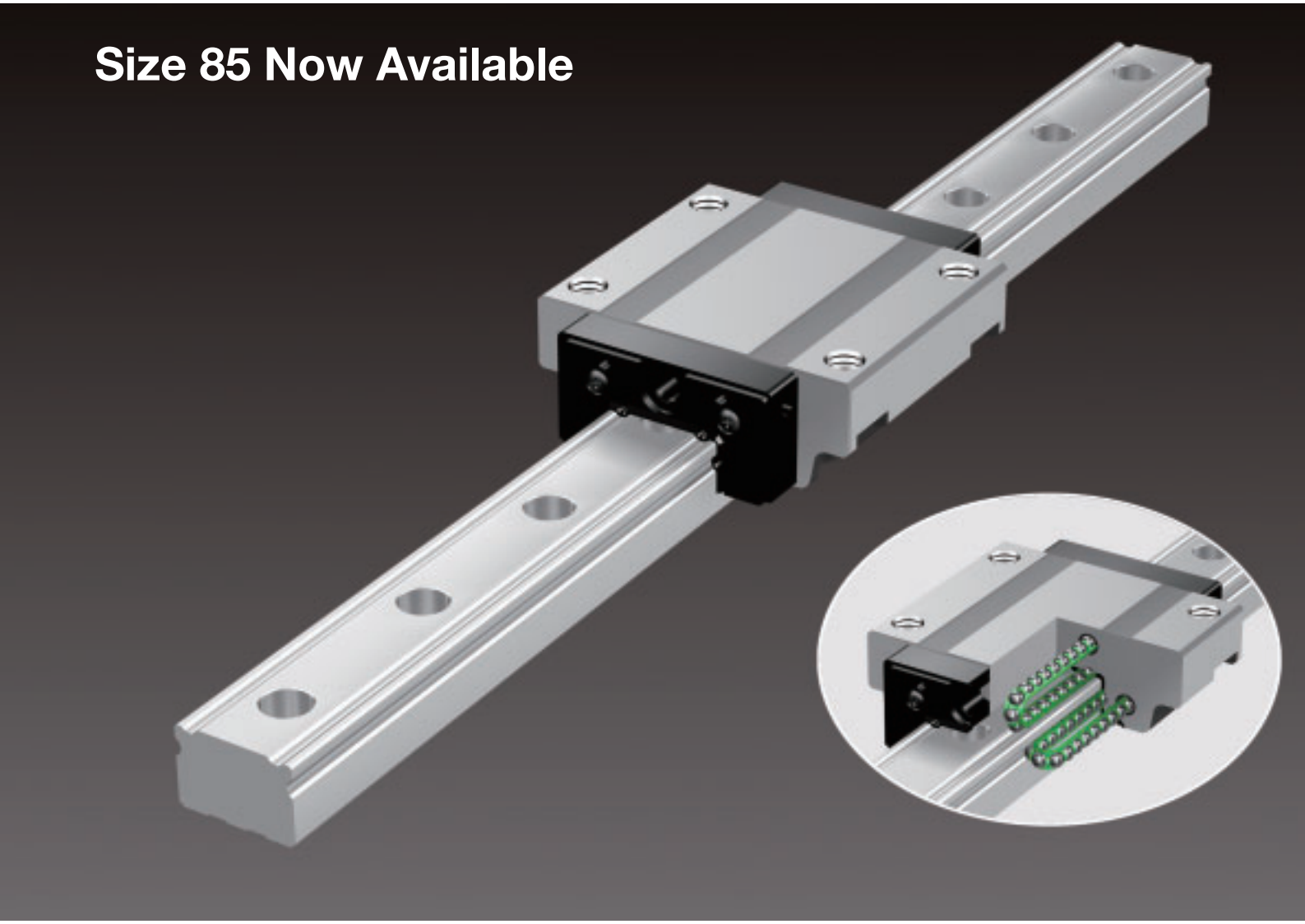
Compliant with
New Accuracy Standards

Caged Ball LM Guide

Ball Cage Effect
Ultra-Heavy Load Type SNR/SNS

Size 85 Now Available



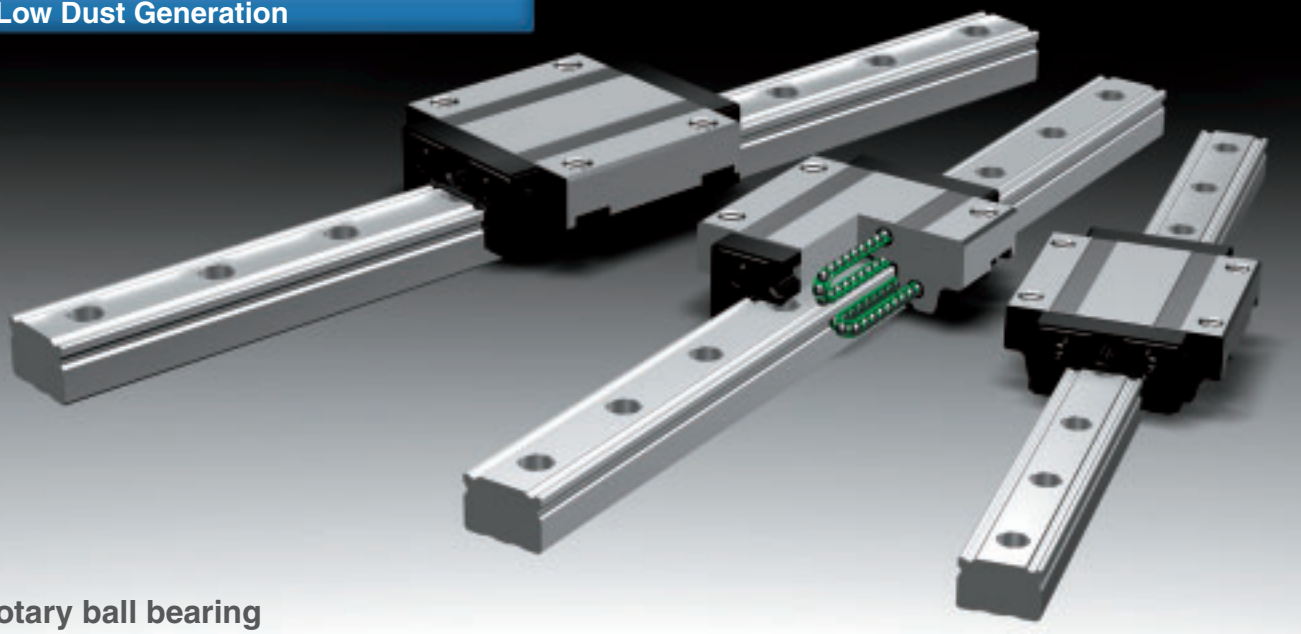
THK CO., LTD.
TOKYO. JAPAN

CATALOG No.234-9E

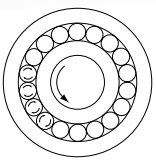
Ball Cage Effect

The early forms of ball bearings were full-ball types without ball cages. Friction between balls caused loud noise, made high-speed rotation impossible and shortened the service life. Twenty years later, a Caged Ball design was developed for ball bearings. The new design enabled high-speed rotation at a low noise level, and extended the service life despite the reduced number of balls used. It marked a major development in the history of ball bearings.
Similarly, the quality of needle bearings was significantly improved by the caged needle structure.
With cage-less, full-ball types of ball bearings, balls make metallic contact with one another and produce loud noise. In addition, they rotate in opposite directions, causing the sliding contact between two adjacent balls to occur at a speed twice the ball-spinning rate. It results in severe wear and shortens the service life.
In addition, without a cage, balls make point contact to increase bearing stress, thus facilitating breakage of the oil film. In contrast, each caged ball contacts the cage over a wide area. Therefore, the oil film does not break, the noise level is low and balls can rotate at a high speed, resulting in a long service life.

- **Long Service Life and Long-term Maintenance-free Operation**
- **Superbly High Speed**
- **Low Noise, Acceptable Running Sound**
- **Smooth Motion**
- **Low Dust Generation**

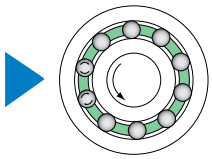


Rotary ball bearing



Conventional structure

- Adjacent balls contact each other at a point. As a result, contact stress is high and the oil film breaks due to friction.
- The service life becomes shorter.

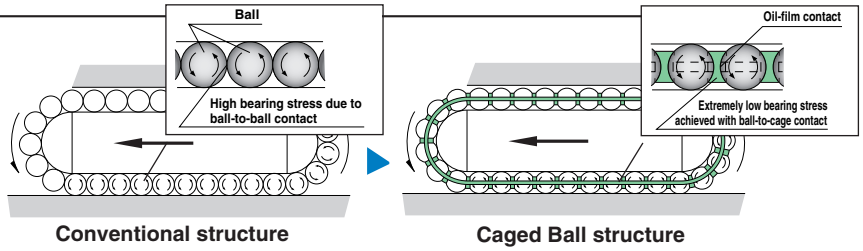


Caged Ball structure

- The service life is prolonged due to the elimination of wear caused by friction between balls.
- The absence of friction between balls results in reduced heat generation during high-speed rotation.
- The absence of friction between balls eliminates collision noise of the balls.
- The even spacing of the balls enables them to move smoothly.
- Retention of lubricant in the ball cage ensures a long service life.

Caged Ball LM Guide

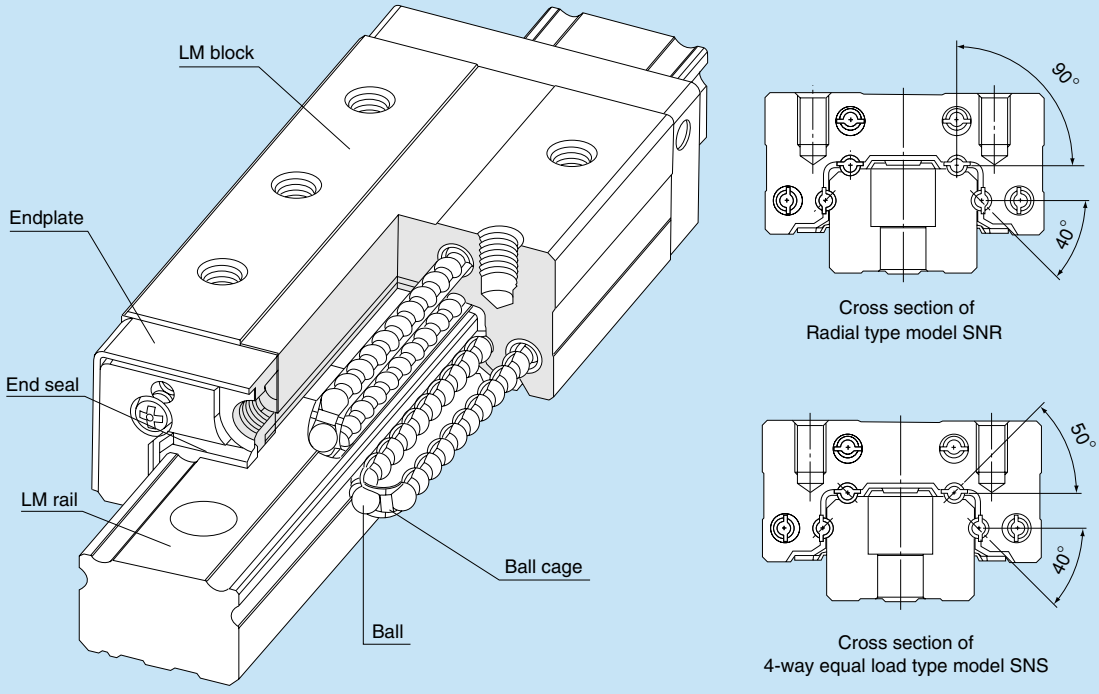
With the Caged Ball LM Guide, the use of a ball cage allows lines of evenly spaced balls to circulate, thus eliminating friction between the balls.
In addition, grease held in a space between the ball circulation path and the ball cage (grease pocket) is applied on the contact surface between each ball and the ball cage as the ball rotates, forming an oil film on the ball surface. This minimizes the risk of oil-film break.



Conventional structure　　Caged Ball structure

Ultra-Heavy Load Type Caged Ball LM Guide

SNR/SNS



Structure of Models SNR/SNS

Balls roll in four rows of raceways precision-ground on an LM rail and an LM block, and ball cages and endplates incorporated in the LM block allow the balls to circulate. Use of the ball cage eliminates friction between balls and increases grease retention, thus achieving low noise, high speed and long-term maintenance-free operation.

● High rigidity

Models SNR/SNS are the most rigid types among the Caged Ball LM Guide series.
Both the radial type SNR and the 4-way equal load type SNS are available for each size variation. Depending on the intended use, you can select either type.

● Ultra-heavy load

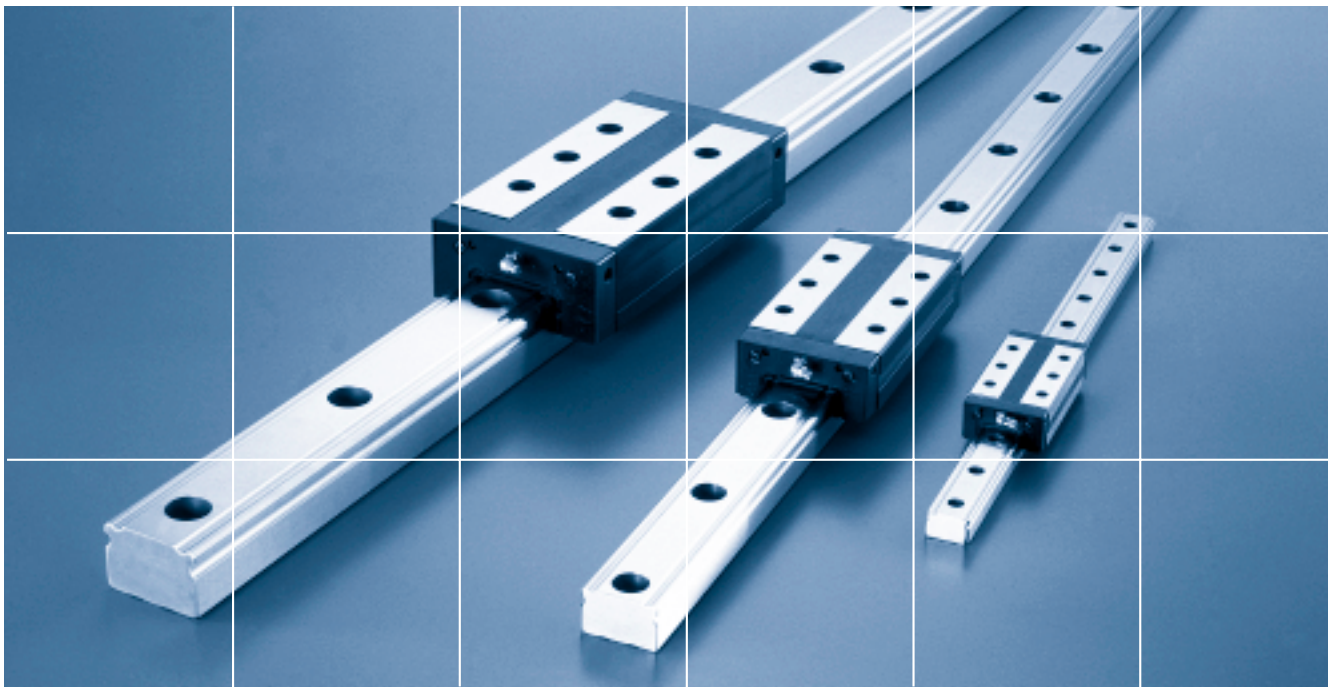
Since the curvature of the raceway is approximated to the ball radius, the ball contact area under a load is increased and the capacity to carry ultra-heavy loads is achieved.

● Increased damping effect

In rapid traverse where the LM block travels at high speed, no differential slip occurs and smooth motion is maintained, thus achieving highly accurate positioning. In heavy cutting where the LM block travels at low speed, favorable differential slip according to the cutting load occurs to increase frictional resistance, thus increasing the damping capacity.

● Wide array of options

Various options are available, including end seal, inner seal, Laminated Contact Scraper LaCS and plate cover, to respond to diversified applications.



SNR/SNS Outline

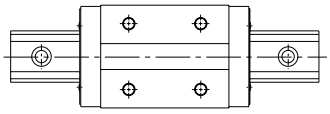
Models SNR/SNS - Product Overview

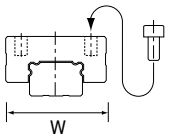
Ultra-heavy load, high rigidity and improved damping characteristics.
Selectable between a radial type model SNR and a 4-way equal-load type model SNS.
Major applications **Machining center / NC lathe / grinding machine / penta-plano milling machine**

Models SNR-R/SNS-R

The LM block has a smaller width (W) and is equipped with tapped holes.
It is suitable for places where space for the table width is limited.

- SNR/SNS 25R
- SNR/SNS 30R
- SNR/SNS 35R
- SNR/SNS 45R
- SNR/SNS 55R
- SNR/SNS 65R

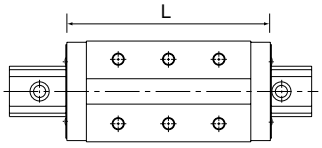


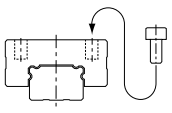


Models SNR-LR/SNS-LR

The LM block has the same sectional shape as models SNR-R/SNS-R, but has a longer overall LM block length (L) and a greater rated load.

- SNR/SNS 25LR
- SNR/SNS 30LR
- SNR/SNS 35LR
- SNR/SNS 45LR
- SNR/SNS 55LR
- SNR/SNS 65LR
- SNR/SNS 85LR

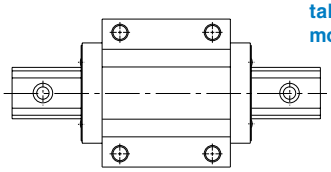


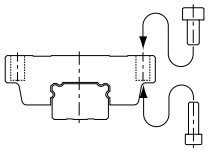


Models SNR-C/SNS-C

The flange of the LM block has tapped holes.
It can be mounted from the top or the bottom.
It can be used in places where the table cannot have through holes for mounting bolts.

- SNR/SNS 25C
- SNR/SNS 30C
- SNR/SNS 35C
- SNR/SNS 45C
- SNR/SNS 55C
- SNR/SNS 65C

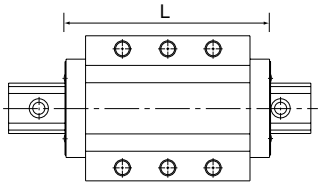


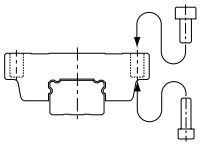


Models SNR-LC/SNS-LC

The LM block has the same sectional shape as models SNR-C/SNS-C, but has a longer overall LM block length (L) and a greater rated load.

- SNR/SNS 25LC
- SNR/SNS 30LC
- SNR/SNS 35LC
- SNR/SNS 45LC
- SNR/SNS 55LC
- SNR/SNS 65LC
- SNR/SNS 85LC



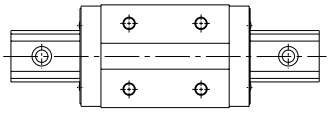


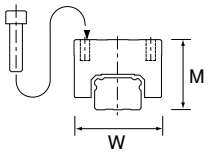
Build-to-order Models

Models SNR-RH/SNS-RH (build to order)

The height (M) and width (W) dimensions are the same as that of LM Guide models SHS and HSR, and the LM block has tapped holes.

- SNR/SNS 35RH
- SNR/SNS 45RH
- SNR/SNS 55RH

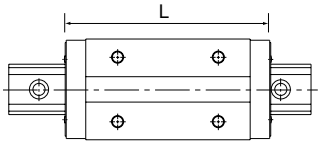


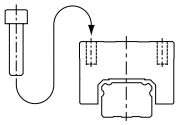


Models SNR-LRH/SNS-LRH (build to order)

The LM block has the same sectional shape as models SNR-RH/SNS-RH, but has a longer overall LM block length (L) and a greater rated load.

- SNR/SNS 35LRH
- SNR/SNS 45LRH
- SNR/SNS 55LRH

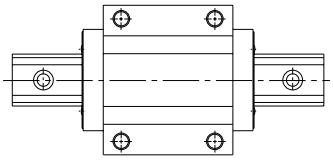


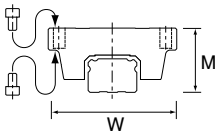


Models SNR-CH/SNS-CH (build to order)

The height (M) and width (W) dimensions are the same as that of LM Guide models SHS and HSR, and the flange of the LM block has tapped holes.

- SNR/SNS 35CH
- SNR/SNS 45CH
- SNR/SNS 55CH

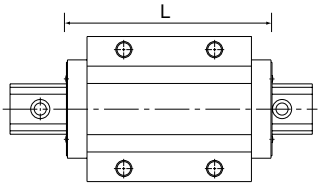


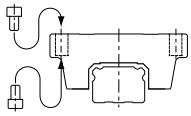


Models SNR-LCH/SNS-LCH (build to order)

The LM block has the same sectional shape as models SNR-CH/SNS-LCH, but has a longer overall LM block length (L) and a greater rated load.

- SNR/SNS 35LCH
- SNR/SNS 45LCH
- SNR/SNS 55LCH



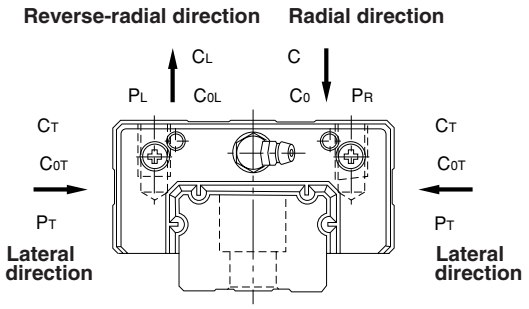


*1: Dimensional table for models SNR/SNS
Model SNR-R/LR → pages 11-12
Model SNS-R/LR → pages 13-14
Model SNR-C/LC → pages 15-16
Model SNS-C/LC → pages 17-18
Model SNR-RH/LRH → pages 19-20
Model SNS-RH/LRH → pages 19-20
Model SNR-CH/LCH → pages 21-22
Model SNS-CH/LCH → pages 21-22

Rated Loads in All Directions

Models SNR/SNS are capable of receiving loads in all four directions: radial, reverse-radial and lateral directions.

Their basic dynamic load ratings are represented by the symbols in the radial direction indicated in the figure on the right, and the actual values are provided in the dimensional tables*1 for SNR/SNS. The values in the reverse-radial and lateral directions are obtained from the table.



Rated Loads of Models SNR/SNS in All Directions

Direction	SNR	
	Basic dynamic load rating	Basic static load rating
Radial direction	C	C_0
Reverse-radial direction	C_L=0.64C	C_{0L}=0.64C_0
Lateral direction	C_T=0.47C	C_{0T}=0.38C_0

Direction	SNS	
	Basic dynamic load rating	Basic static load rating
Radial direction	C	C_0
Reverse-radial direction	C_L=0.84C	C_{0L}=0.84C_0
Lateral direction	C_T=0.84C	C_{0T}=0.84C_0

Equivalent Load

When the LM block of model SNR receives a reverse-radial load and a lateral load simultaneously, the equivalent load is obtained from the equation below.

$$P_E = X \cdot P_L + Y \cdot P_T$$

where

P_E : Equivalent load (N)
·Reverse-radial direction
·Lateral direction
P_L : Reverse-radial load (N)
P_T : Lateral load (N)
X, Y : Equivalent factor (see table 1)

Table 1 Equivalent Factor of Model SNR

P_E	X	Y
Equivalent load in reverse-radial direction	1	1.678
Equivalent load in lateral direction	0.596	1

When the LM block of model SNS receives a radial load and a lateral load, or a reverse-radial load and a lateral load, simultaneously, the equivalent load is obtained from the equation below.

$$P_E = X \cdot P_R\ (P_L) + Y \cdot P_T$$

where

P_E : Equivalent load (N)
·Radial direction
·Reverse-radial direction
·Lateral direction
P_R : Radial load (N)
P_L : Reverse-radial load (N)
P_T : Lateral load (N)
X, Y : Equivalent factor (see tables 2 and 3)

Table 2 Equivalent Factor of Model SNS
(When radial load and lateral load are applied)

P_E	X	Y
Equivalent load in radial direction	1	0.935
Equivalent load in lateral direction	1.07	1

Table 3 Equivalent Factor of Model SNS
(When reverse-radial load and lateral load are applied)

P_E	X	Y
Equivalent load in reverse-radial direction	1	1.02
Equivalent load in lateral direction	0.986	1

Service life

The service life of an LM Guide is subject to variations even under the same operational conditions. Therefore, it is necessary to use the rated life defined below as a reference value for obtaining the service life of the LM Guide.

●Rated life

The rated life means the total travel distance that 90% of a group of units of the same LM Guide model can achieve without flaking (scale-like exfoliation on the metal surface) after individually running under the same conditions.

$$L = \left(\frac{f_H \cdot f_T \cdot f_C}{f_W} \cdot \frac{C}{P_C}\right)^3 \times 50$$

L	: Rated life	(km)
C	: Basic dynamic load rating*1	(N)
P_C	: Calculated load	(N)
f_H	: Hardness factor	(see Fig. 1)
f_T	: Temperature factor	(see Fig. 2)
f_C	: Contact factor	(see Table 1)
f_W	: Load factor	(see Table 2)

●Service life time

Once the rated life (L) has been obtained, the service life time can be obtained using the equation on the right if the stroke length and the number of reciprocations are constant.

$$L_h = \frac{L \times 10^6}{2 \times \ell_s \times n_1 \times 60}$$

L_h	: Service life time	(h)
ℓ_s	: Stroke length	(mm)
n_1	: No. of reciprocations per min	(min^{-1})

*1: Basic dynamic load rating (C)

It refers to a load with a constant magnitude and direction under which the rated life (L) of a group of identical LM Guide units independently operating is 50 km.

■f_H : Hardness factor

To ensure the achievement of the optimum load capacity of the LM Guide, the raceway hardness must be between 58 and 64 HRC.
At hardness below this range, the basic dynamic and static load ratings decrease. Therefore, the rating values must be multiplied by the respective hardness factors (f_H).
Since the LM Guide has sufficient hardness, the f_H value for the LM Guide is normally 1.0 unless otherwise specified.

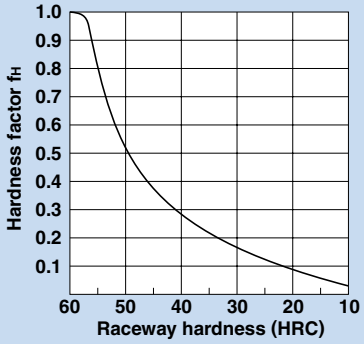


Fig. 1

■f_T : Temperature factor

Since the service temperature of Caged Ball LM Guides is normally 80°C or below, the f_T value is 1.0.

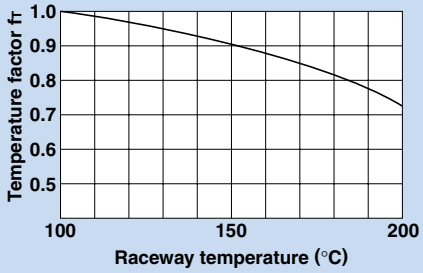


Fig. 2

■f_C : Contact factor

When multiple LM blocks are used in close contact with each other, it is difficult to achieve uniform load distribution due to moment loads and mounting-surface accuracy. When using multiple blocks in close contact with each other, multiply the basic load rating (C or C_0) by the corresponding contact factor indicated in Table 1.

Note: When uneven load distribution is expected in a large machine, consider using a contact factor from Table 1.

Table 1 Contact Factor (f_C)

Number of blocks used in close contact	Contact factor f_C
2	0.81
3	0.72
4	0.66
5	0.61
6 or more	0.6
Normal use	1

■f_W : Load factor

In general, reciprocating machines tend to produce vibrations or impact during operation. It is especially difficult to accurately determine all vibrations generated during high-speed operation and impacts produced each time the machine starts and stops. Therefore, where the effects of speed and vibration are estimated to be significant, divide the basic dynamic load rating (C) by a load factor selected from Table 2, which contains empirically obtained data.

Table 2 Load Factor (f_W)

Vibration/impact	Speed (V)	f_W
Faint	Very slow V≦0.25m/s	1 to 1.2
Weak	Slow 0.25<V≦1m/s	1.2 to 1.5
Moderate	Medium 1<V≦2m/s	1.5 to 2
Strong	Fast V>2m/s	2 to 3.5

***1: Preload**

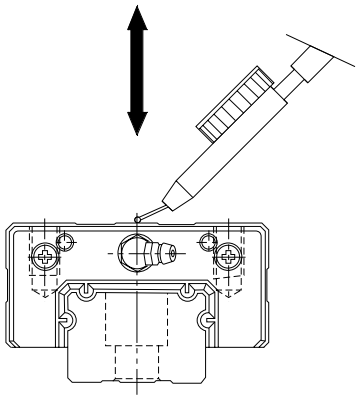
Preload is an internal load applied to the rolling elements (balls, rollers, etc.) of an LM block in advance in order to increase its rigidity. The clearance of all model SNR/SNS units is adjusted to the designated value before being shipped. Therefore, it is unnecessary to adjust the preload.

Radial Clearance Standard

Since the radial clearance of an LM Guide greatly affects the running accuracy, load carrying capacity and rigidity of the LM Guide, it is important to select an appropriate clearance according to the application.

In general, selecting a negative clearance (i.e., a preload[*1] is applied) while taking into account possible vibrations and impact generated from reciprocating motion favorably affects the service life and the accuracy.

Radial clearance



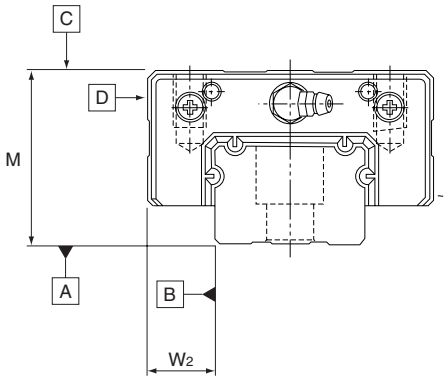
Unit: μm

Model No. \ Indication symbol	Normal	Light preload	Moderate preload
	No symbol	C1	C0
25	− 3 to +2	− 6 to − 3	− 9 to − 6
30	− 4 to +2	− 8 to − 4	−12 to − 8
35	− 4 to +2	− 8 to − 4	−12 to − 8
45	− 5 to +3	−10 to − 5	−15 to −10
55	− 6 to +3	−11 to − 6	−16 to −11
65	− 8 to +3	−14 to − 8	−20 to −14
85	−13 to +4	−20 to −13	−27 to −20

Accuracy Standard

The accuracy of model SNR/SNS is specified in terms of running parallelism (*1), dimensional tolerance for height and width, and height and width difference between a pair (*2,*3) when two or more LM blocks are used on one rail or when two or more rails are mounted on the same plane.

The accuracy of model SNR/SNS is categorized into Normal grade (no symbol), High-accuracy grade (H), Precision grade (P), Super precision grade (SP) and Ultra precision grade (UP) by model numbers, as indicated in the table below.



Unit: mm

Model No.	Accuracy standard	Normal grade	High-accuracy grade	Precision grade	Super precision grade	Ultra precision grade
	Item	No Symbol	H	P	SP	UP
25 30 35	Dimensional tolerance for height M	±0.08	±0.04	$^{0}_{-0.04}$	$^{0}_{-0.02}$	$^{0}_{-0.01}$
	Difference in height M	0.02	0.015	0.007	0.005	0.003
	Dimensional tolerance for width W_2	±0.07	±0.03	$^{0}_{-0.03}$	$^{0}_{-0.015}$	$^{0}_{-0.01}$
	Difference in width W_2	0.025	0.015	0.007	0.005	0.003
	Running parallelism of surface C against surface A	as shown in the table below				
	Running parallelism of surface D against surface B	as shown in the table below				
45 55	Dimensional tolerance for height M	±0.08	±0.04	$^{0}_{-0.05}$	$^{0}_{-0.03}$	$^{0}_{-0.015}$
	Difference in height M	0.025	0.015	0.007	0.005	0.003
	Dimensional tolerance for width W_2	±0.07	±0.04	$^{0}_{-0.04}$	$^{0}_{-0.025}$	$^{0}_{-0.015}$
	Difference in width W_2	0.03	0.015	0.007	0.005	0.003
	Running parallelism of surface C against surface A	as shown in the table below				
	Running parallelism of surface D against surface B	as shown in the table below				
65 85	Dimensional tolerance for height M	±0.08	±0.04	$^{0}_{-0.05}$	$^{0}_{-0.04}$	$^{0}_{-0.03}$
	Difference in height M	0.03	0.02	0.01	0.007	0.005
	Dimensional tolerance for width W_2	±0.08	±0.04	$^{0}_{-0.05}$	$^{0}_{-0.04}$	$^{0}_{-0.03}$
	Difference in width W_2	0.03	0.02	0.01	0.007	0.005
	Running parallelism of surface C against surface A	as shown in the table below				
	Running parallelism of surface D against surface B	as shown in the table below				

LM Rail Length and Running Parallelism for Models SNR/SNS

Unit: μm

LM rail length (mm)		Running Parallelism Values				
Above	Or less	Normal grade	High-accuracy grade	Precision grade	Super precision grade	Ultra precision grade
		No Symbol	H	P	SP	UP
—	50	5	3	2	1.5	1
50	80	5	3	2	1.5	1
80	125	5	3	2	1.5	1
125	200	5	3.5	2	1.5	1
200	250	6	4	2.5	1.5	1
250	315	7	4.5	3	1.5	1
315	400	8	5	3.5	2	1.5
400	500	9	6	4.5	2.5	1.5
500	630	11	7	5	3	2
630	800	12	8.5	6	3.5	2
800	1000	13	9	6.5	4	2.5
1000	1250	15	11	7.5	4.5	3
1250	1600	16	12	8	5	4
1600	2000	18	13	8.5	5.5	4.5
2000	2500	20	14	9.5	6	5
2500	3150	21	16	11	6.5	5.5
3150	4000	23	17	12	7.5	6
4000	5000	24	18	13	8.5	6.5

***1: Running parallelism**

It refers to the parallelism error between the LM block and the LM rail datum plane when the LM block travels the whole length of the LM rail with the LM rail secured on the reference datum plane using bolts.

***2: Difference in height M**

It indicates the difference between the minimum and maximum values of height (M) of each of the LM blocks used on the same plane in combination.

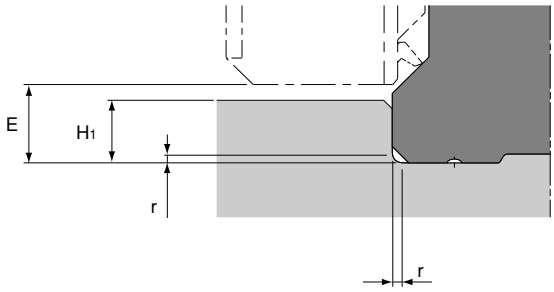
***3: Difference in width W_2**

It indicates the difference between the minimum and maximum values of the width (W_2) between each of the LM blocks, mounted on one LM rail in combination, and the LM rail.

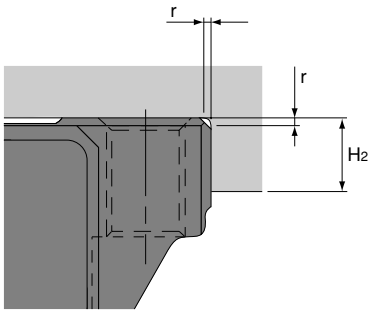
Shoulder Height of the Mounting Base and the Corner Radius

Normally, the mounting base for the LM rail and the LM block has a datum plane on the side face of the shoulder of the base in order to allow easy installation and highly accurate positioning.

The corner of the mounting shoulder must be machined to have a recess, or machined to be smaller than the corner radius "r," to prevent interference with the chamfer of the LM rail or the LM block.



Shoulder for the LM rail



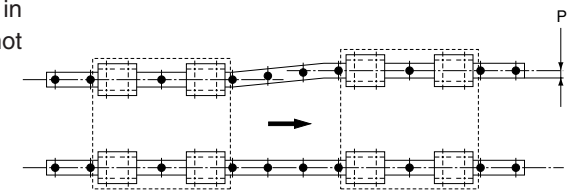
Shoulder for the LM block

Unit: mm

Model No.	Corner radius r (max)	Shoulder height for the LM rail H_1	Shoulder height for the LM block H_2	E
25	0.5	5	5	5.5
30	1	5	5	7
35	1	6	6	9
45	1	8	8	11.5
55	1.5	10	10	14
65	1.5	10	10	15
85	1.5	14	14	17

Error Allowance in the Parallelism Between Two Rails

The following table shows error allowances in parallelism (P) between two rails that will not affect the service life in normal operation.



Model SNR

Unit: μm

Model No.	Clearance C0	Clearance C1	Normal clearance
25	14	15	21
30	19	21	28
35	21	25	35
45	25	28	42
55	32	35	49
65	39	42	56
85	49	53	63

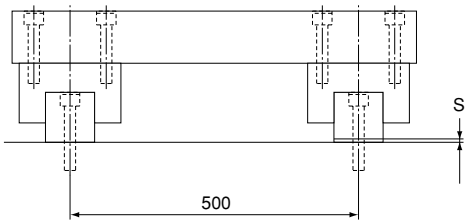
Model SNS

Unit: μm

Model No.	Clearance C0	Clearance C1	Normal clearance
25	10	11	15
30	14	15	20
35	15	18	25
45	18	20	30
55	23	25	35
65	28	30	40
85	35	38	45

Error Allowance in Vertical Level Between Two Rails

The values in the tables indicate the error allowances in vertical level (S) between two rails per 500 mm of the axis-to-axis distance, and are proportional to the axis-to-axis distances.



Model SNR

Unit: μm

Model No.	Clearance C0	Clearance C1	Normal clearance
25	35	43	65
30	45	55	85
35	60	75	105
45	70	85	125
55	85	105	150
65	100	125	175
85	120	145	200

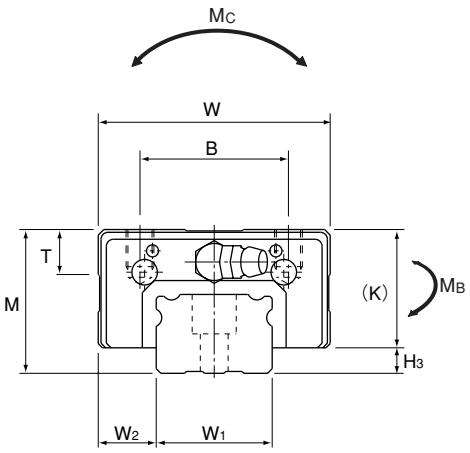
Model SNS

Unit: μm

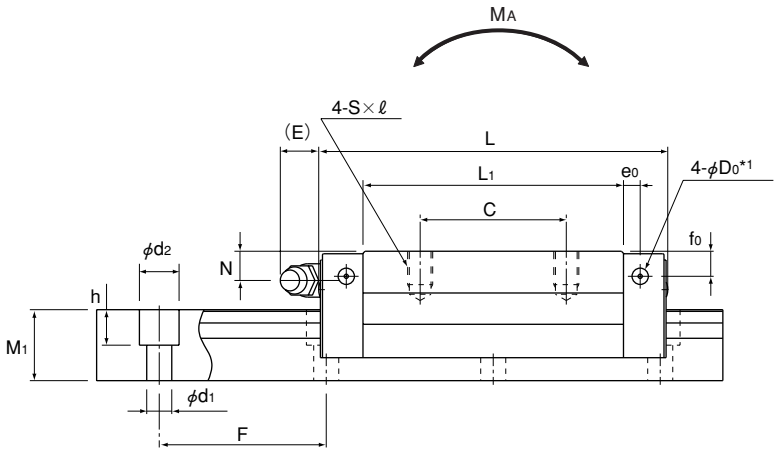
Model No.	Clearance C0	Clearance C1	Normal clearance
25	49	60	91
30	63	77	119
35	84	105	147
45	98	119	175
55	119	147	210
65	140	175	245
85	168	203	280

Models SNR-R/SNR-LR

Dimensional Table for Models SNR-R/SNR-LR



Model SNR-R/LR



Model SNR-R

Model No.	Outer dimensions			LM block dimensions												
	Height M	Width W	Length L	B	C	S×ℓ	L1	T	K	N	f0	E	e0	D0	Grease nipple	H3
SNR 25R **SNR 25LR**	31	50	82.8 102	32	35 50	M6×8	62.4 81.6	9.7	25.5	7	6	12	4	3.9	B-M6F	5.5
SNR 30R **SNR 30LR**	38	60	98 120.5	40	40 60	M8×10	72.1 94.6	9.7	31	7	7	12	6.5	3.9	B-M6F	7
SNR 35R **SNR 35LR**	44	70	109.5 135	50	50 72	M8×12	79 104.5	11.7	35	8	8	12	6	5.2	B-M6F	9
SNR 45R **SNR 45LR**	52	86	138.2 171	60	60 80	M10×17	105 137.8	14.7	40.4	10	8	16	8.5	5.2	B-PT1/8	11.5
SNR 55R **SNR 55LR**	63	100	163.3 200.5	65	75 95	M12×18	123.6 160.8	17.7	49	11	10	16	10	5.2	B-PT1/8	14
SNR 65R **SNR 65LR**	75	126	186 246	76	70 110	M16×20	143.6 203.6	21.6	60	16	15	16	9	8.2	B-PT1/8	15
SNR 85LR	90	156	302.8	100	140	M18×25	251	27.3	73	20	20	16	10	8.2	B-PT1/8	17

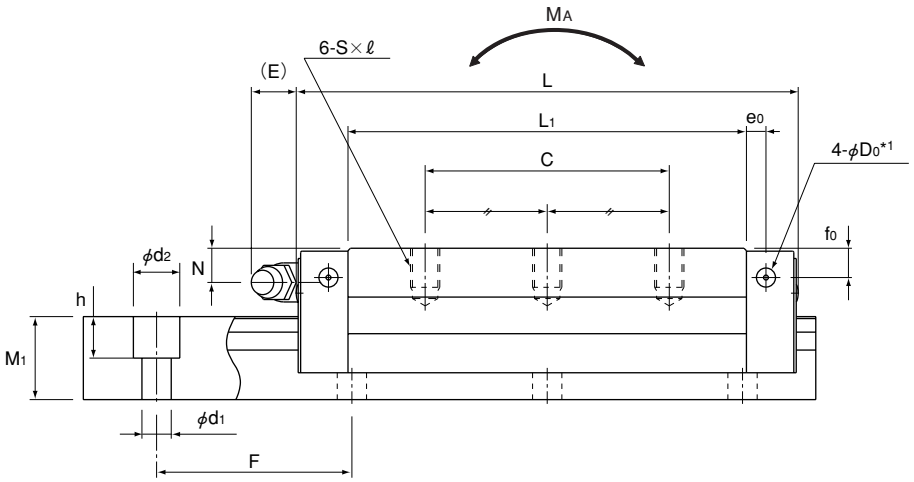
■ Example of model number coding

SNR45 LR 2 QZ KKHH C0 +1200L P Z - II

1 2 3 4 5 6 7 8 9 10

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Dust prevention accessory symbol (see page 26) 6 Radial clearance symbol (see page 7)
7 LM rail length (in mm) 8 Accuracy symbol (see page 8) 9 Plate cover or steel tape* 10 No. of rails used on the same plane
* Specify either plate cover or steel tape.

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



Model SNR-LR

Unit: mm

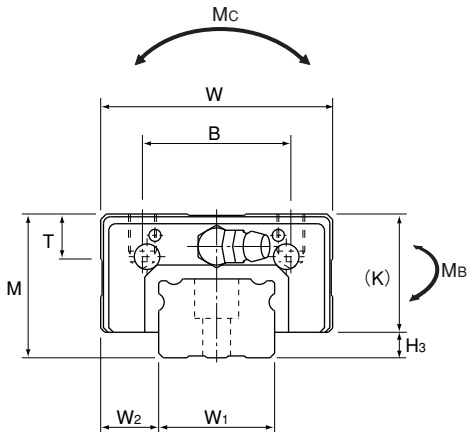
	LM rail dimensions						Basic load rating		Static permissible moment kN-m*3					Mass	
	Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	Length Max*2	C kN	C_0 kN	M_A 1 block	M_A Double blocks	M_B 1 block	M_B Double blocks	M_C 1 block	LM block kg	LM rail kg/m
	25	12.5	17	40	6×9.5×8.5	2500	48 57	79 101	0.682 1.14	3.62 5.55	0.427 0.708	2.25 3.4	0.868 1.1	0.4 0.6	3.1
	28	16	21	80	7×11×9	3000	68 81	106 138	1.04 1.81	5.7 8.89	0.653 1.12	3.56 5.47	1.3 1.69	0.7 0.9	4.4
	34	18	24.5	80	9×14×12	3000	90 108	144 188	1.61 2.68	8.64 13.6	1.01 1.67	5.39 8.49	2.13 2.79	1 1.4	6.2
	45	20.5	29	105	14×20×17	3090	132 161	216 288	3.29 5.4	16 26.2	2.03 3.35	9.86 16.2	4.21 5.64	1.9 2.4	9.8
	53	23.5	36.5	120	16×23×20	3060	177 214	292 383	4.99 8.41	25.7 40.9	3.11 5.22	16 25.3	6.69 8.78	3.1 4	14.5
	63	31.5	43	150	18×26×22	3000	260 340	409 572	8.05 15.9	41.2 74.5	5.03 9.84	25.6 45.7	11 15.4	5.6 8	20.5
	85	35.5	48	180	24×35×28	3000	550	887	30.3	142	18.7	87.6	31.9	14.8	29.5

Note

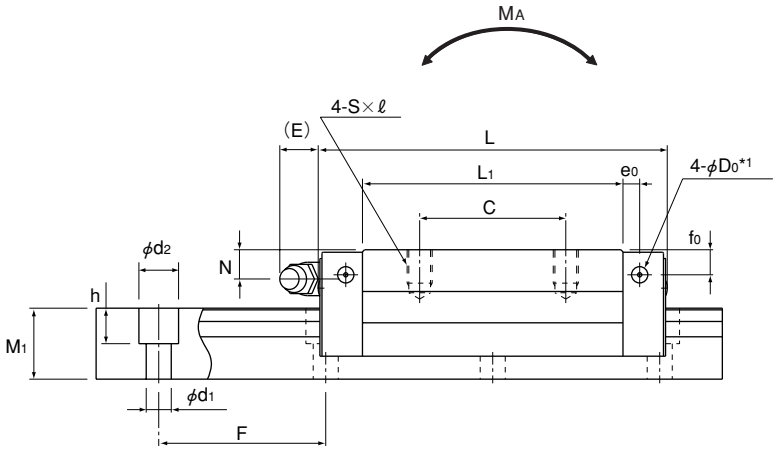
*1 Pilot holes for side nipples are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes for purposes other than mounting a grease nipple.
*2 The maximum length under "Length" indicates the standard maximum length of an LM rail.
*3 Static permissible moment: 1 block: Static permissible moment value with 1 LM block
Double blocks: Static permissible moment value with 2 blocks closely contacting with each other

Models SNS-R/SNS-LR

Dimensional Table for Models SNS-R/SNS-LR



Model SNS-R/LR



Model SNS-R

Model No.	Outer dimensions			LM block dimensions												H3
	Height M	Width W	Length L	B	C	S×ℓ	L1	T	K	N	f0	E	e0	D0	Grease nipple	
SNS 25R	31	50	82.8	32	35	M6×8	62.4	9.7	25.5	7	6	12	4	3.9	B-M6F	5.5
SNS 25LR			102		50		81.6									
SNS 30R	38	60	98	40	40	M8×10	72.1	9.7	31	7	7	12	6.5	3.9	B-M6F	7
SNS 30LR			120.5		60		94.6									
SNS 35R	44	70	109.5	50	50	M8×12	79	11.7	35	8	8	12	6	5.2	B-M6F	9
SNS 35LR			135		72		104.5									
SNS 45R	52	86	138.2	60	60	M10×17	105	14.7	40.4	10	8	16	8.5	5.2	B-PT1/8	11.5
SNS 45LR			171		80		137.8									
SNS 55R	63	100	163.3	65	75	M12×18	123.6	17.7	49	11	10	16	10	5.2	B-PT1/8	14
SNS 55LR			200.5		95		160.8									
SNS 65R	75	126	186	76	70	M16×20	143.6	21.6	60	16	15	16	9	8.2	B-PT1/8	15
SNS 65LR			246		110		203.6									
SNS 85LR	90	156	302.8	100	140	M18×25	251	27.3	73	20	20	16	10	8.2	B-PT1/8	17

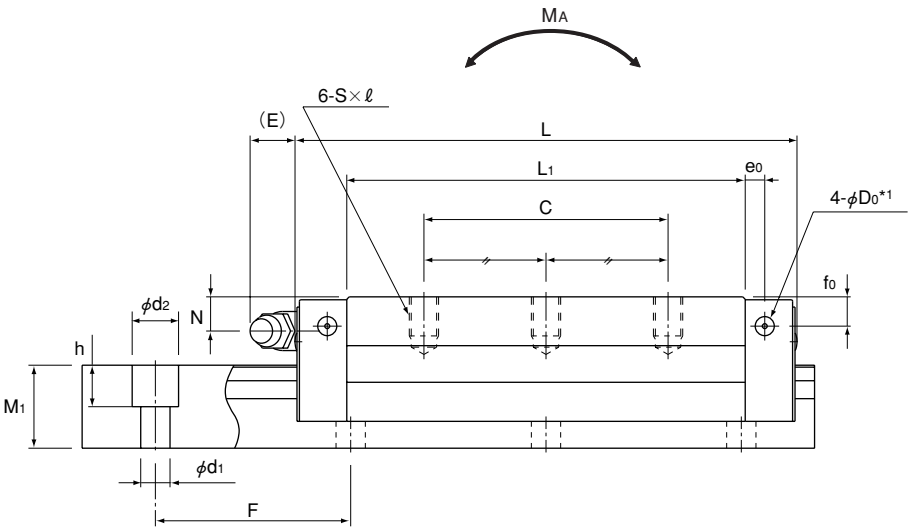
■ Example of model number coding

SNS45 LR 2 QZ KKHH C0 +1200L P Z -Ⅱ

1 2 3 4 5 6 7 8 9 10

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Dust prevention accessory symbol (see page 26) 6 Radial clearance symbol (see page 7)
7 LM rail length (in mm) 8 Accuracy symbol (see page 8) 9 Plate cover or steel tape* 10 No. of rails used on the same plane
* Specify either plate cover or steel tape.

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



Model SNS-LR

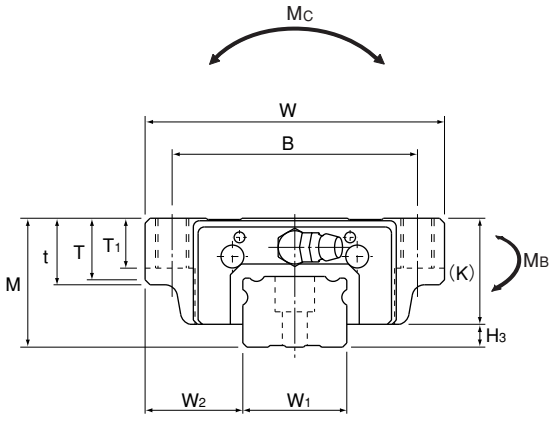
Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN-m*3					Mass	
	Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	Length Max*2	C kN	C_0 kN	M_A 1 block	M_A Double blocks	M_B 1 block	M_B Double blocks	M_C 1 block	LM block kg	LM rail kg/m
	25	12.5	17	40	6×9.5×8.5	2500	37 44	61 78	0.544 0.915	2.88 4.41	0.504 0.847	2.67 4.09	0.648 0.826	0.4 0.6	3.1
	28	16	21	80	7×11×9	3000	52 62	81 106	0.821 1.43	4.5 7.04	0.761 1.33	4.17 6.53	0.962 1.25	0.7 0.9	4.4
	34	18	24.5	80	9×14×12	3000	69 83	110 144	1.27 2.11	6.81 10.7	1.17 1.96	6.32 10	1.56 2.05	1 1.4	6.2
	45	20.5	29	105	14×20×17	3090	101 123	167 222	2.63 4.29	12.7 20.8	2.43 3.97	11.8 19.3	3.15 4.21	1.9 2.4	9.8
	53	23.5	36.5	120	16×23×20	3060	136 164	225 295	3.96 6.66	20.4 32.4	3.67 6.17	19 30	4.97 6.52	3.1 4	14.5
	63	31.5	43	150	18×26×22	3000	199 261	315 441	6.4 12.7	32.7 59.1	5.93 11.7	30.3 54.8	8.24 11.5	5.6 8	20.5
	85	35.5	48	180	24×35×28	3000	422	679	23.9	112	22.1	104	23.7	14.8	29.5

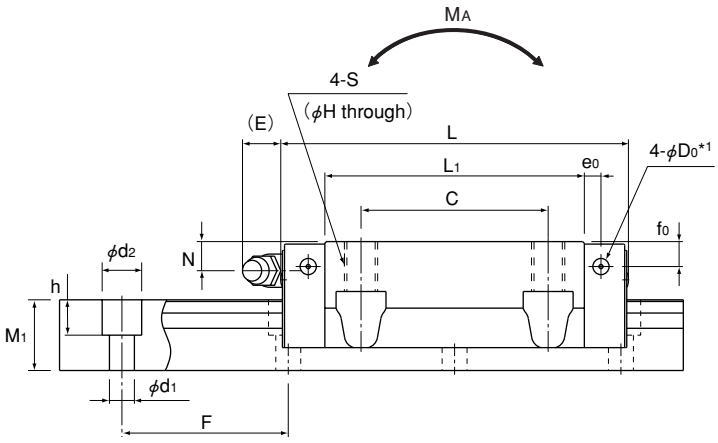
Note *1 Pilot holes for side nipples are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes for purposes other than mounting a grease nipple.
*2 The maximum length under "Length" indicates the standard maximum length of an LM rail.
*3 Static permissible moment: 1 block: Static permissible moment value with 1 LM block
Double blocks: Static permissible moment value with 2 blocks closely contacting with each other

Models SNR-C/SNR-LC

Dimensional Table for Models SNR-C/SNR-LC



Model SNR-C/LC



Model SNR-C

Model No.	Outer dimensions			LM block dimensions															H3
	Height M	Width W	Length L	B	C	S	H	L1	t	T	T1	K	N	f0	E	e0	D0	Grease nipple	
SNR 25C **SNR 25LC**	31	72	82.8 102	59	45	M 8	6.8	62.4 81.6	16	14.8	12	25.5	7	6	12	4	3.9	B-M6F	5.5
SNR 30C **SNR 30LC**	38	90	98 120.5	72	52	M10	8.5	72.1 94.6	18	16.8	14	31	7	7	12	6.5	3.9	B-M6F	7
SNR 35C **SNR 35LC**	44	100	109.5 135	82	62	M10	8.5	79 104.5	20	18.8	16	35	8	8	12	6	5.2	B-M6F	9
SNR 45C **SNR 45LC**	52	120	138.2 171	100	80	M12	10.5	105 137.8	22	20.5	20	40.4	10	8	16	8.5	5.2	B-PT1/8	11.5
SNR 55C **SNR 55LC**	63	140	163.3 200.5	116	95	M14	12.5	123.6 160.8	24	22.5	22	49	11	10	16	10	5.2	B-PT1/8	14
SNR 65C **SNR 65LC**	75	170	186 246	142	110	M16	14.5	143.6 203.6	28	26	25	60	16	15	16	9	8.2	B-PT1/8	15
SNR 85LC	90	215	302.8	185	140	M20	17.6	251	34	32	28	73	20	20	16	10	8.2	B-PT1/8	17

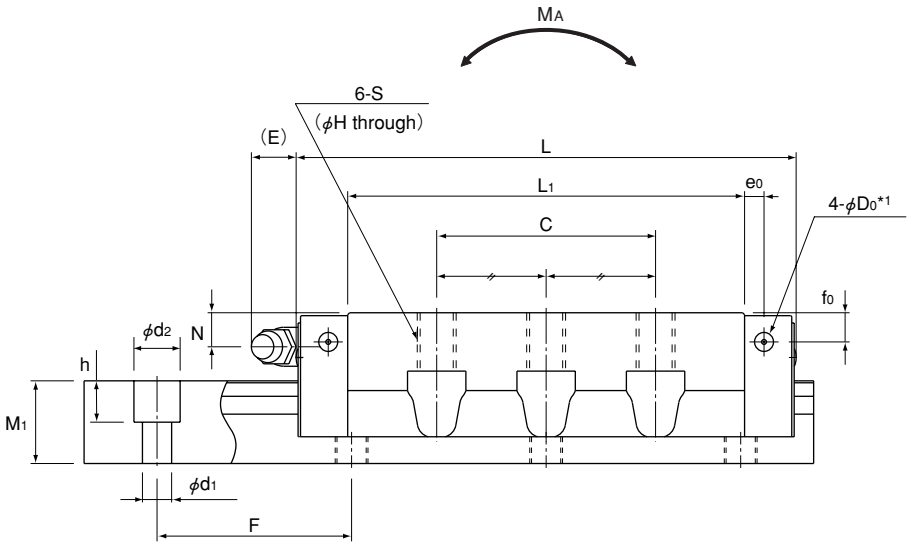
Example of model number coding

SNR45 LC 2 QZ KKHH C0 +1200L P Z - II

1 2 3 4 5 6 7 8 9 10

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Dust prevention accessory symbol (see page 26) 6 Radial clearance symbol (see page 7)
7 LM rail length (in mm) 8 Accuracy symbol (see page 8) 9 Plate cover or steel tape* 10 No. of rails used on the same plane
* Specify either plate cover or steel tape.

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



Model SNR-LC

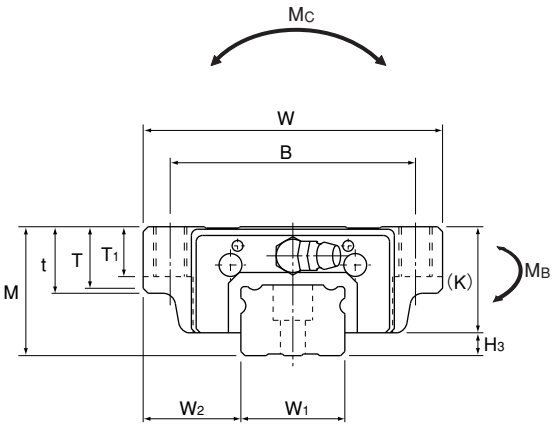
Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN-m*3					Mass	
	Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	Length Max*2	C kN	C_0 kN	M_A 1 block	M_A Double blocks	M_B 1 block	M_B Double blocks	M_C 1 block	LM block kg	LM rail kg/m
	25	23.5	17	40	6×9.5×8.5	2500	48 57	79 101	0.682 1.14	3.62 5.55	0.427 0.708	2.25 3.4	0.868 1.1	0.6 0.8	3.1
	28	31	21	80	7×11×9	3000	68 81	106 138	1.04 1.81	5.7 8.89	0.653 1.12	3.56 5.47	1.3 1.69	1 1.3	4.4
	34	33	24.5	80	9×14×12	3000	90 108	144 188	1.61 2.68	8.64 13.6	1.01 1.67	5.39 8.49	2.13 2.79	1.5 2	6.2
	45	37.5	29	105	14×20×17	3090	132 161	216 288	3.29 5.4	16 26.2	2.03 3.35	9.86 16.2	4.21 5.64	2.3 3.4	9.8
	53	43.5	36.5	120	16×23×20	3060	177 214	292 383	4.99 8.41	25.7 40.9	3.11 5.22	16 25.3	6.69 8.78	3.6 5.5	14.5
	63	53.5	43	150	18×26×22	3000	260 340	409 572	8.05 15.9	41.2 74.5	5.03 9.84	25.6 45.7	11 15.4	7.4 10.5	20.5
	85	65	48	180	24×35×28	3000	550	887	30.3	142	18.7	87.6	31.9	20.0	29.5

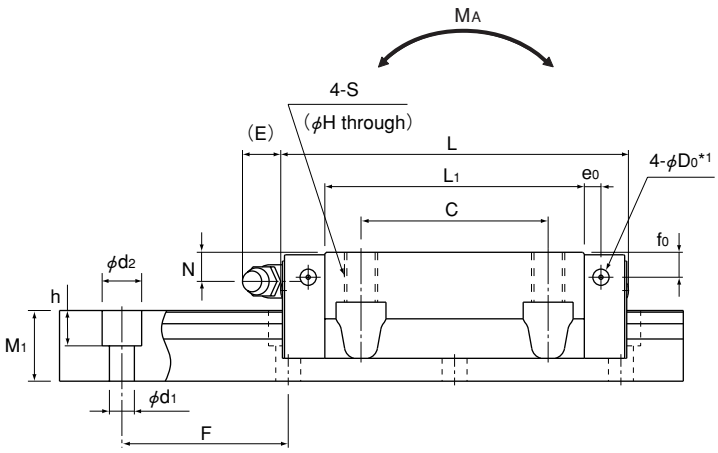
Note *1 Pilot holes for side nipples are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes for purposes other than mounting a grease nipple.
*2 The maximum length under "Length" indicates the standard maximum length of an LM rail.
*3 Static permissible moment: 1 block: Static permissible moment value with 1 LM block
Double blocks: Static permissible moment value with 2 blocks closely contacting with each other

Models SNS-C/SNS-LC

Dimensional Table for Models SNS-C/SNS-LC



Model SNS-C/LC



Model SNS-C

Model No.	Outer dimensions			LM block dimensions															H3
	Height M	Width W	Length L	B	C	S	H	L1	t	T	T1	K	N	f0	E	e0	D0	Grease nipple	
SNS 25C **SNS 25LC**	31	72	82.8 102	59	45	M 8	6.8	62.4 81.6	16	14.8	12	25.5	7	6	12	4	3.9	B-M6F	5.5
SNS 30C **SNS 30LC**	38	90	98 120.5	72	52	M10	8.5	72.1 94.6	18	16.8	14	31	7	7	12	6.5	3.9	B-M6F	7
SNS 35C **SNS 35LC**	44	100	109.5 135	82	62	M10	8.5	79 104.5	20	18.8	16	35	8	8	12	6	5.2	B-M6F	9
SNS 45C **SNS 45LC**	52	120	138.2 171	100	80	M12	10.5	105 137.8	22	20.5	20	40.4	10	8	16	8.5	5.2	B-PT1/8	11.5
SNS 55C **SNS 55LC**	63	140	163.3 200.5	116	95	M14	12.5	123.6 160.8	24	22.5	22	49	11	10	16	10	5.2	B-PT1/8	14
SNS 65C **SNS 65LC**	75	170	186 246	142	110	M16	14.5	143.6 203.6	28	26	25	60	16	15	16	9	8.2	B-PT1/8	15
SNS 85LC	90	215	302.8	185	140	M20	17.6	251	34	32	28	73	20	20	16	10	8.2	B-PT1/8	17

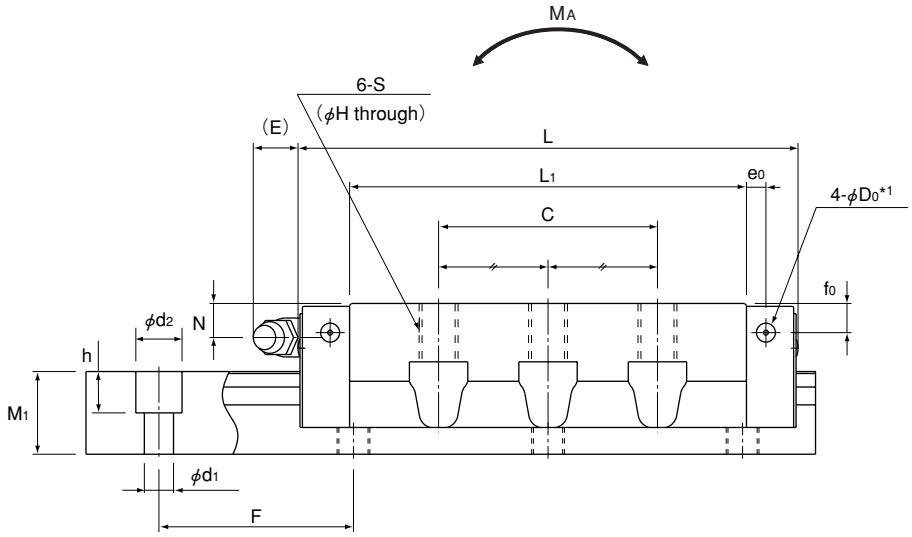
Example of model number coding

SNS45 LC 2 QZ KKHH C0 +1200L P Z - II

1 2 3 4 5 6 7 8 9 10

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Dust prevention accessory symbol (see page 26) 6 Radial clearance symbol (see page 7)
7 LM rail length (in mm) 8 Accuracy symbol (see page 8) 9 Plate cover or steel tape* 10 No. of rails used on the same plane
* Specify either plate cover or steel tape.

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



Model SNS-LC

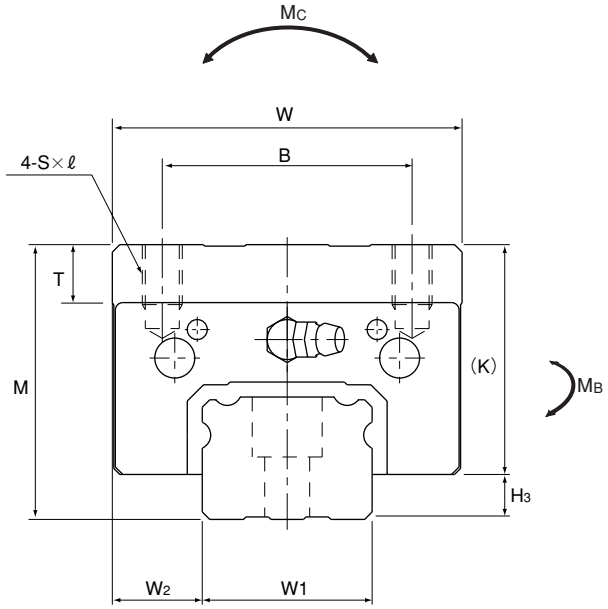
Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN-m*3					Mass	
	Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	Length Max*2	C kN	C_0 kN	M_A 1 block	M_A Double blocks	M_B 1 block	M_B Double blocks	M_C 1 block	LM block kg	LM rail kg/m
	25	23.5	17	40	6×9.5×8.5	2500	37	61	0.544	2.88	0.504	2.67	0.648	0.6	3.1
							44	78	0.915	4.41	0.847	4.09	0.826	0.8	
	28	31	21	80	7×11×9	3000	52	81	0.821	4.5	0.761	4.17	0.962	1	4.4
							62	106	1.43	7.04	1.33	6.53	1.25	1.3	
	34	33	24.5	80	9×14×12	3000	69	110	1.27	6.81	1.17	6.32	1.56	1.5	6.2
							83	144	2.11	10.7	1.96	10	2.05	2	
	45	37.5	29	105	14×20×17	3090	101	167	2.63	12.7	2.43	11.8	3.15	2.3	9.8
							123	222	4.29	20.8	3.97	19.3	4.21	3.4	
	53	43.5	36.5	120	16×23×20	3060	136	225	3.96	20.4	3.67	19	4.97	3.6	14.5
							164	295	6.66	32.4	6.17	30	6.52	5.5	
	63	53.5	43	150	18×26×22	3000	199	315	6.4	32.7	5.93	30.3	8.24	7.4	20.5
							261	441	12.7	59.1	11.7	54.8	11.5	10.5	
	85	65	48	180	24×35×28	3000	422	679	23.9	112	22.1	104	23.7	20.0	29.5

Note *1 Pilot holes for side nipples are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes for purposes other than mounting a grease nipple.
*2 The maximum length under "Length" indicates the standard maximum length of an LM rail.
*3 Static permissible moment: 1 block: Static permissible moment value with 1 LM block
Double blocks: Static permissible moment value with 2 blocks closely contacting with each other

Models SNR-RH/SNR-LRH SNS-RH/SNS-LRH

Dimensional Table for Models SNR-RH/SNR-LRH SNS-RH/SNS-LRH Build-to-order Models



Model No.	Outer dimensions			LM block dimensions												H_3
	Height M	Width W	Length L	B	C	S×ℓ	L_1	T	K	N	f_0	E	e_0	D_0	Grease nipple	
SNR 35RH SNS 35RH	55	70	109.5	50	50	M8×12	79	11.7	46	19	19	12	6	5.2	B-M6F	9
SNR 35LRH SNS 35LRH	55	70	135	50	72	M8×12	104.5	11.7	46	19	19	12	6	5.2	B-M6F	9
SNR 45RH SNS 45RH	70	86	138.2	60	60	M10×17	105	14.7	58.4	28	26	16	8.5	5.2	B-PT1/8	11.5
SNR 45LRH SNS 45LRH	70	86	171	60	80	M10×17	137.8	14.7	58.4	28	26	16	8.5	5.2	B-PT1/8	11.5
SNR 55RH SNS 55RH	80	100	163.3	75	75	M12×18	123.6	17.7	66	28	27	16	10	5.2	B-PT1/8	14
SNR 55LRH SNS 55LRH	80	100	200.5	75	95	M12×18	160.8	17.7	66	28	27	16	10	5.2	B-PT1/8	14

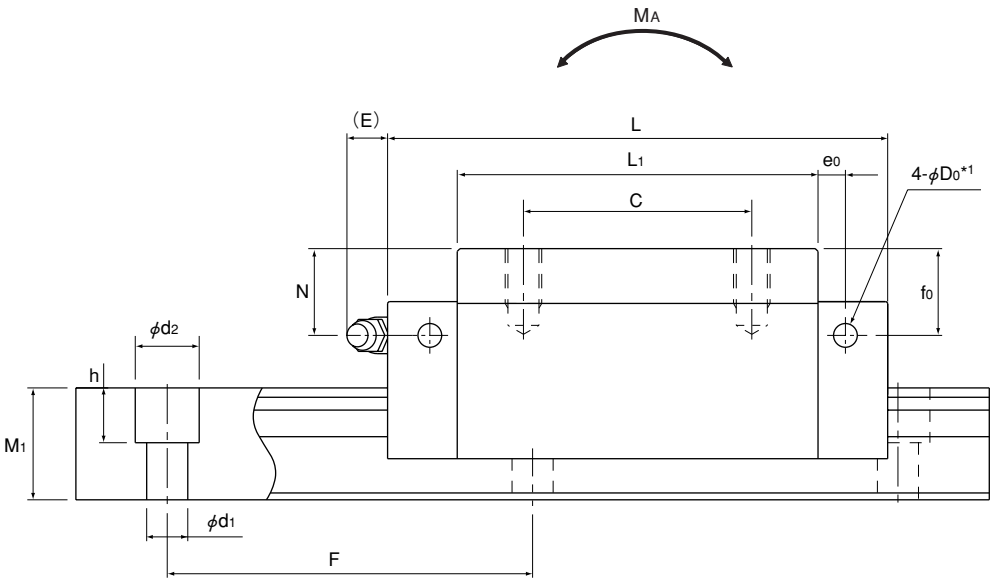
■ Example of model number coding

SNR35 RH 2 QZ KKHH C0 +920L H Z - II

1 2 3 4 5 6 7 8 9 10

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Dust prevention accessory symbol (see page 26) 6 Radial clearance symbol (see page 7)
7 LM rail length (in mm) 8 Accuracy symbol (see page 8) 9 Plate cover or steel tape* 10 No. of rails used on the same plane
* Specify either plate cover or steel tape.

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



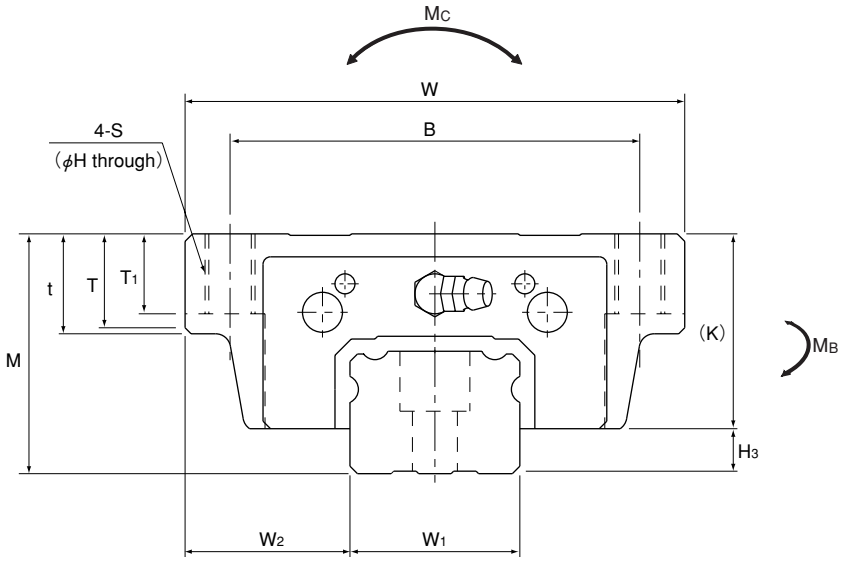
Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN-m*3					Mass	
	Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	Length Max*2	C kN	C_0 kN	M_A 1 block	M_A Double blocks	M_B 1 block	M_B Double blocks	M_C 1 block	LM block kg	LM rail kg/m
	34	18	24.5	80	9×14×12	3000	90 69	144 110	1.61 1.27	8.64 6.81	1.01 1.17	5.39 6.32	2.13 1.56	1.5	6.2
	34	18	24.5	80	9×14×12	3000	108 83	188 144	2.68 2.11	13.6 10.7	1.67 1.96	8.49 10	2.79 2.05	2	6.2
	45	20.5	29	105	14×20×17	3090	132 101	216 167	3.29 2.63	16 12.7	2.03 2.43	9.86 11.8	4.21 3.15	3.2	9.8
	45	20.5	29	105	14×20×17	3090	161 123	288 222	5.4 4.29	26.2 20.8	3.35 3.97	16.2 19.3	5.64 4.21	4.1	9.8
	53	23.5	36.5	120	16×23×20	3060	177 136	292 225	4.99 3.96	25.7 20.4	3.11 3.67	16 19	6.69 4.97	4.7	14.5
	53	23.5	36.5	120	16×23×20	3060	214 164	383 295	8.41 6.66	40.9 32.4	5.22 6.17	25.3 30	8.78 6.52	6.2	14.5

Note *1 Pilot holes for side nipples are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes for purposes other than mounting a grease nipple.
*2 The maximum length under "Length" indicates the standard maximum length of an LM rail.
*3 Static Permissible moment: 1 block: Static permissible moment value with 1 LM block
Double blocks: Static permissible moment value with 2 blocks closely contacting with each other

Models SNR-CH/SNR-LCH SNS-CH/SNS-LCH

Dimensional Table for Models SNR-CH/SNR-LCH SNS-CH/SNS-LCH Build-to-order Models



Model No.	Outer dimensions			LM block dimensions															
	Height M	Width W	Length L	B	C	S	H	L_1	t	T	T_1	K	N	f_0	E	e_0	D_0	Grease nipple	H_3
SNR 35CH SNS 35CH	48	100	109.5	82	62	M10	8.5	79	20	18.8	16	39	12	12	12	6	5.2	B-M6F	9
SNR 35LCH SNS 35LCH	48	100	135	82	62	M10	8.5	104.5	20	18.8	16	39	12	12	12	6	5.2	B-M6F	9
SNR 45CH SNS 45CH	60	120	138.2	100	80	M12	10.5	105	22	20.5	20	48.4	18	16	16	8.5	5.2	B-PT1/8	11.5
SNR 45LCH SNS 45LCH	60	120	171	100	80	M12	10.5	137.8	22	20.5	20	48.4	18	16	16	8.5	5.2	B-PT1/8	11.5
SNR 55CH SNS 55CH	70	140	163.3	116	95	M14	12.5	123.6	24	22.5	22	56	18	17	16	10	5.2	B-PT1/8	14
SNR 55LCH SNS 55LCH	70	140	200.5	116	95	M14	12.5	160.8	24	22.5	22	56	18	17	16	10	5.2	B-PT1/8	14

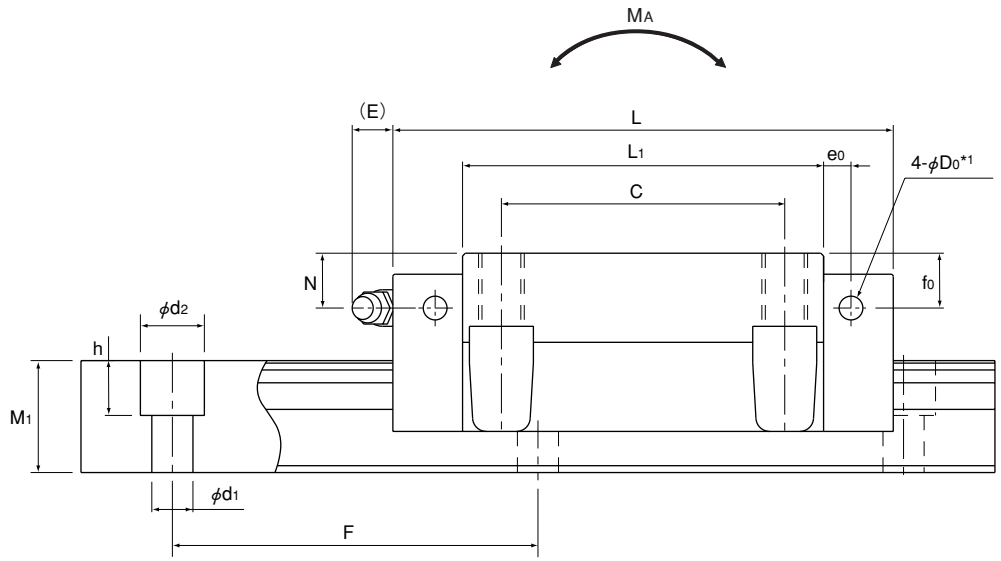
■ Example of model number coding

SNR45 LCH 2 QZ KK C0 +1000L P Z - II

1 2 3 4 5 6 7 8 9 10

1 Model number 2 Type of LM block 3 No. of LM blocks used on the same rail 4 With QZ Lubricator
5 Dust prevention accessory symbol (see page 26) 6 Radial clearance symbol (see page 7)
7 LM rail length (in mm) 8 Accuracy symbol (see page 8) 9 Plate cover or steel tape* 10 No. of rails used on the same plane
* Specify either plate cover or steel tape.

Note This model number indicates that an LM block and an LM rail constitute one set (i.e., the required number of sets when 2 rails are used in parallel is 2).
Those models equipped with QZ Lubricator cannot have a grease nipple.



Unit: mm

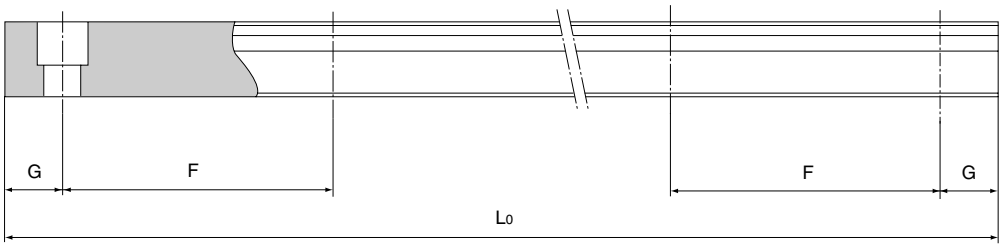
	LM rail dimensions						Basic load rating		Static permissible moment kN-m*3					Mass	
	Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	Length Max*2	C kN	C_0 kN	M_A 1 block	M_A Double blocks	M_B 1 block	M_B Double blocks	M_C 1 block	LM block kg	LM rail kg/m
	34	33	24.5	80	9×14×12	3000	90 69	144 110	1.61 1.27	8.64 6.81	1.01 1.17	5.39 6.32	2.13 1.56	1.7	6.2
	34	33	24.5	80	9×14×12	3000	108 83	188 144	2.68 2.11	13.6 10.7	1.67 1.96	8.49 10	2.79 2.05	2.2	6.2
	45	37.5	29	105	14×20×17	3090	132 101	216 167	3.29 2.63	16 12.7	2.03 2.43	9.86 11.8	4.21 3.15	3	9.8
	45	37.5	29	105	14×20×17	3090	161 123	288 222	5.4 4.29	26.2 20.8	3.35 3.97	16.2 19.3	5.64 4.21	4.2	9.8
	53	43.5	36.5	120	16×23×20	3060	177 136	292 225	4.99 3.96	25.7 20.4	3.11 3.67	16 19	6.69 4.97	4.4	14.5
	53	43.5	36.5	120	16×23×20	3060	214 164	383 295	8.41 6.66	40.9 32.4	5.22 6.17	25.3 30	8.78 6.52	6.5	14.5

Note *1 Pilot holes for side nipples are not drilled through in order to prevent foreign material from entering the product. THK will mount grease nipples per your request. Therefore, do not use the side nipple pilot holes for purposes other than mounting a grease nipple.
*2 The maximum length under "Length" indicates the standard maximum length of an LM rail.
*3 Static permissible moment: 1 block: Static permissible moment value with 1 LM block
Double blocks: Static permissible moment value with 2 blocks closely contacting with each other

SNR/SNS

Standard Length and Maximum Length of the LM Rail

The table below shows the standard LM rail lengths and the maximum lengths of models SNR/SNS variations. If the maximum length of the desired LM rail exceeds them, connected rails will be used. Contact THK for details.
For the G dimension when a special length is required, we recommend selecting the corresponding G value from the table. The longer the G dimension is, the less stable the G area may become after installation, thus adversely affecting accuracy.

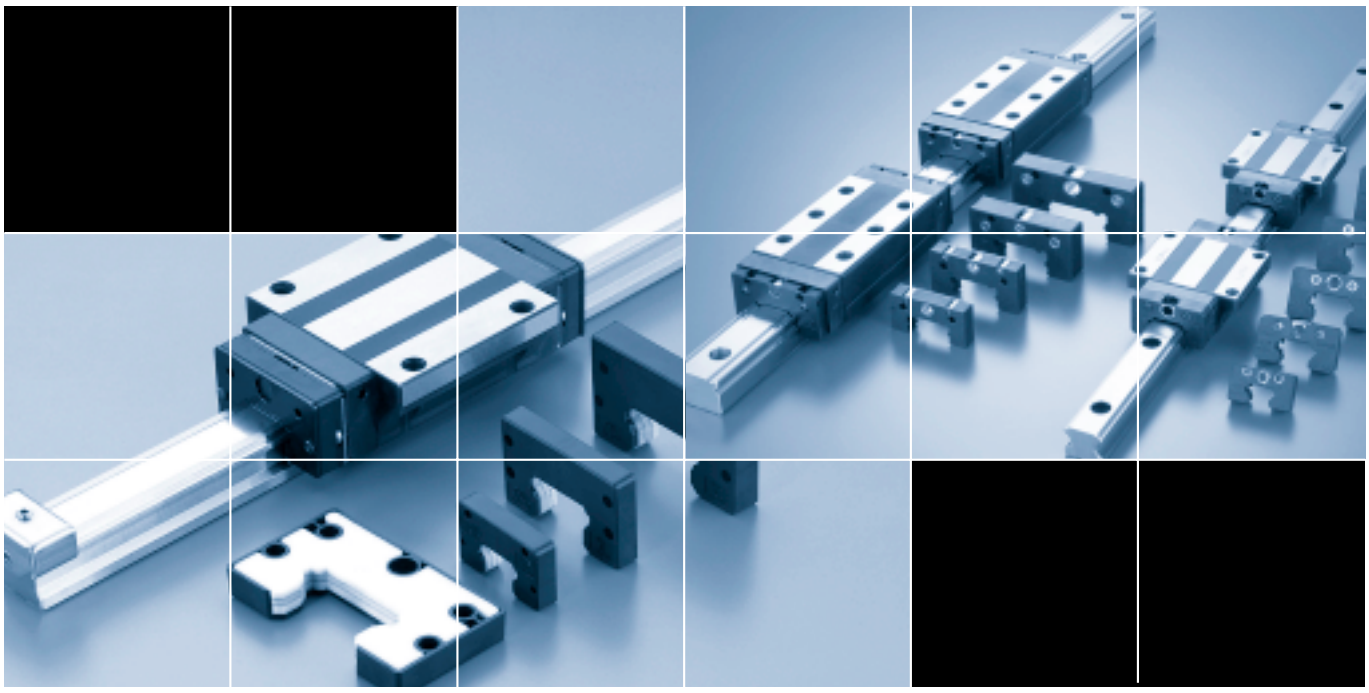


Standard Length and Maximum Length of the LM Rail for Models SNR/SNS

Unit: mm

Model No.	SNR/SNS 25	SNR/SNS 30	SNR/SNS 35	SNR/SNS 45	SNR/SNS 55	SNR/SNS 65	SNR/SNS 85
Standard LM rail length (Lo)	230 270 350 390 470 510 590 630 710 750 830 950 990 1070 1110 1190 1230 1310 1350 1430 1470 1550 1590 1710 1830 1950 2070 2190 2310 2430 2470	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1560 1640 1720 1800 1880 1960 2040 2200 2360 2520 2680 2840 3000	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1560 1640 1720 1800 1880 1960 2040 2200 2360 2520 2680 2840 3000	570 675 780 885 990 1095 1200 1305 1410 1515 1620 1725 1830 1935 2040 2145 2250 2355 2460 2565 2670 2775 2880 2985 3090	780 900 1020 1140 1260 1380 1500 1620 1740 1860 1980 2100 2220 2340 2460 2580 2700 2820 2940 3060	1270 1570 2020 2620	1530 1890 2250 2610
Standard pitch F	40	80	80	105	120	150	180
G	15	20	20	22.5	30	35	45
Max length	2500	3000	3000	3090	3060	3000	3000

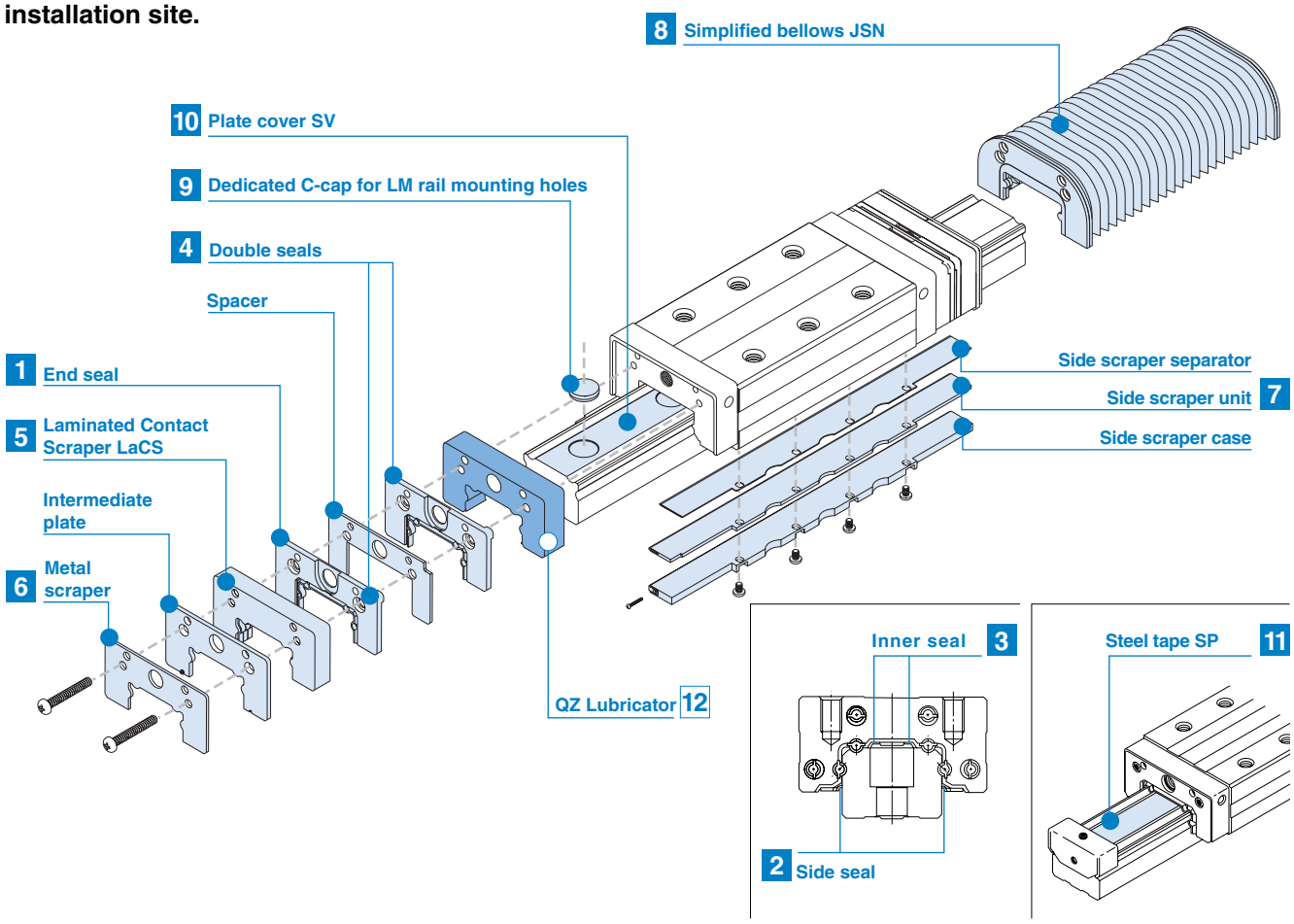
Note 1: The maximum length varies with accuracy grades. Contact THK for details.
Note 2: If connected rails are not allowed and a greater length than the maximum values above is required, contact THK.



SNR/SNS OPTIONS

Options

For models SNR/SNS, dust-prevention and lubrication accessories are available. Make a selection according to the application and the installation site.

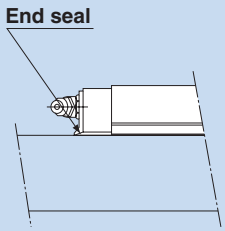


Dust Prevention Accessories

When foreign matter enters an LM system, it will cause abnormal wear or shorten the service life. It is necessary to prevent foreign matter from entering the system. Therefore, when possible entrance of foreign matter is predicted, it is important to select an effective sealing device or dust-prevention device that meets the working conditions.

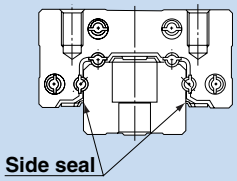
1 End seal

Used in locations exposed to dust.



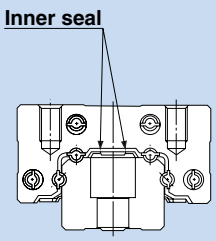
2 Side seal

Used in locations where dust may enter the LM block from the side or bottom surface, such as vertical, horizontal and inverted mount.



3 Inner seal

Used in locations severely exposed to dust or cutting chips.



Seals and Scrapers

1 to 4 Seals

Highly wear-resistant end seals made of special resin rubber and side seals for increased dust-prevention effect are available.

If desiring a dust-prevention accessory, specify it with the corresponding symbol indicated in table 3.
For the supported LM Guide model numbers for dust-prevention accessories and the overall LM block length with a dust-prevention accessory attached (dimension L), see tables 4 and 5.

Seal resistance value

For the maximum seal resistance value per LM block when a lubricant is applied on seal SNR/SNS ··· SS, refer to the corresponding value provided in table 1.

Table 1 Maximum Seal Resistance Value of Seal SNR/SNS ··· SS Unit: N

Model No.	Seal resistance value
25	8
30	14
35	14
45	16
55	20
65	25
85	30

5 6 Scrapers

Laminated Contact Scraper LaCS®

For locations with an even more adverse working conditions, the Laminated Contact Scraper LaCS is available.
LaCS removes minute foreign matter adhering to the LM rail in multiple stages and prevents it from entering the LM block with a laminated contact structure (3-layer scraper).

Features

- Since the 3 layers of scrapers fully contact the LM rail, LaCS is highly capable of removing minute foreign matter.
- Since it uses oil-impregnated, foam synthetic rubber with a self-lubricating function, low friction resistance is achieved.

Basic Specifications of LaCS

① Service temperature range of LaCS: -20°C to +80°C
② Resistance of LaCS: indicated in table 2

*Note that LaCS is not sold alone.

Table 2 Resistance of LaCS Unit: N

Model No.	Resistance of LaCS
25	8.1
30	13.4
35	15.5
45	23.3
55	28.6
65	39.6

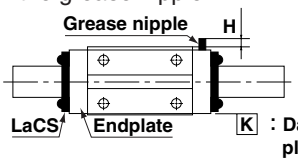
Note 1: Each resistance value in the table only consists of that of LaCS, and does not include sliding resistances of seals and other accessories.
Note 2: For the maximum service speed of LaCS, contact THK.

Table 3 Symbols of Dust Prevention Accessories for Models SNR/SNS

Symbol	Dust prevention accessory
UU	With end seal
SS	With end seal + side seal + inner seal
DD	With double seals + side seal + inner seal
ZZ	With end seal + side seal + inner seal + metal scraper
KK	With double seals + side seal + inner seal + metal scraper
SSHH	With end seal + side seal + inner seal + LaCS
DDHH	With double seals + side seal + inner seal + LaCS
ZZHH	With end seal + side seal + inner seal + metal scraper + LaCS
KKHH	With double seals + side seal + inner seal + metal scraper + LaCS

When Dust Prevention Accessories SSHH, DDHH, ZZHH or KKHH are Attached

When dust prevention accessories SSHH, DDHH, ZZHH or KKHH are attached, the grease nipple can be mounted in the location indicated in the figure below. The table on the right shows incremental dimensions with the grease nipple.



Note: When desiring the mounting location for the grease nipple other than the one indicated in the figure above, contact THK.

Unit: mm

Model No.	Incremental dimension with grease nipple H	Nipple type
25C/LC	—	PB1021B
25R/LR	4.9	PB1021B
30C/LC	—	PB1021B
30R/LR	4.5	PB1021B
35C/LC,CH/LCH	—	A-M6F
35R/LR,RH/LRH	7.8	A-M6F
45C/LC,CH/LCH	—	A-M6F
45R/LR,RH/LRH	7.9	A-M6F
55C/LC,CH/LCH	—	A-M6F
55R/LR,RH/LRH	7.7	A-M6F
65C/LC	—	A-PT1/8
65R/LR	15.8	A-PT1/8

When Dust Prevention Accessories DD, ZZ or KK are Attached

For the mounting location of the grease nipple and its incremental dimension when dust prevention accessories DD, ZZ or KK are attached, contact THK.

Table 4 Overall LM Block Length (Dimension L) of Models SNR/SNS with the QZ Lubricator Attached

Unit: mm

Model No.	UU	SS	DD	ZZ	KK	SSHH	DDHH	ZZHH	KKHH
25R/C	82.8	82.8	90.4	89.2	96.8	100.1	107.7	102.5	110.1
25LR/LC	102	102	109.6	108.4	116	119.3	126.9	121.7	129.3
30R/C	98	98	107.8	104.4	114.2	118.5	128.3	120.9	130.7
30LR/LC	120.5	120.5	130.3	126.9	136.7	141	150.8	143.4	153.2
35R/C	109.5	109.5	119.7	117.1	127.3	131.1	141.3	133.5	143.7
35LR/LC	135	135	145.2	142.6	152.8	156.6	166.8	159	169.2
45R/C	138.2	138.2	148.4	146.6	156.8	163.2	173.4	166.4	176.6
45LR/LC	171	171	181.2	179.4	189.6	196	206.2	199.2	209.4
55R/C	163.3	163.3	172.7	171.1	181.3	187.8	198	191	201.2
55LR/LC	200.5	200.5	209.9	208.3	218.5	225	235.2	228.2	238.4
65R/C	186	186	196.2	194.2	204.8	214.3	224.9	217.5	228.1
65LR/LC	246	246	256.2	254.2	264.8	274.3	284.9	277.5	288.1
85LR/LC	302.8	302.8	313.8	312.2	323.2	—	—	—	—

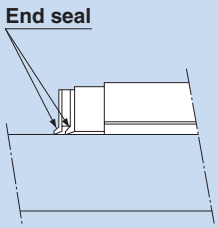
Table 5 Overall LM Block Length (Dimension L) of Models SNR/SNS-H with the QZ Lubricator Attached

Unit: mm

Model No.	UU	SS	DD	ZZ	KK	SSHH	DDHH	ZZHH	KKHH
35RH/CH	109.5	109.5	119.7	117.1	127.3	131.1	141.3	133.5	143.7
35LRH/LCH	135	135	145.2	142.6	152.8	156.6	166.8	159	169.2
45RH/CH	138.2	138.2	148.4	146.6	156.8	163.2	173.4	166.4	176.6
45LRH/LCH	171	171	181.2	179.4	189.6	196	206.2	199.2	209.4
55RH/CH	163.3	163.3	172.7	171.1	181.3	187.8	198	191	201.2
55LRH/LCH	200.5	200.5	209.9	208.3	218.5	225	235.2	228.2	238.4

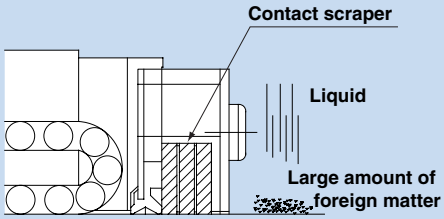
4 Double seals

Used in locations exposed to much dust or many cutting chips.



5 LaCS

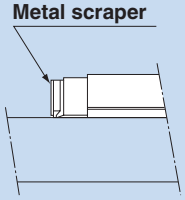
Used in harsh environments exposed to foreign matter such as fine dust and liquids.



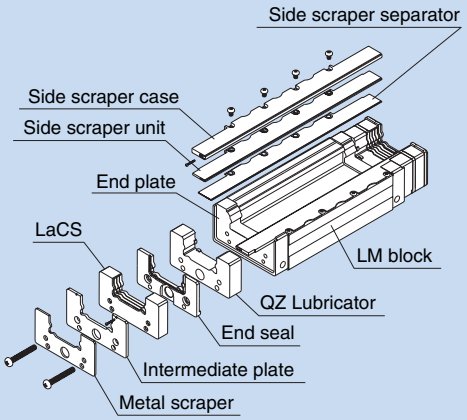
Structural drawing

6 Metal scraper

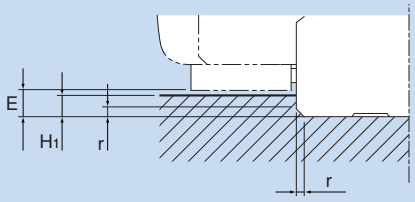
Used in locations where welding spatter may adhere to the LM rail.



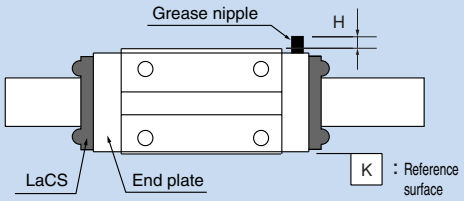
7 Side Scraper



Side Scraper Configuration
(Options shown: QZZZHHYY)



Side view of the LM block after the side scraper is mounted

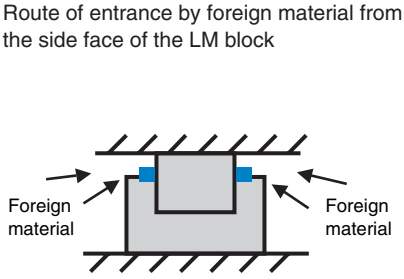


Location of mounting the grease nipple

7 Side Scraper

- **Minimizes foreign material entering from the side of the LM Guide in a harsh environment.**
- **Demonstrates a dust protection effect in inverted or wall mount.**

Route of entrance by foreign material from the side face of the LM block



Note: The side scraper is not sold separately. Side scraper option need to be specified at the time of order.

The shoulder height of the mounting surface and the corner radius after the side scraper is mounted

Unit : mm

Model No.	Corner radius r (maximum)	Shoulder height of the LM rail section H_1	E
25	1	2	2.7
30	1	3.5	4.2
35	1	5.5	6.2
45	1	8	8.8
55	1.5	10.5	11.2
65	1.5	11	12.1

Grease Nipple dimensions for Side Scraper configuration

Unit : mm

Model No.		Incremental dimensions of the grease nipple H	Nipple type
SNR/SNS	25LR/LC	4.5	PB1021B
	30LR/LC	4.5	PB1021B
	35LR/LC/LRH/LCH	5.4	A-M6F
	45LR/LC/LRH/LCH	5.4	A-M6F
	55LR/LC/LRH/LCH	5.4	A-M6F
	65LR/LC/LRH/LCH	8	A-PT1/8

Note: Short blocks as well as long blocks are supported. Contact THK for details.

■ Model number coding

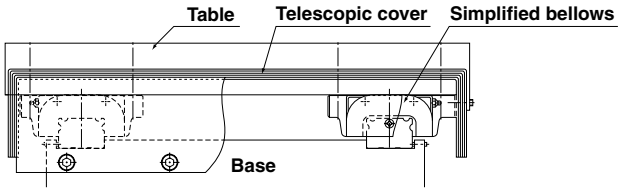
SNR45 LR 1 QZ ZZHH YY C1 +1200L

1 With a side scraper*

* Side scraper models SNR/SNS support various options of contamination-protection parts (P. 26) and lubrication-related parts (P. 30). Contact THK for details.

8 Simplified Bellows JSN

For models SNR/SNS-C, SNR/SNS-LC, SNR/SNS-R and SNR/SNS-LR, a simplified bellows is available. Attach the simplified bellows when the LM Guide is used in locations subject to a coolant or the like. To gain a higher dust-prevention effect, attach a telescopic cover outside the simplified bellows after the bellows are mounted.



Example of Mounting the Simplified Bellows

Dimensional Table for JSN

Unit: mm

Model No.	Major dimensions											A (Lmax / Lmin)	Supported model
	W	H	H1	P	b	t1	t2	t3	Mounting bolt S	Mounting bolt S1	T		
JSN 25	50	25.5	24.5	10	26.6	4.6	13	—	M3×5 ℓ	M4×4 ℓ	1.5	7	SNR/SNS25
JSN 30	60	31	30	14	34	5.5	17	—	M4×8 ℓ	M4×4 ℓ	1.5	9	SNR/SNS30
JSN 35	70	35	34	15	36	6	20.5	—	M4×8 ℓ	M5×4 ℓ	2	10	SNR/SNS35
JSN 45	86	40.5	39.5	17	47	6.5	24	—	M5×10ℓ	M5×4 ℓ	2	10	SNR/SNS45
JSN 55	100	49	48	19.5	54	10	29.5	18	M5×10ℓ	M5×4 ℓ	2	13	SNR/SNS55
JSN 65	126	60	59	22	64	13.5	36.2	20	M6×12ℓ	M6×5 ℓ	3.2	13	SNR/SNS65
JSN 85	156	70.5	70.5	30	110	15.5	39.5	28	M6×12ℓ	M6×5 ℓ	3.2	20	SNR/SNS85

■ Example of model number coding

JSN25-60/420

1 2

1 Model number ··· bellows for SNR25
2 Bellows dimensions (length when compressed / length when extended)

9 Dedicated C-cap for LM Rail Mounting Holes

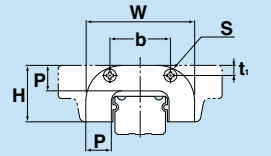
If any of the LM rail mounting holes of an LM Guide is filled with cutting chips or foreign matter, they may enter the LM block structure. Entrance of such foreign matter can be prevented by covering each LM rail mounting hole with the dedicated cap so that the top of the mounting holes are on the same level as the LM rail top face.

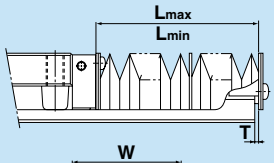
The dedicated C-cap for LM rail mounting holes is highly durable since it uses a special synthetic resin with high oil resistance and high wear resistance. When placing an order, specify the desired cap type with the corresponding cap number indicated in the table on the right.

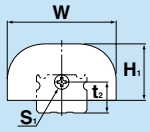
Model No.	C-cap model No.	Bolt used	Major dimensions mm	
			D	H
25	C 5	M 5	9.8	2.4
30	C 6	M 6	11.4	2.7
35	C 8	M 8	14.4	3.7
45	C12	M12	20.5	4.7
55	C14	M14	23.5	5.7
65	C16	M16	26.5	5.7
85	C22	M22	35.5	5.7

Simplified bellows JSN 8

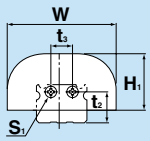
Used in locations exposed to dust or cutting chips.







SNR/SNS 25 to 45



SNR/SNS 55 to 85

Note 1: When desiring to use the simplified bellows other than in horizontal mount (i.e., vertical, wall and inverted mount), or when desiring a heat-resistant type of bellows, contact THK.
Note 2: For lubrication when using the simplified bellows, contact THK.
Note 3: For the bellows for models SNR/SNS-CH, SNR/SNS-LCH, SNR/SNS-RH and SNR/SNS-LRH, contact THK.
Note 4: When using the simplified bellows, the LM block and LM rail need to be machined so that the bellows can be mounted. Be sure to indicate that the simplified bellows is required when ordering the LM Guide.

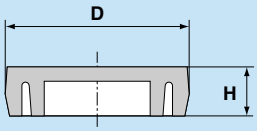
Note: The length of the bellows is calculated as follows.

$L_{min} = \frac{S}{(A-1)}$ **S: Stroke length (mm)**

$L_{max} = L_{min} \cdot A$ **A: Extension rate**

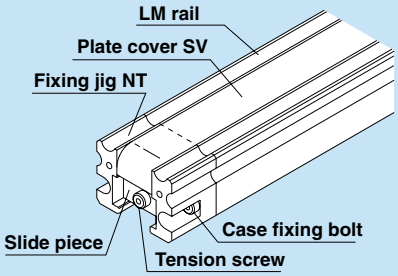
Dedicated C-cap 9

It prevents cutting chips from entering the LM rail mounting holes.



10 Plate cover SV

It prevents foreign matter, such as cutting chips and dust, and coolant from entering the LM rail mounting holes.



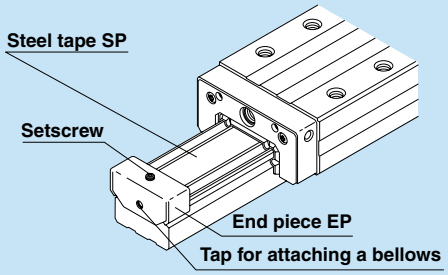
10 Plate Cover SV

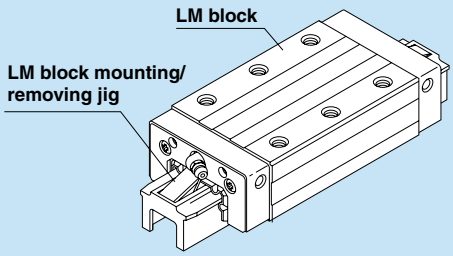
For models SNR/SNS, plate covers are available as an essential means of dust prevention for machine tools. By covering the LM rail mounting holes with an ultra thin stainless steel (SUS304) plate, the plate cover SV drastically increases sealability, thus to prevent the penetration of coolant or cutting chips, which previously could not be stopped from entering the mounting holes.

Note1: When mounting the plate cover, the LM rail needs to be machined. Indicate that the plate cover is required when ordering the LM Guide.
Note2: The plate cover is available for models SNR/SNS35 to 65.

11 Steel tape SP

It prevents foreign matter, such as cutting chips and dust, and coolant from entering the LM rail mounting holes.





11 Steel Tape SP

For models SNR/SNS, steel tape is available as an essential means of dust prevention for machine tools. By covering the LM rail mounting holes with an ultra thin stainless steel (SUS304) plate, the steel tape SP further increases sealability, thus to prevent the penetration of coolant or cutting chips, which previously could not be stopped from entering the mounting holes (when mounting the steel tape, end piece EP can be used as a means to secure the cover).

Note 1: When mounting the steel tape, the LM rail needs to be machined. Indicate that steel tape is required when ordering the LM Guide.
Note 2: The steel tape is available for models SNR/SNS25 to 85.
Note 3: Since balls of models SNR/SNS are retained by ball cages, they will not fall off even if the LM block is removed from the LM rail.
However, if the LM block is twisted when reattaching it onto the LM rail, it may cause the balls to fall or damage the ball cage. We recommend using the LM block removing/mounting jig (for models receiving preloads, be sure to use the LM block removing/mounting jig).

Lubrication Accessories

12 QZ Lubricator™

The QZ Lubricator feeds the right amount of lubricant to the ball raceway on the LM rail. This allows an oil film to continuously be formed between the balls and the raceway, and drastically extends the lubrication and maintenance intervals.

When the QZ Lubricator is required, specify the desired type with the corresponding symbol indicated in table 1.
For supported LM Guide model numbers for the QZ Lubricator and the overall block length with the QZ Lubricator attached (L dimension), see tables 2 and 3.

Features

- Supplements lost oil to drastically extend the lubrication/maintenance interval.
- Eco-friendly lubrication system that does not contaminate the surrounding area since it feeds the right amount of lubricant to the ball raceway.
- The user can select a type of lubricant that meets the intended use.

Significant Extension of the Maintenance Interval

Attaching the QZ Lubricator helps extend the maintenance interval throughout the whole load range from the light-load area to the heavy-load area.

*Note that the QZ Lubricator is not sold alone.
*Those models equipped with the QZ Lubricator cannot have a grease nipple.
When desiring both the QZ Lubricator and a grease nipple to be attached, contact THK.

Table 1 Parts Symbols for Model SNR with the QZ Lubricator Attached

Symbol	Dust prevention accessories for LM Guide with QZ Lubricator attached
QZUU	With end seal + QZ Lubricator
QZSS	With end seal + side seal + inner seal + QZ Lubricator
QZDD	With double seals + side seal + inner seal + QZ Lubricator
QZZZ	With end seal + side seal + inner seal + metal scraper + QZ Lubricator
QZKK	With double seals + side seal + inner seal + metal scraper + QZ Lubricator
QZSSHH	With end seal + side seal + inner seal + LaCS + QZ Lubricator
QZDDHH	With double seals + side seal + inner seal + LaCS + QZ Lubricator
QZZZHH	With end seal + side seal + inner seal + metal scraper + LaCS + QZ Lubricator
QZKKHH	With double seals + side seal + inner seal + metal scraper + LaCS + QZ Lubricator

Table 2 Overall LM Block Length (Dimension L) of Models SNR/SNS with a Dust Prevention Accessory Attached

Unit: mm

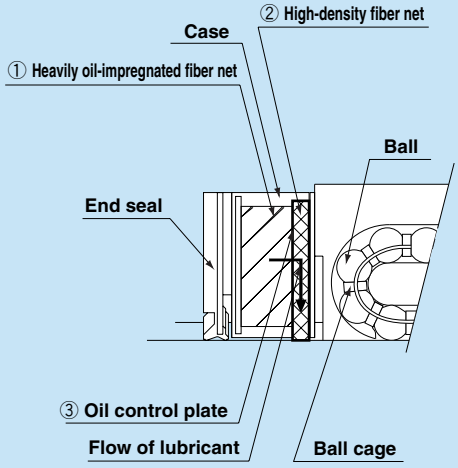
Model No.	QZUU	QZSS	QZDD	QZZZ	QZKK	QZSSHH	QZDDHH	QZZZHH	QZKKHH
25R/C	105.2	105.2	112.8	110.9	118.5	122.5	130.1	124.9	132.5
25LR/LC	124.4	124.4	132	130.1	137.7	141.7	149.3	144.1	151.7
30R/C	121.2	121.2	131	126.9	136.7	141.7	151.5	144.1	153.9
30LR/LC	143.7	143.7	153.5	149.4	159.2	164.2	174	166.6	176.4
35R/C	142.7	142.7	152.9	149.5	159.7	164.3	174.5	166.7	176.9
35LR/LC	168.2	168.2	178.4	175	185.2	189.8	200	192.2	202.4
45R/C	171.4	171.4	181.6	179	189.2	196.4	206.6	199.6	209.8
45LR/LC	204.2	204.2	214.4	211.8	222	229.2	239.4	232.4	242.6
55R/C	204.5	204.5	214.7	213.2	223.4	231	241.2	234.2	244.4
55LR/LC	241.7	241.7	251.9	250.4	260.6	268.2	278.4	271.4	281.6
65R/C	227.6	227.6	238.2	236.3	246.9	257.5	268.1	260.7	271.3
65LR/LC	287.6	287.6	298.2	296.3	306.9	317.5	328.1	320.7	331.3

Table 3 Overall LM Block Length (Dimension L) of Models SNR/SNS-H with a Dust Prevention Accessory Attached

Unit: mm

Model No.	QZUU	QZSS	QZDD	QZZZ	QZKK	QZSSHH	QZDDHH	QZZZHH	QZKKHH
35RH/CH	142.7	142.7	152.9	149.5	159.7	164.3	174.5	166.7	176.9
35LRH/LCH	168.2	168.2	178.4	175	185.2	189.8	200	192.2	202.4
45RH/CH	171.4	171.4	181.6	179	189.2	196.4	206.6	199.6	209.8
45LRH/LCH	204.2	204.2	214.4	211.8	222	229.2	239.4	232.4	242.6
55RH/CH	204.5	204.5	214.7	213.2	223.4	231	241.2	234.2	244.4
55LRH/LCH	241.7	241.7	251.9	250.4	260.6	268.2	278.4	271.4	281.6

QZ Lubricator 12



The structure of the QZ Lubricator consists of three major components:
① a heavy oil-impregnated fiber net (functions to store lubricant).
② a high-density fiber net (functions to apply lubricant to the raceway).
③ an oil-control plate (functions to adjust oil flow).
The lubricant contained in the QZ Lubricator is fed by the capillary phenomenon, which is used also in felt pens and many other products, as the fundamental principle.

Caged Ball LM Guide Models SNR/SNS

Precautions on use

● Handling
- Disassembling components may cause dust to enter the system or degrade mounting accuracy of parts. Do not disassemble the product.
- Tilting an LM block or LM rail may cause them to fall by their own weight.
- Dropping or hitting the LM Guide may damage it. Giving an impact to the LM Guide could also cause damage to its function even if the guide looks intact.

● Lubrication
- Thoroughly remove anti-corrosion oil and feed lubricant before using the product.
- Do not mix lubricants of different physical properties.
- In locations exposed to constant vibrations or in special environments such as clean rooms, vacuum and low/high temperature, normal lubricants may not be used. Contact THK for details.
- When planning to use a special lubricant, contact THK before using it.
- When adopting oil lubrication, the lubricant may not be distributed throughout the LM system depending on the mounting orientation of the system. Contact THK for details.
- Lubrication interval varies according to the service conditions. Contact THK for details.

● Precautions on Use
- Entrance of foreign matter may cause damage to the ball circulating path or functional loss. Prevent foreign matter, such as dust or cutting chips, from entering the system.
- When planning to use the LM system in an environment where coolant penetrates the LM block, it may cause trouble to product functions depending on the type of coolant. Contact THK for details.
- Do not use the LM system at temperature of 80℃ or higher. When desiring to use the system at temperature of 80℃ or higher, contact THK in advance.
- If foreign matter adheres to the LM system, replenish the lubricant after cleaning the product. For available types of detergent, contact THK .
- When using the LM Guide with an inverted mount, breakage of the endplate due to an accident or the like may cause balls to fall out and the LM block to come off from the LM rail and fall. In these cases, take preventive measures such as adding a safety mechanism for preventing such falls.
- When using the LM system in locations exposed to constant vibrations or in special environments such as clean rooms, vacuum and low/high temperature, contact THK in advance.
- When removing the LM block from the LM rail and then replacing the block, an LM block mounting/removing jig that facilitates such installation is available. Contact THK for details.

● Storage
- When storing the LM Guide, enclose it in a package designated by THK and store it in a horizontal orientation while avoiding high temperature, low temperature and high humidity.

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