

## A-I -6 NSK S1™ Series Precision Linear Guides

The popular series has been updated and expanded into a complete lineup with a new series of interchangeable products!

The NSK S1 Series Linear Guide features resin retainers between the balls to prevent collision and rubbing.

Ball groove construction is standard in the LH and LS Series.

### A-I -6.1 Feature

#### (1) Lower noise and gentler tone

Incorporating a retainer piece and optimizing the circulation path enables steel ball circulation stability and the prevention of ball collision, resulting in noise reduction by 5 dB (A) or more than that of conventional NSK products. In addition, contributing to sound improvement (human-friendly sound quality) with lower noise levels, especially in the high-frequency range.

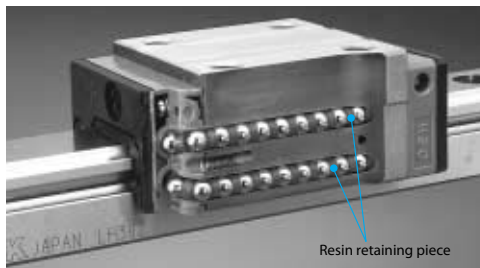


Fig. I -6•1

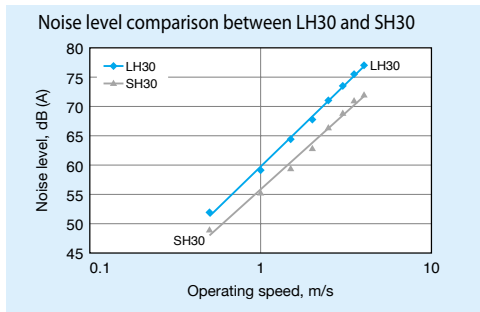


Fig. I -6•2

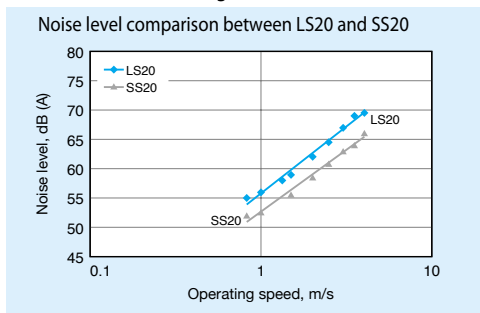
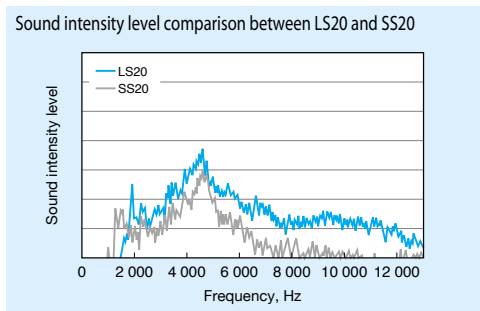


Fig. I -6•3



Test conditions : Oil lubrication (VG68)

Locate a microphone at  
500 mm above the sample  
(both for LH30 and LS20)

\* Noise level depends on the microphone location.

Noise level drops by approximately  
6 dB (A) when the distance from the microphone  
is doubled.

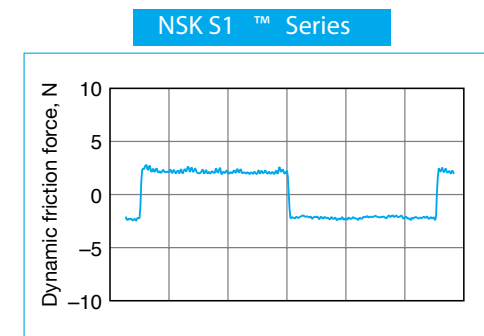
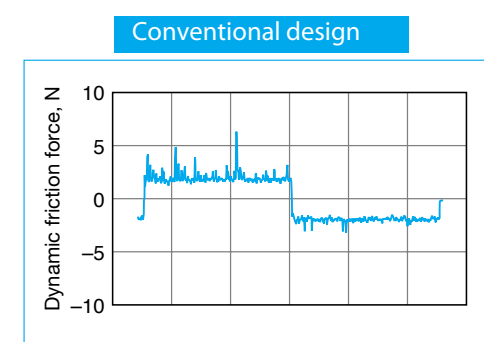
#### (2) Smoother motion

Improved steel ball circulation stability, free of interference between the balls improves dynamic friction characteristics, resulting in smooth and stable motion, which is especially effective for low speed motion.

Test model: NSK LH30 slight preload

Evaluation conditions: Grease lubrication, Operating speed of 1 m/min

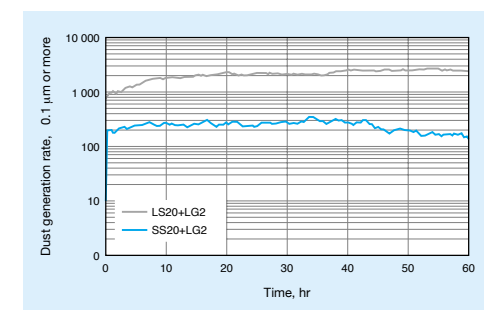
Fig. I -6•4 Comparison in smooth motion between LH30 and SH30



#### (3) Low dust generation

A resin retaining piece, which prevents steel balls collision, features effective low dust generation characteristics compared to conventional products.

Fig. I -6•5 Comparison of dust generation



#### (4) Fast delivery

Lineup of interchangeable rails and ball slides in the series supports random matching and facilitates fast delivery.



(5) Accuracy

The preloaded assembly types products have four accuracy grades; Ultra precision P3, Super precision P4, High precision P5 and Precision P6, while the interchangeable types have a regular class PC.

Table 1 shows the accuracy standard for the preloaded assembly type of the SH Series and SS Series, while Table 2 shows the accuracy standard for the interchangeable types.

Table I -6•1 Accuracy grade for the preloaded assembly type

Accuracy grade	Preload assembly types				Interchangeable types
	Ultra precision P3	Super precision P4	High precision P5	Precision P6	
Item	P3	P4	P5	P6	PC
Mounting height: H	±10	±10	±20	±40	6
Variation of mounting height: H (All slides on a pair or rails)	3	5	7	15	6
Mounting width dimension: W <sub>2</sub> or: W <sub>3</sub>	±15	±15	±25	±50	7
Variation of mounting width dimension: W <sub>2</sub> (s) or: W <sub>3</sub> (s) (All slides on datum rails)	3	7	10	20	7
Running parallelism of face C against face A	Shown in Table I -6•3				
Running parallelism of face D against face B					

Table I -6•2 Accuracy grade for the interchangeable type

Accuracy grade	Normal interchangeable types
Item	PC
Mounting height: H	±20
Variation of mounting height: H (one rail)	15
Variation of mounting height: H (multiple rails)	30
Assembly width dimension: W <sub>2</sub> or: W <sub>3</sub>	±30
Variation of assembly width dimension: W <sub>2</sub> (s) or: W <sub>3</sub> (s) (All slides on datum rails)	25
Running parallelism of face C against face A	Shown in Table I -6•3
Running parallelism of face D against face B	

Table I -6•3 Running parallelism tolerance

Rail length (mm)	Preload assembly types				Interchangeable types
	Ultra precision P3	Super precision P4	High precision P5	Precision P6	
over					Normal interchangeable type
50	2	2	2	4.5	6
50~ 80	2	2	3	5	6
80~ 125	2	2	3.5	5.5	6.5
125~ 200	2	2	4	6	7
200~ 250	2	2.5	5	7	8
250~ 315	2	2.5	5	8	9
315~ 400	2	3	6	9	11
400~ 500	2	3	6	10	12
500~ 630	2	3.5	7	12	14
630~ 800	2	4.5	8	14	16
800~ 1 000	2.5	5	9	16	18
1 000~ 1 250	3	6	10	17	20
1 250~ 1 600	4	7	11	19	23
1 600~ 2 000	4.5	8	13	21	26
2 000~ 2 500	5	10	15	22	29
2 500~ 3 150	6	11	17	25	32
3 150~ 4 000	9	16	23	30	34

Fig. I -6•6 Assembly dimensions

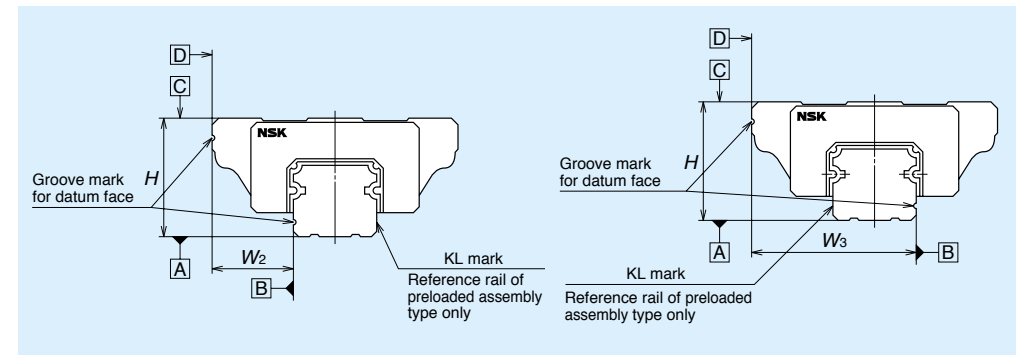
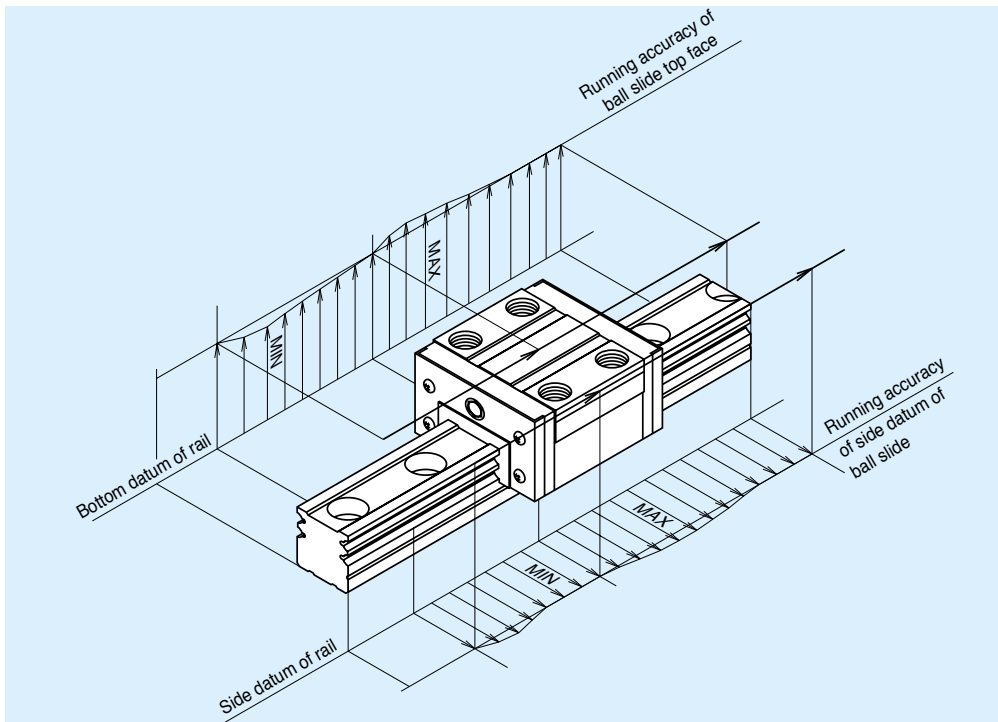


Fig. I -6•7 Running parallelism



**A-I -6.2 Preload and rigidity**

We offer three levels of preload: Medium preload (Z3), Slight preload (Z1) and Fine clearance (Z0), along with interchangeable types of Fine clearance (ZZ). Values for preload and rigidity of the SH and SS Series are shown in Tables 4 and 5.

Table I -6•4 Preload and rigidity of the SH Series

Model	Preload (N)		Rigidity (N/ μm)				
			Vertical direction		Lateral direction		
	Slight preload (Z1)	Medium preload (Z3)	Slight preload (Z1)	Medium preload (Z3)	Slight preload (Z1)	Medium preload (Z3)	
High load capacity type	SH15 AN , EL, FL, EM	78	441	127	215	88	166
	SH20 AN , EL, FL, EM	147	784	157	274	127	225
	SH25 AN , AL, EL, FL, EM	196	1180	186	343	137	255
	SH30 AN , AL	245	1470	196	363	137	265
	SH30 EL , FL, EM	294	1670	245	441	176	323
Ultra high load capacity type	SH35 AN , AL, EL, FL, EM	390	2160	294	529	205	382
	SH45 AN , EL, FL, EM	635	3700	397	727	283	529
	SH55 AN , EL, FL, EM	930	5600	482	891	336	635
	SH15 BN , GL, HL, GM	98	637	186	333	137	264
	SH20 BN , GL, HL, GM	196	1080	235	421	186	343
	SH25 BN , BL, GL, HL, GM	245	1570	284	529	196	382
	SH30 BN , BL, GL, HL, GM	343	2160	333	627	235	451
	SH35 BN , BL, GL, HL, GM	490	2840	411	755	284	529
	SH45 BN , GL, HL, GM	785	4600	515	944	367	686
	SH55 BN , GL, HL, GM	1180	6750	631	1148	440	817

Note: Because the clearance value for Fine clearance (Z0) is 0 – 3μm, the preload value is zero.

Table I -6•5 Preload and rigidity of the SS Series

Model	Preload (N)		Rigidity (N/ μm)				
			Vertical direction		Lateral direction		
	Slight preload (Z1)	Medium preload (Z3)	Slight preload (Z1)	Medium preload (Z3)	Slight preload (Z1)	Medium preload (Z3)	
High load capacity type	SS15 AL , EL, FL, EM	69	392	118	216	88	157
	SS20 AL , EL, FL, EM	88	490	147	255	108	186
	SS25 AL , EL, FL, EM	147	833	196	353	137	255
	SS30 AL , EL, FL, EM	245	1370	245	441	176	323
	SS35 AL , EL, FL, EM	294	1860	284	539	205	392
Medium load capacity type	SS15 CL , JL, KL, JM	39	245	69	127	49	88
	SS20 CL , JL, KL, JM	59	343	88	157	59	118
	SS25 CL , JL, KL, JM	98	588	108	206	78	147
	SS30 CL , JL, KL, JM	147	882	127	235	98	176
	SS35 CL , JL, KL, JM	196	1180	166	304	117	225

Note: Because the clearance value for Fine clearance (Z0) is 0 – 3μm, the preload value is zero.

Table I -6•6 Preload and rigidity of the interchangeable types

Model	Slight preload ZZ
SH15	-4~ 0
SH20	-5~ 0
SH25	-5~ 0
SH30	-7~ 0
SH35	-7~ 0
SH45	-7~ 0
SH55	-8~ 0

Model	Slight preload ZZ
SS15	-4~ 0
SS20	-4~ 0
SS25	-5~ 0
SS30	-5~ 0
SS35	-6~ 0

Negative values indicate preload volume (elastic deformation of balls).



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A-1 -6.3 Reference number

This number comprises codes and numbers which indicate key specifications, and is generated when the customer and NSK have defined specifications.

Example: **SH 301000 ANC2-\*\* PCZ-II**

Series name	SH	Size	30	Rail length (mm)	1000	Ball slide shape/height (See Table I -2 · 2 in page A15)	ANC	Accuracy grade (See page A105)	2	* Design serial number	**	Material/surface treatment	PCZ	Preload (See page A107)	-II	*- II : Use two rails as a set Default: One rail use
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\* 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.

(1) Combination of accuracy and preload

Table I -6·7

		Accuracy grade				
		Ultra super precision	Super precision	Precision	High	Normal interchangeable type
Without NSK K1 lubrication unit		P3	P4	P5	P6	PC
With NSK K1 lubrication unit		K3	K4	K5	K6	KC
Preload	Fine clearance Z0	a	a	a	a	—
	Slight preload Z1	a	a	a	a	—
	Medium preload Z3	a	a	a	a	—
	Interchangeable preload ZZ	—	—	—	—	a

(2) Reference number for single bearing of interchangeable types

Example: **SAH30ANSZ**

Interchangeable ball slide	SAH	Size	30	Preload Z: Slight preload	AN	Material/surface treatment	S	Preload Z: Slight preload	Z
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S: Stainless steel  
No code: Special carbon steel (NSK standard)

**SAH30ANSZ**

Interchangeable rail	SAH	Size	30	Preload Z: Slight preload	AN	Material/surface treatment	S	Preload Z: Slight preload	Z
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S: Stainless steel  
No code: Special carbon steel (NSK standard)

**L1S151000LCNT\*\*PCZ**

Interchangeable ball slide	L1S	Size	15	Rail length (mm)	1000	Shape code	LCNT	Design serial number	**	Material/surface treatment code (See Table I -4 · 1 in page A27)	PC	Preload code	Z
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(L: Standard, LS15 with bolt holes for M4)  
(T: Domestic standard, K: Domestic semi-standard, B: International user standard)  
\*Butting rail specification (N: Non-butting, L: Butting specification)  
\* Please consult with NSK for butting rail specification.

A-1 -6.4 Application examples

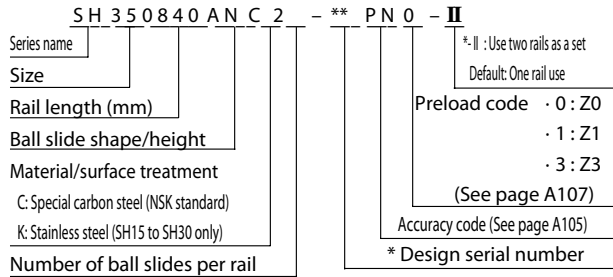
- A Applications that require lower noise levels and a lower level of vibration  
Instruments, printers, medical equipment, office machines, etc.
- A Applications that require smoother motion  
Electric wire cutting discharge machines, scanners and pattern generators and steppers.

Handling Precautions

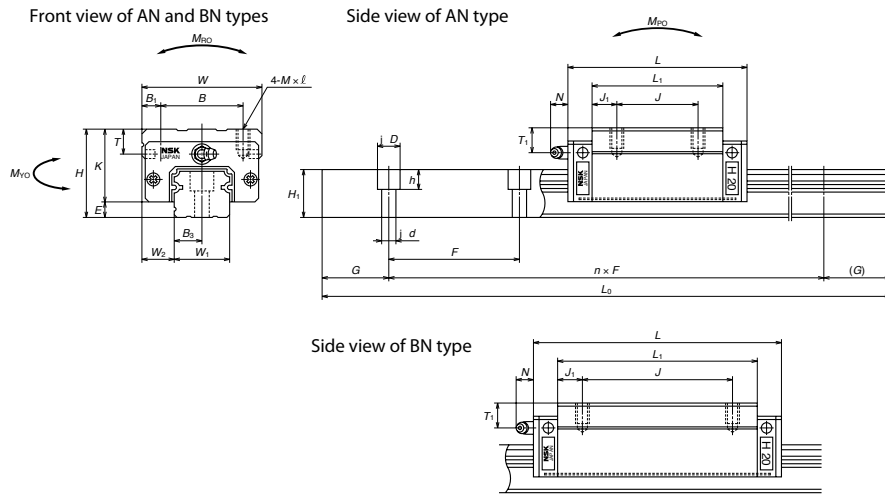
- Temperature range . . . . . Maximum operating temperature: 50 °C  
Maximum momentary temperature: 80 °C
- Usage conditions . . . . . We recommend using “NSK S1™ Series” products in a clean environment in order to utilize their full range of capabilities.
- Handling of interchangeable types
  - Interchangeable ball slide will be delivered with a provisional rail (inserting fixture).
  - Do not remove the ball slide from provisional rail until inserting into a rail.
  - Be sure to use the provisional rail when removing ball slide(s) from a rail.



Dimensions of SH Series  
SH-AN (High load type)  
SH-BN (Super high load type)

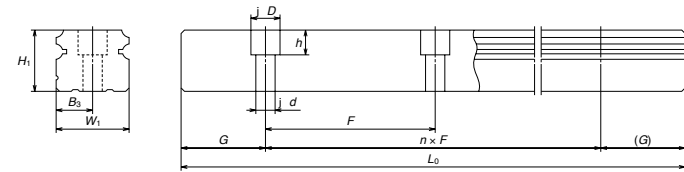
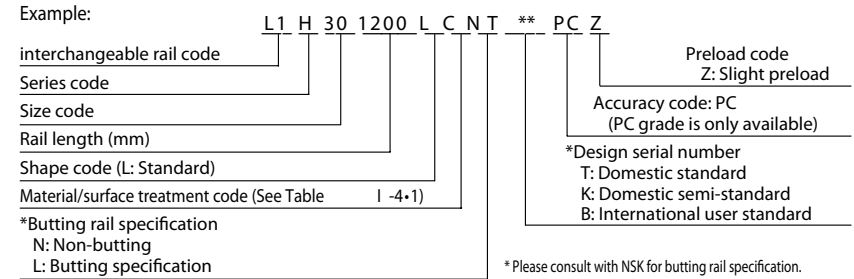


\* Please note that we assign the design number, and omit the last code ( II ) that indicates a use of two rails as a set to finalize the reference number as product identification.

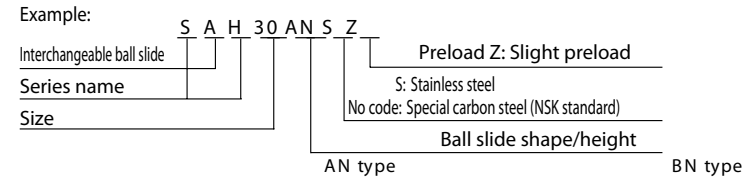


Model No.	Assembly			Ball slide												
	Height	Width	Length	Mounting tap hole					Grease fitting							
				H	E	W <sub>2</sub>	W	L	B	J	M x pitch x l	B <sub>1</sub>	L <sub>1</sub>	J <sub>1</sub>	K	T
SH15AN SAH15AN SH15BN SAH15BN	28	4.6	9.5	34	55 74	26	26	M4 x 0.7 x 6	4	39 58	6.5 16	23.4	8	φ3	8.5	3.3
SH20AN SAH20AN SH20BN SAH20BN	30	5	12	44	69.8 91.8	32	36 50	M5 x 0.8 x 6	6	50 72	7 11	25	12	M6 x 0.75	5	11
SH25AN SAH25AN SH25BN SAH25BN	40	7	12.5	48	79 107	35	35 50	M6 x 1 x 9	6.5	58 86	11.5 18	33	12	M6 x 0.75	10	11
SH30AN SAH30AN SH30BN SAH30BN	45	9	16	60	85.6 124.6	40	40 60	M8 x 1.25 x 10	10	59 98	9.5 19	36	14	M6 x 0.75	10	11
SH35AN SAH35AN SH35BN SAH35BN	55	9.5	18	70	109 143	50	50 72	M8 x 1.25 x 12	10	80 114	15 21	45.5	15	M6 x 0.75	15	11
SH45AN SAH45AN SH45BN SAH45BN	70	14	20.5	86	139 171	60	60 80	M10 x 1.5 x 17	13	105 137	22.5 28.5	56	17	Rc1/8	20	13
SH55AN SAH55AN SH55BN SAH55BN	80	15	23.5	100	163 201	75	75 95	M12 x 1.75 x 18	12.5	126 164	25.5 34.5	65	18	Rc1/8	21	13

Reference number for rail of interchangeable types  
For regular rails (non-jointed rail)



Reference number for ball slide of interchangeable types

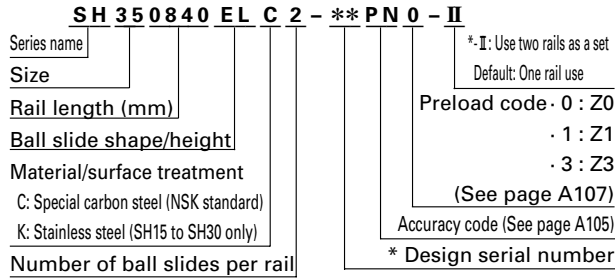


Rail								Basic load rating					Ball diameter		Weight	
Width	Height	Pitch	Mounting bolt hole d x D x h	B <sub>3</sub>	G (recomm ended)	Max. length L <sub>omax</sub> ( ) for stainless	Dynamic C (N)	Static C <sub>0</sub> (N)	Static moment			D <sub>w</sub>	Ball slide (kg)	Rail (kg/m)		
									M <sub>Ro</sub> (N·m)	M <sub>PO</sub> (N·m)	M <sub>VO</sub> (N·m)					
15	15	60	4.5 x 7.5 x 5.3	7.5	20	2 000 (1 800)	10 100 13 400	18 800 28 200	98 147	87 193	73 162	3.175 0.26	0.18 0.26	1.6		
20	18	60	6 x 9.5 x 8.5	10	20	3 960 (3 500)	16 300 21 600	29 600 44 500	199 298	167 360	141 305	3.968 0.48	0.33 0.48	2.6		
23	22	60	7 x 11 x 9	11.5	20	3 960 (3 500)	22 400 32 000	37 500 62 500	295 490	246 615	207 515	4.762 0.82	0.55 0.82	3.6		
28	26	80	9 x 14 x 12	14	20	4 000 (3 500)	31 000 46 000	51 500 91 500	490 870	365 1 060	305 885	5.556 1.3	0.77 1.3	5.2		
34	29	80	9 x 14 x 12	17	20	4 000	47 500 61 500	80 500 117 000	950 1 380	780 1 600	655 1 340	6.35 2.1	1.5 2.1	7.2		
45	38	105	14 x 20 x 17	22.5	22.5	3990	76 500 94 500	128 000 175 000	1 970 2 680	1 550 2 760	1 300 2 320	7.937 3.9	3.0 3.9	12.3		
53	44	120	16 x 23 x 20	26.5	30	3960	113 000 140 000	181 000 247 000	3 300 4 550	2 640 4 800	2 210 4 050	9.525 6.1	4.7 6.1	16.9		

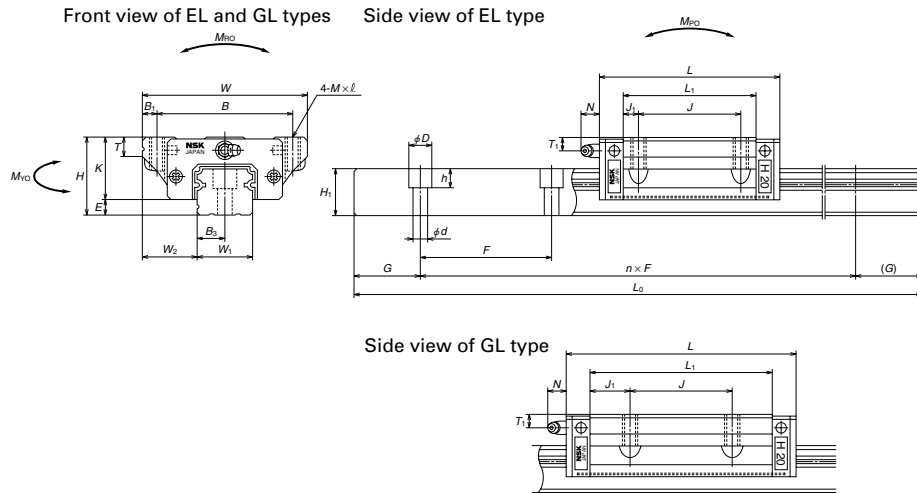
The basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface.  
When converting the basic dynamic load rating C to the dynamic load rating C<sub>100</sub> for 100 km rating fatigue life, divide the C by 1.26



**SH-EL (High load type)**  
**SH-GL (Super high load type)**



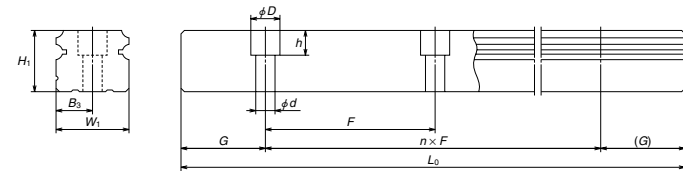
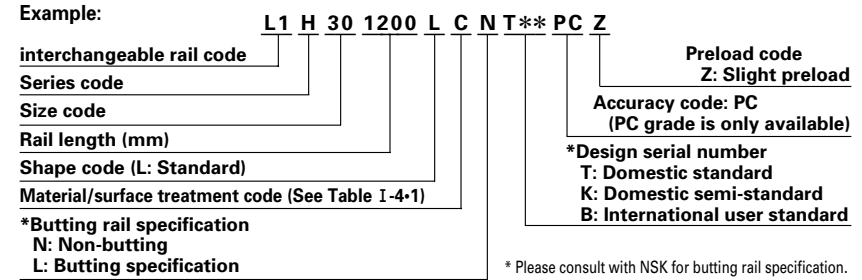
\* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.



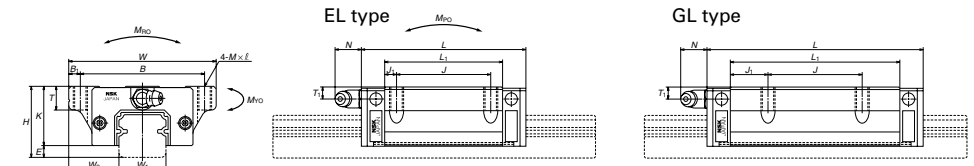
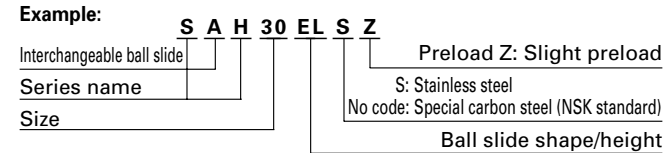
Model No.	Assembly			Ball slide												
	Height	Width	Length	Mounting tap hole					Grease fitting							
				Hole size	T <sub>1</sub>	N										
SH15EL SAH15EL SH15GL SAH15GL	24	4.6	16	47	55 74	38	30	M5×0.8×8	4.5	39 58	4.5 14	19.4	8	φ3	4.5	3.3
SH20EL SAH20EL SH20GL SAH20GL	30	5	21.5	63	69.8 91.8	53	40	M6×1×10	5	50 72	5 16	25	10	M6×0.75	5	11
SH25EL SAH25EL SH25GL SAH25GL	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
SH30EL SAH30EL SH30GL SAH30GL	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
SH35EL SAH35EL SH35GL SAH35GL	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
SH45EL SAH45EL SH45GL SAH45EL	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
SH55EL SAH55EL SH55GL SAH55GL	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

Dimensions in ( ) are applicable to stainless steel products.

**Reference number for rail of interchangeable types**  
For regular rails (non-jointed rail)



**Reference number for ball slide of interchangeable types**



Rail							Basic load rating					Ball diameter	Weight	
Width	Height	Pitch	Mounting bolt hole	G	Max. length	Dynamic	Static	Static moment			D <sub>w</sub>	Ball slide (kg)	Rail (kg/m)	
W <sub>1</sub>	H <sub>1</sub>	F	d×D×h	B <sub>3</sub>	L <sub>max</sub>			C	C <sub>0</sub>	M <sub>RO</sub>				M <sub>PO</sub>
15	15	60	4.5×7.5×5.3	7.5	20	10 100 (1 800)	18 800	98	87	73	3.175	0.17	1.6	
20	18	60	6×9.5×8.5	10	20	16 300 (3 500)	29 600	199	167	141	3.968	0.45	2.6	
23	22	60	7×11×9	11.5	20	22 400 (3 500)	37 500	295	246	207	4.762	0.63	3.6	
28	26	80	9×14×12	14	20	35 500 (3 500)	63 000	600	540	450	5.556	1.2	5.2	
34	29	80	9×14×12	17	20	47 500 (1 700)	80 500	950	780	655	6.35	1.7	7.2	
45	38	105	14×20×17	22.5	22.5	76 500 (3 990)	128 000	1 970	1 550	1 300	7.937	3.0	12.3	
53	44	120	16×23×20	26.5	30	113 000 (140 000)	181 000	3 300	2 640	2 210	9.525	5.0	16.9	

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 C<sub>100</sub> for 100 km rating fatigue life, divide the C by 1.26

# SH Series

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

SH 35 0840 FL C 2 - \*\* PN 0 - II

Series name: SH 35 0840  
Size: FL C 2  
Rail length (mm): 35  
Ball slide shape/height: 08  
Material/surface treatment: 40  
Number of ball slides per rail: FL C 2  
Preload code: 0 : Z0  
Accuracy code (See page A105): \*\*  
Design serial number: PN 0 - II

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

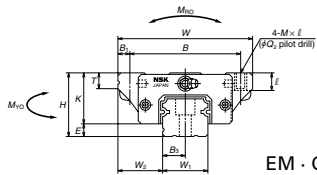
Preload code: 0 : Z0  
1 : Z1  
3 : Z3

(See page A107)

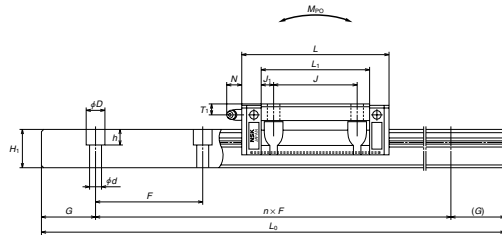
Accuracy code (See page A105)

\* Design serial number

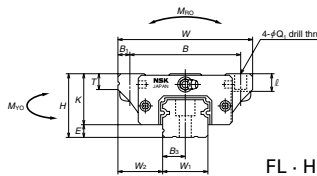
\* Please note that we assign the design number, and omit the last code (II) that indicates a use of two rails as a set to finalize the reference number as product identification.



EM · GM type



FL · HL type



Model No.	Assembly			Ball slide											Grease fitting				
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting tap hole					Q <sub>2</sub>	B <sub>1</sub>	L <sub>1</sub>	J <sub>1</sub>	K	T	Hole size	T <sub>1</sub>	N
						B	J	Q <sub>1</sub> × l		Q <sub>2</sub>									
SH15FL SAH15FL	24	4.6	16	47	55	38	30	4.5 × 7		4.4	4.5	39	4.5	19.4	8	φ3	4.5	3.3	
SH15EM SAH15EM					74			M5 × 0.8 × 7		4.4		58	14						
SH15HL SAH15HL								M5 × 0.8 × 7											
SH15GM SAH15GM							6 × 9.5		5.3	5	50	5	25	10	M6 × 0.75	5	11		
SH20FL SAH20FL	30	5	21.5	63	69.8	53	40	M6 × 1 × 9.5		5.3		72	16						
SH20EM SAH20EM					91.8			6 × 9.5											
SH20HL SAH20HL								M6 × 1 × 9.5											
SH20GM SAH20GM							7 × 10 (7 × 11.5)		6.8	6.5	58	6.5	29	11 (12)	M6 × 0.75	6	11		
SH25FL SAH25FL	36	7	23.5	70	79	57	45	(M8 × 1.2 × 11.5)		6.8		86	20.5						
SH25EM SAH25EM					107			7 × 10 (7 × 11.5)											
SH25HL SAH25HL								(M8 × 1.2 × 11.5)											
SH25GM SAH25GM							9 × 12 (9 × 14.5)		8.6	9	80	9	33	11 (15)	M6 × 0.75	7	11		
SH30FL SAH30FL	42	9	31	90	98.6	72	52	M10 × 1.5 × 12		8.6		72	10						
SH30EM SAH30EM					124.6			(M10 × 1.5 × 14.5)											
SH30HL SAH30HL								9 × 12 (9 × 14.5)											
SH30GM SAH30GM							M10 × 1.5 × 12		8.6		98	23							
SH35FL SAH35FL	48	9.5	33	100	109	82	62	9 × 13		8.6	9	80	9	38.5	12	M6 × 0.75	8	11	
SH35EM SAH35EM					143			M10 × 1.5 × 13		8.6		114	26						
SH35HL SAH35HL								9 × 13											
SH35GM SAH35GM							M10 × 1.5 × 13		8.6		114	26							
SH45FL SAH45FL	60	14	37.5	120	139	100	80	11 × 15		10.5	10	105	12.5	46	13	Rc1/8	10	13	
SH45EM SAH45EM					171			M12 × 1.75 × 15		10.5		137	28.5						
SH45HL SAH45HL								11 × 15											
SH45GM SAH45GM							M12 × 1.75 × 15		10.5		137	28.5							
SH55FL SAH55FL	70	15	43.5	140	163	116	95	14 × 18		12.5	12	126	15.5	55	15	Rc1/8	11	13	
SH55EM SAH55EM					201			M14 × 2 × 18		12.5		164	34.5						
SH55HL SAH55HL								14 × 18											
SH55GM SAH55GM							M14 × 2 × 18		12.5		164	34.5							

A117 Dimensions in ( ) are applicable to stainless steel products.

## Reference number for rail of interchangeable types

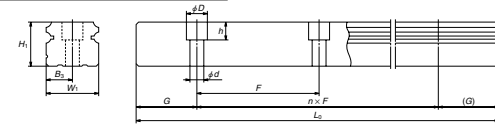
For regular rails (non-jointed rail)

Example:

L1 H 30 1200 L C N T \*\* PC Z

interchangeable rail code: L1 H 30 1200 L C N T \*\*  
Series code: H 30  
Size code: 1200  
Rail length (mm): L  
Shape code (L: Standard): C  
Material/surface treatment code (See Table I-4-1): N T \*\*  
Preload code: Z  
Accuracy code: PC  
Design serial number: \*\*  
Domestic standard: T  
Domestic semi-standard: K  
International user standard: B

\* Please consult with NSK for butting rail specification.

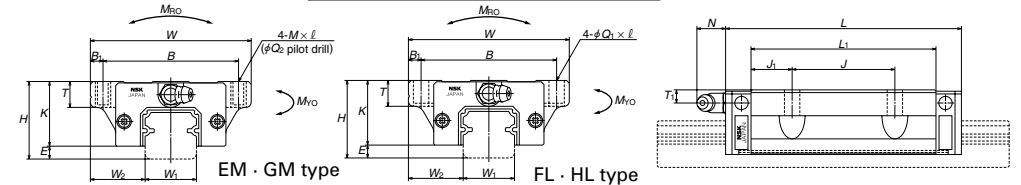


## Reference number for ball slide of interchangeable types

Example:

S A H 30 FL S Z

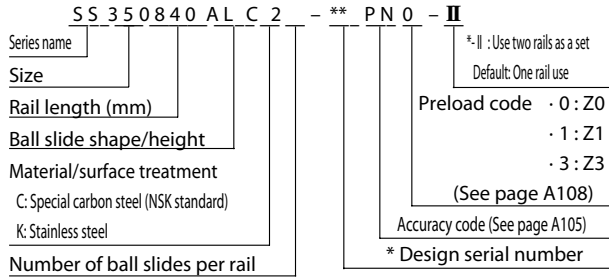
Interchangeable ball slide: S A H 30 FL S  
Series name: A H 30  
Size: FL S  
Preload Z: Slight preload  
S: Stainless steel  
No code: Special carbon steel (NSK standard)  
Ball slide shape/height: Z



Rail							Basic load rating					Ball diameter	Weight	
Width	Height	Pitch	Mounting bolt hole	B <sub>3</sub>	G (recomm ended)	Max. length L <sub>0max</sub> ( ) for stainless	Dynamic C (N)	Static C <sub>0</sub> (N)	Static moment (N·m)			D <sub>w</sub>	Ball slide (kg)	Rail (kg/m)
W <sub>1</sub>	H <sub>1</sub>	F	d × D × h				C	C <sub>0</sub>	M <sub>RO</sub>	M <sub>PO</sub>	M <sub>VO</sub>			
15	15	60	4.5 × 7.5 × 5.3	7.5	20	2000 (1800)	10100	18800	98	87	73	3.175	0.17	1.6
20	18	60	6 × 9.5 × 8.5	10	20	3960 (3500)	16300	29600	199	167	141	3.968	0.45	2.6
23	22	60	7 × 11 × 9	11.5	20	3960 (3500)	22400	37500	295	246	207	4.762	0.63	3.6
28	26	80	9 × 14 × 12	14	20	4000 (3500)	35500	63000	600	540	450	5.556	1.2	5.2
34	29	80	9 × 14 × 12	17	20	4000	47500	80500	950	780	655	6.35	1.7	7.2
45	38	105	14 × 20 × 17	22.5	22.5	3990	76500	128000	1970	1550	1300	7.937	3	12.3
53	44	120	16 × 23 × 20	26.5	30	3990	113000	181000	3000	2640	2210	9.525	5	16.9

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 C<sub>100</sub> for 100 km rating fatigue life, divide the C by 1.26

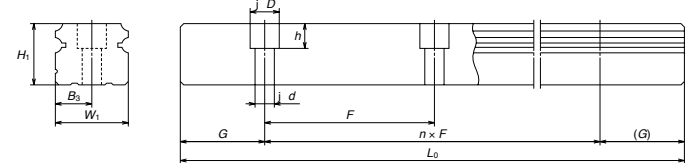
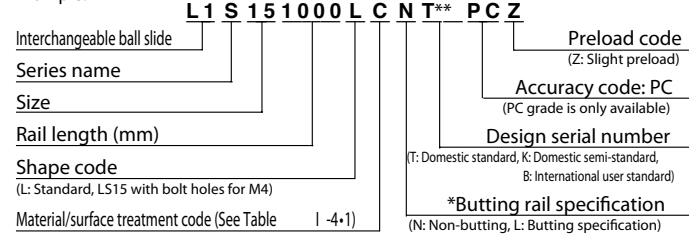
SS-AL (High load type)  
SS-CL (Super high load type)



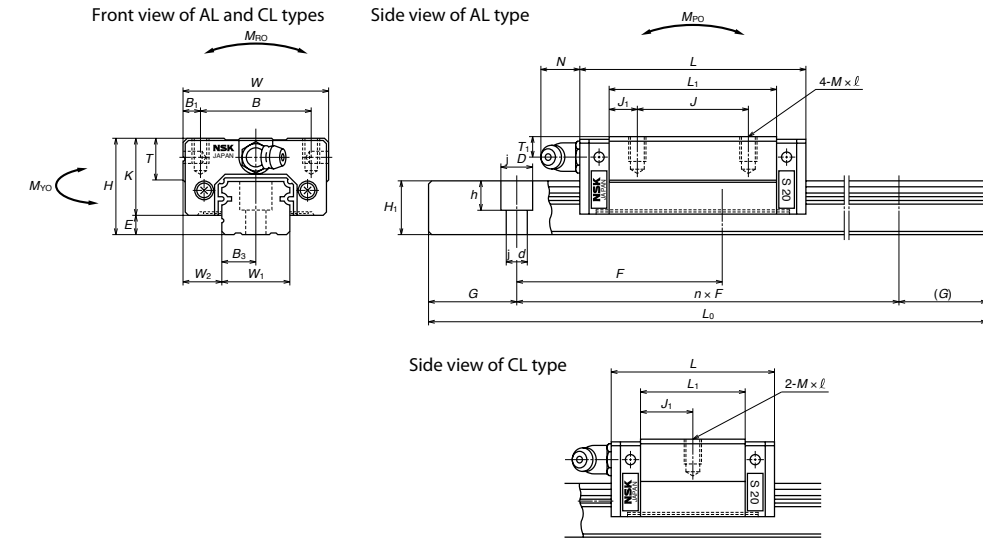
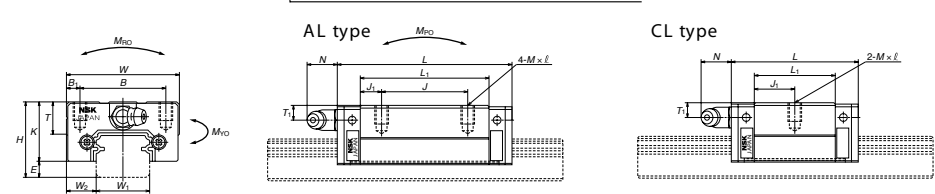
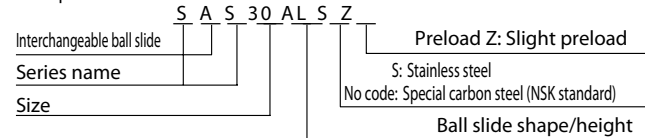
\* Please note that we assign the design number, and omit the last code ( II ) that indicates a use of two rails as a set to finalize the reference number as product identification.

Reference number for rail of interchangeable types  
For regular rails (non-jointed rail)

Example:



Reference number for ball slide of interchangeable types  
Example:



Model No.	Assembly			Ball slide												
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting tap hole					Grease fitting					
						B	J	M × pitch × l	B <sub>1</sub>	L <sub>1</sub>	J <sub>1</sub>	K	T	Hole size	T <sub>1</sub>	N
SS15CL SAS15CL	24	4.6	9.5	34	40.4	26	-	M4 × 0.7 × 6	4	23.6	11.8	19.4	10	φ3	6	3
SS15AL SAS15AL					56.8					40	7					
SS20CL SAS20CL	28	6	11	42	47.2	32	-	M5 × 0.8 × 7	5	30	15	22	12	M6 × 0.75	5.5	11
SS20AL SAS20AL					65.2	32	32		5	48	8					
SS25CL SAS25CL	33	7	12.5	48	59.6	35	-	M6 × 1 × 9	6.5	38	19	26	12	M6 × 0.75	7	11
SS25AL SAS25AL					81.6	35	35		6.5	60	2.5					
SS30CL SAS30CL	42	9	16	60	67.4	40	-	M8 × 1.25 × 12	10	42	21	33	13	M6 × 0.75	8	11
SS30AL SAS30AL					96.4	40	40		10	71	15.5					
SS35CL SAS35CL	48	10.5	18	70	77	50	-	M8 × 1.25 × 12	10	49	24.5	37.5	14	M6 × 0.75	8.5	11
SS35AL SAS35AL					108	50	50		10	80	15					

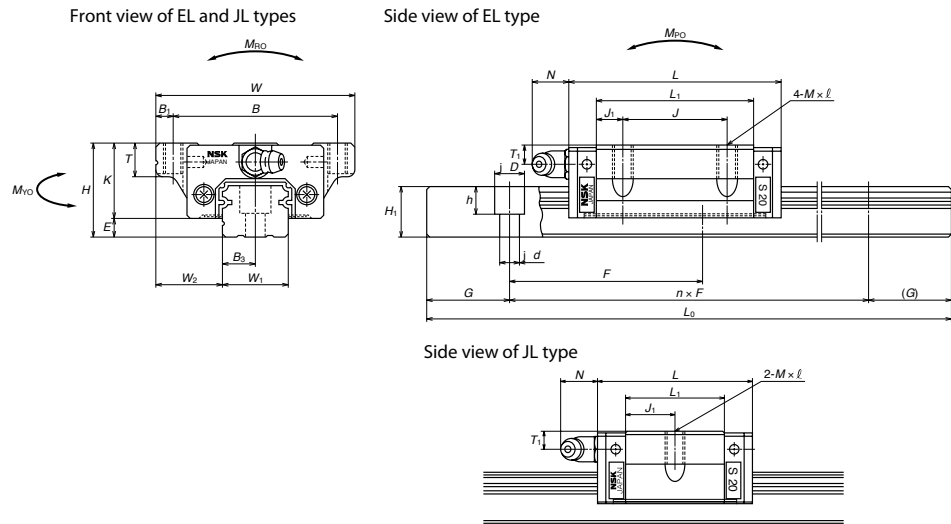
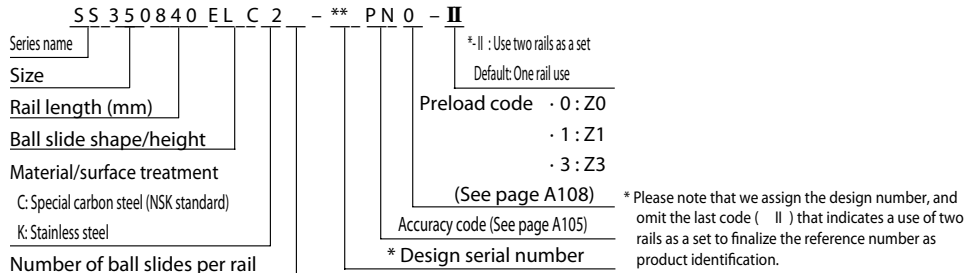
Rail							Basic load rating					Ball diameter	Weight	
Width	Height	Pitch	Mounting bolt hole	B <sub>3</sub>	G (recomm ended)	Max. length L <sub>o max</sub> (1) for stainless	Dynamic C (N)	Static C <sub>0</sub> (N)	Static moment			D <sub>w</sub>	Ball slide (kg)	Rail (kg/m)
W <sub>1</sub>	H <sub>1</sub>	F	d × D × h				C	C <sub>0</sub>	M <sub>ro</sub> (N · m)	M <sub>po</sub> (N · m)	M <sub>vo</sub> (N · m)			
15	12.5	60	9 3.5 × 6 × 4.5 4.5 × 7.5 × 5.3	7.5	20	2 000 (1 700)	4 900	7 800	39	21	18	2.778	0.14	1.4
20	15.5	60	6 × 9.5 × 8.5	10	20	3 960 (3 500)	7 250	11 800	80	40	34	3.175	0.28	2.3
23	18	60	7 × 11 × 9	11.5	20	3 960 (3 500)	12 700	20 800	164	96	81	3.968	0.34	3.1
28	23	80	7 × 11 × 9	14	20	4 000 (3 500)	17 700	29 600	282	153	128	4.762	0.58	4.8
34	27.5	80	9 × 14 × 12	17	20	4 000 (3 500)	26 000	40 000	465	234	196	5.556	0.86	7

g Standard mounting hole of SS15 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 basic dynamic load rating is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball mounting surface.  
When converting the basic dynamic load rating C to the dynamic load rating C<sub>100</sub> for 100 km rating fatigue life, divide the C by 1.26



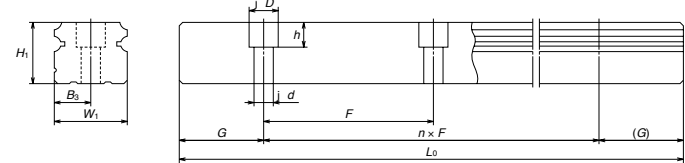
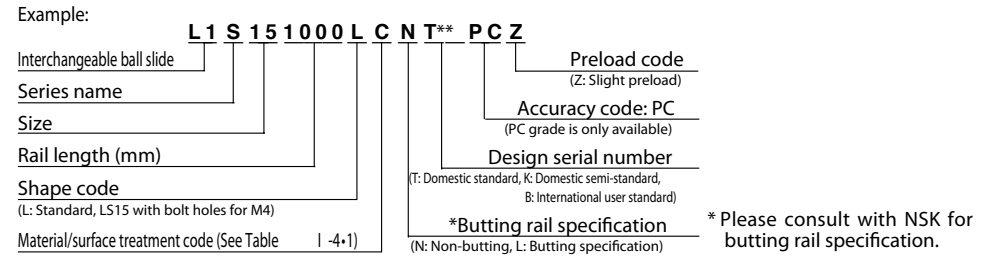
PACIFIC INTERNATIONAL BEARING SALES, INC.  
800.228.8895 • WWW.PACIFICBEARINGSALES.COM

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

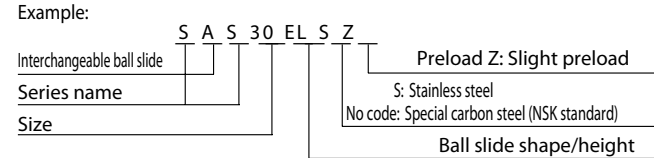


Model No.	Assembly			Ball slide												
	Height H	E	W <sub>2</sub>	Width W	Length L	Mounting tap hole					Grease fitting					
						B	J	M x pitch x l	B <sub>1</sub>	L <sub>1</sub>	J <sub>1</sub>	K	T	Hole size	T <sub>1</sub>	N
SS15JL SS15EL SAS15EL	24	4.6	18.5	52	40.4 56.8	41	- 26	M5 x 0.8 x 6	5.5	23.6 40	11.8 7	19.4	8	φ3	6	3
SS20JL SS20EL SAS20EL	28	6	19.5	59	47.2 65.2	49	- 32	M6 x 1 x 10	5	30 48	15 8	22	10	M6 x 0.75	5.5	11
SS25JL SS25EL SAS25EL	33	7	25	73	59.6 81.6	60	- 35	M8 x 1.25 x 12	6.5	38 60	19 12.5	26	11 (12)	M6 x 0.75	7	11
SS30JL SS30EL SAS30EL	42	9	31	90	67.4 96.4	72	- 40	M10 x 1.5 x 18 (M10 x 1.5 x 15)	9	42 71	21 15.5	33	11 (15)	M6 x 0.75	8	11
SS35JL SS35EL SAS35EL	48	10.5	33	100	77 108	82	- 50	M10 x 1.5 x 20 (M10 x 1.5 x 15)	9	49 80	24.5 15	37.5	12 (15)	M6 x 0.75	8.5	11

Reference number for rail of interchangeable types  
For regular rails (non-jointed rail)



Reference number for ball slide of interchangeable types



Rail							Basic load rating					Ball diameter	Weight	
Width W <sub>1</sub>	Height H <sub>1</sub>	Pitch F	Mounting bolt hole d x D x h	B <sub>3</sub>	G (recomm ended)	Max. length L <sub>0max</sub> ( ) for stainless	Dynamic C (N)	Static C <sub>0</sub> (N)	Static moment			D <sub>w</sub>	Ball slide (kg)	Rail (kg/m)
							C	C <sub>0</sub>	M <sub>RO</sub> (N·m)	M <sub>PO</sub> (N·m)	M <sub>VO</sub> (N·m)			
15	12.5	60	g 3.5 x 6 x 4.5 4.5 x 7.5 x 5.3	7.5	20	2 000 (1 700)	4 900 7 900	7 800 15 600	39 78	21 74	18 62	2.778 <sub>0.17</sub>	0.26	1.4
20	15.5	60	6 x 9.5 x 8.5	10	20	3 960 (3 500)	7 250 11 100	11 800 21 800	80 149	40 124	34 104	3.175 <sub>0.35</sub>	0.24	2.3
23	18	60	7 x 11 x 9	11.5	20	3 960 (3 500)	12 700 17 900	20 800 33 500	164 266	96 242	81 203	3.968 <sub>0.66</sub>	0.44	3.1
28	23	80	7 x 11 x 9	14	20	4 000 (3 500)	18 700 27 300	29 600 50 500	282 480	153 415	128 350	4.762 <sub>1.2</sub>	0.76	4.8
34	27.5	80	9 x 14 x 12	17	20	4 000 (3 500)	26 000 38 000	40 000 68 500	465 800	234 620	196 520	5.556 <sub>1.7</sub>	1.2	7

g Standard mounting hole of SS15 rail is for M3 bolts (Hole size: 3.5 x 6 x 4.5).  
If you require the mounting hole for M4 bolts (Hole size: 4.5 x 7.5 x 5.3), please specify it when ordering.  
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 mounting surface.  
When converting the basic dynamic load rating C to the dynamic load rating C<sub>100</sub> for 100 km rating fatigue life, divide the C by 1.26

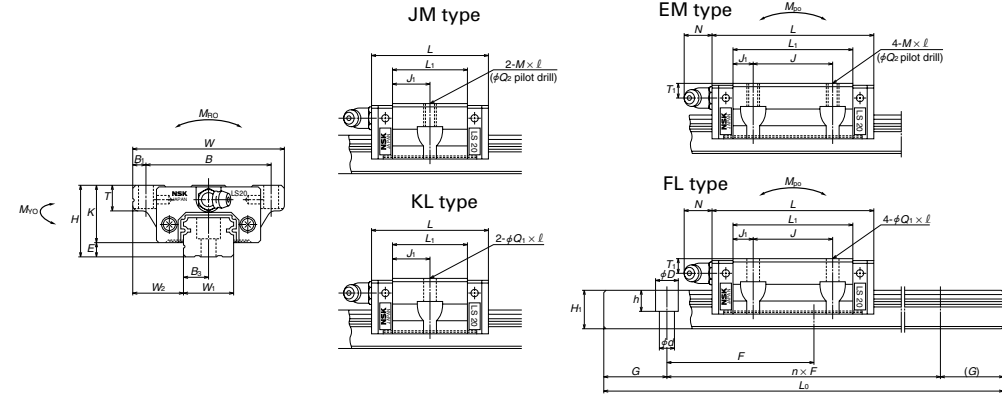
SS-FL (High load type)  
SS-KL (Medium load type)

SS 350840 FL C 2 - \*\* PN 0 - II

Series name  
Size  
Rail length (mm)  
Ball slide shape/height  
Material/surface treatment  
C: Special carbon steel (NSK standard)  
K: Stainless steel  
Number of ball slides per rail

\*I: Use two rails as a set  
Default: One rail use  
Preload code: 0 : Z0  
. 1 : Z1  
. 3 : Z3  
(See page A108)  
Accuracy code (See page A105)  
\* Design serial number

\* 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.



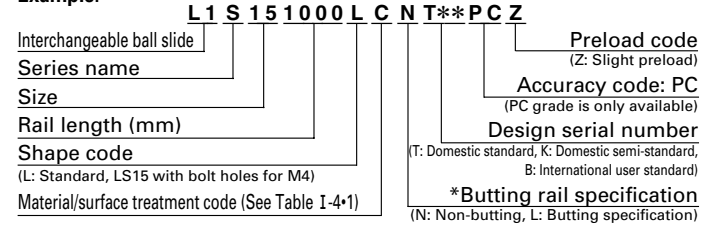
Model No.	Assembly			Ball slide													
	Height	Width	Length	Mounting tap hole										Grease fitting			
				$H$	$E$	$W_2$	$W$	$L$	$B$	$J$	$M \times \text{pitch} \times \ell$	$Q_2$	$B_1$	$L_1$	$J_1$	$K$	$T$
SS15KL SAS15KL SS15JM SS15FL SAS15FL SS15EM SAS15EM	24	4.6	18.5	52	40.4	41	26	4.5×7 M5×0.8×7 4.5×7 M5×0.8×7	4.4 5.5 4.4	23.6	11.8	7	19.4	8	$\phi 3$	6	3
SS20KL SAS20KL SS20JM SS20FL SAS20FL SS20EM SAS20EM	28	6	19.5	59	47.2	49	32	5.5×9(5.5×9.5) M6×1×9 (M6×1×9.5) 5.5×9(5.5×9.5) M6×1×9 (M6×1×9.5)	5.3 5 5.3	30	15	22	10	M6×0.75	5.5	11	
SS25KL SAS25KL SS25JM SS25FL SAS25FL SS25EM SAS25EM	33	7	25	73	59.6	60	35	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 6.5 6.8	38	19	26	11 (12)	M6×0.75	7	11	
SS30KL SAS30KL SS30JM SS30FL SAS30FL SS30EM SAS30EM	42	9	31	90	67.4	72	40	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 9 8.6	42	21	33	11 (15)	M6×0.75	8	11	
SS35KL SAS35KL SS35JM SS35FL SAS35FL SS35EM SAS35EM	48	10.5	33	100	77	82	50	9×13(9×14.5) M10×1.5×13 (M10×1.5×14.5) 9×13(9×14.5) M10×1.5×13 (M10×1.5×14.5)	8.6 9 8.6	49	24.5	37.5	12 (15)	M6×0.75	8.5	11	

Dimensions in ( ) are applicable to stainless steel products.

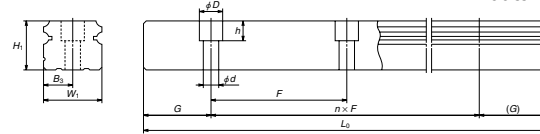
Reference number for rail of interchangeable types

For regular rails (non-jointed rail)

Example:

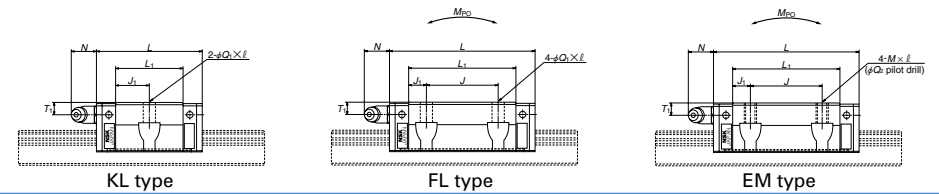
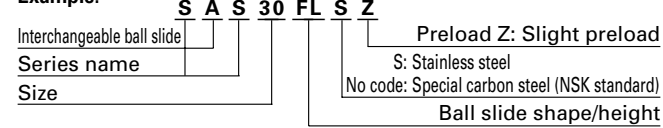


\*Please consult with NSK for butting rail specification.



Reference number for ball slide of interchangeable types

Example:



Rail						Basic load rating					Ball diameter	Weight		
Width	Height	Pitch	Mounting bolt hole	$B_3$	$G$ (recomm. ended)	Dynamic	Static	Static moment			$D_w$	Ball slide (kg)	Rail (kg/m)	
$W_1$	$H_1$	$F$	$d \times D \times h$		$L_{Dmax}$ (1 for stainless)	$C$ (N)	$C_0$ (N)	$M_{R0}$ (N-m)	$M_{P0}$ (N-m)	$M_{V0}$ (N-m)				
15	12.5	60	※ 3.5×6×4.5 4.5×7.5×5.3	7.5	20	2000 (1700)	4900 7900	7800 15600	39 78	21 74	18 62	2.778	0.17 0.26	1.4
20	15.5	60	6×9.5×8.5	10	20	3960 (3500)	7250 11100	11800 21800	80 149	40 124	34 104	3.175	0.24 0.35	2.3
23	18	60	7×11×9	11.5	20	3960 (3500)	12700 17900	20800 33500	164 266	96 242	81 203	3.968	0.44 0.66	3.1
28	23	80	7×11×9	14	20	4000 (3500)	18700 27300	29600 50500	282 480	153 415	128 350	4.762	0.76 1.2	4.8
34	27.5	80	9×14×12	17	20	4000 (3500)	26000 38000	40000 68500	465 800	234 620	196 520	5.556	1.2 1.7	7

※ Standard mounting hole of SS15 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 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