

A-5-1.7 TS Series

(1) Features

1. Inexpensive

Newly developed manufacturing process of rail, and design review of ball slide contribute to substantial cost reductions.

2. High capacity

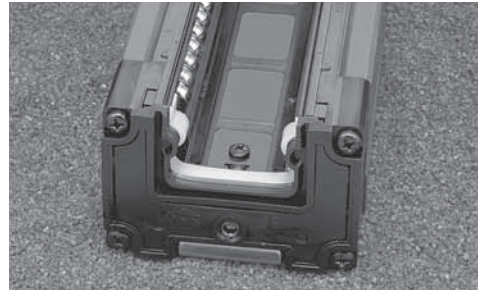
Optimum ball diameter for higher capacity design.

3. High dust proof capability

Dust-tight high performance end seals, bottom seals, and inner seals are built-in as a standard feature. (Optional protector is available for protection against hot debris such as welding spatters or hard contamination.)

4. Maintenance free

NSK K1 lubrication unit is equipped as a standard specification for long-term maintenance-free operation.



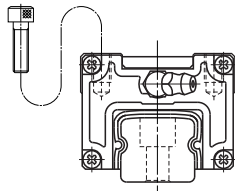
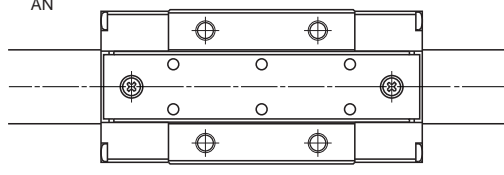
5. Rust prevention

NSK provides a lineup of products with antirust surface treatment for corrosive environments.

6. Fast delivery

Lineup of random-matching rails and ball slides supports and facilitates fast delivery.

(2) Ball slide shape

Ball slide Model	Shape / installation method	Type
AN		AN 

(3) Accuracy and preload

Accuracy grade: Normal grade for transportation

Tolerance of mounting height H : ± 0.1 mm

Running parallelism: 100 μ m or less

Running parallelism (height): 500 μ m/500 mm

Clearance: 60 μ m or less

(4) Available length of rail

Table 1 shows the limitations of rail length (maximum length).

Table 1 Length limitations of rails

Series	Material	Size				
		15	20	25	* 30	* 35
TS	Special high carbon steel	1960	2920	4000	4040	4040

Note: Rails can be butted if user requirement exceeds the rail length shown in the Table. Please consult NSK.

*)The maximum length of fluoride low temperature chrome plated products is 4 000 (G = 80).

(5) Lubrication components

Refer to page A38 and D13 for the lubrication of linear guides.

1. Types of lubrication accessories

Figure 2 and Table 2 show grease fittings and tube fittings.

2. Mounting position of lubrication accessories

The standard position of grease fittings is the end face of ball slide. We mount them on a side of end cap for an option. (Fig. 2)

Please consult NSK for installation of grease or tube fittings to the ball slide body or side of end cap.

When using a piping unit with thread of M6 \times 1, you require a connector to connect to a grease fitting mounting hole with M6 \times 0.75. The connector is available from NSK.

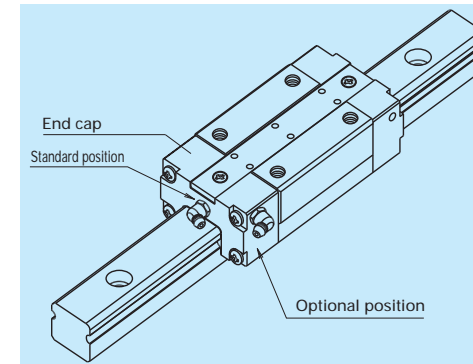


Fig. 2 Mounting position of lubrication accessories

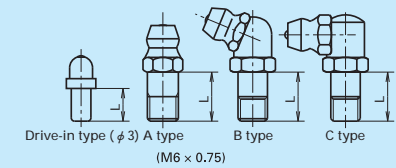
(6) Dust proof components

1. Standard specification

To keep foreign matters from entering inside the ball slide, TS series has an end seal and NSK K1 on both ends, and bottom seals at the bottom.

Also, the inner seal is a standard equipment.

Grease fitting



Tube fitting

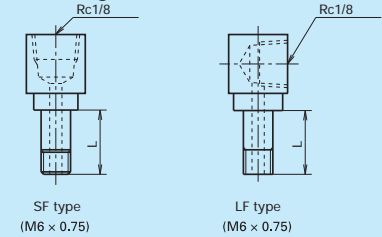


Fig. 1 Grease fitting and tube fitting

Table 2 Unit: mm

Model No.	Dust proof specification	Grease fitting	Tube fitting
		Thread body length L	Thread body length L
TS15	Standard*	5	-
	Protector	5	-
TS20	Standard*	5	6
	Protector	5	6
TS25	Standard*	5	6
	Protector	5	6
TS30	Standard*	5	6
	Protector	5	6
TS35	Standard*	5	6
	Protector	5	6

*) NSK K1 units are mounted as a standard specification for TS series.

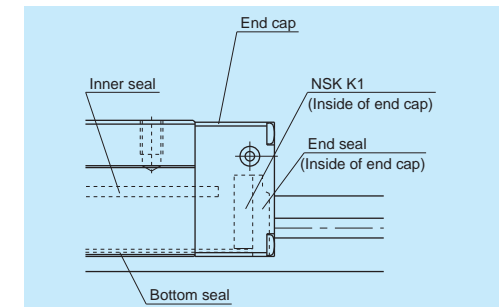


Fig. 3

2. Protector

It is possible to mount a protector to TS series as an option.

Please consult NSK as the protector for TS series can be installed only before shipping from the factory.

Fig. 4 and Table 3 show the ball slide length when protector is installed.

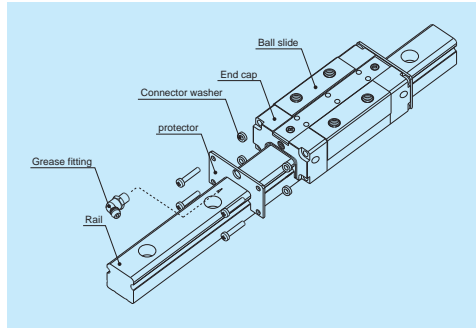


Fig. 5 Protector

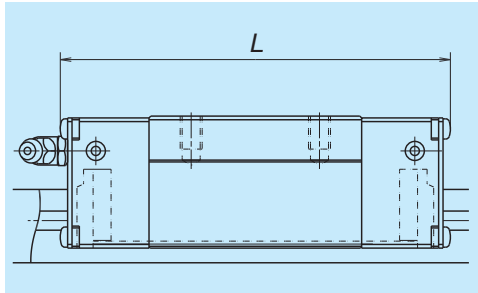


Fig. 4

Table 3 Dimension when equipped with the protector

Model No.	Ball slide length L		
	Standard length	Protector installation*	Increased thickness
TS15	72.2	77.6	2.7
TS20	87	92.8	2.9
TS25	100	106.4	3.2
TS30	115	123.4	4.2
TS35	135.8	144.2	4.2

*) Showing the ball slide length when one protector is installed in both ends.

3. Cap to cover the bolt hole for rail mounting

Table 4 Caps to cover rail bolt hole

Model No.	Bolt to secure rail	Cap reference No.	Quantity /case
TS15	M4	LG-CAP/M4	20
TS20	M5	LG-CAP/M5	20
TS25	M6	LG-CAP/M6	20
TS30, TS35	M8	LG-CAP/M8	20

Note: Cap to cover the bolt hole for rail mounting is exclusive for rail design of type I.

(7) Reference number

Reference numbers shall be set to individual NSK linear guide when its specifications are finalized, and it is indicated on its specification drawing.

Please specify the reference number, except design serial number, to identify the product when ordering, requiring estimates, or inquiring about specifications from NSK.

1. Reference number for assembly of random-matching ball slide and rail

TS 30 2400 ANP 2 - KL S**

Series name	Preload code : S
Size	S: Clearance of 60 μm or less
Rail length (mm)	Accuracy code : KL
Ball slide shape code (See page A243)	KL: Normal grade is only available
Surface treatment/Rail design code	Design serial number
P: No surface treatment/Counterbores on a rail top face (Type I)	Added to the reference number.
V: No surface treatment/Tapped holes on a rail bottom face (Type II)	Number of ball slides per rail
R: Fluoride low temperature chrome plating/Counterbores on a rail top face (Type I)	
W: Fluoride low temperature chrome plating/Tapped holes on a rail bottom face (Type II)	

2. Reference number for random-matching type

TAS 30 ANC -KLS**

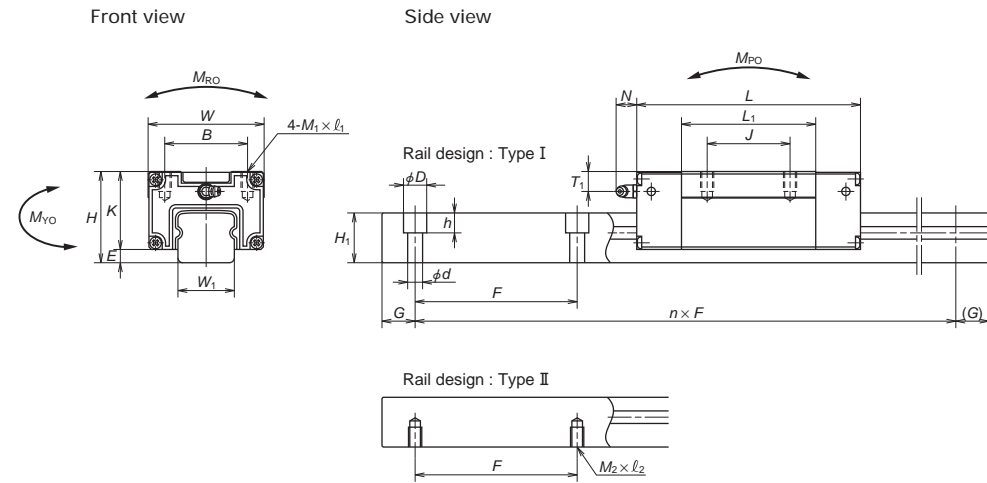
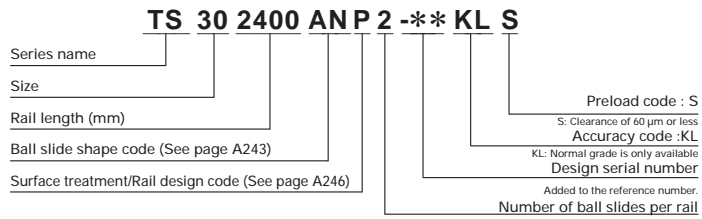
Ball slide	Preload code : S
Random-matching ball slide series code	S: Clearance of 60 μm or less
TAS : TS Series random-matching ball slide	Accuracy code : KL
Size	KL: Normal grade is only available
Ball slide shape code (See page A243)	Design serial number
Material/surface treatment code	Added to the reference number.
C: Special high carbon steel	
D: Special high carbon steel with surface treatment	
Z: Other, Special	

T1S 30 2400 LPN - KL S**

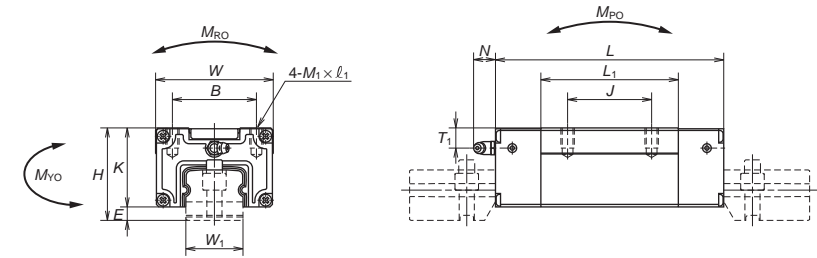
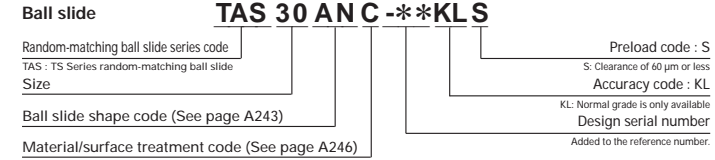
Rail	Preload code : S
Random-matching rail series code	S: Clearance of 60 μm or less
T1S : TS Series random-matching rail	Accuracy code : KL
Size	KL: Normal grade is only available
Rail length (mm)	Design serial number
Rail shape code: L	Added to the reference number.
L : Standard	*Butting rail specification
Surface treatment/rail design code (See above)	N: Non-butting, L: Butting specification

*Please consult with NSK for butting rail specification.

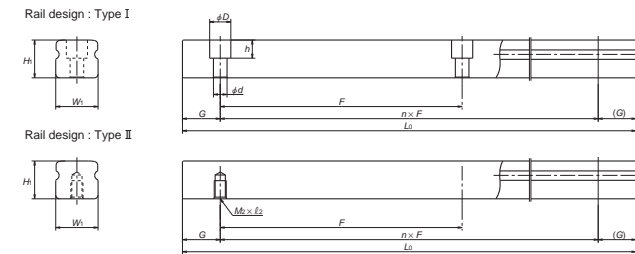
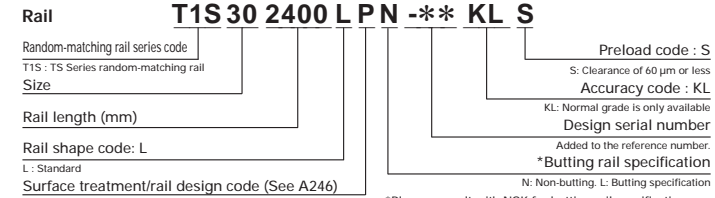
(8) Dimensions
Combinations of random-matching type



Reference number for ball slide of random-matching type



Reference number for rail of random-matching type



Unit: mm

Model No.	Assembly		Ball slide												
	Height	Width	Length	Mounting hole						Grease fitting			width	height	Pitch
				B	J	M x pitch x l1	L1	K	Hole size	T1	N	W1			
TS15AN	28	3	34	72.2	26	26	M4x0.7x6	39	25	phi 3	6.5	(5)	15	14	120
TS20AN	30	3	44	87	32	36	M5x0.8x8	50	27	M6x0.75	6.5	(14)	20	15	120
TS25AN	40	4	48	100	35	35	M6x1x9	58	36	M6x0.75	9.5	(14)	23	20	120
TS30AN	45	6.5	60	115	40	40	M8x1.25x10	70	38.5	M6x0.75	9.5	(14)	28	25	160
TS35AN	55	8	70	135.8	50	50	M8x1.25x12	81.8	47	M6x0.75	12	(14)	34	30	160

Remarks: 1) TS Series does not have a ball retainer. Be aware that balls fall out when the ball slide is withdrawn from the rail.

Rail		Basic load rating							Ball dia.	Weight	
Mounting hole		G	Maximum length Lmax	Dynamic C (N)	Static C0 (N)	Static moment				Dw	Ball slide (kg)
Type I d x D x h	Type II M2 x pitch x l2					MRO (N·m)	MPO (N·m)	MVO (N·m)			
4.5x7.5x5.3	M4x0.7x6	20	1 960	9 800	11 800	92	63.5	63.5	3.968	0.21	1.5
6x9.5x8.5	M5x0.8x8	20	2 920	15 700	19 100	196	137	137	4.762	0.37	2.1
7x11x9	M6x1x9	20	4 000	21 800	26 000	320	217	217	5.556	0.47	3.4
9x14x12	M8x1.25x12	20	4 040*	31 000	37 500	565	395	395	6.350	0.77	5.3
9x14x12	M8x1.25x12	20	4 040*	46 500	53 000	970	635	635	7.937	1.3	7.7

2) The basic dynamic load rating C is a load that furnishes 50 km rating fatigue life; it is a vertical and constant load to the ball slide mounting surface. To convert C to C100 for a 100 km fatigue life, divide C by 1.26.
3) Consult with NSK when using a TS series in a single rail configuration.
* The maximum length of fluoride low temperature chrome plated products is 4 000 (G = 80).