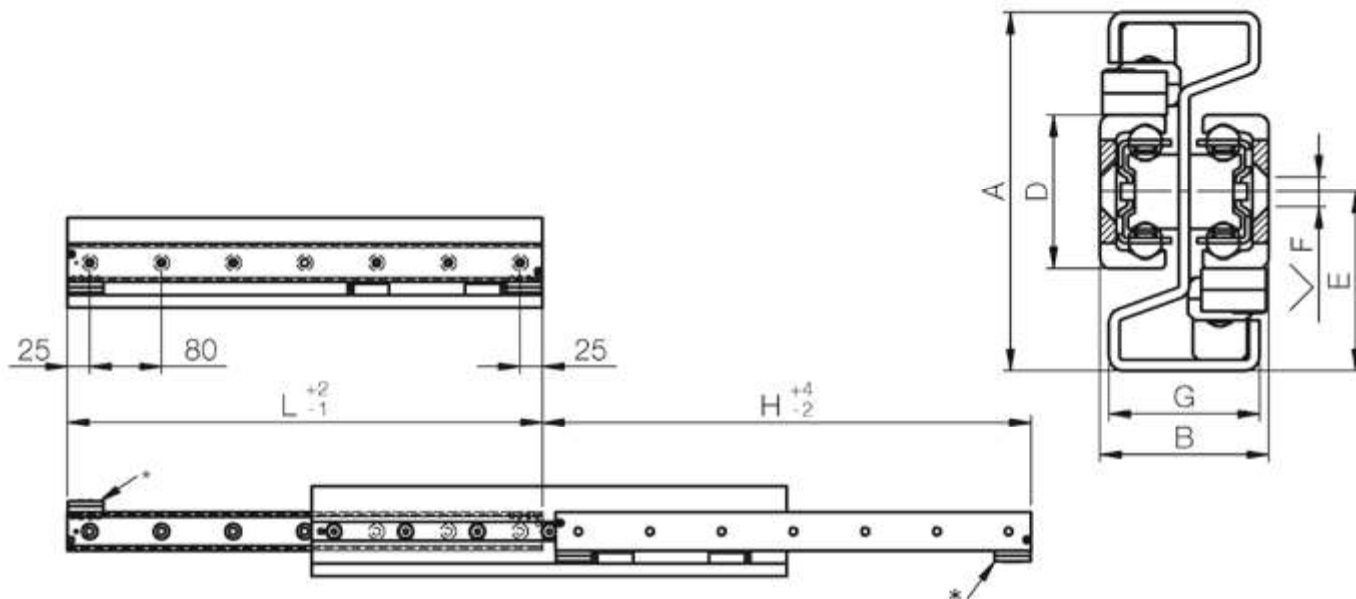


# HEAVY LOADS

## BALLCAGE TELESCOPIC SLIDES TSH SERIES



\* For the fixing of the slide, you must remove the lock block on the rail (see figure) and reposition it once finished. The operation must be performed on both rails

Code	A (mm)	B (mm)	G (mm)	D (mm)	E (mm)	F (mm)
TSH28	80	28,5	25,5	28	40	Ø 5,5 for screw M5 DIN7991
TSH43	100	47	42	43	50	Ø 8,5 for screw M8 DIN7991

The listed load capacities  $C_{o\ rad}$  are per single slide, with the load centered, i.e. in the middle of the extended lower rail, P. In case the load is not centered, ex. The load is more towards tip, the load capacity is reduced, please refer to page 48. For further info and flexion "F" indications.

When using the TSH in pairs, the same slide is assembled both left and right side, just by turning the TSH 180°.

ORDER CODE	VERSION	CHARACTERISTICS
<b>TSH43-1010</b>	<b>BASIC</b>	Cold drawn steel rails with patented "T RACE-NOX 1.0": high depth nitride hardening and black oxidation treatment. The rails are cut to size after treatment, so the rail ends are protected by protective spray. All threaded holes are without treatment. Ball-cages in zinc plated steel, while balls hardened steel. Intermediate steel S-element is protected with black epoxy electro coating - "T RACE e-coating 1.0".
<b>TSH43-1010-KL</b>	<b>KL</b>	As a basic TLS product but with additional black "T RACE e-coating 1.0" on the rails, for high corrosion resistance (min 700 hours resistance in salt fog). The rail has no T RACE e-coating on the raceway contact area with the rollers, as masked before the treatment. The raceways are anyhow with standard oxidation while the wipers with incorporated pre-oiled felt assure lubrication and corrosion protection of raceways.
<b>TSH43-1010-KB</b>	<b>KB</b>	As the version KL but with the ball-cages made in stainless steel AISI304 and the balls in hardened AISI440C

Code	Lenght L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Capacity load Co rad (N)	Capacity load Co ax (N)	Weight (kg)
TSH28-290	290	295	868	577	336	1,8
TSH28-370	370	380	1.143	762	443	2,3
TSH28-450	450	460	1.525	1.020	593	2,8
TSH28-530	530	540	1.802	1.206	701	3,3
TSH28-610	610	620	2.187	1.466	853	3,8
TSH28-690	690	700	2.464	1.652	961	4,3
TSH28-770	770	780	2.851	1.913	1.113	4,8
TSH28-850	850	860	3.128	2.099	1.221	5,3
TSH28-930	930	940	3.515	2.361	1.374	5,8
TSH28-1010	1010	1020	3.792	2.546	1.423	6,3
TSH28-1090	1090	1100	4.068	2.370	1.322	6,8
TSH28-1170	1170	1180	4.456	2.213	1.235	7,3
TSH28-1250	1250	1260	4.733	2.076	1.158	7,8
TSH28-1330	1330	1340	5.121	1.955	1.091	8,2
TSH28-1410	1410	1420	5.397	1.847	1.031	8,7
TSH28-1490	1490	1500	5.785	1.750	977	9,2

Code	Lenght L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Capacity load Co rad (N)	Capacity load Co ax (N)	Weight (kg)
TSH43-530	530	545	3.490	2.187	1.266	7,3
TSH43-610	610	625	3.824	2.393	1.385	8,3
TSH43-690	690	705	4.468	2.799	1.621	9,5
TSH43-770	770	785	5.112	3.206	1.856	10,5
TSH43-850	850	865	5.758	3.614	2.092	11,7
TSH43-930	930	945	6.404	4.022	2.329	12,7
TSH43-1010	1010	1025	7.051	4.431	2.565	13,9
TSH43-1090	1090	1105	7.698	4.808	2.802	15
TSH43-1170	1170	1185	8.028	4.495	2.919	16,1
TSH43-1250	1250	1265	8.675	4.220	2.903	17,2
TSH43-1330	1330	1345	9.322	3.977	2.736	18,3
TSH43-1410	1410	1425	9.969	3.761	2.587	19,4
TSH43-1490	1490	1505	10.617	3.567	2.453	20,5
TSH43-1570	1570	1585	11.265	3.392	2.333	21,6
TSH43-1650	1650	1665	11.913	3.233	2.224	22,7
TSH43-1730	1730	1745	12.240	3.089	2.124	23,8
TSH43-1810	1810	1825	12.888	2.956	2.033	24,9
TSH43-1890	1890	1905	13.536	2.835	1.950	26
TSH43-1970	1970	1985	14.184	2.723	1.873	27,1

### TECHNICAL CHARACTERISTICS

TSH is basically a standard TLS, but with an intermediate element much more squared shape, to assure high inertia strength in both radial and axial load direction. The result is a telescopic slide with similar radial load capacities as our TLS range, but with much higher axial load capacity and much more stable and has the added benefit of less lateral oscillation when fully extended.

TSH are ball-cage telescopic slides and are composed of two SR semi-telescopic slides fixed to a rigid intermediate element which assures high load capacities with low flexion. Both inner and outer rail are with patented T RACE-NOX treatment; high depth nitride hardened rails with black oxidation, assuring a long lifetime without wear yet a good corrosion resistance.

The intermediate element is dragged out/in by strong rubber damping stoppers so impact bumps are much reduced on the intermediate element during opening/closing.

Patented T RACE-NOX treatment guarantees a constant preload setting during the complete lifetime, unlike traditional zinc-plated ball-cage slides, which very soon it is noticeable the zinc has worn off at the raceway contact points, with the result being much increased play/shaky movements. The standard preload setting is a minor play to absorb minor inaccuracies within the assembly structure, while for precision applications it is in general preferred to supply a preloaded version, - customized version.

The materials and surface treatments assure a general high standard of corrosion resistance. With additional black electro coating, KB-version, the TSH slide becomes suitable for outdoor applications or very humid ambient scenarios.

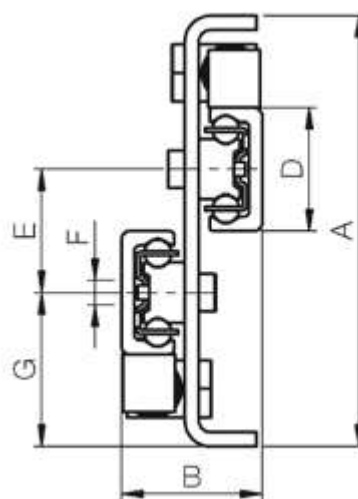
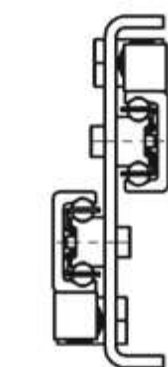
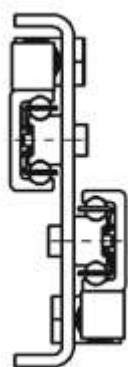
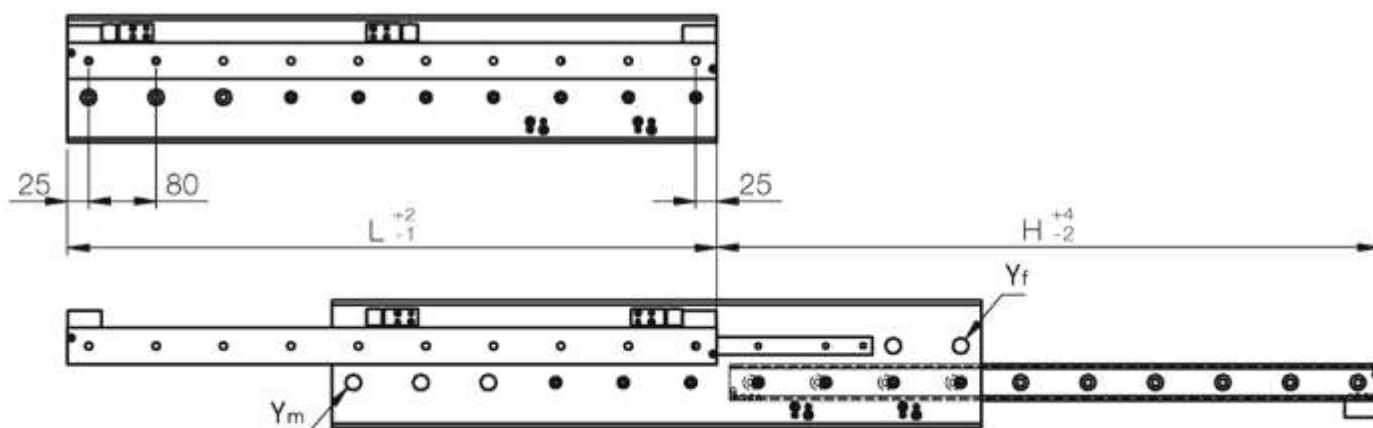
Upon request, customized version with longer extension or both customized length and stroke can be accommodated.

Load Co rad/ax refers to a single slide



# EXTREME LOADS

## BALLCAGE TELESCOPIC SLIDES TH2 SERIES



TH2S- LEFT SIDE  
VERSION

TH2D -RIGHT SIDE  
VERSION

Available in **Left-side** and **Right-side** version when used in pairs.

The listed load capacities  $Co_{rad}$ , are per single slide, with the load centered, i.e. in the middle of the extended lower rail, P. In case the load is not centered, ex. The load is more towards tip, the load capacity is reduced, please refer to page 48. For further info and flexion "f" indications.

Code	A (mm)	B (mm)	D (mm)	G (mm)	E (mm)	F (mm)
TH2.150	150	49	43	53.5	43	Ø 8,5 for screw M8 DIN7991

ORDER CODE	VERSION	CHARACTERISTICS
TH2D150-1010	BASIC	Cold drawn steel rails with patented "T RACE-NOX 1.0": high depth nitride hardening and black oxidation treatment. The rails are cut to size after treatment, so the rail ends are protected by protective spray. All threaded holes are without treatment. Ball-cages in zinc plated steel, while balls hardened steel. Intermediate steel S-element is protected with black epoxy electro coating - "T RACE e-coating 1.0".
TH2D150-1010-KL	KL	As a basic TLS product but with additional black "T RACE e-coating 1.0" on the rails, for high corrosion resistance (min 700 hours resistance in salt fog). The rail has no T RACE e-coating on the raceway contact area with the rollers, as masked before the treatment. The raceways are anyhow with standard oxidation while the wipers with incorporated pre-oiled felt assure lubrication and corrosion protection of raceways.
TH2D150-1010-KB	KB	As the version KL but with the ball-cages made in stainless steel AISI304 and the balls in hardened AISI440C

Code	Lenght L (mm)	Stroke H (mm)	Y <sub>f</sub> N' of Y-access holes	Y <sub>m</sub>	Dynamic coefficient C (N)	Capacity load Co rad (N)	Weight (kg)
TH2.150-0770	770	785	2	3	6.318	3.984	13,0
TH2.150-0850	850	865	2	3	6.942	4.378	14,2
TH2.150-0930	930	945	2	4	7.953	4.935	15,4
TH2.150-1010	1010	1025	3	4	8.577	5.419	16,6
TH2.150-1090	1090	1105	3	4	9.444	5.968	17,9
TH2.150-1170	1170	1185	3	4	9.909	6.250	19,2
TH2.150-1250	1250	1265	3	5	10.355	6.520	20,4
TH2.150-1330	1330	1345	3	5	11.155	7.022	21,7
TH2.150-1410	1410	1425	4	5	11.557	7.262	22,9
TH2.150-1490	1490	1505	4	6	12.305	7.155	24,1
TH2.150-1570	1570	1585	4	6	12.663	6.804	25,3
TH2.150-1650	1650	1665	4	6	13.358	6.486	26,6
TH2.150-1730	1730	1745	4	6	13.671	6.196	28,0
TH2.150-1810	1810	1825	5	7	13.965	5.931	29,1
TH2.150-1890	1890	1905	5	7	14.579	5.687	30,3
TH2.150-1970	1970	1985	5	7	14.828	5.463	31,6
TH2.150-2050	2050	2065	5	8	15.387	5.256	32,9
TH2.150-2130	2130	2145	5	8	15.590	5.064	34,1
TH2.150-2210	2210	2225	6	8	16.092	4.886	35,3

### TECHNICAL CHARACTERISTICS

TH2 is designed to be a telescopic slide for very heavy loads up to a 2 metre extension and is composed of two SR semi-telescopic slides fixed to a highly rigid intermediate element. To optimise the load capacity, the two semi-telescopic slides are manufactured with different strokes. The slide fixed to the structure moves about 2/5ths of total stroke, while the slide fixed to the extending part moves 3/5ths of the total stroke. Hereby they present as non-symmetric slides, with a "Right-side" and "Left-side" version (Handed).

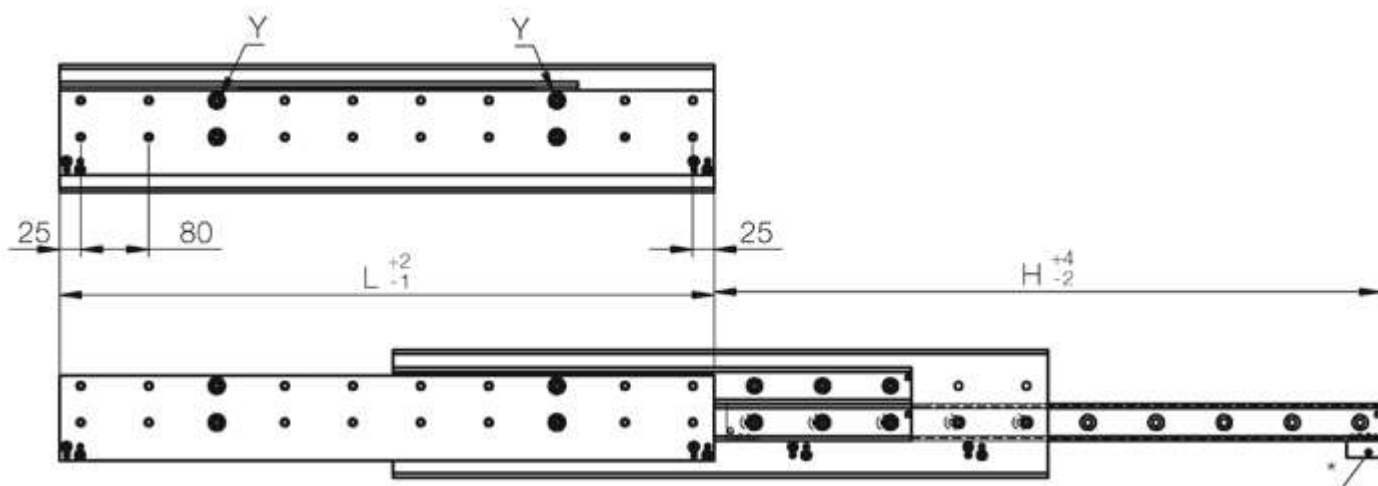
The SR semi-telescopic slides are with patented T RACE NOX1.0 treatment; high depth nitride hardened rails with black oxidation, assuring a long lifetime without wear and a good corrosion resistance.

The presence of special robust impact absorbing rubber stoppers between the rails and intermediate element assure a smooth and silent dragging motion of the intermediate element.

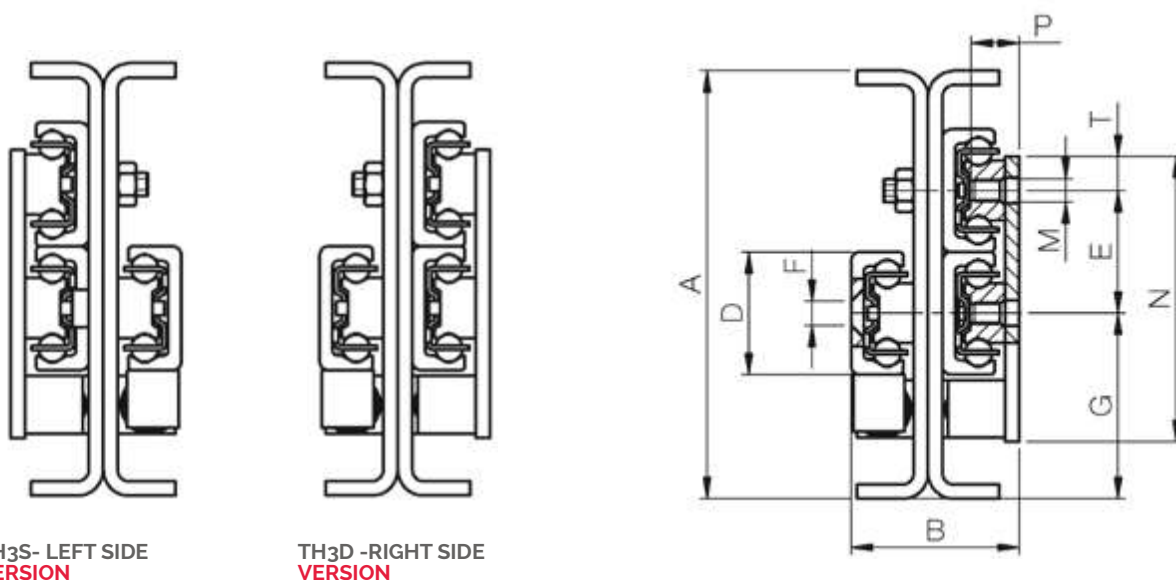
Patented T RACE-NOX treatment guarantees a constant preload setting during the complete lifetime, unlike traditional zinc-plated ball-cage slides, which very soon will have the zinc worn away at the raceway contact points, with the result relatively soon of increased play/shaky movements. The materials and surface treatments assure a general high standard of corrosion resistance. With additional black electro coating, KB-version, the TH2 slide becomes suitable for outdoor applications or very humid ambient environments.

Upon request, customized versions with longer extensions or both customized length and stroke can be made available. Load Co rad refers to a single slide





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TH3S - LEFT SIDE  
VERSION

TH3D - RIGHT SIDE  
VERSION

Available in **Left-side and Right-side version** when used in pairs.

The listed load capacities  $C_{o\ rad}$ , are per single slide, with the load centered, i.e. in the middle of the extended lower rail, P. In case the load is not centered, ex. The load is more towards tip, the load capacity is reduced, please refer to page 48. For further info and flexion "f" indications.

For fixing the slide to the fixed structure two lines of threaded holes are provided while for the moving part are provided through countersunk holes for screws to access all the countersunk holes you need to remove a block limit and slide the moving rail on the opposite side of the intermediate element.

Code	A (mm)	B (mm)	D (mm)	N (mm)	G (mm)	E (mm)	T (mm)	M (mm)	P (mm)	F (mm)
TH3.150	150	59	43	100	65	43	12	M8	16,5	Ø 8,5 for screw M8 DIN7991

\* To fix the slide, it is necessary to remove the end-stopper, fixed to the rail (see figure), and replace it when finished installation. Y = N \* 4 screws used for positioning the fixing plate. If not required it can too be omitted.

ORDER CODE	VERSION	CHARACTERISTICS
TH3D150-1010	BASIC	Cold drawn steel rails with patented "T RACE-NOX 1.0": high depth nitride hardening and black oxidation treatment. The rails are cut to size after treatment, so the rail ends are protected by protective spray. All threaded holes are without treatment. Ball-cages in zinc plated steel, while balls hardened steel. Intermediate steel S-element is protected with black epoxy electro coating - "T RACE e-coating 1.0".
TH3D150-1010-KL	KL	As a basic TLS product but with additional black "T RACE e-coating 1.0" on the rails, for high corrosion resistance (min 700 hours resistance in salt fog). The rail has no T RACE e-coating on the raceway contact area with the rollers, as masked before the treatment. The raceways are anyhow with standard oxidation while the wipers with incorporated pre-oiled felt assure lubrication and corrosion protection of raceways.
TH3D150-1010-KB	KB	As the version KL but with the ball-cages made in stainless steel AISI304 and the balls in hardened AISI440C

Code	Lenght L (mm)	Stroke H (mm)	Y <sub>f</sub> Screws	Dynamic coefficient C (N)	Capacity load Co rad (N)	Weight (kg)
TH3.150-0770	770	785	2+2	8.198	5.513	25,1
TH3.150-0850	850	865	2+2	9.377	4.903	27,7
TH3.150-0930	930	945	2+2	10.560	5.336	30,3
TH3.150-1010	1010	1025	2+2	11.747	5.769	32,4
TH3.150-1090	1090	1105	2+2	12.749	6.501	35,0
TH3.150-1170	1170	1185	2+2	13.731	6.812	37,6
TH3.150-1250	1250	1265	2+2	14.067	7.110	40,2
TH3.150-1330	1330	1345	2+2	14.990	7.395	42,4
TH3.150-1410	1410	1425	2+2	15.880	8.049	45,0
TH3.150-1490	1490	1505	2+2	16.739	8.298	47,6
TH3.150-1570	1570	1585	2+2	17.564	8.534	49,8
TH3.150-1650	1650	1665	2+2	18.355	9.123	52,4
TH3.150-1730	1730	1745	2+2	19.113	9.323	54,9
TH3.150-1810	1810	1825	2+2	19.270	9.510	57,5
TH3.150-1890	1890	1905	2+2	19.965	9.684	60,1
TH3.150-1970	1970	1985	2+2	20.626	10.185	62,3
TH3.150-2050	2050	2065	2+2	21.251	10.263	64,9
TH3.150-2130	2130	2145	2+2	21.841	9.888	67,5
TH3.150-2210	2210	2225	2+2	22.394	9.540	70,1
TH3.150-2290	2290	2305	2+2	22.912	9.215	72,3
TH3.150-2370	2370	2385	2+2	22.883	8.912	74,9
TH3.150-2450	2450	2465	2+2	23.334	8.628	77,4

### TECHNICAL CHARACTERISTICS

TH3 is designed to be a telescopic slide for extreme high loads up to a 2,3 metre extension, composed of three SR semi-telescopic slides fixed to a H-shaped rigid intermediate beam, assuring very high loads with very low flexion yet good lateral stability.

The SR semi-telescopic slides are with patented T RACE NOX 1.0 treatment; high depth nitride hardened rails with black oxidation, assuring long lifetime without wear and a good corrosion resistance. The presence of special robust impact absorbing rubber stoppers between the rails and intermediate element assure a smooth and silent motion dragging the intermediate element.

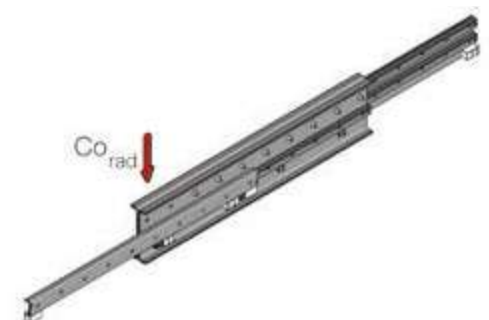
As the slides are non-symmetric slides, there is a "Right-side" and "Left-side" version.

Patented T RACE-NOX 1.0 treatment guarantees a constant preload setting during the complete lifetime, unlike traditional zinc-plated ball-cage slides, which very soon have the zinc worn away at the raceway contact points, with the result being soon an increase in play/shaky movements.

The materials and surface treatments assure a general high standard of corrosion resistance. With additional black electro coating, KB-version, the TH3 slide becomes suitable for outdoor applications or very humid ambient environments.

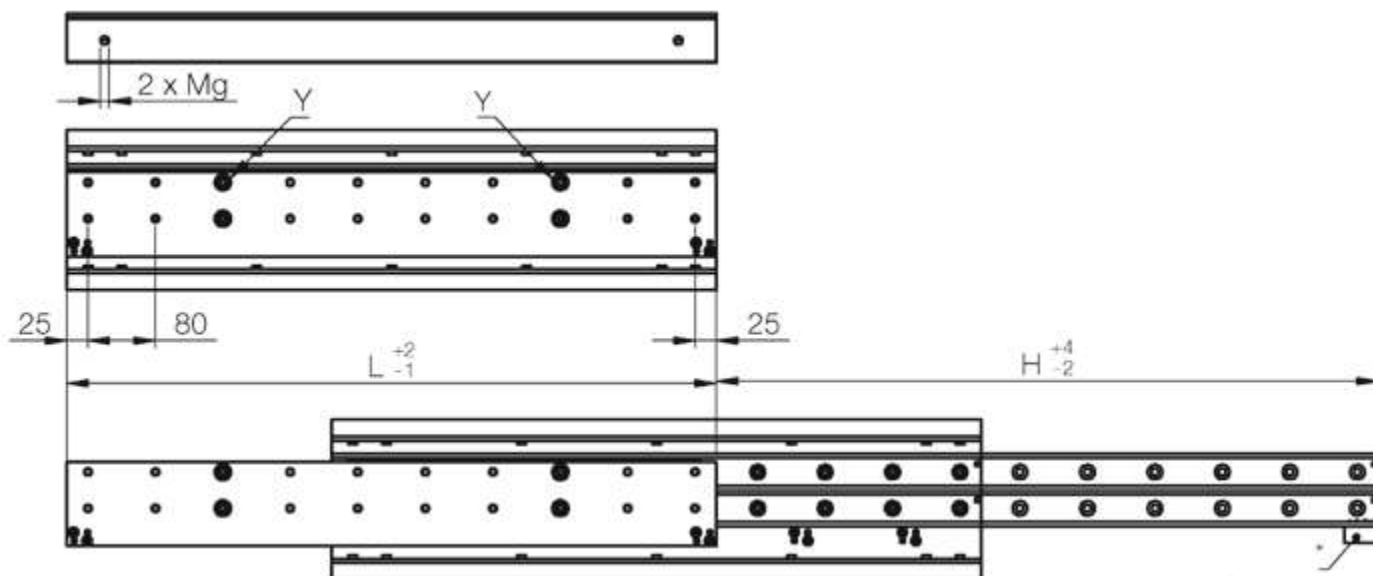
Upon request, customized versions with longer extension or both customized length and stroke can be produced.

Load Co rad refers to a single slide.

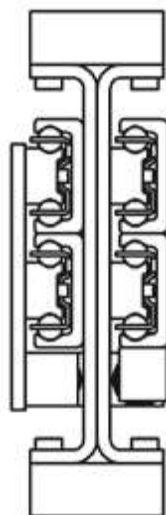




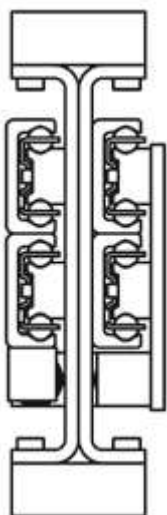
# EXTREME LOADS BALLCAGE TELESCOPIC SLIDES TH4 SERIES



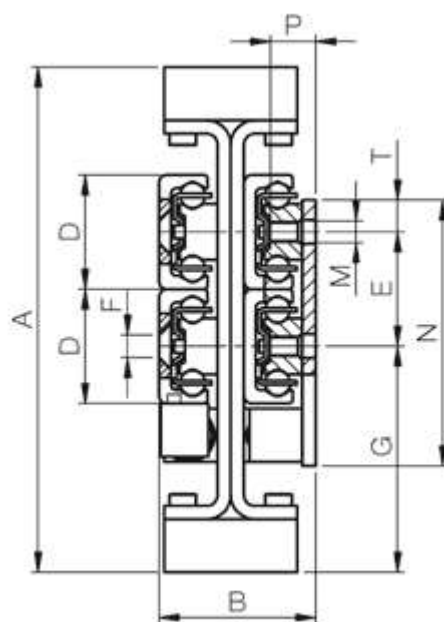
38



**TH4S- LEFT SIDE  
VERSION**



**TH4D -RIGHT SIDE  
VERSION**



Available in **Left-side and Right-side version** when used in pairs.

The listed load capacities  $C_{o\ rad}$ , are per single slide, with the load centered, i.e. in the middle of the extended lower rail, P. In case the load is not centered, ex. The load is more towards tip, the load capacity is reduced, please refer to page 48. For further info and flexion "f" indications.

For fixing the slide to the fixed structure two lines of threaded holes are provided while for the moving part are provided through countersunk holes for screws to access all the countersunk holes you need to remove a block limit and slide the moving rail on the opposite side of the intermediate element.

Code	A (mm)	B (mm)	D (mm)	N (mm)	G (mm)	E (mm)	T (mm)	M (mm)	P (mm)	F (mm)	Mg (mm)
TH4.190	190	59	43	100	85	43	12	M8	16,5	Ø 8,5 for screw M8 DIN7991	M12 x 18

\* To fix the slide, it is necessary to remove the end-stopper, fixed to the rail (see figure), and replace it when finished installation.

Y = N' 4 screws used for positioning the fixing plate. If not required it can too be omitted.

ORDER CODE	VERSION	CHARACTERISTICS
<b>TH4D190-1010</b>	<b>BASIC</b>	Cold drawn steel rails with patented "TRACE-NOX 1.0", depth nitride nitriding hardening and black oxidation treatment. The rails are cut to size after treatment, so the rail ends are protected by protective spray. All threaded holes are without treatment. Ball-cages in zinc plated steel, while balls hardened steel. Intermediate steel S-element is protected with black epoxy electro coating - "TRACE e-coating 1.0".
<b>TH4D190-1010-KL</b>	<b>KL</b>	As a basic TLS product but with additional black "TRACE e-coating 1.0" on the rails, for high corrosion resistance (min 700 hours resistance in salt fog). The rail has no TRACE e-coating on the raceway contact area with the rollers, as masked before the treatment. The raceways are anyhow with standard oxidation while the wipers with incorporated pre-oiled felt assure lubrication and corrosion protection of raceways.
<b>TH4D190-1010-KB</b>	<b>KB</b>	As the version KL but with the ball-cages made in stainless steel AISI304 and the balls in hardened AISI440C

Code	Lenght L (mm)	Stroke H (mm)	Y <sub>f</sub> Screws	Dynamic coefficient C (N)	Capacity load Co rad (N)	Weight (kg)
TH4.190-0770	770	785	2+2	10.602	7.172	41,4
TH4.190-0850	850	865	2+2	11.651	7.880	45,6
TH4.190-0930	930	945	2+2	13.327	8.883	49,8
TH4.190-1010	1010	1025	2+2	14.375	9.754	54,0
TH4.190-1090	1090	1105	2+2	15.828	10.742	58,2
TH4.190-1170	1170	1185	2+2	16.627	11.250	62,4
TH4.190-1250	1250	1265	2+2	17.397	11.736	66,6
TH4.190-1330	1330	1345	2+2	18.744	12.639	70,8
TH4.190-1410	1410	1425	2+2	19.444	13.071	75,1
TH4.190-1490	1490	1505	2+2	20.709	13.910	79,3
TH4.190-1570	1570	1585	2+2	21.338	14.289	83,5
TH4.190-1650	1650	1665	2+2	22.518	15.062	87,7
TH4.190-1730	1730	1745	2+2	23.075	15.387	91,9
TH4.190-1810	1810	1825	2+2	23.601	15.690	96,1
TH4.190-1890	1890	1905	2+2	24.653	16.366	100,3
TH4.190-1970	1970	1985	2+2	25.106	16.616	104,5
TH4.190-2050	2050	2065	2+2	26.069	17.225	108,7
TH4.190-2130	2130	2145	2+2	26.447	17.422	112,9
TH4.190-2210	2210	2225	2+2	27.318	17.964	117,1
TH4.190-2290	2290	2305	2+2	27.620	18.107	121,3
TH4.190-2370	2370	2385	2+2	27.889	17.547	125,5
TH4.190-2450	2450	2465	2+2	28.624	16.987	129,7
TH4.190-2530	2530	2545	2+2	28.816	16.463	133,9

Y = N \* 4 screws used for fastening the thick plate. If necessary, you can remove them.

### TECHNICAL CHARACTERISTICS

TH4 is designed to be a telescopic slide for extreme high loads up to 2,5m extension, composed of four SR semi-telescopic slides fixed to a reinforced H-shaped rigid intermediate beam, assuring extreme high loads with very low flexion yet very high lateral stability.

T RACE's new TH4-series telescopic slides for Extreme loads, is the "strongest" telescopic slide world-wide, offering a load capacity of 4tons with 2,5metre extension for a pair of slides. The SR semi-telescopic slides are with patented T RACE NOX 1.0 treatment; high depth nitride hardened rails with black oxidation, assuring a long lifetime without wear and a good corrosion resistance.

The presence of special robust impact absorbing rubber stoppers between the rails and intermediate element assure a smooth and silent dragging motion for the intermediate element.

Patented T RACE-NOX 1.0 treatment guarantees a constant preload setting during the complete lifetime, unlike traditional zinc-plated ball-cage slides, which very soon has the zinc worn away/removed at the raceway contact points, with the result in a relatively short time frame of much increased play/shaky movements.

As the slides are non-symmetric slides, there is a "Right-side" and "Left-side" version.

The materials and surface treatments assure a general high standard of corrosion resistance. With additional black electro coating, KB-version, the TH4 slide becomes suitable for outdoor applications or very humid ambient environments.

Upon request, customized versions with longer extension or both customized length and stroke can be made available.

Load Co rad refers to a single slide

