SAIBO
Innovation in Motion

TELESCOPIC RAIL

TELESCOPIC RAILS

SAIBO Telescopic Rails are designed for heavy duty industrial applications which require smooth telescopic sliding with no play. These applications include such as Automation Warehousing systems, 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 and internal sliders to preset the extension ranges. From cross section, there are V-shaped concave raceways in external rail and internal slider, balls run in the raceways with 4 contact points. Zero clearance is set between balls and raceways during assembling and this is very important for precise sliding. This 4-points contact structure achieve very small displacement forces and acceleration forces. It also could get a very good rigidity.

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

The simplest type of these series products is one internal slider runs in an external rail. We call this Partial Extension(TPE) Rails. This is the basic component and could be built to another Full Extension slides flexibly.

TPE
Partial Extension

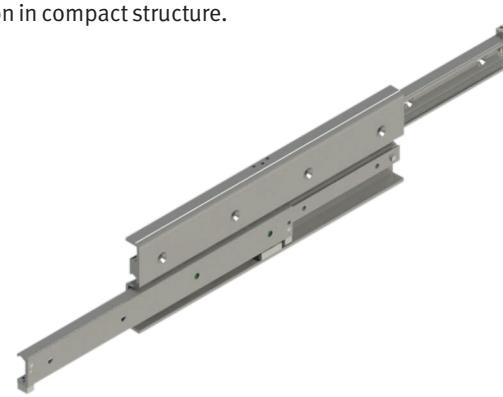
This rail's stroke could reach half or more than its length. Using shorter ball cage could get longer stroke. But this will reduce load capacity.

TDB
Double Assembly Back to Back

This series products permit **full extension**. It is assembled with two TPE rails which are bolted back to back. This rail's stroke could reach slider's full length or even more.

TFS
Full Extension with S-beam

Telescopic rail of Full extension with S-beam. Thin structure is very fit for limited assembly space. TFS achieves high load capacity, small deflection in compact structure.



TLB

Linear Guide with Ball Cage

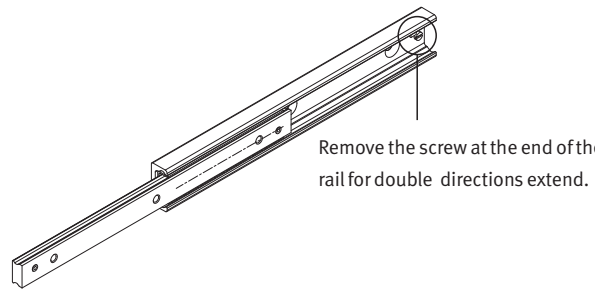
This series products' ball cage and internal slider are limited in the external C-shaped rail. The internal slider can not extend external C-shaped rail. One or more internal sliders could be set in one external rail. Internal slides could be set in the same or diflerent ball cages.

TV Rollers Slider

TV rail matches roller slider could achieve high-speed, high acceleration, low noise. Lubricate felt wipers provides cleaning and lubrication.

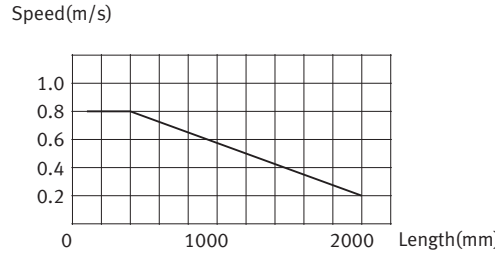
Double Directions

If need double directions extend, just remove the stop screw, Then the internal slider could extend 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.



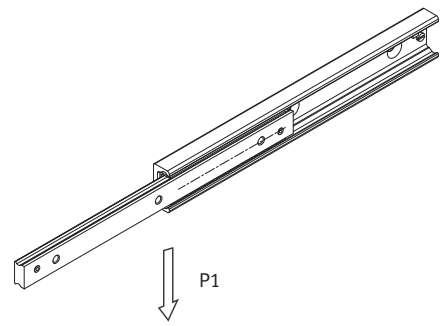
Lubrication and Temperature

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 raceways which allows to work in the temperature between -20 °C and 120°C. It is commended to re-lubricate each 100Km running.

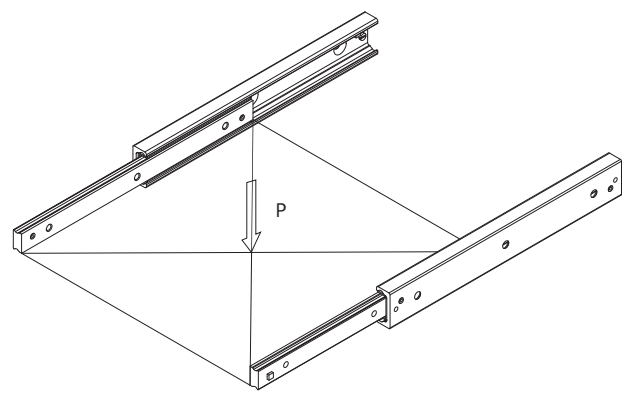
The rail could work in maximum working temperature 170°C in short time. In higher temperature working conditions, the raceway hardness will be reduced undergo the tempering process. Then the load capacity would reduce.

Load Capacity

These Cold-drawn Steel Rails are designed for heavy load capacity. The load capacity is most different to those steel sheet rolled 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 extend slider in the status of completely extension.



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.

$$P=2\ P1$$

Load Calculation

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

Equivalent Load LF

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

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)

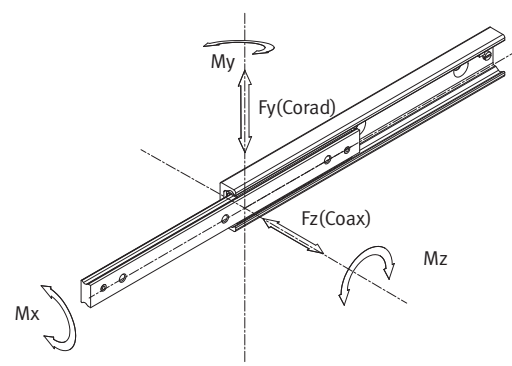
Corad – Load capacity in Y direction (N)

Coax –Load capacity in Z direction (N)

Mx-Max-Moment capacity in X directiron (N.m)

My-Max-Moment capacity in Y directiron (N.m)

Mz-Max-Moment capacity in Z directiron (N.m)



Life Calculation

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

C_{100} – Load capacity factor.

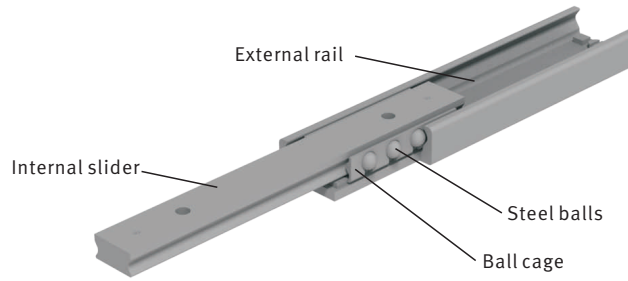
(Please check detailed parameter each product's load capacity table)

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

TPE

Partial Extension



TPE stroke could reach half of its length or even more. Shorter ball cage could achieve longer stroke. But load capacity will be smaller accordingly.

Rail Profile

External and internal profiles are made of high-quality steel with cold drawn, induction hardening. So it performs good rigidity, excellent wear-resisting property.

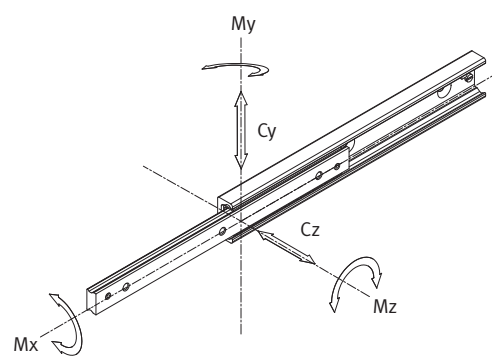
Steel Ball

SAIBO select high performance steel balls which are made of high-quality steel. Precision and hardened steel balls are very helpful to improve wear-resisting property and reduce noise

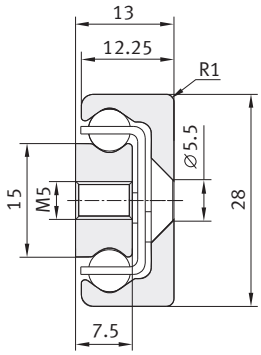
Code Description

TPE	28	- L	- S
			Stroke
		Rail length	
	Size		
Product series code			

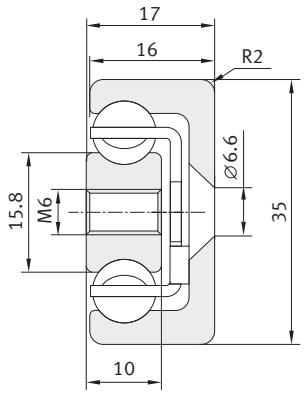
Force Diagrams



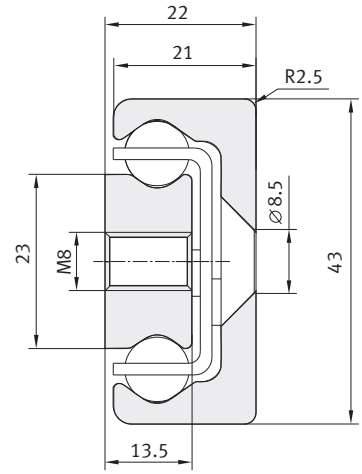
TPE Dimension and Load Capacity



TPE28

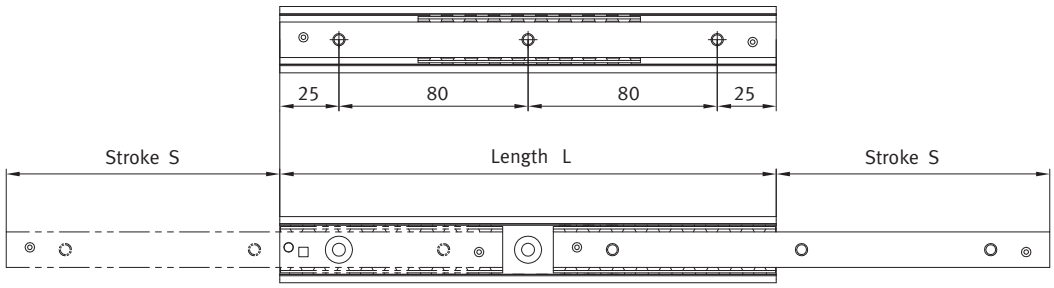


TPE35



TPE43

Type	Length L (mm)	Stroke S (mm)	Load Capacity					C_{100} (N)	No. of holes
			C_y (N)	C_z (N)	M_x (Nm)	M_y (Nm)	M_z (Nm)		
TPE28-130	130	74	612	430	16	21	29	873	2
TPE28-210	210	116	1117	782	27	59	83	1579	3
TPE28-290	290	148	1935	1355	40	133	187	2693	4
TPE28-370	370	190	2446	1712	51	214	306	3403	5
TPE28-450	450	232	2956	2070	62	315	450	4120	6
TPE28-530	530	274	3467	2427	73	436	620	4835	7
TPE28-610	610	316	3978	2785	83	577	820	5558	8
TPE28-690	690	358	4489	3142	94	736	1051	6273	9
TPE28-770	770	400	4996	3499	105	915	1308	6985	10
TPE28-850	850	433	5829	4082	118	1166	1667	8113	11
TPE28-930	930	475	6336	4437	130	1390	1985	8810	12
TPE28-1010	1010	517	6849	4795	140	1633	2329	9526	13
TPE28-1090	1090	559	7359	5150	151	1894	2704	10239	14
TPE28-1170	1170	601	7868	5508	162	2176	3109	10953	15

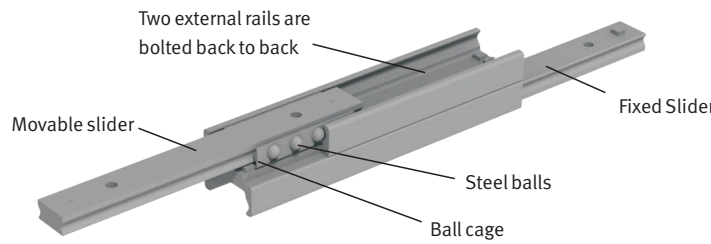


Type	Length L (mm)	Stroke S (mm)	Load Capacity					C_{100} (N)	No. of holes
			C_y (N)	C_z (N)	M_x (Nm)	M_y (Nm)	M_z (Nm)		
TPE35-210	210	127	1066	745	29	58	81	1532	3
TPE35-290	290	159	2061	1441	47	147	207	2905	4
TPE35-370	370	203	2639	1846	60	239	339	3720	5
TPE35-450	450	247	3217	2251	73	355	504	4536	6
TPE35-530	530	279	4282	2996	90	544	774	5989	7
TPE35-610	610	323	4859	3400	104	712	1014	6802	8
TPE35-690	690	367	5436	3803	117	903	1287	7611	9
TPE35-770	770	399	6522	4564	134	1192	1701	9092	10
TPE35-850	850	443	7096	4965	147	1436	2049	9902	11
TPE35-930	930	487	7670	5367	160	1703	2430	10713	12
TPE35-1010	1010	519	8766	6135	178	2093	2988	12200	13
TPE35-1090	1090	563	9338	6535	191	2413	3444	13008	14
TPE35-1170	1170	607	9910	6936	204	2755	3933	13817	15
TPE35-1250	1250	639	11013	7707	221	3246	4635	15310	16
TPE35-1330	1330	683	11583	8106	234	3641	5199	16117	17
TPE35-1410	1410	727	12154	8506	247	4059	5796	16924	18
TPE35-1490	1490	759	13261	9281	265	4651	6642	18422	19

型号	长度 L (mm)	行程 S (mm)	承载能力					承载系数 C_{100} (N)	安装孔数量
			C_y (N)	C_z (N)	M_x (Nm)	M_y (Nm)	M_z (Nm)		
TPE43-210	210	123	1596	1118	61	85	121	2288	3
TPE43-290	290	158	2873	2012	94	202	289	4055	4
TPE43-370	370	208	3378	2365	116	307	441	4794	5
TPE43-450	450	243	4691	3285	150	510	730	6602	6
TPE43-530	530	278	6040	4228	185	763	1089	8451	7
TPE43-610	610	313	7412	5189	216	1065	1520	10325	8
TPE43-690	690	363	7865	5506	238	1295	1850	11007	9
TPE43-770	770	398	9233	6465	273	1682	2403	12879	10
TPE43-850	850	433	10617	7430	305	2120	3029	14763	11
TPE43-930	930	483	11056	7740	328	2440	3485	15430	12
TPE43-1010	1010	518	12435	8705	360	2962	4231	17311	13
TPE43-1090	1090	568	12878	9015	383	3336	4767	17981	14
TPE43-1170	1170	603	14256	9980	416	3945	5635	19861	15
TPE43-1250	1250	638	15640	10948	450	4597	6572	21749	16
TPE43-1330	1330	688	16076	11255	471	5066	7238	22412	17
TPE43-1410	1410	723	17458	12220	504	5806	8296	24298	18
TPE43-1490	1490	758	18848	13192	538	6599	9426	26187	19
TPE43-1570	1570	793	20240	14168	571	7442	10630	28085	20
TPE43-1650	1650	843	20663	14465	593	8031	11473	28735	21
TPE43-1730	1730	878	22055	15438	626	8958	12796	30628	22
TPE43-1810	1810	928	22480	15738	648	9604	13718	31280	23
TPE43-1890	1890	963	23865	16709	682	10615	15163	33170	24
TPE43-1970	1970	1013	24230	17010	705	11315	16162	33827	25

TDB

Full Extension Rail

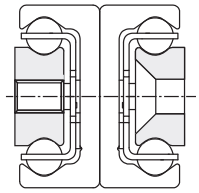


This series products permit full extension. It is assembled with two Partial Extension(TPE) Rails which are bolted back to back. This rail's stroke could reach slider's full length or even more.

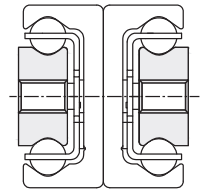
- Full stroke
- High load capacity and good rigidity performance
- Compact and easy structure
- Two-way slide is available

TDB Mount–holes combinations

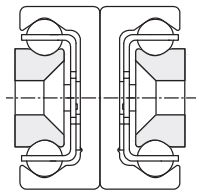
There're several options for mounting holes available for :



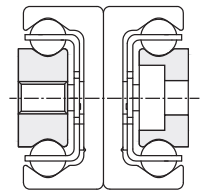
Basic combination



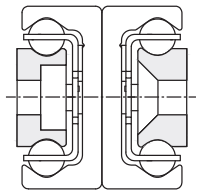
MM



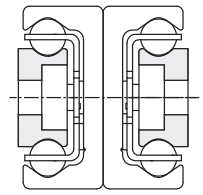
V V



CM



C V



C C

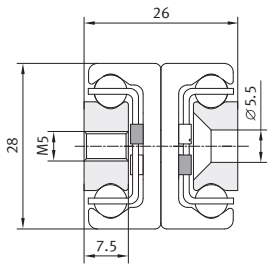
* V type hole is optional DIN7991 bolt and C type hole is optional DIN7984 Bolt.

* 28 Size rail is optional M5 bolt, 35 Size rail is optional M6 bolt and 43 size rail is optional M8 bolt.

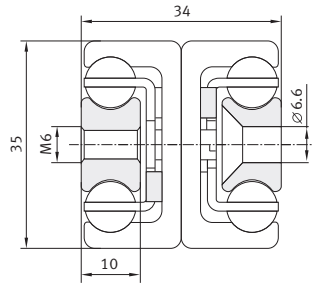
Code Description

TDB	28	MM V V C M C V C C	- L	- S
Product series code	Size	Mount-hole combination type, vacant means basic combination	Rail length	Stroke

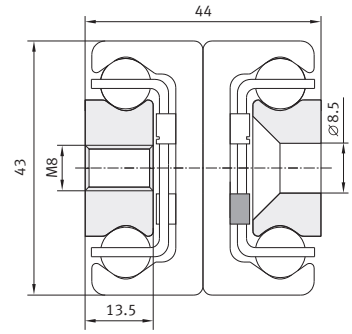
TDB Dimension and Load Capacity



TDB28

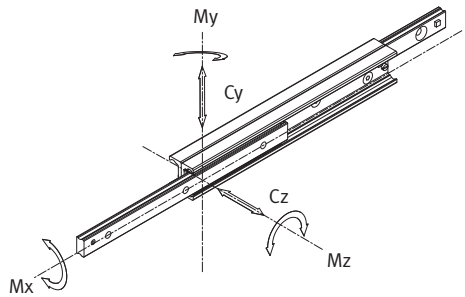


TDB35



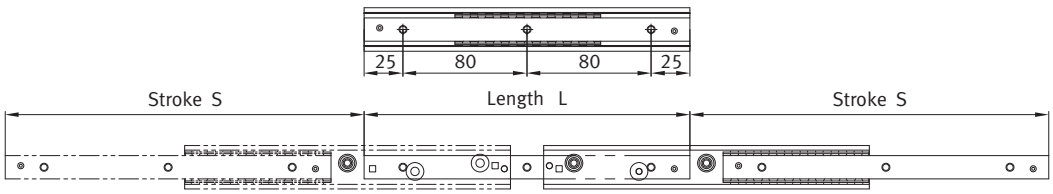
TDB43

Force Diagrams



Type	Length L (mm)	Stroke S (mm)	Load Capacity		C_{100} (N)	No. of holes
			C_y (N)	C_z (N)		
TDB28-130	130	148	236	165	358	2
TDB28-210	210	232	433	303	656	3
TDB28-290	290	296	768	538	1155	4
TDB28-370	370	380	969	472	1456	5
TDB28-450	450	464	1170	386	1760	6
TDB28-530	530	548	1108	326	2065	7
TDB28-610	610	633	956	281	2370	8
TDB28-690	690	717	845	248	2673	9
TDB28-770	770	801	754	220	2978	10
TDB28-850	850	866	712	209	3489	11
TDB28-930	930	950	647	190	3785	12
TDB28-1010	1010	1034	593	175	4086	13
TDB28-1090	1090	1118	548	161	4389	14
TDB28-1170	1170	1202	509	150	4691	15

TDB with double direction stroke

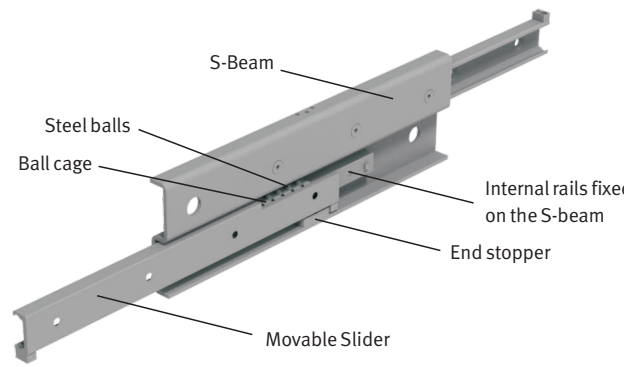


Type	Length L (mm)	Stroke S (mm)	Load Capacity		C_{100} (N)	No. of holes
			C_y (N)	C_z (N)		
TDB35-210	210	254	403	282	615	3
TDB35-290	290	318	801	561	1212	4
TDB35-370	370	406	1026	719	1553	5
TDB35-450	450	494	1251	794	1893	6
TDB35-530	530	558	1686	729	2541	7
TDB35-610	610	646	1909	627	2879	8
TDB35-690	690	734	1690	549	3218	9
TDB35-770	770	798	1592	517	3882	10
TDB35-850	850	886	1426	464	4219	11
TDB35-930	930	974	1292	420	4556	12
TDB35-1010	1010	1038	1234	401	5227	13
TDB35-1090	1090	1126	1132	368	5562	14
TDB35-1170	1170	1214	1046	340	5898	15
TDB35-1250	1250	1278	1007	328	6574	16
TDB35-1330	1330	1366	938	305	6908	17
TDB35-1410	1410	1454	878	286	7243	18
TDB35-1490	1490	1518	851	277	7921	19

型号	长度 L (mm)	行程 S (mm)	承载能力		承载系数 C_{100} (N)	安装孔数量
			C_y (N)	C_z (N)		
TDB43-210	210	246	606	425	923	3
TDB43-290	290	316	1115	781	1687	4
TDB43-370	370	416	1302	912	1974	5
TDB43-450	450	486	1827	1280	2764	6
TDB43-530	530	556	2376	1435	3580	7
TDB43-610	610	626	2935	1303	4414	8
TDB43-690	690	726	3092	1096	4661	9
TDB43-770	770	796	3056	1018	5493	10
TDB43-850	850	866	2848	945	6335	11
TDB43-930	930	966	2508	835	6572	12
TDB43-1010	1010	1036	2365	788	7411	13
TDB43-1090	1090	1106	2239	745	8257	14
TDB43-1170	1170	1206	2020	673	8489	15
TDB43-1250	1250	1276	1929	642	9332	16
TDB43-1330	1330	1376	1767	588	9568	17
TDB43-1410	1410	1446	1694	565	10409	18
TDB43-1490	1490	1516	1628	542	11255	19
TDB43-1570	1570	1586	1568	523	12105	20
TDB43-1650	1650	1686	1460	487	12330	21
TDB43-1730	1730	1756	1407	470	13178	22
TDB43-1810	1810	1856	1322	440	13406	23
TDB43-1890	1890	1926	1281	426	14252	24
TDB43-1970	1970	2026	1207	402	14483	25

TFS

Full Extension rail with S-beam



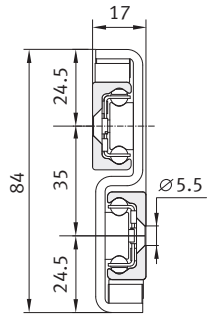
TFS rail is a full extension rail with S-beam. Thin structure is very fit for limited assembly space. TFS achieves high load capacity, small deflection in compact structure.

- It is ideal for using in limited space
- Full stroke
- High load capacity and good rigidity performance
- Two-way slide is available

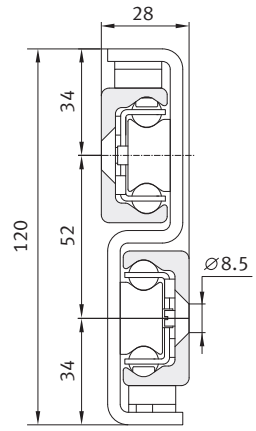
Code Description

TFS	28	D	-L	-S
				Stroke
			Rail length	
		Two-way movable , vacant means one-way movalbe		
	Size			
Product series code				

TFS One-way Dimension and Load Capacity

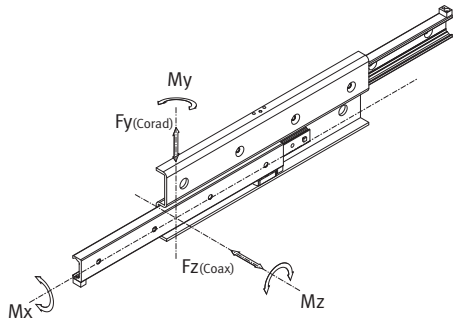


TFS28

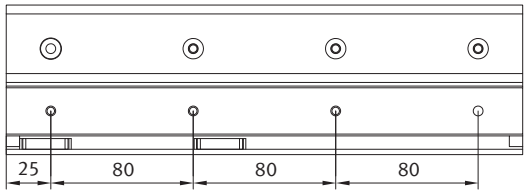


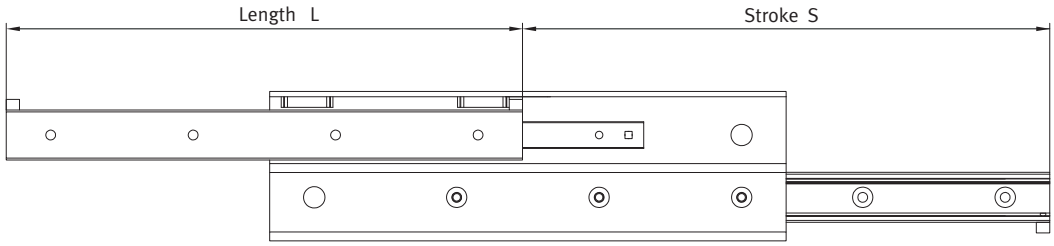
TFS43

Force Diagrams



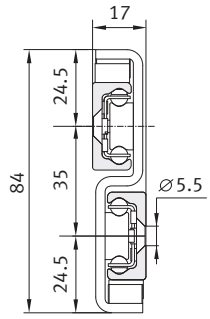
Type	Carriage				
	Length	Stroke	Load Capacity	C_{100} (N)	No. of holes
	L (mm)	S (mm)	Corad (N)		
TFS28-290	290	296	570	864	4
TFS28-370	370	380	769	1164	5
TFS28-450	450	464	969	1465	6
TFS28-530	530	548	1170	1768	7
TFS28-610	610	630	1376	2079	8
TFS28-690	690	714	1577	2385	9
TFS28-770	770	798	1778	2684	10
TFS28-850	850	864	2111	3210	11
TFS28-930	930	950	2240	3475	12
TFS28-1010	1010	1034	2054	3778	13
TFS28-1090	1090	1118	1896	4081	14
TFS28-1170	1170	1202	1761	4384	15
TFS28-1250	1250	1266	1695	4903	16
TFS28-1330	1330	1350	1586	5193	17
TFS28-1410	1410	1434	1490	5496	18
TFS28-1490	1490	1518	1405	5810	19



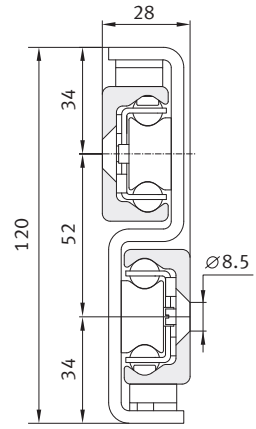


Type	Carriage				
	Length	Stroke	Load Capacity	C_{100} (N)	No. of holes
	L (mm)	S (mm)	Corad (N)		
TFS43-530	530	556	2061	3121	7
TFS43-610	610	626	2603	3953	8
TFS43-690	690	726	2775	4197	9
TFS43-770	770	796	3319	5010	10
TFS43-850	850	866	3873	5837	11
TFS43-930	930	966	4036	6095	12
TFS43-1010	1010	1036	4590	6916	13
TFS43-1090	1090	1106	4908	7750	14
TFS43-1170	1170	1206	4610	7645	15
TFS43-1250	1250	1276	4398	8829	16
TFS43-1330	1330	1376	4027	9077	17
TFS43-1410	1410	1446	3864	9909	18
TFS43-1490	1490	1516	3713	10750	19
TFS43-1570	1570	1616	3445	10988	20
TFS43-1650	1650	1686	3325	11830	21
TFS43-1730	1730	1756	3213	12665	22
TFS43-1810	1810	1856	3011	12910	23
TFS43-1890	1890	1926	2919	13743	24
TFS43-1970	1970	2026	2750	13983	25

TFS...D Two-way Dimension and Load Capacity

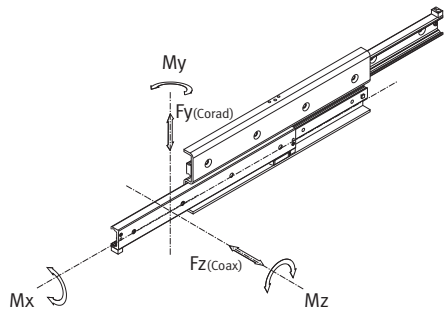


TFS28D

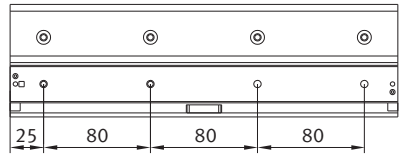


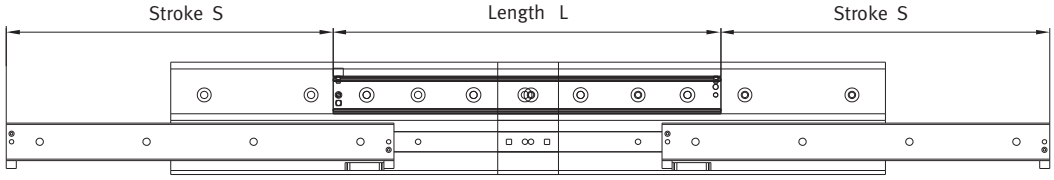
TFS43D

Force Diagrams



Type	Carriage				
	Length	Stroke	Load Capacity	C_{100} (N)	No. of holes
	L (mm)	S (mm)	Corad (N)		
TFS28D-290	290	246	896	864	4
TFS28D-370	370	326	1105	1164	5
TFS28D-450	450	406	1320	1465	6
TFS28D-530	530	486	1626	1768	7
TFS28D-610	610	566	1838	2079	8
TFS28D-690	690	646	2055	2385	9
TFS28D-770	770	726	2262	2684	10
TFS28D-850	850	806	2485	3210	11
TFS28D-930	930	886	2582	3475	12
TFS28D-1010	1010	966	2357	3778	13
TFS28D-1090	1090	1046	2168	4081	14
TFS28D-1170	1170	1126	2008	4384	15
TFS28D-1250	1250	1206	1883	4903	16
TFS28D-1330	1330	1286	1749	5193	17
TFS28D-1410	1410	1366	1644	5496	18
TFS28D-1490	1490	1446	1555	5810	19

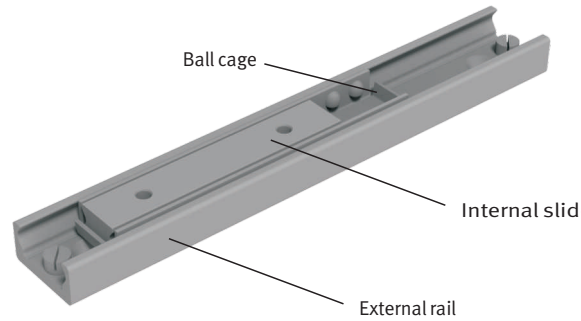




Type	Carriage				
	Length	Stroke	Load Capacity	C_{100} (N)	No. of holes
	L (mm)	S (mm)	Corad (N)		
TFS43D-530	530	480	3019	3121	7
TFS43D-610	610	560	3280	3953	8
TFS43D-690	690	640	3781	4197	9
TFS43D-770	770	720	4297	5010	10
TFS43D-850	850	800	4548	5837	11
TFS43D-930	930	880	5065	6095	12
TFS43D-1010	1010	960	5578	6916	13
TFS43D-1090	1090	1040	5830	7750	14
TFS43D-1170	1170	1120	5390	7645	15
TFS43D-1250	1250	1200	5014	8829	16
TFS43D-1330	1330	1280	4686	9077	17
TFS43D-1410	1410	1360	4398	9909	18
TFS43D-1490	1490	1440	4140	10750	19
TFS43D-1570	1570	1520	3917	10988	20
TFS43D-1650	1650	1600	3715	11830	21
TFS43D-1730	1730	1680	3530	12665	22
TFS43D-1810	1810	1760	3362	12910	23
TFS43D-1890	1890	1840	3213	13743	24
TFS43D-1970	1970	1920	3075	13983	25

TLB

Linear guide with Ball cage



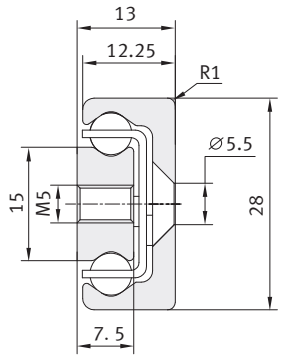
This series products' ball cage and internal slider are limited in the external C-shaped rail. Then the internal slider can't extend external C-shaped rail. One or more internal sliders could be set in one external rail.

- Internal slider length is available for custom design
- One External rail could set one or more internal sliders
- One or more internal sliders could be set in the same or different ball cages

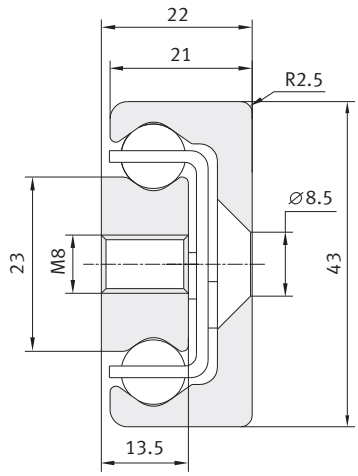
Code Description

TLB	28	- L	- A	- S
				Stroke
			Slider length	
		Rail length		
	Size			
Product series code				

TLB Dimension and Load Capacity

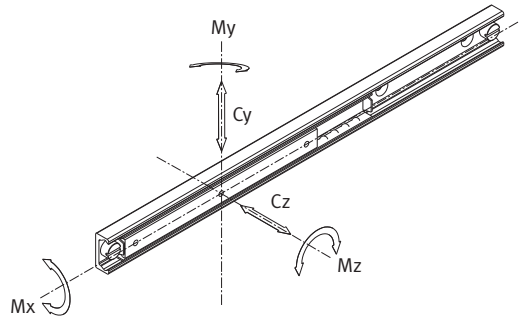


TLB28

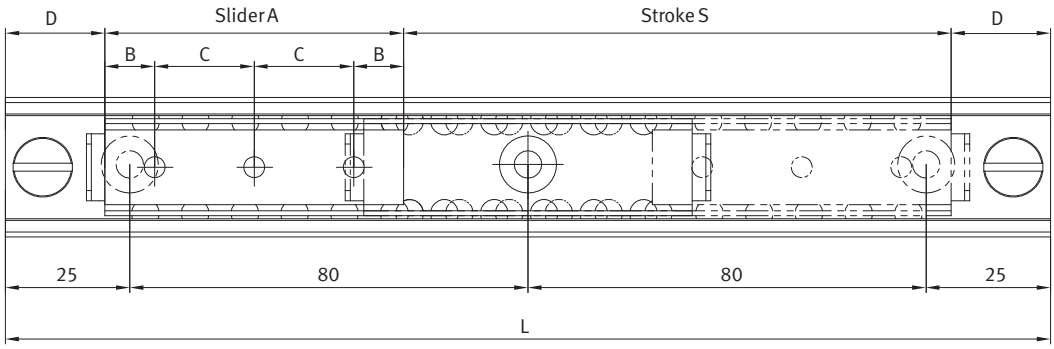


TLB43

Force Diagrams



Type	Carriage										
	Dimension				Load Capacity					C_{100} (N)	No. of holes
	D (mm)	A (mm)	B (mm)	C (mm)	C_y (N)	C_z (N)	M_x (Nm)	M_y (Nm)	M_z (Nm)		
TLB28-60	20	60	10	20	3481	2438	17	25	36	3481	3
TLB28-80	20	80	10	20	4642	3249	23	44	62	4642	4
TLB28-130	20	130	25	80	7542	5279	36	115	162	7542	2
TLB28-210	20	210	25	80	12182	8525	60	301	427	12200	3
TLB28-290	20	290	25	80	16850	11775	83	570	812	16823	4
TLB28-370	20	370	25	80	21461	15024	106	928	1324	21461	5
TLB28-450	20	450	25	80	26103	18272	128	1372	1965	26103	6



Type	Carriage										
	Dimension				Load Capacity					C_{100} (N)	No. of holes
	D (mm)	A (mm)	B (mm)	C (mm)	C_y (N)	C_z (N)	M_x (Nm)	M_y (Nm)	M_z (Nm)		
TLB43-130	25	130	25	80	13912	9738	97	212	302	13912	2
TLB43-210	25	210	25	80	22471	15743	156	550	786	22471	3
TLB43-290	25	290	25	80	31032	21723	215	1060	1503	31032	4
TLB43-370	25	370	25	80	39633	27715	272	1710	2442	39592	5
TLB43-450	25	450	25	80	48151	33704	333	2528	3612	48151	6
TLB43-530	25	530	25	80	56713	39698	390	3508	5010	56713	7
TLB43-610	25	610	25	80	65272	45689	451	4646	6637	65272	8

TLB Specifications

Type	Rail Length	Carriage Length	Stroke
TLB28-130-60-30	130	60	30
TLB28-210-60-110	210	60	110
TLB28-290-60-190	290	60	190
TLB28-370-60-270	370	60	270
TLB28-450-60-350	450	60	350
TLB28-210-80-90	210	80	90
TLB28-290-80-170	290	80	170
TLB28-370-80-250	370	80	250
TLB28-450-80-330	450	80	330
TLB28-530-80-410	530	80	410
TLB28-610-80-490	610	80	490
TLB28-290-130-120	290	130	120
TLB28-370-130-200	370	130	200
TLB28-450-130-280	450	130	280
TLB28-530-130-360	530	130	360
TLB28-610-130-440	610	130	440
TLB28-690-130-520	690	130	520
TLB28-770-130-600	770	130	600
TLB28-850-130-680	850	130	680
TLB28-930-130-760	930	130	760
TLB28-1010-130-840	1010	130	840
TLB28-450-210-200	450	210	200
TLB28-530-210-280	530	210	280
TLB28-610-210-360	610	210	360
TLB28-690-210-440	690	210	440
TLB28-770-210-520	770	210	520
TLB28-850-210-600	850	210	600
TLB28-930-210-680	930	210	680
TLB28-1010-210-760	1010	210	760
TLB28-1170-210-920	1170	210	920
TLB28-1330-210-1080	1330	210	1080
TLB28-610-290-280	610	290	280
TLB28-690-290-360	690	290	360
TLB28-770-290-440	770	290	440
TLB28-850-290-520	850	290	520
TLB28-930-290-600	930	290	600
TLB28-1010-290-680	1010	290	680
TLB28-1170-290-840	1170	290	840
TLB28-1330-290-1000	1330	290	1000
TLB28-1490-290-1160	1490	290	1160
TLB28-770-370-360	770	370	360
TLB28-850-370-440	850	370	440
TLB28-930-370-520	930	370	520
TLB28-1010-370-600	1010	370	600
TLB28-1170-370-760	1170	370	760
TLB28-1330-370-920	1330	370	920
TLB28-1490-370-1080	1490	370	1080
TLB28-930-450-440	930	450	440
TLB28-1010-450-520	1010	450	520
TLB28-1170-450-680	1170	450	680
TLB28-1330-450-840	1330	450	840
TLB28-1490-450-1000	1490	450	1000
TLB28-1650-450-1160	1650	450	1160

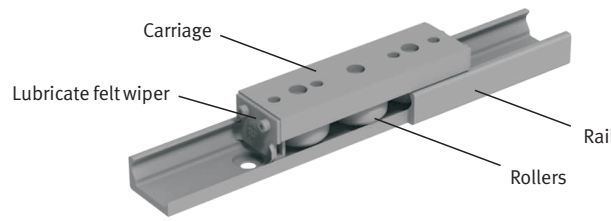
TLB Specifications

Type	Rail Length	Carriage Length	Stroke
TLB43-290-130-110	290	130	110
TLB43-370-130-190	370	130	190
TLB43-450-130-270	450	130	270
TLB43-530-130-350	530	130	350
TLB43-610-130-430	610	130	430
TLB43-690-130-510	690	130	510
TLB43-770-130-590	770	130	590
TLB43-850-130-670	850	130	670
TLB43-930-130-750	930	130	750
TLB43-1010-130-830	1010	130	830
TLB43-450-210-190	450	210	190
TLB43-530-210-270	530	210	270
TLB43-610-210-350	610	210	350
TLB43-690-210-430	690	210	430
TLB43-770-210-510	770	210	510
TLB43-850-210-590	850	210	590
TLB43-930-210-670	930	210	670
TLB43-1010-210-750	1010	210	750
TLB43-1170-210-910	1170	210	910
TLB43-1330-210-1070	1330	210	1070
TLB43-1490-210-1230	1490	210	1230
TLB43-1650-210-1390	1650	210	1390
TLB43-610-290-270	610	290	270
TLB43-690-290-350	690	290	350
TLB43-770-290-430	770	290	430
TLB43-850-290-510	850	290	510
TLB43-930-290-590	930	290	590
TLB43-1010-290-670	1010	290	670
TLB43-1170-290-830	1170	290	830
TLB43-1330-290-990	1330	290	990
TLB43-1490-290-1150	1490	290	1150
TLB43-1650-290-1310	1650	290	1310
TLB43-1810-290-1470	1810	290	1470
TLB43-770-370-350	770	370	350
TLB43-850-370-430	850	370	430
TLB43-930-370-510	930	370	510
TLB43-1010-370-590	1010	370	590
TLB43-1170-370-750	1170	370	750
TLB43-1330-370-910	1330	370	910
TLB43-1490-370-1070	1490	370	1070
TLB43-1650-370-1230	1650	370	1230
TLB43-1810-370-1390	1810	370	1390
TLB43-930-450-430	930	450	430
TLB43-1010-450-510	1010	450	510
TLB43-1170-450-670	1170	450	670
TLB43-1330-450-830	1330	450	830
TLB43-1490-450-990	1490	450	990
TLB43-1650-450-1150	1650	450	1150
TLB43-1810-450-1310	1810	450	1310
TLB43-1970-450-1470	1970	450	1470
TLB43-1170-530-590	1170	530	590
TLB43-1330-530-750	1330	530	750
TLB43-1490-530-910	1490	530	910
TLB43-1650-530-1070	1650	530	1070
TLB43-1810-530-1230	1810	530	1230
TLB43-1970-530-1390	1970	530	1390
TLB43-1330-610-670	1330	610	670
TLB43-1490-610-830	1490	610	830
TLB43-1650-610-990	1650	610	990
TLB43-1810-610-1150	1810	610	1150
TLB43-1970-610-1310	1970	610	1310

TV rollers slider

Construction

TV rail matches roller slider could achieve high-speed, high acceleration, low noise. Lubricate felt wipers provides cleaning and lubrication. According to load capacity, carriage could set 3 or more rollers.



Rail

Rail is made of high-quality steel with cold drawn, induction hardening. So it performs good rigidity, excellent wear-resisting property. Various surface treatment is optional for resisting corrosion.

Carriage

Carriage body is made of high strength aluminium alloy. Precision rollers set in concentric and eccentric according to different load capacities.

Feature

High load capacity, good rigidity performance

Low friction, excellent wear-resisting property

High speed and acceleration

Rails are easy to joint for long length

Preload Setting

Eliminating the gap between the slider and the rail helps to improve the rigidity and stability of the system. The preload adjustment of the TV guide is relatively easy. The method is as follows:

1. First, mount the concentric rollers onto the slider base and lock it with the following hexagonal chuck wrench and inner hex wrench.

2. In the same way, mount the eccentric roller onto the slider base. Fixing the screw to tighten slightly but not lock.

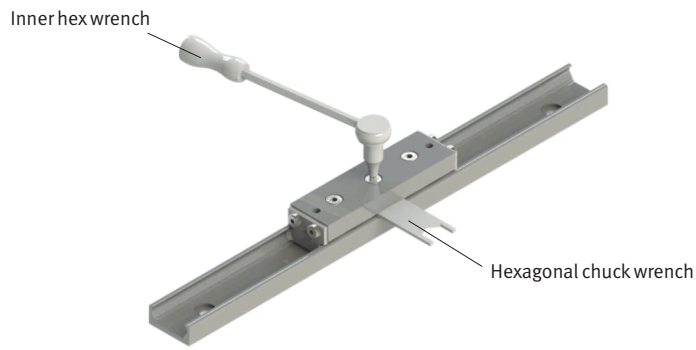
3. Hold the position of the inner hex wrench by one hand. And turn the hexagonal chuck wrench slightly in the other hand, turning the eccentric shaft. Adjust the gap between the rail and the slider. In the meanwhile, move the slider until feel a slight resistance.

4. Hold the position of the Hexagonal chuck wrench by one hand and lock the screw with the inner hex wrench in the other hand.

Carriage size	Locking torque (N.m)
28	7
43	12

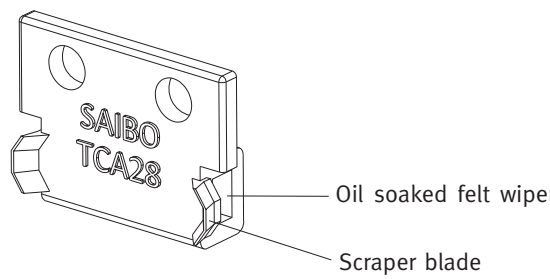
Important Note

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



Lubricate

SAIBO Lubricate wiper designed two functions. Scraper blade is to remove the dust on the raceway. Oil soaked felts touch the raceway to lubricate it. All lubricate wiper filled oil before delivery. Please check and fill mineral base oil regularly. Change felt or lubricate wiper when felt was worn.



Running Parameter

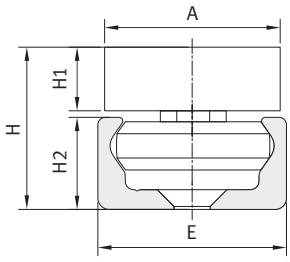
Max. speed

Size 28 5m/s

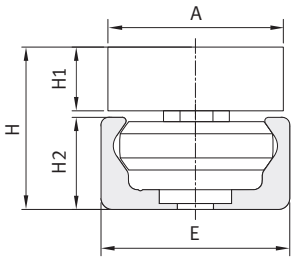
Size 43 7m/s

Max. Acceleration: 15m/s^2

TV Dimension and Load Capacity



V holes



C holes

Rail Type	Carriage Type (standard 3 roller)	Assembly Dimensions			Carriage Dimensions		
		H (mm)	E (mm)	A (mm)	B (mm)	C (mm)	D (mm)
TV28 x **L**	TCA28	24	28	26.5	88	78	35
TV43 x **L**	TCA43	37	43	40	134	114	55

* V type hole is optional DIN7991 bolt.

* C type hole is optional below bolt.

Carriage size	d (mm)	D (mm)	K (mm)	B (mm)
28	M5x0.8	10	1.5	T10
43	M8x1.25	16	1.5	T45

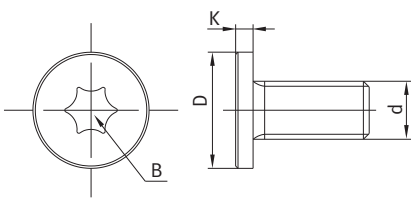
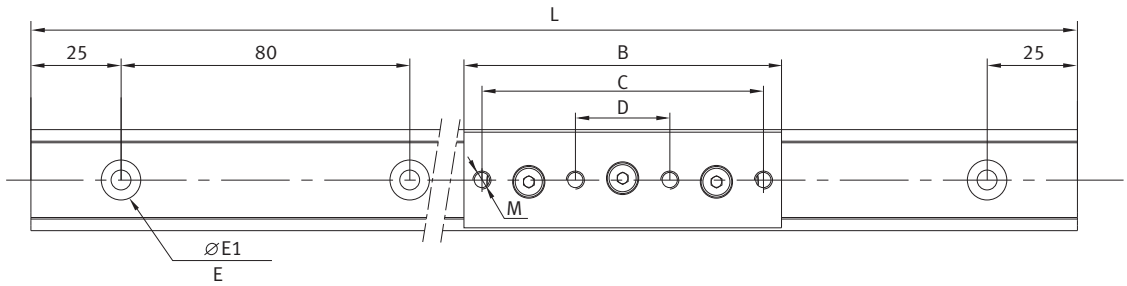


Figure for bolt



		Railway Dimensions					
H1 (mm)	M (mm)	E		E1 (mm)	H2 (mm)	P (mm)	S (mm)
		V type	C type				
9.8	M5	⌵⌀10.6x90°	⌀11x2.1	5.5	12.25	80	25
14.5	M8	⌵⌀17x90°	⌀18x3.1	8.5	21	80	25

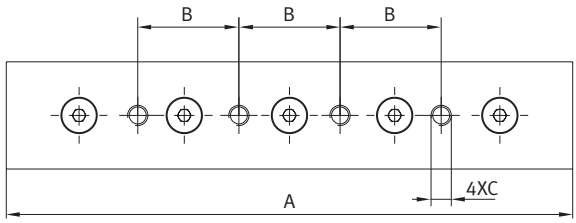
Rail Code Description

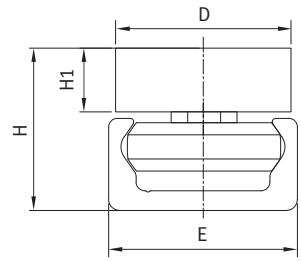
TV	28	C	X L
			Rail length
		Mount hole type. Vacant means V type mount hole.	
	Size		
Product series code			

TCA Long Carriage

SAIBO also supply long size carriage mounted more rollers to achieve big load capacity.

Carriage Dimension

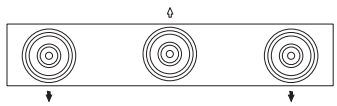




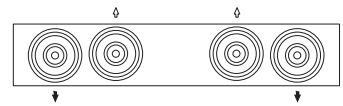
Rail Type	Carriage Type (Long size)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	H (mm)	H1 (mm)
TV28 x **L**	**TCA28L**	140	25	M5	26.5	28	24	9.8
TV43 x **L**	**TCA43L**	208	40	M8	40	43	37	14.5

Rollers Setting

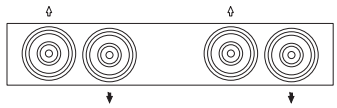
TCAL-3-A



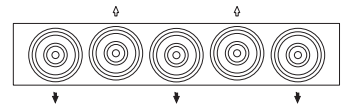
TCAL-4-C



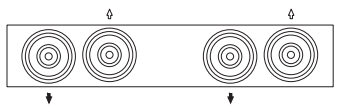
TCAL-4-A



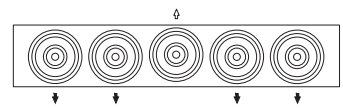
TCAL-5-A

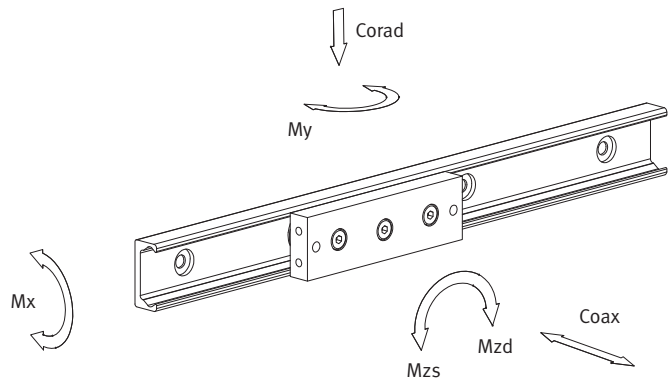


TCAL-4-B



TCAL-5-B



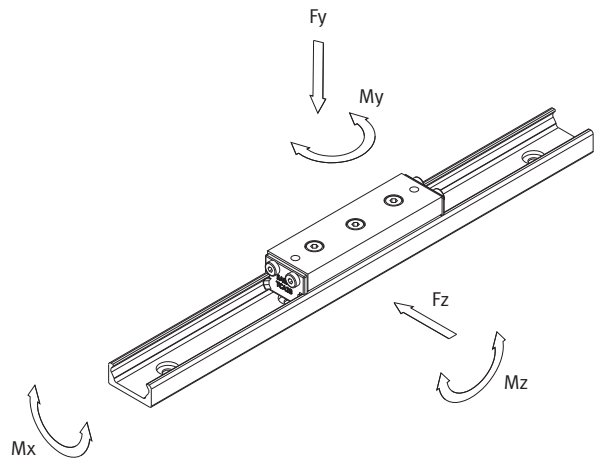


Carriage Load Capacity

Type	No. Rollers	Load Capacity						
		C_{100} (N)	Corad (N)	Coax (N)	M_x (Nm)	M_y (Nm)	M_z (Nm)	
							Mzd	Mzs
TCA28	3	4285	2170	640	6.3	16	27.3	27.3
TCA28L-3-A	3	4285	2170	640	6.3	29	54.4	54.4
TCA28L-4-A	4	4285	2170	750	11.5	29	54.4	109
TCA28L-4-B	4	4285	2170	750	11.5	29	109	54.4
TCA28L-4-C	4	4285	2170	750	11.5	29	81.6	81.6
TCA28L-5-A	5	5065	2580	900	11.5	29	81.6	81.6
TCA28L-5-B	5	6816	3472	640	6.2	29	54.4	54.4
TCA43	3	12280	5515	1575	23.6	60	104.5	104.5
TCA43L-3-A	3	12280	5515	1575	23.6	108.4	212	212
TCA43L-4-A	4	12280	5515	1855	43.6	108.4	212	418
TCA43L-4-B	4	12280	5515	1855	43.6	108.4	418	210
TCA43L-4-C	4	12280	5515	1855	43.6	108.4	313.5	313.5
TCA43L-5-A	5	14675	6540	2215	43.6	108.4	313.5	313.5
TCA43L-5-B	5	19650	8800	1570	23.6	108.4	210	210

Load Calculation

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.



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)

Mx-Max-Moment capacity in X directiron (N.m)

My-Max-Moment capacity in Y directiron (N.m)

Mz-Max-Moment capacity in Z directiron (N.m)

Life Calculation

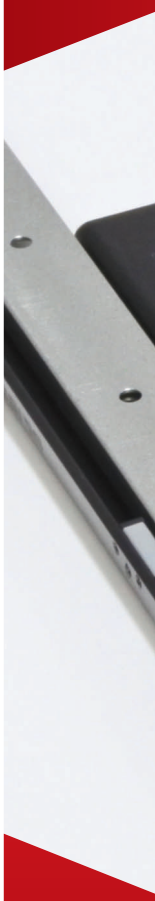
$$L_{km} = 100 \cdot \left(\frac{C_{100}}{LF \cdot f} \right)^3$$

C_{100} – Load coefficient

(Please see it in the table of Carriage load capacity)

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



WUXI SAIBO INDUSTRY CO LIMITED
6–701 XIHU EAST ROAD, WUXI 214011, CHINA
Tel: +86-510-8230 0095
Fax: +86-510-8230 0096

www.saibo-bearing.com
info@saibo-bearing.com

V.2020 No.3