

**ROLLON**<sup>®</sup>

Linear Evolution

*Opti Rail*



## Product explanation



### > Fully extending telescopic rails for manual movement



Fig. 1

Range of fully extending telescopic rails, extremely compact and highly rigid, with reduced deflection even when the telescopic rail is fully extended. The steel ball bearings ensure a high load capacity.

#### The most important characteristics:

- Full extension
- Compact construction
- Quiet and smooth operation
- Long life
- Reliable operation
- 2 types of hole pitch

#### Preferred areas of application:

- Railway (e. g. maintenance and battery extensions)
- Special Vehicles (e.g. fireworks, ambulance, mobile shops)
- Professional furniture
- Special machines
- Industrial drawers

**LTH**

Fully extending telescopic rail made of cold drawn steel, consisting of two rails, one fixed and one moveable, and of a central I-beam profile element. This element has high inertia and a very rigid construction, while boasting a very compact design. This ensures a high load capacity and reduced deflection even when the telescopic rail is fully extended.



Fig. 2

**LTF**

Fully extending telescopic rail consisting of two guide rails as fixed and movable elements and an S-shaped intermediate element. This special shape allows an extremely slim and compact design for movements that are only occasionally executed.



Fig. 3

## Technical data

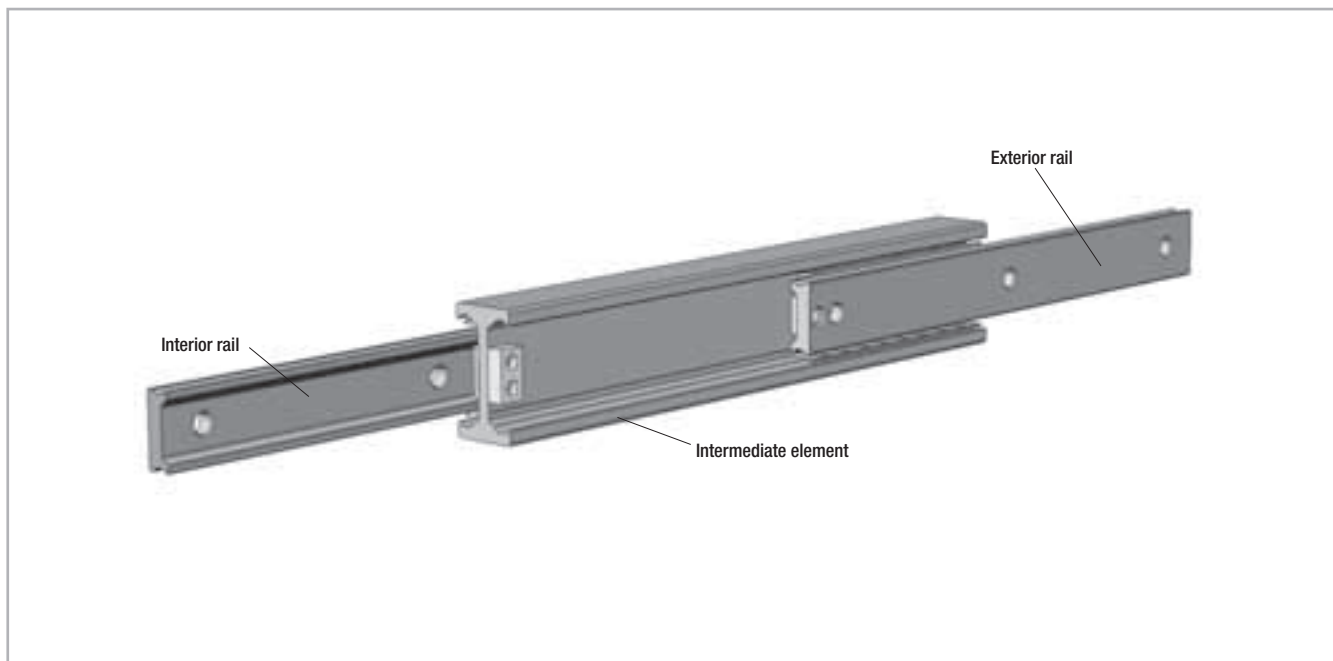


Fig. 4

### Performance characteristics

- Temperature range: -30 °C to +170 °C (-22 °F to +338 °F)
- Max. operating speed: 0.3 m/s (depending on application)
- Available sizes LTH: 30 and 45
- Available sizes LTF: 44
- Sliders and LTH central element made of steel Cf53
- Sliders and LTF central element made of steel C43

### Note:

- Horizontal movement installation is recommended
- Vertical movement installation on request
- Custom strokes on request
- All load capacity data are based on one telescopic rail
- Fixing screws of property class 10.9 must be used for all telescopic rails
- Internal stops are used to stop the unloaded slider and the ball cage.  
Please use external stops as end stops for a loaded system.

# Dimensions and load capacity

## LTH30 RF

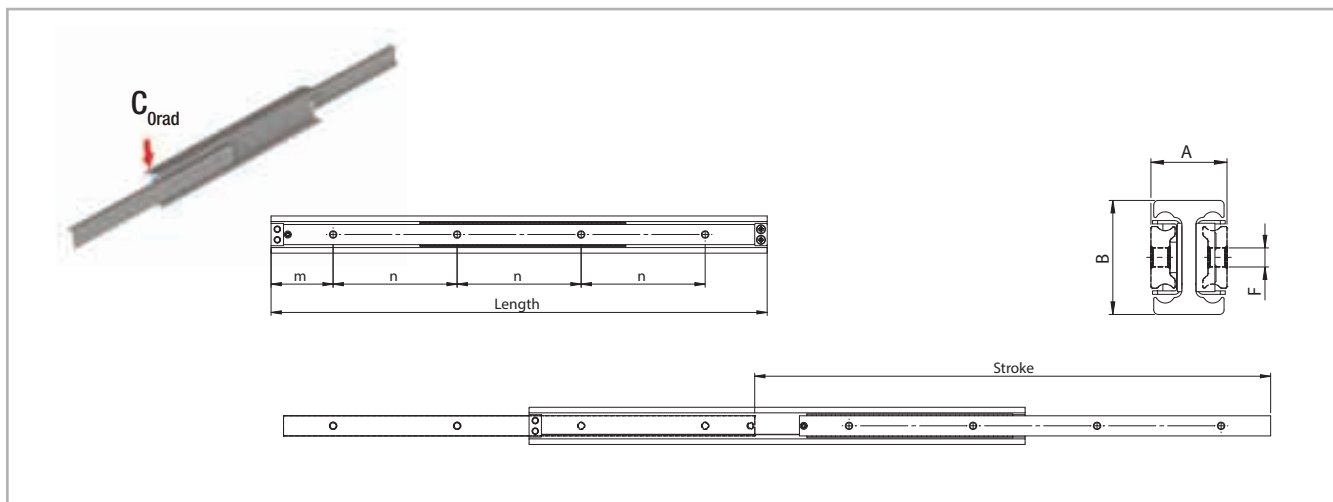


Fig. 5

Type	Size	Length	Stroke	A	B	m	n	F	Load capacity*	No. of holes	Weight*
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		$C_{Orad}$ [N]		[kg]
LTH	30	250	285	20	30	25	100	M6	202	3	0.88
		300	323			50			504		
		350	377			25			4	1.23	
		400	416			50					568
		450	485			25			5	1.58	
		500	523			50					735
		550	577			25			6	1.93	
		600	615			50					701
		650	685			25			7	2.28	
		700	723			50					593
		750	777			25			8	2.63	
		800	815			50					533
		850	884			25			9	2.98	
		900	923			50					468
		950	977			25			10	3.33	
		1000	1015			50					429
		1050	1084			25			11	3.68	
		1100	1123			50					396
1150	1176	25	12	4.03							
1200	1215	50			368	360					

\* The given load capacities and weights apply for a single extension

Tab. 1

> LTH30 KF

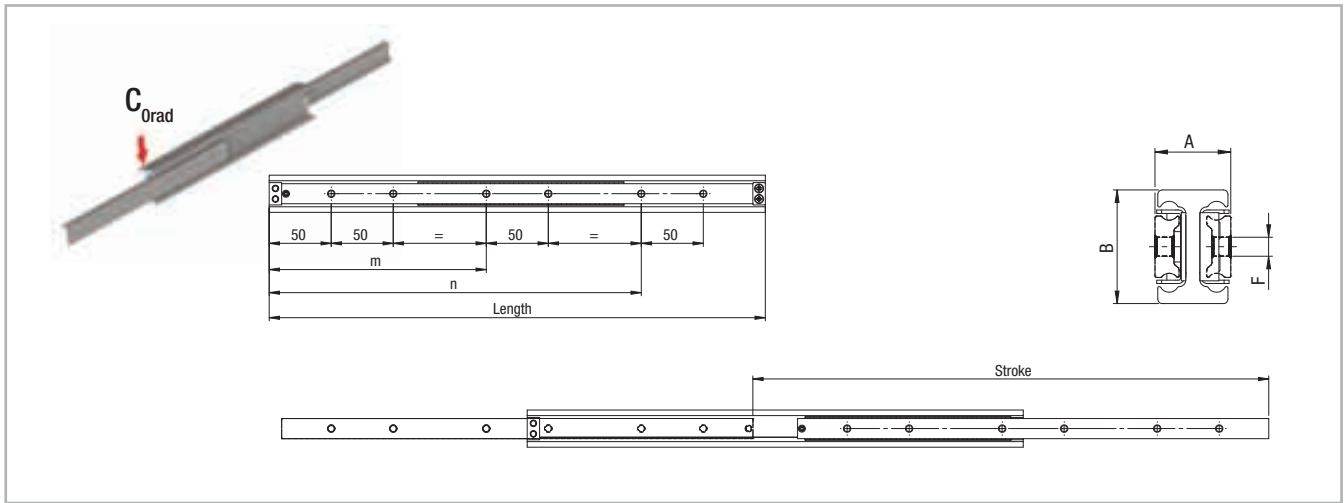


Fig. 6

Type	Size	Length	Stroke	A	B	m	n	F	Load capacity*	No. of holes	Weight*
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		$C_{Orad}$ [N]		[kg]
LTH	30	250	285	20	30	-	150	M6	202	4	0.88
		300	323			-	200		504		1.05
		350	377			-	250		521		1.23
		400	416			175	300		568		1.40
		450	485			200	350		582	1.58	
		500	523			225	400		735	1.75	
		550	577			250	450		732	1.93	
		600	615			275	500		701	2.10	
		650	685			300	550		615	2.28	
		700	723			325	600		593	2.45	
		750	777			350	650		550	2.63	
		800	815			375	700		533	2.80	
		850	884			400	750		481	2.98	
		900	923			425	800		468	3.15	
		950	977			450	850		441	3.33	
		1000	1015			475	900		429	3.50	
1050	1084	500	950	396	3.68						
1100	1123	525	1000	386	3.85						
1150	1176	550	1050	368	4.03						
1200	1215	575	1100	360	4.20						

\* The given load capacities and weights apply for a single extension

Tab. 2

> LTH45 RF

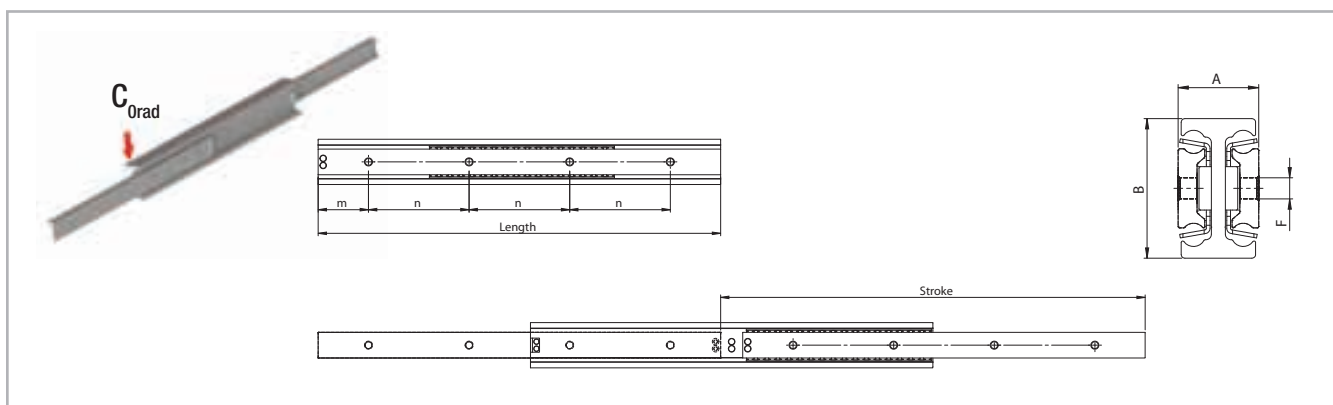


Fig. 7

Type	Size	Length	Stroke	A	B	m	n	F	Load capacity*	No. of holes	Weight*
		[mm]	[mm]						$C_{Orad}$ [N]		[kg]
LTH	45	250	276	26	45	25	100	M8	1305	3	1.50
		300	310			50			1412		1.80
		350	388			25			1410	4	2.10
		400	422			50			1421		2.40
		450	478			25			1432	5	2.70
		500	512			50			1450		3.00
		550	590			25			1382	6	3.30
		600	624			50			1516		3.60
		650	680			25			1626	7	3.90
		700	714			50			1673		4.20
		750	770			25			1542	8	4.50
		800	826			50			1430		4.80
		850	882			25			1333	9	5.10
		900	916			50			1307		5.40
		950	972			25			1225	10	5.70
		1000	1028			50			1153		6.00
		1050	1084			25			1089	11	6.30
		1100	1118			50			1072		6.60
		1150	1174			25			1017	12	6.90
		1200	1230			50			967		7.20
1250	1286	25	921	13	7.50						
1300	1320	50	909		7.80						
1350	1376	25	869	14	8.10						
1400	1410	50	858		8.40						
1450	1488	25	798	15	8.70						
1500	1522	50	789		9.00						

\* The given load capacities and weights apply for a single extension

Tab. 3

> LTH45 KF

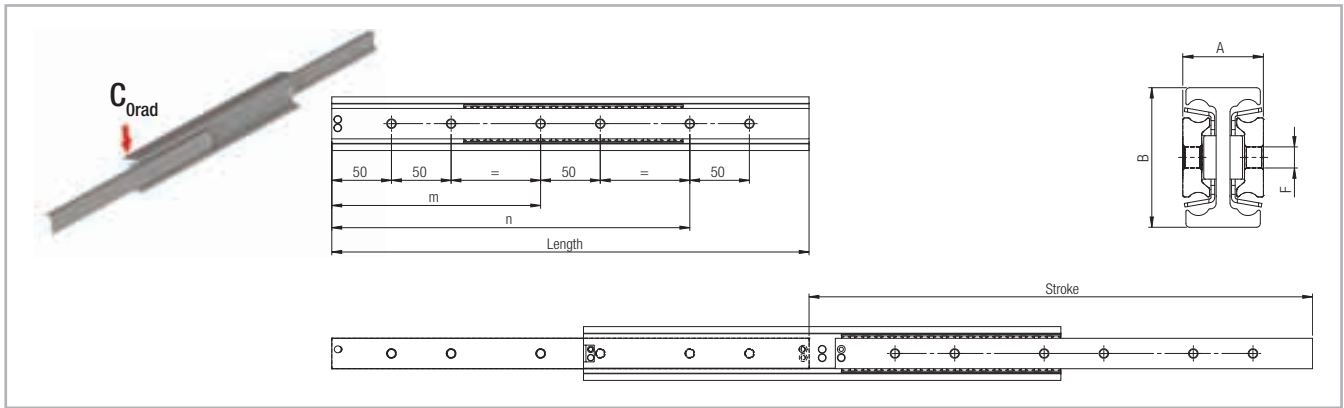


Fig. 8

Type	Size	Length	Stroke	A	B	m	n	F	Load capacity*	No. of holes	Weight*
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		$C_{Orad}$ [N]		[kg]
LTH	45	250	276	26	45	-	150	M8	1305	4	1.50
		300	310			-	200		1412		1.80
		350	388			-	250		1410		2.10
		400	422			175	300		1421		2.40
		450	478			200	350		1432	2.70	
		500	512			225	400		1450	3.00	
		550	590			250	450		1382	3.30	
		600	624			275	500		1516	3.60	
		650	680			300	550		1626	3.90	
		700	714			325	600		1673	4.20	
		750	770			350	650		1542	4.50	
		800	826			375	700		1430	4.80	
		850	882			400	750		1333	5.10	
		900	916			425	800		1307	5.40	
		950	972			450	850		1225	5.70	
		1000	1028			475	900		1153	6.00	
		1050	1084			500	950		1089	6.30	
		1100	1118			525	1000		1072	6.60	
		1150	1174			550	1050		1017	6.90	
		1200	1230			575	1100		967	7.20	
1250	1286	600	1150	921	7.50						
1300	1320	625	1200	909	7.80						
1350	1376	650	1250	869	8.10						
1400	1410	675	1300	858	8.40						
1450	1488	700	1350	798	8.70						
1500	1522	725	1400	789	9.00						

\* The given load capacities and weights apply for a single extension

Tab. 4



> LTF44

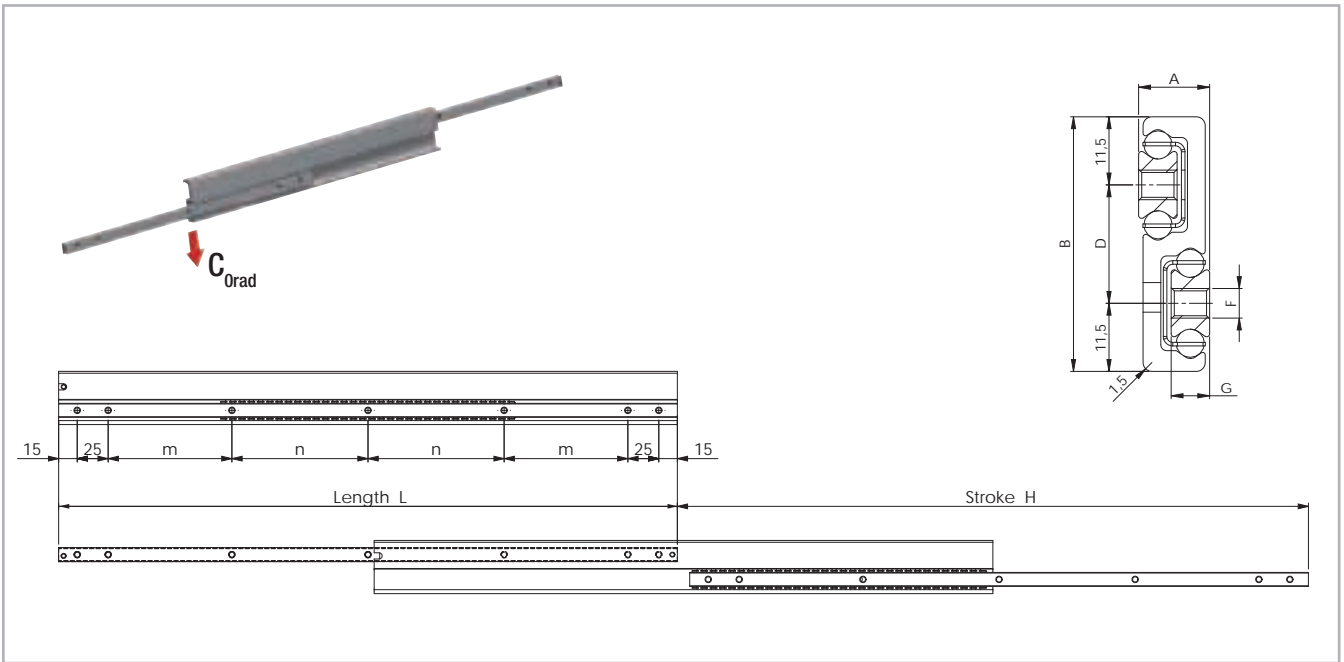


Fig. 9

Type	Size	Length L [mm]	Stroke H [mm]	Load capacity $C_{Orad}$ [N]	Cross-section					Fixed and movable rail			Weight [kg/m]
					A [mm]	B [mm]	D [mm]	G [mm]	F	m [mm]	n [mm]	No. of holes	
LTF	44	200	210	114	12	43	20	6,5	M5	60	0	5	2,70
		225	235	130						72,5			
		250	260	144						85			
		275	285	162						97,5			
		300	310	180						110			
		325	335	196						122,5			
		350	360	210						135			
		375	385	226						147,5			
		400	410	246						160			
		425	435	262						172,5			
		450	460	276						185			
		500	510	312						100	110		
		550	560	342							135		
		600	610	384							160		
		650	660	408							185		
		700	710	444							160		
		750	760	474						150	185	7	
		800	810	510							210		
		850	860	540							235		
		900	910	576							260		
950	960	612	285										
1000	1010	648		310									

Tab. 5

## Technical instructions



### > Load capacity

- The given load capacities are guidelines for one extension slide mounted vertically with uniform load distribution (area load) when using all mounting holes. The load values must be reduced in unfavorable conditions.

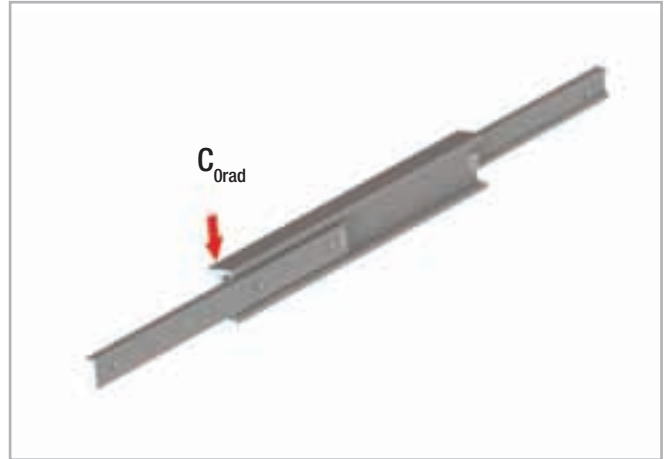


Fig. 10

### > Opening and closing force

- The required actuation forces of a telescopic rail depend on the acting load and the deflection in the extended state. The force required for opening is principally determined by the coefficient of friction of the linear bearing. With correct assembly and lubrication, this is 0.01. During the extension, the force is reduced with the elastic deflection of the loaded telescopic rail. A higher force is required to close a telescopic extension, since, based on the elastic deflection, even if it is minimal, the movable rail must move against an inclined plane.

## > Anticorrosive protection

- All of the OPTI RAIL series have a standard anticorrosive protection by electrolytic galvanisation according to ISO 2081. If increased anticorrosive protection is required, the rails are available chemically nickel plated and with corrosion resistant steel balls.
- Numerous application-specific surface treatments are available upon request, e.g., as a nickel-plated design with FDA approval for use in the food industry.  
For more information please contact Rollon Engineering.

## > Temperature

- The OPTI RAIL series can be used up to an ambient temperature of +170 °C (+338 °F). A lithium lubricant for high operating temperatures is recommended for temperatures above +130 °C (+266 °F).

## > Lubrication

- Recommended lubrication intervals are heavily dependent upon the ambient conditions, speed and temperature. Under normal conditions, lubrication is recommended after 100 km operational performance or after an operating period of six months. In critical application cases the interval should be shorter. Please clean the raceways carefully before relubrication. Raceways and spaces of the ball cage are lubricated with a lithium lubricant of average consistency (roller bearing lubricant).
- Different lubricants for special applications can be supplied upon request. Example: Lubricant with FDA approval for use in the food industry. For more information please contact Rollon Engineering.

## > Installation instructions

- The internal stops are not designed to stop a moving load. They are only supposed to retain the ball-cage and prevent the internal parts from sliding 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 OPTI RAIL rails with all accessible holes on a rigid and level surface.
- Double-sided stroke available on request.
- When using an extension pair, please observe the parallelism of the installation surfaces. The fixed rail and the movable one will assume the rigidity of the mounting structure.
- 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 after a number of cycles, in order to re-phase the ball cage in its correct position.

## Ordering key OPTI RAIL



### > LTH

<b>LTH</b>	<b>45</b>	<b>850</b>	<b>904</b>	<b>KF</b>	<b>NIC</b>
					Expanded surface protection is deviation from standard (ISO 2081) <i>see pg. OR-11 Anticorrosive protection</i>
				Hole pattern	<i>see pg. OR-5ff</i>
				Stroke, if deviating from standard stroke (catalogue data) <i>see pg. OR-5ff Product dimensions and Ordering key for special strokes</i>	
		Length	<i>see pg. OR-5ff Product dimensions</i>		
	Size	<i>see pg. OR-5ff Product dimensions</i>			
Product type	<i>see pg. OR-5ff Product dimensions</i>				

Ordering example 1: LTH45-0850-KF

Ordering example 2: LTH45-0850-0904-KF-NIC

Notes on ordering: Rail lengths and strokes are always stated with 4 digits. Please use zeroes to fill in for lengths with less than 4 digits

### > LTH Special strokes

Special strokes are defined as deviations from standard stroke.

They are each available as multiples of the values in tab. 6.

These values are dependent on the spacing of the ballage.

Type	Size	Stroke modification [mm]
LTH	30	15,4
	45	22

Tab. 6

Each stroke modification influences the load capacities stated in the catalogue. For more information please contact Rollon Application Engineering.

### > LTF

<b>LTF</b>	<b>44</b>	<b>690</b>	<b>NIC</b>
			Expanded surface protection is deviation from standard (ISO 2081) <i>see pg. OR-11 Anticorrosive protection</i>
		Length	<i>see pg. OR-9ff</i>
	Size	<i>see pg. OR-9ff</i>	
Product type	<i>see pg. OR-9ff</i>		