ROLLON®
BY TIMKEN

TLAX - TQAX

Data sheet - rev. 1.0

LINEAR COMPONENTS

myRollon

myRollon is Rollon's **digital working platform** designed to simplify the selection and configuration of linear and rotary motion solutions. It enables users to identify the most suitable motion system based on their specific application requirements, enhancing design precision and efficiency.

By centralizing essential tools and resources in a unified environment, myRollon empowers users to access all necessary services and information — saving time and boosting productivity in search of high-performance motion solutions.

SCAN ME!

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ORDERING KEY

▪ TLAX

TLAX	26	-1100	X
			X = **Electro-polish** (optional)
		Length	
	Size		
Series			

Ordering examples: **TLAX26-1000X; 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”.

▪ TQAX

TQAX	26	-1100	X
			X = **Electro-polish** (optional)
		Length	
	Size		
Series			

Ordering examples: **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”.

FEATURES AND ADVANTAGES

Fig.1

TLAX and TQAX are full-extension telescopic rails, combining compact dimensions with high flexural rigidity. The use of steel rollers without ball cages reduces sensitivity to high dynamics and variable duty cycles, making them ideal for automated, vertical, or variable-stroke applications, even in the presence of dirt or debris.

TLAX rails are made of AISI 304 stainless steel with AISI 440 hardened steel rollers, 2RS seals, and lifetime lubrication. An electro-polished version is available for enhanced corrosion resistance.

TQAX rails feature a compact design with the same materials and lubrication. They are particularly suited for vertical applications and allow for a customizable stroke/load ratio. An electro-polished version is available for severe environmental conditions.

These rails are ideal for automation systems, industrial and packaging machinery, medical technology, and environments such as pharmaceutical, chemical, and marine sectors where reliability, high cycle performance, and low maintenance are critical.

Performance characteristics

- Available sizes: 26, 40
- Max. operating speed: 1 m/s (39 in/s)*
- Temperature range: -20 °C + 80 °C (-4 °F + 176 °F)
- Surface treatments: see Pg.16

* depending on application and stroke

Rails

- Materials: Stainless steel.
- Available rail lengths: from 300 mm up to 1600 mm (from 11.8 in to 63 in)

Rollers

- Materials: Stainless steel 2RS shield.
- Rollers lubricated for life

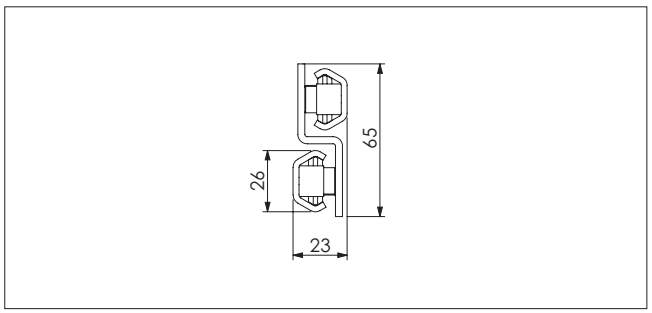
MAIN ADVANTAGES

Long service life	Versatility	Low maintenance	High dynamics	Reliability in dirty environments
Lifetime lubrication, stainless steel construction, and hardened rollers help ensure durability under repeated cycles and demanding environmental conditions.	The absence of a ball cage allows TLAX and TQAX rails to operate reliably in vertical and variable-stroke applications.	Lifetime lubrication of the rollers and wiper-equipped end-stoppers reduce the need for maintenance, even in high-cycle or contaminated environments.	Hardened ball bearings combined with robust end-stoppers enable high-speed operation and reduced cycle times.	Large rolling elements and wiper-equipped end-stoppers make the rails less sensitive to dirt and debris, helping ensure smooth operation and consistent lubrication.

COMPONENTS AND DIMENSIONS

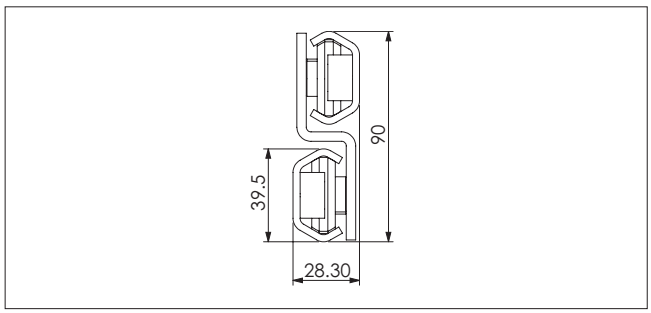
▪ TLAX-TQAX series

▪ TLAX26



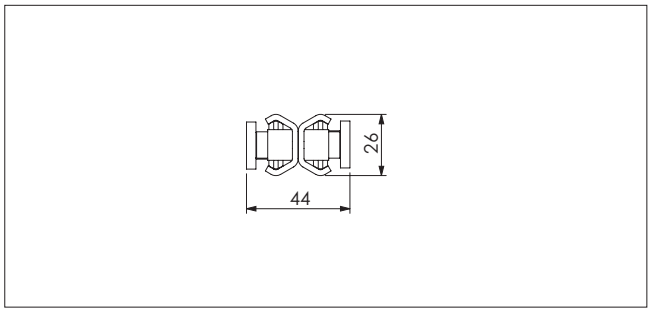
Load capacity Pg.8 **Fig.2**

▪ TLAX40



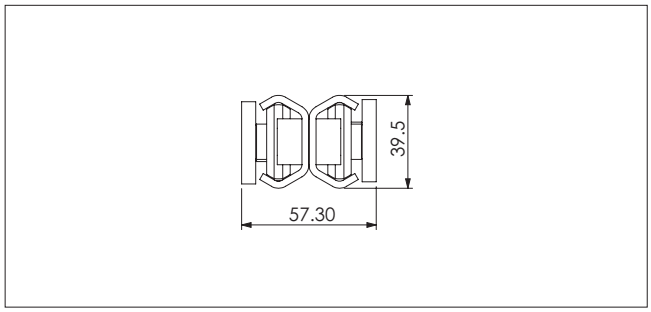
Load capacity Pg.9 **Fig.3**

▪ TQAX26



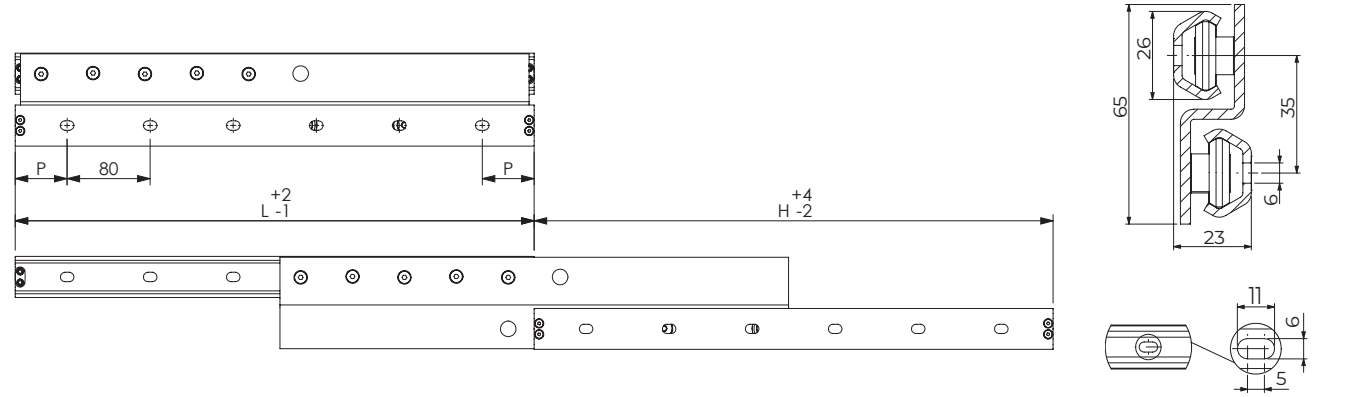
Load capacity Pg.10 **Fig.4**

▪ TQAX40



Load capacity Pg.11 **Fig.5**

■ TLAX26



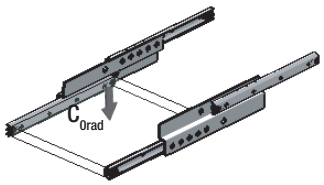
Fixing holes are through passing holes for standard button-head screws ISO 7380. Alternatively, special low head Rollon Torx screws can be used.
When used in pairs, the same rail can be installed left or right just by rotating it.

Fig.6

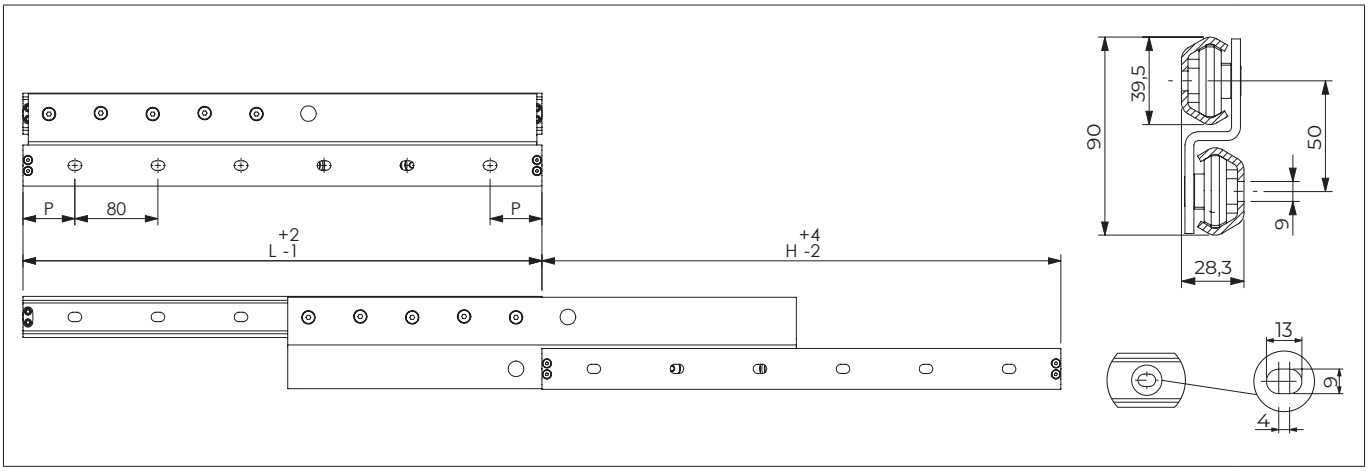
Type	Size	Length L [mm]	Stroke H [mm]	P [mm]	N° of access holes	Load capacity for a pair of rails C_{0rad} [N]	Weight [kg]
TLAX	26	300	300	30	4	466	1.2
		350	350	55	4	621	1.4
		400	400	40	5	745	1.5
		450	450	25	6	846	1.7
		500	500	50	6	931	1.9
		550	550	35	7	1003	2.1
		600	600	20	8	1064	2.3
		650	650	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	1177	3.2
		900	900	50	11	1118	3.3
		1000	1000	20	13	1016	3.7
		1100	1100	30	14	932	4.1
		1200	1200	40	15	860	4.4

Tab.1

Loads



■ TLAX40



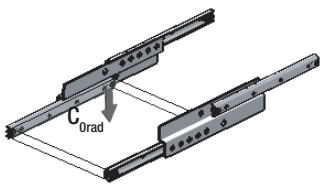
Fixing holes are through passing holes for standard button-head screws ISO 7380. Alternatively, special low head Rollon Torx screws can be used.
When used in pairs, the same rail can be installed left or right just by rotating it.

Fig.7

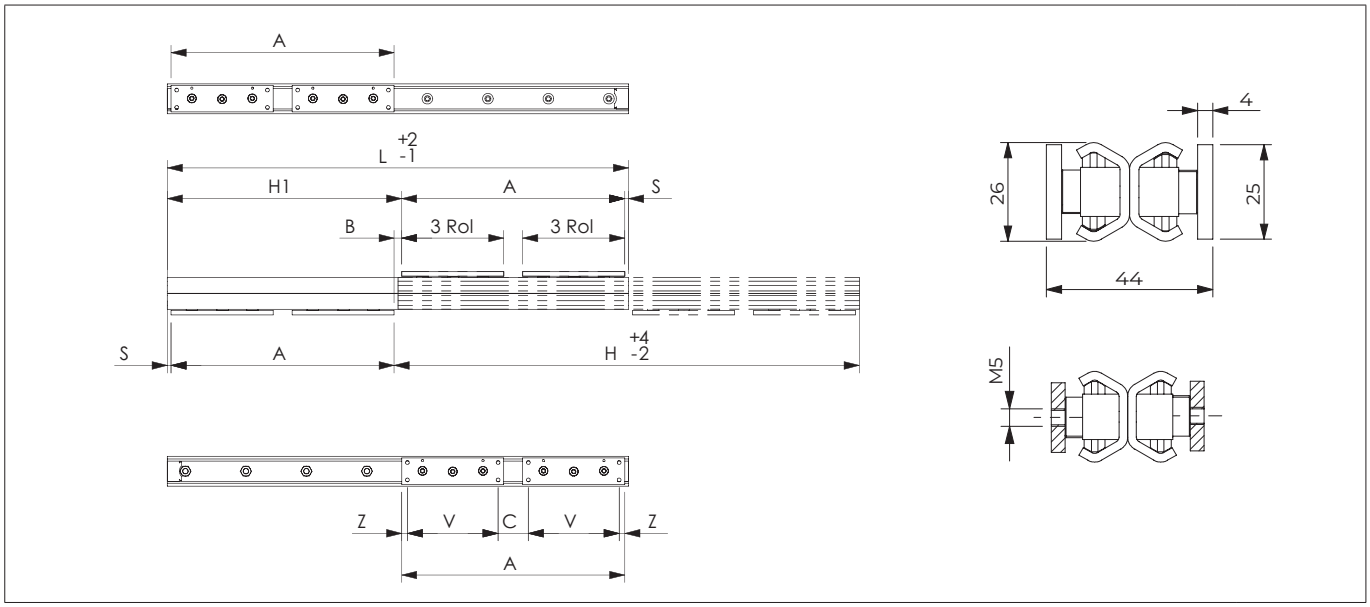
Type	Size	Length L [mm]	Stroke H [mm]	P [mm]	N° of access holes	Load capacity for a pair of rails C_{0rad} [N]	Weight [kg]
TLAX	40	500	500	50	6	985	3.4
		550	550	35	7	1143	3.7
		600	600	20	8	1280	4.1
		650	650	45	8	1400	4.4
		700	700	30	9	1506	4.7
		750	750	55	9	1600	5.0
		800	800	40	10	1684	5.3
		850	850	25	11	1760	5.7
		900	900	50	11	1829	6.0
		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.2

Loads



▪ TQAX26



When used in pairs, the same rail can be installed left or right just by rotating it. See "Installation Instructions" on Pg.17.

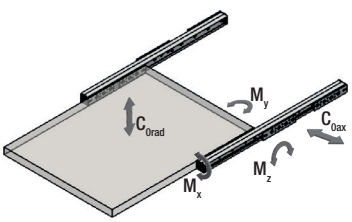
Fig.8

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

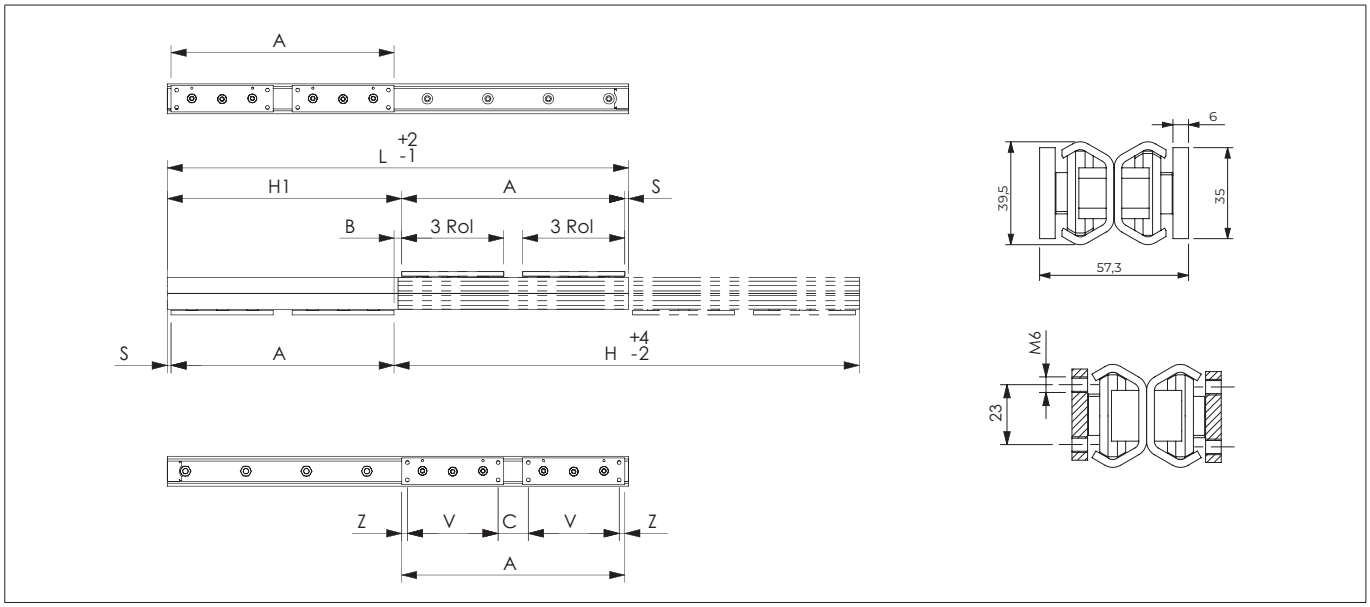
Tab.3

* The value Mx refers to a single rail
*2 Each slider incorporates three rollers

Loads



▪ TQAX40



When used in pairs, the same rail can be installed left or right just by rotating it. See "Installation Instructions" on Pg.17.

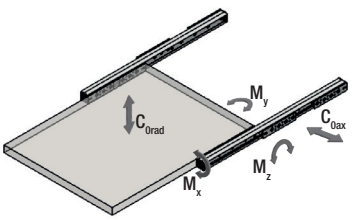
Fig.9

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

Tab.4

* The value Mx refers to a single rail
*2 Each slider incorporates three rollers

Loads



ACCESSORIES

▪ Fixing screws

We recommend fixing screws according to ISO 7380 with low head height or TORX® screws (see Fig.10) on request.

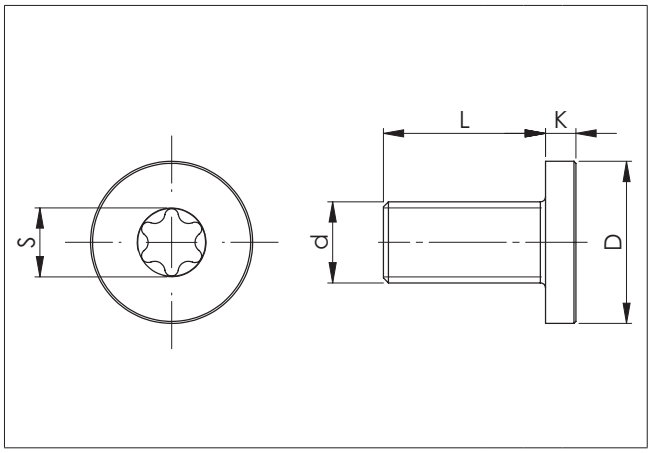


Fig.10

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
40	M8 x 16	M8 x 1.25	16	16	3	T40	20

Tab.5

USE AND MAINTENANCE

▪ 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.12), the expected elastic deflection in the extended state can be determined as follows:

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

Fig.11

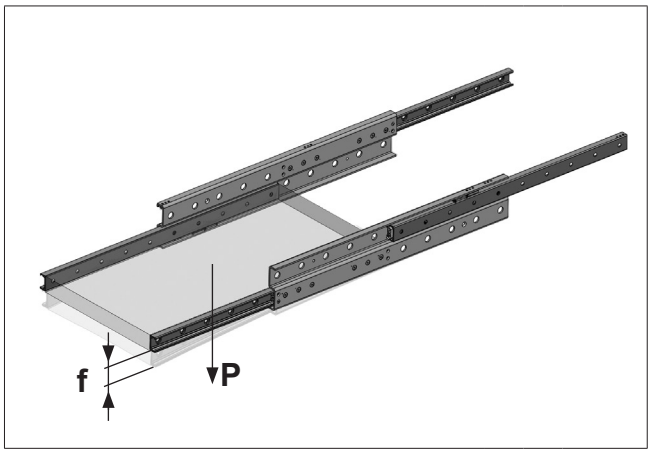


Fig.12

Whereby:

f is the expected elastic deflection [mm]

q is a stroke coefficient (see Fig.14)

t is a factor depending on the model of the telescopic rail (see Fig.13)

P is the actual load acting on the center 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.

TLAX26 t=185	TQAX26 t=105
TLAX40 t=425	TQAX40 t=420

Fig.13

Fig.14

▪ 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 TLAX, verification is mainly involves comparing the load capacity C_{0rad} to Pe, including a safety factor S_0.

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

Fig.15

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.6

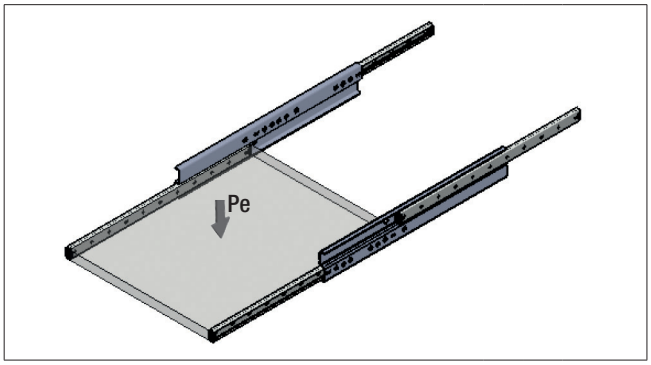


Fig.17

For telescopic rails TQAX the calculation might also includes moments and axial load.

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

Fig.16

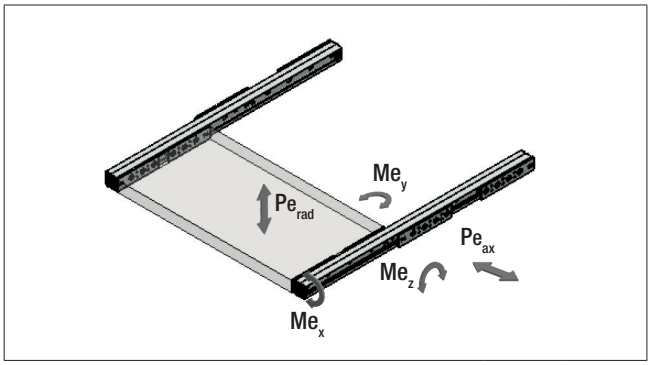


Fig.18

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.16 must be divided by 2 (M_x is always and only referred to a single rail).

▪ Lubrication

TLAX and TQAX 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

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.7

▪ 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.

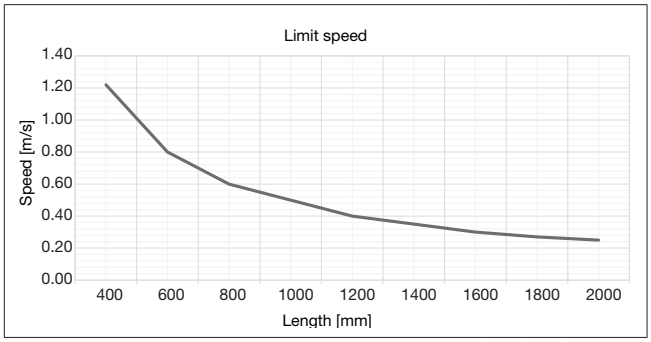


Fig.19

▪ Stroke customization for TQAX

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. Vice versa, the total stroke decreases and the load capacity is improved. Please contact our technical department for load capacities according to customized stroke.

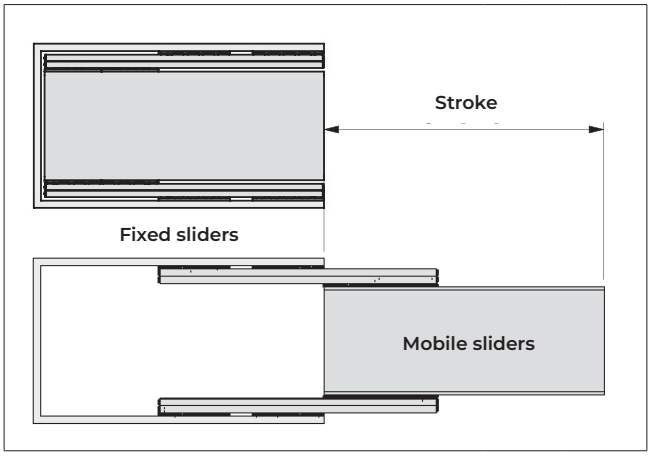


Fig.20

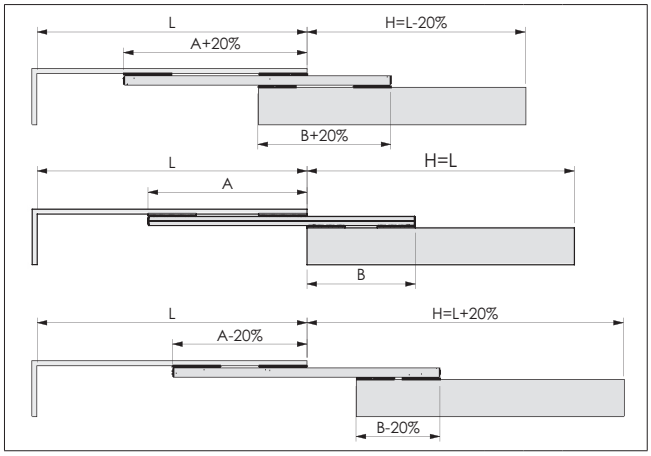


Fig.21

■ Installation instructions

In general and for specific product series

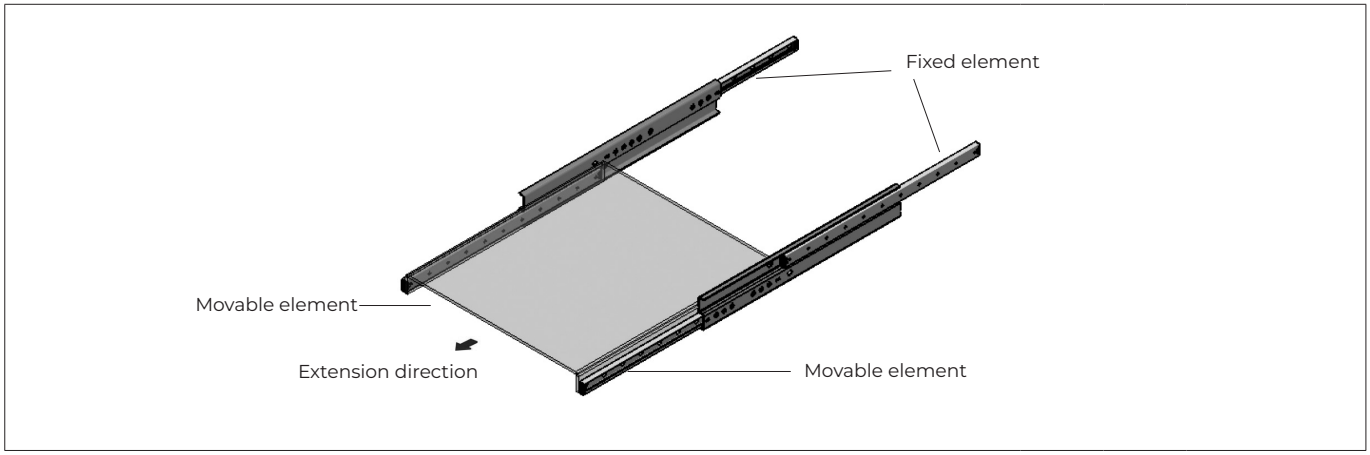


Fig.22

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 surfac es. 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 Pg.14).

TLAX

- This series accepts 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.22). 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.

TQAX

- This series accepts radial and axial loads and moments in all principal directions.
- Horizontal and vertical applications are possible. Prior to vertical 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 a left or right rail, always keeping the mark facing upwards.

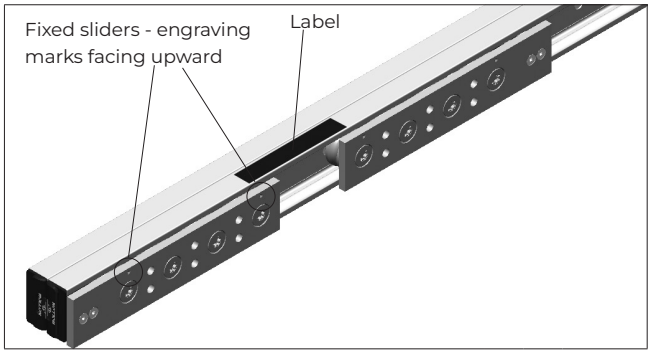


Fig.23

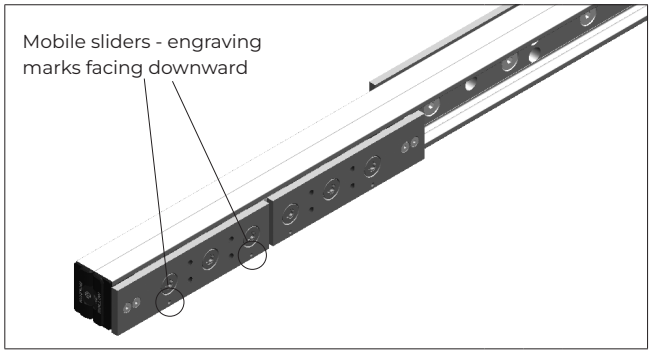


Fig.24

STATIC LOAD

▪ Sizing of telescopic applications

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.

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.

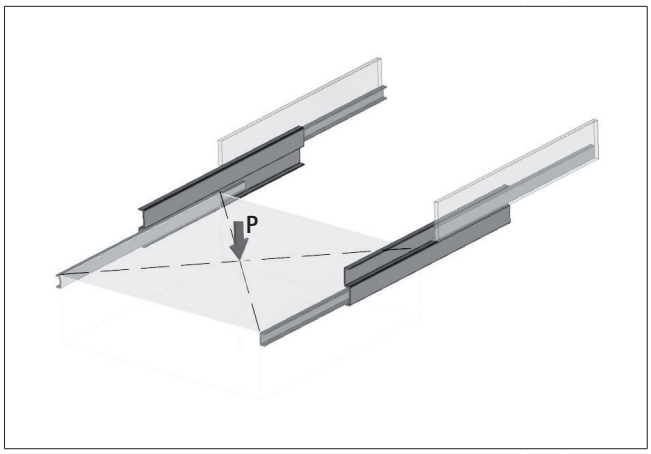


Fig.26

When sizing a telescopic application, consider the center of mass of the load and any external dynamic forces acting on the rails.

If the actual load P isn't centered the equivalent load Pe must be calculated for load capacity verification, as explained on Pg. 15.

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

Fig.25

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].

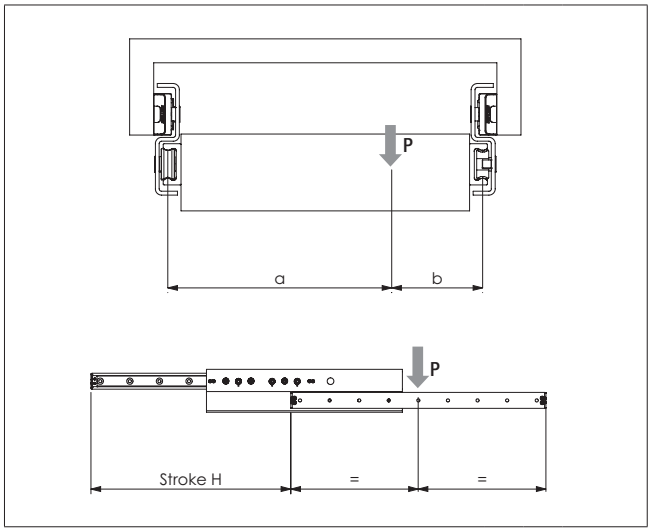


Fig.27

If the load is not positioned halfway on the mobile slider but with a deviation c from its center, contact the technical department.

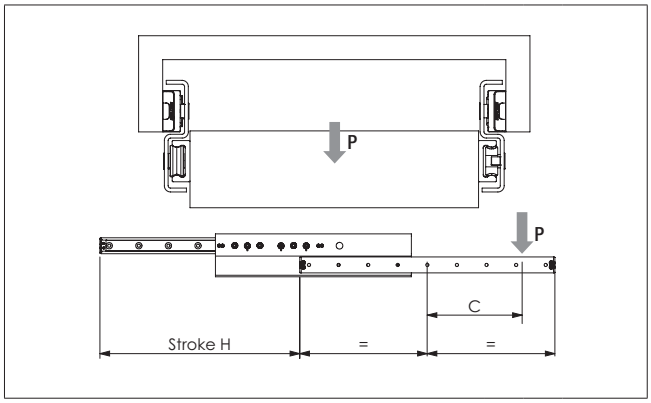


Fig.28

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