

Solid design meets smooth running

The new miniature profile rail guide series for laboratory automation



Miniature profile rail guides are the ideal solution for applications requiring compact dimensions, high running accuracy, long service life and low noise as for example in laboratory machinery.

With the new miniature profile rail guide series LLS, SKF has coupled its practical experience gained in the Medical industry with the latest findings from its own reasearch and development into the new design.

The demands placed on modern linear guidance technology have risen significantly in recent years - especially in terms of service life, precise motion combined with a high robustness of the product. At the same time, users expect installation and maintenance outlay to be as low as possible, and this is particularly true in the field of medical applications.



**Lower noise level
suitable for medical,
lab and office
environments**



**Self lubrication for long
service life**



**Smooth running
and low friction for
position accuracy**

Optimized for your application

Minimal service requirements combined with low friction and silent running, the new LLS series provides high performance for medical applications.

Typical applications

- Robotic analyzer
- Sample processor
- Dental laboratory equipment
- Chemical analyzer

Benefits

- Low noise for medical, lab and office environments
- Self-lubrication for long service life
- Smooth running for position accuracy
- Safe and quick mounting due to innovative ball retention system
- Robust and compact design
- Interchangeability of carriages and rails
- More clean with threads from the bottom
- Customized designs for better integrations
- Stainless steel components
- RoHs and REACH conform

Dental milling machine



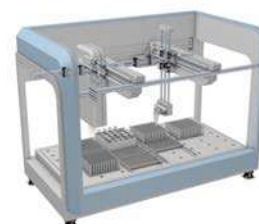
Chemical analyzer



Sample processor



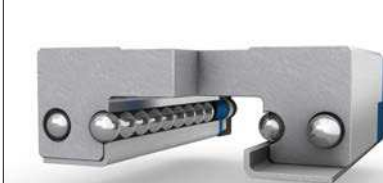
Robotic analyzer for laboratories



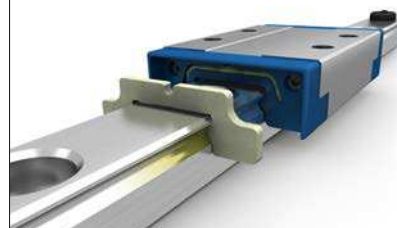
Optimized design features

- New optimized ball recirculation
- To maximize the maintenance-free operation, all LLS carriages are factory pre-lubricated and equipped with a lubrication reservoir which secures the lubrication condition in the complete guiding system
- Robust ball retention system
- New and optimized seal design
- Reduced friction
- High dynamic values: speed $v = 3 \text{ m/s}$, acceleration $a = 80 \text{ m/s}^2$
- Extended temperature range -20 $+100 \text{ }^\circ\text{C}$ (sealed version $+80 \text{ }^\circ\text{C}$)
- Interchangeable according to ISO 12090-2
- High stiffness due to optimized number of balls

Robust ball retention system



Lubrication reservoir



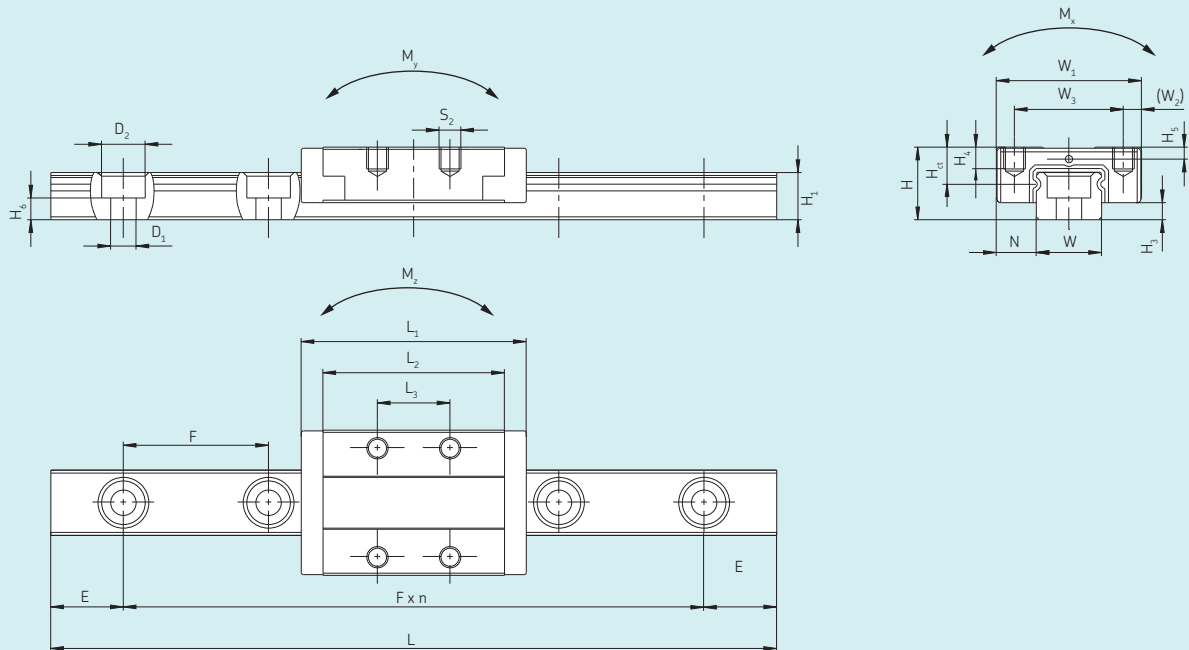
Lubrication channel



Optimized seal design



Technical data



Designation	Size																					
		H	W ₁	W ₂	W ₃	L ₁	L ₂	L ₃	S ₂	H ₁	H ₃	H ₄	H ₅	H ₆	H _{ct}	W	N	L ±1	D ₁ x D ₂	E _{min} ±0,5	E _{max} ±0,5	F
mm																						
LLSHS 7 TA	7	8	17	2,5	12	23,5	18	8	M2	4,8	1,5	2,5	1,7	2,3	4,6	7	5	1000	2,5x4,5	5	12	15
LLSHS 7 LA	7	8	17	2,5	12	31,5	26	12	M2	4,8	1,5	2,5	1,7	2,3	4,6	7	5	1000	2,5x4,5	5	12	15
LLSHS 9 TA	9	10	20	2,5	15	31	25	10	M3	6,5	2,35	3	1,65	3	5,1	9	5,5	1000	3,5x6	5	16	20
LLSHS 9 LA	9	10	20	2,5	15	40,5	34,5	15	M3	6,5	2,35	3	1,65	3	5,1	9	5,5	1000	3,5x6	5	16	20
LLSHS 12 TA	12	13	27	3,5	20	35	29	15	M3	8,8	3,35	4,5	2,65	4,3	6,5	12	7,5	1000	3,5x6	5	21	25
LLSHS 12 LA	12	13	27	3,5	20	46,5	40,5	20	M3	8,8	3,35	4,5	2,65	4,3	6,5	12	7,5	1000	3,5x6	5	21	25

Designation	Size									Weight	
		C	C ₀	M _{xC}	M _{xCO}	M _{yC} /M _{zC}	M _{yCO} /M _{zCO}	Carriage	Rail		
		100 km		dyn	stat	dyn	stat				
		N		Nm				kg	kg/m		
LLSHS 7 TA	7	915	1460	3,0	4,6	1,7	2,6	0,01	0,23		
LLSHS 7 LA	7	1270	2400	4,1	7,6	3,9	7,4	0,02	0,23		
LLSHS 9 TA	9	1700	2800	7,1	11,5	4,6	7,5	0,02	0,4		
LLSHS 9 LA	9	2280	4300	9,6	17,7	9,6	18,0	0,03	0,4		
LLSHS 12 TA	12	2500	3900	14,0	21,5	7,5	11,7	0,04	0,75		
LLSHS 12 LA	12	3550	6300	19,9	34,8	17,1	30,4	0,06	0,75		

Ordering key

	LLS	H	S	9	TA	R	1	T0	-300	P5	W2	D	E=0	MC
Miniature profile rail guide	_____													
System type	_____													
H	Standard system													
Type code	_____													
C	Carriage (Carriage only) ¹⁾													
R	Rail (Rail only) ¹⁾													
S	System (Carriage and rail)													
Z	Accessories ¹⁾													
Size	_____													
7, 9, 12														
Carriage type	_____													
TA	Standard carriage, standard length, standard height													
LA	Standard carriage, extended length, standard height													
Sealing	_____													
.	Carriage with cover plates ³⁾													
R	Carriage with front seals													
Number of carriages per rail	_____													
1, 2, 4, 6														
Preload class	_____													
T0	Clearance													
T1	Light preload													
T2	Medium preload (on request)													
Rail length	_____													
- xxxx	up to 1.000mm length (longer rails are available on request)													
Precision class	_____													
P5	Standard													
P1	High ²⁾													
Rail arrangement	_____													
.	Single rail system ³⁾													
W2	Two rails mounted parallel													
Wx	x rails mounted parallel													
Rail	_____													
.	Standard rail ³⁾													
Dx	Customized rail													
Distance between end face and center of the first mounting hole of the rail	_____													
E0	If no "E" specified, the holes at both rail ends will be positioned equidistantly from either end of the rail (shortest possible "E" dimension)													
Exx	"E" dimensions to be specified ($E_{min} = 5mm$)													
Rail end stops	_____													
.	Plastic plugs ³⁾													
PP	Plastic plugs ¹⁾													
MC	Metal clamps													

¹⁾ Delivered seperately
²⁾ Available as system
³⁾ No code for standard

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