

LINEAR ROLLER SLIDES SERIES ML

The **ML Series** Linear Roller System consists of a C shaped steel rail with internal concave raceways where robust ball bearing rollers travel.

The high precision rollers are lubricated for life and protected with 2Z seals. Sliders are available with three or five rollers including eccentrics to adjust the slider's preload. Both ends of the sliders are equipped with polyamide wipers to remove debris from the raceway and grease impregnated felt wipers to lubricate the raceways for long life with minimal maintenance.

Sliders include a mix of concentric and eccentric rollers. The eccentric rollers are used to preload the system and eliminate any play. The preload can be adjusted to suit the particular application.

Sliders are able to carry load and moment loads in all direction. Because one of the rail raceways contacts more rollers than the other, this direction is the preferred direction of radial loading. Two small circular marks indicate the direction of preferred slider loading.

The ML Systems's C shaped steel rail has internal raceways that are protected from accidental damage. Similarly, the rollers are protected inside the rail and under the slider body.

Overall, the ML Systems is easy to assemble and extremely compact.



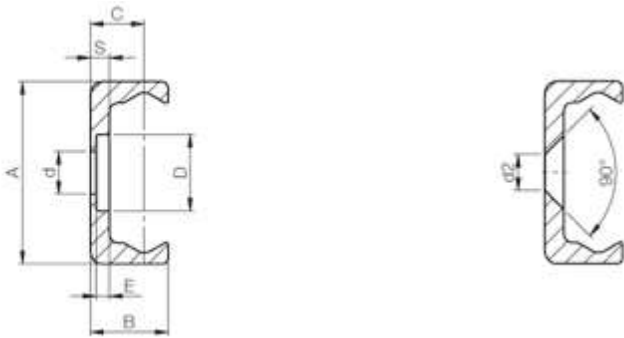
TECHNICAL FEATURES

The ML Series Rails are available with two types of mounting holes:

- **ML .. L** with counterbored mounting holes for special low head TORX mounting screws that are provided with the rail.
- **ML .. S** with countersunk mounting holes for UNI-standard ISO5933 common screws .

The rail has a "C" shaped cross-section with interior, convex raceways. The convex raceways are polished for smooth, low noise movement. The interior raceways are protected from accidental bumps and other damage, that might ruin the raceway surface. The shape also protects the rollers from similar types of damage. **ML Rails are made from high strength steel that is hardened through the innovative TRACE-NOX 1.0 high depth nitriding process and with afterwards black oxidation that provides an excellent corrosion resistance.** This treatment is not a plating which can flake off but instead penetrates and alters the material surface. The result is a very hard and durable, corrosion resistant linear rail, that is black in color, due to the micro impregnation of oil and antioxidants.

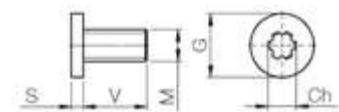
VERSION WITH CYLINDRICAL HOLES ML..L VERSION WITH C'SUNK HOLES ML..S



Code	A (mm)	B (mm)	C (mm)	S (mm)	D (mm)	d (mm)	E (mm)	d2 (mm)	Type of screws	Weight (Kg/m)
ML28L	28	11,5	8,2	3	11	6	2	-	M5X10 (TORX) *	0,96
ML28S					-	-	-	5,5	M5 DIN 7991	
ML43L	43	18,3	12,65	4,5	18	10	3,2	-	M8X16 (TORX) *	2,37
ML43S					-	-	-	8,5	M8 DIN 7991	

* SPECIAL SCREWS FOR FIXING OF ML.L RAILS, SUPPLIED WITH THE RAILS.

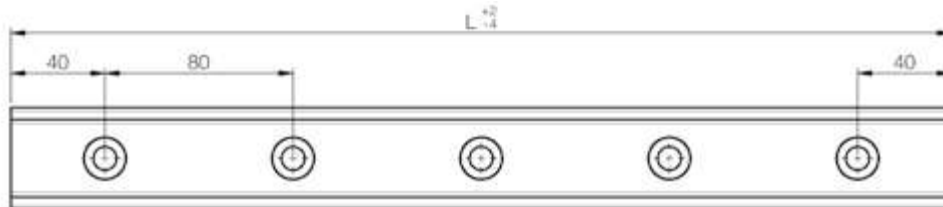
SPECIAL SCREWS FOR FIXING



Type of screws	M	V	G	S	Ch	Tightening torque
M5X10 (TORX)	M5	10	10	2	T25	10 Nm
M8X16 (TORX)	M8	16	16	3	T40	20 Nm
M8X12 ⁽¹⁾ (TORX)		12				

⁽¹⁾ CAN BE SUPPLIED ON REQUEST

RAIL LENGTHS



From 160 mm to 2000 mm

Rail codes	Length L (mm)																							
	160	240	320	400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520	1600	1680	1760	1840	1920	2000
ML28	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ML43				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

• Available in stock

From 2080 mm to 4000 mm

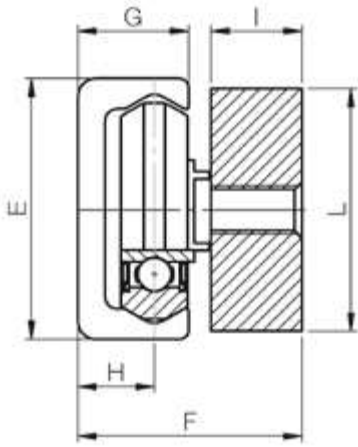
Rail codes	Length L (mm)																								
	2080	2160	2240	2320	2400	2480	2560	2640	2720	2800	2880	2960	3040	3120	3200	3280	3360	3440	3520	3600	3680	3760	3840	3920	4000
ML28	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
ML43	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

ORDER CODES	VERSION	CHARACTERISTICS
ML43S-1040	BASIC	Rolled steel rail with "T RACE NOX 2.0" nitride hardening, black oxidation, cut to size after treatment. The cut ends are protected with black spray paint.
ML43S-1040-NT	NT	It is possible to order customized rails with surface treatments carried out after the cut. Hereby the same treatment at the ends as on the whole rail, - suffix NT at the end of the order code.
ML43S-1040-KB	KB	As base version, but with additional treatment "T RACE e-coating 1.0" black electro painting on the entire surface, except on the inner raceway area, providing a high corrosion resistance, up to 700 hours in salty fog. The raceways are still protected by the standard oxidation and raceway lubrication.

RL SLIDERS

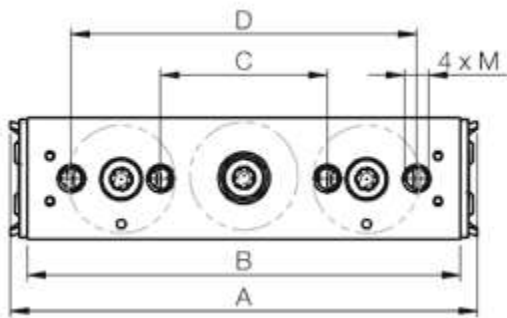
The RL sliders offer a strong steel body with 4 fixing holes, equipped with wipers and preoiled felt.

STANDARD

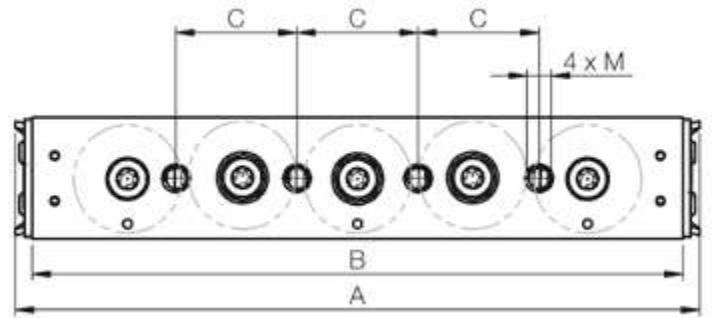


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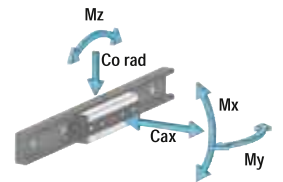
RL SLIDERS



3 ROLLERS

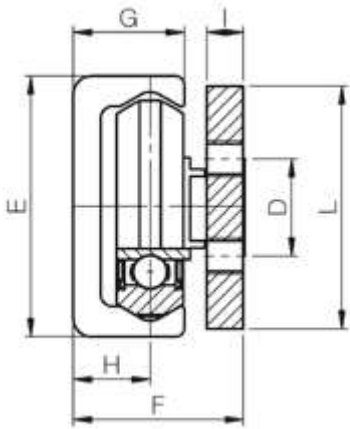


5 ROLLERS



Code	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	L (mm)	M (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Weight (g)	Dynamic coefficient C (N)	Load capacity				
														Co rad (N)	Co ax (N)	Mx (Nm)	My (Nm)	Mz (Nm)
RL28-3	28	24.1	11.5	8.2	10	25	M5	105	97	35	78	220	4800	2000	750	5	13	27
RL28-5								151	143	25	-	330	6480	2700	1250	10	25	75
RL43-3	43	37	18.3	12.65	15	40	M8	154	143	55	114	700	11600	5000	1875	21	54	107
RL43-5								226	215	40	-	1070	15660	6750	3125	41	95	285

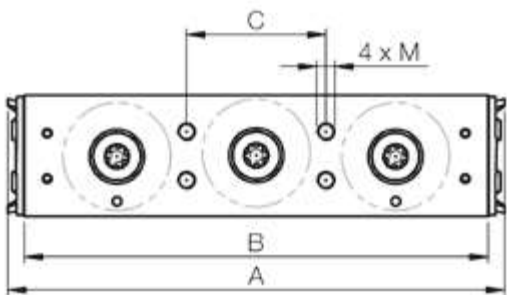
The sliders of the RLS series are characterized by a very slim slider body that allows a very compact installation dimension, however with same load / moment / rotation / floating capacities as standard thicker body sliders – RL. The sliders are available in standard version with threaded mounting holes RLS and RLS version - .. With suffix C with cylindrical holes suitable for fixing from the inside with screws to ISO 3780. The socket head screw head does not interfere with rollers.



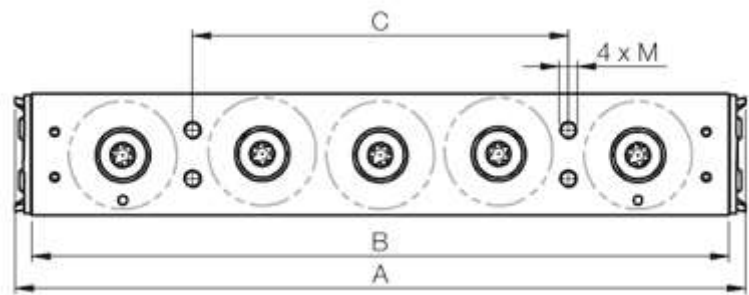
Code	M (mm)	Type of screws
RLS28-3	M5	-
RLS28-4L		
RLS28-5		
RLS28-3C	Ø5,5	M5 DIN912
RLS28-4LC		
RLS28-5C		
RLS43-3	M6	-
RLS43-4L		
RLS43-5		
RLS43-3C	Ø6,5	M6 DIN912
RLS43-4LC		
RLS43-5C		

RLS SLIDERS

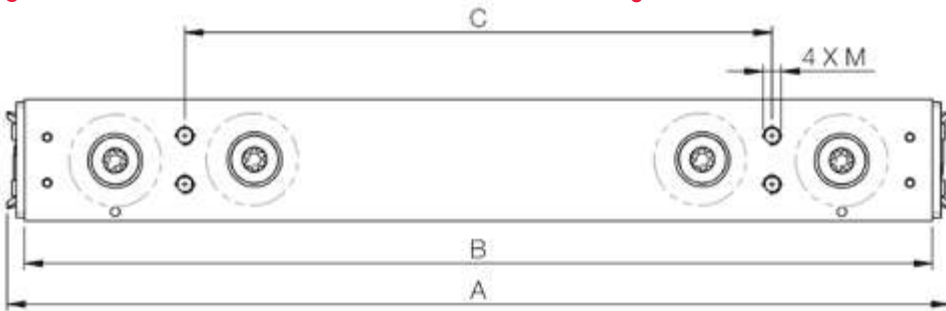
RLS SLIDERS



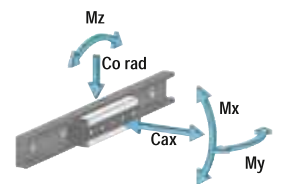
3 ROLLERS



5 ROLLERS



4 ROLLERS



Code	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)	L (mm)	M (mm)	A (mm)	B (mm)	C (mm)	D (mm)	Weight (g)	Dynamic coefficient C (N)	Load capacity				
														Co _{rad} (N)	Co _{ax} (N)	M _x (Nm)	M _y (Nm)	M _z (Nm)
RLS28-3	28	18,1	11,5	8,2	4	25	Vedi tabella fori	114	106	32	10	140	4800	2000	750	5	16	32
RLS28-4L								208	200	126		210	4800	2000	1000	10	39	126
RLS28-5								164	156	82		230	6480	2700	1250	10	28	82
RLS43-3	43	28	18,3	12,65	6	40	Vedi tabella fori	164	153	46	16	440	11600	5000	1875	19	57	115
RLS43-4L								311	300	194		670	11600	5000	2500	37	150	485
RLS43-5								241	230	124		750	15600	6750	3125	37	106	310

USE OF SINGLE WHEELS

In addition to standard sliders, rollers can also be fitted to custom sliders or even directly to mobile elements. When doing so, the following points must be kept in mind:

The minimum number of rollers is 3. Of these, 2 must be concentric rollers and located to run in the raceway of the rail that supports the main load. The third must be an eccentric roller, adjusted to run along the opposite raceway. If more than two rollers are needed to support the main load, only two must be fixed, concentric rollers. Additional load-bearing rollers must be eccentric rollers adjusted to run on the same raceway. It is important to ensure that eccentric rollers used in this way are perfectly aligned in order to distribute load equally.

At least one eccentric roller must be provided and adjusted to run on the opposite raceway in order to eliminate play. Additional rollers may be needed, on the basis of the direction of load. e.g. to counteract bi-directional or overhung loads.

Eccentric rollers used in this way must be located as near as possible to a concentric roller. See the table alongside for minimum distances.

The arrangement and number of rollers must always be determined by the amount and direction of load applied by the element the rollers support. The overall load capacity of the assembly is limited by the maximum load capacity of the most highly loaded roller. The roller bearing that takes the greatest load should always be a concentric roller.

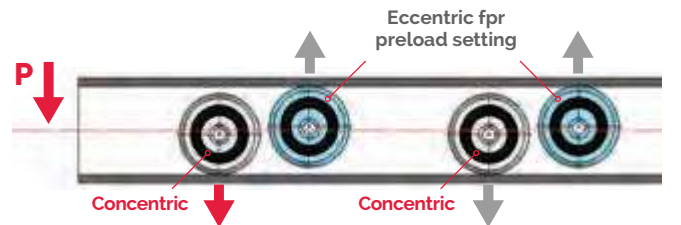
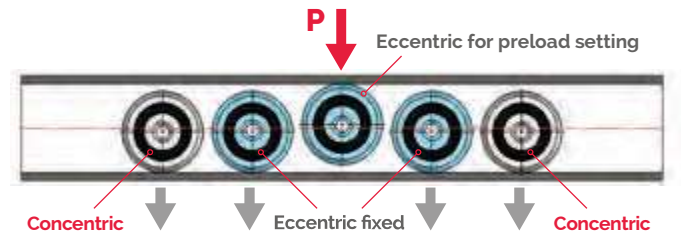
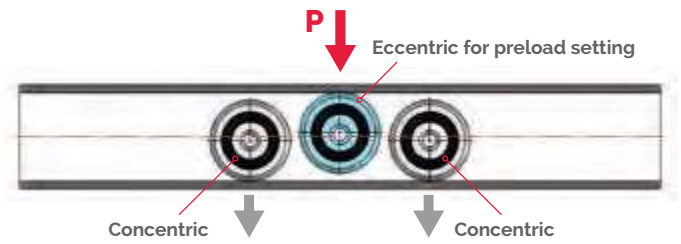
T-RACE's Technical Assistance Service is always happy to suggest the best arrangement of rollers for specific applications. If load is supported by more than two rollers (e.g. 3, 4 or 5) on the same raceway, and load is located centrally with respect to the set of rollers, total load capacity is determined by the load capacity of one roller multiplied by the total number of rollers, reduced by a suitable safety factor depending on the accuracy of alignment of the rollers and on the rigidity of the surface to which they are fixed.

Holes in the mobile element intended to fix rollers in place must be of the bare minimum diameter necessary for the fixing screw to pass through and must be of the minimum length specified in the table.

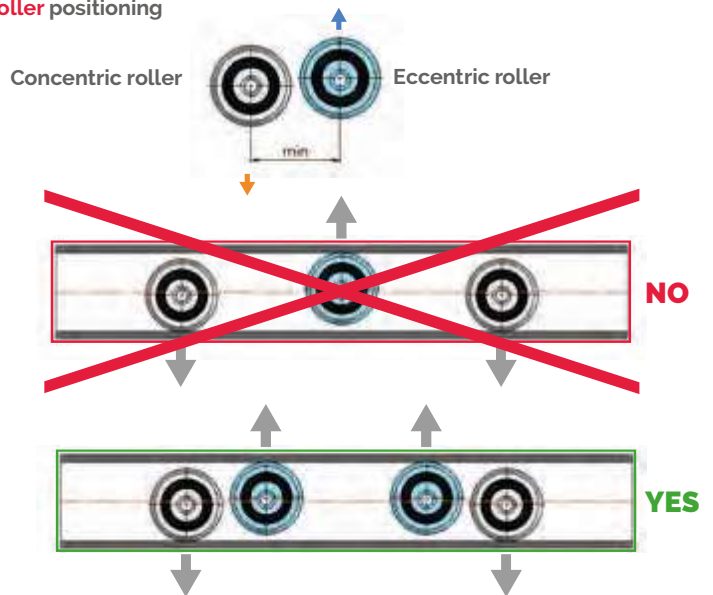
Fixing screws for eccentric rollers must always be fitted with a lock washer to permit adjustment of preload.

The procedure for adjusting eccentric rollers is similar to that given on page 10 for standard sliders, as are screw tightening torques.

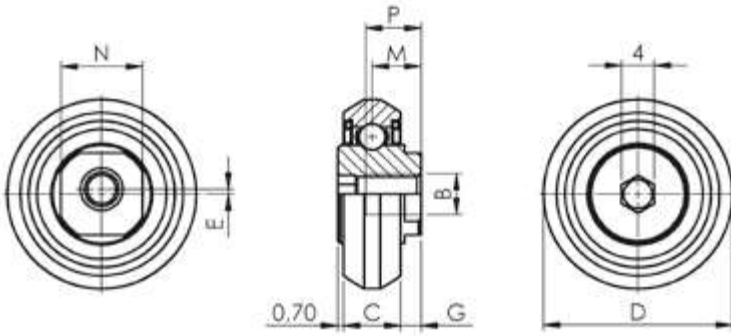
PHASE 1-2



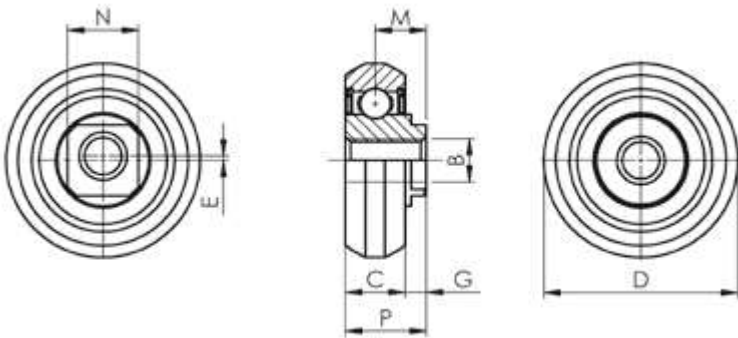
Roller positioning



The rollers of LN series have an inner construction with single row ball bearing. They have metal 2Z seals and are lubricated for life, with a lithium based grease. The inner ball-cage is made of metal, allowing for use in higher temperature ambients compared to MR/MRG systems. The bearing rings are made of core hardened bearing steel, ground to DIN620 precision classes.

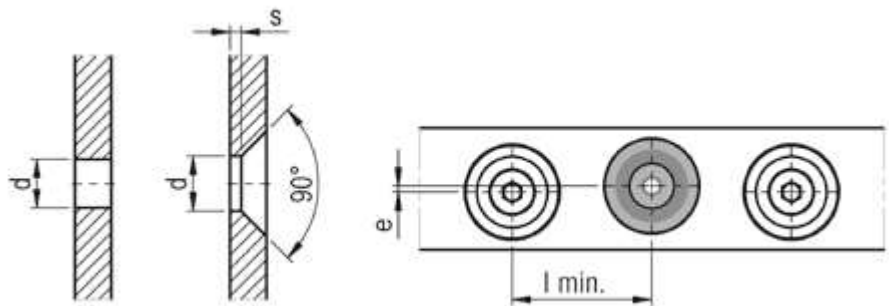


Code	Type	E (mm)	D (mm)	C (mm)	M (mm)	G (mm)	P (mm)	N (key)		B (mm)	Weight (g)	Dynamic coefficient C (N)	Load capacity	
								key	N (nn)				Co _{rad} (N)	Co _{ax} (N)
LCN28	Concentric	-	23,15	7	6	2,5	6,5	KLM28	10	M5	20	2400	1000	250
LEN28	Eccentric	0,6										2400	1000	250



Code	Type	E (mm)	D (mm)	C (mm)	M (mm)	G (mm)	P (mm)	N (key)		B (mm)	Weight (g)	Dynamic coefficient C (N)	Load capacity	
								key	N (nn)				Co _{rad} (N)	Co _{ax} (N)
LCN43	Concentric	-	35,6	11	9,35	3,75	14,85	KLM43	13	M8	50	5800	2500	625
LEN43	Eccentric	0,8										5800	2500	625

HOLE DIMENSIONING FOR FIXING ROLLERS



Roller type	d (mm) Fixing hole	s (mm) Min. cylindrical part	e (mm) Axis difference to eccentric roller	l _{min} (mm) Suggested min. distance
LN28	5 ⁰ _{-0,1}	1	0,4	26
LN43	8 ⁰ _{-0,1}	2	0,4	38