ROLLON®
BY TIMKEN

Light Rail

Light Rail

A renewed range of rolled steel telescopic rails with light structure and full or partial extension: **4 main advantages.**

1

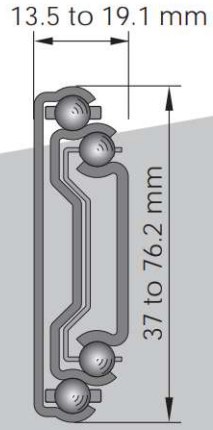
Low deflection

Good rigidity in relation to a lightweight design

2

Quiet sliding

Smooth and silent movement with heavy loads.



3

Low maintenance

Lubricated with heavy duty ball bearing grease based on mineral oil.

4

Space saving

Compact overall dimensions make them ideal for medium and lightweight drawers.

Structural elasticity capable of absorbing minor impacts.

Product explanation

Light telescopic rails with full or partial extension

Fig. 1

Light Rail is the product family of lightweight telescopic rails with full and partial extension, ideal for applications in which the mass of the rail is just as important as the bending rigidity.

End stoppers allow smooth and quiet operation even with heavy loads applied and avoid permanent distortion in case of eventual shocks.

Different options are available depending on the rail size (e.g. locking systems in open and/or closed position) and further customizations (eg. lengths, strokes) are possible.

The Light Rail product family is available in 5 sizes (37-46-56-71-76) and features partial, full extension or overextending, with a wide range of use that spans from light-duty applications, such as kitchen drawers or office furniture, to more demanding ones in industrial automations or special vehicles.

The most important characteristics:

- Light and quiet running
- Long service life with low maintenance
- High 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

LRS37

Partial extension telescopic rail made of cold rolled, low carbon steel, interconnected with a ball bearing cage and treated with corrosion resisting zinc-plating ISO 2081 with blue passivation. It features end stoppers which reduce noise function, and is ideal for light-duty applications such as kitchen and bathroom drawers as well as office furniture.

Fig. 2

LFS46

Full extension telescopic rail with detachable internal element, which can be released with a latch. Rails are made of steel, the ball cages of steel and plastic. Roll back protection in closed position.

Fig. 3

LRS56-71

Full extension telescopic rail made of cold rolled, low carbon steel rails interconnected with ball bearing cages and treated with corrosion resisting zinc-plating ISO 2081 with blue passivation. It features end stoppers with hold closed which reduces noise function and prevents the guide from opening by itself in closed position.

Fig. 4

LRS76

Full extension telescopic rail made of cold rolled, low carbon steel rails interconnected with ball bearing cages and treated with corrosion resisting zinc-plating ISO 2081 with blue passivation.
It features locking mechanisms to lock the slide in opened, closed, and both end positions.

Fig. 5

LRS710E

Telescopic rail with a 150% extension of it's length made of cold rolled, low carbon steel rails interconnected with ball bearing cages and treated with corrosion resisting zinc-plating ISO 2081 with blue passivation.
It features end stoppers with rubber elements to reduce noise in closed position.

Fig. 6

Overview product cross sections

Partial extension guides

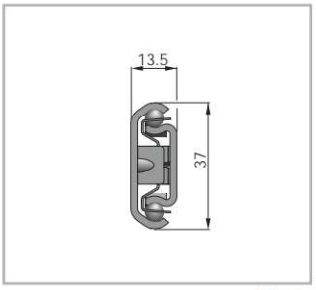


Fig. 7

LRS37

Load capacities p. LR-6

Full extension guides

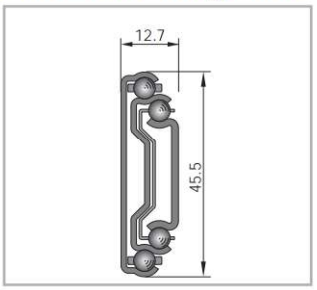


Fig. 8

LFS46

Load capacities p. LR-7

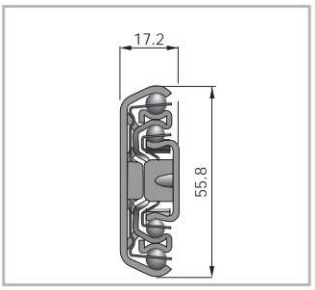


Fig. 9

LRS56

Load capacities p. LR-8

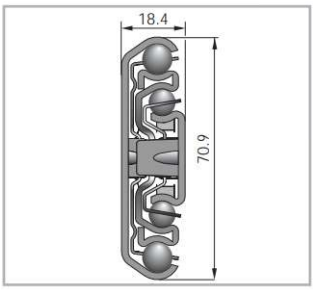


Fig. 10

LRS71

Load capacities p. LR-9

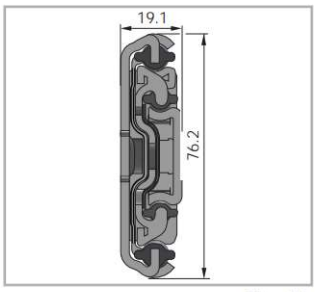


Fig. 11

LRS76

Load capacities p. LR-10

Overextending guides

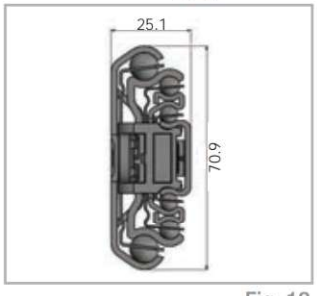


Fig. 12

LRS710E

Load capacities p. LR-11

Technical data

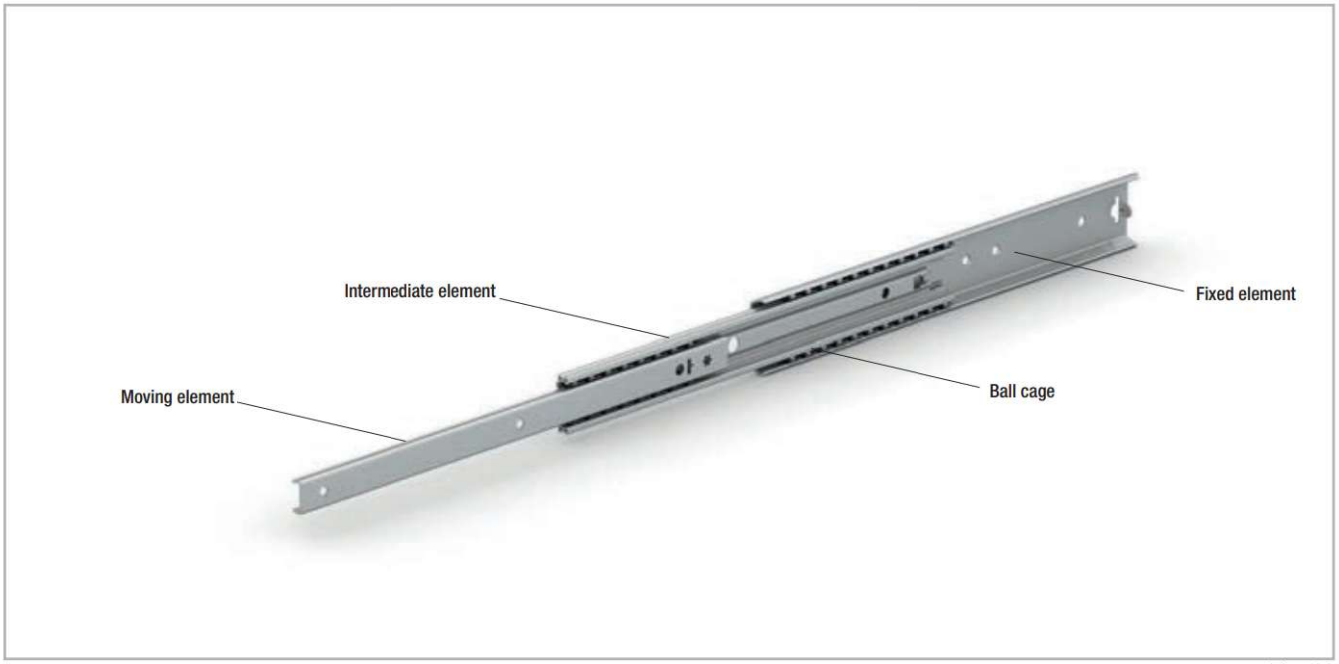


Fig. 13

Performance characteristics:

- Extension speed (depending on application):
  Extension 100 - 500 mm: max. 0.5 m/s (19.69 in/s)
  Extension 600 mm: max. 0.4 m/s (15.75 in/s)
  Extension ≥ 700 mm: max. 0.3 m/s (11.81 in/s)
- Temperature range: LRS from -20°C to +80°C (depending on the application), LFS from +10°C to +40°C (depending on the application).
- All systems are lubricated with heavy duty ball bearing grease based on mineral oil.
- Rail material: cold rolled, low carbon and high yield strength steel.
- Ball cages material: electrolitically galvanized steel or plastics.
- Ball bearings material: hardened carbon steel.

Remarks:

- All load capacity data are based on a pair of telescopic rails
- Horizontal movement installation is recommended
- All strokes are subject to a general tolerance of ± 4 mm.
- Vertical movement installation on request, please contact our Technical Department.
- 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 tolerances, the service life is decreased
- Cycle data applies to the use of an extension pair (recommended)
- Vertical use of extensions (radial load) is recommended
- Not suitable for moments – must be used in pair
- For alternative and specialized finishings, please contact our technical department.
- Customizations possible (eg. lengths, strokes, hold-in, soft close bumpers, ...). Please contact our technical department.
- 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.
- For models LRS76 with locking in closed position (VG) and in closed and opened position (VB) please observe right or left side use

Dimensions and load capacity

LRS37

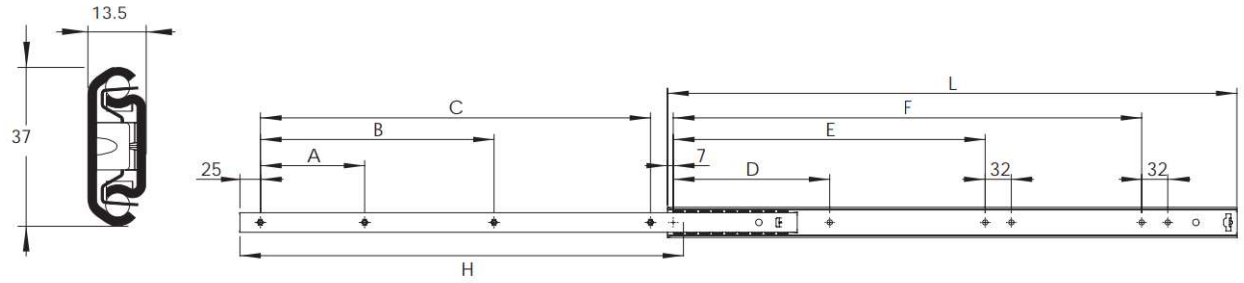


Fig. 14

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		Moving element			Fixed element			Weight per single guide [kg]
				C_{0rad} [N] 10.000 Cycles	C_{0rad} [N] 100.000 Cycles	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	
LRS	37	300	205	780	600	32	96	128	128	192	-	0.45
		350	239	630	490	64	128	160		224	-	0.52
		400	289	540	420		160	224		288	-	0.6
		450	339	460	360			256		320	-	0.67
		500	373	540	420	96	192	288	160	288	384	0.7
		600	457	560	430	128	256	384		352	480	0.88
		700	541	560	430	128	288	480	192	384	576	1.08

Tab. 1

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

LFS46

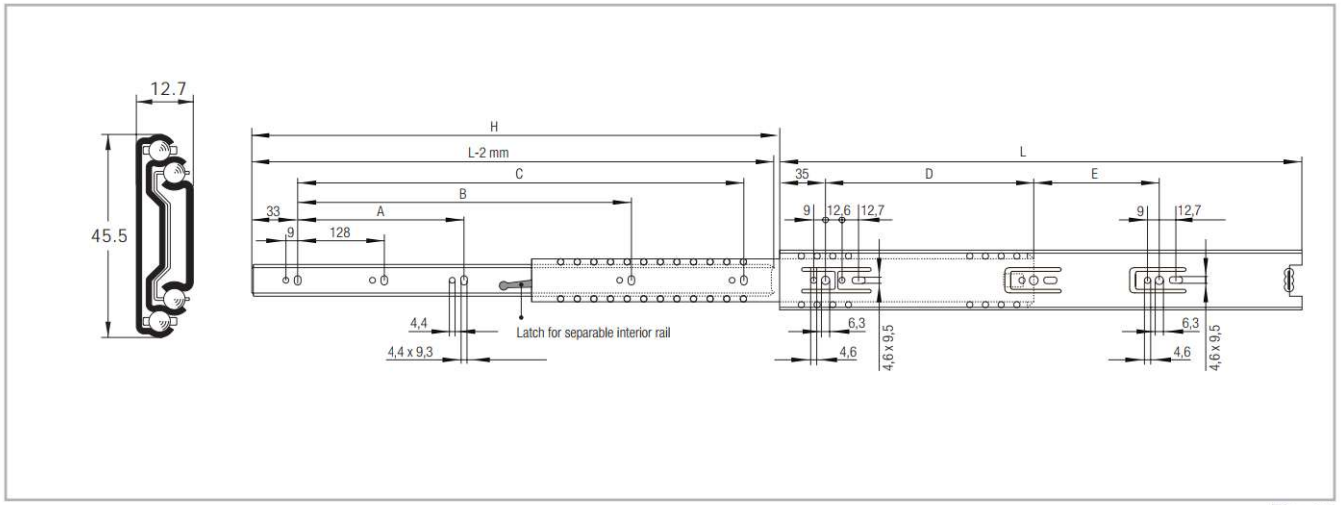


Fig. 15

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails	Moving element			Fixed element		Weight per single guide [kg]
				C_{0rad} [N] 50.000 cycles	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	
LFS	46	300	305	300	-	-	242	192	-	0,48
		350	356		-	-	292	256	-	0,51
		400	406	350	-	256	342	160	96	0,64
		450	457		-		392		160	0,71
		500	508		-	352	442	224	128	0,79
		550	559	400	224	416	492		192	0,88
		600	610				542		224	0,95

Tab. 2

Note: The given load capacities are guidelines with uniform load distribution (area load) when using all mounting holes (at least one hole for each group must be used). The load values must be reduced in unfavorable conditions.

LRS56

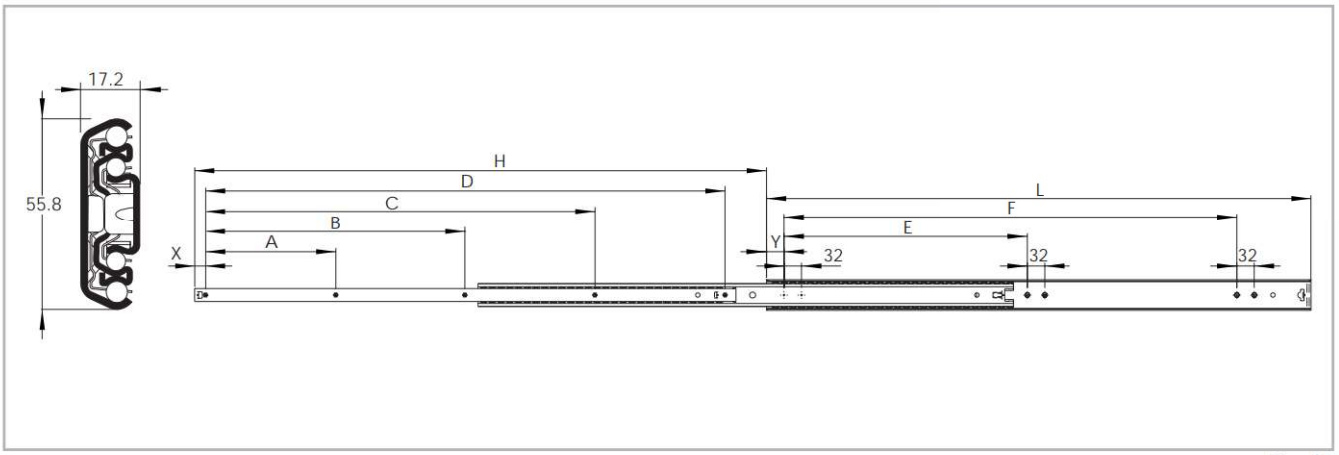


Fig. 16

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		Moving element					Fixed element			Weight per single guide [kg]
				C_{0rad} [N] 10.000 Cycles	C_{0rad} [N] 100.000 Cycles	X [mm]	A [mm]	B [mm]	C [mm]	D [mm]	Y [mm]	E [mm]	F [mm]	
LRS	56	300	320	940	680	20	130	260	-	-	32	160	-	0.84
		350	375	960	770		155	310	-	-			-	0.98
		400	440	970	730		180	360	-	-		192	-	1.12
		450	495	1100	830		205	410	-	-		256	-	1.26
		500	550	1190	900		230	460	-	-		288	-	1.42
		550	600	1180	910		255	510	-	-		320	-	1.56
		600	650	1230	970		280	560	-	-		384	-	1.70
		700	750	1290	1030		330	660	-	-		416	-	1.99
		800	848	1210	1020		251	502.5	754	-		352	640	2.25
		900	950	1050	900		285	569	854	-		384	736	2.58
		1000	1050	810	720		238.5	477	715.5	954		448	832	2.87
		1100	1100	720	630	50	220	425	609	922	42.5	524	914	3.15

Tab. 3

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

LRS71

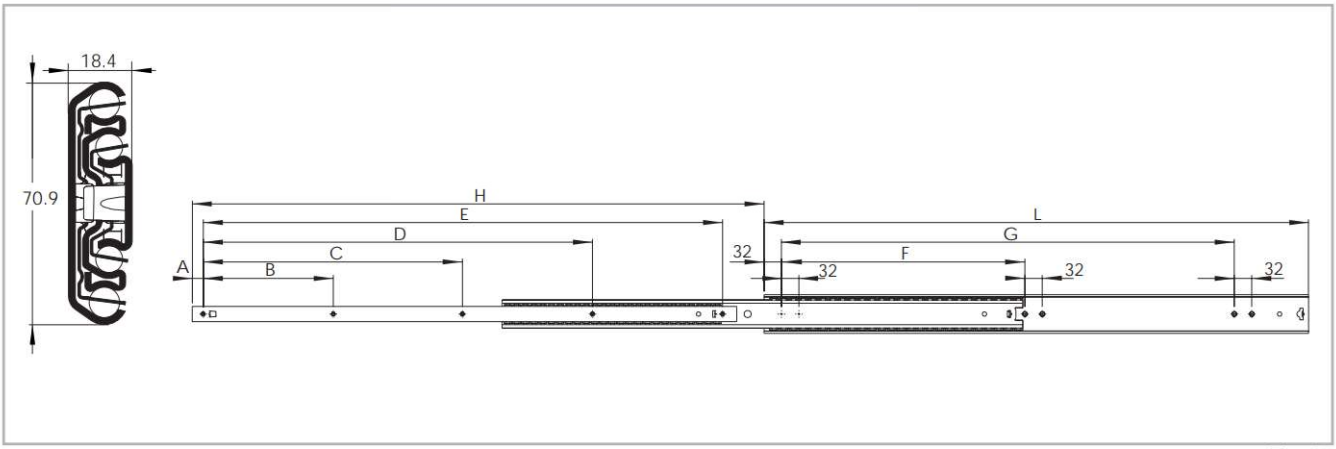


Fig. 17

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		Moving element					Fixed element		Weight per single guide [kg]
				C_{0rad} [N] 10.000 Cycles	C_{0rad} [N] 100.000 Cycles	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	
LRS	71	400	435	1570	970	43	75	150	225	300	256	-	1.55
		450	485	1600	1030		87.5	175	262.5	350		-	1.75
		500	545	1690	1150		100	200	300	400	320	-	2.10
		550	595	1870	1180		112.5	225	337.5	450		-	2.40
		600	650	1890	1180		125	250	375	500	416	-	2.60
		700	750	1870	1370		150	300	450	600		-	2.80
		800	850	2120	1470	20	251	502.5	754	-	352	640	3.10
		900	950	1920	1250		285	569	854	-	384	736	3.58
		1000	1050	1790	1080		238.5	477	715.5	954	448	832	3.95
		1100	1100	1710	1010	50	220	425	640	926	520	932	4.35

Tab. 4

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

LRS76

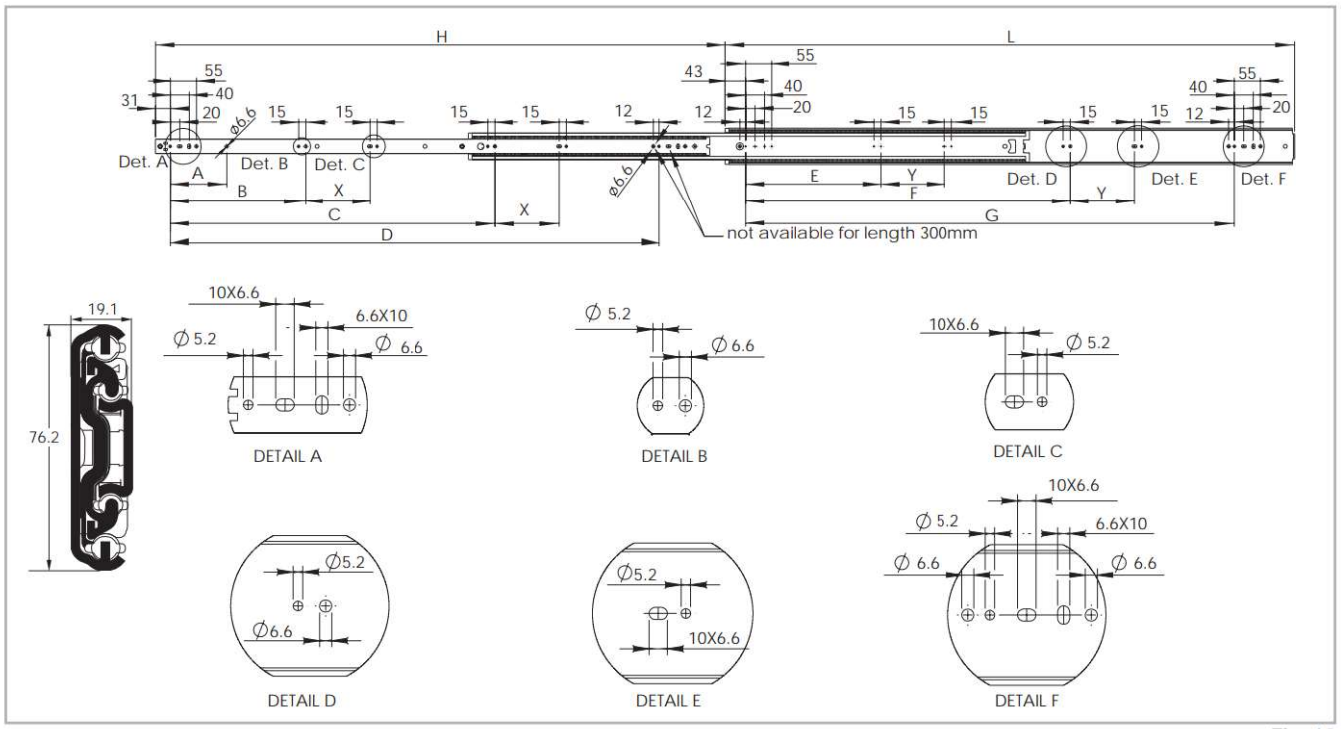


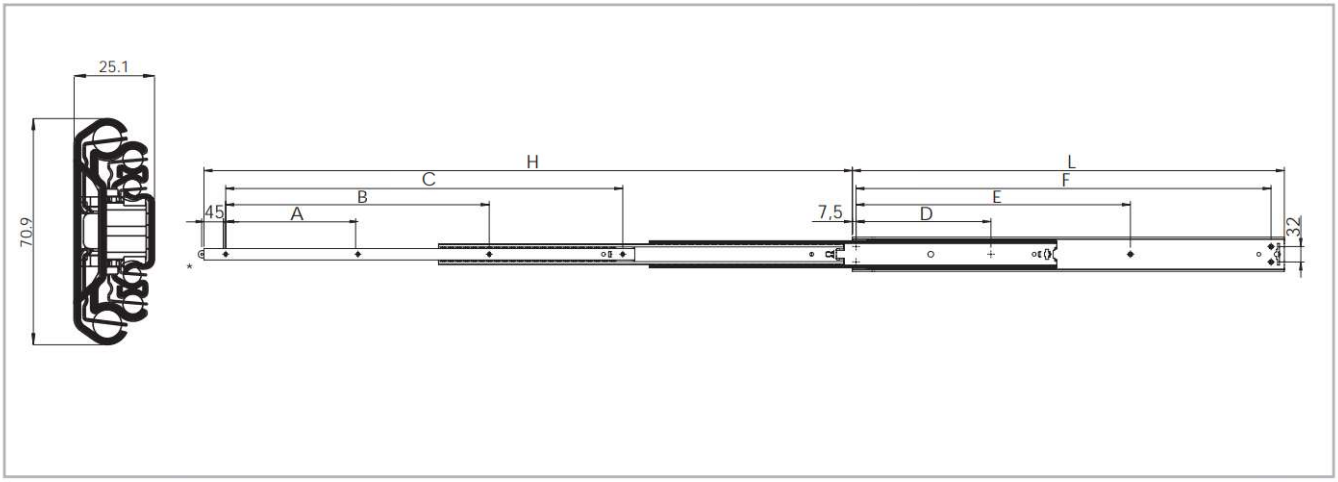
Fig. 18

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity for a pair of rails		Moving element						Fixed element					Weight per single guide [kg]
				C_{0rad} [N] 10.000 Cycles	C_{0rad} [N] 50.000 Cycles	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	I [mm]	J [mm]	K [mm]	M [mm]	
LRS	76	300	298	2250	1950	-	-	-	-	-	130	-	-	-	-	130	1.40
		350	366	2350	2000	-	-	-	-	-	180	-	-	-	-	180	1.65
		400	398	2500	2100	118	-	-	-	-	230	-	-	-	-	230	1.90
		450	464	2550	2200	142	-	-	-	-	280	-	-	-	-	280	2.13
		500	512	2600	2300	186	-	-	-	-	330	-	-	-	-	330	2.40
		550	562	2650	2400	186	-	-	-	-	380	-	-	-	-	380	2.65
		600	610	2750	2550	-	185	355	-	-	430	185	320	-	-	430	2.90
		650	660	2850	2650	-	185	355	-	-	480	185	320	-	-	480	3.15
		700	708	2950	2800	-	285	420	-	-	530	185	320	-	-	530	3.40
		750	758	3000	2900	-	285	420	-	-	580	185	370	-	-	580	3.65
		800	806	3100	3000	-	285	455	-	-	630	285	420	-	-	630	3..90
		850	854	3150	3000	-	335	520	-	-	680	285	420	-	-	680	4.15
		900	904	3200	3100	-	385	520	-	-	730	285	420	-	-	730	4.40
		1000	1000	3250	3150	-	385	555	-	-	830	385	520	-	-	830	4.90
		1100	1098	3050	2900	-	235	420	635	770	930	235	420	585	770	930	5.40
		1200	1212	2950	2800	-	285	420	685	820	1030	285	420	685	820	1030	5.90
		1350	1358	2450	2100	-	285	455	785	920	1180	285	420	785	920	1180	6.65
		1500	1504	2250	1950	-	358	520	885	1020	1330	385	520	885	1020	1330	7.40

Tab. 5

Note: The given load capacities are guidelines with uniform load distribution (area load) when using all mounting holes (at least one hole for each group must be used). The load values must be reduced in unfavorable conditions. Please observe right or left installation for version LRS76 with locking mechanisms in closed position (VG) and in closed and opened position (VB).

LRS710E



* Lock-in feature not assembled - device enclosed to each delivery

Fig. 19

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity	Moving element			Fixed element		
				C_{0rad} [N] 10.000 Cycles	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
LRS	710E	300	395	800	105	-	227.5	142.5	-	265
		400	595	900	115	218	327.5	192.5	-	365
		500	750		145	290	427.5	155	310	465
		600	900	1000	170	340	527.5	182.5	372.5	565
		700	1050		200	400	627.5	212.5	432.5	665
		800	1200		240	480	727.5	247.5	502.5	765
		900	1350		275	550	827.5	282.5	572.5	865

Tab. 6

Note: The given load capacities are guidelines with uniform load distribution (area load) when using all mounting holes (at least one hole for each group must be used). The load values must be reduced in unfavorable conditions.

Accessories

Available options (depending on telescope version)

Locking

Locking mechanisms make it possible to lock the Light Rail in opened, closed, or both end positions. This prevents inadvertent extension or retraction of the rail in any case. This ensures personal safety and protection of materials, especially in moving installations, as in vehicles.

Damping

Light Rail telescopic rails can be equipped with damped end stops in closed position. the damping elements provide quieter operation, a softer end stop when pushing in the rail, and higher resistance at the end of the stroke.

Snap

Light Rail telescopic guides can be equipped with a snap. Thus, an unintended process of the telescope system is avoided.

Note: Not all accessories (damping, snap) can be combined with each other and available. (see Technical features overview) Please contact our technical service.

Technical instructions

Load capacities

Vertical installation (radial load)

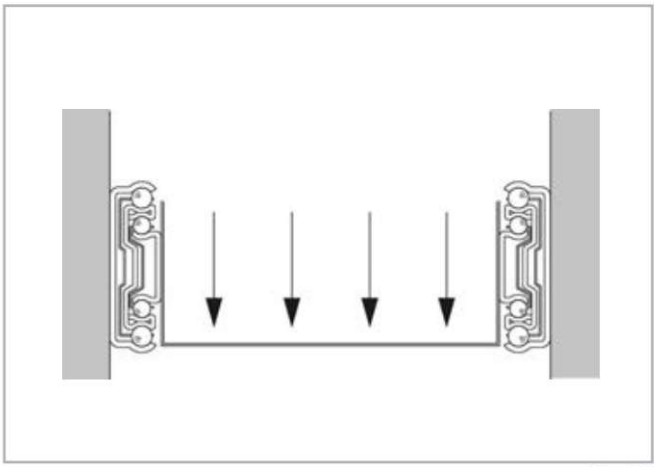


Fig. 20

The given loading capacities are guidelines for a pair of rails vertically mounted with uniform load distribution using all mounting holes (for LFS46 and LRS76 at least one hole of each group must be used). The load values must be reduced in unfavorable conditions.

Overall dimension

When installing the rail, its nominal overall dimension relative to the side of the drawer/cabinet must be kept in mind. The overall dimension is the thickness of the rail plus 0.5 mm ± 0.25. The thickness of the rail is measured with the ball cage in the closed position. Be sure to leave at least 5 mm of clearance behind the drawer.

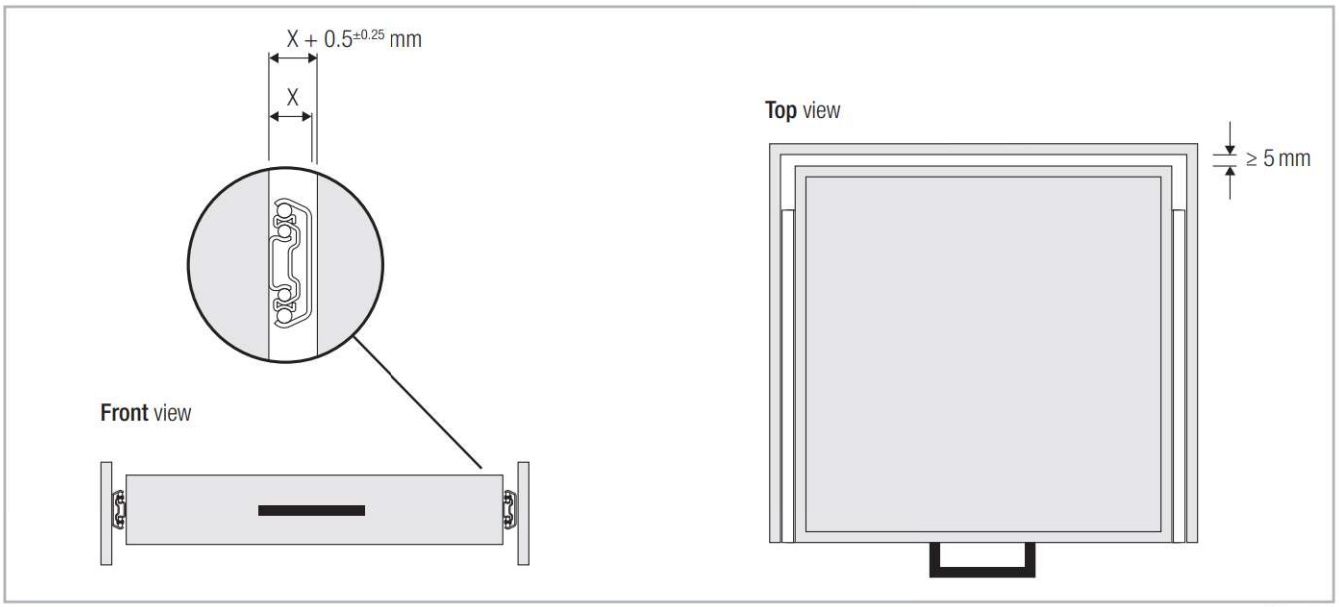


Fig. 21

Alignment

When positioning the rails, it is important that they are aligned accurately, within the specified tolerances. The more precisely the guide rails are aligned, the smaller the chance that they will work against each other.

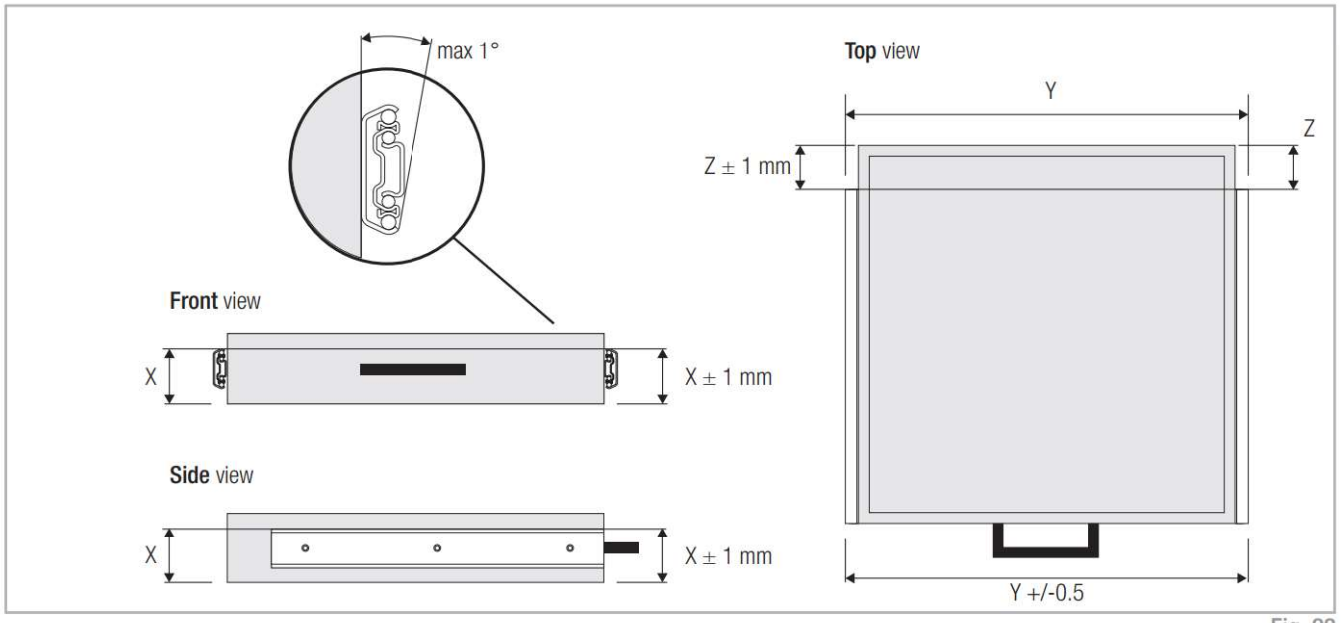


Fig. 22

Stroke tolerance

The given strokes in the „Dimensions and load capacity“ chapter are subject to a general tolerance of ± 4 mm.

Distances

The pair of rails are tested at a maximum width of 600 mm. For distances wider than 600 mm, please contact our technical department.

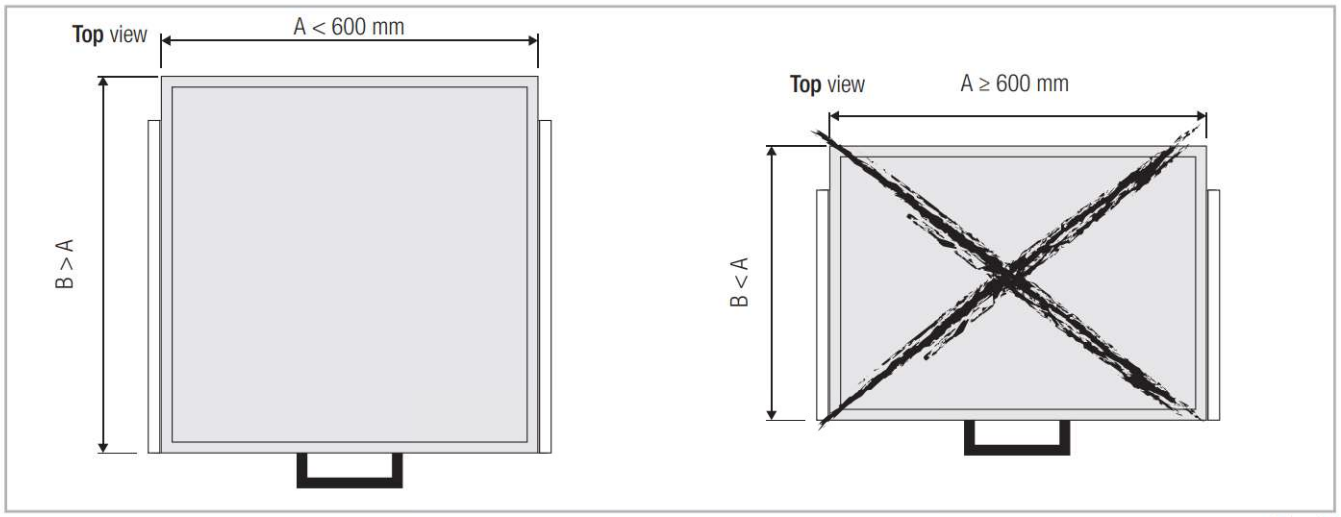
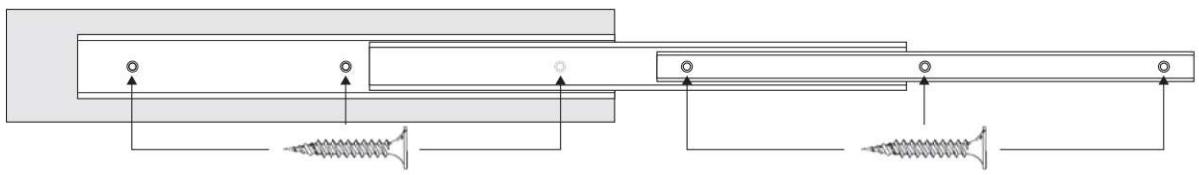


Fig. 23

Fixations

The rails can be mounted using a wide variety of fixations such as screw holes, mounting tabs, hanging tabs, press-in bolts, etc. When selecting screws, make sure the screw head does not protrude, so there is no contact between the moving parts of the rail and the screw head.



*the number of screws may vary depending on the length of the rail

Fig. 24

Type	Size	Screw type	
		Moving element	Fixed element
LRS	37	Metal: M4 / DIN 965 / ISO 7046 M4 / DIN 7500 Wood: 4,5 / DIN 7997	Metal: M4 / DIN 7984 M4 / M5 / ISO 7380 Wood: 5,0 / DIN 7997
LFS	46	M4 DIN 965 / UNI 7688	M4 DIN 965 / UNI 7688
LRS	56	Metal: M4 / DIN 965 / ISO 7046 M4 / DIN 7500 M4 / DIN 7991 / ISO 10462 Wood: 4,0 / 4,5 / DIN 7997	Metal: M5 / DIN 965 / ISO 7046 M5 / DIN 7500 Wood: 5,0 / DIN 7997
	71	Metal: M4 / DIN 965 / ISO 7046 M4 / DIN 7500 Wood: 4,0 / 4,5 / DIN 7997	Metal: M5 / DIN 965 / ISO 7046 M5 / DIN 7500 Wood: 5,0 / DIN 7997
	76	Metal: M5 / DIN 7984 M5 / M6 / ISO 7380	Metal: M5 / DIN 7984 M5 / M6 / ISO 7380
LRS	71OE	Metal: M5 / DIN 965 / ISO 7046 M4 / DIN 7500 M4 / DIN 7991 / ISO 10462 Wood: 4,0 / 4,5 / DIN 7997	Metal: M5 / DIN 965 / ISO 7046 M4 / DIN 7500 Wood: 5,0 / DIN 7997

Tab. 7

Load capacity

Load capacities are specified per pair and are purely indicative. Length, application and construction of the enclosure all have an impact on the load capacity. We recommend testing based on a prototype of the final application. Only then can the proper operation, service life and safety of the application be ensured.

Static load capacity

Static load means that the load capacity of the rail is based on less than 10.000 cycles per pair.

Dynamic load capacity

Dynamic load means that the load capacity of the rail is based up to 100.000 cycles per pair (50.000 for LFS46 and LRS76). The number of cycles affects the service life and performance. Other factors that may affect performance are:

1. A uniformly or unevenly distributed load
2. Centre of gravity of the load
3. The speed and/or frequency of the movement
4. The length of the rail relative to the extended length
5. The force with which the load comes against the end stop
6. For optimum performance, the rails must be regularly fully extended
7. In case of use in outdoor applications or aggressive environments, please contact our Technical Department.

Abnormal loads / vibrations

Transport, misuse and shock loads – even of short duration – may cause damage. Excessive or continuous vibration can also reduce the performance and service life of the rails.

Anticorrosion treatments

The rails have a corrosion-resistant, zinc-plated, blue-passivated finish. High humidity, salts or other chemical agents may damage the surface of metal or plastic components. Exposure to any such conditions should be avoided at all times. For more information please contact Rollon technical support.

Lubrication

To ensure optimum performance, Rollon applies grease/lubricant to the rails. Contaminants such as grime, grindings, sawdust, paint, etc. may reduce the effectiveness of the applied grease. For more information please contact our Technical Department.

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. 25). 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.

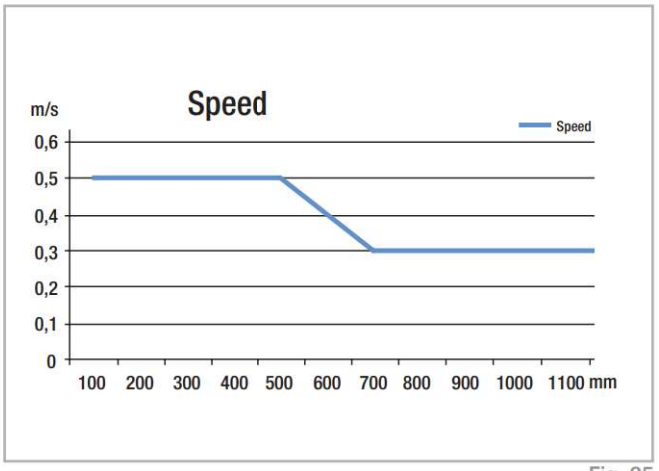


Fig. 25

Temperature

Continual operating temperature is -20°C to +80°C for LRS and +10°C to +40°C for LFS. The temperature range may vary according to the application (duration of exposure, impact, other forces on the rail, etc). Please contact our Technical Department.

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.
- The rails perform best when mounted in a very rigid construction (furniture, device or installation). Do not use the rails as a structural part of a construction.
- 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-16, fig.25). 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.

Ordering key

Light Rail

LRS	**71-**	**400**	
		Rail length in mm	*see from pg. LR-6*
	Size	*see from pg. LR-6*	
Rail type	*see from pg. LR-6*		

Ordering example: LRS71-0400

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