

ROLLON[®]
Linear Evolution

Telerace



Product explanation



> Telerace roller telescopic slides



Fig. 1

The Telerace family is composed of telescopic roller slides made of sheet steel of particular precision finish, fully hardened using high depth nitride hardened rails with black oxidation. This treatment assures long lifetime without wear and a good corrosion resistance. Telerace roller slides are suitable for harsh ambient environment, since the rollers are much less sensitive than ball-cage slides. TLR and TLQ series represent the high performance telescopic slides. TLN and TQN offer many of the technological advantages with a more simplified construction, TLAX and TQAX are completely made of stainless steel. The listed load capacities are per pair of slides, with the load centred. In case the load is not centred, the load capacity is reduced.

TLR-TLQ series

TLR and TLQ series represent the high performance telescopic slides. Top features like hardened and honed raceways, strong double row ball bearings, wipers with incorporated pre-oiled felt and robust rubber stoppers make them ideal for all kinds of industrial high frequency applications, including variable and vertical stroke.

TLN-TQN series

The roller telescopic slides TLN and TQN offer many of the technological advantages from the top-range slides, like hardened raceways and robust rubber stoppers, but with a more simplified construction to offer a range of cost-effective roller telescopic slides with good load capacities for industrial applications. All models are available in K-version, for higher corrosion resistance, and with other optional surfaces treatments.

TLAX-TQAX series

The complete INOX slides TLAX and TQAX are available in X-version with rails and intermediate S-element electro-polished for very high corrosion resistance, making them ideal for most critical outdoor applications.

Industrial automation

Telerace slides are especially recommended for high frequency applications, where long service requirements and low maintenance are necessary. Roller telescopic slides are superior for motorized automation with or without variable stroke-cycles, to eliminate the typical problem of ball cage creeping that subsequently can cause serious motor jamming-problems, when increased motor power is instantly required to reposition the ball cage. The materials and surface treatments assure high corrosion resistance, and with the additional treatments Telerace slides become suitable for outdoor applications or very humid ambient.

The most important characteristics:

- High load capacity
- Limited flexion
- Suitable for harsh environmental conditions
- Corrosion resistance
- Strong stoppers for smooth movement
- Compactness
- Smooth and friction-less extension
- Suitable for continuous movement
- Long life without wear

TLR

TLR series provides excellent smooth and play-free running performance, along with high load capacities and low flexion. Good cleaning, proper lubrication and reduced maintenance thanks to pre-oiled felts on the strong wipers. When TLR series slides are used in pairs, they offer the possibility to absorb minor misalignment errors.

TLQ

TLQ series are very compact slides with a square cross section that offer good load capacities, both axial and radial, and are particularly suitable for vertical applications, thanks to their compactness and light weight. TLQ series is composed of two single rails fixed together to form a rigid H-profile as an intermediate element. As TLR series, TLQ series features double row bearings. Possible customised stroke.

TLN

TLN series features an innovative constructive design that combines cost-effective rails with advanced technology. The hardened rails assembled to a rigid intermediate S-shaped element provide excellent smooth and play-free running performance, along with high load capacities and low flexion. Also available the HP version with additional rollers to increase the load capacity, about 40-50% more, with no change in external dimensions.

TQN

TQN series are very compact slides with a square cross section that offer good load capacities, both axial and radial, and are particularly suitable for vertical applications, thanks to their compactness and light weight. TQN series is composed of two single rails fixed together to form a rigid H-profile as an intermediate element. As TLN series, TQN series features single row bearings. Possible customised stroke.

TLAX

TLAX series are made of AISI 304 rails and AISI 404 hardened steel rollers, with 2RS seals and lubricated for life with grease for longevity and low temperature applications. TLAX is ideal for medical, pharmaceutical, chemical, medical industries or maritime ambient. For very severe environmental conditions, TLAX can be supplied in X-version, which provides an improved corrosion resistance. Customized versions with longer extension, length and stroke are available upon request.

TQAX

TQAX series are very compact stainless-steel slides with a square cross section that offer good load capacities, both axial and radial, and are particularly suitable for vertical applications, thanks to their compactness and light weight. TQAX series is composed of two single rails fixed together to form a rigid H-profile as an intermediate element. Rails are in AISI 304 and single row bearings in hardened AISI 440 with 2RS seals and lifetime lubricated.

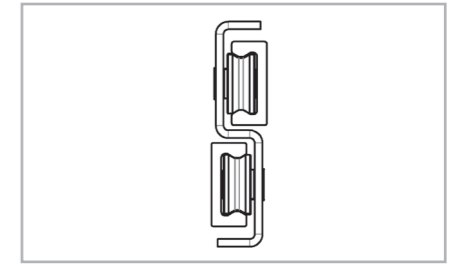


Fig. 2

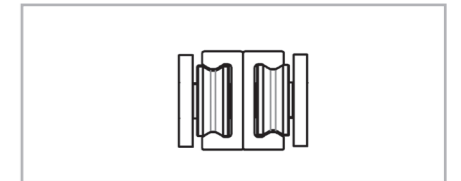


Fig. 3

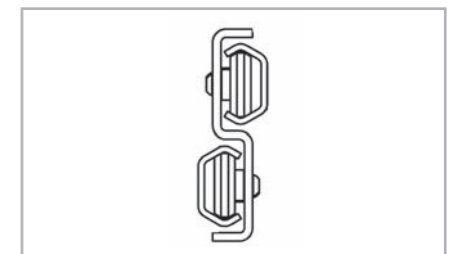


Fig. 4



Fig. 5

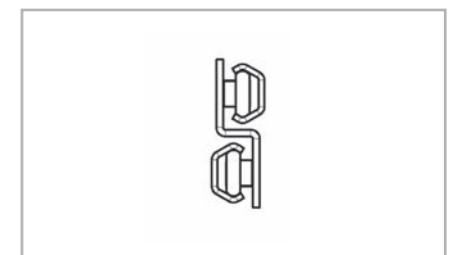


Fig. 6

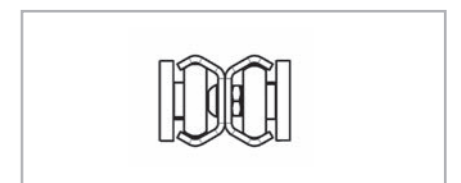
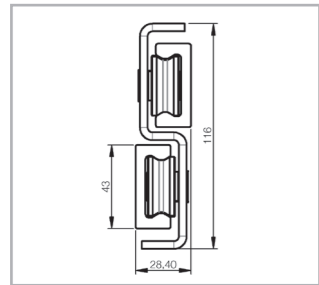
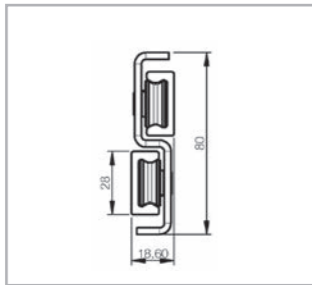


Fig. 7

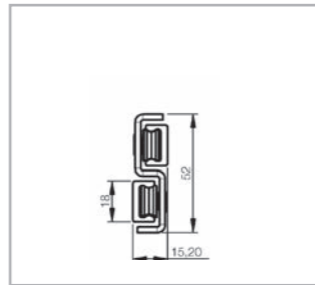
> TLR-TLQ series



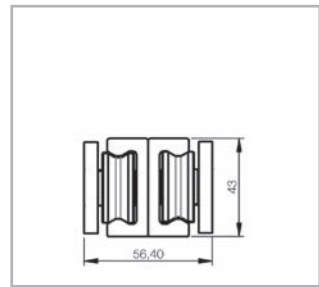
TLRD43 - TLRS43
Load capacity p. TLR-44



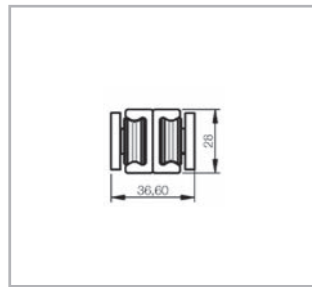
TLRD28 - TLRS28
Load capacity p. TLR-45



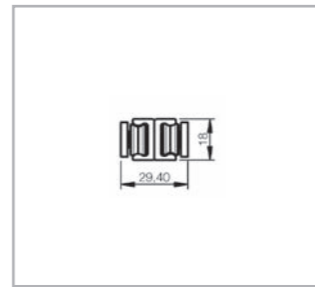
TLRD18 - TLRS18
Load capacity p. TLR-44



TLQ43
Load capacity p. TLR-55

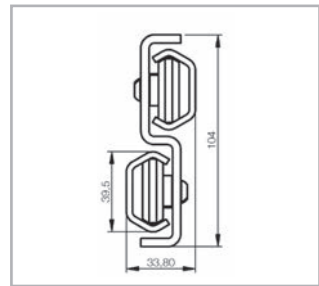


TLQ28
Load capacity p. TLR-55

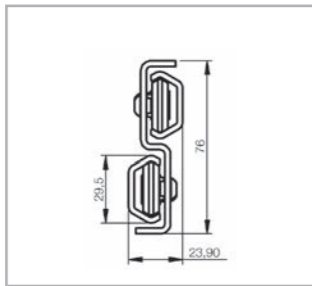


TLQ18FF
Load capacity p. TLR-54

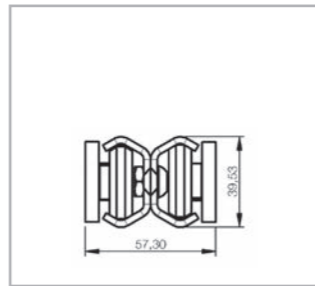
> TLN-TQN series



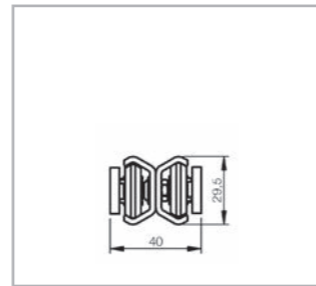
TLND40 - TLNS40
Load capacity p. TLR-48



TLND30 - TLNS30
Load capacity p. TLR-48

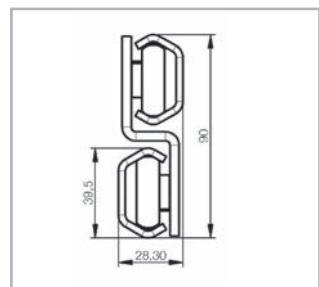


TQN40
Load capacity p. TLR-58

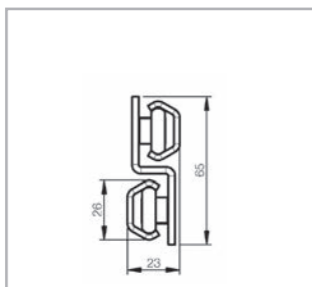


TQN30
Load capacity p. TLR-58

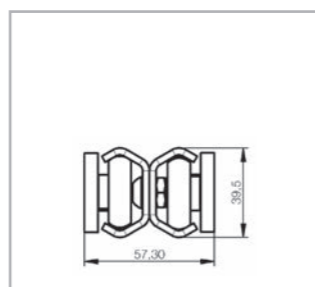
> TLAX-TQAX series



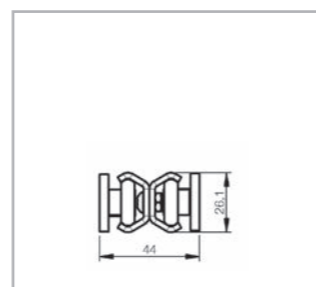
TLAX40
Load capacity p. TLR-51



TLAX26
Load capacity p. TLR-51



TQAX40
Load capacity p. TLR-61



TQAX26
Load capacity p. TLR-61

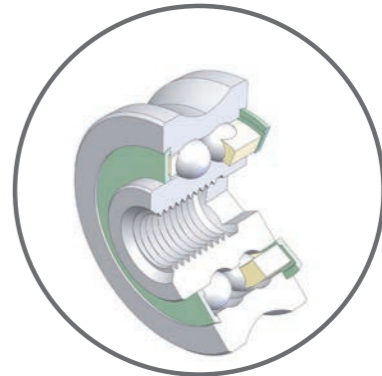
General characteristics



> TLR-TLQ series

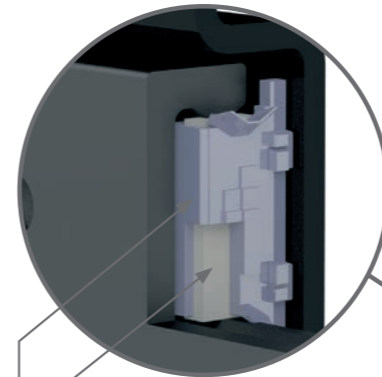
Cold drawn steel rails with Patented ROLLON-NOX treatment for high depth nitride hardening and with black oxidation, assuring long lifetime without wear and a good corrosion resistance.

- High hardness
- Durable for high load/frequency
- Long life
- Good corrosion resistance also on the raceways, tested for 120 hours in salt fog.



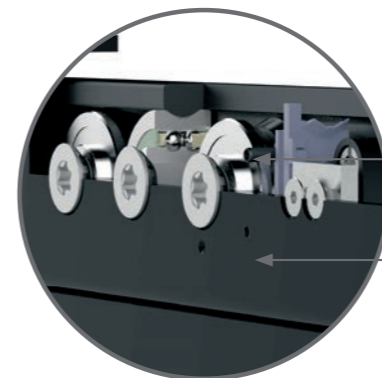
Strong double row ball-bearings, 2RS seals and lubricated for life.

- Eccentric rollers for preload
- setting for smooth play-free running.



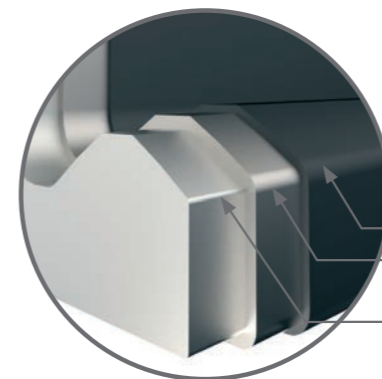
Wipers with incorporated pre-oiled felt for optimum long term raceway lubrication, assuring low maintenance

Internal strong wipers for good raceway cleaning



Robust rubber stoppers for smooth dragging of intermediate element

Silent and fast movement with no play



black oxidation with micro oil impregnation, ROLLON-NOX, anti-corrosion treatment

High depth nitriding technology ROLLON-NOX

High strength cold drawn steel alloy profile

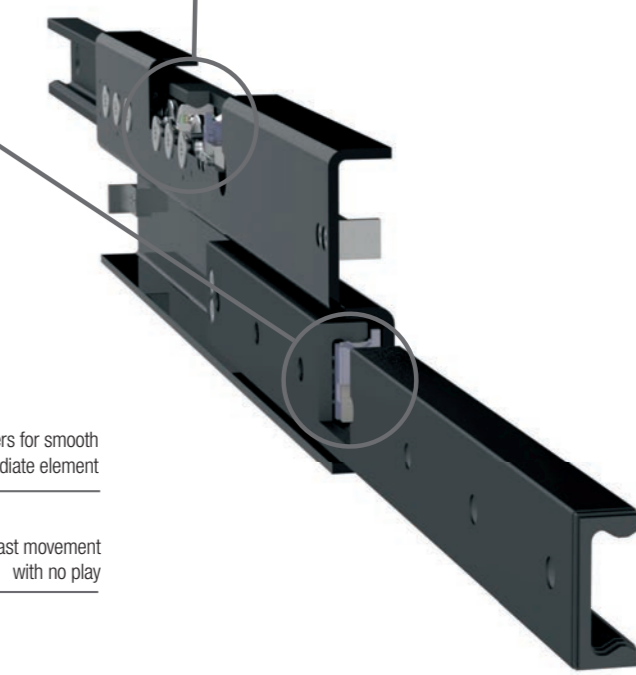


Fig. 22
TLR-5

> TLN-TQN series

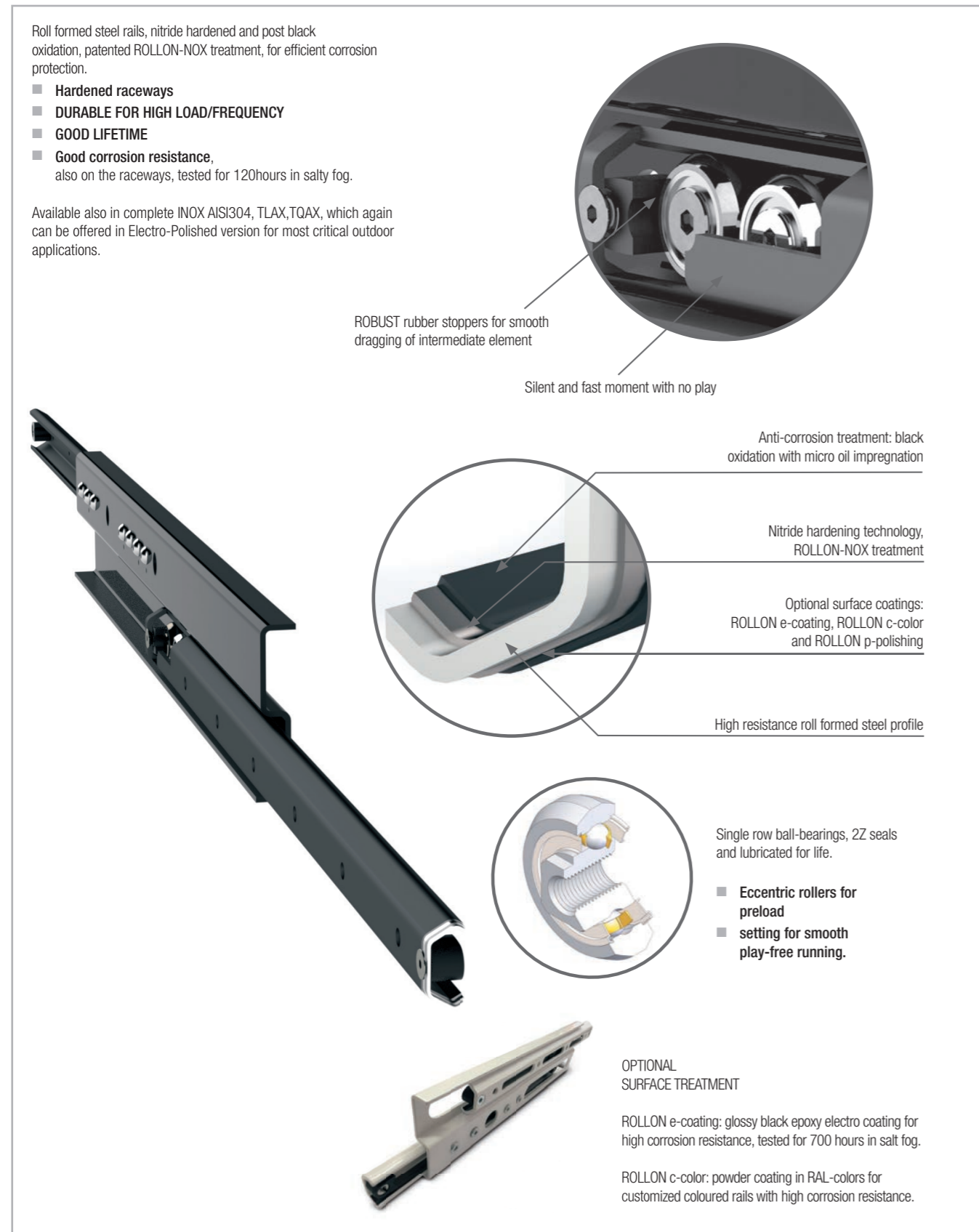


Fig. 23

Dimensions and load capacity



> Roller telescopic slides TLR series

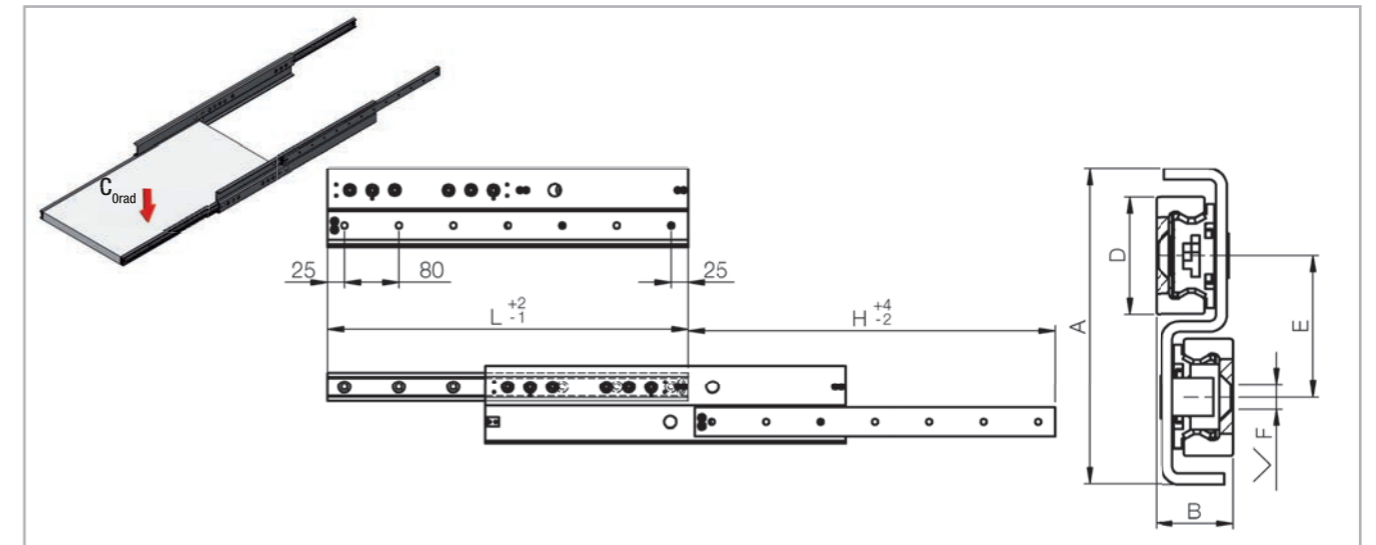


Fig. 24

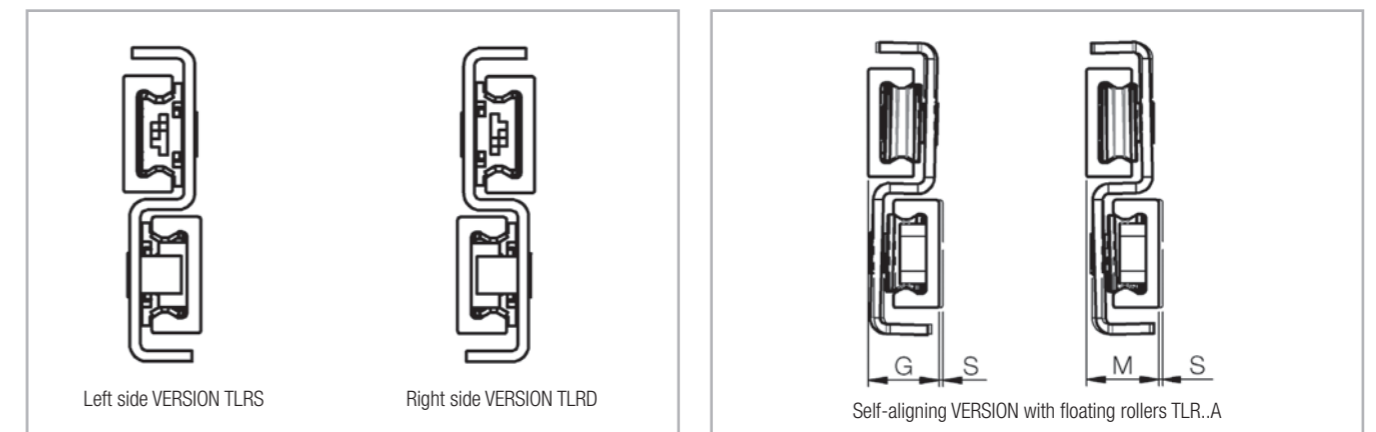


Fig. 25

Fig. 26

Code	A (mm)	B (mm)	D (mm)	E (mm)	F (mm)	G (mm)	M (mm)	S (mm)
TLR18	52	15,2	18	25	Ø 4,5 for screw M4 DIN7991	14,7	15,7	1
TLR28	80	18,6	28	35	Ø 5,5 for screw M5 DIN7991	17,2	19	1,8
TLR43	116	28,4	43	52	Ø 8,5 for screw M8 DIN7991	26,8	30	3,2

Tab. 1

Self-aligning capability

When TLR slides are used in pairs, they offer the possibility to absorb minor structural errors or non-precise installation, which otherwise would much increase the required force for moving the mobile part, in both extending and closing direction. Such “binding-problems” for installation on non precise structures, common for ball-cage slides and can be eliminated/ much reduced with a pair of self-aligning TLR..A slides. A problem of heavy binding will consequently much reduce load capacity and expected life-time. The self-aligning capacity is obtained by having a combination of floating and guiding rollers in the TLR..A. i.e. allowing for a minor rotation

of the rails whilst maintaining the preload in both upper and lower rails. The suffix A in TLR..A, indicates “Aligning”. To be noted that the rotation ex. of the TLR28A slide hereby changes the nominal value of 18,6mm to 17,2mm (S min) – 19,0mm (S max) while compensating dimensional errors on mobile structures or distance errors between the two lateral sides of fixed structures, for which the upper rails are fixed to. The TLR..A is in general always used as a pair with a standard TLR, to assure good lateral stability.

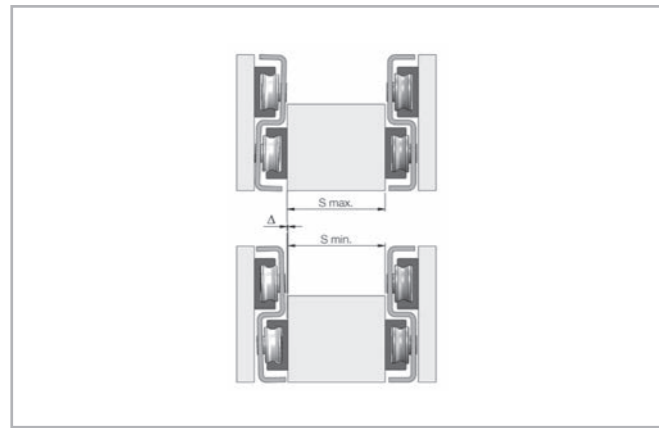


Fig. 27

Order code	Version	Characteristics
TLRD43-1010	BASIC	Cold drawn steel rails with patented “ROLLON-NOX”; 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. The rollers are core hardened steel, while the intermediate steel S-element is protected with black epoxy electro coating - “ROLLON e-coating” .
TLRD43-1010-Q	Q	As a basic TLR product but with additional black “ROLLON e-coating” on the rails, for high corrosion resistance (min 700 hours resistance in salt fog) . The rail has no ROLLON 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.
TLRD43-1010-K	K	As the version Q but with the rollers made in stainless steel AISI440C

Tab. 2

Code	Length L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Load capacity for a pair of rails Co rad (N)	Weight (kg)
TLR.18.-290	290	290	731	710	0,9
TLR.18.-370	370	370	969	940	1,2
TLR.18.-450	450	450	1.115	1082	1,4
TLR.18.-530	530	530	1.214	1178	1,6
TLR.18.-610	610	610	1.286	1246	1,9
TLR.18.-690	690	690	1.324	1284	2,1
TLR.18.-770	770	770	1.344	1304	2,3

Tab. 3

Code	Length L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Load capacity for a pair of rails Co rad (N)	Weight (kg)
TLR.28.-370	370	380	1.578	1.596	2,1
TLR.28.-450	450	460	1.860	1.882	2,5
TLR.28.-530	530	540	2.045	2.068	2,9
TLR.28.-610	610	620	2.711	2.744	3,3
TLR.28.-690	690	700	2.933	2.968	3,7
TLR.28.-770	770	780	3.084	3.120	4,1
TLR.28.-850	850	860	3.180	3.218	4,5
TLR.28.-930	930	940	3.259	3.264	4,9
TLR.28.-1010	1010	1020	3.325	3.038	5,3
TLR.28.-1090	1090	1100	3.381	2.842	5,7
TLR.28.-1170	1170	1180	3.428	2.670	6,1
TLR.28.-1250	1250	1260	3.469	2.516	6,5
TLR.28.-1330	1330	1340	3.505	2.380	6,9
TLR.28.-1410	1410	1420	3.537	2.258	7,3
TLR.28.-1490	1490	1500	3.565	2.148	7,7

Tab. 4

Code	Length L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Load capacity for a pair of rails Co rad (N)	Weight (kg)
TLR.43.-530	530	540	4.075	4.156	6,4
TLR.43.-610	610	620	4.241	4.326	7,3
TLR.43.-690	690	700	6.155	6.278	8,2
TLR.43.-770	770	780	6.554	6.686	9,1
TLR.43.-850	850	860	6.870	7.008	10
TLR.43.-930	930	940	7.127	7.270	10,9
TLR.43.-1010	1010	1020	7.341	7.488	11,8
TLR.43.-1090	1090	1100	7.520	7.672	12,7
TLR.43.-1170	1170	1180	7.674	7.568	13,6
TLR.43.-1250	1250	1260	7.807	7.148	14,5
TLR.43.-1330	1330	1340	7.922	6.772	15,4
TLR.43.-1410	1410	1420	8.024	6.434	16,3
TLR.43.-1490	1490	1500	8.115	6.130	17,2
TLR.43.-1570	1570	1580	8.195	5.850	18,1
TLR.43.-1650	1650	1660	8.268	5.596	19
TLR.43.-1730	1730	1740	8.333	5.364	19,9
TLR.43.-1810	1810	1820	8.393	5.150	20,8
TLR.43.-1890	1890	1900	8.447	4.952	21,7
TLR.43.-1970	1970	1980	8.497	4.768	22,6

Tab. 5

➤ Roller telescopic slides TLQ series

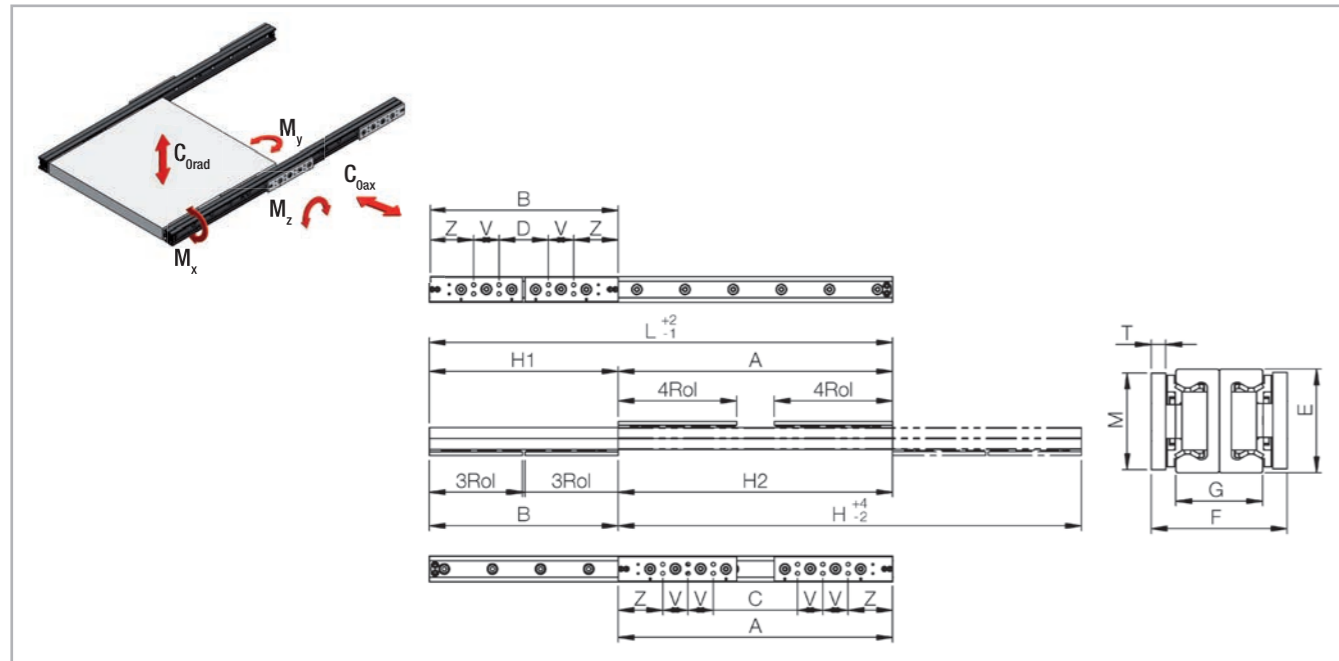


Fig. 28

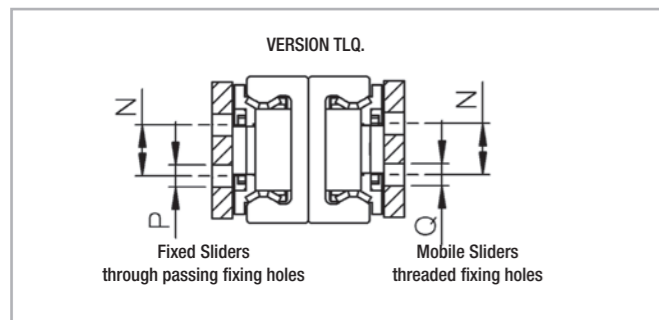


Fig. 29

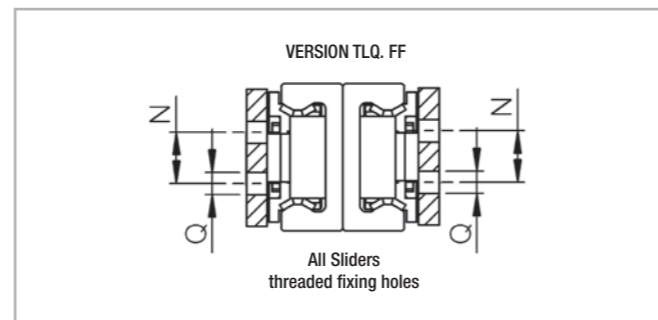


Fig. 30

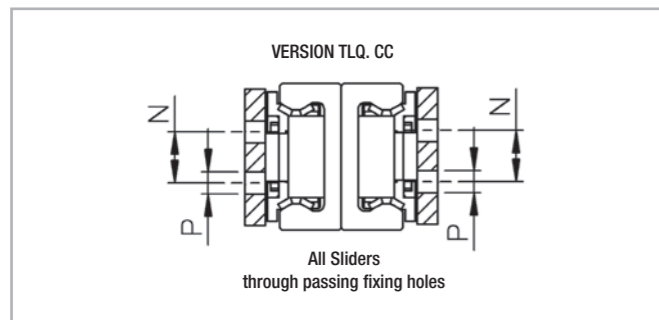


Fig. 31

Code	E (mm)	F (mm)	G (mm)	M (mm)	T (mm)	N (mm)	P (mm)	Q (mm)	Sliders		Z (mm)	V (mm)	Weight (kg/m)	Weight 4 sliders (Kg)
									Type	Length L (mm)				
TLQ18FF	18	29,4	19	15	3	8	-	M4	3Rol	87	48	21	1,4	0,4
TLQ28..	28	36,6	23,9	25	4	10	Ø5,5 for screw M5 DIN912	M5	3Rol	111,5	58	29	2,5	1,5
									4Rol	140,5				
TLQ43..	43	56,4	36	40	6	15	Ø6,5 for screw M6 DIN912	M6	3Rol	155	74	42	6	2,4
									4Rol	197				

Tab. 6

Customized stroke

TLQ slides offer the unique possibility to easily customize the actual stroke H to individual needs. This is obtained by repositioning the slider distance "A" for "Fixed sliders" and distance "B" for "Mobile sliders", with different distances than indicated on this page. Just keep in mind that distance A is always bigger than B, to maximize the load capacity. By reducing distances between A and B the total stroke increases but the Load capacity decreases, conversely increasing the distance between A and B the total stroke is reduced, while the load capacity increases. Contact ROLLON's Technical department for load capacities according to customized stroke.

Installation notes for radial loads

The slide must be installed with the mark "Up-side" facing upwards, when considering RADIAL loads. The sliders attached to structure are marked "Fix-sliders" while the sliders mounted to mobile part are marked "Mobile sliders". When used in pairs, the same slide can be installed left or right, just by rotating the slide, keeping the mark "Up-side" facing upwards, for radial loads.

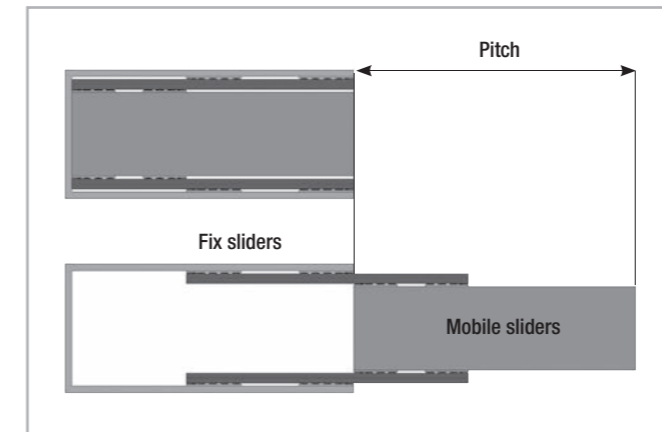


Fig. 32

Order code	Version	Characteristics
TLQ43-1010	BASIC	Cold drawn steel rails with patented "ROLLON-NOX"; 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. The rollers are core hardened steel.
TLQ43-1010-Q	Q	As a basic TLQ product but with additional black "ROLLON e-coating" on the rails, for high corrosion resistance (min 700 hours resistance in salt fog). The rail has no ROLLON 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.

Tab. 7

Code	L (mm)	H (mm)	Fix sliders (mm)			Mobile sliders (mm)			Load capacity and moments for a pair of rails					
			A (mm)	C (mm)	H1 (mm)	B (mm)	D (mm)	H2 (mm)	Dynamic coefficient C (N)	Co _{rad} (N)	Co _{ax} (N)	M _x * (Nm)	M _y (Nm)	M _z (Nm)
TLQ18FF-370	370	370	185	47	185	185	47	185	725	702	350	6	218	94
TLQ18FF-450	450	450	270	132	180	180	42	270	1159	946	426	6	202	86
TLQ18FF-530	530	530	318	180	212	212	74	318	1.267	828	374	6	268	120
TLQ18FF-610	610	610	366	228	244	244	106	366	1.343	738	332	6	268	120
TLQ18FF-690	690	690	414	276	276	276	138	414	1.400	664	300	6	268	120
TLQ18FF-770	770	770	462	324	308	308	170	462	1.445	604	272	6	268	120
			Slider type All sliders type 3Rol			All sliders type 3Rol								

Tab. 8

* The value Mx refers to a single rail

Code	L (mm)	H (mm)	Fix sliders (mm)			Mobile sliders (mm)			Load capacity and moments for a pair of rails					
			A (mm)	C (mm)	H1 (mm)	B (mm)	D (mm)	H2 (mm)	Dynamic coefficient C (N)	Co _{rad} (N)	Co _{ax} (N)	M _x * (Nm)	M _y (Nm)	M _z (Nm)
TLQ28..-450	450	450	227	53	223	223	49	227	602	928	464	18	192	256
TLQ28..-530	530	530	307	133	223	223	49	307	1138	1754	876	18	192	256
TLQ28..-610	610	610	360	128	250	250	76	360	1335	2058	808	18	256	342
TLQ28..-690	690	690	408	176	282	282	108	408	1458	1916	732	18	316	444
TLQ28..-770	770	770	456	224	314	314	140	456	1552	1754	670	18	316	546
TLQ28..-850	850	850	504	272	346	346	172	504	1626	1616	618	18	316	576
TLQ28..-930	930	930	552	320	378	378	204	552	1687	1500	572	18	316	576
TLQ28..-1010	1010	1010	600	368	410	410	236	600	1737	1398	534	18	316	576
TLQ28..-1090	1090	1090	648	416	442	442	268	648	1779	1310	500	18	316	576
TLQ28..-1170	1170	1170	696	464	474	474	300	696	1814	1232	470	18	316	576
TLQ28..-1250	1250	1250	744	512	506	506	332	744	1845	1162	444	18	316	576
TLQ28..-1330	1330	1330	792	560	538	538	364	792	1872	1100	420	18	316	576
TLQ28..-1410	1410	1410	840	608	570	570	396	840	1896	1044	400	18	316	576
TLQ28..-1490	1490	1490	888	656	602	602	428	888	1917	994	380	18	316	576
Slider type			Length 450 e 530 type 3Rol from Length 610 type 4Rol			All sliders type 3Rol			Tab. 9					

* The value Mx refers to a single rail

Code	L (mm)	H (mm)	Fix sliders (mm)			Mobile sliders (mm)			Load capacity and moments for a pair of rails					
			A (mm)	C (mm)	H1 (mm)	B (mm)	D (mm)	H2 (mm)	Dynamic coefficient C (N)	Co _{rad} (N)	Co _{ax} (N)	M _x * (Nm)	M _y (Nm)	M _z (Nm)
TLQ43..-610	610	600	310	78	300	310	78	300	1529	2228	1114	64	648	864
TLQ43..-690	690	690	374	142	316	316	84	374	2326	3390	1694	64	680	906
TLQ43..-770	770	770	456	140	314	314	82	456	3052	4448	2068	64	668	892
TLQ43..-850	850	850	504	188	346	346	114	504	3305	4816	1916	64	842	1122
TLQ43..-930	930	930	552	236	378	378	146	552	3509	4978	1784	64	1014	1352
TLQ43..-1010	1010	1010	600	284	410	410	178	600	3676	4656	1668	64	1036	1584
TLQ43..-1090	1090	1090	648	332	442	442	210	648	3816	4374	1568	64	1036	1814
TLQ43..-1170	1170	1170	696	380	474	474	242	696	3935	4126	1478	64	1036	2044
TLQ43..-1250	1250	1250	744	428	506	506	274	744	4037	3902	1398	64	1036	2274
TLQ43..-1330	1330	1330	792	476	538	538	306	792	4126	3702	1326	64	1036	2504
TLQ43..-1410	1410	1410	840	524	570	570	338	840	4204	3522	1262	64	1036	2736
TLQ43..-1490	1490	1490	888	572	602	602	370	888	4272	3358	1204	64	1036	2892
TLQ43..-1570	1570	1570	936	620	634	634	402	936	4334	3210	1150	64	1036	2892
TLQ43..-1650	1650	1650	984	668	666	666	434	984	4389	3072	1102	64	1036	2892
TLQ43..-1730	1730	1730	1032	716	698	698	466	1032	4438	2948	1056	64	1036	2892
TLQ43..-1810	1810	1810	1080	764	730	730	498	1080	4483	2832	1014	64	1036	2892
TLQ43..-1890	1890	1890	1128	812	762	762	530	1128	4524	2726	976	64	1036	2892
TLQ43..-1970	1970	1970	1176	860	794	794	562	1176	4561	2626	940	64	1036	2892
Slider type			Length 610 e 690 type 3Rol from Length 770 type 4Rol			All sliders type 3Rol			Tab.10					

* The value Mx refers to a single rail

> Roller telescopic slides TLN series

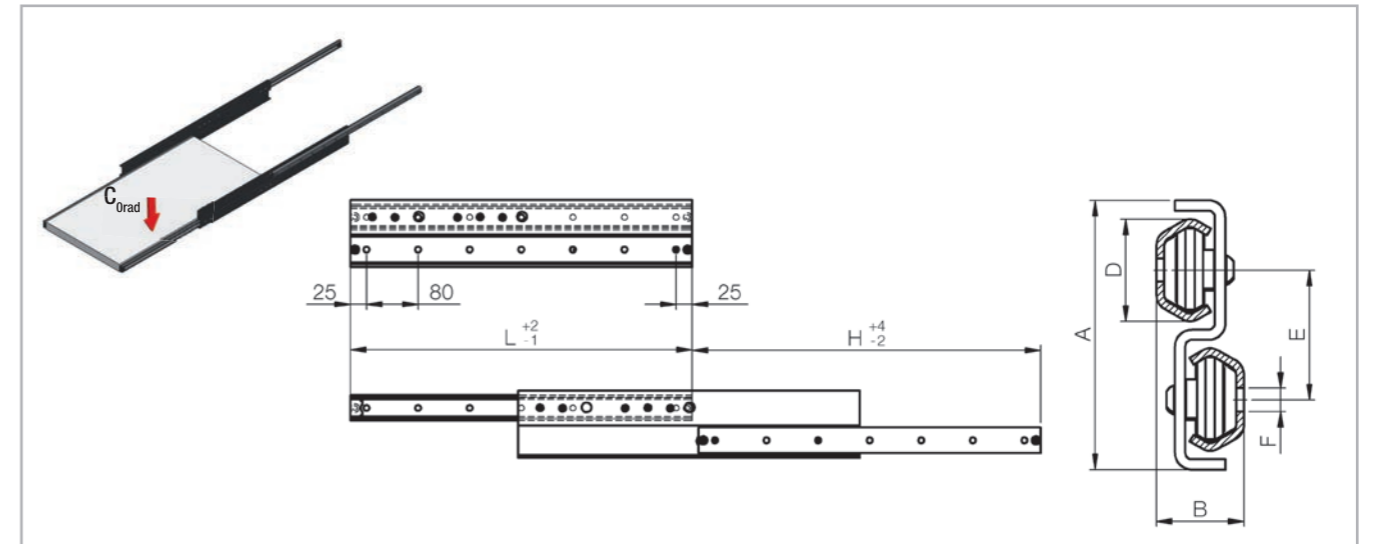
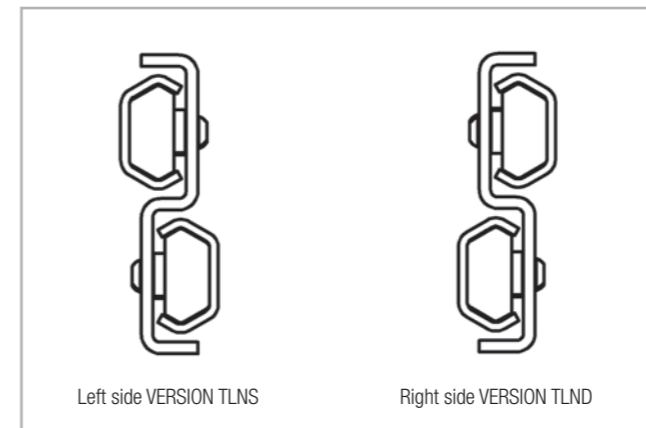


Fig. 33



Code	A (mm)	B (mm)	D (mm)	E (mm)	F (mm)	Fixing screw
TLN.30	76	23,9	29,5	37	∅ 6,5	KIT-40.VC-SP01.0510.ZB M5 ISO7380
TLN.40	104	33,8	39,5	50	∅ 9	KIT-40.VC-SP01.0816.ZB M8 ISO7380

The fixing holes on TLN are through passing holes for standard Button-head screws ISO 7380 or alternatively very Flat-head ROLLON TORX screws 40.VC-SP01

Tab. 11

Fig. 34

Order code	Version	Characteristics
TLND40-1010	BASIC	Roll formed steel rails with patented "ROLLON-NOX" ; nitride hardening and black oxidation treatment. The rails are cut to size after treatment, so the rail ends are protected by protective spray. The rollers are core hardened steel, while the intermediate steel S-element is protected with black epoxy electro coating - "ROLLON e-coating".
TLND40-1010-Q	Q	As a basic TLN product but with additional black "ROLLON e-coating" on the rails, for high corrosion resistance (min 700 hours resistance in salt fog) . The rail has no ROLLON 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.
TLND40-1010-CW	CW o CR	As basic version with colored aesthetic finish ROLLON p-colored CW version (white color) and CR (red color) offer also a high resistance to corrosion. The treatment is deposited over the entire surface of the guides, toexcept for the raceways that are still protected from oxidation by basic black and the lubricating film, and on the intermediate except.

Tab. 12

Code	Length L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Load capacity for a pair of rails Co rad (N)	Weight (kg)	Code	Length L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Load capacity for a pair of rails Co rad (N)	Weight (kg)
TLN.30-290	290	300	369	1086	1,2						
TLN.30-370	370	380	431	1266	1,5						
TLN.30-450	450	460	480	1412	1,8	TLN.30HP-450	450	460	720	2.118	1,9
TLN.30-530	530	540	516	1516	2,2	TLN.30HP-530	530	540	773	2.274	2,2
TLN.30-610	610	620	540	1588	2,5	TLN.30HP-610	610	620	810	2.382	2,5
TLN.30-690	690	700	560	1646	2,8	TLN.30HP-690	690	700	840	2.470	2,8
TLN.30-770	770	780	570	1676	3,1	TLN.30HP-770	770	780	861	2.534	3,1
TLN.30-850	850	860	578	1700	3,4	TLN.30HP-850	850	860	879	2.586	3,4
TLN.30-930	930	940	583	1714	3,7	TLN.30HP-930	930	940	895	2.624	3,7
TLN.30-1010	1010	1020	589	1732	4,0	TLN.30HP-1010	1010	1020	907	2.440	4,0
TLN.30-1090	1090	1100	592	1740	4,3	TLN.30HP-1090	1090	1100	918	2.278	4,3
TLN.30-1170	1170	1180	596	1752	4,6	TLN.30HP-1170	1170	1180	927	2.138	4,6
TLN.30-1250	1250	1260	599	1764	4,9	TLN.30HP-1250	1250	1260	935	2.012	4,9
TLN.30-1330	1330	1340	601	1768	5,2	TLN.30HP-1330	1330	1340	942	1.902	5,2
TLN.30-1410	1410	1420	604	1776	5,5	TLN.30HP-1410	1410	1420	948	1.802	5,6
TLN.30-1490	1490	1500	606	1712	5,8	TLN.30HP-1490	1490	1500	954	1.712	5,9

Tab. 13

Code	Length L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Load capacity for a pair of rails Co rad (N)	Weight (kg)	Code	Length L (mm)	Stroke H (mm)	Dynamic coefficient C (N)	Load capacity for a pair of rails Co rad (N)	Weight (kg)
TLN.40-450	450	460	797	2.344	3,7						
TLN.40-530	530	540	889	2.614	4,3						
TLN.40-610	610	620	959	2.820	4,9	TLN.40HP-610	610	620	1.438	4.230	5,1
TLN.40-690	690	700	1.011	2.974	5,5	TLN.40HP-690	690	700	1.517	4.462	5,7
TLN.40-770	770	780	1.051	3.090	6,1	TLN.40HP-770	770	780	1.576	4.634	6,3
TLN.40-850	850	860	1.084	3.188	6,7	TLN.40HP-850	850	860	1.626	4.782	6,9
TLN.40-930	930	940	1.110	3.264	7,3	TLN.40HP-930	930	940	1.665	4.896	7,5
TLN.40-1010	1010	1020	1.133	3.332	7,9	TLN.40HP-1010	1010	1020	1.700	5.000	8,1
TLN.40-1090	1090	1100	1.153	3.390	8,5	TLN.40HP-1090	1090	1100	1.729	5.086	8,7
TLN.40-1170	1170	1180	1.168	3.436	9,1	TLN.40HP-1170	1170	1180	1.753	5.154	9,2
TLN.40-1250	1250	1260	1.183	3.480	9,7	TLN.40HP-1250	1250	1260	1.775	5.220	9,8
TLN.40-1330	1330	1340	1.195	3.514	10,2	TLN.40HP-1330	1330	1340	1.792	5.200	10,4
TLN.40-1410	1410	1420	1.207	3.548	10,8	TLN.40HP-1410	1410	1420	1.810	4.936	11,0
TLN.40-1490	1490	1500	1.217	3.578	11,4	TLN.40HP-1490	1490	1500	1.825	4.696	11,6
TLN.40-1570	1570	1580	1.225	3.604	12,0	TLN.40HP-1570	1570	1580	1.838	4.478	12,2
TLN.40-1650	1650	1660	1.230	3.620	12,6	TLN.40HP-1650	1650	1660	1.850	4.280	12,8
TLN.40-1730	1730	1740	1.235	3.634	13,2	TLN.40HP-1730	1730	1740	1.860	4.098	13,4
TLN.40-1810	1810	1820	1.238	3.642	13,8	TLN.40HP-1810	1810	1820	1.870	3.932	14,0
TLN.40-1890	1890	1900	1.240	3.648	14,4	TLN.40HP-1890	1890	1900	1.880	3.778	14,6
TLN.40-1970	1970	1980	1.244	3.636	15,0	TLN.40HP-1970	1970	1980	1.888	3.636	15,2

Tab. 14

> Roller telescopic slides TQN series

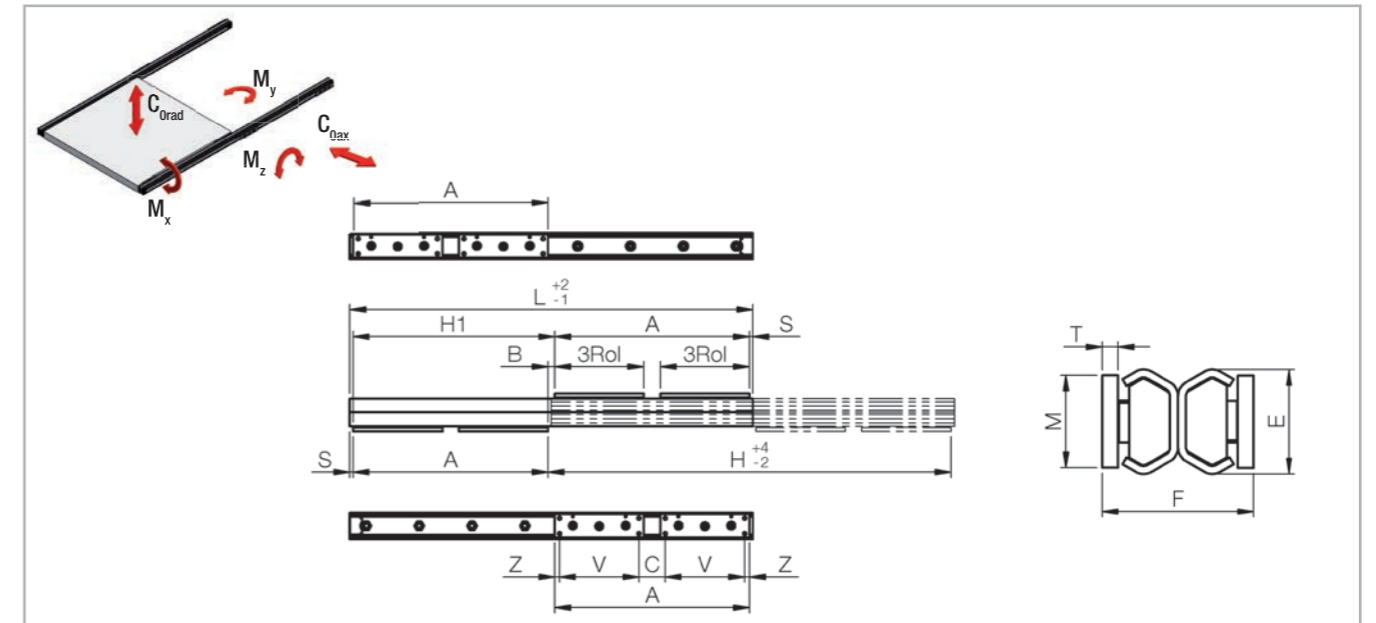


Fig. 35

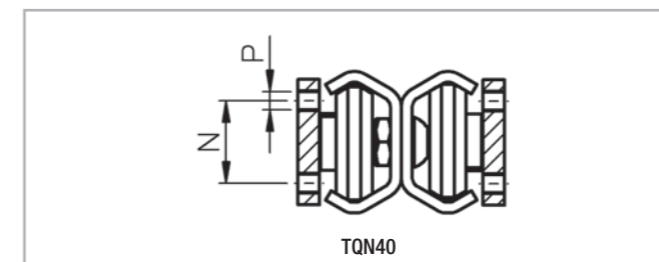


Fig. 36

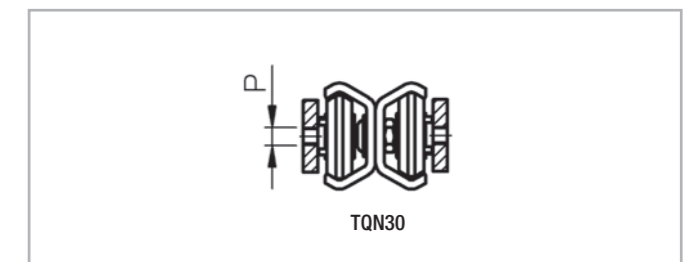


Fig. 37

Code	E (mm)	F (mm)	M (mm)	T (mm)	N (mm)	P (mm)	Sliders		Z (mm)	V (mm)	S (mm)	N° fori	B (mm)	Rail Weight (Kg/m)	Weight 4 sliders (Kg)
							Type	Length L (mm)							
TQN30	29,5	40	20	4	-	M5	3RoL	92	31	30	5	2	10	1,9	0,45
TQN40	39,5	57,3	35	6	23	M6	3RoL	135	7,5	120	5	4	10	3,1	1,5

Tab. 15

Customized stroke

TQN slides offer the unique possibility to easily customize the actual stroke H, to individual needs by the standard products. This obtained simply by repositioning the slider distance "A" for "Fixed sliders" and "Mobile sliders", with different distance than indicated on this page. The concept is that by reducing distances the total stroke increases but the Load capacity decreases, conversely increasing the distances the total stroke is reduced, while the load capacity increases. Contact ROLLON's Technical department for load capacities according to customized stroke. For radial loading the slide must be installed with the mark "Up-side" facing upwards. The sliders fixed to structure are marked "Fix-sliders" while the once fixed to mobile part are marked "Mobile sliders". When used in pairs, the same slide can be installed left or right, just by rotating

the slide, keeping the mark "Up-side" facing upwards for radial loading.

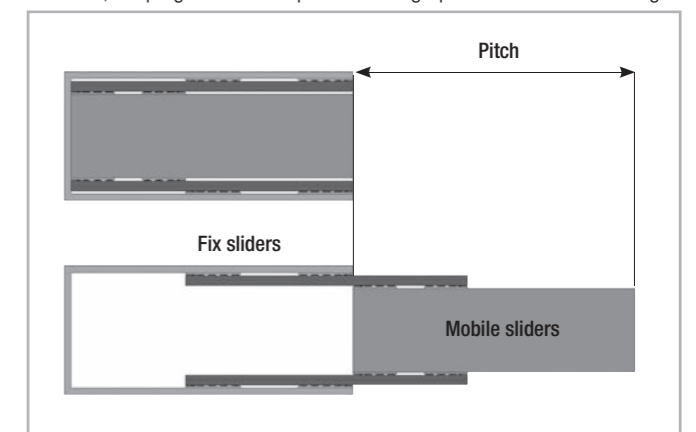


Fig. 38

Order code	Version	Characteristics
TQN40-1010	BASIC	Roll formed steel rails with patented "ROLLON-NOX"; nitride hardening and black oxidation treatment. The rails are cut to size after treatment, so the rail ends are protected by protective spray. The rollers are core hardened steel.
TQN40-1010-Q	Q	As a basic TQN product but with additional black "ROLLON e-coating" on the rails, for high corrosion resistance (min 700 hours resistance in salt fog). The rail has no ROLLON 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.
TQN40-1010-CW	CW o CR	As a Basic version but with rails and intermediate element with additional colored treatment ROLLON c-color. Upon request available PC-version, where rails and intermediate element, except raceways, are with RED or WHITE powder coating, code PCR and PCW.

Tab. 16

Code	L (mm)	H (mm)	Fix & Mobile sliders (mm)			Load capacity and moments for a pair of rails					
			A (mm)	C (mm)	H1 (mm)	Dynamic coefficient C (N)	Co _{rad} (N)	Co _{ax} (N)	M _x * (Nm)	M _y (Nm)	M _z (Nm)
TQN30-450	450	450	215	93	225	419	1234	432	8	174	246
TQN30-530	530	530	255	133	265	463	1362	476	8	228	326
TQN30-610	610	610	295	173	305	494	1324	508	8	228	406
TQN30-690	690	690	335	213	345	517	1190	532	8	228	472
TQN30-770	770	770	375	253	385	535	1080	520	8	228	472
TQN30-850	850	850	415	293	425	550	990	478	8	228	472
TQN30-930	930	930	455	333	465	562	914	440	8	228	472
TQN30-1010	1010	1010	495	373	505	572	848	408	8	228	472
TQN30-1090	1090	1090	535	413	545	580	790	382	8	228	472
TQN30-1170	1170	1170	575	453	585	587	740	358	8	228	472
TQN30-1250	1250	1250	615	493	625	593	696	336	8	228	472
TQN30-1330	1330	1330	655	533	665	599	658	318	8	228	472
TQN30-1410	1410	1410	695	573	705	603	624	300	8	228	472
TQN30-1490	1490	1490	735	613	745	608	592	286	8	228	472
Slider type			All sliders type 3Rol								

Tab. 17

* The value Mx refers to a single rail

Code	L (mm)	H (mm)	Fix & Mobile sliders (mm)			Load capacity and moments for a pair of rails					
			A (mm)	C (mm)	H1 (mm)	Dynamic coefficient C (N)	Co _{rad} (N)	Co _{ax} (N)	M _x * (Nm)	M _y (Nm)	M _z (Nm)
TQN40-610	610	610	295	40	305	405	2382	834	20	562	640
TQN40-690	690	690	335	80	345	440	2592	906	20	562	800
TQN40-770	770	770	375	120	385	468	2516	964	20	562	960
TQN40-850	850	850	415	160	425	490	2314	1008	20	562	1120
TQN40-930	930	930	455	200	465	508	2142	1044	20	562	1152
TQN40-1010	1010	1010	495	240	505	522	1994	972	20	562	1152
TQN40-1090	1090	1090	535	280	545	535	1864	910	20	562	1152
TQN40-1170	1170	1170	575	320	585	545	1750	854	20	562	1152
TQN40-1250	1250	1250	615	360	625	554	1650	806	20	562	1152
TQN40-1330	1330	1330	655	400	665	562	1562	762	20	562	1152
TQN40-1410	1410	1410	695	440	705	569	1480	722	20	562	1152
TQN40-1490	1490	1490	735	480	745	576	1408	686	20	562	1152
TQN40-1570	1570	1570	775	520	785	581	1342	654	20	562	1152
TQN40-1650	1650	1650	815	560	825	586	1282	626	20	562	1152
TQN40-1730	1730	1730	855	600	865	591	1228	600	20	562	1152
TQN40-1810	1810	1810	895	640	905	595	1178	574	20	562	1152
TQN40-1890	1890	1890	935	680	945	599	1132	552	20	562	1152
TQN40-1970	1970	1970	975	720	985	602	1088	532	20	562	1152
Slider type			All sliders type 3Rol								

Tab. 18

* The value Mx refers to a single rail

> Roller telescopic slides TLAX series "INOX"

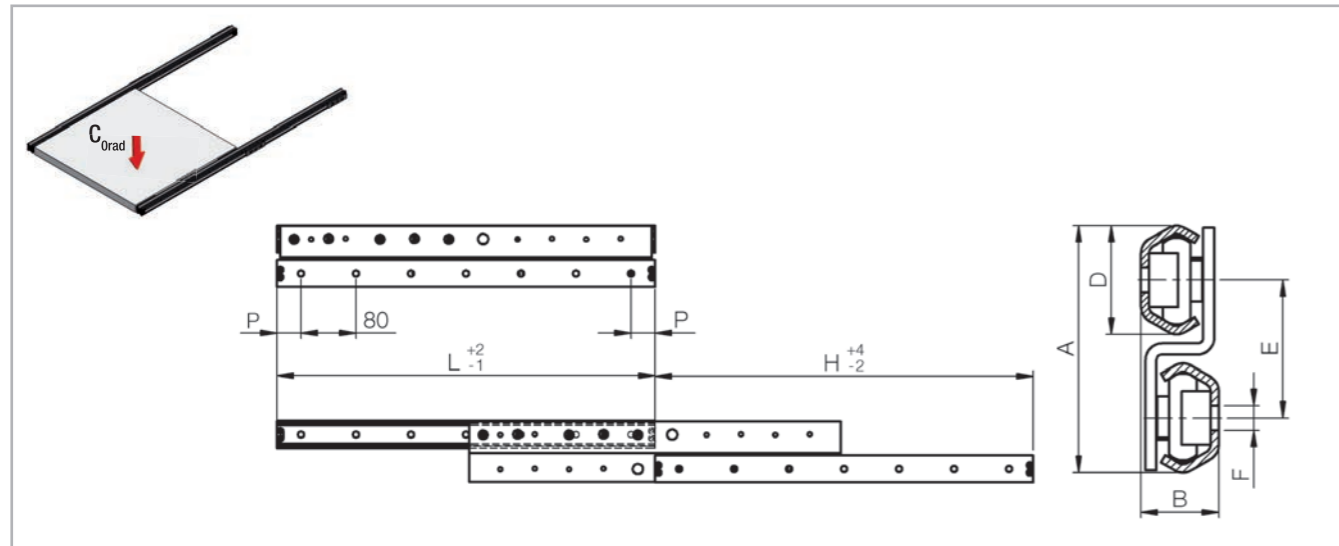


Fig. 39

Code	A (mm)	B (mm)	D (mm)	E (mm)	F (mm)	Type of Fixing screws
TLAX26	65	23	26	35	∅ 6,5	KIT-40.VC-SP01.0510.ZB M5 ISO7380
TLAX40	90	28,3	39,5	50	∅ 9	KIT-40.VC-SP01.0816.ZB M8 ISO7380

Tab. 19

The fixing holes on TLAX are through passing holes for standard Button-head screws ISO 7380 or alternatively very Flat-head ROLLON TORX screws 40.VC-SP01 TLAX must be mounted with upper rail fixed to structure and the movable lower rail fixed to the moving part. When used in pairs the same slide can be used both left and right side on mobile part, just by turning around the slide .

Order code	Version	Characteristics
TLAX40-1000	BASIC	Rails and intermediate S-element in AISI304 . Rollers in hardened AISI440C .
TLAX40-1000-X	X	As Basic version, but rails and intermediate S-element completely Electro-Polished for very high corrosion resistance, 1000hours in salt fog . The Electro Polishing also gives the product a very shiny surface.

Tab. 20

Code	Length L (mm)	Stroke H (mm)	P (mm)	N° of Y-access holes	Load capacity for a pair of rails Co rad (N)	Weight (kg)
TLAX26-300	300	300	30	4	640	1,2
TLAX26-350	350	350	55	4	800	1,4
TLAX26-400	400	400	40	5	914	1,5
TLAX26-450	450	450	25	6	1.000	1,7
TLAX26-500	500	500	50	6	1.066	1,9
TLAX26-550	550	550	35	7	1.120	2,1
TLAX26-600	600	600	20	8	1.164	2,3
TLAX26-650	650	650	45	8	1.200	2,4
TLAX26-700	700	700	30	9	1.230	2,6
TLAX26-750	750	750	55	9	1.258	2,8
TLAX26-800	800	800	40	10	1.280	3
TLAX26-850	850	850	25	11	1.300	3,2
TLAX26-900	900	900	50	11	1.318	3,3
TLAX26-1000	1000	1000	20	13	1.330	3,7
TLAX26-1100	1100	1100	30	14	1.218	4,1
TLAX26-1200	1200	1200	40	15	1.124	4,4

Tab. 21

Code	Length L (mm)	Stroke H (mm)	P (mm)	N° of Y-access holes	Load capacity for a pair of rails Co rad (N)	Weight (kg)
TLAX40-500	500	500	50	6	1.504	3,4
TLAX40-550	550	550	35	7	1.684	3,7
TLAX40-600	600	600	20	8	1.828	4,1
TLAX40-650	650	650	45	8	1.948	4,4
TLAX40-700	700	700	30	9	2.048	4,7
TLAX40-750	750	750	55	9	2.134	5
TLAX40-800	800	800	40	10	2.206	5,3
TLAX40-850	850	850	25	11	2.270	5,7
TLAX40-900	900	900	50	11	2.328	6
TLAX40-1000	1000	1000	20	13	2.422	6,6
TLAX40-1100	1100	1100	30	14	2.316	7,3
TLAX40-1200	1200	1200	40	15	2.144	7,9
TLAX40-1300	1300	1300	50	16	1.996	8,5
TLAX40-1400	1400	1400	20	18	1.868	9,2
TLAX40-1500	1500	1500	30	19	1.754	9,8
TLAX40-1600	1600	1600	40	20	1.654	10,5

Tab. 22

> Roller telescopic slides TQAX series "INOX"

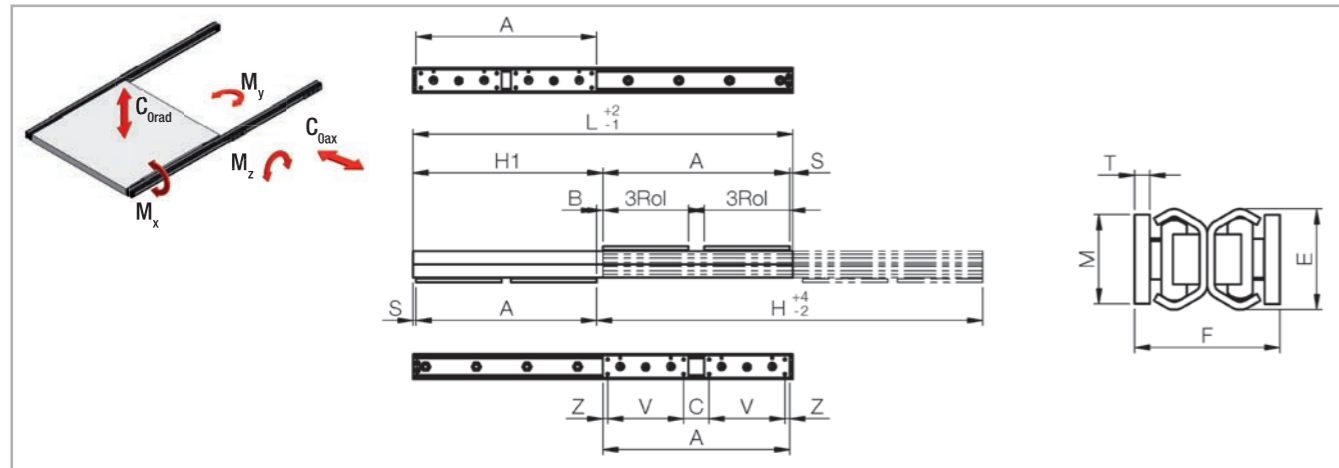


Fig. 40

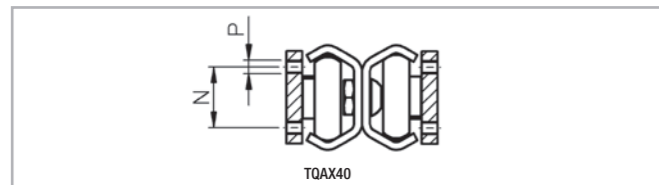


Fig. 41

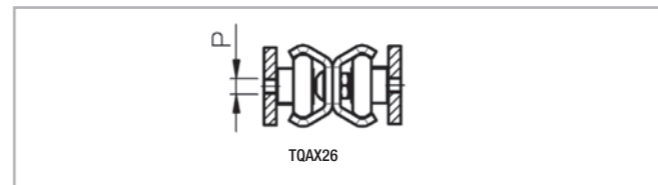


Fig. 42

Code	E (mm)	F (mm)	M (mm)	T (mm)	N (mm)	P (mm)	Sliders		Z (mm)	V (mm)	S (mm)	N° holes	B (mm)	Rail weight (Kg/m)	Weight 4 sliders (Kg)
							Type	Length (mm)							
TQAX26	26	44	25	4	-	M5	3Rol	80	25	30	14	2	28	1,6	0,4
TQAX40	39,5	57,3	35	6	23	M6	3Rol	135	7,5	120	0	4	0	3,1	1,5

Tab. 23

Customized stroke

TQAX slides offer the unique possibility to easily customize the actual stroke H, to individual needs by the standard products. This obtained simply by repositioning the slider distance "A" for "Fixed sliders" and "Mobile sliders", with different distance than indicated on this page. The concept is that by reducing distances the total stroke increases but the Load capacity decreases, conversely increasing the distances the total stroke is reduced, while the load capacity increases. Contact ROLLON's Technical department for load capacities according to customized stroke. For radial loading the slide must be installed with the mark "Up-side" facing upwards. The sliders fixed to structure are marked "Fix-sliders" while the once fixed to mobile part are marked "Mobile sliders". When

used in pairs, the same slide can be installed left or right, just by rotating the slide, keeping the mark "Up-side" facing upwards for radial loading.

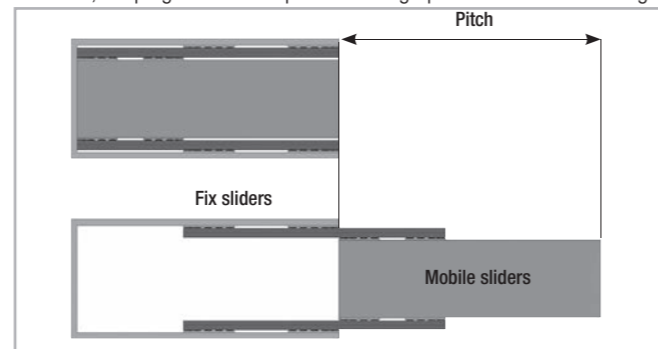


Fig. 43

Order code	Version	Characteristics
TQAX40-1000	BASIC	Roll formed inox rails in AISI304 . Rollers in hardened AISI440C .
TQAX40-1000-X	X	As Basic version, but rails and intermediate S-element completely Electro-Polished for very high corrosion resistance, 1000hours in salt fog. The Electro Polishing also gives the product a very shiny surface.

Tab. 24

Code	L (mm)	H (mm)	Fix & Mobile sliders (mm)			Load capacity and moments for a pair of rails				
			A (mm)	C (mm)	H1 (mm)	Co _{rad} (N)	Co _{ax} (N)	M _x * (Nm)	M _y (Nm)	M _z (Nm)
TQAX26-400	400	400	172	62	200	836	292	6	98	144
TQAX26-450	450	450	197	87	225	932	326	6	124	184
TQAX26-500	500	500	222	112	250	1008	352	6	152	224
TQAX26-550	550	550	247	137	275	956	374	6	170	264
TQAX26-600	600	600	272	162	300	890	390	6	170	304
TQAX26-650	650	650	297	187	325	830	406	6	170	316
TQAX26-700	700	700	322	212	350	780	418	6	170	316
TQAX26-750	750	750	347	237	375	734	394	6	170	316
TQAX26-800	800	800	372	262	400	694	372	6	170	316
TQAX26-850	850	850	397	287	425	658	352	6	170	316
TQAX26-900	900	900	422	312	450	626	334	6	170	316
TQAX26-950	950	950	447	337	475	596	318	6	170	316
TQAX26-1000	1000	1000	472	362	500	568	304	6	170	316
TQAX26-1100	1100	1100	522	412	550	522	280	6	170	316
TQAX26-1200	1200	1200	572	462	600	482	258	6	170	316

Slider type All sliders type 3Rol

Tab. 25

* The value Mx refers to a single rail

Code	L (mm)	H (mm)	Fix & Mobile sliders (mm)			Load capacity and moments for a pair of rails				
			A (mm)	C (mm)	H1 (mm)	Co _{rad} (N)	Co _{ax} (N)	M _x * (Nm)	M _y (Nm)	M _z (Nm)
TQAX40-600	600	600	300	45	300	1978	692	18	468	526
TQAX40-650	650	650	325	70	325	2082	728	18	468	606
TQAX40-700	700	700	350	95	350	2170	760	18	468	686
TQAX40-750	750	750	375	120	375	2168	786	18	468	766
TQAX40-800	800	800	400	145	400	2052	808	18	468	846
TQAX40-850	850	850	425	170	425	1948	828	18	468	926
TQAX40-900	900	900	450	195	450	1854	846	18	468	960
TQAX40-950	950	950	475	220	475	1768	860	18	468	960
TQAX40-1000	1000	1000	500	245	500	1690	824	18	468	960
TQAX40-1100	1100	1100	550	295	550	1554	758	18	468	960
TQAX40-1200	1200	1200	600	345	600	1438	702	18	468	960
TQAX40-1300	1300	1300	650	395	650	1338	652	18	468	960
TQAX40-1400	1400	1400	700	445	700	1250	610	18	468	960
TQAX40-1500	1500	1500	750	495	750	1174	572	18	468	960
TQAX40-1600	1600	1600	800	545	800	1106	540	18	468	960

Slider type All sliders type 3Rol

Tab. 26

* The value Mx refers to a single rail

> Sizing of telescopic applications

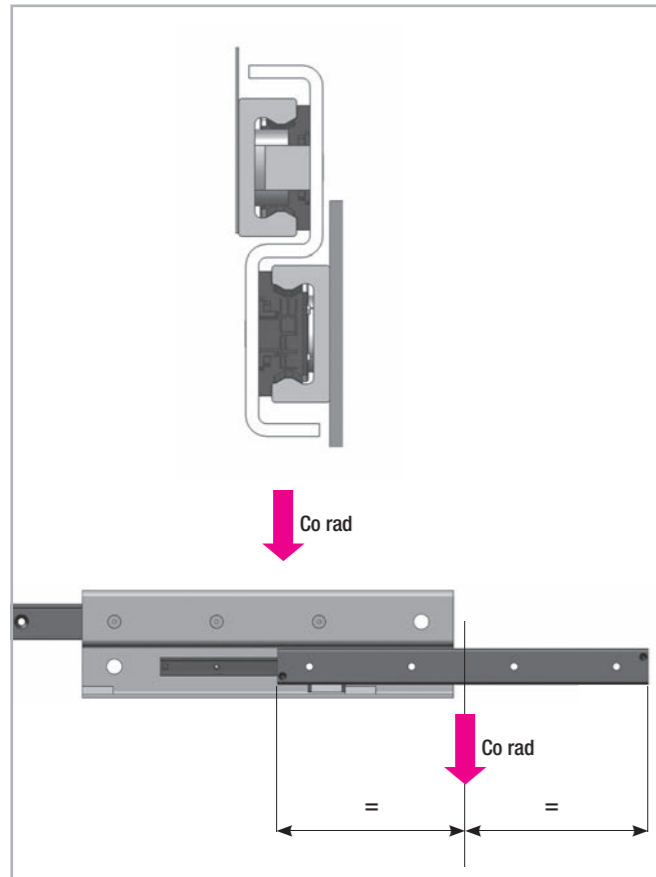


Fig. 44

- The main factors for sizing the slides for a telescopic movement:
- The weight/forces of mobile part and their position compared to slides.
 - Presence of dynamic forces / eventual abuse
 - max. acceptable flexion
 - max. acceptable extraction/closing force of mobile part
 - Ambients, frequency, speed
 - Expected lifetime

All load capacities Co rad, are indicated per pair of slides and with the load perfectly centered. I.e an homogeneous load placed between 2 slides. Hereby the load P is acting as a radial point load, at half the extension and in the middle between the 2 slides. The load capacity for a single is then:

$$P = \frac{Co\ rad}{2}$$

When sizing a telescopic application, it must be carefully evaluated if the load is centered. Also it must be considered if any external dynamic forces, or possible abuse could further increase the load forces acting on the slides.

In case the load isn't centered. i.e. load center Pe1 more towards one of the slides, and/or more towards the tip of the load, the center weighted load must be calculated

= Pe1, to be inserted in formula on next page.

$$Pe1 = \frac{(P \cdot a)}{(a + b)} \cdot fp$$

Where :

P = Weight/load of mobile part

a, b = distances from centered load to left/right slide

fp = load position coefficient, based on relation of "c" distance between actual load P and load Co rad position, compared stroke H.

The coefficient fp is obtained from below diagram. as the ratio between "c/H" .

When only 1 slide the formula is $Pe = P \cdot fp$

Capacity load reduction - According to the position of the load p

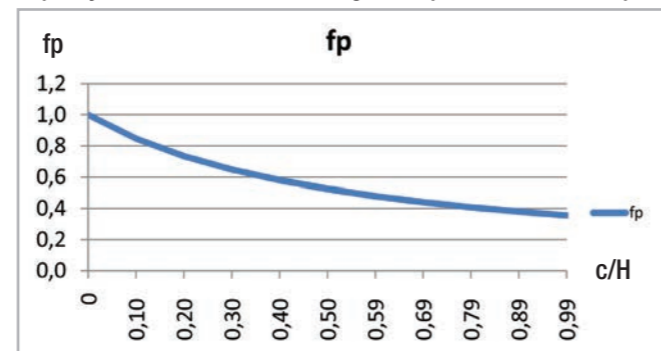


Fig. 46

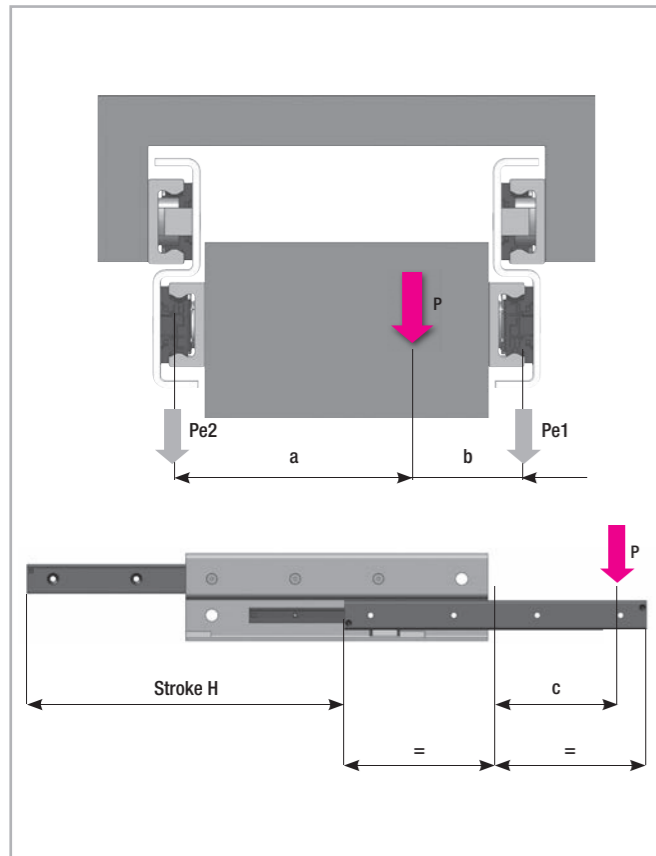


Fig. 45

> Verification of load capacity

To assure a correct selection of the slides according to the slide's load capacity, it is assumed the known different forces acting on the slides, which then must be decomposed in : radial, axial or moment forces. Then again compared to load/moment capacities indicated for each single product in previous pages. For the slides with intermediate element TLR, TLN and TLAX the verification is mainly down to comparing the load capacity Co Rad. to Pe including a safety factor Z.

$$Pe \leq Co\ rad \cdot Z$$

Where Z is the safety coefficient as per below table

Safety coefficient - Z	Application conditions
1-1,5	Precise calculation of load/forces, precise assembly and rigid structures
1,5-2	Intermediate conditions
2-3,5	Roughly estimation of load/forces, not precise and not rigid structures

Tab. 27

> Lifetime calculation

Theoretical lifetime calculation

The theoretical life of the rollers and raceways of rail should be determined by the conventional formula as indicated below in km of running, however, should keep in mind that the value thus calculated must be taken with caution just for orientation, in fact, the real service life achieved can be very different from that calculated value, because the phenomena of wear and fatigue are caused by factors not easy to predetermine, for example:

- Inaccuracy in the estimation of the real loading condition
- Overloading for inaccuracies in assembling
- Vibration, shock and dynamic pulse stress
- Raceways status of lubrication
- Thermal excursions
- Environmental pollution and dust
- Damage mounting
- Stroke length and frequency of movement

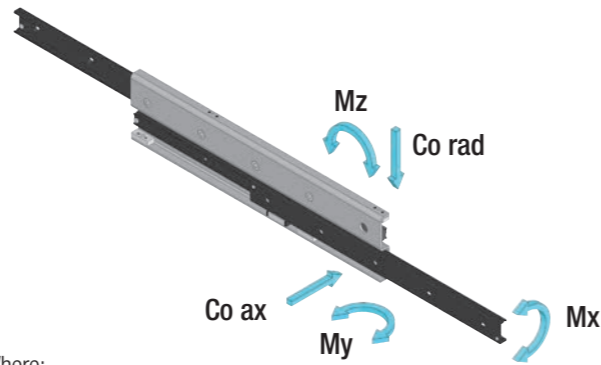
$$L_{cy} = 50 \cdot \left(\frac{C}{P} \cdot \frac{1}{f_i} \right)^3 \cdot \frac{1}{H} \cdot 10^6$$

Where:

- L_{cy} = N° of cycles open/close
- C = Dynamic load coefficient
- P = Weight/load of single rail (N)
- H = Stroke (mm)
- f_i = Coefficient taking into account operational ambient and level of correct lubrication

The correction factor f_i applied to the theoretical calculation formula have the sole purpose of guiding the designer qualitatively on the influence in the lifetime estimation of the real application conditions without any pretense of precision. For more details please contact Rollon's technical department.

The slides TLAX and TQAX is expected to reach approx. 100.000 cycles, with a load of 70% of max load capacity.



Where:

- Pe rad = applied radial load
- Pe ax = applied axial load
- Mex, Mey, Mez = applied moments
- Co rad = radial load capacity
- Co ax = axial load capacity
- Mx, My, Mz = moment capacities

For full telescopic slides TLQ, TQN and TQAX, the calculation might also includes moments.

$$\left(\frac{Pe \text{ ax}}{Co \text{ ax}} + \frac{Pe \text{ rad}}{Co \text{ rad}} + \frac{Mex}{Mx} + \frac{Mey}{My} + \frac{Mez}{Mz} \right) \leq \frac{1}{Z}$$

Coefficient fi	Operating conditions
1-1.5	Correct load sizing, rigid structures, constant good lubrication, clean ambient
1.5-2	Intermediate conditions
2-3.5	Approximative load sizing, unprecise non rigid structures, dusty not clear ambient.

Tab. 28

The actual lifetime very much depends on constant good lubrication of the raceways. Without good constant lubrication and/or in very dusty ambients the actual lifetime expectations can be much reduced.

Calculation of load P to be used for lifetime calculation

The load P to be used in below formular is referred to single slide, with load in the centre. If used in pair, load on each single slide must be calculated.

The slides TLQ, TQN might include moments Mex, Mey and Mez, in addition to radial and axial loads. The formula in case of moments is:

$$Pe = Co \text{ rad} \cdot \left(\frac{Pe \text{ rad}}{Co \text{ rad}} + \frac{Pe \text{ ax}}{Co \text{ ax}} + \frac{Mex}{Mx} + \frac{Mey}{My} + \frac{Mez}{Mz} \right)$$

Notes

Large grid area for notes.



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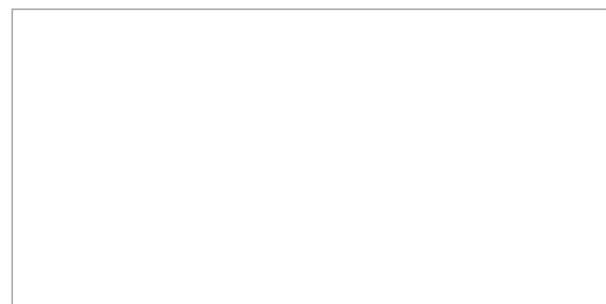
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