frac{Mx}{Mxmax} + \frac{My}{Mymax} + \frac{Mz}{Mzmax} \right) Corad$$

- Fy – Actual load in Y direction (N)
- Fz – Actual load in Z direction (N)
- Mx- Actual moment load in X directiron (N.m)
- My- Actual moment load in Y directiron (N.m)
- Mz- Actual moment load in Z directiron (N.m)

(Below Parameters can be taken from the table of Load Capacity)

- Corad – Load capacity in Y direction (N)
- Coax –Load capacity in Z direction (N)
- Mxmax-Moment capacity in X directiron (N.m)
- Mymax-Moment capacity in Y directiron (N.m)
- Mzmax-Moment capacity in Z directiron (N.m)



Life in Kilometers

$$L_{km} = 100 \cdot \left(\frac{C_{100}}{LF \cdot f} \right)^3$$

C100 – Load capacity factor.
(Please check detailed parameter each product's load capacity table)
f – Application Coefficient

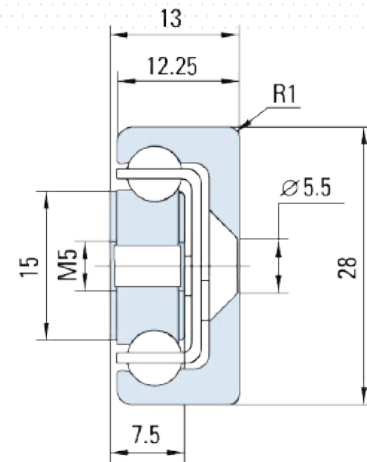
None vibration or shock, Low speed Low frequency shift direction, clean environment.	1.3 - 1.8
Light vibration or shock, medium speed medium frequency shift direction, some dirtiness	1.8 - 2.3
Heavy vibration or shock, high speed high frequency shift direction, heavy dirty	2.3 - 3.5

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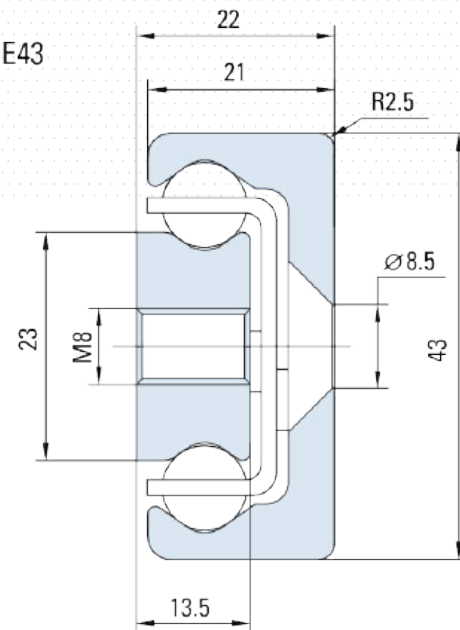


TPE Cross-Section Dimension

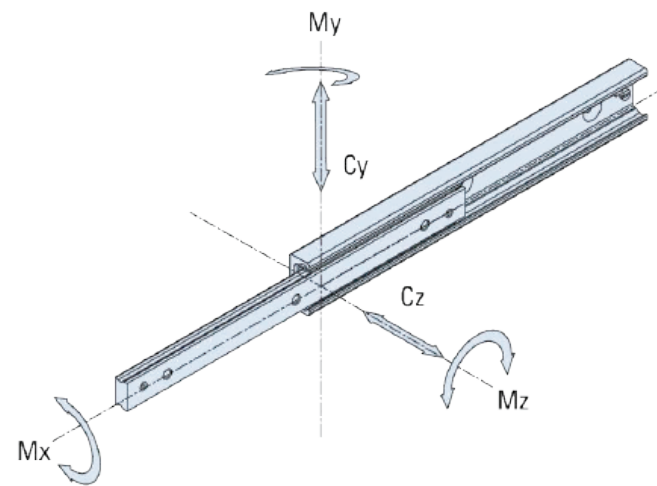
TPE28



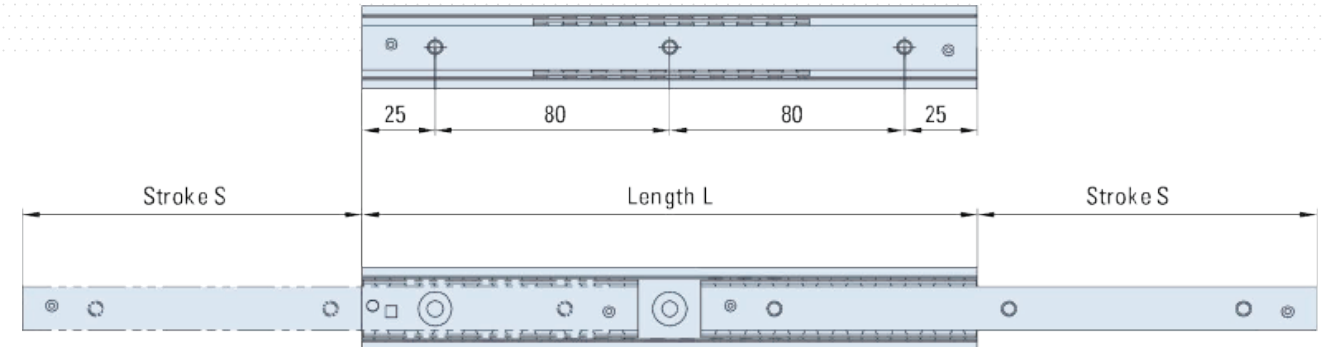
TPE43



Load Capacity



Type	Length L (mm)	Stroke S (mm)	Load Capacity					C ₁₀₀ (N)
			C _y (N)	C _z (N)	M _x (Nm)	M _y (Nm)	M _z (Nm)	
HTPE28-130	130	74	612	430	16	21	29	873
HTPE28-210	210	116	1117	782	27	59	83	1579
HTPE28-290	290	148	1935	1355	40	133	187	2693
HTPE28-370	370	190	2446	1712	51	214	306	3403
HTPE28-450	450	232	2956	2070	62	315	450	4120
HTPE28-530	530	274	3467	2427	73	436	620	4835
HTPE28-610	610	316	3978	2785	83	577	820	5558
HTPE28-690	690	358	4489	3142	94	736	1051	6273
HTPE28-770	770	400	4996	3499	105	915	1308	6985
HTPE28-850	850	433	5829	4082	118	1166	1667	8113
HTPE28-930	930	475	6336	4437	130	1390	1985	8810
HTPE28-1010	1010	517	6849	4795	140	1633	2329	9526
HTPE28-1090	1090	559	7359	5150	151	1894	2704	10239
HTPE28-1170	1170	601	7566	5508	162	2176	3109	10953

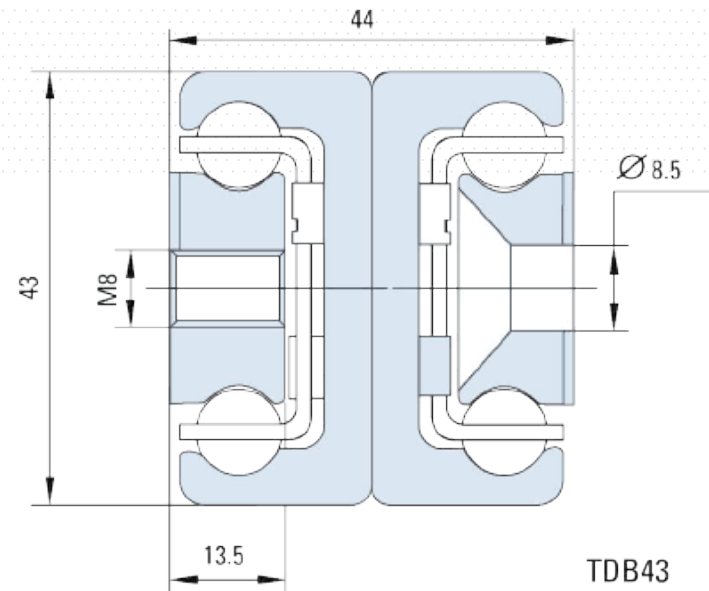
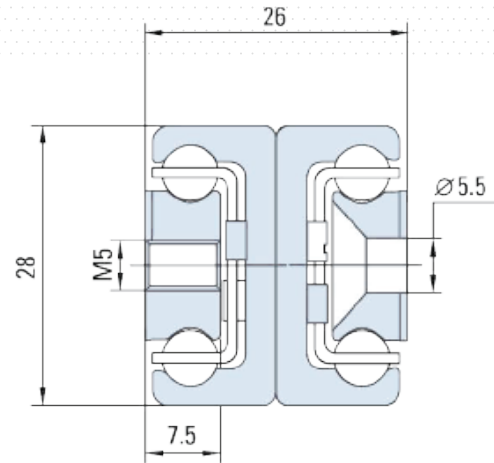


Type	Length L (mm)	Stroke S (mm)	Load Capacity					C ₁₀₀ (N)
			C _y (N)	C _z (N)	M _x (Nm)	M _y (Nm)	M _z (Nm)	
HTPE43-210	210	123	1596	1118	61	85	121	2288
HTPE43-290	290	158	2873	2012	94	202	289	4055
HTPE43-370	370	208	3378	2365	116	307	441	4794
HTPE43-450	450	243	4691	3285	150	510	730	6602
HTPE43-530	530	278	6040	4228	185	763	1089	8451
HTPE43-610	610	313	7412	5189	216	1065	1520	10325
HTPE43-690	690	363	7865	5506	238	1295	1850	11007
HTPE43-770	770	398	9233	6465	273	1682	2403	12879
HTPE43-850	850	433	10617	7132	305	2120	3029	14763
HTPE43-930	930	483	11056	7740	328	2440	3485	15430
HTPE43-1010	1010	518	12435	8705	360	2962	4231	17311
HTPE43-1090	1090	568	12878	9015	383	3336	4767	1981
HTPE43-1170	1170	603	14256	9980	416	3945	5635	19861
HTPE43-1250	1250	638	15640	10948	450	4597	6572	21749
HTPE43-1330	1330	688	16076	11255	471	5066	7238	22412
HTPE43-1410	1410	723	17458	12220	504	5806	8296	24298
HTPE43-1490	1490	758	18848	13192	538	6599	9426	26187
HTPE43-1570	1570	793	20240	14168	571	7442	10630	28085
HTPE43-1650	1650	843	20663	14465	593	8031	11473	28735
HTPE43-1730	1730	878	22055	15438	626	8958	12796	30628
HTPE43-1810	1810	928	22480	15738	648	9604	13718	31280
HTPE43-1890	1890	963	23865	16709	682	10615	15163	33170
HTPE43-1970	1970	1013	24230	17010	705	11315	16162	33827

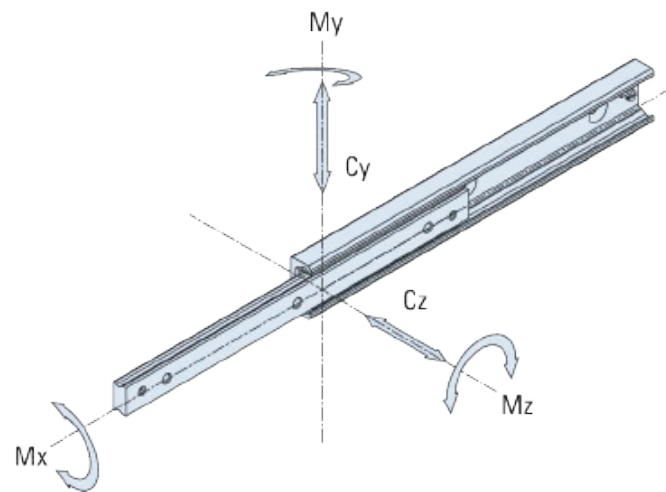
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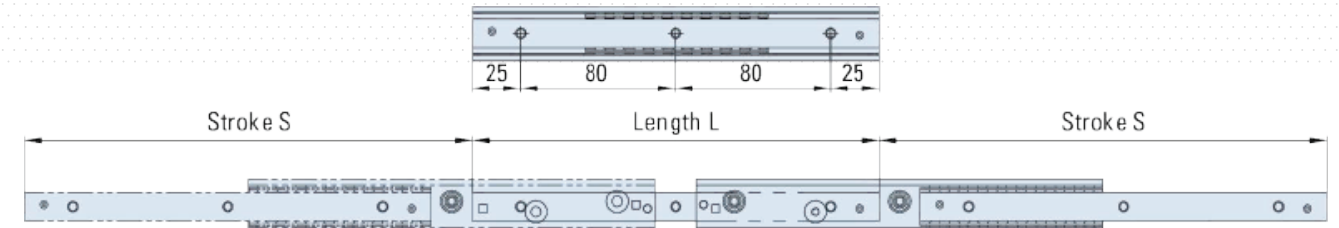
TDB Cross-Section Dimension



Load Capacity



Type	Length L (mm)	Stroke S (mm)	Load Capacity		
			C _y (N)	C _z (N)	C ₁₀₀ (N)
HTPE28-130	130	148	236	165	358
HTPE28-210	210	232	433	303	656
HTPE28-290	290	296	768	538	1155
HTPE28-370	370	380	969	472	1157
HTPE28-450	450	464	1170	386	1760
HTPE28-530	530	548	1108	326	2065
HTPE28-610	610	633	956	281	2370
HTPE28-690	690	717	845	248	2673
HTPE28-770	770	801	754	220	2978
HTPE28-850	850	866	712	209	3489
HTPE28-930	930	950	647	190	3785
HTPE28-1010	1010	1034	593	175	4088
HTPE28-1090	1090	1118	548	161	4389
HTPE28-1170	1170	1202	509	150	4691

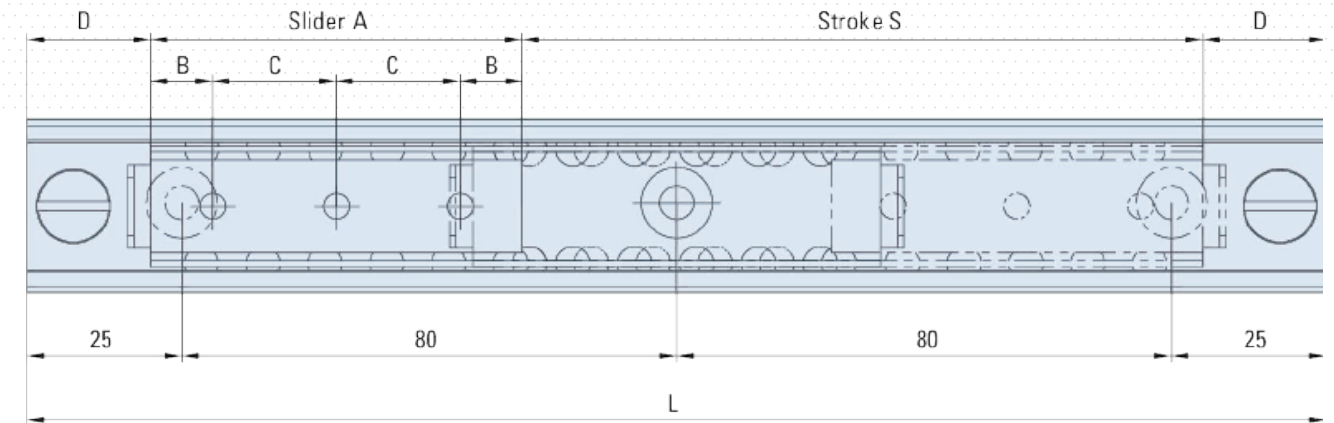
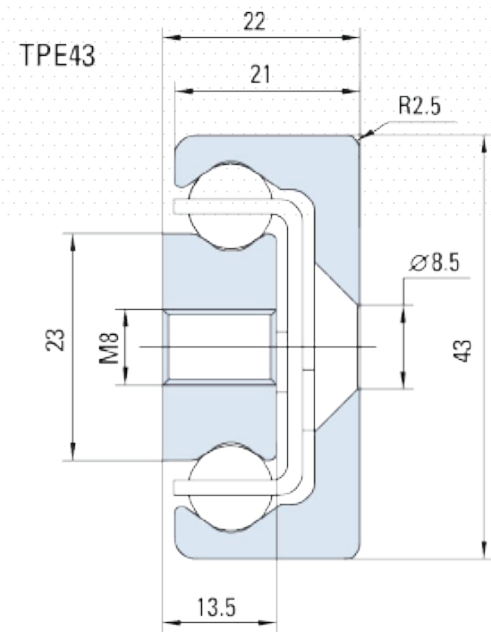
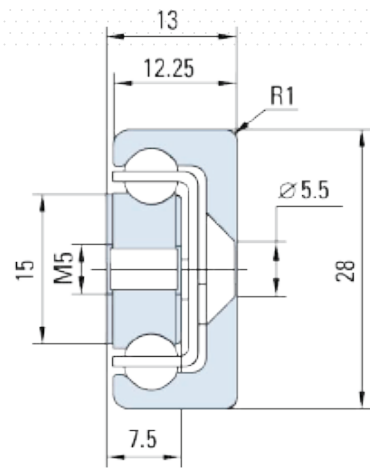


Type	Length L (mm)	Stroke S (mm)	Load Capacity		
			C _y (N)	C _z (N)	C ₁₀₀ (N)
HTPE43-210	210	246	606	425	923
HTPE43-290	290	316	1115	781	1687
HTPE43-370	370	416	1302	912	1974
HTPE43-450	450	486	1827	1280	2764
HTPE43-530	530	556	2376	1435	3580
HTPE43-610	610	626	2935	1303	4414
HTPE43-690	690	726	3092	1096	4661
HTPE43-770	770	796	3056	1018	5493
HTPE43-850	850	866	2848	945	6335
HTPE43-930	930	966	2508	835	6572
HTPE43-1010	1010	1036	2365	788	7411
HTPE43-1090	1090	1106	2239	745	8257
HTPE43-1170	1170	1206	2020	673	8489
HTPE43-1250	1250	1276	1929	642	9332
HTPE43-1330	1330	1376	1767	588	9568
HTPE43-1410	1410	1446	1965	565	10409
HTPE43-1490	1490	1516	1628	542	11255
HTPE43-1570	1570	1586	1568	523	12105
HTPE43-1650	1650	1686	1460	487	12330
HTPE43-1730	1730	1756	1407	470	13178
HTPE43-1810	1810	1856	1322	440	13406
HTPE43-1890	1890	1926	1281	426	14252
HTPE43-1970	1970	2026	1207	402	14483

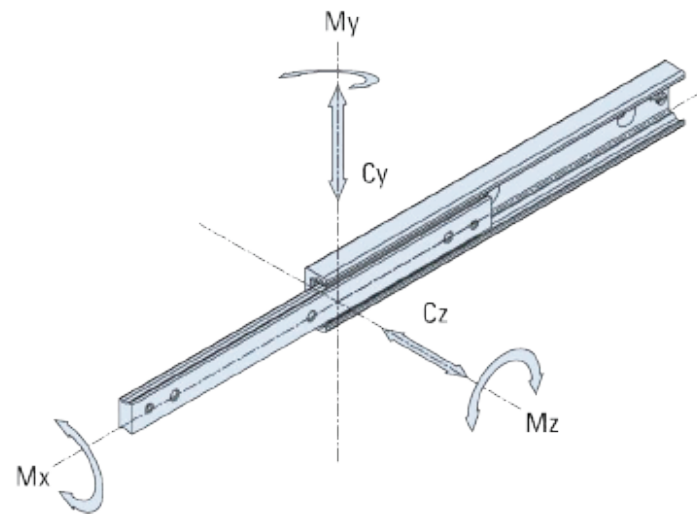
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TLB Cross-Section Dimension



Load Capacity



Type	Carriage										
	Dimensions				Load Capacity						
	D (mm)	A (mm)	B (mm)	C (mm)	C _y (N)	C _z (N)	M _x (Nm)	M _y (Nm)	M _z (Nm)	C ₁₀₀ (N)	No. of holes
HTPE28-130	612	430	16	21	29	430	16	21	29	873	2
HTPE28-210	1117	782	27	59	83	782	27	59	83	1579	3
HTPE28-290	1935	1355	40	133	187	1355	40	133	187	2693	4
HTPE28-370	2446	1712	51	214	306	1712	51	214	306	3403	5
HTPE28-450	2956	2070	62	315	450	2070	62	315	450	4120	6
HTPE28-530	3467	2427	73	436	620	2427	73	436	620	4835	7
HTPE28-610	3978	2785	83	577	820	2785	83	577	820	5558	8

Type	Carriage										
	Dimensions				Load Capacity						
	D (mm)	A (mm)	B (mm)	C (mm)	C _y (N)	C _z (N)	M _x (Nm)	M _y (Nm)	M _z (Nm)	C ₁₀₀ (N)	No. of holes
HTLB28-60	20	60	10	20	3481	2438	17	25	36	3481	3
HTLB28-80	20	80	10	20	4642	3249	23	44	63	4642	4
HTLB28-130	20	130	25	80	7542	5279	37	115	162	7542	2
HTLB28-210	20	210	25	80	12182	8525	60	299	427	12182	3
HTLB28-290	20	290	25	80	16823	11775	83	570	812	16823	4
HTLB28-370	20	370	25	80	21461	15024	106	927	1324	21461	5
HTLB28-450	20	450	25	80	26103	18272	128	1372	1959	26103	6

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TLB Standard Length

Type	Rail Length	Carriage Length	Stroke
HTLB28-130-60-30	130	60	30
HTLB28-210-60-110	210	60	110
HTLB28-290-60-190	290	60	190
HTLB28-370-60-270	370	60	270
HTLB28-450-60-350	450	60	350
HTLB28-210-80-90	210	80	90
HTLB28-290-80-170	290	80	170
HTLB28-370-80-250	370	80	250
HTLB28-450-80-330	450	80	330
HTLB28-530-80-410	530	80	410
HTLB28-610-80-490	610	80	490
HTLB28-290-130-120	290	130	120
HTLB28-370-130-200	370	130	200
HTLB28-450-130-280	450	130	280
HTLB28-530-130-360	530	130	360
HTLB28-610-130-440	610	130	440
HTLB28-690-130-520	690	130	520
HTLB28-770-130-600	770	130	600
HTLB28-850-130-680	850	130	680
HTLB28-930-130-760	930	130	760
HTLB28-1010-130-840	1010	130	840
HTLB28-450-210-200	450	210	200
HTLB28-530-210-280	530	210	280
HTLB28-610-210-360	610	210	360
HTLB28-690-210-440	690	210	440
HTLB28-770-210-520	770	210	520
HTLB28-850-210-600	850	210	600
HTLB28-930-210-680	930	210	680
HTLB28-1010-210-760	1010	210	760
HTLB28-1170-210-920	1170	210	920
HTLB28-1330-210-1080	1330	210	1080
HTLB28-610-290-280	610	290	280
HTLB28-690-290-360	690	290	360
HTLB28-770-290-440	770	290	440
HTLB28-850-290-520	850	290	520
HTLB28-930-290-600	930	290	600
HTLB28-1010-290-680	1010	290	680
HTLB28-1170-290-840	1170	290	840
HTLB28-1330-290-1000	1330	290	1000
HTLB28-1490-290-1160	1490	290	1160
HTLB28-770-370-360	770	370	360
HTLB28-850-370-440	850	370	440
HTLB28-930-370-520	930	370	520
HTLB28-1010-370-600	1010	370	600
HTLB28-1170-370-760	1170	370	760
HTLB28-1330-370-920	1330	370	920
HTLB28-1490-370-1080	1490	370	1080
HTLB28-930-450-440	930	450	440
HTLB28-1010-450-520	1010	450	520
HTLB28-1170-450-680	1170	450	680
HTLB28-1330-450-840	1330	450	840
HTLB28-1490-450-1000	1490	450	1000
HTLB28-1650-450-1160	1650	450	1160
HTLB43-290-130-110	290	130	110

TLB Standard Length

Type	Rail Length	Carriage Length	Stroke
HTLB43-370-130-190	370	130	190
HTLB43-450-130-270	450	130	270
HTLB43-530-130-350	530	130	350
HTLB43-610-130-430	610	130	430
HTLB43-690-130-510	690	130	510
HTLB43-770-130-590	770	130	590
HTLB43-850-130-670	850	130	670
HTLB43-930-130-750	930	130	750
HTLB43-1010-130-830	1010	130	830
HTLB43-450-210-190	450	210	190
HTLB43-530-210-270	530	210	270
HTLB43-610-210-350	610	210	350
HTLB43-690-210-430	690	210	430
HTLB43-770-210-510	770	210	510
HTLB43-850-210-590	850	210	590
HTLB43-930-210-670	930	210	670
HTLB43-1010-210-750	1010	210	750
HTLB43-1170-210-910	1170	210	910
HTLB43-1330-210-1070	1330	210	1070
HTLB43-1490-210-1230	1490	210	1230
HTLB43-1650-210-1390	1650	210	1390
HTLB43-610-290-270	610	290	270
HTLB43-690-290-350	690	290	350
HTLB43-770-290-430	770	290	430
HTLB43-850-290-510	850	290	510
HTLB43-930-290-590	930	290	590
HTLB43-1010-290-670	1010	290	670
HTLB43-1170-290-830	1170	290	830
HTLB43-1330-290-990	1330	290	990
HTLB43-1490-290-1150	1490	290	1150
HTLB43-1650-290-1310	1650	290	1310
HTLB43-1810-290-1470	1810	290	1470
HTLB43-770-370-350	770	370	350
HTLB43-850-370-430	850	370	430
HTLB43-930-370-510	930	370	510
HTLB43-1010-370-590	1010	370	590
HTLB43-1170-370-750	1170	370	750
HTLB43-1330-370-910	1330	370	910
HTLB43-1490-370-1070	1490	370	1070
HTLB43-1650-370-1230	1650	370	1230
HTLB43-1810-370-1390	1810	370	1390
HTLB43-930-450-430	930	450	430
HTLB43-1010-450-510	1010	450	510
HTLB43-1170-450-670	1170	450	670
HTLB43-1330-450-830	1330	450	830
HTLB43-1490-450-990	1490	450	990
HTLB43-1650-450-1150	1650	450	1150
HTLB43-1810-450-1310	1810	450	1310
HTLB43-1970-450-1470	1970	450	1470
HTLB43-1170-530-590	1170	530	590
HTLB43-1330-530-750	1330	530	750
HTLB43-1490-530-910	1490	530	910
HTLB43-1650-530-1070	1650	530	1070
HTLB43-1810-530-1230	1810	530	1230
HTLB43-1970-530-1390	1970	530	1390
HTLB43-1330-610-670	1330	610	670
HTLB43-1490-610-830	1490	610	830
HTLB43-1650-610-990	1650	610	990
HTLB43-1810-610-1150	1810	610	1150
HTLB43-1970-610-1310	1970	610	1310

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.

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