

Dimensions of LW Series (Interchangeable ball slide)



Example of reference number

Regular rail (non-butting rail)

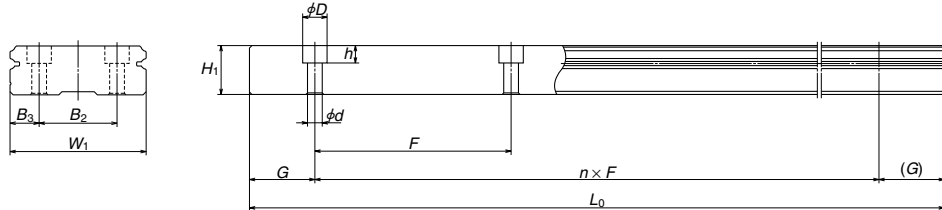
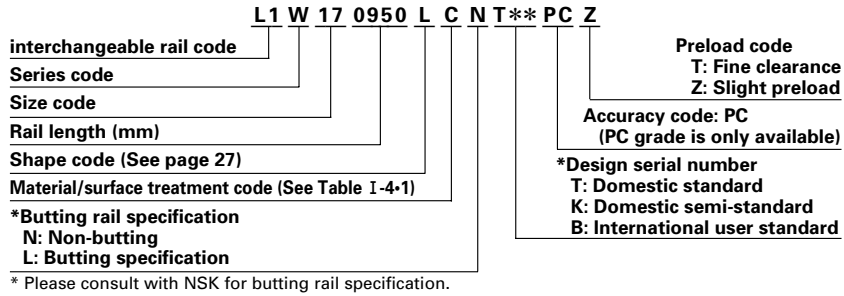


Table. I-5-25

Unit: mm

Model No.	Rail								
	Width W_1	Height H_1	B_2	Pitch F	Mounting bolt hole $d \times D \times h$	B_3	G (recommended)	Max. length L_{0max}	Weight (Kg / m)
L1W17	33	8.7	18	40	4.5×7.5×5.3	7.5	15	1000	2.1
L1W21	37	10.5	22	50	4.5×7.5×5.3	7.5	15	1600	2.9
L1W27	42	15	24	60	4.5×7.5×5.3	9	20	2000	4.7
L1W35	69	19	40	80	7×11×9	14.5	20	2400	9.6
L1W50	90	24	60	80	9×14×12	15	20	3000	15.8

A-I-5.6 LE Series (Miniature wide rail type)

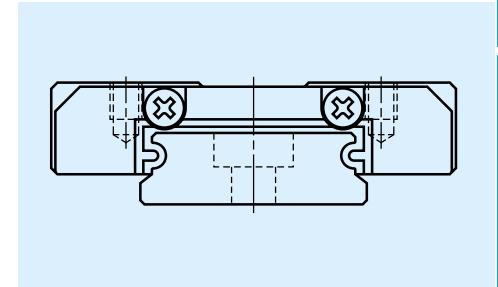


Table I-5-19 LE Series

(1) Ideal for use of single rail

LE Series linear guides are miniature, wide rail type. Thanks to the wide rail, load carrying capacity is high against moment load from rolling direction.

(2) Equal load carrying capacity in vertical and lateral directions

Contact angle is set at 45 degrees, equally dispersing the load from vertical and lateral directions. This also provides equal rigidity in the two directions.

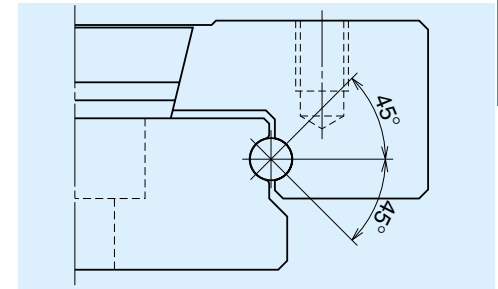


Table I-5-20 Balls in contact

(3) Guides are super-thin.

Super-thin guides owe their design to the single ball groove on right and left sides (gothic-arch).

(4) High accuracy

Fixing the master rollers is easy thanks to the gothic-arc groove. Groove measuring is accurate and easy.

(5) Stainless steel is standard.

Rails and ball slides are made of martensitic stainless steel.

(6) Ball retainer is available in some series.

Some series come with a ball retainer (ball slide model: AR and TR). Balls are retained in the retainer and do not fall out when a ball slide is withdrawn from the rail (interchangeable ball slides come with a ball retainer).

(7) Interchangeable series is available (short delivery time).

The series enables random matching of rails and ball slides (interchangeability) for prompt delivery.

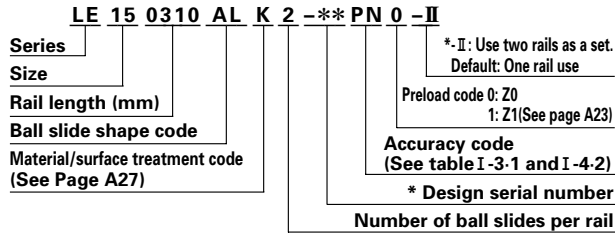
Dimensions of LE Series

LE-AL (Wide rail, miniature)

LE-TL (Wide rail, miniature, large mounting tap hole)

LE-AR (Wide rail, miniature, with ball retainer)

LE-TR (Wide rail, miniature, large mounting tap hole, with ball retainer)



* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

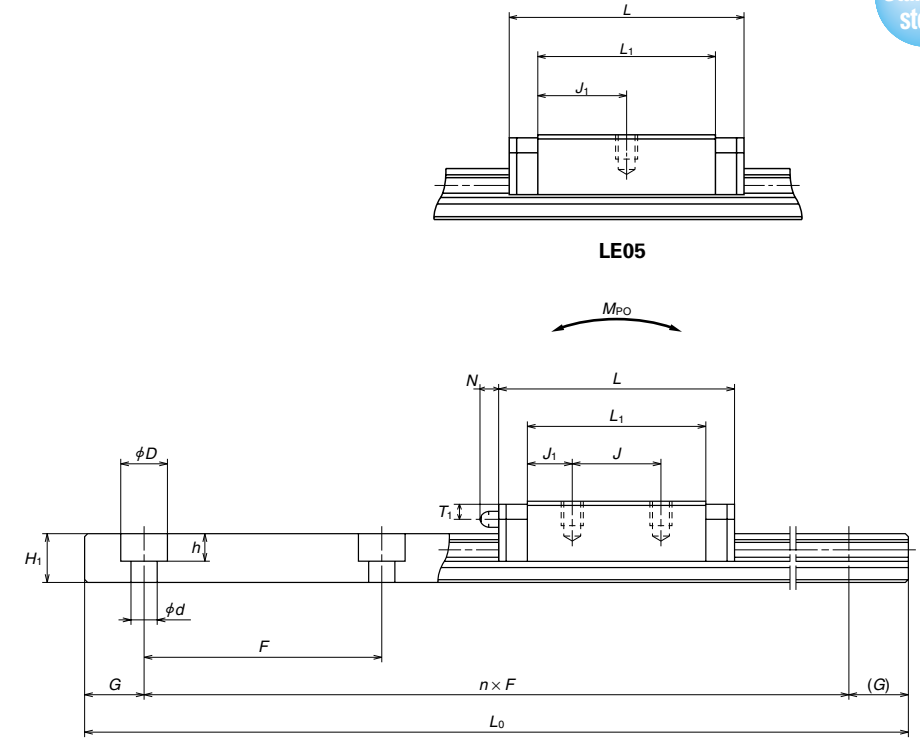
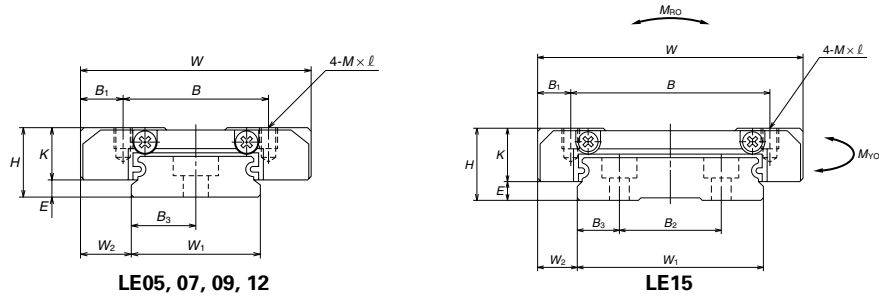


Table. I-5-26

Model No.	Assembly			Ball slide									Grease fitting		
	Height	Width	Length	Mounting hole			B ₁	L ₁	J ₁	K	Hole size	T ₁	N	Width	Height
				B	J	M × pitch × l									
LE05AL	6.5	17	24	13	—	M2.5×0.45×2	2	17	8.5	5.1	—	—	—	10	4
LE07TL	9	25	31	19	10	M3×0.5×3	3	21.2	5.6	7	—	—	—	14	5.2
LE09AL	12	30	39	21	12	M2.6×0.45×3 M3×0.5×3	4.5	27.6	7.8	8	—	—	—	18	7.5
LE09AR	12	30	39.8	21	12	M2.6×0.45×3 M3×0.5×3	4.5	27.6	7.8	8	—	—	—	18	7.5
LE12AL	14	40	44 45	28	15	M3×0.5×4	6	31	8	10	—	—	—	24	8.5
LE15AL	16	60	55 56.6	45	20	M4×0.7×4.5	7.5	38.4	9.2	12	phi 3	3.2	3	42	9.5

LE has only two mounting tap holes.

Rail													Basic load rating			Ball dia.		Weight	
Pitch	Mounting bolt hole	G	Max. length	Dynamic	Static	Static moment			D _w	Ball slide	Rail								
						C	C ₀	M _{RO}				M _{PO}	M _{TO}						
B ₂	F	d × D × h	B ₃	(recomm. ended)	L _{0max}	(N)	(N·m)	(N·m)	D _w	Ball slide (g)	Rail (g/100mm)								
—	20	3×5×1.6	5	7.5	150	725	1110	5.7	2.6	2.6	1.200	11	34						
—	30	3.5×6×3.2	7	10	600	1580	2350	17	7.2	7.2	1.587	25	55						
—	30	3.5×6×4.5	9	10	800	3000	4500	36	17	17	2.000	40	95						
—	30	3.5×6×4.5	9	10	800	3000	4500	36	17	17	2.000	40	95						
—	40	4.5×8×4.5	12	15	1000	4350	6350	71	29	29	2.381	75	140						
23	40	4.5×8×4.5	9.5	15	1200	7600	10400	207	59	59	3.175	150	275						

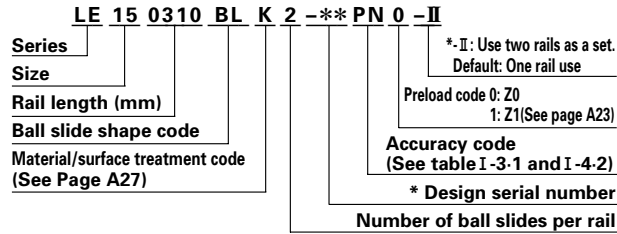
The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface.

When converting the basic dynamic load rating C to the dynamic load rating C₁₀₀ for 100 km rating fatigue life, divide the C by 1.26

For fixing a rail of LE05AL, use cross-recessed pan head machine screw for precision instruments M2.5×0.45 (JCS 10-70 : Japan Camera Industry Association, No.0, class 3).

LE-BL (High load type, wide rail, miniature)

LE-UL (High load type, wide rail, miniature, large mounting tap hole)



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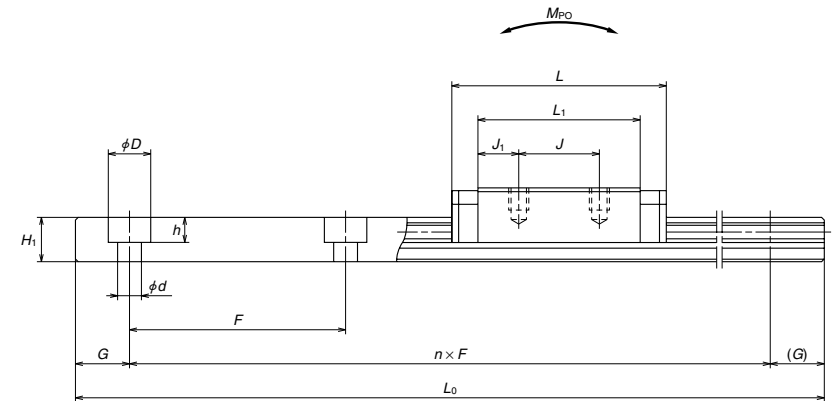
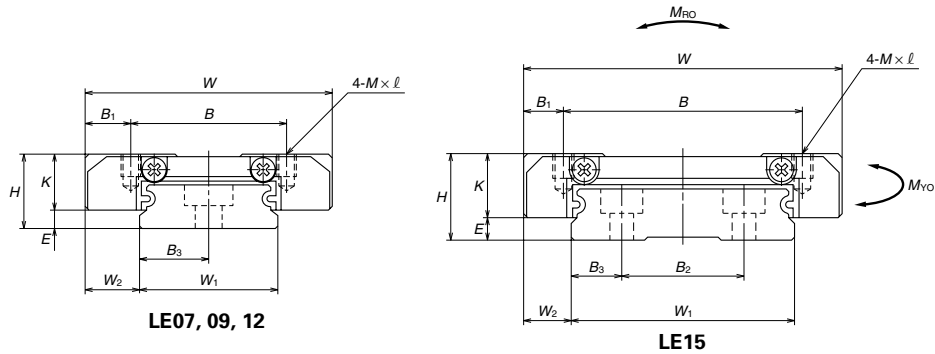


Table. I-5-27

Model No.	Assembly			Ball slide										
	Height <i>H</i>	<i>E</i>	<i>W</i> ₂	Width <i>W</i>	Length <i>L</i>	Mounting hole						Width <i>W</i> ₁	Height <i>H</i> ₁	
						<i>B</i>	<i>J</i>	<i>M</i> × pitch × <i>ℓ</i>	<i>B</i> ₁	<i>L</i> ₁	<i>J</i> ₁			<i>K</i>
LE07UL	9	2	5.5	25	42	19	19	M3×0.5×3	3	32.2	6.6	7	14	5.2
LE09BL LE09UL	12	4	6	30	50.4	23	24	M2.6×0.45×3 M3×0.5×3	3.5	39	7.5 7.5	8	18	7.5
LE12BL	14	4	8	40	59	28	28	M3×0.5×4	6	46	9	10	24	8.5
LE15BL	16	4	9	60	74.5	45	35	M4×0.7×4.5	7.5	57.8	11.4	12	42	9.5

Unit: mm

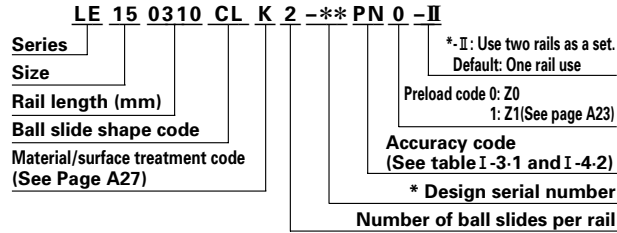
Rail						Basic load rating					Ball dia.	Weight	
<i>B</i> ₂	Pitch <i>F</i>	Mounting bolt hole <i>d</i> × <i>D</i> × <i>h</i>	<i>B</i> ₃	<i>G</i> (recommended)	Max. length <i>L</i> _{0max}	Dynamic <i>C</i> (N)	Static <i>C</i> ₀	Static moment			<i>D</i> _w	Ball slide (g)	Rail (g/100mm)
								<i>M</i> _{R0}	<i>M</i> _{R0}	<i>M</i> _{V0}			
—	30	3.5×6×3.2	7	10	600	2180	3700	26	17	17	1.587	39	55
—	30	3.5×6×4.5	9	10	800	4000	6700	54	38	38	2.000	58	95
—	40	4.5×8×4.5	12	15	1000	5800	9550	106	63	63	2.381	115	140
23	40	4.5×8×4.5	9.5	15	1200	10300	16000	320	135	135	3.175	235	275

The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface.

When converting the basic dynamic load rating *C* to the dynamic load rating *C*₁₀₀ for 100 km rating fatigue life, divide the *C* by 1.26

LE-CL (Medium load type, wide rail, miniature)

LE-SL (Medium load type, wide rail, miniature, large mounting tap hole)



* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

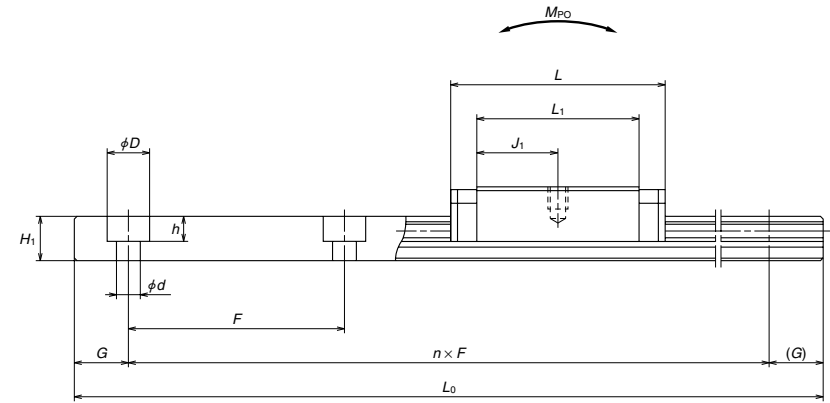
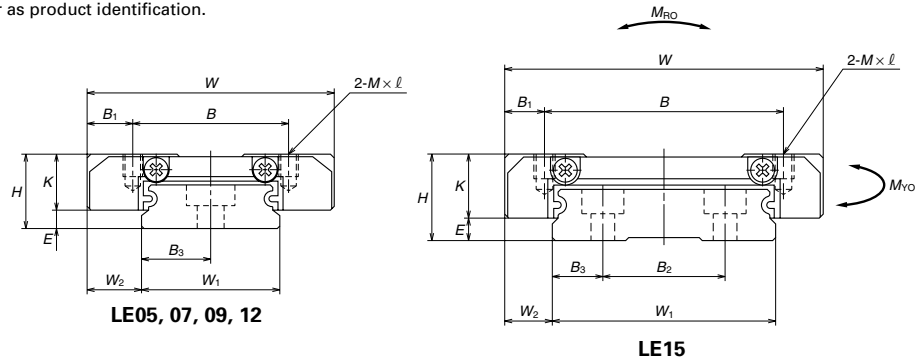


Table. I-5-28

Model No.	Assembly			Ball slide								Width	Height	
	Height	E	W ₂	Width	Length	Mounting hole			B ₁	L ₁	J ₁			K
						B	J	M × pitch × l						
LE05CL	6.5	1.4	3.5	17	20	13	—	M2.5×0.45×2	2	13	6.5	5.1	10	4
LE07SL	9	2	5.5	25	22.5	19	—	M3×0.5×3	3	12.6	6.3	7	14	5.2
LE09CL LE09SL	12	4	6	30	26.4	21	—	M2.6×0.45×3 M3×0.5×3	4.5	15	7.5	8	18	7.5
LE12CL	14	4	8	40	30.5	28	—	M3×0.5×4	6	17.5	8.75	10	24	8.5
LE15CL	16	4	9	60	41.4	45	—	M4×0.7×4.5	7.5	24.8	12.4	12	42	9.5

CL and SL types have only two mounting tap holes in the center.

													Unit: mm		
Model No.	Rail					Basic load rating					Ball dia.		Weight		
	Pitch	Mounting bolt hole	B ₃	G (recommended)	Max. length L _{0max}	Dynamic C (N)	Static C ₀	Static moment (N·m)			D _w	Ball slide (g)	Rail (g/100mm)		
								M _{RO}	M _{PO}	M _{TO}					
—	20	3×5×1.6	5	7.5	150	595	835	4.3	1.5	1.5	1.200	8	34		
—	30	3.5×6×3.2	7	10	600	980	1170	8.3	2.0	2.0	1.587	17	55		
—	30	3.5×6×4.5	9	10	800	1860	2240	18	4.8	4.8	2.000	25	95		
—	40	4.5×8×4.5	12	15	1000	2700	3150	35	8.2	8.2	2.381	50	140		
23	40	4.5×8×4.5	9.5	15	1200	5000	5650	113	19	19	3.175	110	275		

The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface. When converting the basic dynamic load rating C to the dynamic load rating C₁₀₀ for 100 km rating fatigue life, divide the C by 1.26. For fixing a rail of LE05CL, use cross-recessed pan head machine screw for precision instruments M2.5x045 (JCS 10-70 : Japan Camera Industry Association, No.0, class 3).

Dimensions of LE Series (Interchangeable ball slide)

LAE-AR (miniature, with ball retainer)

LAE-TR (miniature, large mounting tap hole, with ball retainer)

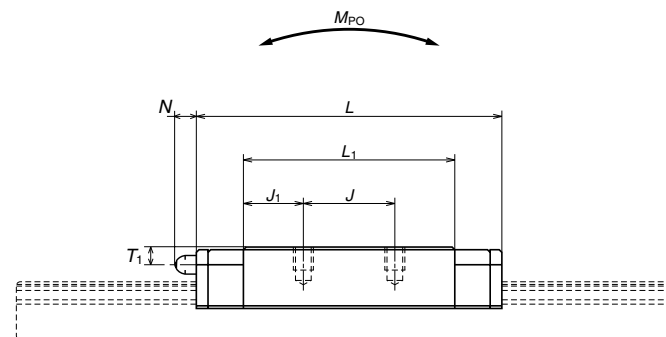
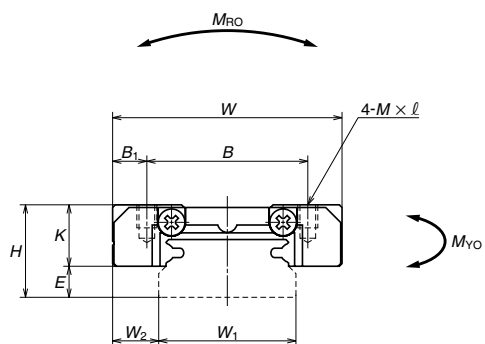
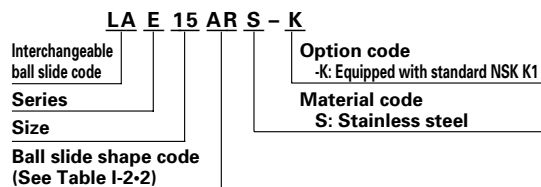


Table. I-5-29

Model No.	Assembly			Ball slide								
	Height			Width	Length	Mounting hole						
	H	E	W ₂	W	L	B	J	M × pitch × l	B ₁	L ₁	J ₁	K
LAE09AR	12	4	6	30	39.8	21	12	M2.6×0.45×3	4.5	27.6	7.8	8
LAE09TR	—	—	—	—	—	—	—	M3×0.5×3	—	—	—	—
LAE12AR	14	4	8	40	45	28	15	M3×0.5×4	6	31	8	10
LAE15AR	16	4	9	60	56.6	45	20	M4×0.7×4.5	7.5	38.4	9.2	12

Unit: mm

Grease fitting			Basic load rating					Ball dia.	Weight
Hole size	T ₁	N	Dynamic	Static	Static moment			D _w	Ball slide
			C (N)	C ₀	M _{RO}	M _{PO}	M _{YO}		
—	—	—	3000	4500	36	17	17	2.000	40
—	—	—	4350	6350	71	29	29	2.381	75
∅3	3.2	3	7600	10400	207	59	59	3.175	150

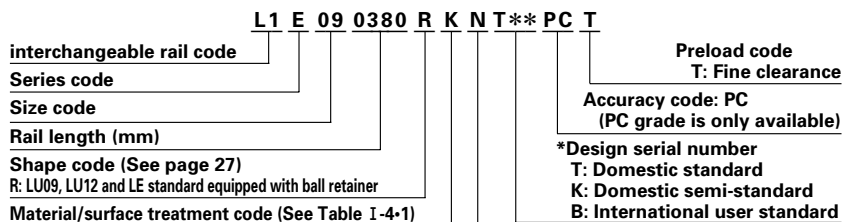
The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface. When converting the basic dynamic load rating C to the dynamic load rating C₁₀₀ for 100 km rating fatigue life, divide the C by 1.26

Table of rail size for LE Series (Interchangeable rail)



Example of reference number

Regular rail (non-butting rail) with fine clearance



*Butting rail specification
N: Non-butting
L: Butting specification

* Please consult with NSK for butting rail specification.

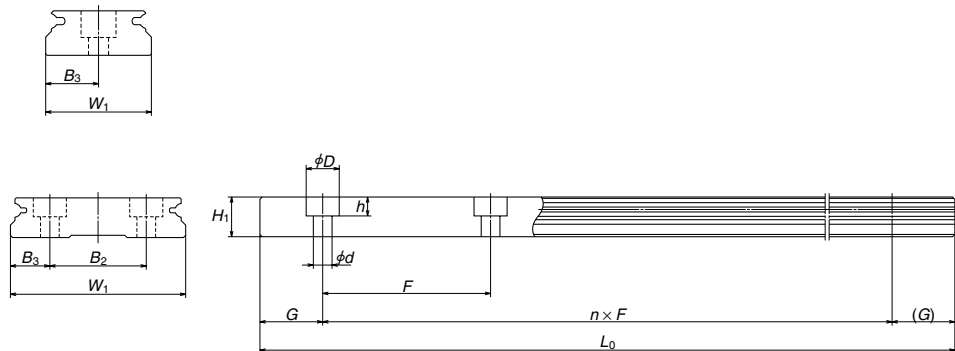


Table. I-5-30

Unit: mm

Model No.	Rail						Mounting bolt hole $d \times D \times h$	G (recommended)	Max. length L_{0max}	Weight (g/100mm)
	Width W_1	Height H_1	F	B_2	B_3					
L1E09	18	7.5	30	—	9	3.5×6×4.5	10	800	95	
L1E12	24	8.5	40	—	12	4.5×8×4.5	15	1000	140	
L1E15	42	9.5	40	23	9.5	4.5×8×4.5	15	1200	275	

A-I-5.7 LU Series (Miniature type)

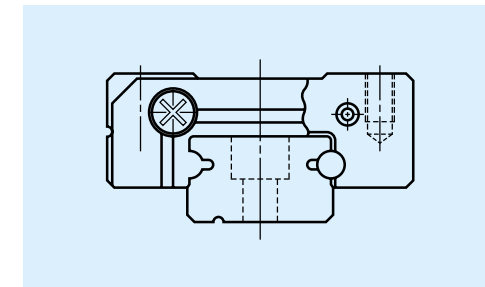


Fig. I-5-21 LU Series

(1) Super-small type.

This compact guide owes its design to the single ball groove on both right and left sides (gothic-arch).

(2) Equal load carrying capacity in vertical and lateral directions

Contact angle is set at 45 degrees, equally load carrying capacity in vertical and lateral directions. This also provides equal rigidity in both directions.

(3) Stainless steel is also standardized.

Items made of the martensitic stainless steel are available as standard.

(4) Some series have a ball retainer.

Ball slide types AR and TR come with a ball retainer. Balls are retained in the retainer and do not fall out when the bearing is withdrawn from the rail. (Ball slides of interchangeable parts as well as LU15 come with ball retainer.)

(5) Interchangeable series is available (short delivery time)

The series enables random matching of rails and ball slides (interchangeability) for prompt delivery.

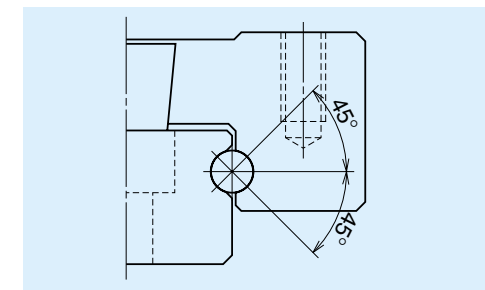


Fig. I-5-22 Balls are in contact.