

A-I-3.5 Available Length of Rail (single rail)

- Table I-3•5 and Table I-3•6 show the limitations of rail length (maximum length). However, the limitations vary by accuracy grade.

Table-I-3•5 Limitations of rail length (single rail) Unit : mm

Series	Size		05	07	09	12	15	20	25	30	35	45	55	65	85
	Material														
LH SH	Special high carbon steel						2000	3960	3960	4000	4000	3990	3960	3900	2520
	Stainless steel						1800	3500	3500	3500					
LS SS	Special high carbon steel						2000	3960	3960	4000	4000				
	Stainless steel						1800	3500	3500	3500	3500				
LA	Special high carbon steel								3960	4000	4000	3990	3960	3900	
LY	Special high carbon steel						2000	2000	2200	3000	3000	3700	3000	3000	
LE	Stainless steel	150	600	800	1000	1200									
LU	Special high carbon steel			1200	1800	2000									
	Stainless steel	210	375	600	800	1000									

Table-I-3•6 Length limitations of LW Series rails Unit : mm

Series	Size		17	21	27	35	50
	Material						
LW	Special high carbon steel		1000	1600	2000	2400	3000

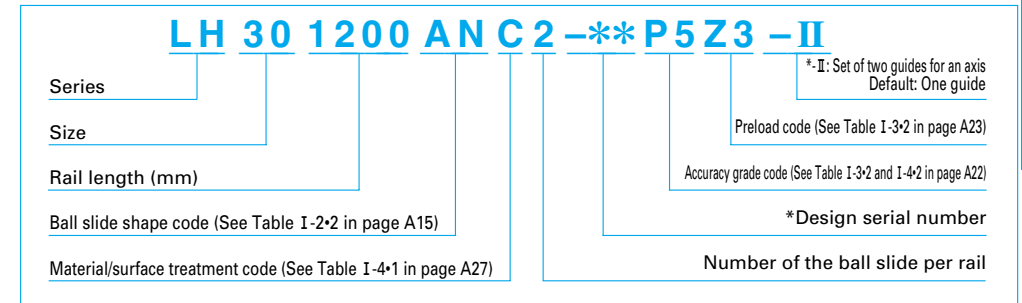
- Rails can be butted if user requirement exceeds the rail length shown in the Table. Please consult NSK.
- Rails for butting connection are available for LH and LS interchangeable rails. Please consult with NSK.

A-I-4 Coding for Reference Number of Linear Guides

When inquiring about or ordering linear guide products from the catalog, please use the reference number of the coding system detailed below. Please omit the design serial number (-**) as this is an internal NSK code that is assigned after a design is created for an application. Once an order is placed, the product reference number and design serial number are combined into the final part number.

A matched set of assemblies is a set of rails and slider blocks where the rails and slider blocks are ground simultaneously to ensure matching assembly height tolerances depending on the accuracy grade required. If you would like to order a matched set, be sure to indicate as such by including the "-II" with your reference number.

1. Preloaded assembly

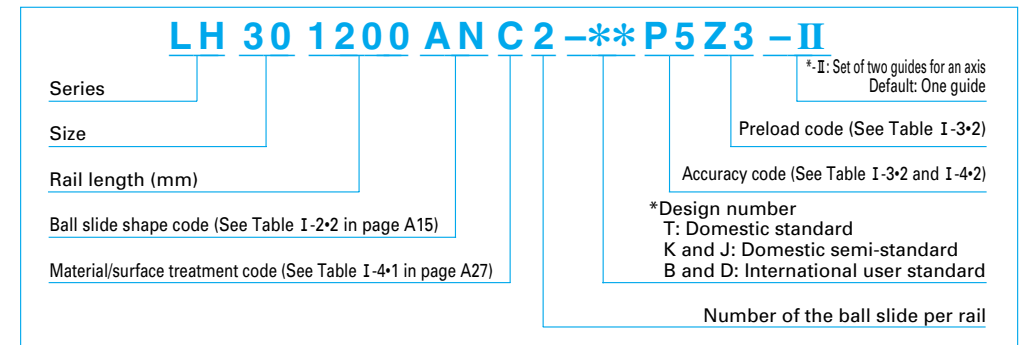


* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

2. Interchangeable type

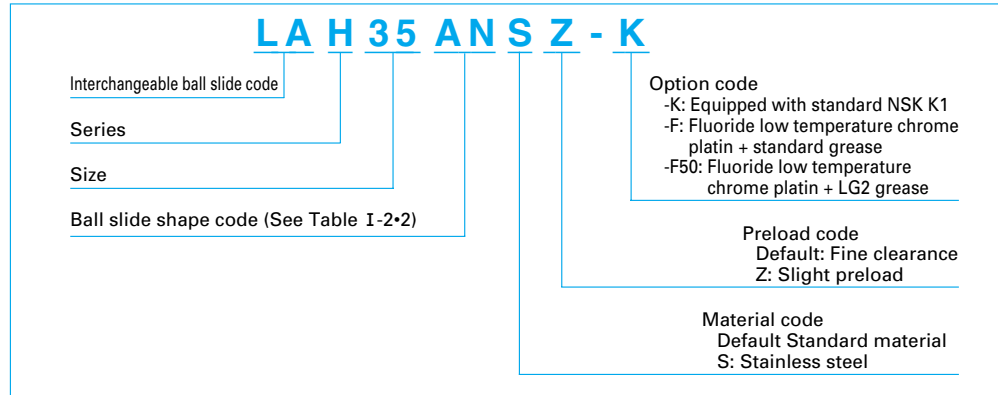
Interchangeable rails and ball slides for random matching are available for LH, LS, SH, SS, LE, LU, and LW series. The rails and ball slides may be purchased separately.

(1) Reference number coding for assembled rail and ball slide

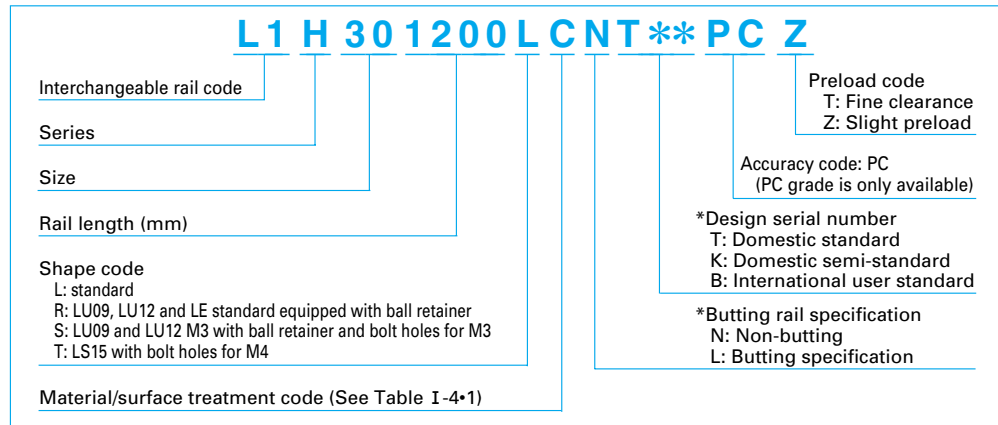


* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

(2) Reference number coding for interchangeable ball slide



(3) Reference number coding for interchangeable rail



* Please consult with NSK for butting rail specification.

Table I-4*1 Material/surface treatment code

Code	Description
P	Special high carbon steel + high performance seal
R	Special high carbon steel + surface treatment + high performance seal
T	Stainless steel + high performance seal
U	Stainless steel + surface treatment + high performance seal
C	Special high carbon steel (NSK standard)
K	Stainless steel
D	Special high carbon steel with surface treatment
H	Stainless steel with surface treatment
Z	Other, special

Table I-4*2 Accuracy code

accuracy	Non NSK K1	with NSK K1
Ultra precision grade	P3	K3
Super precision grade	P4	K4
High precision grade	P5	K5
Precision grade	P6	K6
Normal grade	PN	KN
Normal interchan geade	PC	KC

Note: Refer to Page A125 for NSK K1[®] lubrication unit.

A-I-5 Model Number and Dimension Table of NSK Linear Guides

A-I-5.1 LH Series

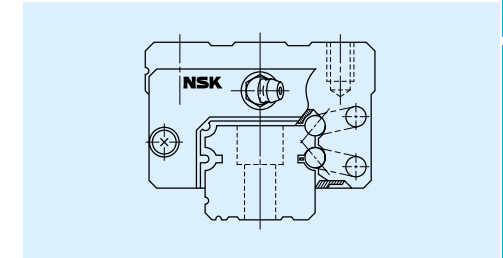
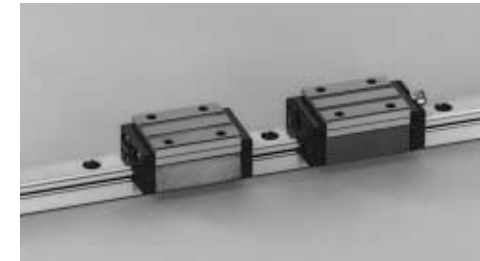


Fig. I-5.1 LH Series

(1) High self-aligning capability (rolling direction)

Same as the DF combination in angular contact bearings, self-aligning capability is high because the cross point of the contact lines of balls and grooves comes inside, reducing moment rigidity. This increases the capacity to absorb the error of installation.

(2) High load carrying capacity to vertical direction

The contact angle is set at 50 degrees, increasing load carrying capacity as well as rigidity in vertical direction.

(3) High resistance against impact load

The bottom ball groove is formed in gothic-arch and the center of the top and bottom grooves are offset as shown in Fig.I-5-2. The vertical load is generally carried by the top rows, at where balls are contacting at two points. Because of this design, the bottom rows will carry load when a large impact load is applied vertically as shown in Fig.I-5*3. This assures high resistance to the impact load.

(4) High accuracy

I-5.4, fixing the master rollers is easy thanks to the gothic-arch groove. This makes easy and accurate measuring of ball grooves.

(5) Easy to handle, and designed with safety in mind.

Balls are retained in the retainer, therefore they do not fall out when the ball slider is withdrawn from the rail.

(6) Abundant models and sizes

Each series has various models of ball slides, rendering the linear guide available for numerous uses.

(7) Interchangeable series is available (prompt delivery)

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

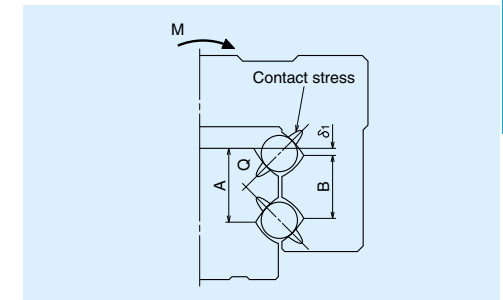


Fig. I-5.2 Enlarged illustration of the offset gothic-arch groove

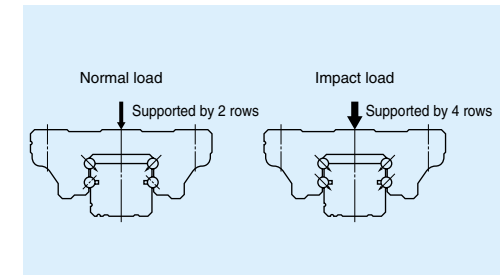


Fig. I-5.3 When load is applied

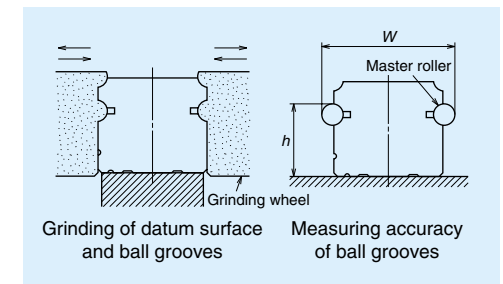
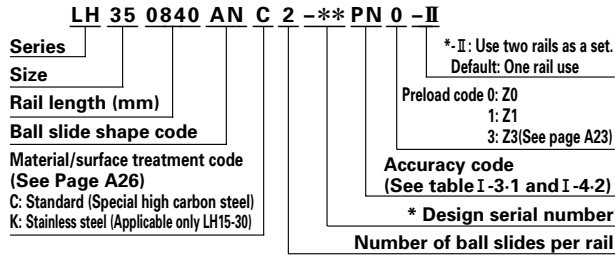


Fig. I-5.4 Rail grinding and measuring

Dimensions of LH Series (Preloaded assembly)

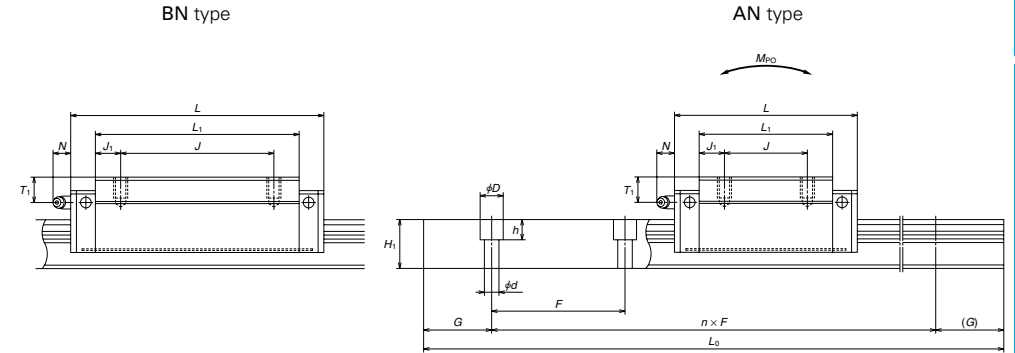
LH-AL, AN (High load type)
LH-BL, BN (Super high load type)



* 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-5-1

Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole			B ₁	L ₁	J ₁	K	T	Grease fitting		
						B	J	M × pitch × l						Hole size	T ₁	N
LH15AN	28	4.6	9.5	34	55	26	26	M4×0.7×6	4	39	6.5	23.4	8	φ3	8.5	3.3
LH15BN					74					58	16					
LH20AN	30	5	12	44	69.8	32	36	M5×0.8×6	6	50	7	25	12	M6×0.75	5	11
LH20BN					91.8		50			72	11					
LH25AL	36				79	35	35	M6×1×6	6.5	58	11.5	29		6		
LH25AN	40	7	12.5	48			M6×1×9			33		12	M6×0.75	10		
LH25BL	36						M6×1×6			29				6		
LH25BN	40				107		50	M6×1×9			86	18	33		10	
LH30AL	42				85.6	40	40	M8×1.25×8	10	59	9.5	33		7		
LH30AN	45	9	16	60			M8×1.25×10			36		14	M6×0.75	10		
LH30BL	42				124.6		60	M8×1.25×8			98	19	33		7	
LH30BN	45						M8×1.25×10			36				10		
LH35AL	48				109	50	50	M8×1.25×8	10	80	15	38.5		8		
LH35AN	55	9.5	18	70			M8×1.25×12			45.5		15	M6×0.75	15		
LH35BL	48				143		72	M8×1.25×8			114	21	38.5		8	
LH35BN	55						M8×1.25×12			45.5				15		
LH45AN	70	14	20.5	86	139	60	60	M10×1.5×17	13	105	22.5	56	17	Rc1/8	20	13
LH45BN					171		80				137	28.5				
LH55AN	80	15	23.5	100	163	75	75	M12×1.75×18	12.5	126	25.5	65	18	Rc1/8	21	13
LH55BN					201		95				164	34.5				
LH65AN	90	16	31.5	126	193	76	70	M16×2×20	25	147	38.5	74	23	Rc1/8	19	13
LH65BN					253		120				207	43.5				



Unit: mm

Rail							Basic load rating					Ball dia.	Weight	
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole d × D × h	B ₃	G (recomm ended)	Max. length L _{0max} () for stainless	Dynamic C (N)	Static C ₀	Static moment M _{RO} M _{FO} M _{VO} (N-m)			D _w	Ball slide (kg)	Rail (kg/m)
15	15	60	4.5×7.5×5.3	7.5	20	2000 (1800)	10800	20700	108	95	80	3.175	0.18	1.6
20	18	60	6×9.5×8.5	10	20	3960 (3500)	17400	32500	219	185	155	3.968	0.33	2.6
23	22	60	7×11×9	11.5	20	3960 (3500)	25600	46000	360	320	267	4.762	0.46	3.6
28	26	80	9×14×12	14	20	4000 (3500)	31000	51500	490	350	292	5.556	0.69	5.2
34	29	80	9×14×12	17	20	4000	47500	80500	950	755	630	6.350	1.2	7.2
45	38	105	14×20×17	22.5	22.5	3990	81000	140000	2140	1740	1460	7.937	3.0	12.3
53	44	120	16×23×20	26.5	30	3960	119000	198000	3600	3000	2510	9.525	4.7	16.9
63	53	150	18×26×22	31.5	35	3900	181000	281000	6150	4950	4150	11.906	7.7	24.3

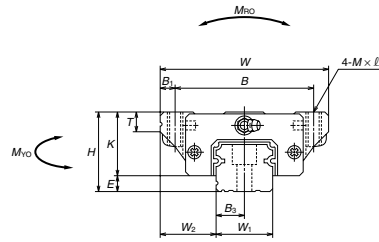
The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface.

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

LH-EL (High load type)
LH-GL (Super high load type)

LH 35 0840 EL C 2 -** PN 0 -II

Series	LH	Size	35	Ball slide shape code	0840	Material/surface treatment code (See Page A26)	EL	C	2	**	PN	0	-II
* II: Use two rails as a set. Default: One rail use Preload code 0: Z0 1: Z1 3: Z3(See page A23) Accuracy code (See table I-3-1 and I-4-2) * Design serial number Number of ball slides per rail													

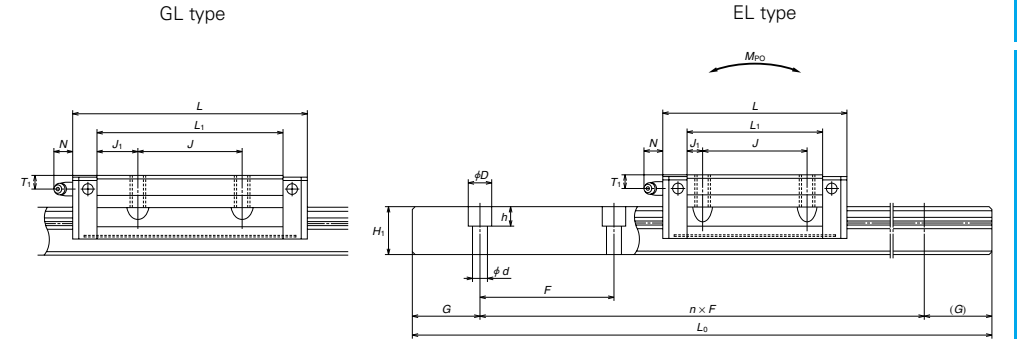


* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

Table. I-5-2

Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole					Grease fitting					
						B	J	M × pitch × l	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LH15EL LH15GL	24	4.6	16	47	55 74	38	30	M5×0.8×8	4.5	39 58	4.5 14	19.4	8	φ3	4.5	3.3
LH20EL LH20GL	30	5	21.5	63	69.8 91.8	53	40	M6×1×10	5	50 72	5 16	25	10	M6×0.75	5	11
LH25EL LH25GL	36	7	23.5	70	79 107	57	45	M8×1.25×16 (M8×1.25×12)	6.5	58 86	6.5 20.5	29	11 (12)	M6×0.75	6	11
LH30EL LH30GL	42	9	31	90	98.6 124.6	72	52	M10×1.5×18 (M10×1.5×15)	9	72 98	10 23	33	11 (15)	M6×0.75	7	11
LH35EL LH35GL	48	9.5	33	100	109 143	82	62	M10×1.5×20	9	80 114	9 26	38.5	12	M6×0.75	8	11
LH45EL LH45GL	60	14	37.5	120	139 171	100	80	M12×1.75×24	10	105 137	12.5 28.5	46	13	Rc1/8	10	13
LH55EL LH55GL	70	15	43.5	140	163 201	116	95	M14×2×28	12	126 164	15.5 34.5	55	15	Rc1/8	11	13
LH65EL LH65GL	90	16	53.5	170	193 253	142	110	M16×2×24	14	147 207	18.5 48.5	74	23	Rc1/8	19	13
LH85GL	110	18	65	215	303	185	140	M20×2.5×30	15	243	51.5	92	30	Rc1/8	23	13

※Dimensions in parenthesis are for items made of stainless steel.
 ※LH85 is the item on order.
 ※The external appearance of stainless steel ball slides differs from those of standard material ball slide.



Unit: mm

Rail							Basic load rating					Ball dia.	Weight	
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole d × D × h	B ₃	G (recomm ended)	Max. length L _{0max} () for stainless	Dynamic C (N)	Static C ₀	Static moment (N·m)			D _w	Ball slide (kg)	Rail (kg/m)
15	15	60	4.5×7.5×5.3	7.5	20	2000 (1800)	10800	20700	108	95	80	3.175	0.17	1.6
20	18	60	6×9.5×8.5	10	20	3960 (3500)	17400	32500	219	185	155	3.968	0.45	2.6
23	22	60	7×11×9	11.5	20	3960 (3500)	25600	46000	360	320	267	4.762	0.63	3.6
28	26	80	9×14×12	14	20	4000 (3500)	35500	63000	600	505	425	5.556	1.2	5.2
34	29	80	9×14×12	17	20	4000	47500	80500	950	755	630	6.350	1.7	7.2
45	38	105	14×20×17	22.5	22.5	3990	81000	140000	2140	1740	1460	7.937	3.0	12.3
53	44	120	16×23×20	26.5	30	3960	119000	198000	3600	3000	2510	9.525	5.0	16.9
63	53	150	18×26×22	31.5	35	3900	181000	281000	6150	4950	4150	11.906	10.0	24.3
85	65	180	24×35×28	42.5	45	2520	345000	585000	17300	17400	14600	14.287	24.5	38.3

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

LH Series (preloaded assembly)

LH-EM
LH-FL (High load type)
LH-GM (Super high load type)
LH-HL

LH 35 0840 FL C 2 -** PN 0 -II

Series: LH 35 0840 FL C 2 -** PN 0 -II
 Size: 35
 Rail length (mm): 0840
 Ball slide shape code: FL
 Material/surface treatment code (See Page A26): C: Standard (Special high carbon steel), K: Stainless steel (Applicable only LH15-30)
 Preload code 0: Z0, 1: Z1, 3: Z3 (See page A23)
 Accuracy code (See table I-3-1 and I-4-2)
 * Design serial number
 Number of ball slides per rail

* 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.

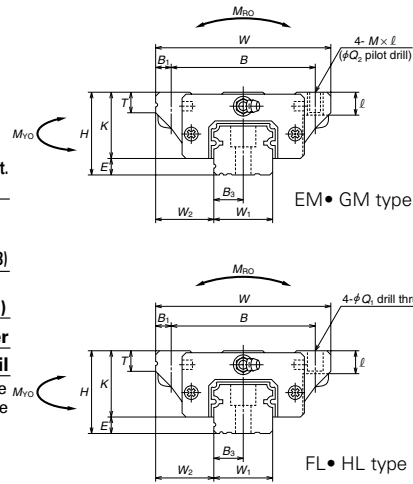


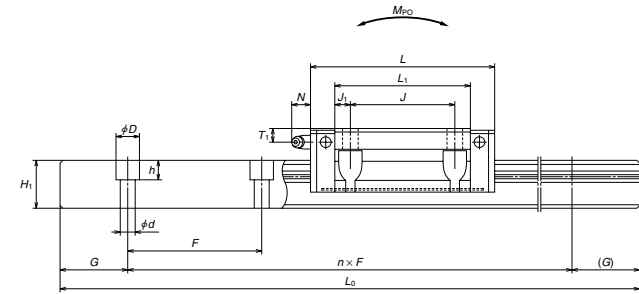
Table. I-5-3

Model No.	Assembly			Ball slide													
	Height H	E	W ₂	Width W	Length L	Mounting hole				B ₁	L ₁	J ₁	K	T	Grease fitting		
						B	J	M × pitch × ℓ	Q ₂						Hole size	T ₁	N
LH15FL	24	4.6	16	47	55	38	30	4.5×7	—	4.5	39	4.5	19.4	8	φ3	4.5	3.3
LH15EM					74			M5×0.8×7	4.4								
LH15HL	30	5	21.5	63	69.8	53	40	4.5×7	—	5	50	5	25	10	M6×0.75	5	11
LH15GM					91.8			M5×0.8×7	4.4								
LH20FL	30	5	21.5	63	69.8	53	40	6×9.5	—	5	50	5	25	10	M6×0.75	5	11
LH20EM					91.8			M6×1.0×9.5	5.3								
LH20HL	36	7	23.5	70	79	57	45	6×9.5	—	6.5	58	6.5	29	11 (12)	M6×0.75	6	11
LH20GM					107			M6×1×9.5	5.3								
LH25FL	36	7	23.5	70	79	57	45	7×10 (7×11.5)	—	9	72	10	33	11 (15)	M6×0.75	7	11
LH25EM					107			M8×1.25×10	6.8								
LH25HL	42	9	31	90	98.6	72	52	M8×1.25×11.5	—	9	98	23	33	11 (15)	M6×0.75	7	11
LH25GM					124.6			M8×1.25×10	6.8								
LH30FL	42	9	31	90	98.6	72	52	9×12 (9×14.5)	—	9	98	23	33	11 (15)	M6×0.75	7	11
LH30EM					124.6			M10×1.5×12	8.6								
LH30HL	48	9.5	33	100	109	82	62	M10×1.5×13	—	9	114	26	38.5	12	M6×0.75	8	11
LH30GM					143			M10×1.5×12	8.6								
LH35FL	48	9.5	33	100	109	82	62	9×13	—	9	114	26	38.5	12	M6×0.75	8	11
LH35EM					143			M10×1.5×13	8.6								
LH35HL	60	14	37.5	120	139	100	80	11×15	—	10	105	12.5	46	13	Rc1/8	10	13
LH35GM					171			M12×1.75×15	10.5								
LH45FL	60	14	37.5	120	139	100	80	11×15	—	10	105	12.5	46	13	Rc1/8	10	13
LH45EM					171			M12×1.75×15	10.5								
LH45HL	70	15	43.5	140	163	116	95	14×18	—	12	126	15.5	55	15	Rc1/8	11	13
LH45GM					201			M14×2×18	12.5								
LH55FL	70	15	43.5	140	163	116	95	14×18	—	12	126	15.5	55	15	Rc1/8	11	13
LH55EM					201			M14×2×18	12.5								
LH55HL	90	16	53.5	170	193	142	110	16×24	—	14	147	18.5	74	23	Rc1/8	19	13
LH55GM					253			M16×2×24	14.6								
LH65FL	90	16	53.5	170	193	142	110	16×24	—	14	147	18.5	74	23	Rc1/8	19	13
LH65EM					253			M16×2×24	14.6								
LH65HL	110	18	65	215	303	185	140	18×30	—	15	243	51.5	92	30	Rc1/8	23	13
LH65GM					303			M16×2×24	14.6								
LH85HL	110	18	65	215	303	185	140	18×30	—	15	243	51.5	92	30	Rc1/8	23	13

* Dimensions in parenthesis are for items made of stainless steel.

* LH85 is the item on order.

* The external appearance of stainless steel ball slides differs from those of standard material ball slide.



Unit: mm

Rail								Basic load rating					Ball dia.		Weight	
Width	Height	Pitch	Mounting bolt hole	B ₃	G (recomm. ended)	aMax. length L _{0max} () for stainless	Dynamic C (N)	Static C ₀ (N)	Static moment (N·m)			D _w	Ball slide (kg)	Rail (kg/m)		
W ₁	H ₁	F	d × D × h	B ₃	(recomm. ended)	()	C	C ₀	M _{RO}	M _{PO}	M _{VO}	D _w	Ball slide (kg)	Rail (kg/m)		
15	15	60	4.5×7.5×5.3	7.5	20	2000 (1800)	10800	20700	108	95	80	3.175	0.17	1.6		
20	18	60	6×9.5×8.5	10	20	3960 (3500)	17400	32500	219	185	155	3.968	0.45	2.6		
23	22	60	7×11×9	11.5	20	3960 (3500)	25600	46000	360	320	267	4.762	0.63	3.6		
28	26	80	9×14×12	14	20	4000 (3500)	35500	63000	600	505	425	5.556	1.2	5.2		
34	29	80	9×14×12	17	20	4000	47500	80500	950	755	630	6.35	1.7	7.2		
45	38	105	14×20×17	22.5	22.5	3990	81000	140000	2140	1740	1460	7.937	3	12.3		
53	44	120	16×23×20	26.5	30	3990	99000	187000	2860	3000	2520	9.525	3.9	16.9		
63	53	150	18×26×22	31.5	35	3900	119000	198000	3600	3000	2510	11.906	5	16.9		
85	65	180	24×35×28	42.5	45	2520	146000	264000	4850	5150	4350	14.287	6.5	24.3		
							345000	585000	17300	17400	14600	14.287	24.5	38.3		

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

Dimensions of LH Series (Interchangeable ball slide)

LAH-AN (High load type)
LAH-BN (Super high load type)

• See Page A27 Reference Number of each interchangeable part.

LA H 30 AN S Z - K

Interchangeable ball slide code
Series
Size
Ball slide shape code (See Table I-2-2)
Material code
Default Standard material S: Stainless steel
(Applicable only LH15-30)

Option code
-K: Equipped with standard NSK K1
-F: Fluoride low temperature chrome platin + standard grease
-F50: Fluoride low temperature chrome platin + LG2 grease

Preload code
Default: Fine clearance
Z: Slight preload

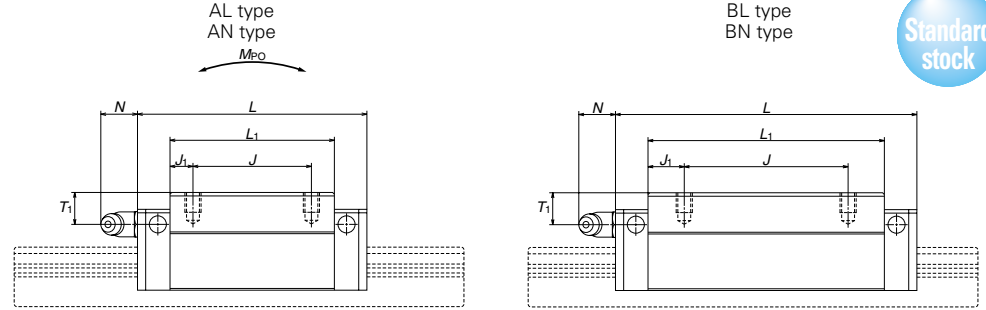
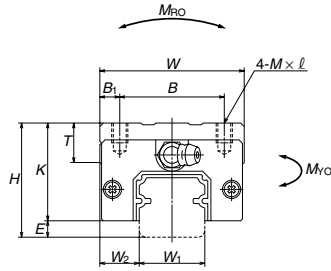


Table. I-5-4

Model No.	Assembly			Ball slide									
	Height H	E	W ₂	Width W	Length L	Mounting hole			B ₁	L ₁	J ₁	K	T
						B	J	M × pitch × l					
LAH15AN	28	4.6	9.5	34	55	26	26	M4×0.7×6	4	39	6.5	23.4	8
LAH15BN					74					58	16		
LAH20AN	30	5	12	44	69.8	32	36	M5×0.8×6	6	50	7	25	12
LAH20BN					91.8					72	11		
LAH25AL	36	7	12.5	48	79	35	35	M6×1×6	6.5	58	11.5	29	12
LAH25AN	40				M6×1×9			33					
LAH25BL	36				M6×1×6			29					
LAH25BN	40				M6×1×9			33					
LAH30AL	42	9	16	60	85.6	40	40	M8×1.25×8	10	59	9.5	33	14
LAH30AN	45				M8×1.25×10			36					
LAH30BL	42				M8×1.25×8			33					
LAH30BN	45				M8×1.25×10			36					
LAH35AL	48	9.5	18	70	109	50	50	M8×1.25×8	10	80	15	38.5	15
LAH35AN	55				M8×1.25×12			45.5					
LAH35BL	48				M8×1.25×8			38.5					
LAH35BN	55				M8×1.25×12			45.5					
LAH45AN	70	14	20.5	86	139	60	60	M10×1.5×17	13	105	22.5	56	17
LAH45BN					171					137	28.5		
LAH55AN	80	15	23.5	100	163	75	75	M12×1.75×18	12.5	126	25.5	65	18
LAH55BN					201					164	34.5		
LAH65AN	90	16	31.5	126	193	76	70	M16×2×20	25	147	38.5	74	23
LAH65BN					253		120			207	43.5		

Unit: mm

Grease fitting			Basic load rating					Ball dia. D _w	Weight Ball slide (kg)
			Dynamic		Static				
Hole size	T ₁	N	C (N)	C ₀	M _{ro}	M _{po} (N·m)	M _{vo}		
φ 3	8.5	3.3	10800	20700	108	95	80	3.175	0.18
			14600	32000	166	216	181		
M6×0.75	5	11	17400	32500	219	185	155	3.968	0.33
			23500	50500	340	420	355		
M6×0.75	6	11	25600	46000	360	320	267	4.762	0.46
			34500	71000	555	725	610		
			6	10					
			6	10					
M6×0.75	7	11	31000	51500	490	350	292	5.556	0.69
			46000	91500	870	1030	865		
			10	7					
			10	7					
M6×0.75	8	11	47500	80500	950	755	630	6.350	1.2
			61500	117000	1380	1530	1280		
			15	8					
			15	8					
Rc1/8	20	13	81000	140000	2140	1740	1460	7.937	3.0
			99000	187000	2860	3000	2520		
Rc1/8	21	13	119000	198000	3600	3000	2510	9.525	4.7
			146000	264000	4850	5150	4350		
Rc1/8	19	13	181000	281000	6150	4950	4150	11.906	7.7
			235000	410000	8950	10100	8450		

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

LAH-EL (High load type)
LAH-GL (Super high load type)

• See Page A27 Reference Number of each interchangeable part.

LA H 30 EL S Z - K

Interchangeable ball slide code
Series
Size
Ball slide shape code (See Table I-2-2)
Material code
Default Standard material S: Stainless steel
(Applicable only LH15-30)

Option code
-K: Equipped with standard NSK K1
-F: Fluoride low temperature chrome platin + standard grease
-F50: Fluoride low temperature chrome platin + LG2 grease

Preload code
Default: Fine clearance
Z: Slight preload

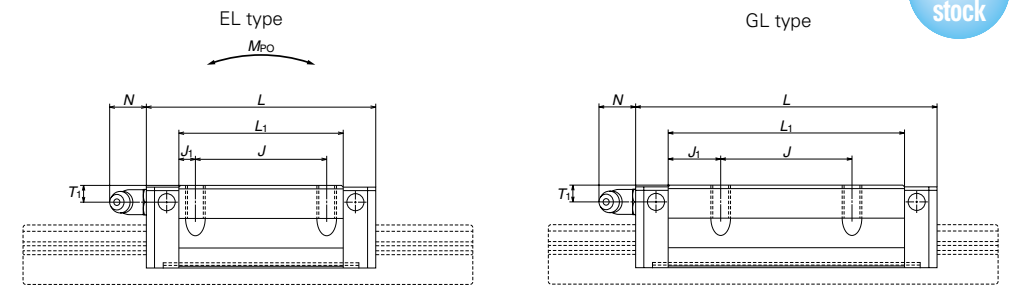
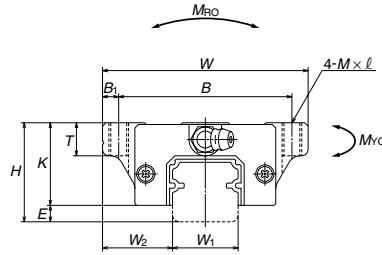


Table. I-5-5

Model No.	Assembly			Ball slide									
	Height H	E	W ₂	Width W	Length L	Mounting hole			B ₁	L ₁	J ₁	K	T
						B	J	M × pitch × ℓ					
LAH15EL	24	4.6	16	47	55	38	30	M5×0.8×8	4.5	39	4.5	19.4	8
LAH15GL					74					58	14		
LAH20EL	30	5	21.5	63	69.8	53	40	M6×1×10	5	50	5	25	10
LAH20GL					91.8					72	16		
LAH25EL	36	7	23.5	70	79	57	45	M8×1.25×16 (M8×1.25×12)	6.5	58	6.5	29	11
LAH25GL					107					86	20.5		(12)
LAH30EL	42	9	31	90	98.6	72	52	M10×1.5×18 (M10×1.5×15)	9	72	10	33	11
LAH30GL					124.6					98	23		(15)
LAH35EL	48	9.5	33	100	109	82	62	M10×1.5×20	9	80	9	38.5	12
LAH35GL					143					114	26		
LAH45EL	60	14	37.5	120	139	100	80	M12×1.75×24	10	105	12.5	46	13
LAH45GL					171					137	28.5		
LAH55EL	70	15	43.5	140	163	116	95	M14×2×28	12	126	15.5	55	15
LAH55GL					201					164	34.5		
LAH65EL	90	16	53.5	170	193	142	110	M16×2×24	14	147	18.5	74	23
LAH65GL					253					207	48.5		

※Dimensions in parenthesis are for items made of stainless steel.
※The external appearance of stainless steel ball slides differs from those of standard material ball slide.

Unit: mm

Grease fitting			Basic load rating					Ball dia. D _w	Weight Ball slide (kg)
			Dynamic		Static				
Hole size	T ₁	N	C	C ₀	M _{Ro}	M _{Po}	M _{Vo}	D _w	Ball slide (kg)
			(N)			(N·m)			
φ 3	4.5	3.3	10800	20700	108	95	80	3.175	0.17
			14600	32000	166	216	181		0.25
M6×0.75	5	11	17400	32500	219	185	155	3.968	0.45
			23500	50500	340	420	355		0.65
M6×0.75	6	11	25600	46000	360	320	267	4.762	0.63
			34500	71000	555	725	610		0.93
M6×0.75	7	11	35500	63000	490	505	425	5.556	1.2
			46000	91500	870	1030	865		1.6
M6×0.75	8	11	47500	80500	950	755	630	6.350	1.7
			61500	117000	1380	1530	1280		2.4
Rc1/8	10	13	81000	140000	2140	1740	1460	7.937	3.0
			99000	187000	2860	3000	2520		3.9
Rc1/8	11	13	119000	198000	3600	3000	2510	9.525	5.0
			146000	264000	4850	5150	4350		6.5
Rc1/8	19	13	181000	281000	6150	4950	4150	11.906	10.0
			235000	410000	8950	10100	8450		14.1

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

LH Series (interchangeable part)

LAH-EM
LAH-FL (High load type)
LAH-HL
LAH-GM (Super high load type)

• See Page A27 Reference Number of each interchangeable part.

LA H 30 FL S Z - K

Interchangeable ball slide code
Series
Size
Ball slide shape code (See Table I-2-2)
Material code
Default Standard material
S: Stainless steel
(Applicable only LH15-30)

Option code
-K: Equipped with standard NSK K1
-F: Fluoride low temperature chrome platin + standard grease
-F50: Fluoride low temperature chrome platin + LG2 grease

Preload code
Default: Fine clearance
Z: Slight preload

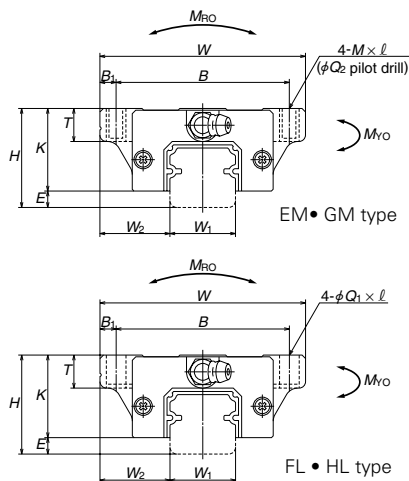
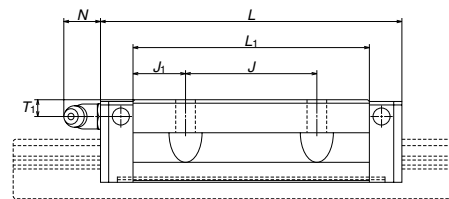


Table. I-5-6

Model No.	Assembly			Ball slide										
	Height H	E	W ₂	Width W	Length L	Mounting hole				B ₁	L ₁	J ₁	K	T
						B	J	Q ₁ × l M × pitch × l	Q ₂					
LAH15FL LAH15EM LAH15HL LAH15GM	24	4.6	16	47	55 74	38 30	30	4.5×7 M5×0.8×7 4.5×7 M5×0.8×7	— 4.4 — 4.4	4.5	39 58	4.5 14	19.4	8
LAH20FL LAH20EM LAH20HL LAH20GM	30	5	21.5	63	69.8 91.8	53 40	40	6×9.5 M6×1×9.5 6×9.5 M6×1×9.5	— 5.3 — 5.3	5	50 72	5 16	25	10
LAH25FL LAH25EM LAH25HL LAH25GM	36	7	23.5	70	79 107	57 45	45	7×10 (7×11.5) M8×1.25×10 (M8×1.25×11.5) 7×10 (7×11.5) M8×1.25×10 (M8×1.25×11.5)	— 6.8 — 6.8	6.5	58 86	6.5 20.5	29	11 (12)
LAH30FL LAH30EM LAH30HL LAH30GM	42	9	31	90	98.6 124.6	72 52	52	9×12 (9×14.5) M10×1.5×12 (M10×1.5×14.5) 9×12 (9×14.5) M10×1.5×12 (M10×1.5×14.5)	— 8.6 — 8.6	9	72 98	10 23	33	11 (15)
LAH35FL LAH35EM LAH35HL LAH35GM	48	9.5	33	100	109 143	82 62	62	9×13 M10×1.5×13 9×13 M10×1.5×13	— 8.6 — 8.6	9	80 114	9 26	38.5	12
LAH45FL LAH45EM LAH45HL LAH45GM	60	14	37.5	120	139 171	100 80	80	11×15 M12×1.75×15 11×15 M12×1.75×15	— 10.5 — 10.5	10	105 137	12.5 28.5	46	13
LAH55FL LAH55EM LAH55HL LAH55GM	70	15	43.5	140	163 201	116 95	95	14×18 M14×2×18 14×18 M14×2×18	— 12.5 — 12.5	12	126 164	15.5 34.5	55	15
LAH65FL LAH65EM LAH65HL LAH65GM	90	16	53.5	170	193 253	142 110	110	16×24 M16×2×24 16×24 M16×2×24	— 14.6 — 14.6	14	147 207	18.5 48.5	74	23

※Dimensions in parenthesis are for items made of stainless steel.

※The external appearance of stainless steel ball slides differs from those of standard material ball slide.



Unit: mm

Grease fitting			Basic load rating					Ball dia. D _w	Weight Ball slide (kg)
			Dynamic C (N)	Static C ₀	Static moment				
Hole size	T ₁	N			M _{RO}	M _{RO}	M _{RO}	D _w	Ball slide (kg)
φ 3	4.5	3.3	10800	20700	108	95	80		
			14600	32000	166	216	181		
M6×0.75	5	11	17400	32500	219	185	155	3.968	0.45
			23500	50500	340	420	355		
M6×0.75	6	11	25600	46000	360	320	267	4.762	0.63
			34500	71000	555	725	610		
M6×0.75	7	11	35500	63000	600	505	425	5.556	1.2
			46000	91500	870	1030	865		
M6×0.75	8	11	47500	80500	950	755	630	6.35	1.7
			61500	117000	1380	1530	1280		
Rc1/8	10	13	81000	140000	2140	1740	1460	7.937	3
			99000	187000	2860	3000	2520		
Rc1/8	11	13	119000	198000	3600	3000	2510	9.525	5
			146000	264000	4850	5150	4350		
Rc1/8	19	13	181000	281000	6150	4950	4150	11.906	10
			235000	410000	8950	10100	8450		

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



Dimensions of LH Series (Interchangeable rail)

Example of reference number

Regular rail (non-butting rail)

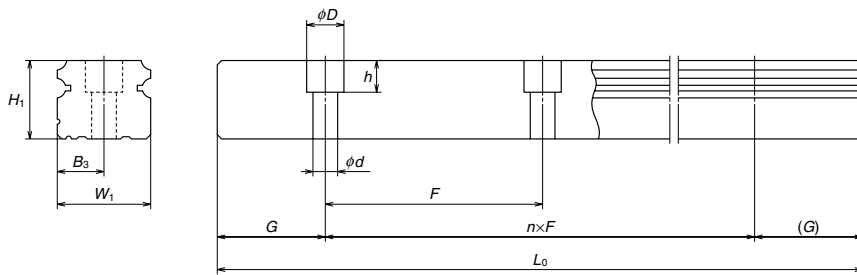
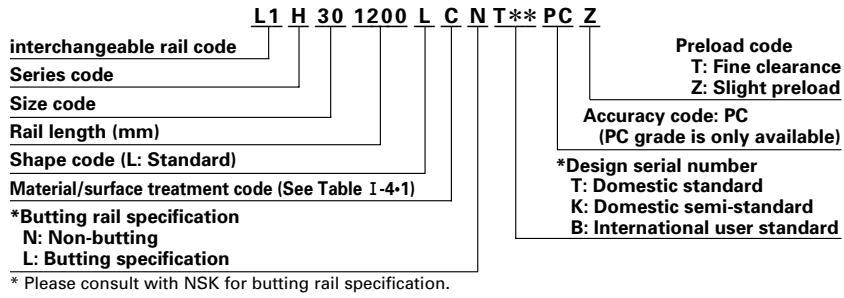


Table I-5-7

Model No.	Rail							Weight
	Width W_1	Height H_1	Pitch F	Mounting bolt hole $d \times D \times h$	B_3	G Recommended	Max. length L_{MAX} () for stainless	Rail (Kg / m)
L1H15	15	15	60	4.5×7.5×5.3	7.5	20	2000 (1800)	1.6
L1H20	20	18	60	6×9.5×8.5	10	20	3960 (3500)	2.6
L1H25	23	22	60	7×11×9	11.5	20	3960 (3500)	3.6
L1H30	28	26	80	9×14×12	14	20	4000 (3500)	5.2
L1H35	34	29	80	9×14×12	17	20	4000	7.2
L1H45	45	38	105	14×20×17	22.5	22.5	3990	12.3
L1H55	53	44	120	16×23×20	26.5	30	3960	16.9
L1H65	63	53	150	18×26×22	31.5	35	3900	24.3

G dimension is $1/2F^{0.5}$ for butting rail.

A-I-5.2 LS Series

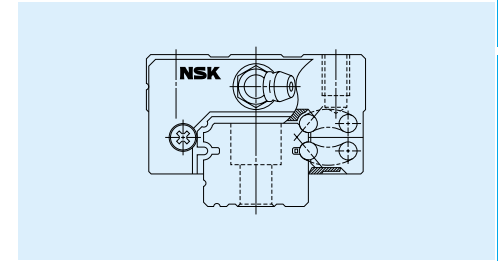
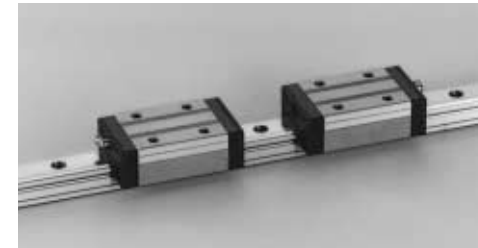


Fig. I-5-5 LS Series

(1) High self aligning capability (rolling direction)

Same as the DF combination in angular contact bearings, self-aligning capability is high because the cross point of the contact lines of balls and grooves comes inside, reducing moment rigidity. This increases the capacity to absorb the error of installation.

(2) High load carrying capacity to vertical direction

The contact angle is set at 50 degrees, increasing load carrying capacity as well as rigidity against the load in vertical direction.

(3) High resistance against impact load

The bottom ball groove is formed in gothic-arch and the center of the top and bottom grooves are offset as shown in Fig. I-5-6. The vertical load is usually carried by top 2 rows at where balls are contacting at two points. Because of this design, the bottom rows will carry the load when a large impact load is applied as shown in Fig. I-5-7. This assures high resistance to the impact load.

(4) High accuracy

As shown in Fig. I-5-8, fixing the measuring rollers is simple thanks to the gothic-arch groove. This makes easy and accurate measuring of ball-grooves.

(5) Easy to handle, and designed with safety in mind.

Balls are retained in the retainer and do not fall out when the ball slide is withdrawn from the rail.

(6) Abundant models and sizes come in series.

Each series have several ball slide models, rendering the linear guide available for numerous uses. The LS Series also has standardized long stainless- steel rail (maximum: 3 500 mm).

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

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

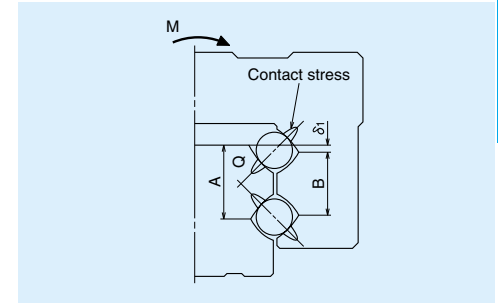


Fig. I-5-6 Enlarged illustration: Offset gothic-arch

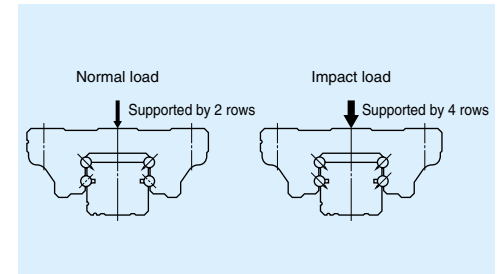


Fig. I-5-7 When load is applied

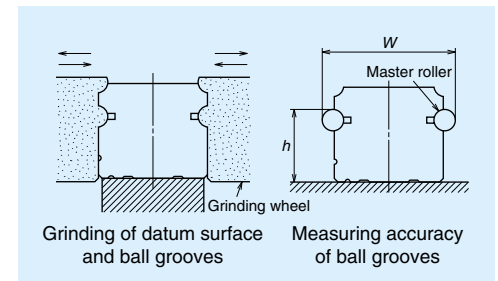


Fig. I-5-8 Rail-grinding and measuring

Dimensions of LS Series (Preloaded assembly)

LS-CL (Medium load type)
LS-AL (High load type)

LS 35 0840 AL C 2 -** PN 0 -II

Series: LS
Size: 35
Rail length (mm): 0840
Ball slide shape code: AL
Material/surface treatment code (See Page A27): C: Standard (Special high carbon steel)
K: Stainless steel (Applicable only LH15-30)
Preload code 0: Z0
1: Z1
3: Z3(See page A23)
Accuracy code (See table I-3.1 and I-4.2)
* Design serial number
Number of ball slides per rail

* 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.

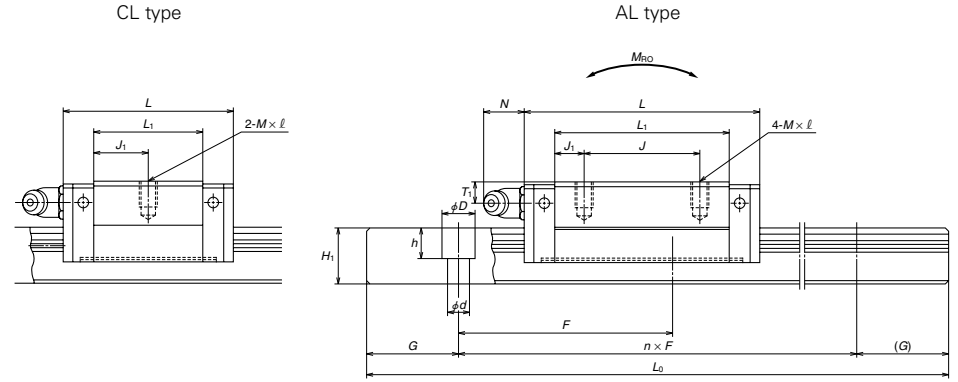
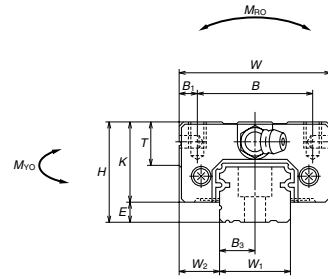


Table. I-5-8

Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole					Grease fitting					
						B	J	M × pitch × ℓ	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LS15CL	24	4.6	9.5	34	40.4	—	—	M4×0.7×6	4	23.6	11.8	19.4	10	φ 3	6	3
LS15AL					56.8	26	26			40	7					
LS20CL	28	6	11	42	47.2	—	—	M5×0.8×7	5	30	15	22	12	M6×0.75	5.5	11
LS20AL					65.2	32	32		5	48	8					
LS25CL	33	7	12.5	48	59.6	—	—	M6×1×9	6.5	38	19	26	12	M6×0.75	7	11
LS25AL					81.6	35	35		6.5	60	12.5					
LS30CL	42	9	16	60	67.4	—	—	M8×1.25×12	10	42	21	33	13	M6×0.75	8	11
LS30AL					96.4	40	40		10	71	15.5					
LS35CL	48	10.5	18	70	77	—	—	M8×1.25×12	10	49	24.5	37.5	14	M6×0.75	8.5	11
LS35AL					108	50	50		10	80	15					

※ Standard mounting hole of LS15 rail is for M3 bolts (Hole size: 3.5×6×4.5).
If you require the mounting hole for M4 bolts (Hole size: 4.5×7.5×5.3), please specify it when ordering.

Unit: mm

Rail							Basic load rating					Ball dia.		Weight	
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole d × D × h	B ₃	G (recomm ended)	Max. length L _{0max} () for stainless	Dynamic C	Static C ₀	Static moment			D _w	Ball slide (kg)	Rail (kg/m)	
							(N)		M _{ro}	M _{po}	M _{vo}				(N·m)
15	12.5	60	※ 3.5×6×4.5 4.5×7.5×5.3	7.5	20	2000 (1700)	5400	9100	46	25	21	2.778	0.14	1.4	
20	15.5	60	6×9.5×8.5	10	20	3960 (3500)	7900	13400	92	47	39	3.175	0.19	2.3	
23	18	60	7×11×9	11.5	20	3960 (3500)	12700	20800	164	91	76	3.968	0.34	3.1	
28	23	80	7×11×9	14	20	4000 (3500)	18700	29600	282	139	116	4.762	0.58	4.8	
34	27.5	80	9×14×12	17	20	4000 (3500)	26000	40000	465	220	185	5.556	0.86	7.0	

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

LS-JL (Medium load type)
LS-EL (High load type)

LS 35 0840 EL C 2 -** PN 0 -II

Series	LS	Size	35	Rail length (mm)	0840	Ball slide shape code	EL	Material/surface treatment code (See Page A27)	C	Accuracy code (See table I-3.1 and I-4.2)	2	Preload code 0: Z0 1: Z1 3: Z3(See page A23)	Design serial number	PN 0	Number of ball slides per rail	II
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*. II : Use two rails as a set.
Default: One rail use

* 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.

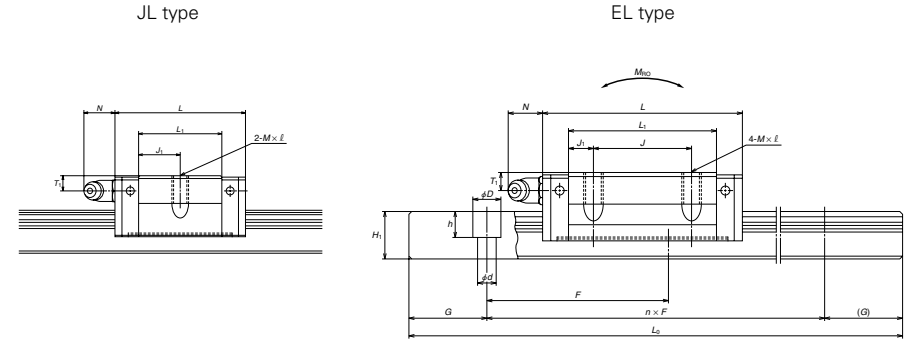
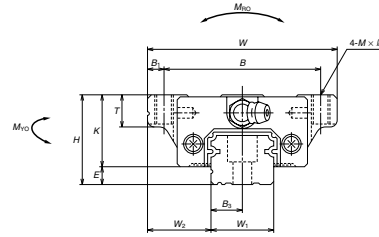


Table. I-5-9

Model No.	Assembly			Ball slide										
	Height H	Width W	Length L	Mounting hole					Grease fitting					
				B	J	M × pitch × l	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LS15JL	24	52	40.4	41	—	M5×0.8×8	5.5	23.6	11.8	19.4	8	φ 3	6	3
LS15EL	24	52	56.8	26	—	M5×0.8×8	5.5	40	7	19.4	8	φ 3	6	3
LS20JL	28	59	47.2	49	—	M6×1×10	5	30	15	22	10	M6×0.75	5.5	11
LS20EL	28	59	65.2	32	—	M6×1×10	5	48	8	22	10	M6×0.75	5.5	11
LS25JL	33	73	59.6	60	—	M8×1.25×12	6.5	38	19	26	11 (12)	M6×0.75	7	11
LS25EL	33	73	81.6	35	—	M8×1.25×12	6.5	60	12.5	26	11 (12)	M6×0.75	7	11
LS30JL	42	90	67.4	72	—	M10×1.5×18 (M10×1.5×15)	9	42	21	33	11 (15)	M6×0.75	8	11
LS30EL	42	90	96.4	40	—	M10×1.5×18 (M10×1.5×15)	9	71	15.5	33	11 (15)	M6×0.75	8	11
LS35JL	48	100	77	82	—	M10×1.5×20 (M10×1.5×15)	9	49	24.5	37.5	12 (15)	M6×0.75	8.5	11
LS35EL	48	100	108	50	—	M10×1.5×20 (M10×1.5×15)	9	80	15	37.5	12 (15)	M6×0.75	8.5	11

※ Standard mounting hole of LS15 rail is for M3 bolts (Hole size: 3.5×6×4.5).
If you require the mounting hole for M4 bolts (Hole size: 4.5×7.5×5.3), please specify it when ordering.
※ The external appearance of stainless steel ball slides differs from those of standard material ball slide.

Unit: mm

Rail							Basic load rating					Ball dia.		Weight	
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole d × D × h	B ₃	G (recomm ended)	Max. length L _{0max} () for stainless	Dynamic C (N)	Static C ₀	Static moment M _{RO} M _{PO} M _{VO} (N·m)			D _w	Ball slide (kg)	Rail (kg/m)	
15	12.5	60	※ 3.5×6×4.5 4.5×7.5×5.3	7.5	20	2000 (1700)	5400	9100	46	25	21	2.778	0.17	1.4	
20	15.5	60	6×9.5×8.5	10	20	3960 (3500)	7900	13400	92	47	39	3.175	0.24	2.3	
23	18	60	7×11×9	11.5	20	3960 (3500)	12700	20800	164	91	76	3.968	0.44	3.1	
28	23	80	7×11×9	14	20	4000 (3500)	18700	29600	282	139	116	4.762	0.76	4.8	
34	27.5	80	9×14×12	17	20	4000 (3500)	26000	40000	465	220	185	5.556	1.2	7.0	

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

LS Series (preloaded assembly)

LS-KL (Medium load type)
LS-FL (High load type)

LS 35 0840 FL C 2 - PN 0 -II**

Series: LS
Size: 35
Rail length (mm): 0840
Ball slide shape code: FL
Material/surface treatment code (See Page A27): C
C: Standard (Special high carbon steel)
K: Stainless steel (Applicable only LH15-30)

*. II : Use two rails as a set.
Default: One rail use

Preload code 0: Z0
1: Z1
3: Z3(See page A23)

Accuracy code (See table I-3-1 and I-4-2)

* Design serial number

Number of ball slides per rail

* 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.

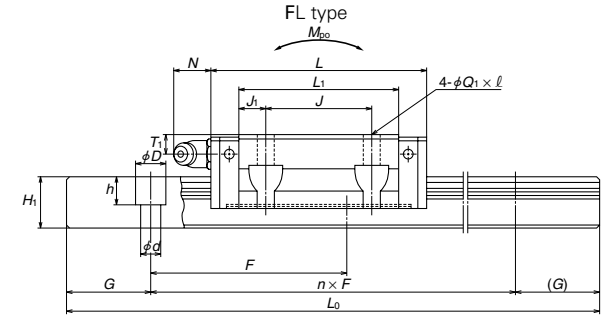
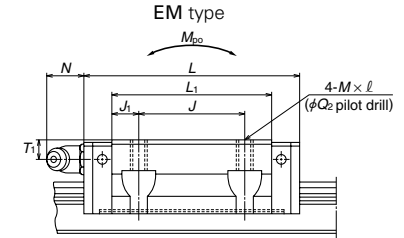
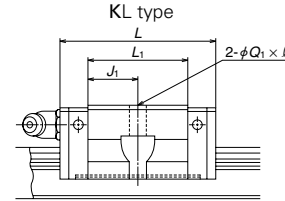
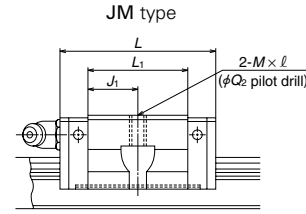
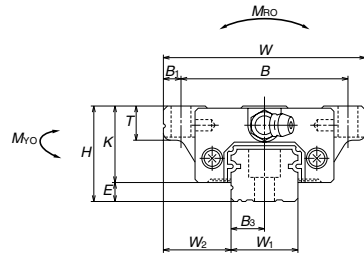


Table. I-5-10

Model No.	Assembly			Ball slide													Grease fitting									
	Height H	E	W ₂	Width W	Length L	Mounting hole							B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N						
						B	J	Q ₁ × l	Q ₂	B ₂	B ₃	L ₂														
LS15KL	24	4.6	18.5	52	40.4	—	—	4.5×7	—	4.4	5.5	23.6	11.8	19.4	8	φ3	6	3								
LS15JM					56.8	—	—	M5×0.8×7	—	—	—	—	—						—	—	—	—	—	—		
LS15FL					—	—	—	4.5×7	—	—	—	—	—						—	—	—	—	—	—	—	—
LS15EM					—	—	—	M5×0.8×7	—	—	—	—	—						—	—	—	—	—	—	—	—
LS20KL					—	—	—	5.5×9 (5.5×9.5)	—	—	—	—	—						—	—	—	—	—	—	—	—
LS20JM	28	6	19.5	59	47.2	—	—	M6×1×9	5.3	5	30	15	22	10	M6×0.75	5.5	11									
LS20FL					65.2	—	—	(M6×1×9.5)	—	—	—	—						—	—	—	—	—	—	—		
LS20EM					—	—	—	5.5×9 (5.5×9.5)	—	—	—	—						—	—	—	—	—	—	—	—	—
LS25KL					—	—	—	6.5	—	—	—	—						—	—	—	—	—	—	—	—	—
LS25JM					—	—	—	32	—	—	—	—						—	—	—	—	—	—	—	—	—
LS25FL	33	7	25	73	59.6	—	—	7×10 (7×11.5)	—	6.8	38	19	26	11 (12)	M6×0.75	7	11									
LS25EM					81.6	—	—	M8×1.25×10	—	—	—	—						—	—	—	—	—	—	—		
LS30KL					—	—	—	6.8	—	—	—	—						—	—	—	—	—	—	—	—	—
LS30JM					—	—	—	35	—	—	—	—						—	—	—	—	—	—	—	—	—
LS30FL					—	—	—	72	—	—	—	—						—	—	—	—	—	—	—	—	—
LS30EM	42	9	31	90	67.4	—	—	9×12 (9×14.5)	—	8.6	42	21	33	11 (15)	M6×0.75	8	11									
LS35KL					96.4	—	—	M10×1.5×12	—	—	—	—						—	—	—	—	—	—	—		
LS35JM					—	—	—	7.5	—	—	—	—						—	—	—	—	—	—	—	—	—
LS35FL					—	—	—	40	—	—	—	—						—	—	—	—	—	—	—	—	—
LS35EM					—	—	—	77	—	—	—	—						—	—	—	—	—	—	—	—	—
LS35JM	48	10.5	33	100	77	—	—	9×13 (9×14.5)	—	8.6	49	24.5	37.5	12 (15)	M6×0.75	8.5	11									
LS35FL					108	—	—	M10×1.5×13	—	—	—	—						—	—	—	—	—	—	—		
LS35EM					—	—	—	82	—	—	—	—						—	—	—	—	—	—	—	—	—
LS35JM					—	—	—	50	—	—	—	—						—	—	—	—	—	—	—	—	—
LS35EM					—	—	—	108	—	—	—	—						—	—	—	—	—	—	—	—	—

※ Standard mounting hole of LS15 rail is for M3 bolts (Hole size: 3.5×6×4.5).
If you require the mounting hole for M4 bolts (Hole size: 4.5×7.5×5.3), please specify it when ordering.
※ The external appearance of stainless steel ball slides differs from those of standard material ball slide.

Rail							Basic load rating					Ball dia.	Weight	
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole d × D × h	B ₃	G (recomm ended)	Max. length L _{0max} () for stainless	Dynamic C	Static C ₀	Static moment M _{Ro} , M _{FO} , M _{VO}			D _w	Ball slide (kg)	Rail (kg/m)
							(N)		(N·m)					
15	12.5	60	※ 3.5×6×4.5 4.5×7.5×5.3	7.5	20	2000 (1700)	5400	9100	46	25	21	2.778	0.17	1.4
20	15.5	60	6×9.5×8.5	10	20	3960 (3500)	7900	13400	92	47	39	3.175	0.26	2.3
23	18	60	7×11×9	11.5	20	3960 (3500)	12700	20800	164	91	76	3.968	0.35	3.1
28	23	80	7×11×9	14	20	4000 (3500)	18700	29600	282	139	116	4.762	0.66	4.8
34	27.5	80	9×14×12	17	20	4000 (3500)	28800	55000	520	435	365	5.556	1.2	7

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

Dimensions of LS Series (Interchangeable ball slide)

LAS-CL (Medium load type)

LAS-AL (High load type)

• See Page A27 Reference Number of each interchangeable part.

LA S 30 AL S Z - K

Interchangeable ball slide code

Series

Size

Ball slide shape code (See Table I-2-2)

Material code

Default Standard material S: Stainless steel

Option code

- K: Equipped with standard NSK K1
- F: Fluoride low temperature chrome platin + standard grease
- F50: Fluoride low temperature chrome platin + LG2 grease

Preload code

- Default: Fine clearance
- Z: Slight preload

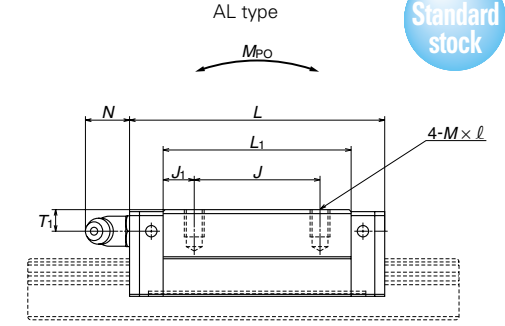
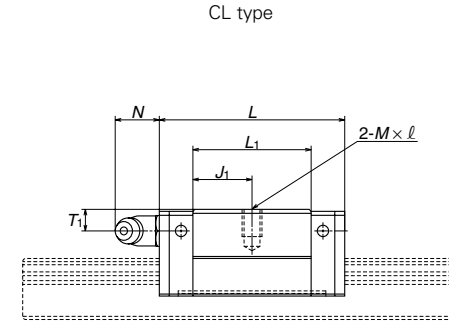
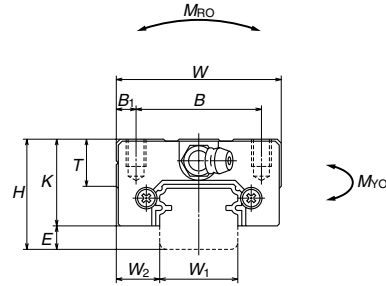


Table. I-5-11

Model No.	Assembly			Ball slide									
	Height H	E	W ₂	Width W	Length L	Mounting hole			B ₁	L ₁	J ₁	K	T
						B	J	M × pitch × l					
LAS15CL	24	4.6	9.5	34	40.4	—	—	M4×0.7×6	4	23.6	11.8	19.4	10
LAS15AL					56.8	26	26			40	7		
LAS20CL	28	6	11	42	47.2	—	—	M5×0.8×7	5	30	15	22	12
LAS20AL					65.2	32	32			48	8		
LAS25CL	33	7	12.5	48	59.6	—	—	M6×1×9	6.5	38	19	26	12
LAS25AL					81.6	35	35			60	12.5		
LAS30CL	42	9	16	60	67.4	—	—	M8×1.25×12	10	42	21	33	13
LAS30AL					96.4	40	40			71	15.5		
LAS35CL	48	10.5	18	70	77	—	—	M8×1.25×12	10	49	24.5	37.5	14
LAS35AL					108	50	50			80	15		

Unit: mm

Grease fitting			Basic load rating					Ball dia. D _w	Weight Ball slide (kg)
			Dynamic C	Static C ₀	Static moment				
Hole size	T ₁	N	(N)			(N·m)			
φ 3	6	3	5400	9100	46	25	21	2.778	0.14
			8350	16900	85	77	65		0.20
M6×0.75	5.5	11	7900	13400	92	47	39	3.175	0.19
			11700	23500	160	133	111		0.28
M6×0.75	7	11	12700	20800	164	91	76	3.968	0.34
			18800	36500	286	258	217		0.51
M6×0.75	8	11	18700	29600	282	139	116	4.762	0.58
			28800	55000	520	435	365		0.85
M6×0.75	8.5	11	26000	40000	465	220	185	5.556	0.86
			40000	74500	865	695	580		1.3

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

LAS-EL (High load type)

LAS-EM

• See Page A27 Reference Number of each interchangeable part.

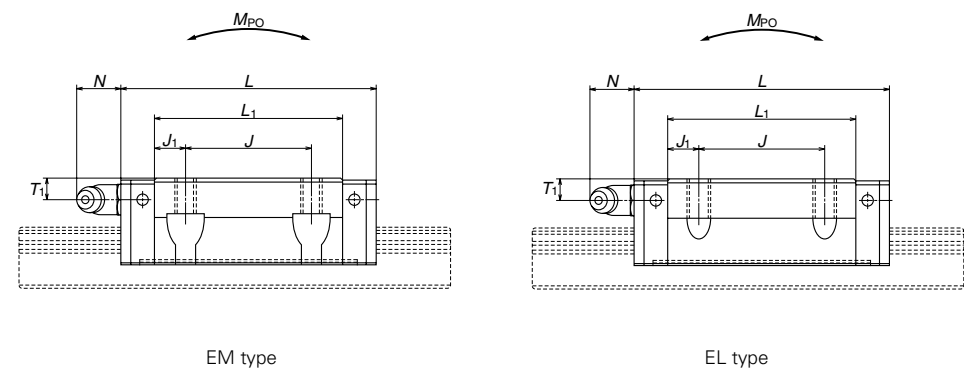
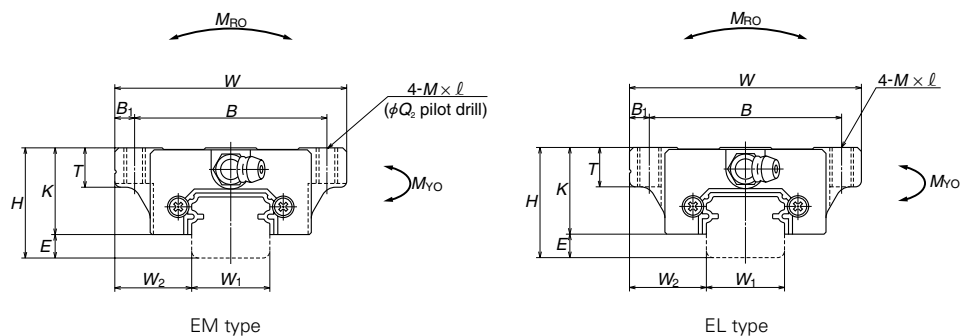
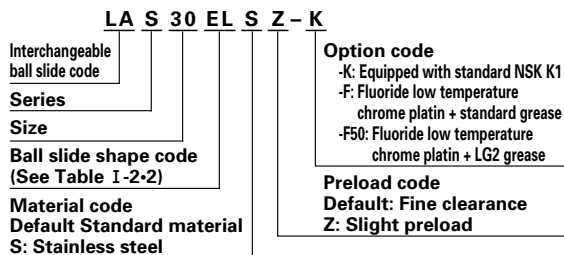


Table. I-5-12

Model No.	Assembly			Ball slide										
	Height H	E	W ₂	Width W	Length L	Mounting hole				B ₁	L ₁	J ₁	K	T
						B	J	M × pitch × l	Q ₂					
LAS15EL	24	4.6	18.5	52	56.8	41	26	M5×0.8×8	—	5.5	40	7	19.4	8
LAS15EM								M5×0.8×7	4.4					
LAS20EL	28	6	19.5	59	65.2	49	32	M6×1×10	—	5	48	8	22	10
LAS20EM								M6×1×9 (M6×1×9.5)	5.3					
LAS25EL	33	7	25	73	81.6	60	35	M8×1.25×12	—	6.5	60	12.5	26	11
LAS25EM								M8×1.25×10 (M8×1.25×11.5)	6.8					
LAS30EL	42	9	31	90	96.4	72	40	M10×1.5×18 (M10×1.5×15)	—	9	71	15.5	33	11 (15)
LAS30EM								M10×1.5×12 (M10×1.5×14.5)	8.6					
LAS35EL	48	10.5	33	100	108	82	50	M10×1.5×20 (M10×1.5×15)	—	9	80	15	37.5	12 (15)
LAS35EM								M10×1.5×13 (M10×1.5×14.5)	8.6					

※Dimensions in parenthesis are for items made of stainless steel.

※The external appearance of stainless steel ball slides differs from those of standard material ball slide.

Grease fitting			Basic load rating					Ball dia. D _w	Weight Ball slide (kg)
			Dynamic C (N)	Static C ₀	Static moment M _{RO} M _{PO} M _{YO} (N·m)				
Hole size	T ₁	N							
φ 3	6	3	8350	16900	85	77	65	2.778	0.26
M6×0.75	5.5	11	11700	23500	160	133	111	3.175	0.35
M6×0.75	7	11	18800	36500	286	258	217	3.968	0.66
M6×0.75	8	11	28800	55000	520	435	365	4.762	1.2
M6×0.75	8.5	11	40000	74500	865	695	580	5.556	1.7

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



LAS-KL (Medium load type)
LAS-FL (High load type)

• See Page A27 Reference Number of each interchangeable part.

LA S 30 FL S Z - K

Interchangeable ball slide code
Series
Size
Ball slide shape code (See Table I-2•2)
Material code
Default Standard material S: Stainless steel

Option code
-K: Equipped with standard NSK K1
-F: Fluoride low temperature chrome platin + standard grease
-F50: Fluoride low temperature chrome platin + LG2 grease

Preload code
Default: Fine clearance
Z: Slight preload

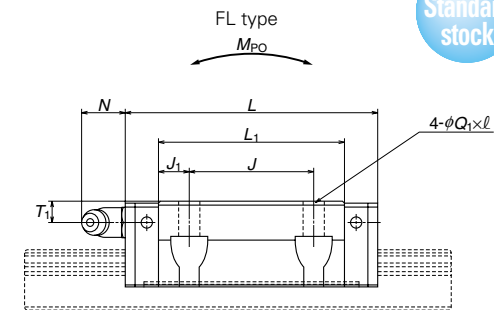
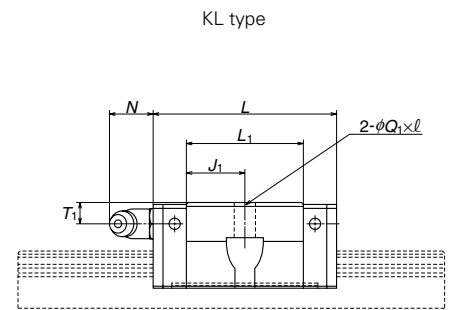
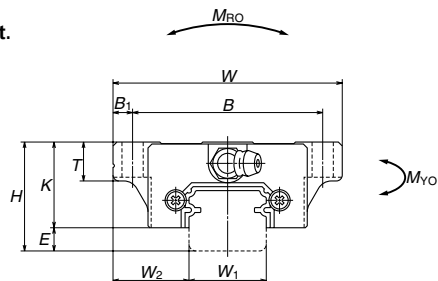


Table. I-5-13

Model No.	Assembly			Ball slide									
	Height H	E	W ₂	Width W	Length L	Mounting hole			B ₁	L ₁	J ₁	K	T
						B	J	Q ₁ ×l					
LAS15KL	24	4.6	18.5	52	40.4	—	—	4.5×7	5.5	23.6	11.8	19.4	8
LAS15FL					56.8	41	26			40	7		
LAS20KL	28	6	19.5	59	47.2	—	—	5.5×9	5	30	15	22	10
LAS20FL					65.2	49	32	(5.5×9.5)		48	8		
LAS25KL	33	7	25	73	59.6	—	—	7×10	6.5	38	19	26	11
LAS25FL					81.6	60	35	(7×11.5)		60	12.5		(12)
LAS30KL	42	9	31	90	67.4	—	—	9×12	9	42	21	33	11
LAS30FL					96.4	72	40	(9×14.5)		71	15.5		(15)
LAS35KL	48	10.5	33	100	77	—	—	9×13	9	49	24.5	37.5	12
LAS35FL					108	82	50	(9×14.5)		80	15		(15)

※Dimensions in parenthesis are for items made of stainless steel.

※The external appearance of stainless steel ball slides differs from those of standard material ball slide.

Unit: mm

Grease fitting			Basic load rating					Ball dia. D _w	Weight Ball slide (kg)
			Dynamic C	Static C ₀	Static moment				
Hole size	T ₁	N	(N)	(N)	M _{R0}	M _{Y0}	M _{Z0}	(N·m)	
φ 3	6	3	5400	9100	46	25	21	2.778	0.17
			8350	16900	85	77	65		0.26
M6×0.75	5.5	11	7900	13400	92	47	39	3.175	0.24
			11700	23500	160	133	111		0.35
M6×0.75	7	11	12700	20800	164	91	76	3.968	0.44
			18800	36500	286	258	217		0.66
M6×0.75	8	11	18700	29600	282	139	116	4.762	0.76
			28800	55000	520	435	365		1.2
M6×0.75	8.5	11	26000	40000	465	220	185	5.556	1.2
			40000	74500	865	695	580		1.7

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

Dimensions of LS Series (Interchangeable rail)



Example of reference number
Regular rail (non-butting rail)

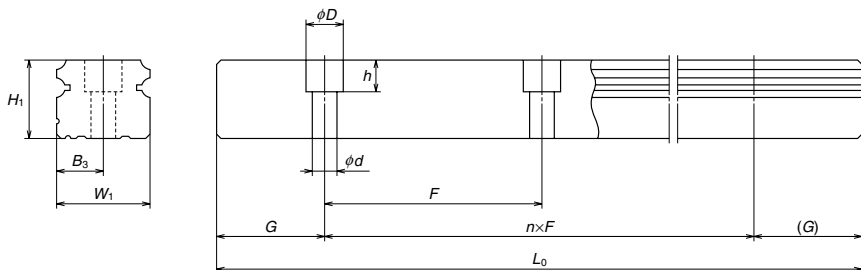
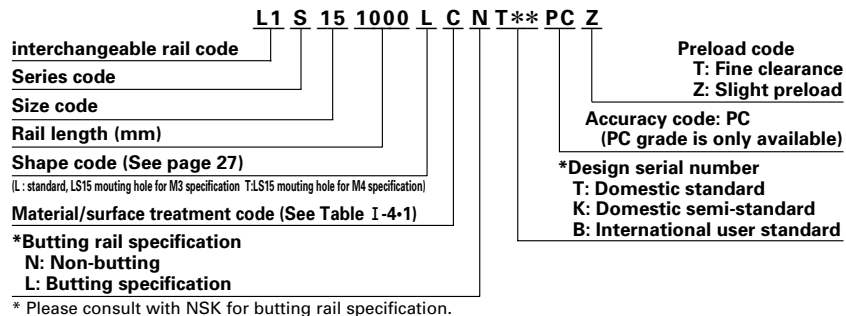


Table I-5-14

Unit: mm

Model No.	Rail							Weight Rail (Kg / m)
	Width W_1	Height H_1	Pitch F	Mounting bolt hole $d \times D \times h$	B_3	G Recommended	Max. length L_{0MAX} () for stainless	
L1S15	15	12.5	60	3.5×6×4.5* 4.5×7.5×5.3	7.5	20	2000 (1700)	1.4
L1S20	20	15.5	60	6×9.5×8.5	10	20	3960 (3500)	2.3
L1S25	23	18	60	7×11×9	11.5	20	3960 (3500)	3.1
L1S30	28	23	80	7×11×9	14	20	4000 (3500)	4.8
L1S35	34	27.5	80	9×14×12	17	20	4000 (3500)	7.0

G dimension is $1/2F^{0.5}$ for butting rail.

* Standard mounting hole of LS15 rail is for M3 bolts (Hole size: 3.5×6×4.5).

If you require the mounting hole for M4 bolts (Hole size: 4.5×7.5×5.3), please specify it when ordering.

A-I-5.3 LA Series

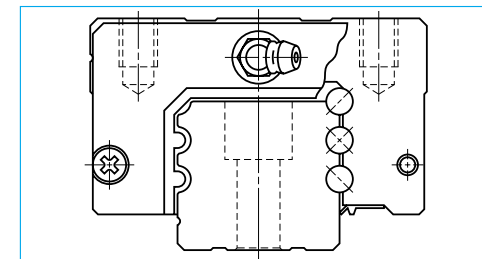


Fig. I-5-9 LA Series

(1) High rigidity and high load carrying capacity

A set of three ball grooves is made on both sides. This contributes to the increased rigidity and load carrying capacity. The top and bottom groove are formed in the circular arc with a closer radius of ball, which ensures great rigidity and load carrying capacity. With the gothic-arch center groove, rigidity and load carrying capacity are further increased.

(2) Moderate friction

A well-balanced combination of 2-point contacts at the top and bottom grooves and 4 points contact at the center groove provides moderate friction while ensuring rigidity by appropriate preload.

(3) Load distribution four directions

Contact angle is set at 45 degrees in all grooves, dispersing the load to four rows irrespective of load direction. This realizes equal rigidity and load carrying capacity in vertical and lateral directions and provides well-balanced design.

(4) Strong against shock load

Load from any direction, vertical and lateral, is received by four rows at all times. The number of the row which receives the load is larger than in other linear guides, making this series stronger against shock load.

(5) High accuracy

Fixing the measuring rollers is easy thanks to the gothic-arch groove. Ball-groove measuring is accurate and simple. This benefits a highly precise and stable manufacturing.

(6) The dust protection design

The rail's cross section is designed as simple as possible. Furthermore, the improved seal enhances the sealing function. Inner seal is available as an option.

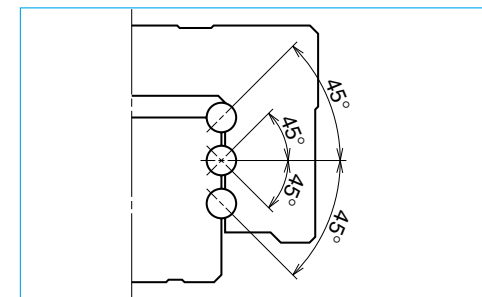


Fig. I-5-10 Super rigidity design

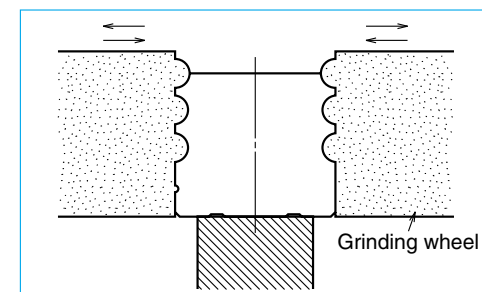


Fig. I-5-11 Rail grinding

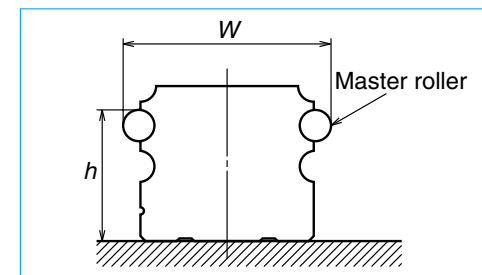
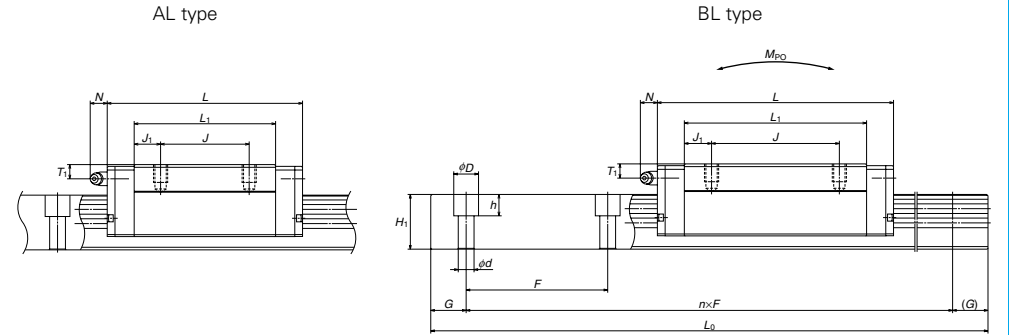
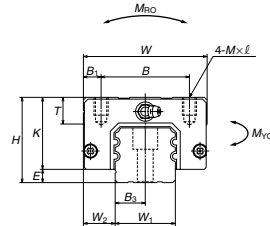
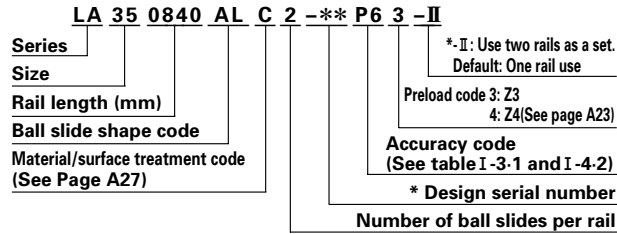


Fig. I-5-12 Measuring groove accuracy

Dimensions of LA Series (Preloaded assembly)

LA-AL (High load type)

LA-BL (Super high load type)



* 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-5-15

Model No.	Assembly			Ball slide										
	Height	Width	Length	Mounting hole								Grease fitting		
				B	J	Mxpitchxl	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LA25AL	36	48	79.8	35	35	M6x1x7	6.5	58	11.5	30.5	8	M6x0.75	6	11
LA25BL	36	48	107.8	50			86	18						
LA30AL	42	60	100.2	40	40	M8x1.25x10	10	72	16	34.5	11	M6x0.75	6.5	11
LA30BL	42	60	126.2	60			98	19						
LA35AL	48	70	110.6	50	50	M8x1.25x10	10	80	15	40.5	15	M6x0.75	8	11
LA35BL	48	70	144.6	72			114	21						
LA45AL	60	86	141.4	60	60	M10x1.5x16	13	105	22.5	50	17	Rc1/8	10	13
LA45BL	60	86	173.4	80			137	28.5						
LA55AL	70	100	165.4	75	75	M12x1.75x16	12.5	126	25.5	58	18	Rc1/8	11	13
LA55BL	70	100	203.4	95			164	34.5						

LA Series does not have a ball retainer. Be aware that balls fall out when the ball slider is withdrawn from the rail.

** LA25AL, BL and LA30AL, BL are the items on order. Please consult with NSK.

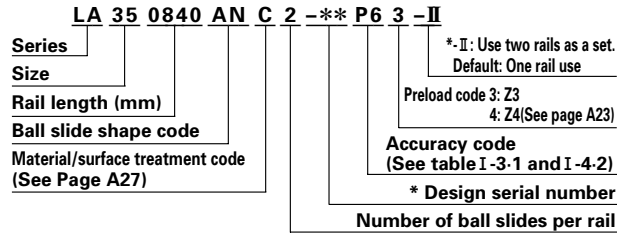
Unit: mm

Rail							Basic load rating					Ball dia.	Weight	
Width	Height	Pitch	Mounting bolt hole	B ₃	G (recomm ended)	Max. length L _{0max}	Dynamic C	Static C ₀	Static moment			D _w	Ball slide (kg)	Rail (kg/m)
W ₁	H ₁	F	dxDxh				(N)		M _{Bo}	M _{ro}	M _{vo}			
23	22	60	7x11x9	11.5	20	3960	30000	50000	290	410	410	3.968	0.5	3.7
							40500	77000	445	935	935		0.8	
28	28	80	9x14x12	14	20	4000	47000	77500	535	820	820	4.762	0.8	5.8
							58000	105000	725	1470	1470		1.2	
34	30.8	80	9x14x12	17	20	4000	61500	98000	845	1130	1130	5.556	1.3	7.7
							80500	143000	1240	2330	2330		1.6	
45	36	105	14x20x17	22.5	22.5	3990	91000	148000	1840	2210	2210	6.350	2.5	12.0
							111000	197000	2460	3850	3850		3.2	
53	43.2	120	16x23x20	26.5	30	3960	139000	215000	3150	3800	3800	7.937	3.9	17.2
							172000	292000	4250	6800	6800		5.1	

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

LA-AN (High load type)
LA-BN (Super high load type)

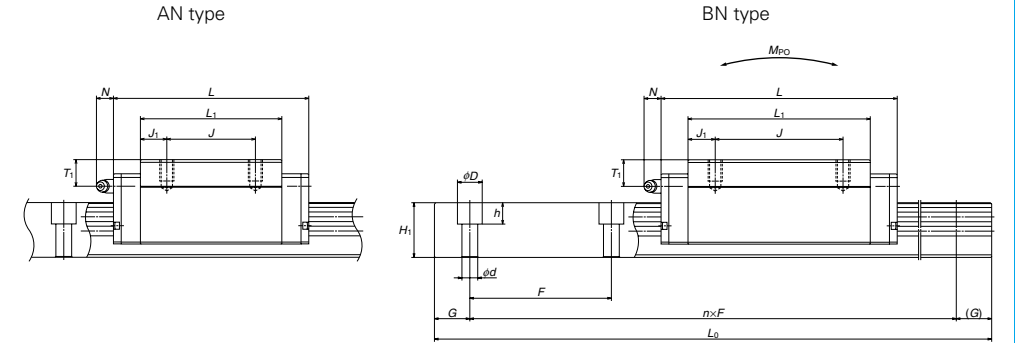


* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

Table. I-5-16

Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole						Grease fitting				
						B	J	M×pitch×l	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LA25AN LA25BN	40	5.5	12.5	48	79.8 107.8	35	35	M6×1×10	6.5	58 86	11.5 18	34.5	12	M6×0.75	10	11
LA30AN LA30BN	45	7.5	16	60	100.2 126.2	40	40	M8×1.25×11	10	72 98	16 19	37.5	14	M6×0.75	9.5	11
LA35AN LA35BN	55	7.5	18	70	110.6 144.6	50	50	M8×1.25×12	10	80 114	15 21	47.5	15	M6×0.75	15	11
LA45AN LA45BN	70	10	20.5	86	141.4 173.4	60	60	M10×1.5×16	13	105 137	22.5 28.5	60	17	Rc1/8	20	13
LA55AN LA55BN	80	12	23.5	100	165.4 203.4	75	75	M12×1.75×18	12.5	126 164	25.5 34.5	68	18	Rc1/8	21	13
LA65AN LA65BN	90	14	31.5	126	196.2 256.2	76	70	M16×2×19	25	147 207	38.5 43.5	76	22	Rc1/8	19	13

LA Series does not have a ball retainer. Be aware that balls fall out when the ball slider is withdrawn from the rail.



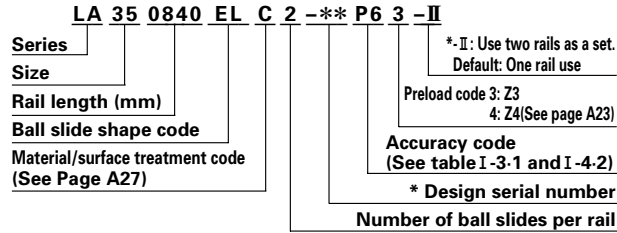
Unit: mm

Rail							Basic load rating					Ball dia.		Weight
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole d×D×h	B ₃	G (recomm. ended)	Max. length L _{0max}	Dynamic C (N[kgf])	Static C ₀	Static moment M _{Bo} M _{FO} M _{VO} (N · m[kgf · m])			D _w	Ball slide (kg)	Rail (kg/m)
23	22	60	7×11×9	11.5	20	3960	30000	50000	290	410	410	3.968	0.6	3.7
28	28	80	9×14×12	14	20	4000	47000	77500	535	820	820	4.762	0.9	5.8
34	30.8	80	9×14×12	17	20	4000	61500	98000	845	1130	1130	5.556	1.5	7.7
45	36	105	14×20×17	22.5	22.5	3990	91000	148000	1840	2210	2210	6.350	3.0	12.0
53	43.2	120	16×23×20	26.5	30	3960	139000	215000	3150	3800	3800	7.937	4.7	17.2
63	55	150	18×26×22	31.5	35	3900	260000	420000	7300	9050	9050	10.318	7.7	25.9

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

LA-EL (High load type)
LA-GL (Super high load type)



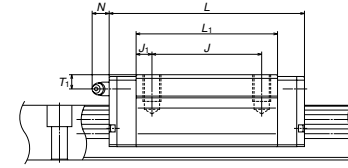
* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

Table. I-5-17

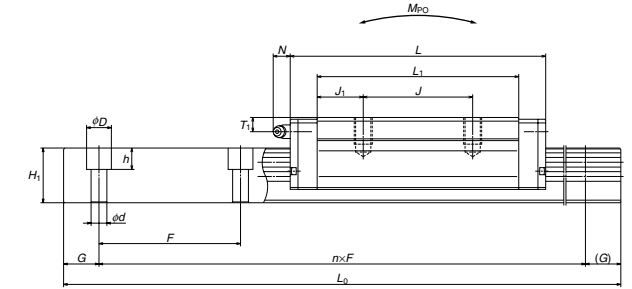
Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole						Grease fitting				
						B	J	M×pitch×ℓ	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LA25EL	36	5.5	23.5	70	79.8	57	45	M8×1.25×12	6.5	58	6.5	30.5	11	M6×0.75	6	11
LA25GL					107.8					86		20.5				
LA30EL	42	7.5	31	90	100.2	72	52	M10×1.5×16	9	72	10	34.5	11	M6×0.75	6.5	11
LA30GL					126.2					98		23				
LA35EL	48	7.5	33	100	110.6	82	62	M10×1.5×15	9	80	9	40.5	12	M6×0.75	8	11
LA35GL					144.6					114		26				
LA45EL	60	10	37.5	120	141.4	100	80	M12×1.75×18	10	105	12.5	50	13	Rc1/8	10	13
LA45GL					173.4					137		28.5				
LA55EL	70	12	43.5	140	165.4	116	95	M14×2×21	12	126	15.5	58	15	Rc1/8	11	13
LA55GL					203.4					164		34.5				
LA65EL	90	14	53.5	170	196.2	142	110	M16×2×24	14	147	18.5	76	22	Rc1/8	19	13
LA65GL					256.2					207		48.5				

LA Series does not have a ball retainer. Be aware that balls fall out when the ball slider is withdrawn from the rail.

EL type



GL type



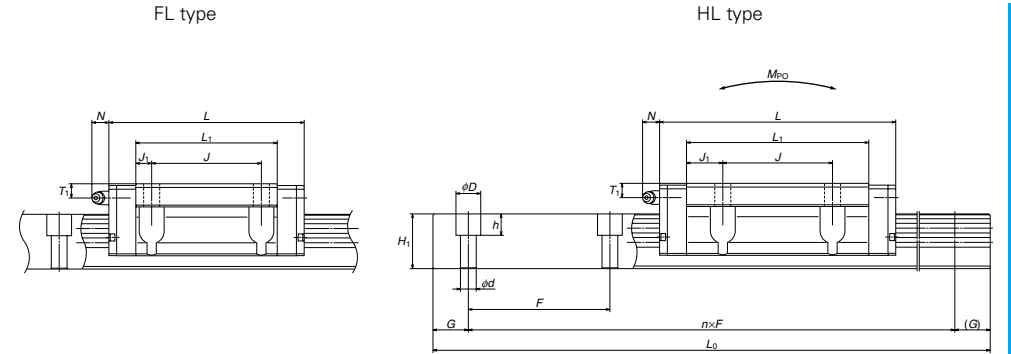
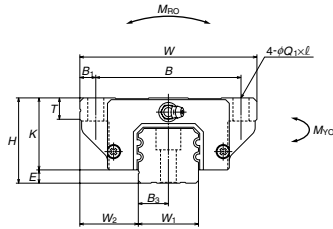
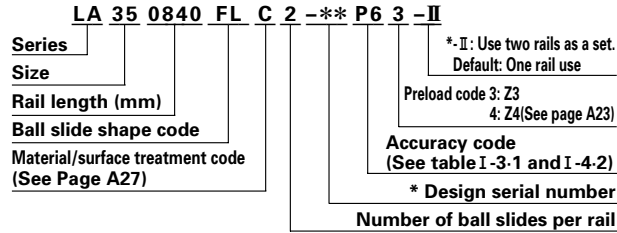
Unit: mm

Rail								Basic load rating					Ball dia.		Weight
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole d×D×h	B ₃	G (recomm. ended)	Max. length L _{0max}	Dynamic C (N)	Static C ₀	Static moment M _{ro} M _{po} M _{vo} (N · m)			D _w	Ball slide (kg)	Rail (kg/m)	
23	22	60	7×11×9	11.5	20	3960	30000	50000	290	410	410	3.968	0.8	3.7	
28	28	80	9×14×12	14	20	4000	47000	77500	535	820	820	4.762	1.3	5.8	
34	30.8	80	9×14×12	17	20	4000	61500	98000	845	1130	1130	5.556	1.9	7.7	
45	36	105	14×20×17	22.5	22.5	3990	91000	148000	1840	2210	2210	6.350	3.3	12.0	
53	43.2	120	16×23×20	26.5	30	3960	139000	215000	3150	3800	3800	7.937	5.5	17.2	
63	55	150	18×26×22	31.5	35	3900	260000	420000	7300	9050	9050	10.318	11.0	25.9	
							340000	615000	10700	18700	18700		15.5		

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

LA-FL (High load type)
LA-HL (Super high load type)



* 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-5-18

Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole					Grease fitting					
						B	J	Q ₁ ×l	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LA25FL	36	5.5	23.5	70	79.8	57	45	7×10	6.5	58	6.5	30.5	11	M6×0.75	6	11
LA25HL					107.8					86		20.5				
LA30FL	42	7.5	31	90	100.2	72	52	9×12	9	72	10	34.5	11	M6×0.75	6.5	11
LA30HL					126.2					98		23				
LA35FL	48	7.5	33	100	110.6	82	62	9×13	9	80	9	40.5	12	M6×0.75	8	11
LA35HL					144.6					114		26				
LA45FL	60	10	37.5	120	141.4	100	80	11×15	10	105	12.5	50	13	Rc1/8	10	13
LA45HL					173.4					137		28.5				
LA55FL	70	12	43.5	140	165.4	116	95	14×18	12	126	15.5	58	15	Rc1/8	11	13
LA55HL					203.4					164		34.5				
LA65FL	90	14	53.5	170	196.2	142	110	16×23	14	147	18.5	76	22	Rc1/8	19	13
LA65HL					256.2					207		48.5				

LA Series does not have a ball retainer. Be aware that balls fall out when the ball slider is withdrawn from the rail.

													Unit: mm				
Rail							Basic load rating					Ball dia.		Weight			
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole dxD×h	B ₃	G (recomm ended)	Max. length L _{0max}	Dynamic C (N)	Static C ₀	Static moment M _{Ro} M _{po} M _{vo} (N · m)			D _w	Ball slide (kg)	Rail (kg/m)			
23	22	60	7×11×9	11.5	20	3960	30000	50000	290	410	410	3.968	0.8	3.7			
							40500	77000	445	935	935		11				
28	28	80	9×14×12	14	20	4000	47000	77500	535	820	820	4.762	1.3	5.8			
							58000	105000	725	1470	1470		1.8				
34	30.8	80	9×14×12	17	20	4000	61500	98000	845	1130	1130	5.556	1.9	7.7			
							80500	143000	1240	2330	2330		2.6				
45	36	105	14×20×17	22.5	22.5	3990	91000	148000	1840	2210	2210	6.350	3.3	12.0			
							111000	197000	2460	3850	3850		4.3				
53	43.2	120	16×23×20	26.5	30	3960	139000	215000	3150	3800	3800	7.937	5.5	17.2			
							172000	292000	4250	6800	6800		7.2				
63	55	150	18×26×22	31.5	35	3900	260000	420000	7300	9050	9050	10.318	11.0	25.9			
							340000	615000	10700	18700	18700		15.5				

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

A-I-5.4 LY Series

**(1) Equal load carrying capacity in four directions.**

Contact angle is set at 45 degrees. Therefore, rigidity and load carrying capacity are equal in vertical and lateral directions.

(2) High rigidity

All four grooves are of gothic-arch. The center of the top and bottom grooves are offset.

It is designed in such way that the contact lines of balls in top and bottom grooves cross outside as shown in Fig.I-5•14 (DB combination). This increases moment rigidity.

With preload higher than medium level (Z3, Z4), ball contact is made at four points as shown in Fig.I-5•15. The increase in contact points enhances both rigidity and load carrying capacity.

(3) High resistance against shock load

Four rows support the load when a high load, such as shock, is applied.

(4) Absorbs vibration (higher than medium preload).

The contact point becomes four under the preload which is higher than medium level (Z3, Z4). This slightly increases the friction coefficient, and enhances vibration-absorbing capacity.

(5) Detects abnormal level of error in installation.

When the error in installation is too large, unlike other series, the friction to the four-groove gothic-arch suddenly becomes large. Thus the abnormality is detected and a warning is signaled.

(6) Easy to handle, and designed with safety in mind.

Balls are retained in the retainer and do not fall out when a ball slide is withdrawn from the rail.

(7) High accuracy

As shown in Fig. I-5•16, fixing the master rollers to the groove is easy thanks to the gothic-arch groove. This makes groove measuring accurate.

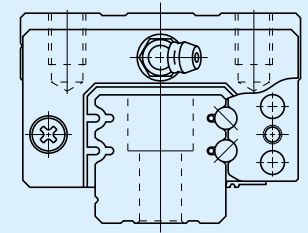


Fig. I-5•13 LY Series

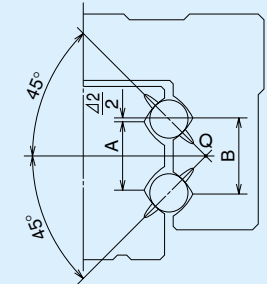


Fig. I-5•14 High rigidity design (DB combination)

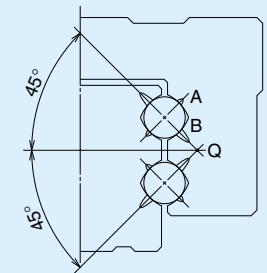


Fig. I-5•15 Ball contact under high preload

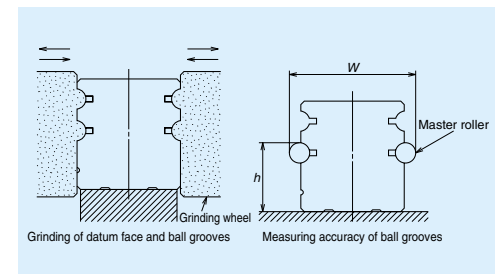


Fig. I-5•16 Rail grinding and measuring

Dimensions of LY Series (Preloaded assembly)

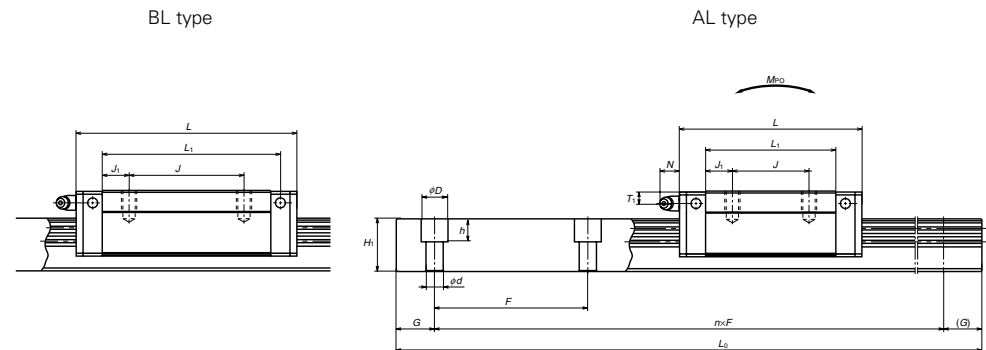
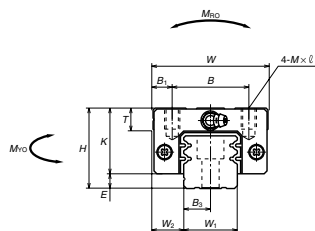
LY-AL (High load type)
LY-BL (Super high load type)

LY 35 0840 AL C 2 - P6 0 -II**

Series: LY 35 0840 AL C 2 -** P6 0 -II
 Size: 35 0840
 Rail length (mm): 0840
 Ball slide shape code: AL
 Material/surface treatment code (See Page A27): C 2 -**
 Accuracy code (See table I-3-1 and I-4-2): P6
 Design serial number: 0
 Number of ball slides per rail: -II

*-II: Use two rails as a set.
 Default: One rail use

Preload code 0: Z0, 1: Z1, 2: Z2,
 3: Z3, 4: Z4(See page A23)



* 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-5-19

Model No.	Assembly			Ball slide												
	Height <i>H</i>	<i>E</i>	<i>W₂</i>	Width <i>W</i>	Length <i>L</i>	Mounting hole						Grease fitting				
						<i>B</i>	<i>J</i>	<i>M</i> ×pitch× <i>l</i>	<i>B₁</i>	<i>L₁</i>	<i>J₁</i>	<i>K</i>	<i>T</i>	Hole size	<i>T₁</i>	<i>N</i>
LY15AL	24	4.5	9.5	34	55	26	26	M4×0.7×6	4	39	6.5	19.5	10	φ 3	5	3
LY20AL	30	7	12	44	69.4	32	36	M5×0.8×8	6	50	7	23	12	φ 3	5	3
LY20BL					85.4											
LY25AL	36	5.5	12.5	48	80.8	35	35	M6×1×10	6.5	58	11.5	30.5	10	M6×0.75	6	11
LY25BL					102.8											
LY30AL	42	7.5	16	60	95.2	40	40	M8×1.25×11	10	68	14	34.5	11	M6×0.75	6.5	11
LY30BL					115.2											
LY35AL	48	7.5	18	70	110.4	50	50	M8×1.25×12	10	80	15	40.5	12	M6×0.75	8	11
LY35BL					133.4											
LY45AL	60	10	20.5	86	137	60	60	M10×1.5×16	13	102	21	50	13	Rc1/8	10	13
LY45BL					169											
LY55AL	70	13	23.5	100	160	75	75	M12×1.75×18	12.5	120	22.5	57	15	Rc1/8	11	13
LY55BL					200											

LY15 and 20 have a single row of balls on each right and left side.

Rail							Basic load rating					Ball dia.	Weight	
Width <i>W₁</i>	Height <i>H₁</i>	Pitch <i>F</i>	Mounting bolt hole <i>d</i> × <i>D</i> × <i>h</i>	<i>B₃</i>	<i>G</i> (recomm ended)	Max. length <i>L_{0max}</i>	Dynamic <i>C</i> (N)	Static <i>C₀</i>	Static moment <i>M_{RO}</i> <i>M_{PO}</i> <i>M_{VO}</i> (N · m)			<i>D_w</i>	Ball slide (kg)	Rail (kg/m)
15	14	60	4.5×7.5×5.3	7.5	20	2000	7100	9400	71	50	50	3.175	0.16	1.6
20	19	60	6×9.5×8.5	10	20	2000	11500	14700	147	96	96	3.968	0.3	2.9
							14500	20600	206	181	181			
23	22.5	60	7×11×9	11.5	20	2200	22400	38000	355	315	315	3.968	0.49	3.9
							29100	56000	515	650	650			
28	27.5	80	9×14×12	14	20	3000	33000	55000	615	545	545	4.762	0.82	5.8
							39500	72000	805	910	910			
34	31	80	9×14×12	17	20	3000	46000	75000	1020	865	865	5.556	1.3	7.9
							55000	98000	1340	1440	1440			
45	37.5	105	14×20×17	22.5	22.5	3000	67000	113000	2080	1690	1690	6.350	2.5	12.7
							82500	151000	2770	2940	2940			
53	45	120	16×23×20	26.5	30	3000	103000	165000	3550	2900	2900	7.937	3.9	17.9
							128000	224000	4800	5200	5200			

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

LY-AN (High load type)
LY-BN (Super high load type)

LY 35 0840 AN C 2 - P6 0 -II**

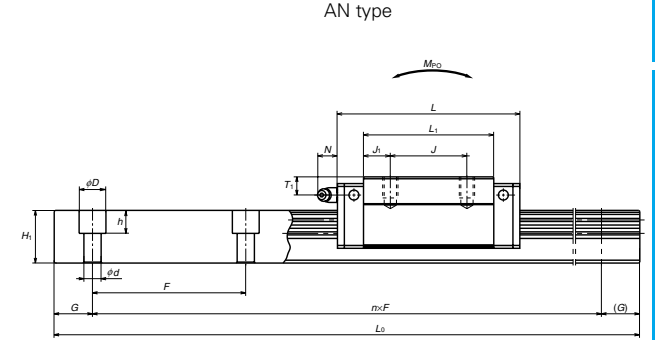
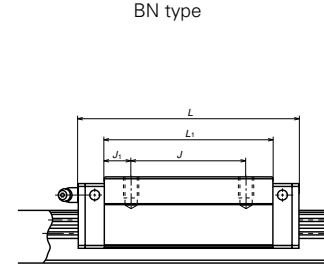
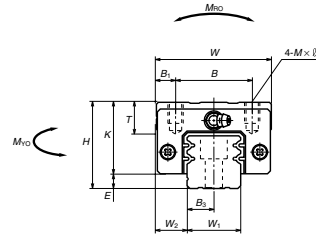
Series: LY
Size: 35
Rail length (mm): 0840
Ball slide shape code: AN
Material/surface treatment code: C
Accuracy code: 2
Preload code: -**
Design serial number: P6
Number of ball slides per rail: 0
* II: Use two rails as a set. Default: One rail use

Preload code 0: Z0, 1: Z1, 2: Z2, 3: Z3, 4: Z4(See page A23)

Accuracy code (See table I-3-1 and I-4-2)

* Design serial number

Number of ball slides per rail



* 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-5-20

Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole					Grease fitting					
						B	J	M×pitch×l	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LY15AN	28	4.5	9.5	34	55	26	26	M4×0.7×6	4	39	6.5	23.5	11	φ3	9	3
LY25AN	40	5.5	12.5	48	80.8	35	M6×1×10	6.5	58	11.5	34.5	12	M6×0.75	10	11	
LY25BN					102.8											
LY30AN	45	7.5	16	60	95.2	40	M8×1.25×11	10	68	14	37.5	14	M6×0.75	9.5	11	
LY30BN					115.2											
LY35AN	55	7.5	18	70	110.4	50	M8×1.25×12	10	80	15	47.5	15	M6×0.75	15	11	
LY35BN					133.4											
LY45AN	70	10	20.5	86	137	60	M10×1.5×16	13	102	21	60	17	Rc1/8	20	13	
LY45BN					169											
LY55AN	80	13	23.5	100	160	75	M12×1.75×18	12.5	120	22.5	67	18	Rc1/8	21	13	
LY55BN					200											
LY65AN	90	14	31.5	126	184.6	70	M16×2×23	25	137	33.5	76	23	Rc1/8	19	13	
LY65BN					244.6											

LY15 has a single row of balls on each right and left side.

Rail													Basic load rating					Ball dia.	Weight	
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole dxD×h	B ₃	G (recomm ended)	Max. length L _{0max}	Dynamic C	Static C ₀	Static moment M _{RO} M _{PO} M _{VO}			D _w	Ball slide (kg)	Rail (kg/m)						
15	14	60	4.5×7.5×5.3	7.5	20	2000	7100	9400	71	50	50	3.175	0.2	1.6						
23	22.5	60	7×11×9	11.5	20	2200	22400	38000	355	315	315	3.968	0.58	3.9						
							29100	56000	515	650	650									
28	27.5	80	9×14×12	14	20	3000	33000	55000	615	545	545	4.762	0.91	5.8						
							39500	72000	805	910	910									
34	31	80	9×14×12	17	20	3000	46000	75000	1020	865	865	5.556	1.6	7.9						
							55000	98000	1340	1440	1440									
45	37.5	105	14×20×17	22.5	22.5	3000	67000	113000	2080	1690	1690	6.350	3.2	12.7						
							82500	151000	2770	2940	2940									
53	45	120	16×23×20	26.5	30	3000	103000	165000	3550	2900	2900	7.937	4.8	17.9						
							128000	224000	4800	5200	5200									
63	53	150	18×26×22	31.5	35	3000	212000	340000	8600	6800	6800	10.318	8.0	25.1						
							282000	515000	12900	14800	14800									

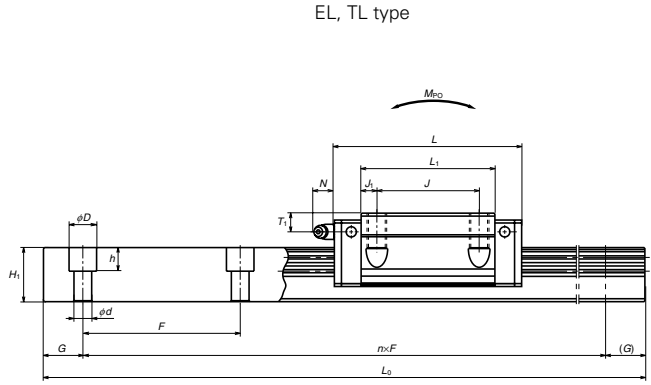
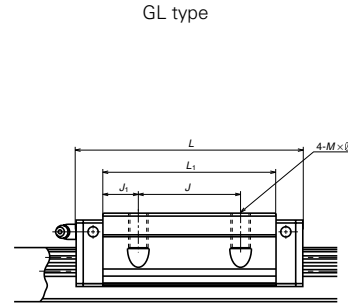
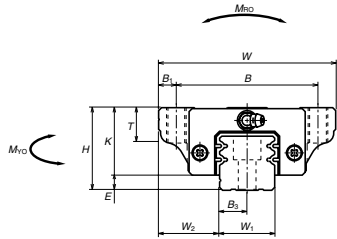
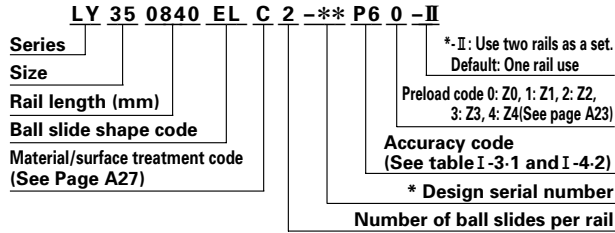
Remarks: There are no LY20AN or LY20BN. LY20AL is equivalent to LY20AN. LY20BL is equivalent to LY20BN. (See Page A67)
The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface.
When converting the basic dynamic load rating C to the dynamic load rating C₁₀ for 100 km rating fatigue life, divide the C by 1.26

LY Series (preloaded assembly)

LY-EL (High load type)

LY-GL (Super high load type)

LY-TL (High-load type, small 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-5-21

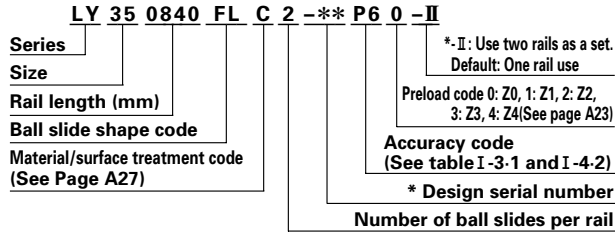
Model No.	Assembly			Ball slide											Grease fitting		
	Height H	E	W ₂	Width W	Length L	Mounting hole			B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N	
						B	J	Mxpitchxℓ									
LY15EL	24	4.5	16	47	55	38	30	M5x0.8x8	4.5	39	4.5	19.5	8	φ 3	5	3	
LY20EL	30	7	21.5	63	69.4	53	40	M6x1x10	5	50	5	23	10	φ 3	5	3	
LY20GL					85.4					66	13						
LY25EL	36	5.5	23.5	70	80.8	57	45	M8x1.25x16	6.5	58	6.5	30.5	11	M6x0.75	6	11	
LY25GL					102.8					80	17.5						
LY30EL	42	7.5	31	90	95.2	72	52	M10x1.5x18	9	68	8	34.5	11	M6x0.75	6.5	11	
LY30GL					115.2					88	18						
LY30TL					95.2					68	8						
LY35EL	48	7.5	33	100	110.4	82	62	M10x1.5x20	9	80	9	40.5	12	M6x0.75	8	11	
LY35GL					133.4					103	20.5						
LY45EL	60	10	37.5	120	137	100	80	M12x1.75x24	10	102	11	50	13	Rc1/8	10	13	
LY45GL					169					134	27						
LY55EL	70	13	43.5	140	160	116	95	M14x2x28	12	120	12.5	57	14	Rc1/8	11	13	
LY55GL					200					160	32.5						
LY65EL	90	14	53.5	170	184.6	142	110	M16x2x37	14	137	13.5	76	23	Rc1/8	19	13	
LY65GL					244.6					197	43.5						

LY15 and 20 have a single row of balls on each right and left side.

Rail							Basic load rating					Ball dia.		Weight	
Width	Height	Pitch	Mounting bolt hole	B ₃	G (recomm ended)	Max. length L _{0max}	Dynamic C (N)	Static C ₀	Static moment (N · m)			D _w	Ball slide (kg)	Rail (kg/m)	
W ₁	H ₁	F	dxDxh						M _{RO}	M _{FO}	M _{VO}				
15	14	60	4.5x7.5x5.3	7.5	20	2000	7100	9400	71	50	50	3.175	0.2	1.6	
20	19	60	6x9.5x8.5	10	20	2000	11500	14700	147	96	96	3.968	0.37	2.9	
							14500	20600	206	181	181		0.51		
23	22.5	60	7x11x9	11.5	20	2200	22400	38000	355	315	315	3.968	0.66	3.9	
							29100	56000	515	650	650		0.83		
28	27.5	80	9x14x12	14	20	3000	33000	55000	615	545	545	4.762	1.1	5.8	
							39500	72000	805	910	910		1.3		
							33000	55000	615	545	545		1.1		
34	31	80	9x14x12	17	20	3000	46000	75000	1020	865	865	5.556	1.7	7.9	
							55000	98000	1340	1440	1440		2.0		
45	37.5	105	14x20x17	22.5	22.5	3000	67000	113000	2080	1690	1690	6.350	3.2	12.7	
							82500	151000	2770	2940	2940		3.9		
53	45	120	16x23x20	26.5	30	3000	103000	165000	3550	2900	2900	7.937	4.9	17.9	
							128000	224000	4800	5200	5200		6.1		
63	53	150	18x26x22	31.5	35	3000	212000	340000	8600	6800	6800	10.318	9.3	25.1	
							282000	515000	12900	14800	14800		12.3		

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

LY-FL (High load type)
LY-HL (Super high load type)



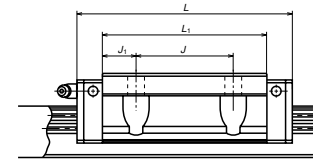
* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.

Table. I-5-22

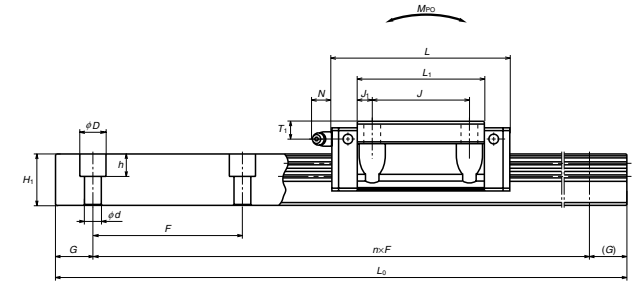
Model No.	Assembly			Ball slide												
	Height H	E	W ₂	Width W	Length L	Mounting hole						Grease fitting				
						B	J	Q ₁ ×l	B ₁	L ₁	J ₁	K	T	Hole size	T ₁	N
LY15FL	24	4.5	16	47	55	38	30	4.5×7	4.5	39	4.5	19.5	8	φ3	5	3
LY20FL	30	7	21.5	63	69.4	53	40	6×9	5	50	5	23	10	φ3	5	3
LY20HL					85.4					66	13					
LY25FL	36	5.5	23.5	70	80.8	57	45	7×10	6.5	58	6.5	30.5	11	M6×0.75	6	11
LY25HL					102.8					80	17.5					
LY30FL	42	7.5	31	90	95.2	72	52	9×12	9	68	8	34.5	11	M6×0.75	6.5	11
LY30HL					115.2					88	18					
LY35FL	48	7.5	33	100	110.4	82	62	9×13	9	80	9	40.5	12	M6×0.75	8	11
LY35HL					133.4					103	20.5					
LY45FL	60	10	37.5	120	137	100	80	11×15	10	102	11	50	13	Rc1/8	10	13
LY45HL					169					134	27					
LY55FL	70	13	43.5	140	160	116	95	14×17	12	120	12.5	57	14	Rc1/8	11	13
LY55HL					200					160	32.5					
LY65FL	90	14	53.5	170	184.6	142	110	16×23	14	137	13.5	76	23	Rc1/8	19	13
LY65HL					244.6					197	43.5					

LY15 and 20 have a single row of balls on each right and left side.

HL type



FL type



Unit: mm

Rail							Basic load rating					Ball dia.	Weight	
Width W ₁	Height H ₁	Pitch F	Mounting bolt hole dxD×h	B ₃	G (recomm ended)	Max. length L _{0max}	Dynamic C	Static C ₀	Static moment			D _w	Ball slide (kg)	Rail (kg/m)
							(N)		M _{RO}	M _{PO}	M _{VO}		(N · m)	
15	14	60	4.5×7.5×5.3	7.5	20	2000	7100	9400	71	50	50	3.175	0.2	1.6
20	19	60	6×9.5×8.5	10	20	2000	11500	14700	147	96	96	3.968	0.37	2.9
							14500	20600	206	181	181		0.51	
23	22.5	60	7×11×9	11.5	20	2200	22400	38000	355	315	315	3.968	0.66	3.9
							29100	56000	515	650	650		0.83	
28	27.5	80	9×14×12	14	20	3000	33000	55000	615	545	545	4.762	1.1	5.8
							39500	72000	805	910	910		1.3	
34	31	80	9×14×12	17	20	3000	46000	75000	1020	865	865	5.556	1.7	7.9
							55000	98000	1340	1440	1440		2.0	
45	37.5	105	14×20×17	22.5	22.5	3000	67000	113000	2080	1690	1690	6.350	3.2	12.7
							82500	151000	2770	2940	2940		3.9	
53	45	120	16×23×20	26.5	30	3000	103000	165000	3550	2900	2900	7.937	4.9	17.9
							128000	224000	4800	5200	5200		6.1	
63	53	150	18×26×22	31.5	35	3000	212000	340000	8600	6800	6800	10.318	9.3	25.1
							282000	515000	12900	14800	14800		12.3	

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

A-I-5.5 LW Series (Wide rail type)

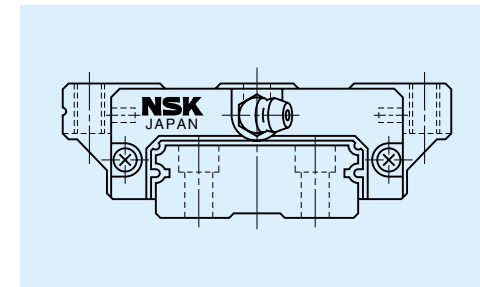
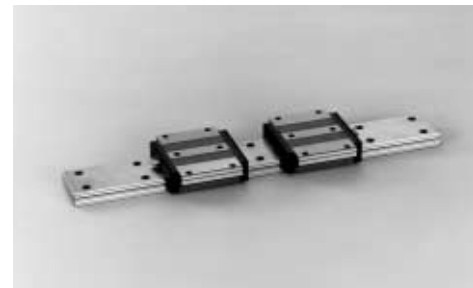


Fig. I-5-17 LW Series

(1) Ideal for use of single rail

Thanks to the wide rail, rigidity and load carrying capacity are high against moment load from rolling direction. This makes LW linear guides ideal in use of single rail as the guide way bearing.

(2) Large load carrying capacity against vertical direction

Contact angle is set at 50 degrees. This enhances load carrying capacity from vertical direction as well as rigidity.

(3) High resistance to impact load

Same as the LH and LS series, the offset gothic-arch grooves support a large load, such as an impact, by four rows.

(4) High accuracy

Fixing master rollers is easy thanks to the gothic-arch groove. This makes easy and accurate measuring of ball grooves.

(5) Easy to handle, and designed with safety in mind.

Balls are retained in the retainer and do not fall out when a ball slide is withdrawn from the rail.

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

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

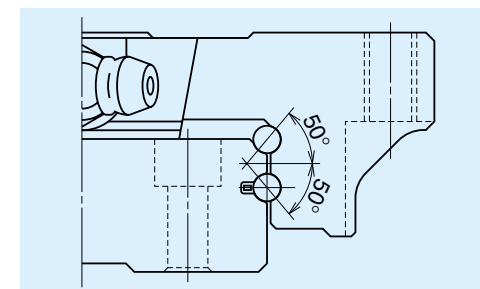
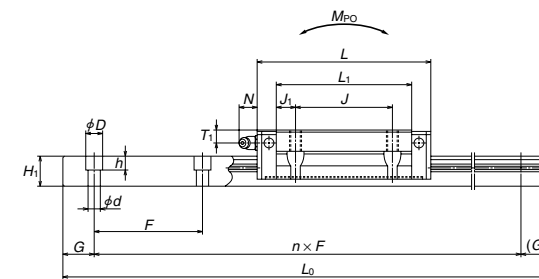
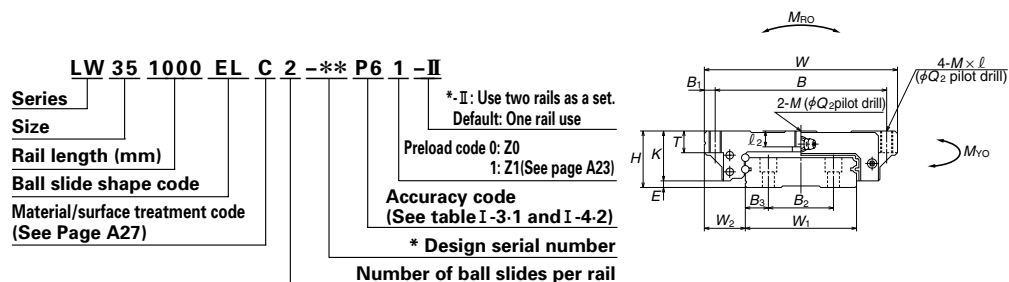


Fig. I-5-18 Balls in contact

Dimensions of LW Series (Preloaded assembly)

LW-EL (Wide rail type)



* 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-5-23

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						Grease fitting						
						<i>B</i>	<i>J</i>	<i>M</i> × pitch × <i>ℓ</i>	<i>ℓ</i> ₂	<i>Q</i> ₂	<i>B</i> ₁	<i>L</i> ₁	<i>J</i> ₁	<i>K</i>	<i>T</i>	Hole size	<i>T</i> ₁	<i>N</i>
LW17EL	17	2.5	13.5	60	51.4	53	26	M4×0.7×6	3.2	3.3	3.5	35	4.5	14.5	6	φ 3	4	3
LW21EL	21	3	15.5	68	58.8	60	29	M5×0.8×8	3.7	4.4	4	41	6	18	8	M6×0.75	4.5	11
LW27EL	27	4	19	80	74	70	40	M6×1×10	6	5.3	5	56	8	23	10	M6×0.75	6	11
LW35EL	35	4	25.5	120	108	107	60	M8×1.25×14	9	6.8	6.5	84	12	31	14	M6×0.75	8	11
LW50EL	50	4.5	36	162	140.6	144	80	M10×1.5×18	14	8.6	9	108	14	45.5	18	Rc1/8	14	14

Unit: mm

Rail		Basic load rating					Ball dia.	Weight							
Width <i>W</i> ₁	Height <i>H</i> ₁	Pitch <i>B</i> ₂	Mounting bolt hole <i>d</i> × <i>D</i> × <i>h</i>	<i>G</i> (recomm ended)	Max. length <i>L</i> _{max}	Static moment			<i>D</i> _w	Ball slide (kg)	Rail (kg/m)				
						Dynamic <i>C</i>	Static <i>C</i> ₀	<i>M</i> _{Ro}				<i>M</i> _{Vo}	<i>M</i> _{Vo}		
33	8.7	18	40	4.5×7.5×5.3	7.5	15	1000	5600	11300	135	44	37	2.381	0.2	2.1
37	10.5	22	50	4.5×7.5×5.3	7.5	15	1600	6450	13900	185	66	55	2.381	0.3	2.9
42	15	24	60	4.5×7.5×5.3	9	20	2000	12800	26900	400	171	143	3.175	0.5	4.7
69	19	40	80	7×11×9	14.5	20	2400	33000	66500	1690	645	545	4.762	1.5	9.6
90	24	60	80	9×14×12	15	20	3000	61500	117000	3900	1530	1280	6.350	4.0	15.8

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

Dimensions of LW Series (Interchangeable ball slide)

LAW-EL (Wide rail type)

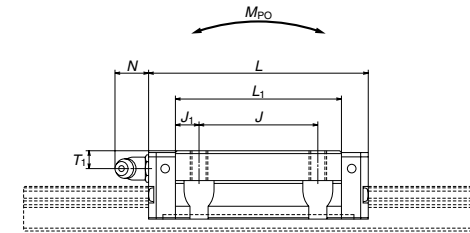
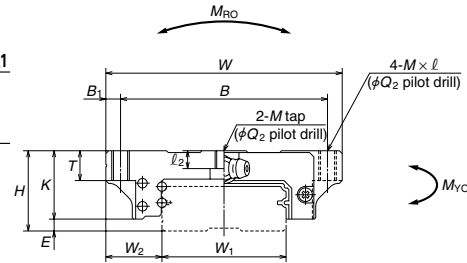
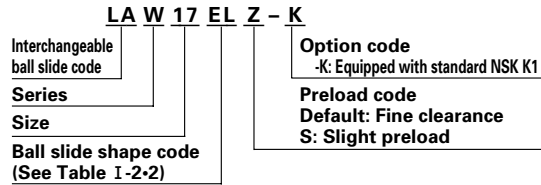


Table. I-5-24

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					<i>B</i> ₁	<i>L</i> ₁	<i>J</i> ₁	<i>K</i>	<i>T</i>
						<i>B</i>	<i>J</i>	<i>M</i> × pitch × <i>l</i>	<i>l</i> ₂	<i>Q</i> ₂					
LAW17EL	17	2.5	13.5	60	51.4	53	26	M4×0.7×6	3.2	3.3	3.5	35	4.5	14.5	6
LAW21EL	21	3	15.5	68	58.8	60	29	M5×0.8×8	3.7	4.4	4	41	6	18	8
LAW27EL	27	4	19	80	74	70	40	M6×1×10	6	5.3	5	56	8	23	10
LAW35EL	35	4	25.5	120	108	107	60	M8×1.25×14	9	6.8	6.5	84	12	31	14
LAW50EL	50	4.5	36	162	140.6	144	80	M10×1.5×18	14	8.6	9	108	14	45.5	18

Unit: mm

Grease fitting			Basic load rating					Ball dia. <i>D</i> _w	Weight Ball slide (kg)
			Dynamic		Static				
Hole size	<i>T</i> ₁	<i>N</i>	<i>C</i> (N)	<i>C</i> ₀	<i>M</i> _{RO} , <i>M</i> _{PO} , <i>M</i> _{VO} (N·m)				
φ 3	4	3	5600	11300	135	44	37	2.381	0.2
M6×0.75	4.5	11	6450	13900	185	66	55	2.381	0.3
M6×0.75	6	11	12800	26900	400	171	143	3.175	0.5
M6×0.75	8	11	33000	66500	1690	645	545	4.762	1.5
Rc1/8	14	14	61500	117000	3900	1530	1280	6.350	4.0

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

Dimensions of LW Series (Interchangeable ball slide)



Example of reference number

Regular rail (non-butting rail)

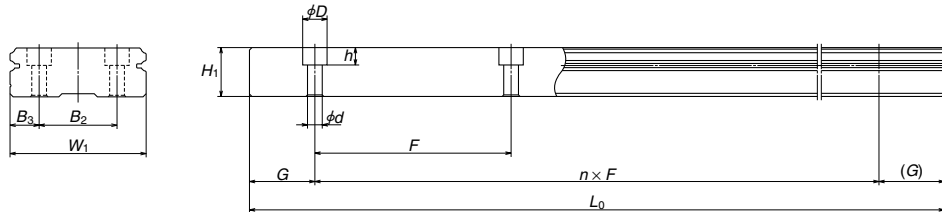
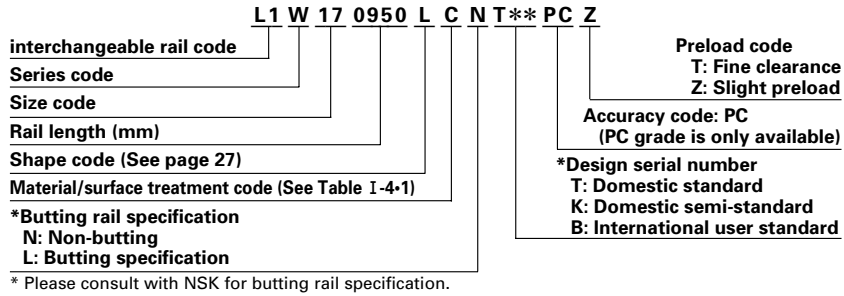


Table. I-5-25

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)

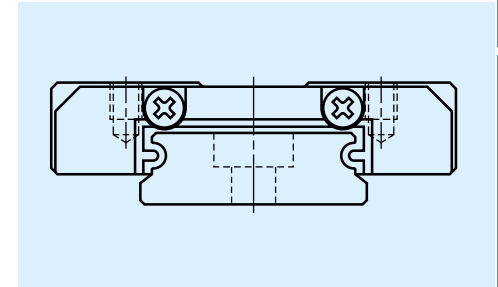


Table I-5-19 LE Series

(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.

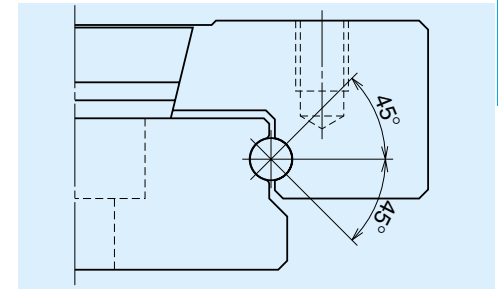


Table I-5-20 Balls in contact

(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.

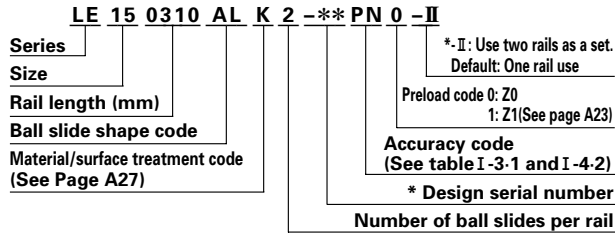
Dimensions of LE Series

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.

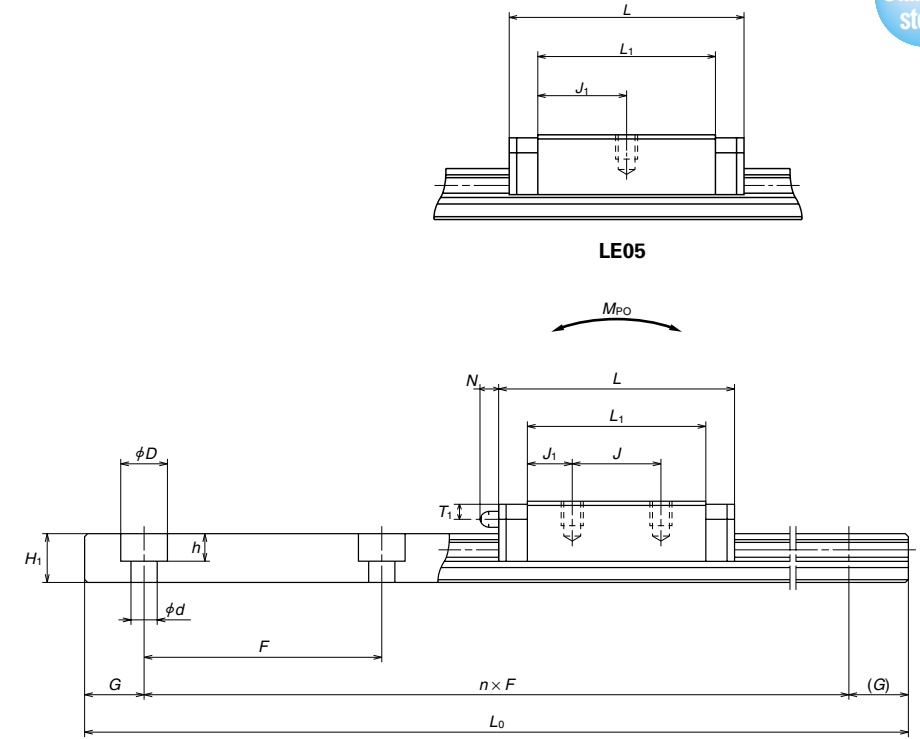
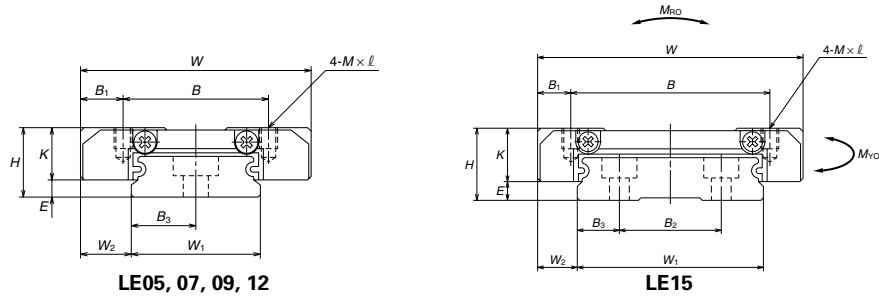


Table. I-5-26

Model No.	Assembly			Ball slide								Grease fitting					
	Height H	E	W ₂	Width W	Length L	Mounting hole			B ₁	L ₁	J ₁	K	Hole size	T ₁	N	Width W ₁	Height H ₁
						B	J	M × pitch × l									
LE05AL	6.5	1.4	3.5	17	24	13	—	M2.5×0.45×2	2	17	8.5	5.1	—	—	—	10	4
LE07TL	9	2	5.5	25	31	19	10	M3×0.5×3	3	21.2	5.6	7	—	—	—	14	5.2
LE09AL	12	4	6	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	4	6	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	4	8	40	44 45	28	15	M3×0.5×4	6	31	8	10	—	—	—	24	8.5
LE15AL	16	4	9	60	55 56.6	45	20	M4×0.7×4.5	7.5	38.4	9.2	12	φ3	3.2	3	42	9.5

LE has only two mounting tap holes.

													Unit: mm		
Rail						Basic load rating					Ball dia.		Weight		
B ₂	Pitch F	Mounting bolt hole d × D × h	B ₃	G (recomm. ended)	Max. length L _{0max}	Dynamic C (N)	Static C ₀	Static moment			D _w	Ball slide (g)	Rail (g/100mm)		
								M _{RO}	M _{PO}	M _{TO}					
—	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		

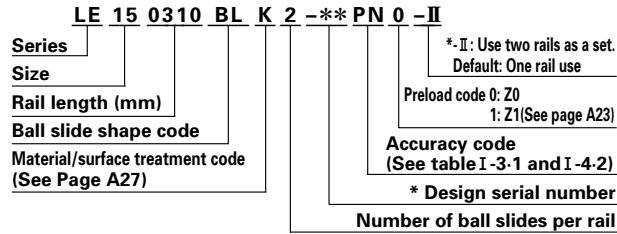
The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface.

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)



* 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.

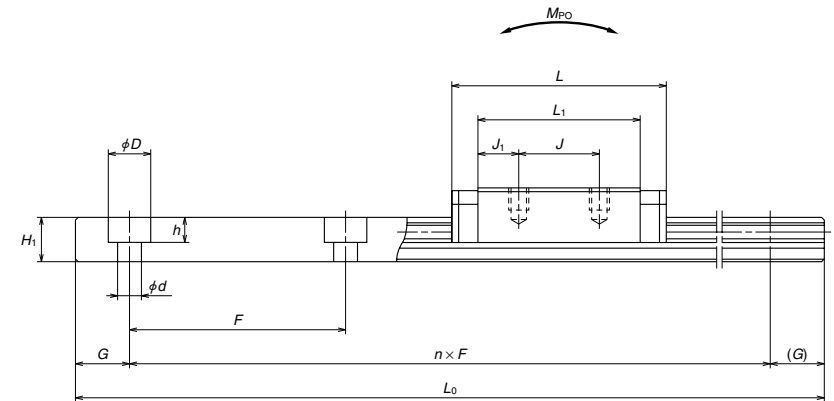
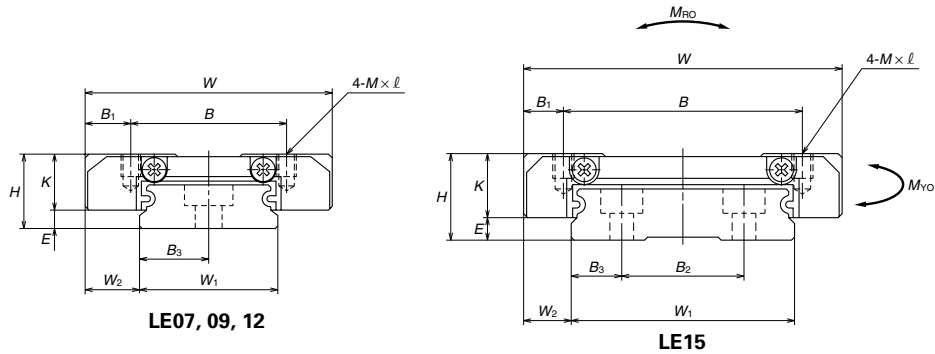


Table. I-5-27

Model No.	Assembly			Ball slide										Width	Height
	Height	Width	Length	Mounting hole							Width	Height			
				B	J	M x pitch x l	B1	L1	J1	K					
LE07UL	H	E	W2	W	L	B	J	M3x0.5x3	B1	L1	J1	K	W1	H1	
LE09BL LE09UL	12	4	6	30	50.4	23	24	M2.6x0.45x3 M3x0.5x3	3.5	39	7.5 7.5	8	18	7.5	
LE12BL	14	4	8	40	59	28	28	M3x0.5x4	6	46	9	10	24	8.5	
LE15BL	16	4	9	60	74.5	45	35	M4x0.7x4.5	7.5	57.8	11.4	12	42	9.5	

Unit: mm

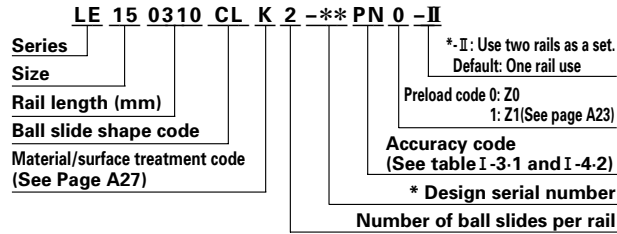
Rail						Basic load rating					Ball dia.	Weight	
Pitch	Mounting bolt hole	G	Max. length	Dynamic	Static	Static moment			Dw	Ball slide (g)	Rail (g/100mm)		
						C	C0	MRO, MRO, MRO					
B2	F	d x D x h	B3	(recomm ended)	L0max	(N)	(N-m)	(N-m)					
—	30	3.5x6x3.2	7	10	600	2180	3700	26	17	17	1.587	39	55
—	30	3.5x6x4.5	9	10	800	4000	6700	54	38	38	2.000	58	95
—	40	4.5x8x4.5	12	15	1000	5800	9550	106	63	63	2.381	115	140
23	40	4.5x8x4.5	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 C100 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.

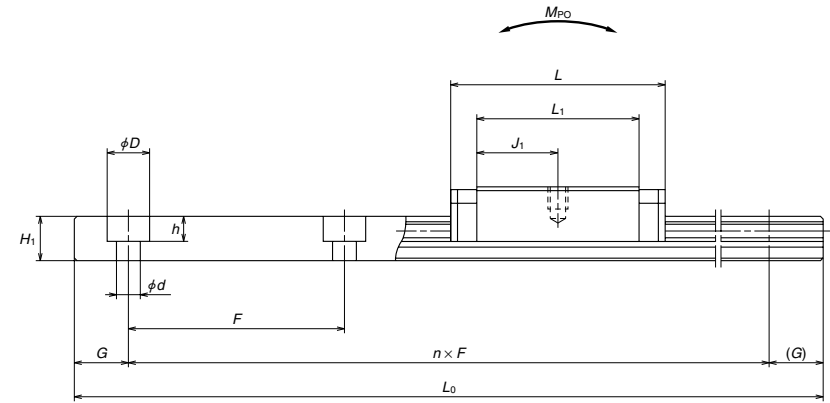
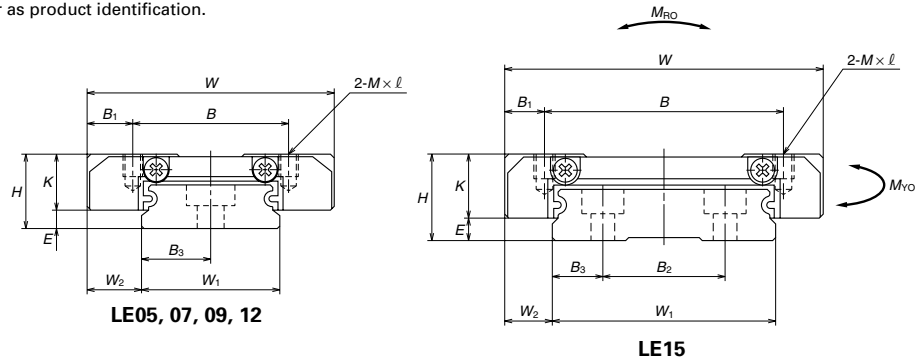


Table. I-5-28

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)

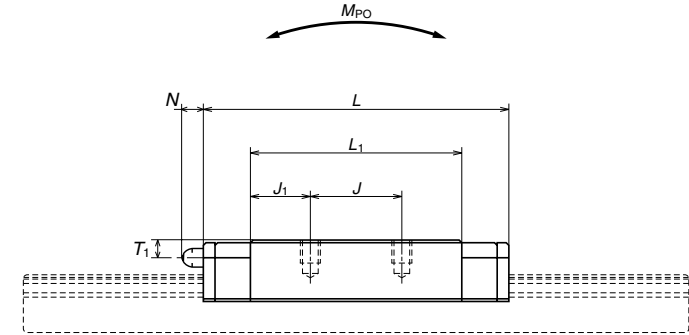
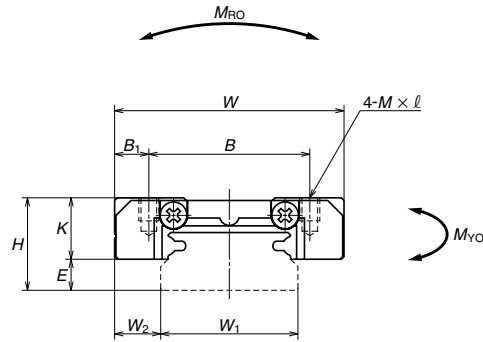
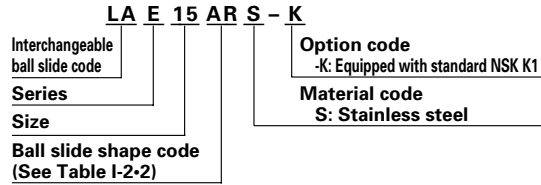


Table. I-5-29

Model No.	Assembly			Ball slide								
	Height			Width	Length	Mounting hole						
	H	E	W_2	W	L	B	J	$M \times \text{pitch} \times l$	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	C_0	M_{RO}	M_{YO}	M_{VO}		
—	—	—	(N)	(N)	(N-m)	(N-m)	(N-m)	(g)	(g)
—	—	—	3000	4500	36	17	17	2.000	40
—	—	—	4350	6350	71	29	29	2.381	75
$\varnothing 3$	3.2	3	7600	10400	207	59	59	3.175	150

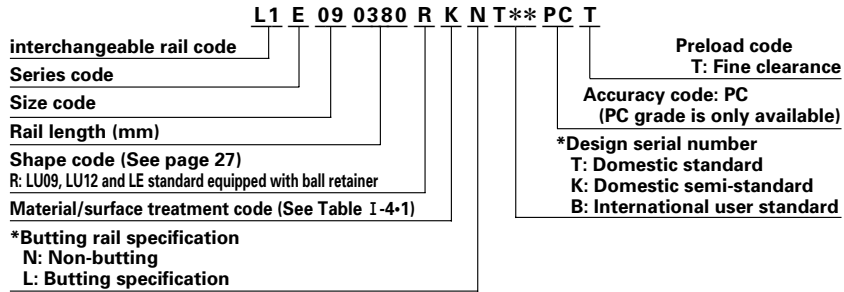
The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface. When converting the basic dynamic load rating C to the dynamic load rating C_{100} for 100 km rating fatigue life, divide the C by 1.26

Table of rail size for LE Series (Interchangeable rail)



Example of reference number

Regular rail (non-butting rail) with fine clearance



* Please consult with NSK for butting rail specification.

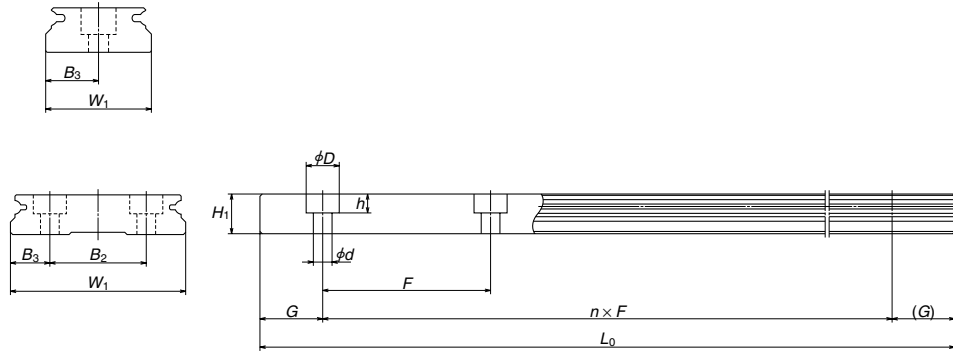


Table. I-5-30

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)

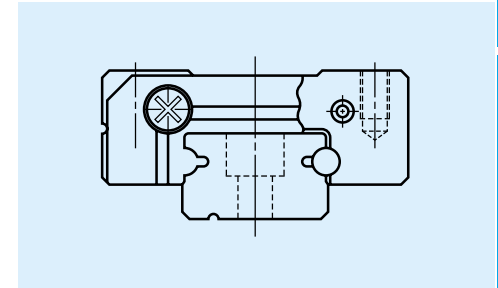


Fig. I-5-21 LU Series

(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.

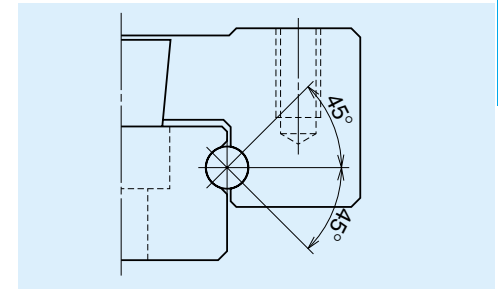
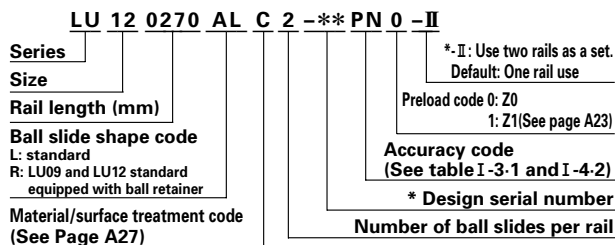


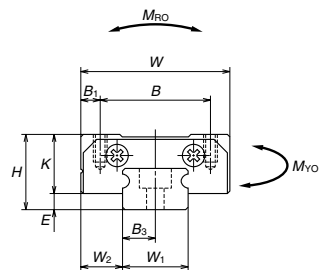
Fig. I-5-22 Balls are in contact.

Dimensions of LU Series

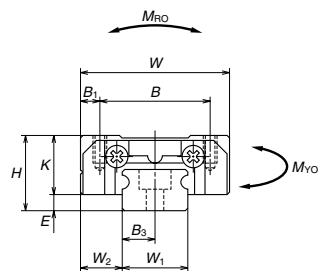
- LU-AL (Miniature, LU15 is equipped with ball retainer)
- LU-TL (Miniature, large mounting tap hole)
- LU-AR (Miniature, with ball retainer)
- LU-TR (Miniature, large mounting tap hole, with ball retainer)



* 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.



LU05TL, LU07AL
LU09AL, LU09TL



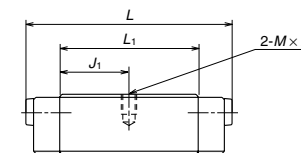
LU09AR, TR
LU12AL, TL, AR, TR
LU15AL

Table. I-5-31

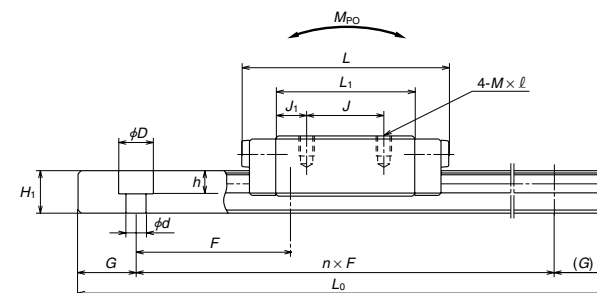
Model No.	Assembly			Ball slide									Width	Height
	Height	E	W ₂	Width	Length	Mounting hole			B ₁	L ₁	J ₁	K		
						B	J	M × pitch × ℓ						
LU05TL	6	1	3.5	12	18	8	—	M2×0.4×1.5	2	12	6	5	5	3.2
LU07AL	8	1.5	5	17	20.4	12	8	M2×0.4×2.4	2.5	13.6	2.8	6.5	7	4.7
LU09AL	10	2.2	5.5	20	26.8	15	13	M2×0.4×2.5	2.5	18	2.5	7.8	9	5.5
LU09TL							10	M3×0.5×3						
LU09AR	10	2.2	5.5	20	30	15	13	M2×0.4×2.5	2.5	20	3.5	7.8	9	5.5
LU09TR							10	M3×0.5×3						
LU12AL	13	3	7.5	27	34	20	15	M2.5×0.45×3	3.5	21.8	3.4	10	12	7.5
LU12TL							15	M3×0.5×3.5						
LU12AR	13	3	7.5	27	35.2	20	15	M2.5×0.45×3	3.5	21.8	3.4	10	12	7.5
LU12TR							15	M3×0.5×3.5						
LU15AL	16	4	8.5	32	43.6	25	20	M3×0.5×4	3.5	27	3.5	12	15	9.5

LU05TL, LU07AL, LU09TL, LU09AR, LU09TR, LU12AR and LU12TR come in stainless steel only.
 LU05TL has only two mounting tap holes in the center.
 Side seals of LU05TL, LU07AL, LU09AL and LU09TL are available on request.

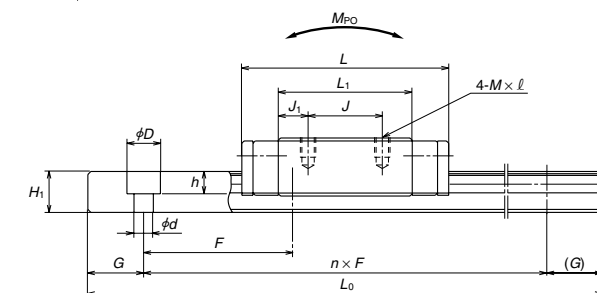
LU05TL



LU07AL
LU09AL, LU09TL



LU09AR, TR
LU12AL, TL, AR, TR
LU15AL



Unit: mm

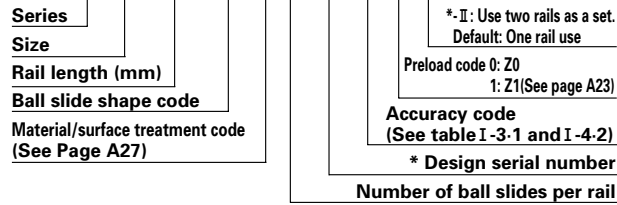
Rail					Basic load rating					Ball dia.		Weight	
Pitch	Mounting bolt hole	B ₃	G (recommended)	Max. length L _{0MAX.} () for stainless	Dynamic C (N)	Static C ₀	Static moment (N-m)			D _w	Ball slide (g)	Rail (g/100mm)	
F	d × D × h						M _{ro}	M _{fo}	M _{vo}				
15	2.3×3.3×1.5	2.5	5	— (210)	545	740	1.9	1.2	1.2	1.2	4	11	
15	2.4×4.2×2.3	3.5	5	— (375)	1090	1370	4.9	2.7	2.7	1.587	10	23	
20	2.6×4.5×3	4.5	7.5	1200 (600)	1760	2220	10	6.1	6.1	2	17	35	
20	3.5×6×4.5												
20	2.6×4.5×3	4.5	7.5	— (600)	1490	2150	9.9	6.1	6.1	1.587	19	35	
20	3.5×6×4.5												
25	3×5.5×3.5	6	10	1800 (800)	2830	3500	21	11	11	2.381	38	65	
25	3.5×6×4.5												
25	3×5.5×3.5	6	10	— (800)	2830	3500	21	11	11	2.381	38	65	
25	3.5×6×4.5												
40	3.5×6×4.5	7.5	15	2000 (1000)	5550	6600	49	26	26	3.175	70	105	

To fix rail of LU05TL, use M2 x 0.4 cross-recessed pan head machine screw for precision instrument. (JCIS 10-70 No. 0 pan head machine screw No.1.)
 (JCIS : Japanese Camera Industrial Standard.)

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

LU-BL (High load type, miniature)
LU-UL (High load type, miniature, large mounting tap hole)

LU 12 0270 BL C 2 -** PN 0 -II



* 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.

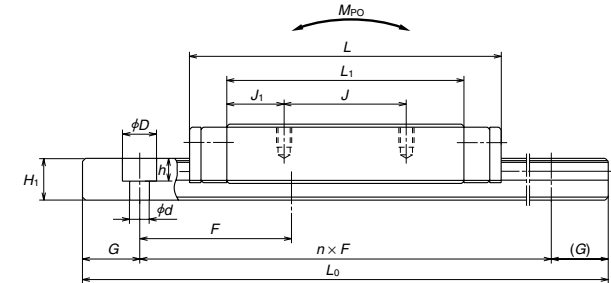
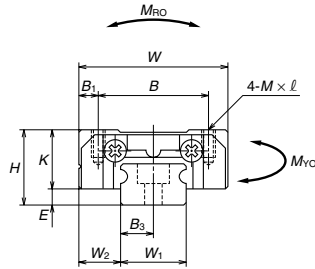


Table. I-5-32

Model No.	Assembly			Ball slide											
	Height H	E	W ₂	Width W	Length L	Mounting hole				B ₁	L ₁	J ₁	K	W ₁	Height H ₁
						B	J	M × pitch × ℓ							
LU09BL LU09UL	10	2.2	5.5	20	41	15	16	M2×0.4×2.5 M3×0.5×3	2.5	31.2	7.6	7.8	9	5.5	
LU12BL LU12UL	13	3	7.5	27	47.5	20	20	M2.5×0.45×3 M3×0.5×3.5	3.5	35.3	7.65	10	12	7.5	
LU15BL	16	4	8.5	32	61	25	25	M3×0.5×4	3.5	44.4	9.7	12	15	9.5	

LU09UL is available only in stainless steel.
 LU15BL is equipped with ball retainer.

Rail					Basic load rating					Ball dia.	Weight	
Pitch F	Mounting bolt hole d × D × h	B ₃	G (recommended)	Max. length L _{0MAX} () for stainless	Dynamic C (N)	Static C ₀	Static moment			D _w	Ball slide (g)	Rail (g/100mm)
							M _{R0}	M _{F0}	M _{V0}			
20	2.6×4.5×3 3.5×6×4.5	4.5	7.5	1200 (600)	2600	3900	18	17	17	2	29	35
25	3×5.5×3.5 3.5×6×4.5	6	10	1800 (800)	4000	5700	34	28	28	2.381	59	65
40	3.5×6×4.5	7.5	15	2000 (1000)	8100	11300	85	69	69	3.175	107	105

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

Dimensions of LU Series (Interchangeable ball slide)

LAU-AR (Miniature, with ball retainer)

LAU-TR (Miniature, large mounting tap hole, with ball retainer)

LAU-AL (LAU15 is equipped with ball retainer)

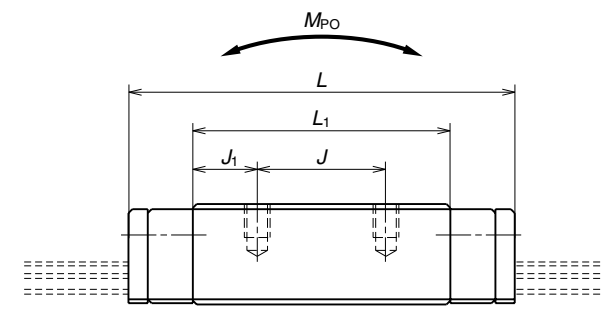
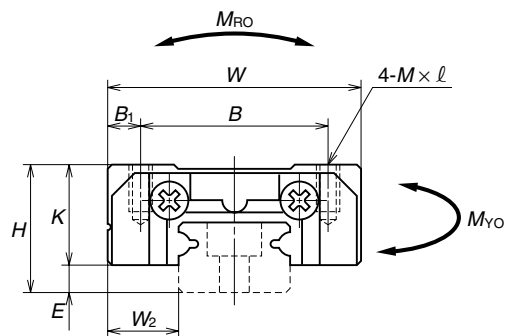
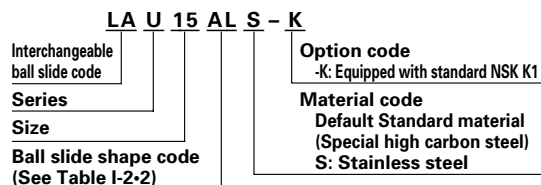


Table. I-5-33

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			<i>B</i> ₁	<i>L</i> ₁	<i>J</i> ₁	<i>K</i>
						<i>B</i>	<i>J</i>	<i>M</i> × pitch × <i>l</i>				
LAU09AR	10	2.2	5.5	20	30	15	13	M2×0.4×2.5	2.5	20	3.5	7.8
LAU09TR							10	M3×0.5×3			5	
LAU12AR	13	3	7.5	27	35.2	20	15	M2.5×0.45×3	3.5	21.8	3.4	10
LAU12TR								M3×0.5×3.5				
LAU15AL	16	4	8.5	32	43.6	25	20	M3×0.5×4	3.5	27	3.5	12

LAU09 and 12 are available only in stainless steel.
LAU15AL is equipped with ball retainer.

Basic load rating					Ball dia.	Weight
Dynamic	Static	Static moment			<i>D</i> _W	Ball slide
<i>C</i>	<i>C</i> ₀	<i>M</i> _{RO}	<i>M</i> _{PO}	<i>M</i> _{YO}		(g)
(N)		(N·m)				
1490	2150	9.9	6.1	6.1	1.587	19
2830	3500	21	11	11	2.381	38
5550	6600	49	26	26	3.175	70

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.

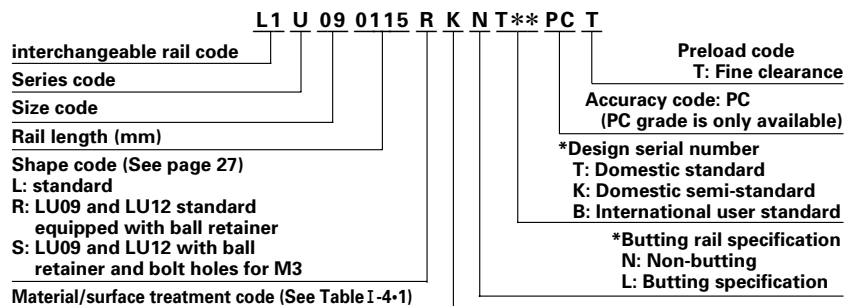
When converting the basic dynamic load rating *C* to the dynamic load rating *C*₁₀₀ for 100 km rating fatigue life, divide the *C* by 1.26

Dimensions of LU Series (Interchangeable rail)



Example of reference number

Regular rail (non-butting) with fine clearance



* Please consult with NSK for butting rail specification.

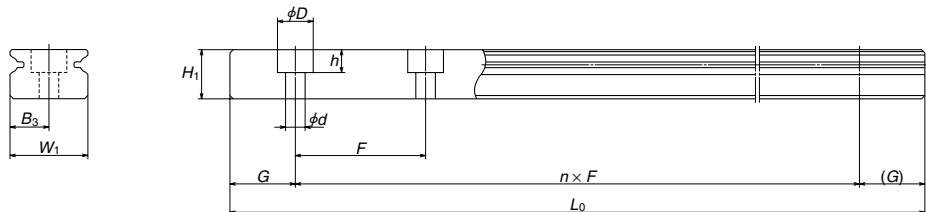


Table. I-5-34

Unit: mm

Model No.	Rail							Weight (g/100mm)
	Width W_1	Height H_1	F	WB_3	Mounting bolt hole $d \times D \times h$	G (recommended)	Max. length L_{0MAX} () for stainless	
L1U09	9	5.5	20	4.5	2.6×4.5×3 3.5×6×4.5	7.5	(600)	35
L1U12	12	7.5	25	6	3×5.5×3.5 3.5×6×4.5	10	(800)	65
L1U15	15	9.5	40	7.5	3.5×6×4.5	15	2000 (1000)	105

A-I-5.8 LL Series

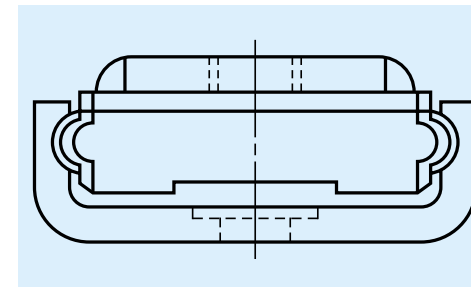


Fig. I-5-23 LL Series

(1) Super light-weight, and compact

This compact guide has a single ball groove on both right and left sides (gothic arch). Rails and ball slides are made of stainless steel plate, therefore they are lightweight.

Also, the ball groove is made outside the ball slide to reduce overall size and to obtain high speed.

(2) Stainless steel is standard.

Rails and bearings are made of martensitic stainless steel.

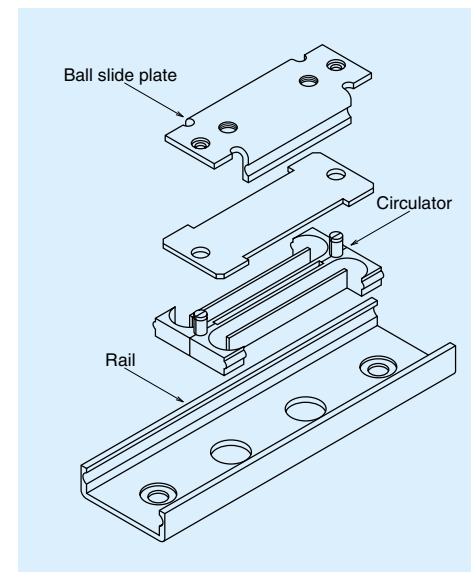
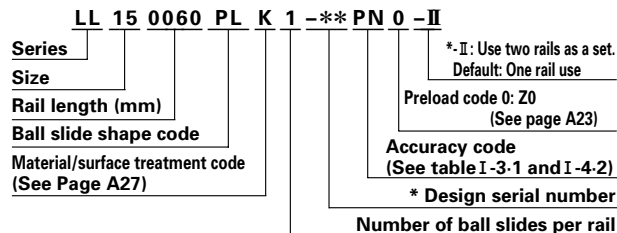


Fig. I-5-24 LL Series structure

Dimensions of LL Series

LL (Miniature, light-weight)



* 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.

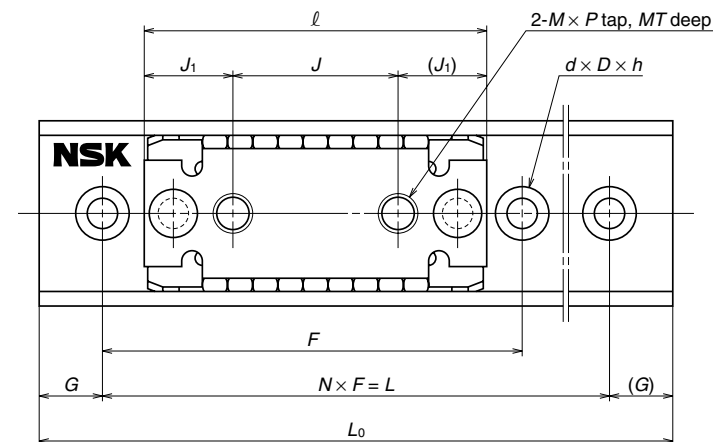
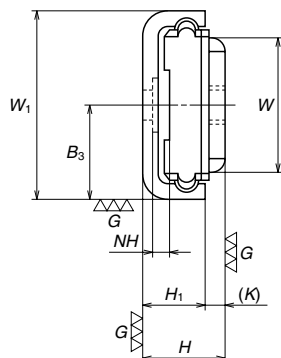


Table. I-5-35

Model No.	Assembly		Ball slide							Height	Pitch	N
	Height	W ₁	Width	Length	Mounting hole			J ₁	K			
					J	M × pitch	MT					
H	W ₁	W	ℓ	J	M × pitch	MT	J ₁	K	H ₁	F		
LL15	6.5	15	10.6	27	13	M3×0.5	1.2	7	1.5	5	30	1
											40	1
											30	2
											40	2
											50	2

Remarks:

1. LL Series does not have a ball retainer. Be aware that the balls fall out when a bearing is withdrawn from the rail.
2. Seal is not available. Please provide the dust-prevention measures on the equipment.
3. Do not use an installation screw on the ball slide which exceeds MT (maximum screw depth allowance) in the dimension table.
4. Use "No.0 of Machine screw 1" of "cross recessed machine screw for precision machinery (Japan Camera Industry Association standard: JCS 10-70)."

Unit: mm

Rail					Basic load rating					Ball dia.	Weight	
Mounting bolt hole	NH	B _s	G	Rail length	Dynamic	Static	Static moment			D _w	Ball slide	Rail
							C	C ₀	M _{RO}			
d × D × h				L ₀	(N)		(N-m)				(g)	(g)
2.4×5×0.4	1.2	7.5	5	40	880	785	7	3	3	2	6	9
				60								11
				75								13
				90								16
				120								21