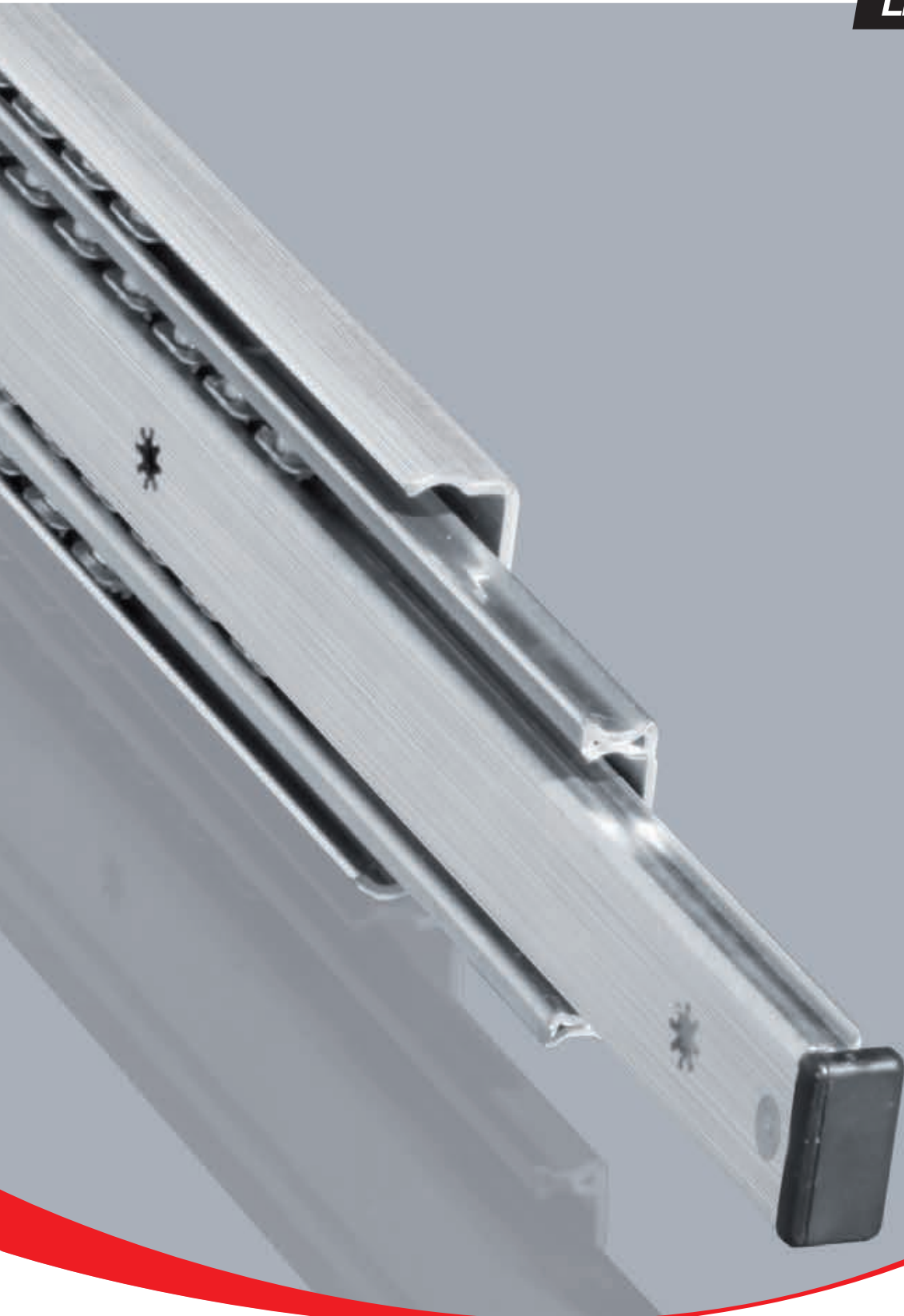


ROLLON[®]
BY TIMKEN

Light Rail



Product explanation



> Light telescopic rails, with full or partial extension



Fig. 1

The Light Rail product family consists of 3 series with full and partial extensions in a lightweight design. It is ideal for applications in which the mass of the rail is just as important as the bending rigidity.

The most important characteristics:

- Light and quiet running with heavy loads
- Long service life without maintenance
- Effective self-cleaning of the ball track
- High functional reliability
- Structural elasticity capable of absorbing minor impacts and absence of permanent deformation
- Not sensitive to side impacts

Preferred areas of application:

- Beverage industry
- Automotive
- Construction and machine technology (e.g., housing)
- Packaging machines
- Railcars (e. g., maintenance and battery extensions)
- Special machines

LPS 38

Partial extension with rails made of hot-dipped galvanized steel and plastic ball cages.



Fig. 2

LFS 46

Detachable internal rail which can be released with a latch. Rails are made of bright chrome-plated steel, the ball cages of steel and plastic. Roll back protection in closed position.



Fig. 3

LFS 57

Full extension with rails made of hot-dipped galvanized steel and zinc-plated steel ball cages. Roll back protection in closed position.



Fig. 4

LFS 58 SC

Full extension with automatic retraction and damping. The automatic retraction system is assisted by a spring-loaded mechanism that allows the rail to get back to a complete retraction before reaching the closed position.



Fig. 5

LFS 70

Full extension with rails made of zinc-plated galvanized and blue passivated steel. The ball cages are made of zinc-plated steel. Heavy load end stop in opened and closed position. Roll back protection in closed position.



Fig. 6

LFX 27

The stainless steel full extension consists of two inner guide rails that, connected to a double-T profile, form the intermediate element and two outer rails that form the connection to the connecting construction as fixed and moving element. The square cross-section allows a compact design of high load ratings and low deflection.



Fig. 7

Overview product cross sections



> Partial extension guides

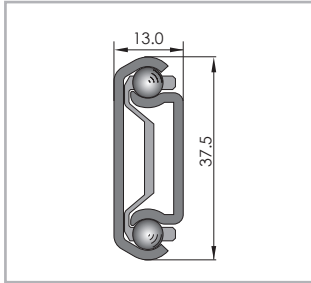


Fig. 8

LPS38

Load capacities p. LR-6

> Full extension guides

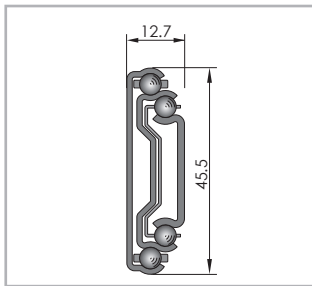


Fig. 9

LFS46

Load capacities p. LR-7

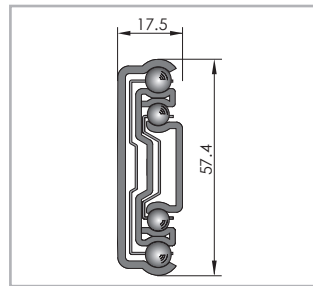


Fig. 10

LFS57

Load capacities p. LR-8

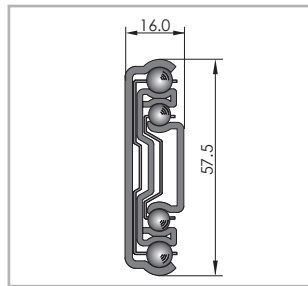


Fig. 11

LFS58 SC

Load capacities p. LR-9

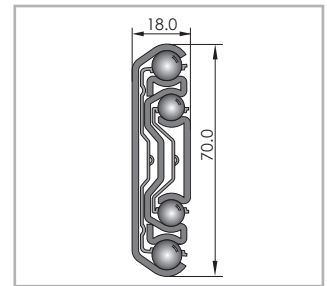


Fig. 12

LFS70

Load capacities p. LR-10

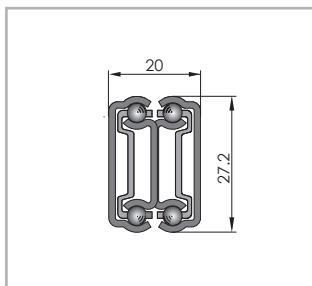


Fig. 13

LFX27

Load capacities p. LR-11

Technical data

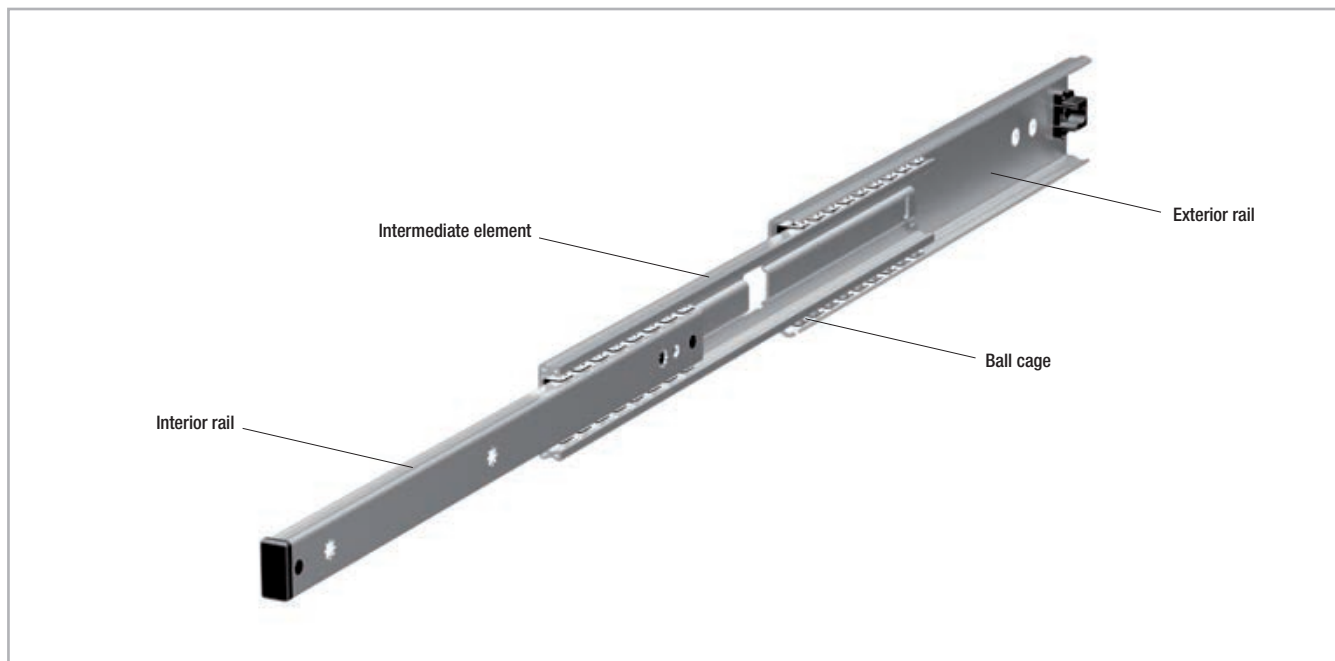


Fig. 14

Performance characteristics:

- Extension speed (depending on application):
 - Extension distance 100 - 500 mm: max. 0.5 m/s (19.69 in/s)
 - Extension distance 600 mm: max. 0.4 m/s (15.75 in/s)
 - Extension distance 700 mm: max. 0.3 m/s (11.81 in/s)
- LFS 58 SC series with automatic retraction
- Temperature range: from +10 °C to +40 °C, for LFX from -30° to +200° C.
- Temporary storage and transport temperature: -20 °C to max. +80 °C (-4 °F to +176 °F)
- All systems are lubricated for life
- LFS/LPS rail material: hot galvanized or chromed steel
- LFS/LPS ball bearing cage material: galvanized steel or plastic
- LFS/LPS ball bearing material: hardened carbon steel
- LFX rail, balls and cage material: stainless steel 1.4301

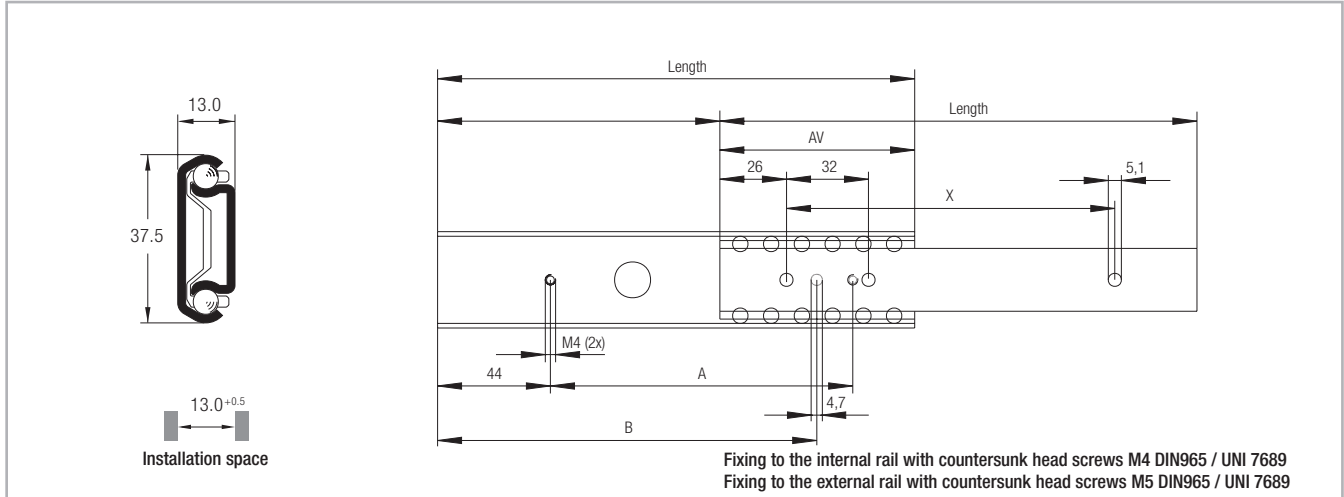
Remarks:

- All load capacity data are based on a pair of telescopic rails
- Horizontal movement installation is recommended
- Vertical movement installation on request
- Assembly in cross-sectional width, here a positive tolerance of +0.5 mm is recommended (mounted under tension). If the extensions are installed with too small a tolerance, the service life is decreased
- Cycle data applies to the use of an extension pair (recommended)
- Vertical use of extensions (radial load) is recommended
- If mounted in a horizontal position, the load capacity will be reduced (see p. LR-13)
- Cathodic edge protection, additional corrosion protection with powder coating on request
- Roll back protection in closed position is friction locked (except LPS 38)
- Not suitable for moments – must be used as extension pair

Dimensions and load capacity



> LPS 38



All dimensions given in mm

Fig. 15

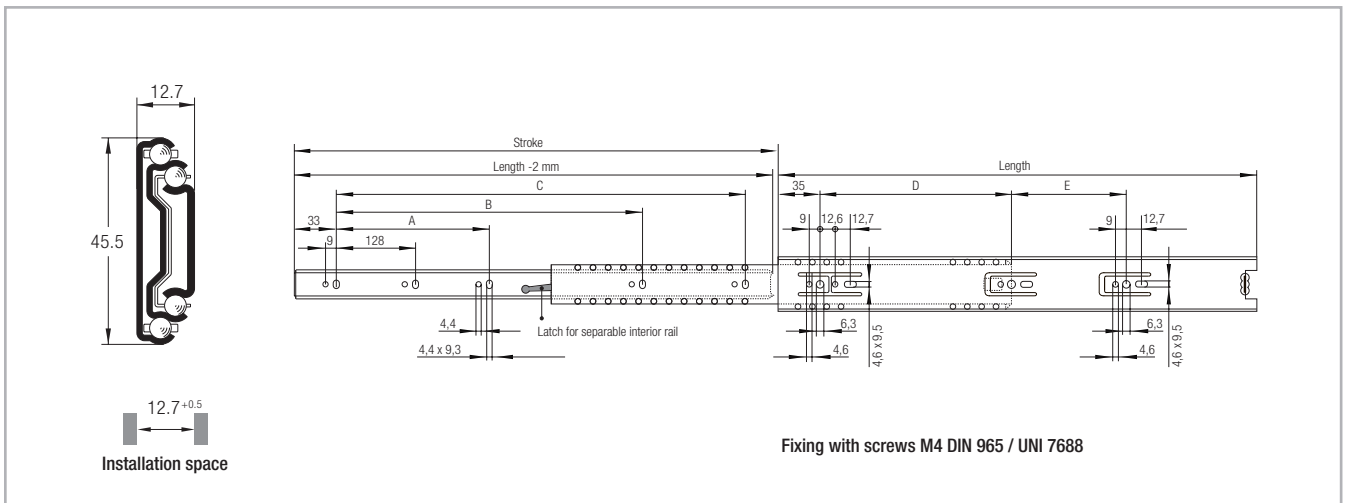
Type	Size	Length [mm]	Extension loss AV [mm]	Stroke* [mm]	A [mm]	B [mm]	X [mm]	Load capacity for a pair of rails		Weight per single guide [kg]
								C_{0rad} [N]	C_{0ax} [N]	
LPS	38	242	88	154	166	202	192	350	100	0.30
		317		229	241	277	256			0.40
		398	100	298	322	358	352			0.50
		473		373	397	433	416			0.60

* The stroke is the difference of the length and the extension loss AV

Tab. 1

Note: The given load capacities are guidelines with 100,000 cycles and uniform load distribution (area load) when using all mounting holes. The load values must be reduced in unfavorable conditions.

> LFS 46



All dimensions given in mm

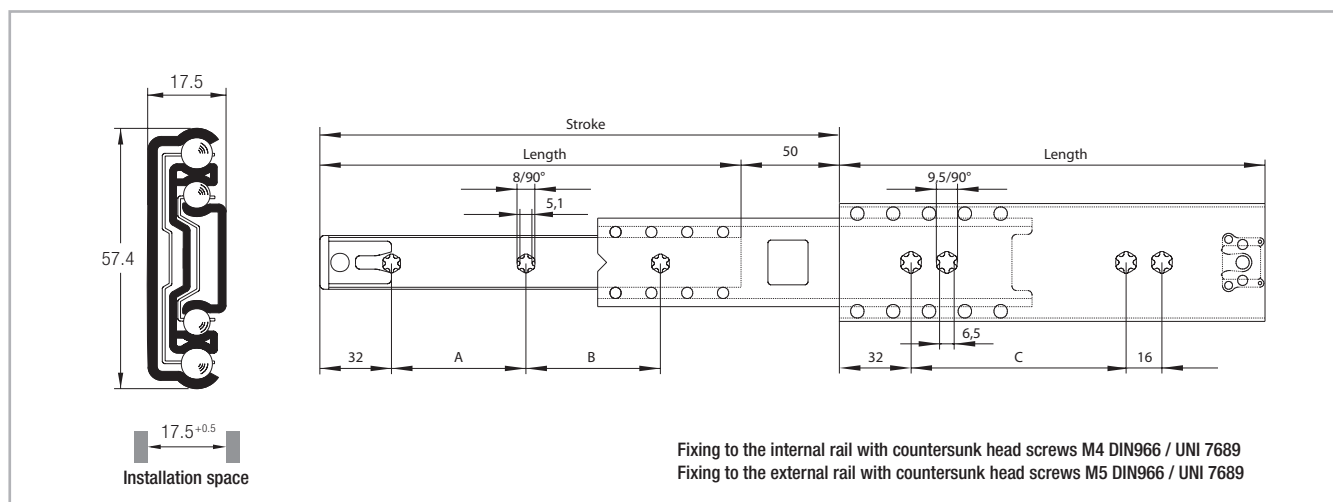
Fig. 16

Type	Size	Length	Stroke	A	B	C	D	E	Load capacity for a pair of rails	Load capacity for a pair of rails	Weight per single guide
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	C_{0rad} [N]	C_{0ax} [N]	[kg]
LFS	46	300	305	-	-	242	192	-	300	100	0,48
		350	356	-	-	292	256	-	300		0,505
		400	406	-	256	342	160	96	350		0,64
		450	457	-		392		160			0,71
		500	508	-	352	128		0,79			
		550	559	224	416	492	224	192	400		0,88
		600	610			542		224			0,95

Tab. 2

Note: The given load capacities are guidelines with 50,000 cycles and uniform load distribution (area load) when using all mounting holes. The load values must be reduced in unfavorable conditions.

> LFS 57



All dimensions given in mm

Fig. 17

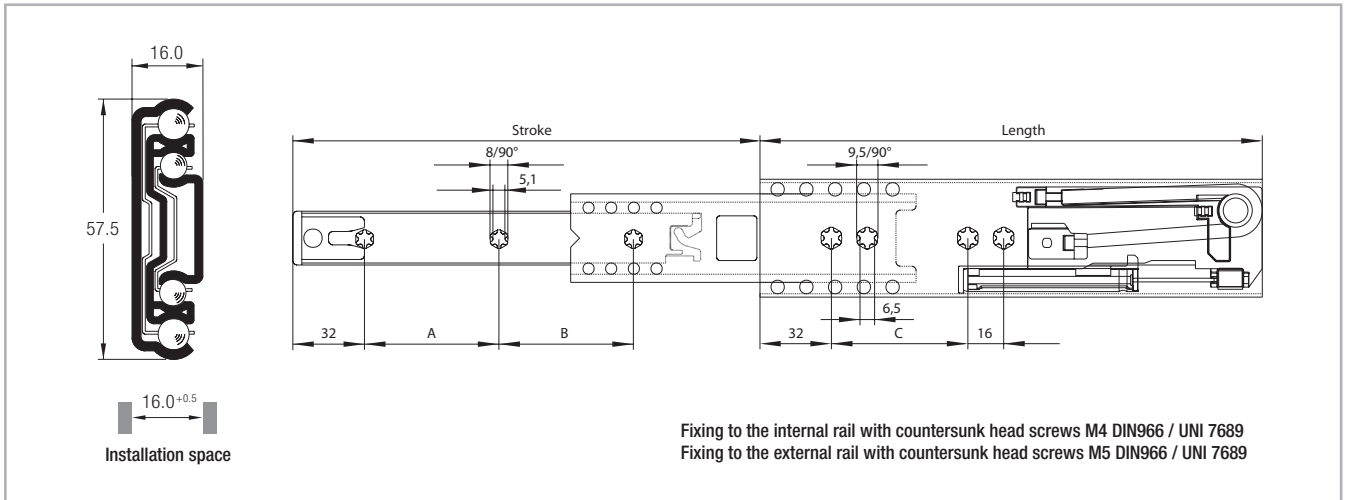
Type	Size	Length	Stroke*	A	B	C	Load capacity for a pair of rails	Load capacity for a pair of rails	Weight per single guide
		[mm]	[mm]	[mm]	[mm]	[mm]	C_{0rad} [N]	C_{0ax} [N]	
LFS	57	300	350	128	104	160	500	160	0.84
		350	400		152		600		0.98
		400	450	160	168	256	650		1.13
		450	500		224		700		1.27
		500	550	224	208	384	750		1.42
		550	600		256				1.57
		600	650	288	240	800	800		1.71
		650	700		288				1.86
		700	750	320	312	360	800		2.01
		750	800		360				2.16

* The stroke is the sum of the length and the over extension

Tab. 3

Note: The given load capacities are guidelines with 100,000 cycles and uniform load distribution (area load) when using all mounting holes. The load values must be reduced in unfavorable conditions.

> LFS 58 SC



All dimensions given in mm

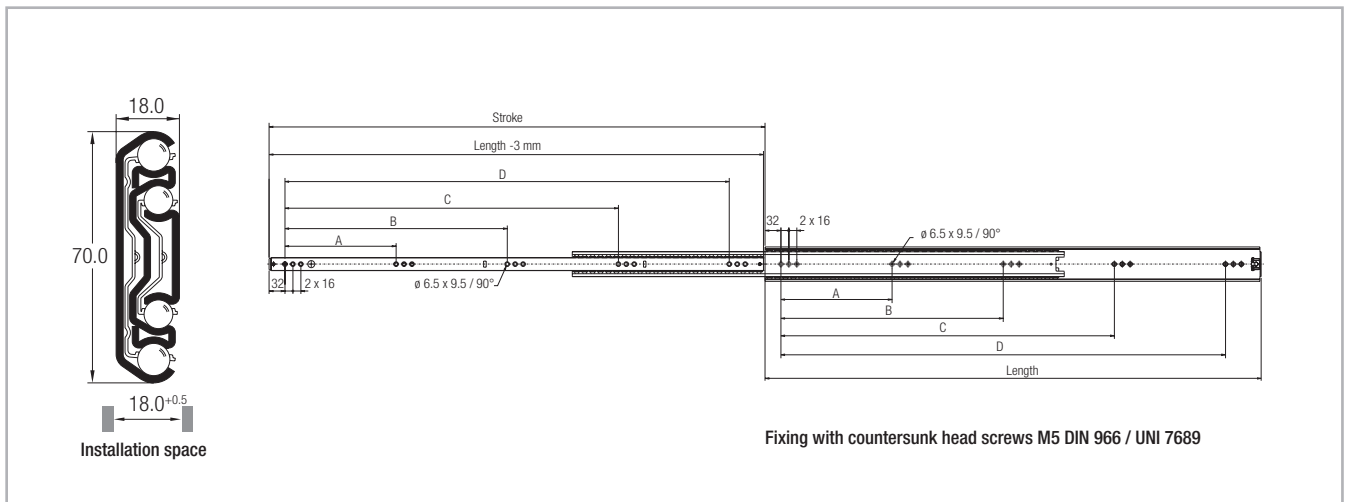
Fig. 18

Type	Size	Length	Stroke	A	B	C	Load capacity for a pair of rails	Weight per single guide
		[mm]	[mm]	[mm]	[mm]	[mm]	C_{Orad} [N]	[kg]
LFS	58	400	434	128	128	224	400	1.10
		450	484	160	160	256	500	1.25
		500	534			192	320	550
		550	584	600	1.55			

Tab. 4

Note: The given load capacities are guidelines with 100,000 cycles and uniform load distribution (area load) when using all mounting holes. The load values must be reduced in unfavorable conditions. Horizontal installation is not possible due to the damping system. The damping effect is reduced for loads of 450 N and higher per extension pair.

> LFS 70



All dimensions given in mm

Fig. 19

Type	Size	Length	Stroke	A	B	C	D	Load capacity for a pair of rails		Weight per single guide	
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	C_{Orad} [N]	C_{Oax} [N]		
LFS	70	400	400	-	-	-	288	1050	1800*	300	1,55
		450	450	-	-	160	320	1150	1900*		1,74
		500	500	-	-	192	384	1300	1950*		1,94
		550	550	-	-	224	448		2000*		2,13
		600	600	-	-		1950*		2,32		
		700	700	-	192	384	576	1750*	2,70		
		800	800	-	224	448	672	1200	1450*		3,10
		1100	1100	224	448	672	896	900	1050*	200	4,25

* 10.000 cycles

Tab. 5

Note: The given load capacities are guidelines with 100.000 cycles and uniform load distribution (area load) when using all mounting holes. The load values must be reduced in unfavorable conditions.

> LFX 27

Stainless steel telescopic guide

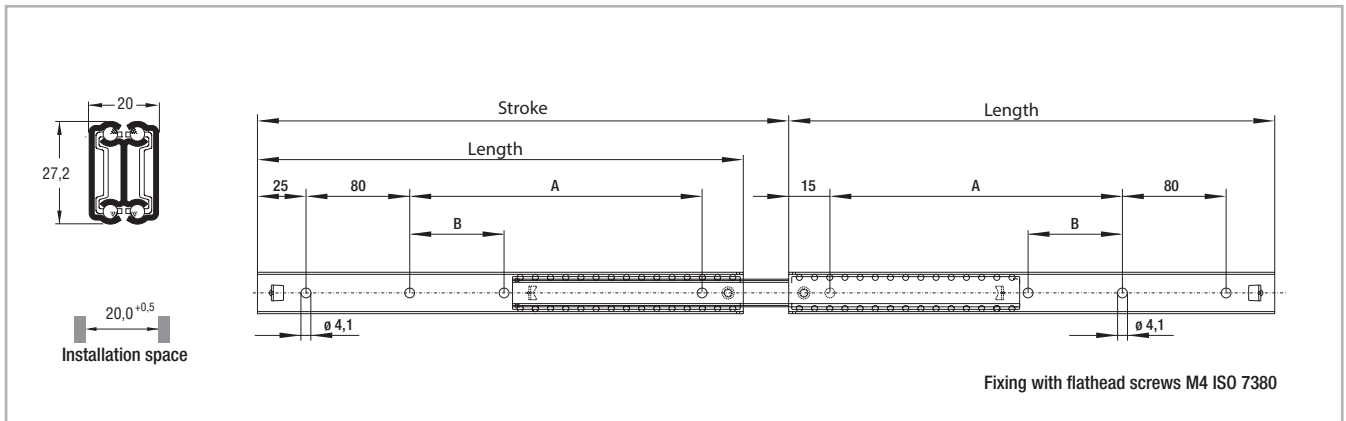


Fig. 20

Type	Size	Length [mm]	Stroke [mm]	A [mm]	B [mm]	Load capacity for a pair of rails [N]				Weight per single guide [kg]
						to 10.000 cycles		to 100.000 cycles		
						C_{Orad}	C_{Oax}	C_{Orad}	C_{Oax}	
LFX	27	300	326	180	-	350	50	250	50	0,43
		350	376	230	70					0,49
		400	426	280	100					0,57
		450	476	330	100					0,64
		500	526	380	140					0,72
		550	576	430	160					0,76

Tab. 6

> **Fixing screws**

We recommend fixing screws according to ISO 7380 with low head height or TORX® screws (see fig. 21) on request.

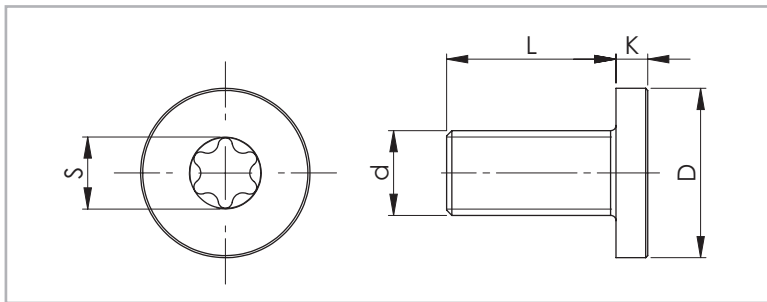


Fig. 21

Rail size	Screw type	d	D [mm]	L [mm]	K [mm]	S	Tightening torque [Nm]
30	M5 x 10	M5 x 0.8	10	10	2	T25	9

Tab. 7

Technical instructions



> Load capacities

Vertical installation (radial load)

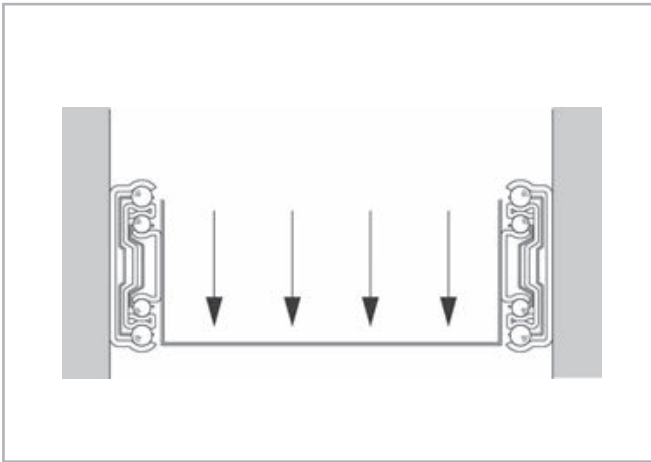


Fig. 22

The given loading capacities are guidelines for a pair of rails vertically mounted with uniform load distribution using all mounting holes. The load values must be reduced in unfavorable conditions.

Horizontal installation (axial load)

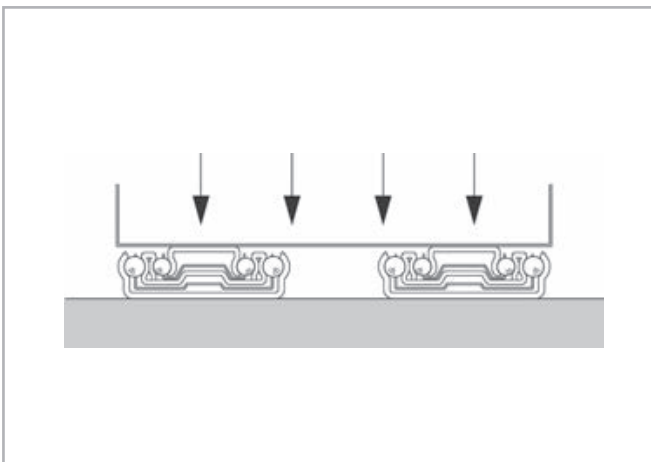


Fig. 23

For horizontal mounted extensions the load capacity is reduced (see pg. LR-6ff).

> Speed

The extension speed is determined by the size of the intermediate elements. Therefore, the maximum extension speed is inversely proportional to the overall extension of the rails (see fig. 24). The maximum extension speed is also directly related to the applied load and operating time. The indicated data refers to continuous operation at the maximum load capacity.

> Temperature

Continual operating temperature of the Light Rail extensions is +10 °C to +40 °C. Temporary storage and transport temperature: -20 °C to max. +80 °C.

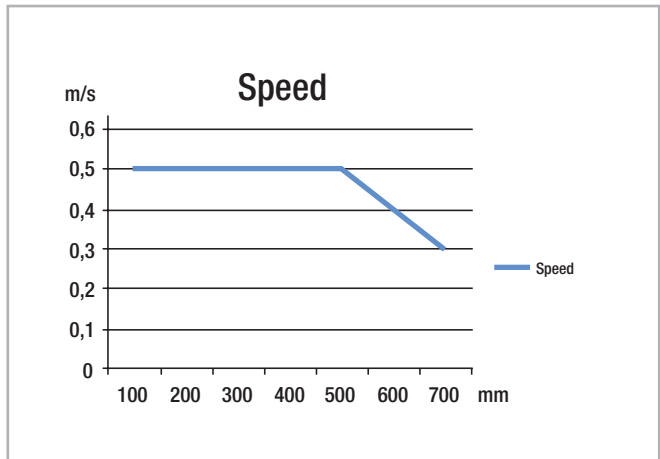


Fig. 24

> Lubrication

All extensions of the Light Rail product family are lubricated for life. Different lubricants for special applications are available upon request. Example: Lubricant with FDA approval for use in the food industry. For more information please contact Rollon technical support.

> Corrosion protection

Base material for the Light Rail product family is cold-rolled, hot-dipped galvanized steel. The cathodic edge protection offers a perfect combination of quality and cost-efficiency. The surface protection conforms to RoHS. For more information please contact Rollon technical support.

> Installation instructions

- The existing internal stops are not designed to stop the moving load. They are only supposed to retain the ball-cage and prevent the internal parts to slide out of the assembly. An external end-stop must always be installed to stop the moving load.
- To achieve optimum running properties, high service life and rigidity, it is necessary to fix the Light Rail extensions with all accessible holes on a rigid and level surface. Please observe the parallelism of the installation surfaces. The fixed and movable rails fit to the rigid assembly construction.
- Light Rail full and partial extensions are suitable for use in automatic systems. For this, the stroke should remain constant in all moving cycles and the extension speed must be checked (see pg. LR-14, fig.24). The movement of the extensions is enabled by internal ball cages, which could experience an offset from the original position with differing strokes. This phase offset can have a negative effect on the running properties or limit the stroke. If differing strokes occur in an application, the drive force must be sufficiently dimensioned in order to appropriately synchronize the ball cage offset. As an alternative, an extra full stroke cycle can be performed every certain number of cycles, in order to re-phase the ball cage in its correct position.

Horizontally installed guides

Horizontally intalled extesions can support tension or compression loads (see figs. 25 and 26).

For the horizontal mounting of extensions with compression loads, please take the following conditions into account: The Hertzian stress of the balls in no longer effective due to the expansion of the rail profile; the nominal tension tolerance of +0.5 mm is eliminated due to the installation configuration. Both the above mentioned conditions contribute to a significant reduction of the axial load capacity.

Horizontally-mounted rails (axial load) also determine a considerably higher deflection of the extended tips if compared to traditionally vertically-mounted rails (radial load).

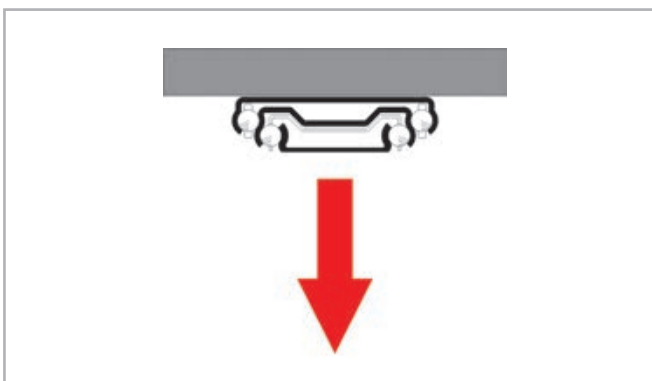


Fig. 25

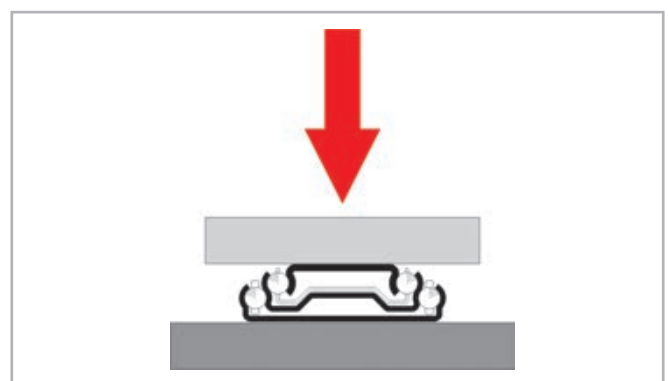


Fig. 26

Ordering key

> Light Rail

LFS	58-	400	SC	
			Automatic retraction only in LFS 58 SC	<i>see pg. LR-9</i>
			Rail length in mm	<i>see pg. LR-6</i>
		Size	<i>see pg. LR-6</i>	
Rail type	<i>see pg. LR-6</i>			

Ordering example: LFS58-0400SC

Notes on ordering: The rail lengths are always indicated as 4 digits with 0 prefixes



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