ROLLON®
BY TIMKEN

Telerace

NEW

TO SUPPORT YOU, WE DESIGN AND PRODUCE

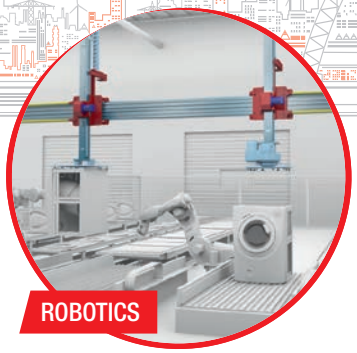
An industrialized process with various levels of customization

For over 40 years, Rollon has adopted an approach entailing responsibility and ethics in the design and production of our linear motion solutions for different industrial sectors. The reliability of an international technology group has now been combined with the availability of a local support and service network

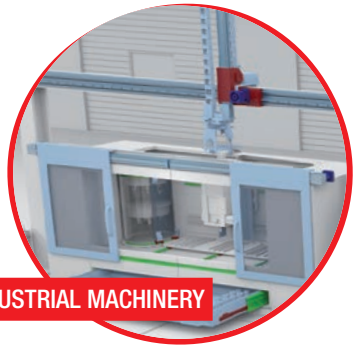
VALUES

PERFORMANCE

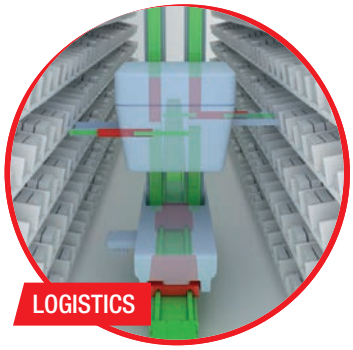
Rollon's goal is to help our clients become more competitive in their markets through technological solutions, design simplification, productivity, reliability, duration, and low maintenance.



ROBOTICS



INDUSTRIAL MACHINERY



LOGISTICS

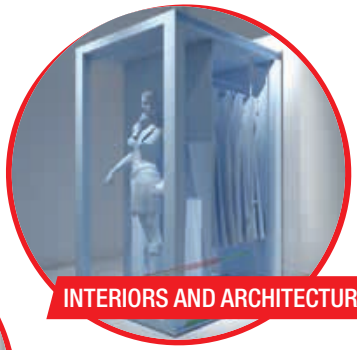
RAILWAY

COLLABORATION

High-level technical consulting and cross-competence allow us to identify the needs of our clients and transform them into guidelines for continuous exchange, while**our strong specialization in the different industrial sectors becomes an factor in developing projects and innovative applications.**

Rollon takes on the task of design and development of linear motion solutions, taking care of everything for our customers, so that they can concentrate on their core business. **We offer everything from individual components to specifically designed, mechanically integrated systems: the quality of our applications is an expression of our technology and competence.**

SOLUTIONS APPLICATIONS



INTERIORS AND ARCHITECTURE

MEDICAL

SPECIAL VEHICLES

AERONAUTICS

DIVERSIFIED LINEAR SOLUTIONS FOR EVERY APPLICATION REQUIREMENT

Linear and telescopic rails

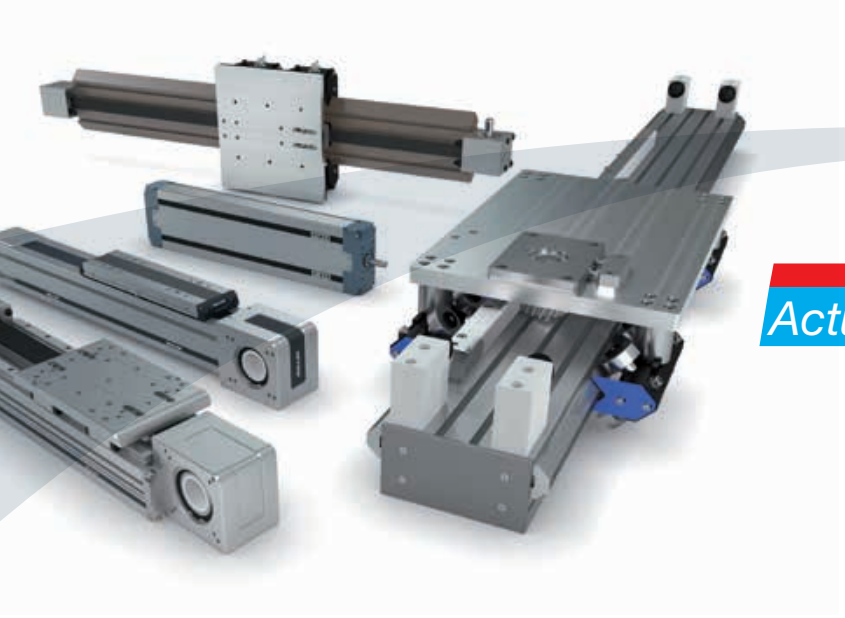
Linear Line

Linear and curved rails with ball and roller bearings, with hardened raceways, high load capacity, self-alignment, and capable of working in dirty environments.

Telescopic Line

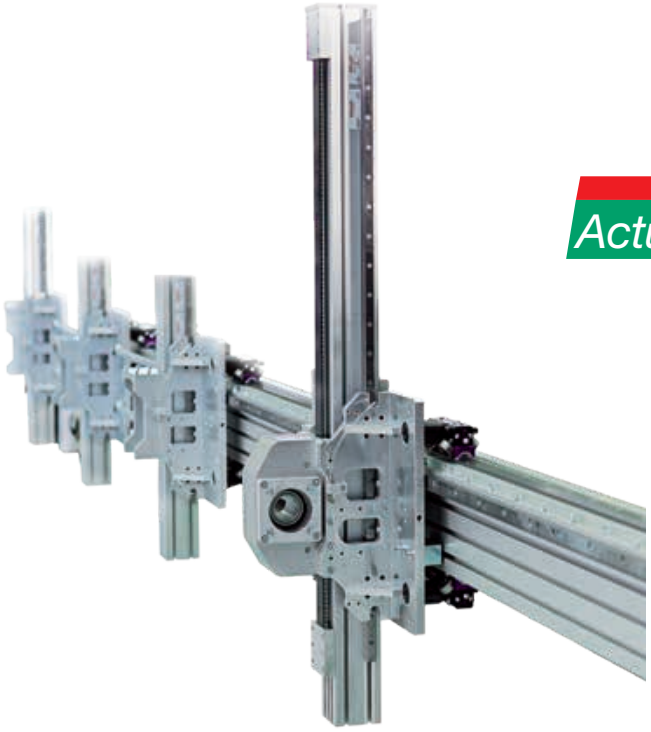
Telescopic rails with ball and roller bearings, with hardened raceways, high load capacities, low bending, resistant to shocks and vibrations. For partial, total or extended extraction up to 200% of the length of the guide.

Linear actuators and automation systems



Actuator Line

Linear actuators with different rail configurations and transmissions, available with belt, screw, or rack and pinion drives for different needs in terms of precision and speed. Rails with bearings or ball recycle systems for different load capacities and critical environments.



Actuator System Line

Integrated actuators for industrial automation, used in applications in several industrial sectors: automated industrial machinery, precision assembly lines, packaging lines and high speed production lines. The Actuator Line evolves to satisfy the requests of our most discerning clients.

Telerace

Technical features overview

Reference				Product name	Extraction	Size	Profile		Self alignment	Slider		
Product Family		Product	Section				Type	Rollon NOX hardening*1		Balls	Rollers	Steel
Telerace		TLR...P PLUS		TLR18P	100%	18	Cold Draw	■	+++		■	■
				TLR28P		28						
				TLR43P		43						
		TLQ...P PLUS		TLQ18P	80% A 120%	18	Cold Draw	■	+		■	■
				TLQ28P		28						
				TLQ43P		43						
		TLN...P		TLN30P	100%	30	Rolled Sheetmetal	■	+		■	■
				TLN40P		40						
		TQN...P		TQN30P	80% A 120%	30	Rolled Sheetmetal	■	+		■	■
				TQN40P		40						
		TLAX		TLAX26	100%	26	Rolled Sheetmetal		+		■	
				TLAX40		40						
		TQAX		TQAX26	80% A 120%	26	Rolled Sheetmetal		+		■	
				TQAX40		40						

Reported data must be verified according to the application.
*1 High dept nitride hardening treatment and oxidation.
*2 The maximum value is defined by the application. For more information, please contact our technical department.

■ standard

steel
X stainless steel
A aluminum

B stroke in both directions
BM stroke in both directions with driving disc

Reference				Product name	Extraction	Size	Profile		Self alignment	Slider		
Product Family		Product	Section				Type	Hardened raceways		Balls	Rollers	Steel
Light Rail		LRS		LRS 37	70%	37	Roll forming		++	■		■
		LFS		LFS46	100%	46	Roll forming		++	■		■
		LRS		LRS56	100%	56	Roll forming		++	■		■
				LRS71		71						
				LRS76		76						

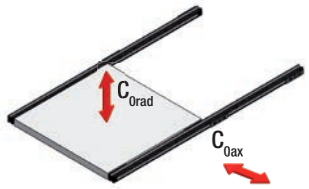
Reported data must be verified according to the application.
* The maximum value is defined by the application. For more information, please contact our technical department.

■ standard

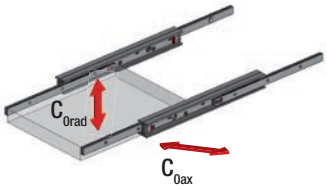
steel
X stainless steel
A aluminum

B stroke in both directions
BM stroke in both directions with driving disc

Material		Stroke direction		Suitable for variable stroke cycles	Suitable for vertical stroke	Damping closed position	Max. load capacity per pair [N]		Max. rail length [mm]	Max. stroke [mm]	Max. extension speed*2 [m/s]	Rigidity (deflection)	Operating temperature [°C]
X	A	B	BM				C_{0rad}	C_{0ax}					
				■		■	1361	-	770	770	1.0	++++	-20 °C/+110 °C
							3455	-	1490	1500			
							8326	-	1970	1980			
				■	■	■	863	379	770	770	1.0	+++	-20 °C/+110 °C
							2146	820	1490	1490			
							5357	2359	1970	1970			
		■		■		■	2540	-	1490	1500	1.0	++++	-20 °C/+80 °C
							5094	-	1970	1980			
		■		■	■	■	1190	521	1490	1490	1.0	+++	-20 °C/+80 °C
							2251	1327	1970	1970			
■				■		■	1329	-	1200	1200	1.0	++++	-20 °C/+80 °C
							2133	-	1600	1600			
■				■	■	■	869	405	1200	1200	1.0	+++	-20 °C/+80 °C
							1880	855	1600	1600			



Material		Stroke direction		Snap closed position	Locking	Damping closed position	Max. load capacity per pair [N]		Max. rail length [mm]	Max. stroke [mm]	Max. extension speed* [m/s]	Rigidity (deflec-tion)	Operating tempera-ture [°C]
X	A	B	BM				C_{0rad}	C_{0ax}					
				■		■	780	-	700	541	0.5	+	-20°C - +80°C
						■	400	-	600	610	0.5	+	+10 °C/+40 °C
				■		■	1290	-	1100	1100	0.5	+	-20°C - +80°C
				■			2120	-	1100	1100			
						■	3250	-	1500	1504			



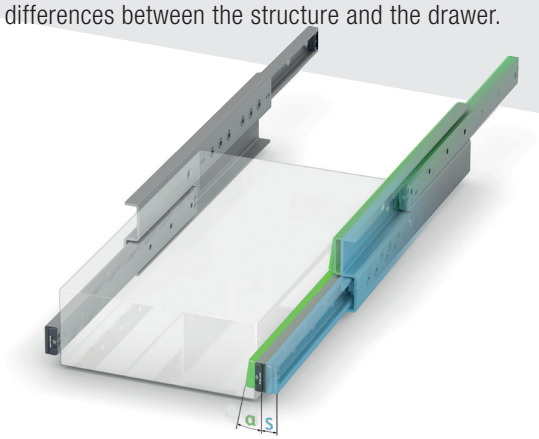
New Telerace PLUS

Telescopic rail with double row ball bearings.
It simplifies and improves automations: **7 main advantages.**

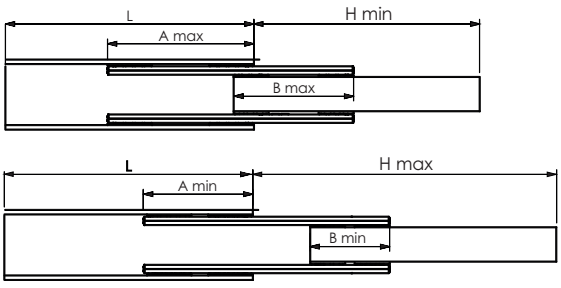
1

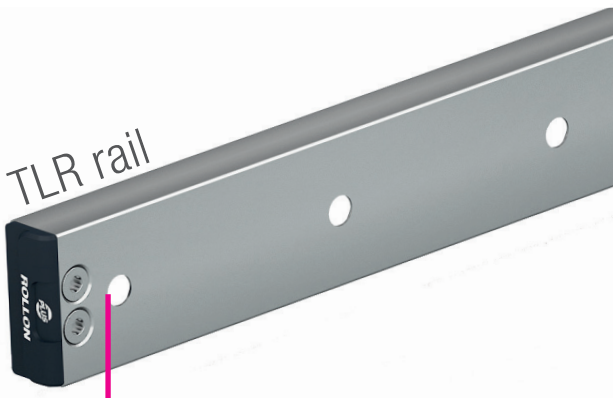
Unique features: self-alignment and stroke customization

TLR: self-aligning version compensates dimensional differences between the structure and the drawer.



TLQ: Easy set the stroke length required by adjusting the distance of the sliders in the rail.





2

Ideal for automation

The use of ball bearings and robust end-stoppers allows to handle high dynamics and reduce cycle times.

3

Reliable vertical and variable stroke

The absence of the ball cage allows to perform automated vertical and variable strokes.

4

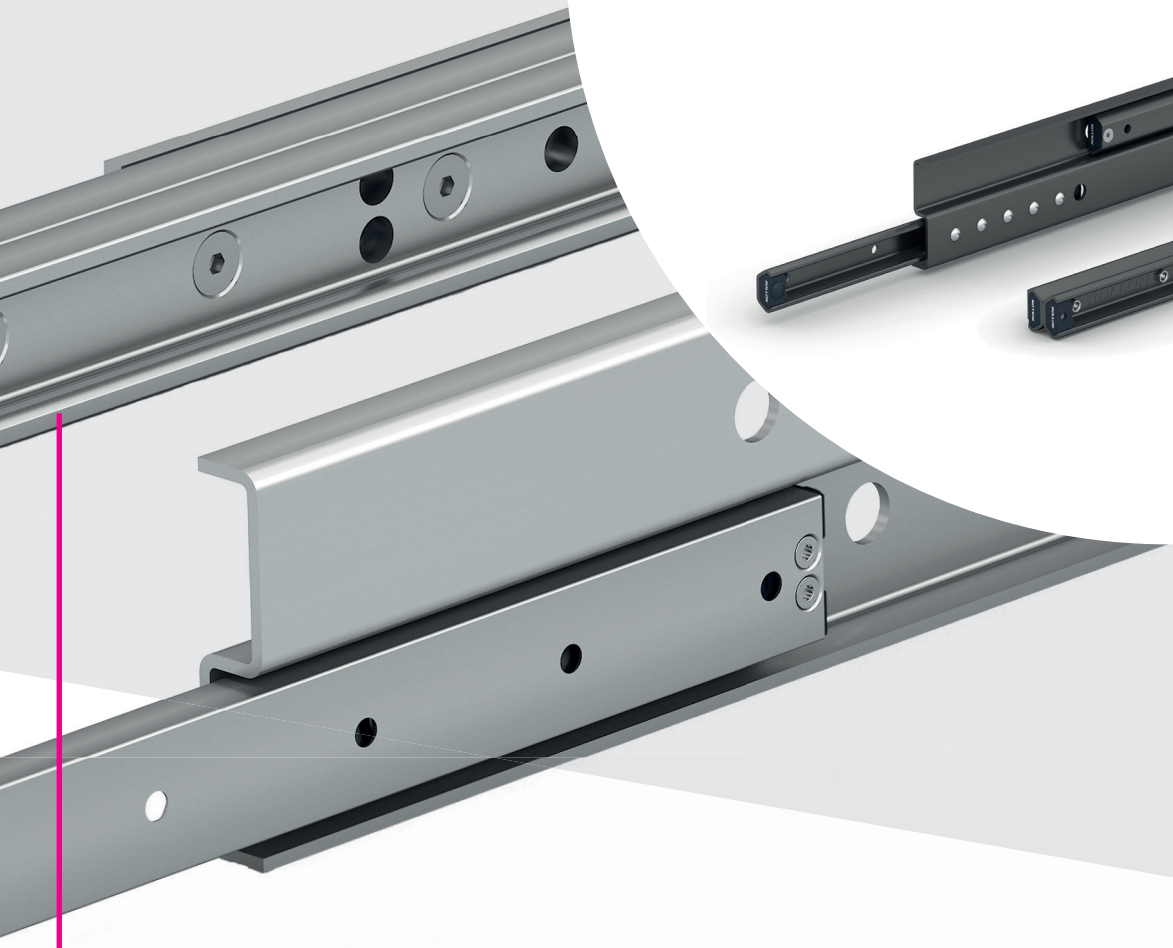
Low opening and closing force

Low deflection with sturdy profiles.

Ground raceways for a smooth and silent movement with low friction.

A full range of telescopic rails for your automations

Also available with single row ball bearings and rolled steel profiles hardened with Rollon-Nox treatment or made of stainless steel.



5

Optimal reliability in dirty environments

Large rolling elements make Telerace less sensitive to dirt and debris.

End-stoppers feature wipers with slow release felts for an optimal cleaning and constant lubrication of the raceways.

6

Long lifetime

Different hardening treatments according to the rail type and size.

- **Induction hardening:** hardened raceways with 1.2 mm effective depth and hardness between 58 and 62 HRC.
- **Rollon-Nox hardening:** treatment of deep nitriding and black oxidation.

7

Resistant to corrosion

Different surface treatments make Telerace reliable in harsh environments.

- **Indoor applications:** Zinc-plating ISO 2081.
- **Corrosive environments (humidity):** ZincNickel-plating ISO19598.
- **Corrosive environments (acidic or basic):** nickel-plating.

Product explanation

Telescopic rails with rollers designed for industrial automations.

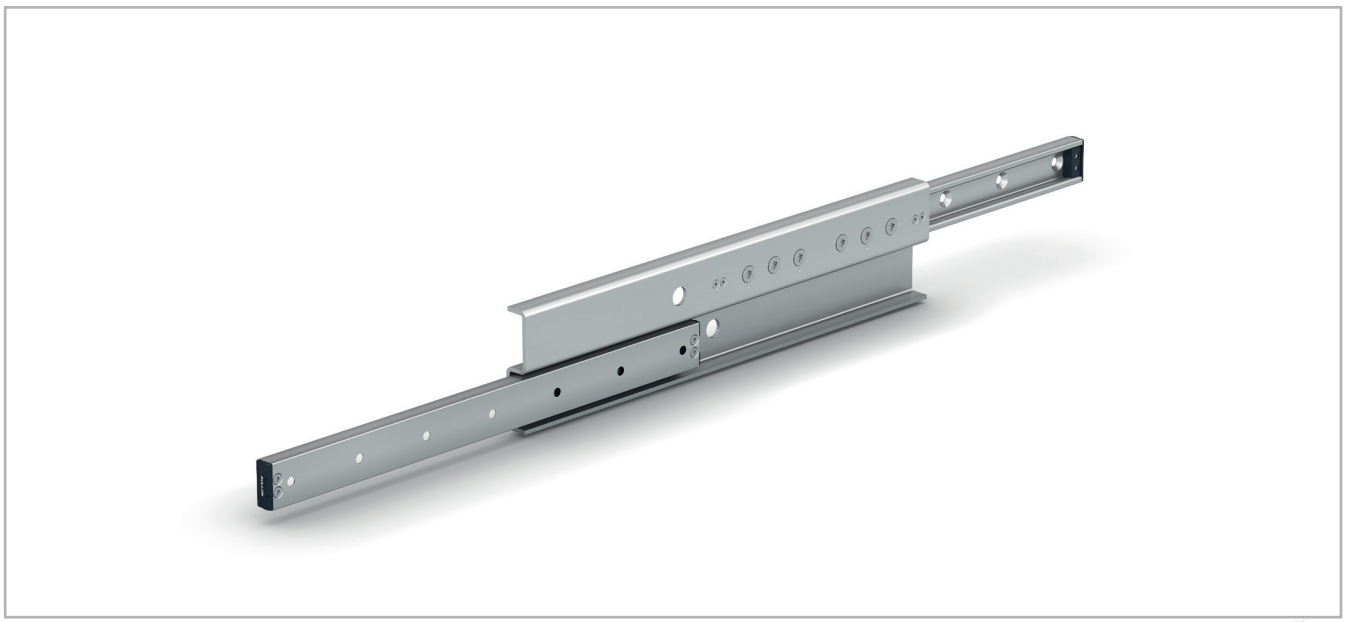


Fig. 1

Telerace family is composed of telescopic rails with ball bearings. These rolling elements make the product less sensitive to high dynamics or shifting working cycles that are typical for automation. Telerace rails are therefore ideal for automated applications where high number of cycles, long service requirements and low maintenance are essentials. In addition, the absence of the ball cage contributes to make Telerace the ideal choice for vertical or variable stroke applications and whenever the rail must function in presence of dirt and debris.

The rails come in six series. It is possible to choose between double row and single row ball bearings, different geometries, sizes and materials to perfectly fit the project and improve the productivity to various kinds of telescopic applications. Each series is designed and equipped to meet specific requirements not only in terms of loads, lifetime and environment but also regarding project simplification and modularity of the solution.

The listed load capacities are per pair of rails, with the load centered. In case the load is not centered, the load capacity is reduced.

The most important characteristics:

- Compensation of minor misaligment errors (TLR...AP)
- Customizable stroke/load capacity ratio (TLQ...P, TQN...P, TQAX).
- Ideal in dirty environments due to large rolling elements
- Ideal for automated applications, vertical and variable stroke
- Different anticorrosion treatments available
- High load capacity
- High operating speeds
- Wide temperature range

Preferred areas of application:

- Automation
- Material handling
- Industrial machines
- Medical technology
- Packaging machines
- Construction and machine technology (doors, protective covers)
- Robots and manipulators

TLR...P PLUS

Fully extending telescopic rails with double row ball bearings and rigid S-shaped intermediate element. They feature high load capacity, low deflection in extended state and a smooth motion without clearance. A special self-aligning version is available for compensating minor misalignments of the structure. Size 18 is hardened with Rollon-Nox nitriding and oxidation process that provides it with a fine black color. Size 28 and 43 have induction hardened and fine ground raceways with different anticorrosion treatments available.

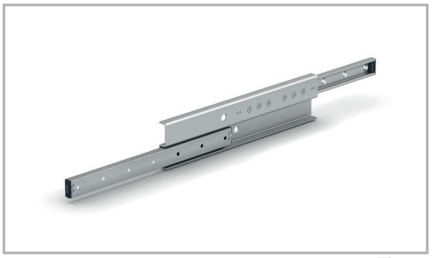


Fig. 2

TLQ...P PLUS

Telescopic rails with double row ball bearings and compact square cross-section. This combination allows high axial and radial load capacity with low overall dimensions and weight, making them particularly suitable for vertical applications. It is possible to customize the stroke/load capacity ratio by adjusting the distance between the sliders in the rail.
Size 18 is hardened with Rollon-Nox nitriding and oxidation process that provides it with a fine black color. Size 28 and 43 have induction hardened and fine ground raceways with different anticorrosion treatments available.

Fig. 3

TLN...P

Fully extending telescopic rails with single row ball bearings and rigid S-shaped intermediate element. They are designed to achieve smooth movement, high load capacity and low deflection while maintaining a cost-effective structure.
They are hardened with Rollon-Nox nitriding and black oxidation process.

Fig. 4

TQN...P

Telescopic rails with single row ball bearings and compact square cross section. They are particularly suitable for vertical applications and designed to achieve smooth movement, high load capacity and low deflection while maintaining a cost-effective structure. It is possible to customize the stroke/load capacity ratio by adjusting the distance between the sliders in the rail.
They are hardened with Rollon-Nox nitriding and black oxidation process.

Fig. 5

TLAX

Telescopic rails made of stainless steel AISI 304 with AISI 440 hardened steel rollers with 2RS seals and lubricated for life with grease for longevity and low temperature applications. They are ideal for pharmaceutical, chemical, medical industries or marine environment. For very severe environmental conditions, they can be supplied in electro-polished version for a further improved corrosion resistance.

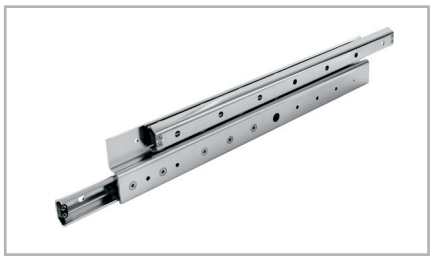


Fig. 6

TQAX

Compact telescopic rails made of stainless steel AISI 304 with AISI 440 hardened steel rollers with 2RS seals and lubricated for life with grease for longevity and low temperature applications. They are particularly suitable for vertical applications and pharmaceutical, chemical, medical industries or marine enviroment. It is possible to customize the stroke/load capacity ratio by adjusting the distance between the sliders in the rail. For very severe environmental conditions, they can be supplied in electro-polished version for a further improved corrosion resistance.

Fig. 7

Rollers

TLR...P and TLQ...P telescopic rails feature double row ball bearings to provide high load capacities in both radial and axial direction and are equipped with splash-proof plastic seal (2RS). The rollers have two contact points on each raceway, creating a well constrained movement in both radial and axial direction. The self-aligning version TLR...AP features a combination of guiding and floating rollers. The floating rollers are constrained radially but allowed to float in the axial direction between the two shoulders and to rotate a little.

Fig. 8

TLN...P, TLQ...P, TLAX and TQAX telescopic rails feature single row ball bearings made of hardened steel or stainless steel and lubricated for life.

Fig. 9

Overview product cross sections

TLR...P-TLQ...P series PLUS

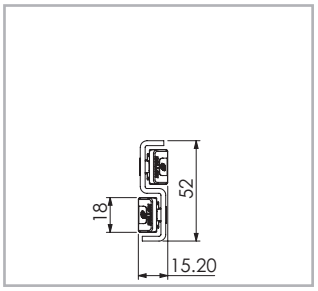


Fig. 10

TLR18P...R - TLR18P...L
Load capacity p. TL-8

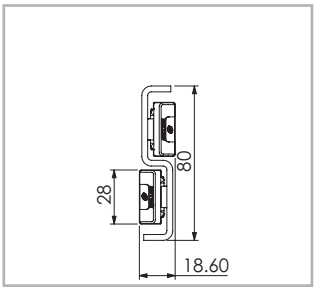


Fig. 11

TLR28P...R - TLR28P...L
Load capacity p. TL-8

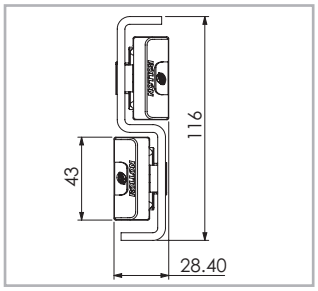


Fig. 12

TLR43P...R - TLR43P...L
Load capacity p. TL-9

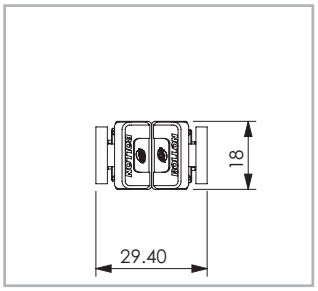


Fig. 13

TLQ18P...
Load capacity p. TL-10

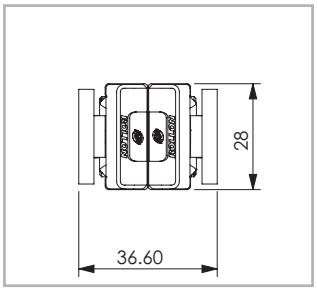


Fig. 14

TLQ28P...
Load capacity p. TL-10

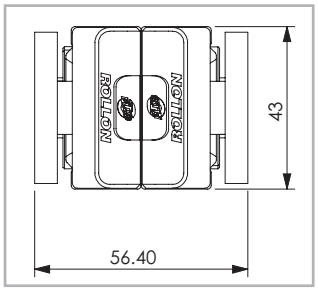


Fig. 15

TLQ43P...
Load capacity p. TL-11

TLN...P - TQN...P series

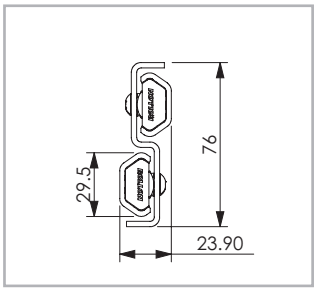


Fig. 16

TLN30P...R - TLN30P...L
Load capacity p. TL-12

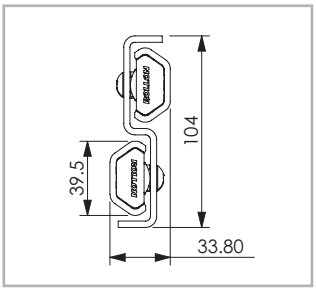


Fig. 17

TLN40P...R - TLN40P...L
Load capacity p. TL-13

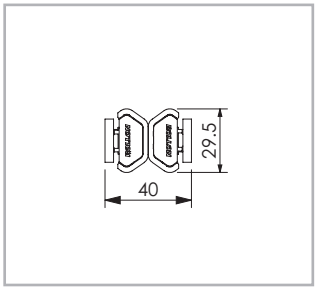


Fig. 18

TQN30P...
Load capacity p. TL-14

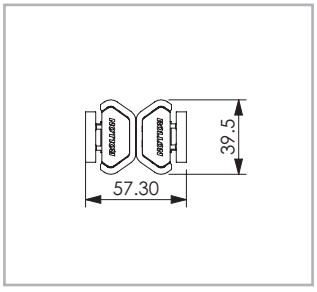


Fig. 19

TQN40P...
Load capacity p. TL-15

TLAX-TQAX series

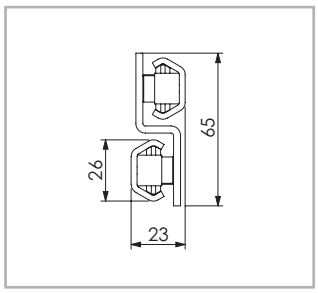


Fig. 20

TLAX26...
Load capacity p. TL-16

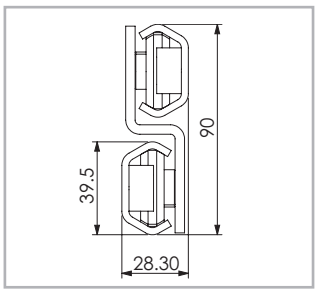


Fig. 21

TLAX40...
Load capacity p. TL-17

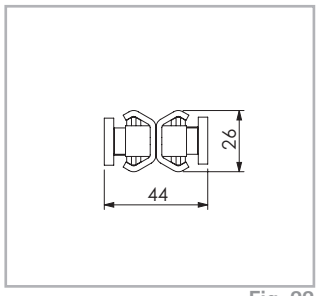


Fig. 22

TQAX26...
Load capacity p. TL-18

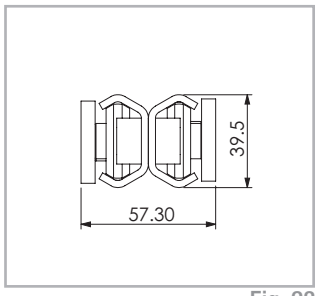


Fig. 23

TQAX40...
Load capacity p. TL-19

Technical data

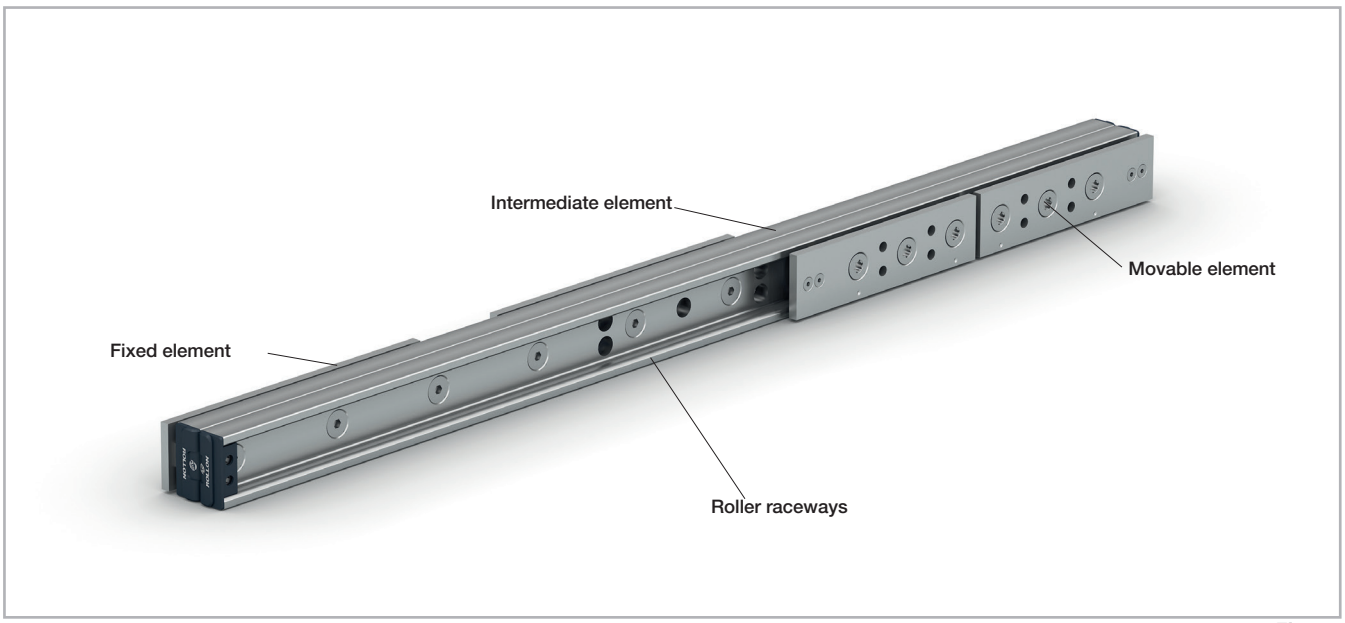


Fig. 24

Performance characteristics:

TLR...P and TLQ...P PLUS

- Available sizes: 18, 28, 43
- Max. operating speed: 1 m/s (depending on application and stroke)
- Max. operating temperature: -20° C to + 110° C (-4° F to 230° F).
- Rail material: cold-drawn carbon steel CF53 (size 28-43), cold-drawn carbon steel 20MnCr5 (size 18) Fe P02G for intermediate element.
- Surface treatment: zinc-plated ISO 2081 with induction hardened and ground raceways (size 28-43), hardened with Rollon-Nox treatment (size 18)
- Rollers material: steel 100Cr6 (also available stainless steel AISI 440)
- Roller seal/shield: 2RS (splash-proof)

TLN...P and TQN...P

- Available sizes: 30, 40
- Max. operating speed: 1 m/s (depending on application and stroke)
- Max. operating temperature: -20° C to + 80° C (-4° F to 176° F)
- Rail material: S420MC for rails, Fe P02 for TLN...P intermediate element, S235JRG2 for TLQ...P sliders
- Surface treatment: hardened with Rollon-Nox process
- Rollers material: carbon steel with 2Z shield (dust cover seal)

TLAX and TQAX

- Available sizes: 26,40
- Max. operating speed: 1 m/s (depending on application and stroke)
- Max. operating temperature:-20 °C to +80 °C (-4° F to 176° F)
- Rail material: stainless steel AISI 304
- Rollers material: stainless steel AISI 440 with 2RS shield (splashproof seal)

Remarks

- All load capacity data are based on a pair of telescopic rails, except the value Mx of TLQ...P, TQN...P and TQAX series.
- All load capacity data is based on continuous operation
- Internal stops are used to stop the unloaded slider and the rollers. Please use external stops as end stops for a loaded system
- TLR...P, TLN...P and TLAX must be mounted with upper rail fixed to structure and the lower rail fixed to the moving part.
- Custom strokes on request.
- For TLR...P, TLN...P series please observe right or left side use.
- Fixing screws of property class 10.9 must be used for all telescopic rails.

Dimensions and load capacity

TLR...P PLUS

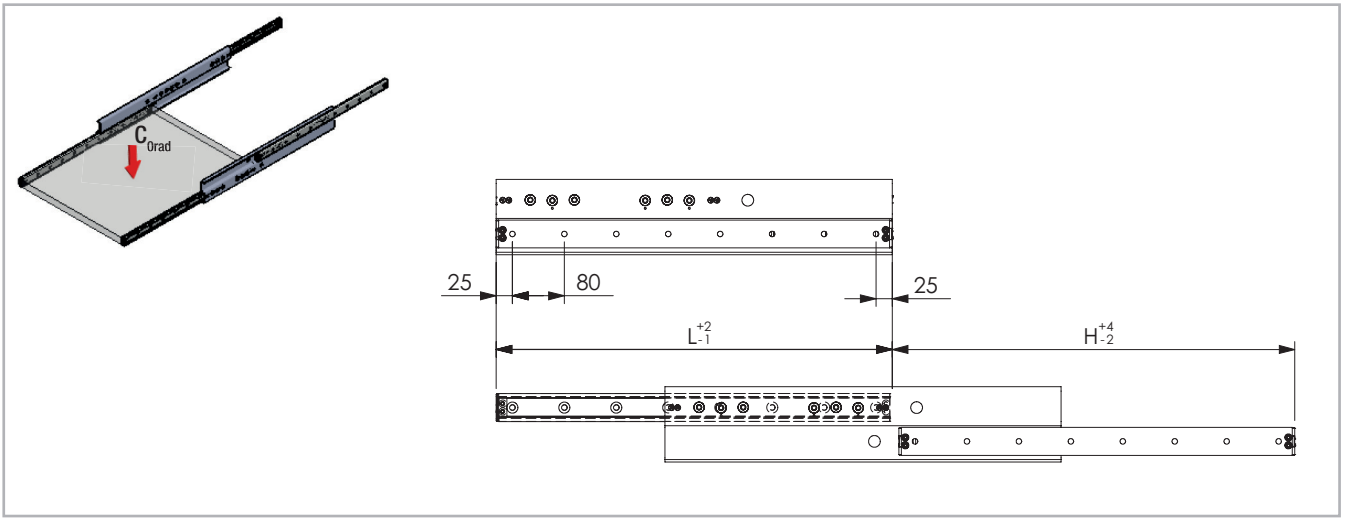


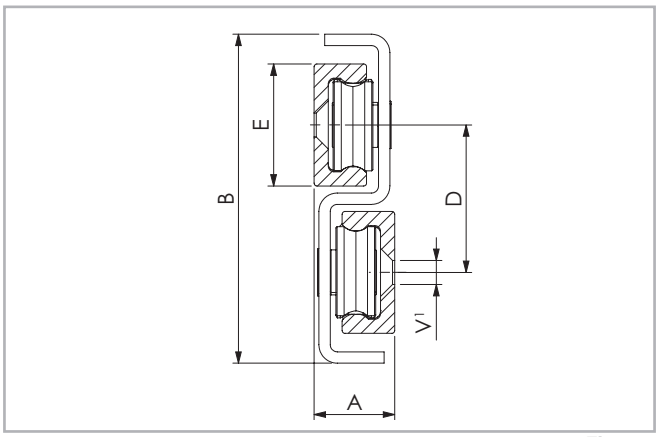
Fig. 25

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		N° of holes	Weight [Kg]
				Dynamic load coefficient C [N]	C_{0rad} [N]		
TLR...P	18	290	290	1510	732	3	0.9
		370	370	2001	970	4	1.2
		450	450	2291	1111	5	1.4
		530	530	2485	1205	6	1.6
		610	610	2623	1272	7	1.9
		690	690	2727	1322	8	2.1
		770	770	2808	1361	9	2.3
	28	370	380	1288	695	4	2.1
		450	460	3401	1835	5	2.5
		530	540	3893	2101	6	2.9
		610	620	5490	2963	7	3.3
		690	700	5981	3227	8	3.7
		770	780	6215	3354	9	4.1
		850	860	6403	3455	10	4.5
		930	940	6556	3267	11	4.9
		1010	1020	6684	3041	12	5.3
		1090	1100	6792	2844	13	5.7
		1170	1180	6885	2672	14	6.1
		1250	1260	6965	2519	15	6.5
		1330	1340	7035	2382	16	6.9
		1410	1420	7097	2260	17	7.3
		1490	1500	7152	2149	18	7.7

Tab. 1

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		N° of holes	Weight [Kg]
				Dynamic load coefficient C [N]	C_{0rad} [N]		
TLR...P	43	530	540	3891	2205	6	6.4
		610	620	7501	4251	7	7.3
		690	700	9725	4805	8	8.2
		770	780	10497	5949	9	9.1
		850	860	13428	7256	10	10.0
		930	940	14266	8085	11	10.9
		1010	1020	14691	8326	12	11.8
		1090	1100	15050	8040	13	12.7
		1170	1180	15356	7568	14	13.6
		1250	1260	15621	7148	15	14.5
		1330	1340	15852	6773	16	15.4
		1410	1420	16055	6435	17	16.3
		1490	1500	16235	6129	18	17.2
		1570	1580	16397	5851	19	18.1
		1650	1660	16541	5597	20	19.0
		1730	1740	16672	5364	21	19.9
		1810	1820	16791	5150	22	20.8
		1890	1900	16899	4952	23	21.7
		1970	1980	16998	4769	24	22.6

Tab. 2



[1] Fixing holes (V) for countersunk head screw according to DIN 7991

Fig. 26

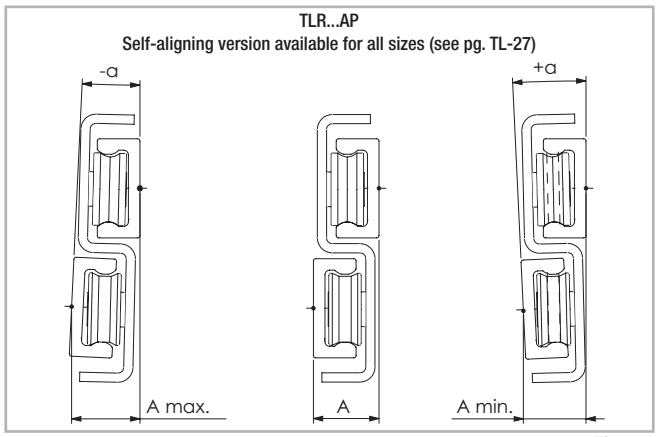


Fig. 27

Type	Size	A [mm]	B [mm]	E [mm]	D [mm]	V
TLR...P	18	15.2	52	18	25	M4
	28	18.6	80	28	35	M5
	43	28.4	116	43	52	M8

Rails are available in left and right version:
TLR...P...L left version
TLR...P...R right version

Tab. 3

Type	Size	A min [mm]	A max [mm]	α
TLR...AP	18	14.7	15.7	±1.8°
	28	17.2	19	±1.8°
	43	26.8	30	±2.7°

Tab. 4

TLQ...P PLUS

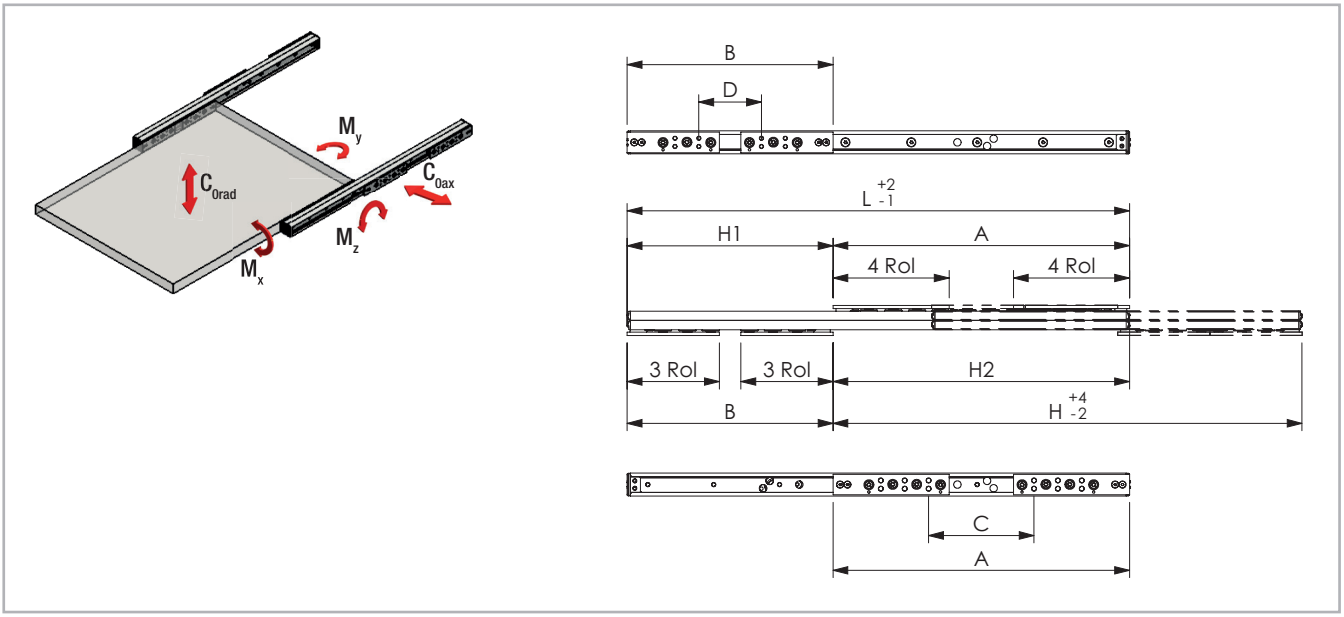


Fig. 28

Type	Size	L [mm]	H [mm]	Fixed sliders*3			Mobile sliders*2			Load capacity and moments for a pair of rails					
				A [mm]	C [mm]	H1 [mm]	B [mm]	D [mm]	H2 [mm]	Dynamic load coefficient C [N]	C_{0rad} [N]	C_{0ax} [N]	M_x*1 [Nm]	M_y [Nm]	M_z [Nm]
TLQ...P	18	370	370	185	47	185	185	47	185	1009	447	282	6	88	110
		450	450	270	132	180	180	42	270	1619	863	379	6	81	102
		530	530	318	180	212	212	74	318	1770	771	332	6	107	153
		610	610	366	228	244	244	106	366	1878	687	296	6	107	204
		690	690	414	276	276	276	138	414	1959	618	266	6	107	250
		770	770	462	324	308	308	170	462	2021	563	242	6	107	250
	28	450	450	227	53	223	223	49	227	1794	882	519	18	187	250
		530	530	307	133	223	223	49	307	2693	1536	778	18	187	250
		610	610	360	128	250	250	76	360	2799	2146	820	18	238	317
		690	690	408	176	282	282	108	408	3030	1940	742	18	310	419
		770	770	456	224	314	314	140	456	3207	1770	677	18	310	522
		850	850	504	272	346	346	172	504	3347	1628	622	18	310	624
		930	930	552	320	378	378	204	552	3460	1507	576	18	310	726
		1010	1010	600	368	410	410	236	600	3553	1403	536	18	310	810
		1090	1090	648	416	442	442	268	648	3631	1312	501	18	310	810
		1170	1170	696	464	474	474	300	696	3698	1232	471	18	310	810
		1250	1250	744	512	506	506	332	744	3755	1161	444	18	310	810
		1330	1330	792	560	538	538	364	792	3805	1098	420	18	310	810
		1410	1410	840	608	570	570	396	840	3849	1042	398	18	310	810
		1490	1490	888	656	602	602	428	888	3888	991	379	18	310	810

Tab. 5

*1 The value Mx refers to a single rail
*2 All mobile sliders are 3 rollers type
*3 For size 18 all fixed sliders are 3 rollers type. For size 28 lengths 450-530mm fixed sliders are 3 rollers type, for longer lengths are 4 rollers type

Type	Size	L [mm]	H [mm]	Fixed sliders*3			Mobile sliders*2			Load capacity and moments for a pair of rails					
				A [mm]	C [mm]	H1 [mm]	B [mm]	D [mm]	H2 [mm]	Dynamic load coefficient C [N]	C_{0rad} [N]	C_{0ax} [N]	M_x*1 [Nm]	M_y [Nm]	M_z [Nm]
TLQ...P	43	610	600	310	78	300	310	78	300	2206	1786	1829	64	690	920
		690	690	374	142	316	316	84	374	2914	2359	2359	64	1044	1008
		770	770	456	140	314	314	82	456	6218	5034	2084	64	1044	944
		850	850	504	188	346	346	114	504	6708	5357	1930	64	1044	1200
		930	930	552	236	378	378	146	552	7103	4988	1797	64	1044	1456
		1010	1010	600	284	410	410	178	600	7428	4667	1681	64	1044	1712
		1090	1090	648	332	442	442	210	648	7701	4384	1579	64	1044	1968
		1170	1170	696	380	474	474	242	696	7932	4134	1489	64	1044	2224
		1250	1250	744	428	506	506	274	744	8131	3911	1409	64	1044	2480
		1330	1330	792	476	538	538	306	792	8304	3711	1337	64	1044	2736
		1410	1410	840	524	570	570	338	840	8456	3530	1272	64	1044	2898
		1490	1490	888	572	602	602	370	888	8590	3366	1213	64	1044	2898
		1570	1570	936	620	634	634	402	936	8710	3216	1159	64	1044	2898
		1650	1650	984	668	666	666	434	984	8817	3080	1109	64	1044	2898
		1730	1730	1032	716	698	698	466	1032	8914	2954	1064	64	1044	2898
		1810	1810	1080	764	730	730	498	1080	9001	2838	1023	64	1044	2898
		1890	1890	1128	812	762	762	530	1128	9081	2731	984	64	1044	2898
		1970	1970	1176	860	794	794	562	1176	9154	2632	948	64	1044	2898

*1 The value Mx refers to a single rail
*2 All mobile sliders are 3 rollers type
*3 For lengths 610-690mm fixed sliders are 3 rollers type, for longer lengths are 4 rollers type

Tab. 6

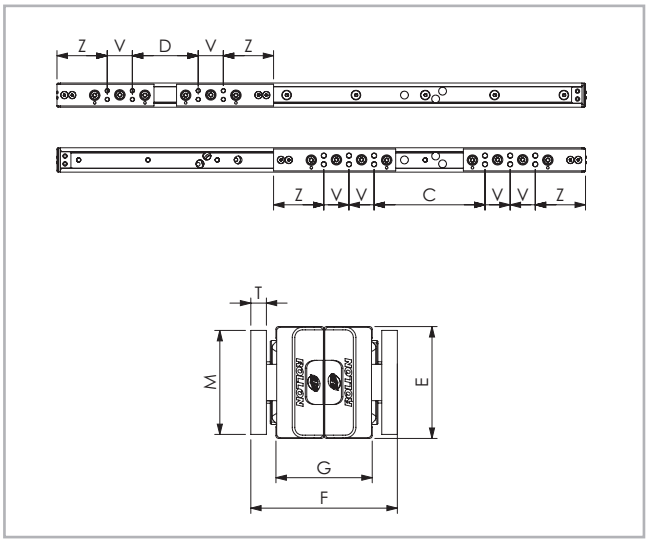
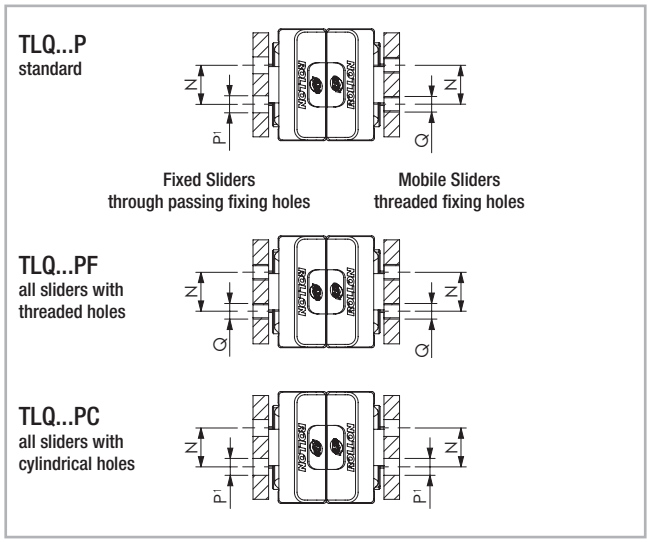


Fig. 29



[1] Fixing holes (P) for fixing screw according to DIN 912.

Fig. 30

Type	Size	E [mm]	F [mm]	G [mm]	M [mm]	T [mm]	N [mm]	P [mm]	Q	Sliders		Z [mm]	V [mm]	Weight [kg/m]	Weight 4 sliders [Kg]
										Num. of rollers	Length [mm]				
TLQ...P	18	18	29.4	19	15	3	8	-	M4	3	87	48	21	1.4	0.4
	28	28	36.6	23.9	25	4	10	Ø5.5	M5	3	111.5	58	29	2.5	1.5
										4	140.5				
	43	43	56.4	36	40	6	15	Ø6.5	M6	3	155	74	42	6	2.4
										4	197				

Three options for fixing holes available (see fig. 30). Rail size 18 is only available in F version with all threaded holes.
When used in pairs, the same rail can be installed left or right just by rotating it. See "Installation Instructions" on pg. TL-29.

Tab. 7

TLN...P

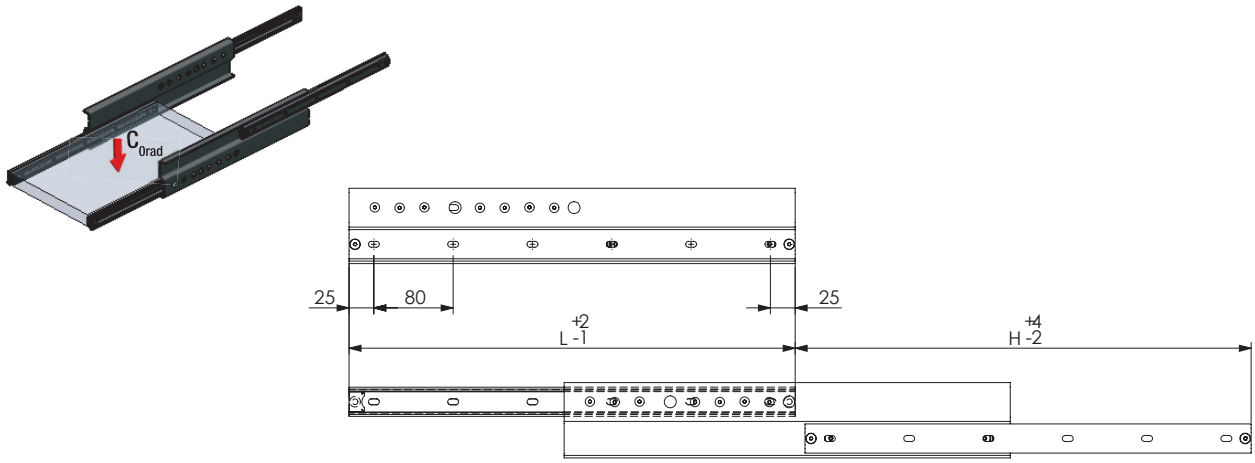


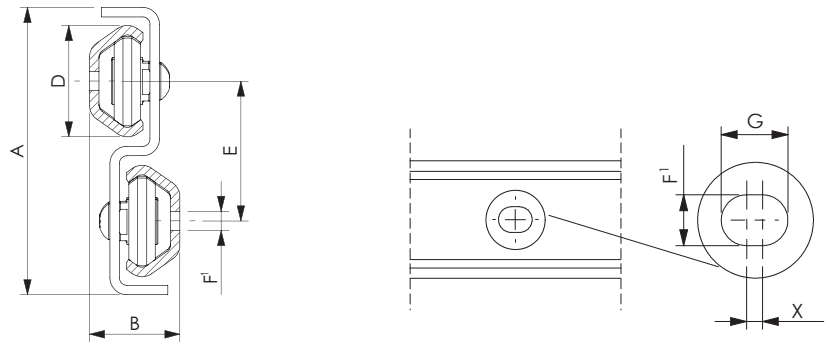
Fig. 31

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		N° of holes	Weight [Kg]
				Dynamic load coefficient C [N]	C_{0rad} [N]		
TLN...P	30	450	460	1287	1843	6	1.9
		530	540	1421	2090	7	2.2
		610	620	1517	2231	8	2.5
		690	700	1589	2337	9	2.8
		770	780	1645	2420	10	3.1
		850	860	1690	2486	11	3.4
		930	940	1727	2540	12	3.7
		1010	1020	1758	2439	13	4.0
		1090	1100	1784	2278	14	4.3
		1170	1180	1807	2137	15	4.6
		1250	1260	1826	2013	16	4.9
		1330	1340	1843	1902	17	5.2
		1410	1420	1858	1802	18	5.6
		1490	1500	1871	1713	19	5.9

Tab. 8

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		N° of holes	Weight [Kg]
				Dynamic load coefficient C [N]	C_{0rad} [N]		
TLN...P	40	610	620	2549	3633	8	5.1
		690	700	2754	4050	9	5.7
		770	780	2913	4284	10	6.3
		850	860	3040	4470	11	6.9
		930	940	3143	4622	12	7.5
		1010	1020	3229	4748	13	8.1
		1090	1100	3301	4855	14	8.7
		1170	1180	3363	4946	15	9.2
		1250	1260	3417	5025	16	9.8
		1330	1340	3464	5094	17	10.4
		1410	1420	3505	4936	18	11.0
		1490	1500	3542	4696	19	11.6
		1570	1580	3575	4478	20	12.2
		1650	1660	3604	4280	21	12.8
		1730	1740	3631	4098	22	13.4
		1810	1820	3655	3932	23	14.0
		1890	1900	3677	3778	24	14.6
		1970	1980	3698	3636	25	15.2

Tab. 9



[1] Fixing holes (F) are through passing holes for standard button-head screws ISO 7380. Alternatively, very flat-head Rollon Torx screws can be used.

Fig. 32

Type	Size	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]	G [mm]	X [mm]	Fixing screw
TLN...P	30	76	23.9	29.5	37	6	11	5	M5 ISO7380
	40	104	33.8	39.5	50	9	13	4	M8 ISO7380

Tab. 10

Rails are available in left and right version:
TLN...P...L left version
TLN...P...R right version

TQN...P

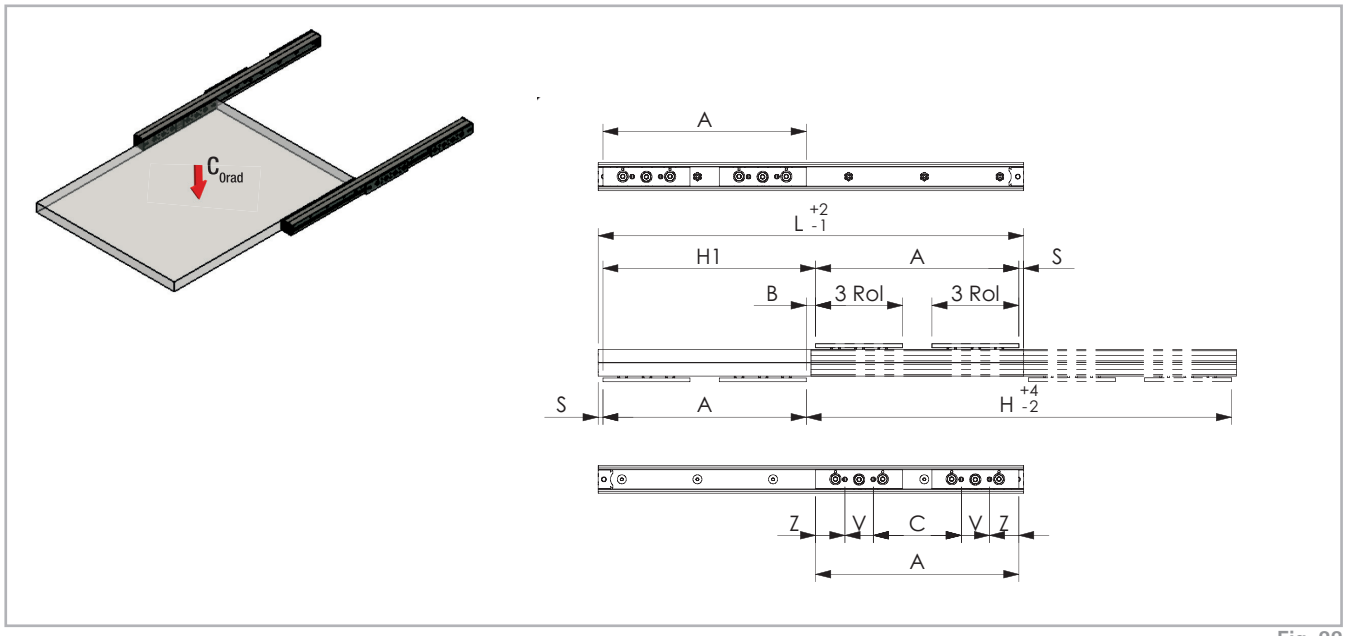


Fig. 33

Type	Size	L [mm]	H [mm]	Fixed & Mobile sliders*2			Load capacity and moments for a pair of rails					
				A [mm]	C [mm]	H1 [mm]	Dynamic load coefficient C [N]	C_{0rad} [N]	C_{0ax} [N]	M_x* [Nm]	M_y [Nm]	M_z [Nm]
TQN...P	30	450	450	215	93	225	606	891	371	8	174	246
		530	530	255	133	265	702	1032	430	8	228	326
		610	610	295	173	305	776	1140	472	8	228	406
		690	690	335	213	345	835	1190	503	8	228	472
		770	770	375	253	385	883	1081	521	8	228	472
		850	850	415	293	425	923	990	477	8	228	472
		930	930	455	333	465	957	913	440	8	228	472
		1010	1010	495	373	505	986	847	409	8	228	472
		1090	1090	535	413	545	1011	790	381	8	228	472
		1170	1170	575	453	585	1033	741	357	8	228	472
		1250	1250	615	493	625	1052	697	336	8	228	472
		1330	1330	655	533	665	1069	658	317	8	228	472
		1410	1410	695	573	705	1085	623	300	8	228	472
		1490	1490	735	613	745	1099	592	285	8	228	472

* The value Mx refers to a single rail
*2 All sliders are 3 rollers type

Tab. 11

Type	Size	L [mm]	H [mm]	Fixed & Mobile sliders*2			Load capacity and moments for a pair of rails					
				A [mm]	C [mm]	H1 [mm]	Dynamic load coefficient C [N]	C_{0rad} [N]	C_{0ax} [N]	M_x* [Nm]	M_y [Nm]	M_z [Nm]
TQN...P	40	610	610	295	40	305	1619	1695	1220	20	562	640
		690	690	335	80	345	1762	1916	1327	20	562	800
		770	770	375	120	385	1872	2098	1228	20	562	960
		850	850	415	160	425	1959	2251	1129	20	562	1120
		930	930	455	200	465	2030	2142	1045	20	562	1152
		1010	1010	495	240	505	2089	1994	972	20	562	1152
		1090	1090	535	280	545	2139	1864	909	20	562	1152
		1170	1170	575	320	585	2181	1751	854	20	562	1152
		1250	1250	615	360	625	2218	1651	805	20	562	1152
		1330	1330	655	400	665	2250	1561	761	20	562	1152
		1410	1410	695	440	705	2278	1481	722	20	562	1152
		1490	1490	735	480	745	2303	1408	687	20	562	1152
		1570	1570	775	520	785	2325	1343	655	20	562	1152
		1650	1650	815	560	825	2345	1283	626	20	562	1152
		1730	1730	855	600	865	2363	1228	599	20	562	1152
		1810	1810	895	640	905	2380	1178	575	20	562	1152
		1890	1890	935	680	945	2394	1131	552	20	562	1152
		1970	1970	975	720	985	2408	1089	531	20	562	1152

* The value Mx refers to a single rail
*2 All sliders are 3 rollers type

Tab. 12

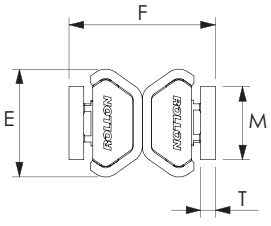
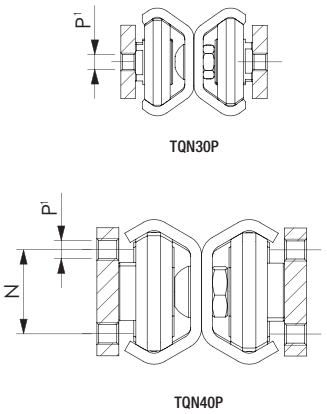


Fig. 34



[1] Fixing holes (P) are threaded holes.

Fig. 35

Type	Size	E [mm]	F [mm]	M [mm]	T [mm]	N [mm]	P	Sliders		Z [mm]	V [mm]	S [mm]	Num. of holes	B [mm]	Rail Weight [kg/m]	Weight 4 sliders [Kg]
								Num. of rollers	Length [mm]							
TQN...P	30	29.5	40	20	4	-	M5	3	92	31	30	5	2	10	1.9	0.45
	40	39.5	57.3	35	6	23	M6	3	135	7.5	120	5	4	10	3.1	1.5

When used in pair, the same rail can be installed left or right just by rotating it. See "Installation Instructions" on pg. TL-29.

Tab. 13

TLAX

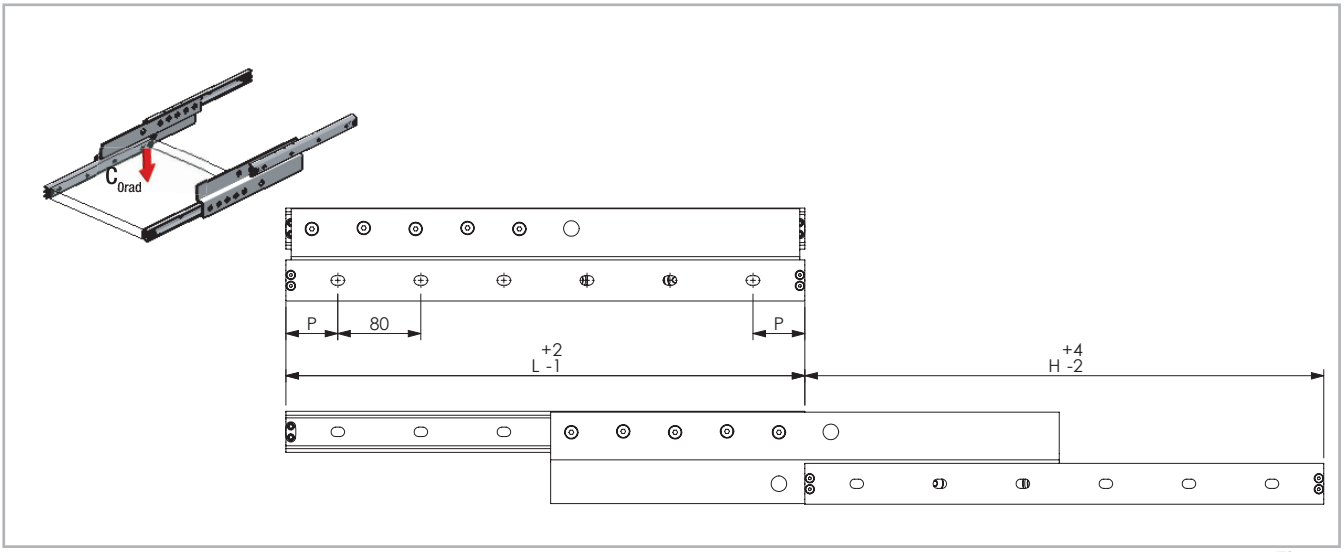


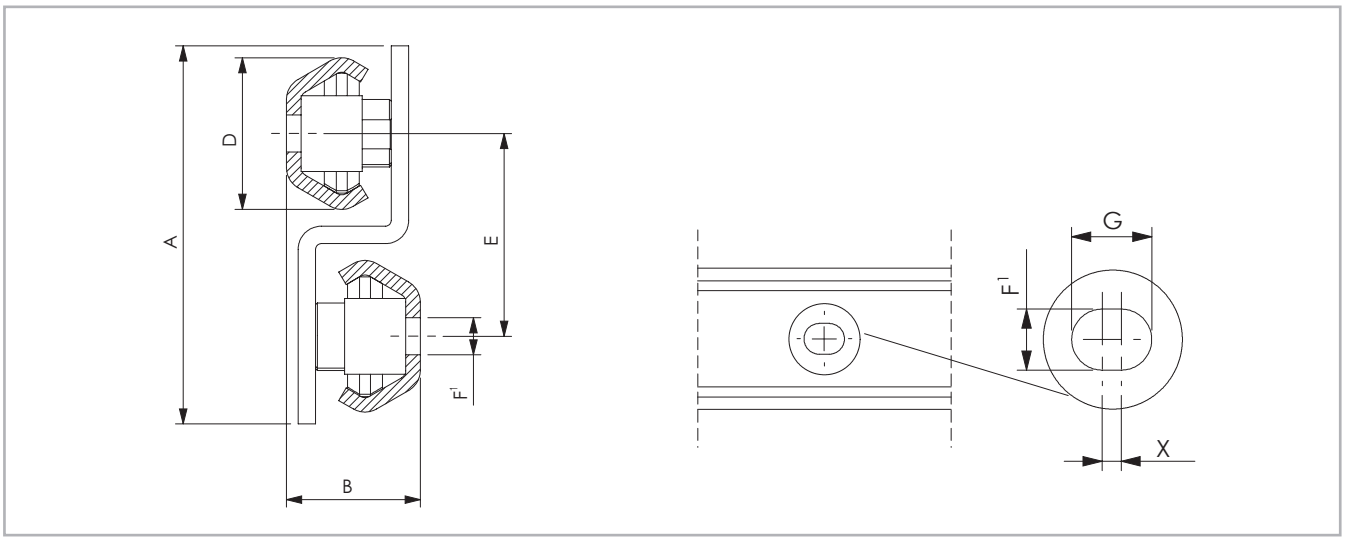
Fig. 36

Type	Size	Length L [mm]	Stroke H [mm]	P [mm]	N° of access holes	Load capacity for a pair of rails C_{0rad} [N]	Weight [kg]
TLAX	26	300	300	30	4	466	1.2
		350	350	55	4	621	1.4
		400	400	40	5	745	1.5
		450	450	25	6	846	1.7
		500	500	50	6	931	1.9
		550	550	35	7	1003	2.1
		600	600	20	8	1064	2.3
		650	650	45	8	1117	2.4
		700	700	30	9	1164	2.6
		750	750	55	9	1205	2.8
		800	800	40	10	1241	3.0
		850	850	25	11	1274	3.2
		900	900	50	11	1303	3.3
		1000	1000	20	13	1329	3.7
		1100	1100	30	14	1218	4.1
		1200	1200	40	15	1125	4.4

Tab. 14

Type	Size	Length L [mm]	Stroke H [mm]	P [mm]	N° of access holes	Load capacity for a pair of rails C_{0rad} [N]	Weight [kg]
TLAX	40	500	500	50	6	985	3.4
		550	550	35	7	1143	3.7
		600	600	20	8	1280	4.1
		650	650	45	8	1400	4.4
		700	700	30	9	1506	4.7
		750	750	55	9	1600	5
		800	800	40	10	1684	5.3
		850	850	25	11	1760	5.7
		900	900	50	11	1829	6
		1000	1000	20	13	1948	6.6
		1100	1100	30	14	2048	7.3
		1200	1200	40	15	2133	7.9
		1300	1300	50	16	1990	8.5
		1400	1400	20	18	1862	9.2
		1500	1500	30	19	1749	9.8
		1600	1600	40	20	1649	10.5

Tab. 15



1 Fixing holes (F) are through passing holes for standard button-head screws ISO 7380.
Alternatively, special low head Rollon Torx screws can be used.

Fig. 37

Type	Size	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]	G [mm]	X [mm]	Type of Fixing screws
TLAX	26	65	23	26	35	6	11	5	M5 ISO7380
	40	90	28.3	39.5	50	9	13	4	M8 ISO7380

When used in pair, the same rail can be installed left or right just by rotating it.

Tab. 16

TQAX

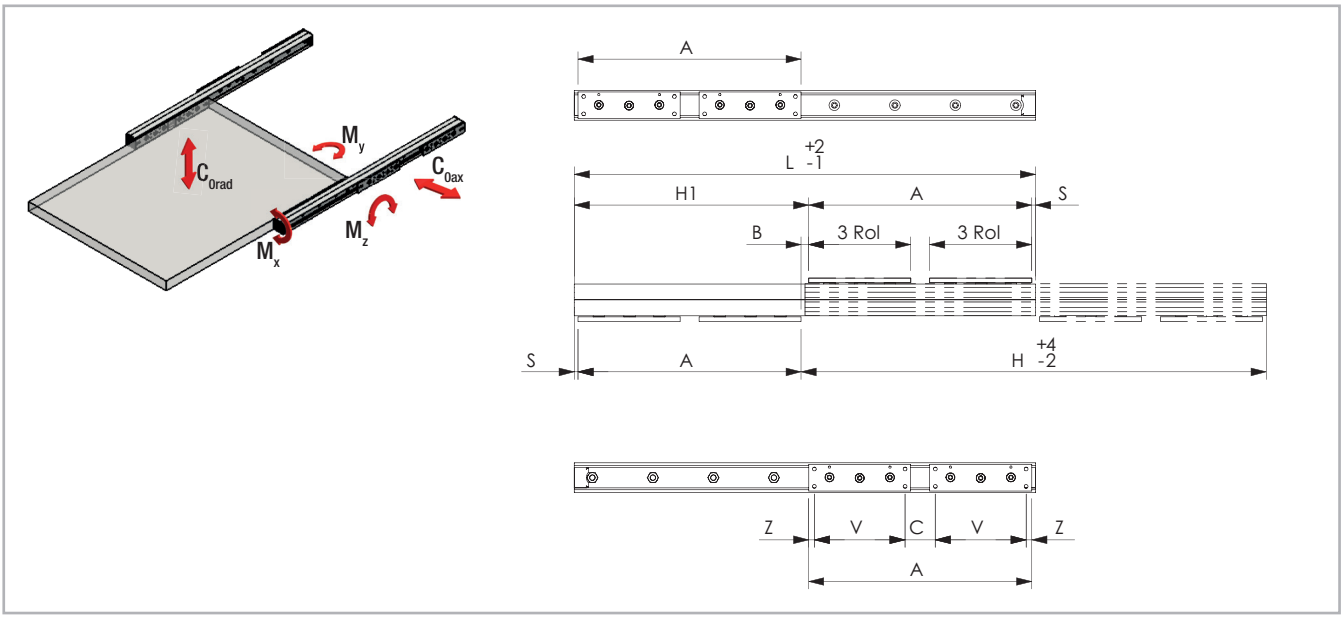


Fig. 38

Type	Size	L [mm]	H [mm]	Fixed & Mobile sliders*2			Load capacity and moments for a pair of rails				
				A [mm]	C [mm]	H1 [mm]	C_{0rad} [N]	C_{0ax} [N]	M_x* [Nm]	M_y [Nm]	M_z [Nm]
TQAX	26	400	400	172	62	200	580	287	6	99	147
		450	450	197	87	225	672	319	6	126	187
		500	500	222	112	250	748	344	6	153	227
		550	550	247	137	275	813	364	6	169	268
		600	600	272	162	300	869	380	6	169	308
		650	650	297	187	325	831	393	6	169	315
		700	700	322	212	350	779	405	6	169	315
		750	750	347	237	375	734	394	6	169	315
		800	800	372	262	400	694	372	6	169	315
		850	850	397	287	425	657	353	6	169	315
		900	900	422	312	450	625	335	6	169	315
		950	950	447	337	475	595	319	6	169	315
		1000	1000	472	362	500	568	305	6	169	315
		1100	1100	522	412	550	521	280	6	169	315
		1200	1200	572	462	600	481	258	6	169	315

* The value Mx refers to a single rail
*2 All sliders are 3 rollers type

Tab. 17

Type	Size	L [mm]	H [mm]	Fixed & Mobile sliders*2			Load capacity and moments for a pair of rails				
				A [mm]	C [mm]	H1 [mm]	C_{0rad} [N]	C_{0ax} [N]	M_x* [Nm]	M_y [Nm]	M_z [Nm]
TQAX	40	600	600	300	45	300	1433	688	18	366	527
		650	650	325	70	325	1545	724	18	422	606
		700	700	350	95	350	1644	755	18	468	766
		750	750	375	120	375	1731	781	18	468	766
		800	800	400	145	400	1809	803	18	468	846
		850	850	425	170	425	1880	823	18	468	926
		900	900	450	195	450	1854	840	18	468	959
		950	950	475	220	475	1768	855	18	468	959
		1000	1000	500	245	500	1691	825	18	468	959
		1100	1100	550	295	550	1554	758	18	468	959
		1200	1200	600	345	600	1437	701	18	468	959
		1300	1300	650	395	650	1337	652	18	468	959
		1400	1400	700	445	700	1250	610	18	468	959
		1500	1500	750	495	750	1174	572	18	468	959
		1600	1600	800	545	800	1106	539	18	468	959

* The value Mx refers to a single rail
*2 All sliders are 3 rollers type

Tab. 18

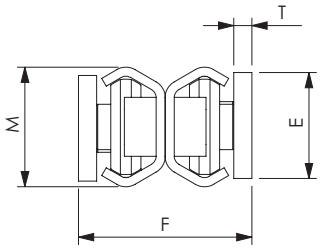
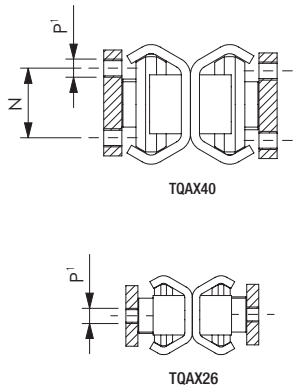


Fig. 39



1 Fixing holes (P) are threaded holes.

Fig. 40

Type	Size	E [mm]	F [mm]	M [mm]	T [mm]	N [mm]	P	Sliders		Z [mm]	V [mm]	S [mm]	Num. of holes	B [mm]	Rail weight [kg/m]	Weight 4 sliders [Kg]
								Num. of rollers	Length [mm]							
TQAX	26	26	44	25	4	-	M5	3	80	25	30	14	2	28	1.6	0.4
	40	39.5	57.3	35	6	23	M6	3	135	7.5	120	0	4	0	3.1	1.5

When used in pair, the same rail can be installed left or right just by rotating it. See "Installation Instructions" on pg. TL-29.

Tab. 19

Technical instructions

Telescopic rail selection

Selecting the suitable telescopic rail should be done based on the load and the maximum permissible deflection in the extended state. The load capacity of a Telerace telescopic rail depends on two factors: the load capacity of the rollers and the rigidity of the intermediate element. For mainly short strokes the load capacity is determined by the load-bearing capacity of the rollers; for average and long strokes it is determined by the rigidity of the intermediate element.

Deflection

If the load P acts vertically on the pair of rails (see fig. 42), the expected elastic deflection in the extended state can be determined as follows:

$$f = \frac{q}{t} \cdot P$$

Fig. 41

Whereby:

f is the expected elastic deflection [mm]

q is a stroke coefficient (see fig. 44)

t is a factor depending on the model of the telescopic rail (see fig. 43)

P is the actual load acting on the centre of a pair of rails [N].

The value resulting from the formula above is an estimation and also assumes an absolutely rigid adjacent construction. If this rigidity is not present, or in case the deflection is a key application requirement, please contact our Technical Department for a precise calculation.

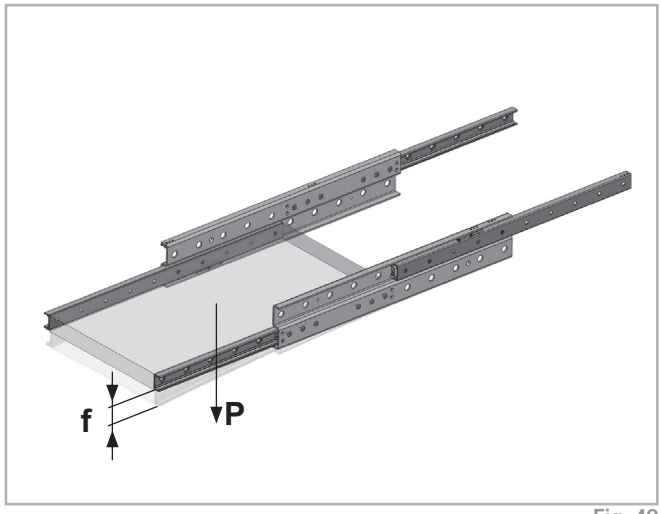


Fig. 42

TLR18P t=300	TQN30P t=120
TLR28P t=500	TQN40P t=420
TLR43P t=1200	
	TLAX26 t=185
TLQ18P t= 60	TLAX40 t=425
TLQ28P t=120	
TLQ43P t= 450	TQAX26 t=105
	TQAX40 t=420
TLN30P t=400	
TLN40P t=900	

Fig. 43

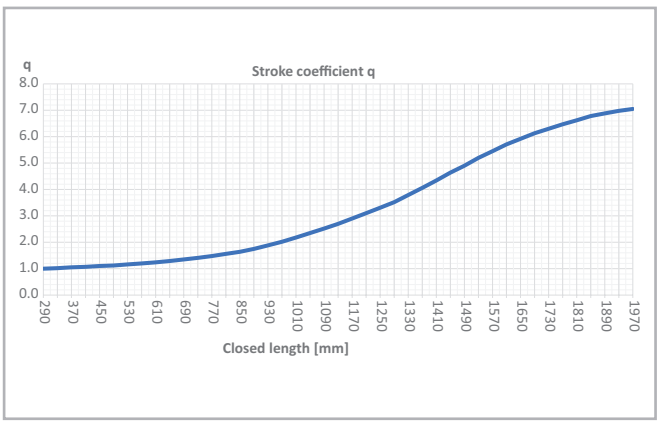


Fig. 44

Sizing of telescopic applications

The main factors to consider while sizing the rail for a telescopic movement are:

- Weight of the mobile part and other appliable loads
- Presence of dynamic forces / eventual abuse
- Max. acceptable deflection
- Max. acceptable extraction/closing force of mobile part
- Environment, frequency and speed
- Expected lifetime

All load capacities C_{0rad} are indicated per pair of rails and with the load perfectly centered. Hereby the load P is acting as a radial point load, at half the extension and in the middle between the two rails. The load capacity for a single rail is obtained dividing the value C_{0rad} by half.

When sizing a telescopic application, consider the center of mass of the load and any external dynamic forces acting on the rails.
In case the actual load P isn't centered the equivalent load Pe must be calculated for the verification of load capacity explained on page TL-24.

$$Pe = 2 \cdot \frac{P \cdot d}{a + b} \cdot \frac{1}{fp}$$

Fig. 45

Where :

P = Weight/load of mobile part [N]

a, b = distances of the load center with respect to left and right rail [mm].

d = the largest between "a" and "b", according to the load position [N].

fp = Load position coefficient, based on relation between the value “c” (distance between actual load P and load C_{0rad}) and stroke H. The coefficient fp is obtained from diagram in Fig. 49.

For a single rail, Pe is obtained with the following formula:

$$Pe = \frac{P}{fp}$$

Fig. 46

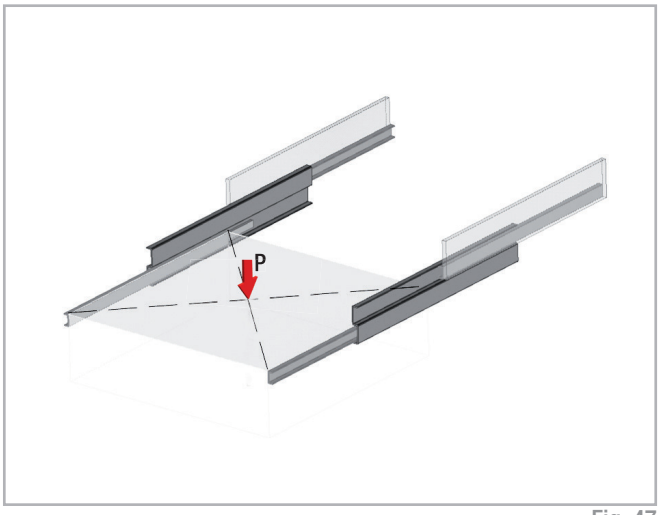


Fig. 47

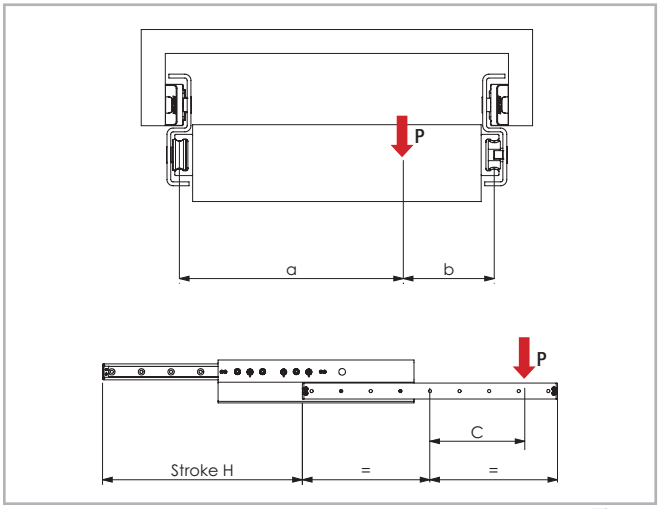


Fig. 48

Load capacity reduction according to the position of the load P

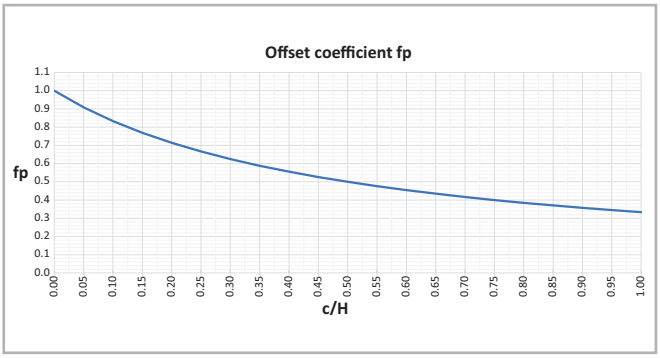


Fig. 49

Verification of load capacity

Verification of the load capacity assumes the knowledge of the forces acting on the rails in the different directions, divided into principal components correspondent to the values indicated in the tables of the product pages: radial loads, axial loads and moments.

For the telescopic rails with intermediate element TLR...P, TLN...P and TLAX the verification is mainly down to comparing the load capacity C_{0rad} to Pe, including a safety factor S_0.

$$Pe <= C_{0rad} / S_0$$

Fig. 50

Where S_0 is the safety coefficient as per below table

Safety coefficient - S_0	Application conditions
1 - 1.5	Neither shocks nor vibrations, smooth and low-frequency reverse, high assembly accuracy, no elastic deformations
1.5 - 2	Normal installation conditions
2 - 3.5	Shocks and vibrations, high-frequency reverse, significant elastic deformation

Tab. 20

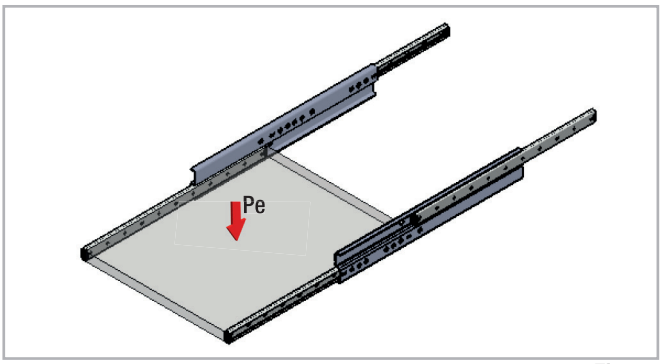


Fig. 52

For telescopic rails TLQ...P, TQN...P and TQAX the calculation might also includes moments and axial load.

$$\left(\frac{Pe_{ax}}{C_{0ax}} + \frac{Pe_{rad}}{C_{0rad}} + \frac{Me_x}{M_x} + \frac{Me_y}{M_y} + \frac{Me_z}{M_z} \right) <= \frac{1}{S_0}$$

Fig. 51

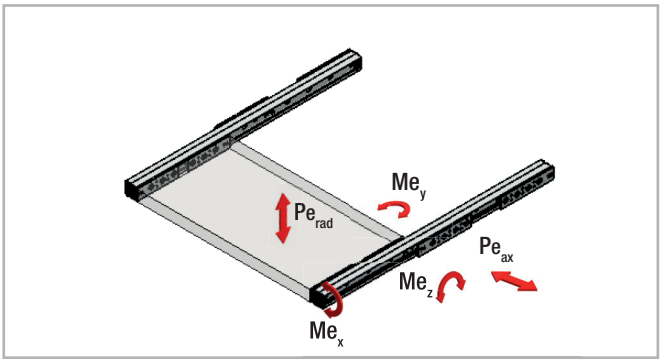


Fig. 53

Where:

Pe_{rad} = applied radial load

Pe_{ax} = applied axial load

Me_x*, Me_y, Me_z = applied moments

C_{0rad} = radial load capacity

C_{0ax} = axial load capacity

M_x, M_y, M_z = moment capacities

*Me_x moment exist only in case of use a single telescopic rail

If using a single telescopic rail, the values C_{0rad}, C_{0ax}, M_y and M_z in the formula Fig. 51 must be divided by 2 (M_x is always and only referred to a single rail).

Lifetime calculation

The service life is defined as the time span between commissioning and the first sign of fatigue or wear indications on the raceways. The service life of a telescopic rail is dependent on several factors, such as the effective load, the installation precision, occurring shocks and vibrations, the operating temperature, the ambient conditions and the lubrication.

Calculation of the service life is based exclusively on the loaded ball bearings. In practice, the decommissioning of the bearing, due to its destruction or extreme wear of a component, represents the end of service life.

This is taken into account by an application coefficient (fi in the formula below), so the service life consists of:

$$Lcy = 50 \cdot \left(\frac{C}{Pe} \cdot \frac{1}{fi} \right)^3 \cdot \frac{1}{H} \cdot 10^6$$

$$Lkm = 100 \cdot \left(\frac{C}{Pe} \cdot \frac{1}{fi} \right)^3$$

Lcy = calculated service life [num. of cycles]
Lkm = calculated service life [Km]
C = Dynamic load coefficient
Pe = Equivalent load applied [N]
H = Stroke [mm]
fi = Application coefficient

Fig. 54

Application coefficient fi

The correction factor fi applied to the theoretical calculation formula has the sole purpose of guiding the designer quantitatively on the influence in the lifetime estimation of the real application conditions without any pretense of precision. For more details please contact our technical department.

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

Tab. 21

Equivalent load applied Pe

When the load P is not perfectly centered, the equivalent load Pe must be calculated as shown in Fig. 45, otherwise, with the load perfecty centered:

$$Pe = P_{rad}$$

Fig. 55

When using a pair of telescopic rails series TLQ, TQN and TQAX, in presence of simultaneous load P_{rad}, P_{ax} and moments M_y, M_z (M_x only in case of single rail) :

$$Pe = Co_{rad} \cdot \left(\frac{Pe_{rad}}{C_{0rad}} + \frac{Pe_{ax}}{C_{0ax}} + \frac{Me_x}{M_x} + \frac{Me_y}{M_y} + \frac{Me_z}{M_z} \right)$$

Fig. 56

If using a single telescopic rail, the values C_{0rad}, C_{0ax}, M_y and M_z in the formula Fig. 57 must be divided by 2 (M_x is always and only referred to a single rail).

Opening and closing force

For applications requiring very low opening and closing forces, the rails series TLR...P and TLQ...P are recommended. The required force Fe to extend a pair of rails is determined by the friction of the rolling elements and the applied load P, according to the following formula:

$$Fe \approx k + 0.01 \cdot P$$

Fig. 57

The required force Fc to close a pair of rails is also influenced by the deflection and the stroke, according the the following formula:

$$Fc \sim k + 0.01 \cdot P + 1.5 \cdot \frac{f}{H} \cdot P$$

Fig. 58

Where :

P = radial load applied on the pair of rails

f = calculated deflection

H = stroke

k = friction force per pair of telescopic rails connected without load applied

These calculated values may be influenced by some additionnal binding friction from non precise assembly or structure. For a single rail, the same formulas can be used.

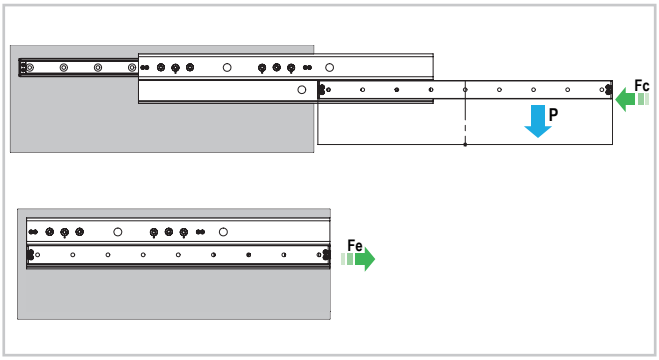


Fig. 60

TLR18P / TLQ18P	k=10 N
TLR28P / TLQ28P	k=15 N
TLR43P / TLQ43P	k=25 N

Fig. 59

Lubrication

TLR...P and TLQ...P rails are equipped with internal wipers with slow release felts that ensure a proper lubrication of the raceways for all the product's lifetime if the rail is used in indoor, clean, environments. The rollers are also lubricated for life. If used in harsh environments (eg. dirt, temperature, humidity) it is necessary to periodically clean and lubricate the raceways.

TLN...P, TQN...P, TLAX and TQAX rails only feature rollers lubricated for life. The raceways must therefore be lubricated every 100.000 cycles if they are used in indoor, clean, environments. If used in harsh environments (eg. dirt, temperature, humidity) the lubrication interval must be reduced and it is necessary to periodically clean the raceways.

Raceways are lubricated with a lithium lubricant of average consistency (roller bearing lubricant). Different lubricants are available on request for special applications:

- FDA-approved lubricant for use in the food industry
- specific lubricant for clean rooms
- specific lubricant for the marine technology sector
- specific lubricant for high and low temperatures

For more details please contact our technical department.

Anticorrosion treatments

TLR...P / TLQ...P

Treatment	Characteristics
Rollon-Nox	Patented high depth nitride hardening and black oxidation treatment that provides good durability under high loads or frequencies and good corrosion resistance. It is standard for size 18 and it's not available for other sizes.
Zinc Plating ISO 2081	Standard treatment for rails sizes 28-43, it is ideal for indoor applications. It is removed from the raceways by the subsequent grinding process. Zinc-plated telescopic rails are supplied with steel rollers.
ZincNickel ISO19598 (Z)	Ideal for outdoor applications. Telescopic rails with this treatment are supplied with stainless steel rollers to further increase the corrosion resistance.
Rollon E-coating (K)	As zinc-plated version with additional electro painting that provides a fine black finishing to the entire rail. It can be partially removed from the raceways on the running contact point of the rollers after a period of use. Telescopic rails with Rollon E-Coating are supplied with stainless steel rollers to further increase the corrosion resistance.
Nickel Plating (N)	Provides high resistance to chemical corrosion and is ideal for applications in medical or food related environments. Raceways are coated too. Telescopic rails with Nickel Plating treatment are supplied with stainless steel rollers to further increase the corrosion resistance.

Tab. 22

TLN...P / TQN...P

Treatment	Characteristics
Rollon-Nox	Patented high depth nitride hardening and black oxidation treatment that provides good durability under high loads or frequencies and good corrosion resistance. It is standard for all sizes.
Rollon E-coating (K)	As zinc-plated version with additional electro painting that provides a fine black finishing to the entire rail. It can be partially removed from the raceways on the running contact point of the rollers after a period of use. Telescopic rails with Rollon E-Coating are supplied with stainless steel rollers to further increase the corrosion resistance.

Tab. 23

TLAX / TQAX

As standard, TLAX and TQAX feature rails and intermediate S-element in AISI304 and Rollers in hardened AISI440.

Treatment	Characteristics
Electro-polish (X)	Rails and intermediate element are completely electro-polished for further improved corrosion resistance. The electro-polishing treatment also gives the product a very shiny surface.

Tab. 24

Speed

The speed of the rails is limited by the strength of the stoppers that take on the intermediate element with each opening/closing. At the same speed, the impact force increase proportionally to the length of the rail and the weight of the intermediate element.

All Telerace telescopic rails feature robust end-stoppers capable of sustaining high speeds. Besides highest speed, the telescopic rails with ball bearing rollers are also less sensitive to frequent and intense accelerations and decelerations due to absence of the ball cage.

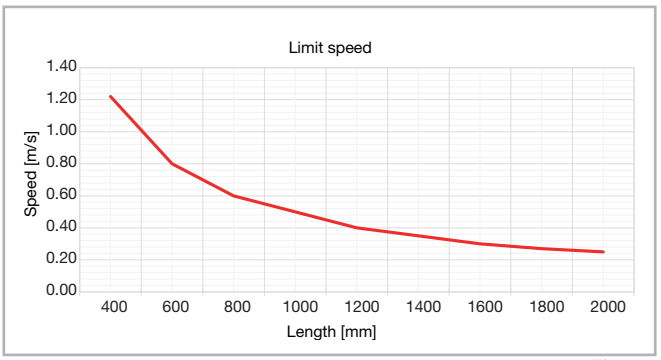


Fig. 61

Self-aligning system with TLR...AP

TLR…P telescopic rails are also available in the TLR…AP version that allows a slight rotation of the movable element around the longitudinal axis, with respect to the fixed element. This rotation is obtained by using a combination of floating and guiding rollers and allows the rail to adapt to mounting surfaces that are not perfectly aligned in their frontal part, avoiding the overload of the rollers and the deterioration of the motion quality. This same rotation also permits a slight compensation of an eventual dimensional gap between the fixed and mobile structures, that may occur due to manufacturing tolerances, with respect to the nominal dimensions of the rail.

The compensating rail TLR…AP must be used in pair with a guiding rail TLR…P to ensure the perfect operation of the system and an optimal lateral stability.

Below are listed 3 examples of compensation of structural errors:
A) Maximum angular compensation (-α) of misaligned mounting surfaces of the mobile structure.

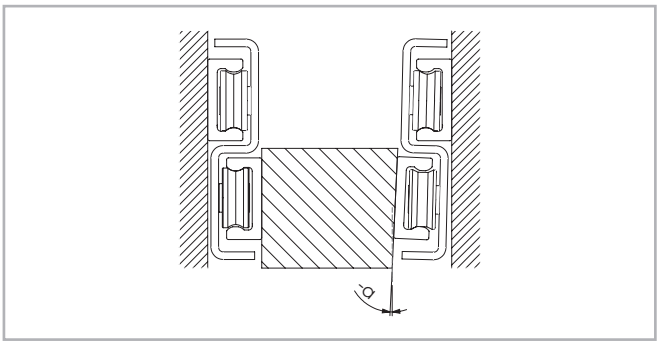


Fig. 62

B) Maximum angular compensation (+α) of misaligned mounting surfaces of the fixed structure

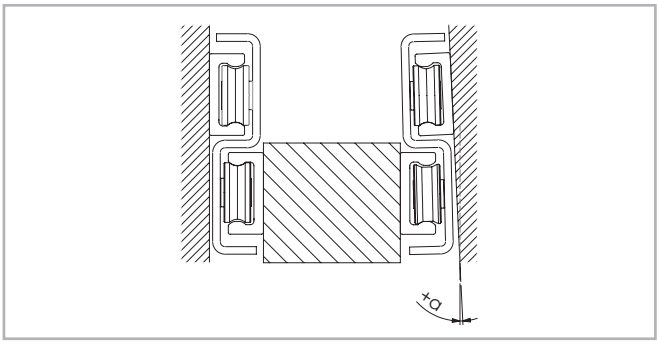


Fig. 63

C) Maximum linear compensation of the dimensional gap between mobile and fixed structure for a rail with parallel mounting surfaces. The rail width can compensate a dimensional gap between A max and A min showed on page TL-9

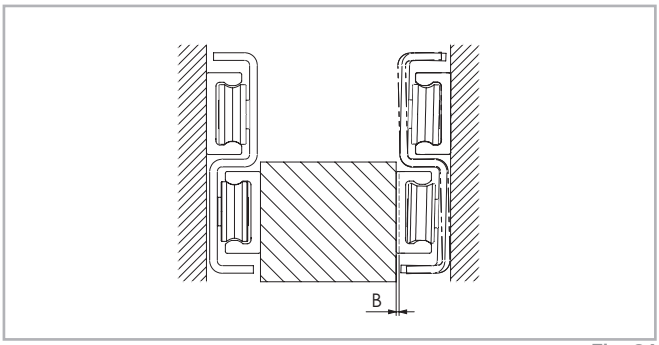


Fig. 64

Size	B [mm]
18	0.5
28	0.3
43	0.3

Tab. 25

Stroke customization for TLQ...P, TQN...P, TQAX

TLQ...P, TQN...P and TQAX series 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 standard. Please consider that distance A should always be longer than distance B to maximize the load capacity. If the distance between fixed sliders "A" and mobile sliders "B" is reduced the total stroke increases and the load capacity decreases. Viceversa, the total stroke decreases and the load capacity is improved. Please contact our technical department for load capacities according to customized stroke.

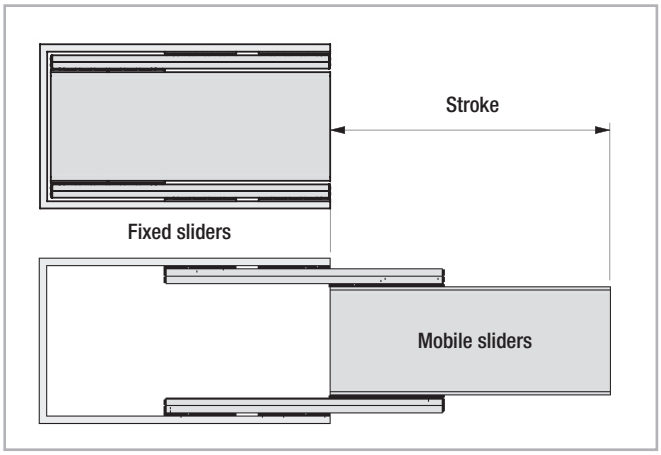


Fig. 65

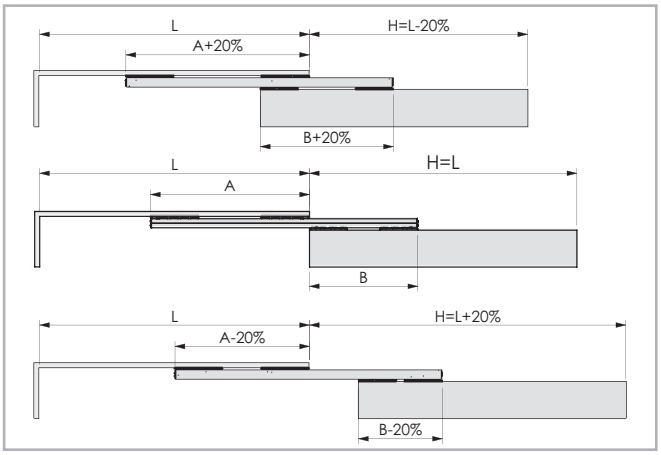
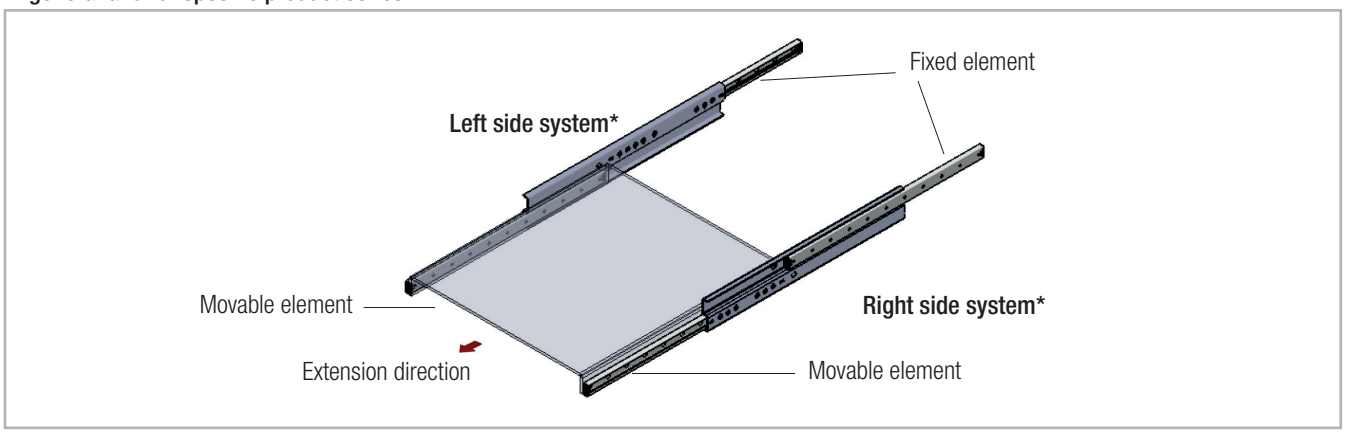


Fig. 66

Installation instructions

In general and for specific product series



* For model TLR...P and TLN...P please observe right or left side use.

Fig. 67

General

- To achieve optimum running properties, high service life and rigidity, it is necessary to fix the telescopic rails with all accessible holes on a rigid and level surface.
- Please observe the parallelism of the installation surfaces. The fixed and movable rails must be fit to a rigid assembly construction.
- Telerace rails are suitable for continuous use in automatic systems, even when the stroke is not constant.
  The operating speed must be checked (see pag. TL-26).

TLR...P, TLN...P, TLAX

- This series accept radial loads. This should act in the vertical cross-sectional axis on the movable rails.
- Horizontal and vertical application is possible. Prior to vertical installation, please contact our technical department.
- When installing make sure that the load is placed on the movable element (the lower rail) (see fig. 67). The opposite assembly negatively affects the function.
- Installation must be done on a rigid structure using all accessible fixing holes.
- Pay attention to the parallel alignment during assembly with paired application. It is possible to compensate minor misalignment errors by pairing TLR...P with TLR...AP (see pag. TL-27)

TLQ...P, TQN...P, TQAX

- This series accept radial and axial loads and moments in all principal directions.
- Horizontal and vertical applications are possible. Prior to vertica installation, please contact our technical department.
- The rail must be installed with the label facing upward. The fixed sliders have the circular engraving mark facing upward, while on the mobile sliders the same mark is facing downward.
- When used in pairs, the same rail can be used as left or right rail, always keeping the mark facing upwards.

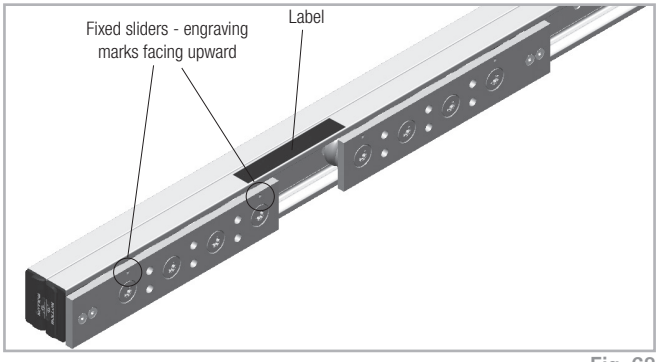


Fig. 68

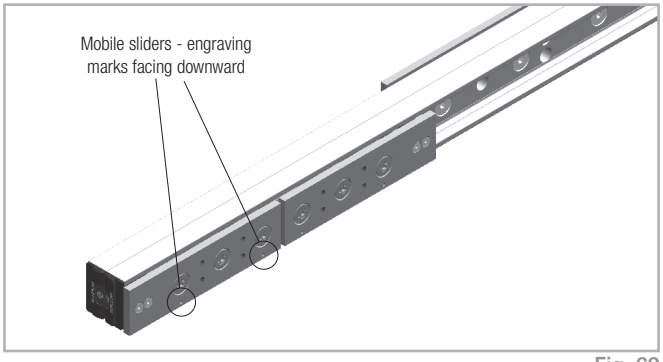


Fig. 69

Fixing screws

TLR...P
We recommend countersunk head screw according to DIN 7991

Type	Size	V
TLR...P	18	M4
	28	M5
	43	M8

Tab. 26

TLQ...P
We recommend fixing screws according to DIN 912 for the fixed sliders in TLQ...P and fixed and mobile sliders in TLQ...PC.

Type	Size	F
TLQ...P	18	M4
	28	M5
	43	M8

Tab. 27

TLN...P, TQN...P, TLAX, TQAX
We recommend fixing screws according to ISO 7380 with low head height or TORX® screws (see fig. 70) on request.

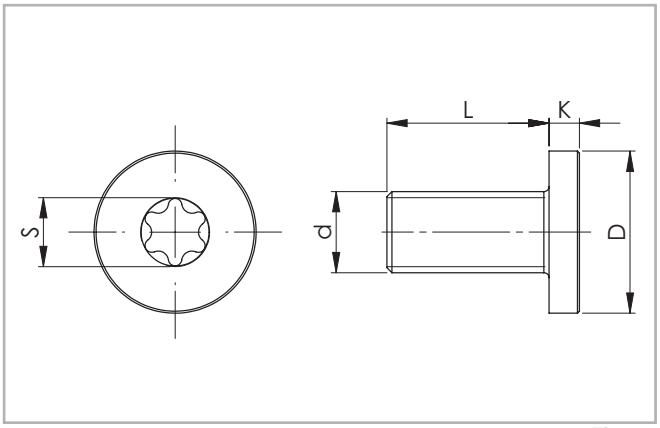


Fig. 70

Rail size	Screw type	d	D [mm]	L [mm]	K [mm]	S	Tightening torque [Nm]
26	M5 x 10	M5 x 0.8	10	10	2	T25	9
30	M5 x 10	M5 x 0.8	10	10	2	T25	9
40	M8 x 16	M8 x 1.25	16	16	3	T40	20

Tab. 28

Ordering key

TLR...P

TLR	28P 28AP	-1490	Z	R
				Right (R) or left (L)
			Surface treatments (if different from standard)	
		Length		
	Size			
Product type				

Ordering examples: TLR43AP-1010ZR; TLR18P-1010L.

Note on ordering: the different surfaces treatments are not available for size 18. Please pad with zeroes to fill in for lengths with less than 4 digits, e.g. 550 mm length is “0550”.

TLQ...P

TLQ	28P	F	-1490	Z
				Surface treatments (if different from standard)
			Length	
		F = all threaded holes C= all passing holes (if different from standard)		
	Size			
Product type				

Ordering examples: TLQ43P-1010Z; TLQ18PF-1010.

Note on ordering: data related to F and C versions only if needed. The different surfaces treatments are not available for size 18. Please pad with zeroes to fill in for lengths with less than 4 digits, e.g. 550 mm length is “0550”.

TLN...P

TLN	30P	-1490	R
			Right (R) or left (L)
		Length	
	Size		
Product type			

Ordering examples: TLN40P-1010R; TLN30P-1010L.

Note on ordering: please pad with zeroes to fill in for lengths with less than 4 digits, e.g. 550 mm length is “0550”.

TQN...P

TQN	30P	-1490
Product type	Size	Length

Ordering examples: TQN30P-1010.

Note on ordering: please pad with zeroes to fill in for lengths with less than 4 digits, e.g. 550 mm length is “0550”.

TLAX / TQAX

TLAX	26	-1490	Q
Product type	Size	Length	Surface treatment (if different from standard)

Ordering examples: TLAX26-1000Q; TQAX40-0700.

Note on ordering: rail lengths are always stated with 4 digits. Please pad with zeroes to fill in for lengths with less than 4 digits, e.g. 550 mm length is “0550”.

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