LM Guide SR — High-Rigidity Radial Type

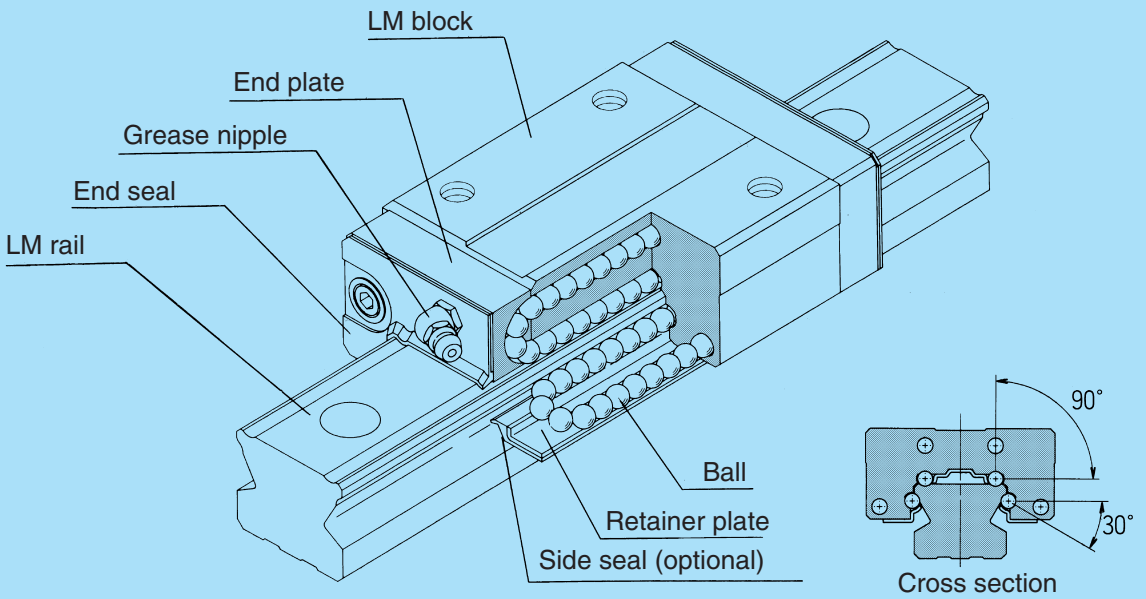


Fig. 1 Construction of Model SR-W

Construction and Features

Balls roll in four rows of a precisely-ground raceway on an LM rail and an LM block. The end plate attached to the LM block causes the trains of balls to circulate. As the balls are held in place by the retainer plate, they do not fall off if the LM block is removed from the rail. The low profile of the assembly and the high rigidity of the LM block combine to provide stable linear motion with a high degree of accuracy.

Compact and heavy-load-bearing

Due to its low-profile, compact design and the 90° ball contact angle in respect to the radial direction, LM Guide SR is best suited for horizontal guideways.

Simple establishment of mounting accuracy

A self-adjusting type capable of compensating for errors in parallelism between two axes and levelness, SR ensures precision and smooth, lively linear motion.

Low noise

The guideway on the end plate installed at each end of the LM block ensures the smooth circulation of the trains of balls at turning corners. As a result, the rolling balls generate little noise.

High durability

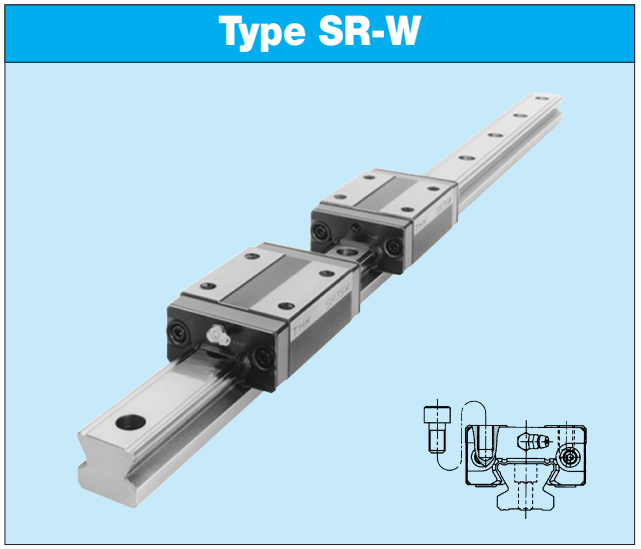
Free from differential slip even under preload or uneven load, the balls roll smoothly. This results in high wear resistance and excellent long-term precision.

Stainless steel type available

Upon request, we can provide stainless steel LM blocks, rails, and balls.

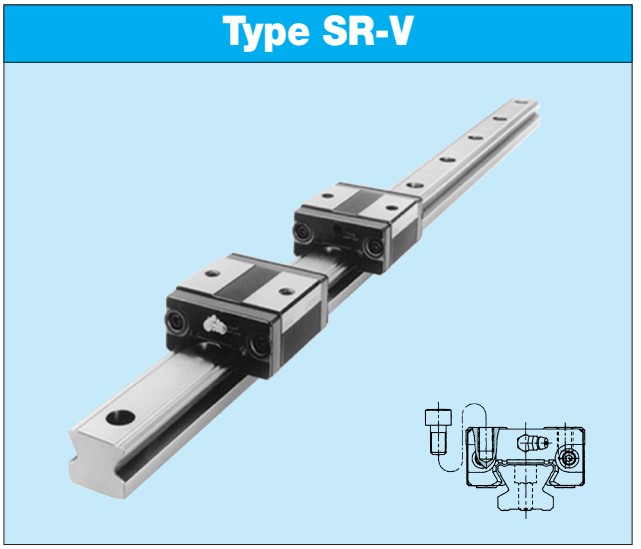
Types and Features

Type SR-W



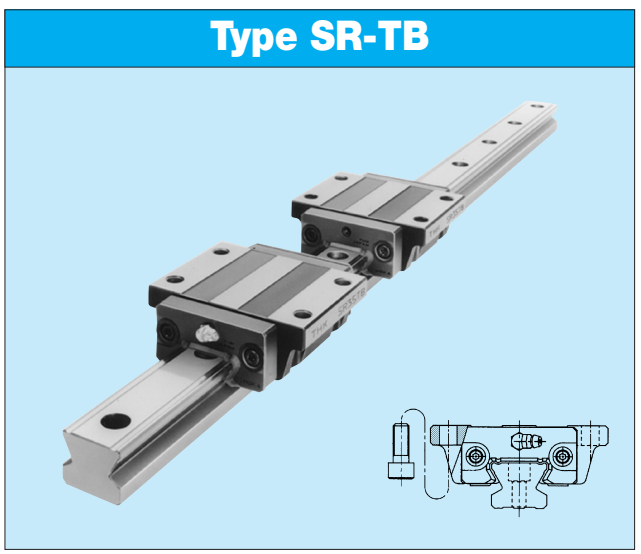
Low-profile, compact, and strong against radial loads. One of the representative models of the LM Guide.

Type SR-V



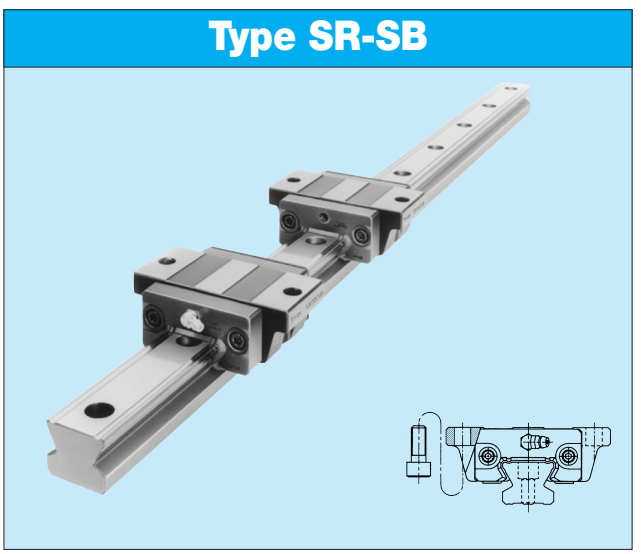
Type SR-W modified by shortening the LM blocks; therefore space-saving

Type SR-TB



Of the same height as type SR-W. The LM blocks can be attached to a table from below.

Type SR-SB



Type SR-TB modified by shortening the LM blocks; therefore space-saving

Characteristics of Type SR

Compared with a guide with a 45° contact design, type SR features the superior characteristics specified below. By taking advantage of those characteristics, we can produce machines and equipment of higher precision and rigidity.

Differences in Load Rating and Service Life

Type SR is constructed so as to provide a 90° ball-contact angle. Compared with a 45° contact angle, use of a 90° contact angle results in a different load rating and service life. Compared with products of the same ball diameter, under the same radial load specified below, with type SR the balls are subjected to only 70% of the load they receive with the 45° contact design. As a result of this difference, the service life is nearly doubled.

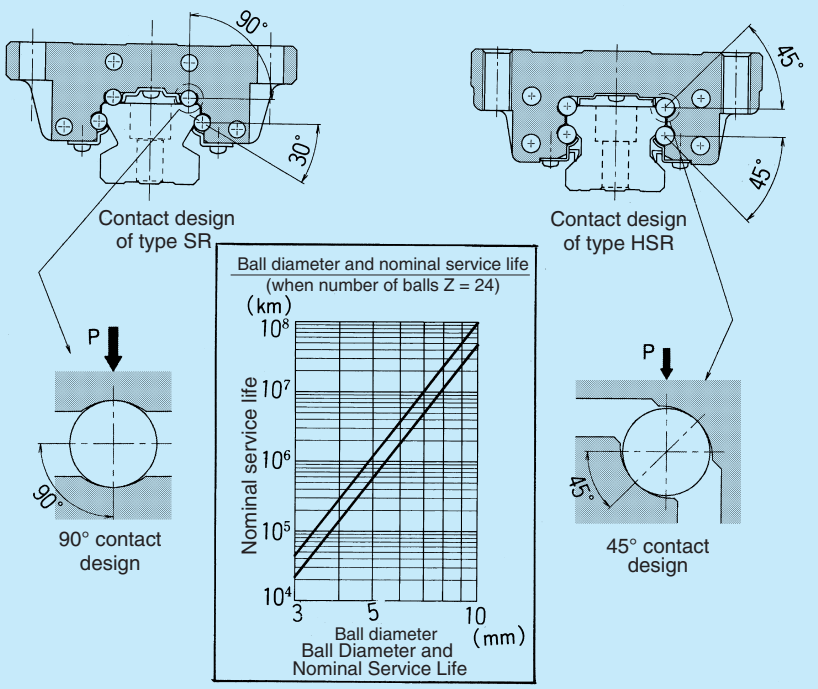


Fig. 2

Difference in Accuracy

Machining (grinding) errors that occur in an LM rail or block affect running accuracy. A grinding error ^{3} on a raceway results in an error in the radial direction 1.4 times greater in the 45° contact design than in type SR, which features a 90° contact design. In the horizontal direction as well, the error with the 45° design is 1.22 times that with the 30° contact design.

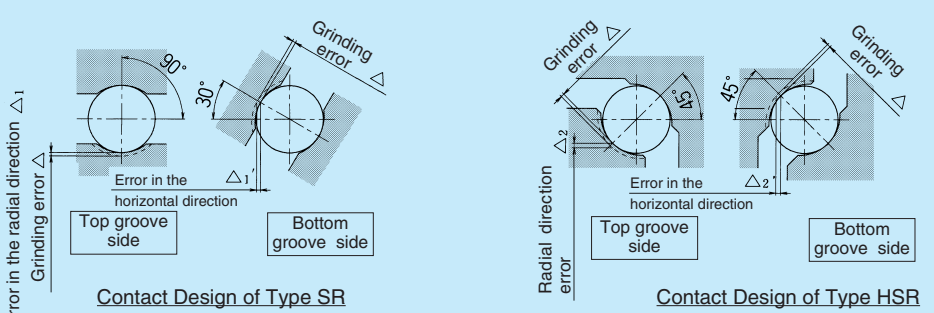


Fig. 3 Machining Error and Precision

Difference in Rigidity

The 90° contact design applied to type SR differs in rigidity from the 45° design.
Under the same radial load P, the deflection in the radial direction with type SR is only 56% of that with the 45° design. The diagrams below show the differences in radial load and deflection. Therefore, when it is necessary to ensure rigidity in the radial direction, type SR has an advantage over other types.

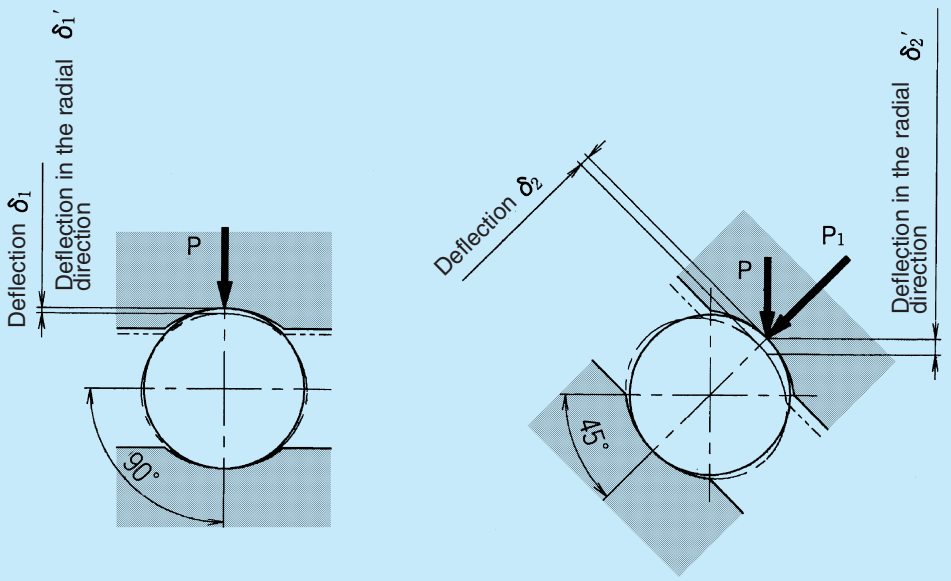


Fig. 4 Deflection under Radial Load

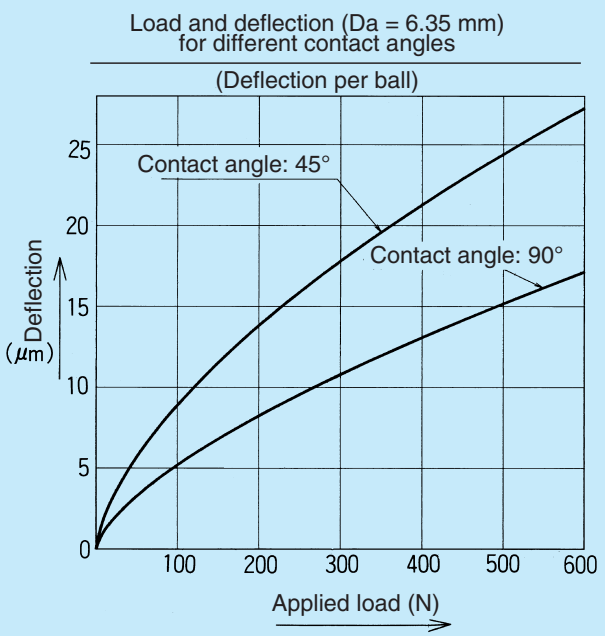


Fig. 5 Radial Load and Deflection

Summary

As illustrated above, type SR is best suited for places where the radial load is the main load, radial rigidity is required, and it is necessary to ensure running accuracy in both the horizontal and vertical directions.

However, where a large reverse-radial or lateral load or a great moment is exerted, we recommend use of a four-way equal-load type such as HSR.

Load Rating and Permissible Moment in Various Directions

Load rating

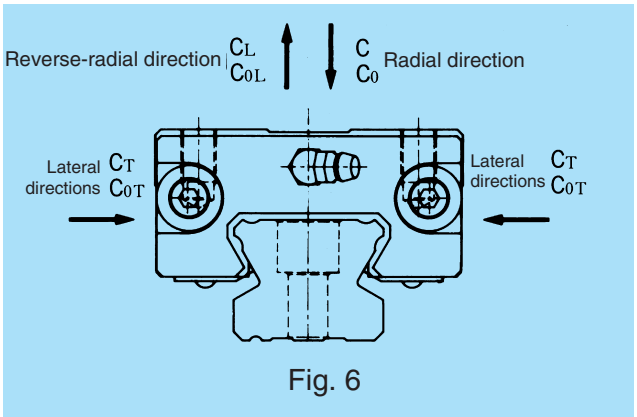


Fig. 6

Type SR can bear loads in all four directions: radial, reverse-radial, and the two lateral directions.

The basic load ratings of type SR is in the radial direction indicated in Fig. 6. The values are presented in the corresponding dimension tables. Values in the reverse-radial and lateral directions can be obtained from Table 1.

Table 1 Type SR Basic Load Ratings in Various Directions

Model No.	Direction	Basic dynamic-load rating	Basic static-load rating
SR 15 ~ 70	Radial direction	C	C_0
	Reverse-radial direction	C_L=0.62C	C_{0L}=0.50C_0
	Lateral directions	C_T=0.56C	C_{0T}=0.43C_0
SR 85 ~ 150	Radial direction	C	C_0
	Reverse-radial direction	C_L=0.78C	C_{0L}=0.71C_0
	Lateral directions	C_T=0.48C	C_{0T}=0.35C_0

Equivalent load

An equivalent load for type SR when reverse-radial and lateral loads are exerted on its LM block simultaneously can be obtained using the following equation:

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

where

P_E : equivalent load (N)
- In the reverse-radial direction
- In the lateral directions

P_L : reverse-radial load (N)

P_T : lateral load (N)

X and Y : equivalent factor (see Table 2)

Table 2 Type-SR Equivalent Factor

Model No.	P_E	X	Y
SR 15 ~ 70	Equivalent load in the reverse-radial direction	1	1.155
	Equivalent load in the lateral directions	0.866	1
SR 85 ~ 150	Equivalent load in the reverse-radial direction	1	2
	Equivalent load in the lateral directions	0.5	1

Permissible moment

In type SR, a single LM block can bear moments in all directions. Table 3 presents the permissible moments in directions M_A, M_B, and M_C for a single LM block and double LM blocks laid over one another (no data for direction M_C).

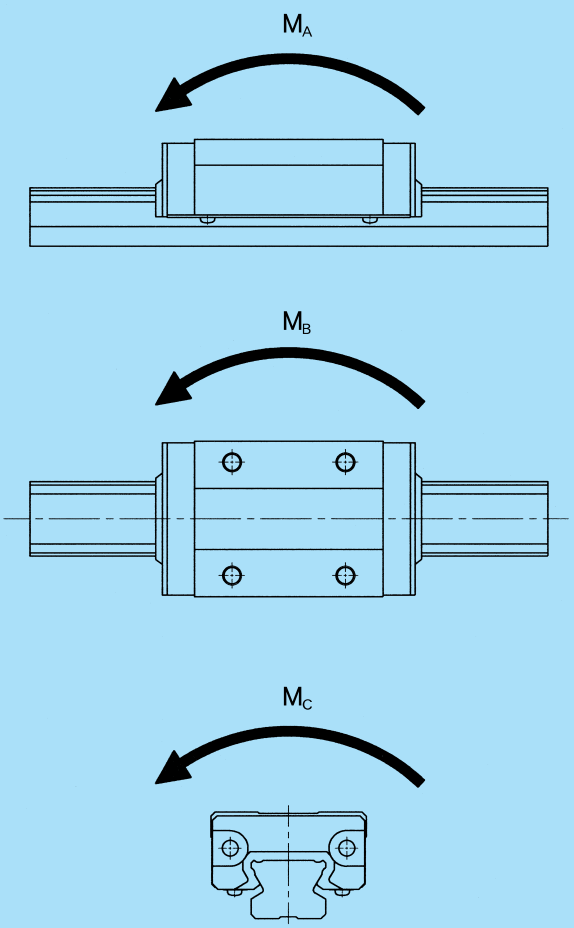


Fig. 7

Table 3 Type-SR Static Permissible Moment

Unit: kN•m

Model No. \ Direction	M_A		M_B		M_C
	Single block	Double block	Single block	Double block	Single block
SR 15V ,SB	0.02	0.13	0.02	0.11	0.04
SR 15W,TB	0.05	0.28	0.04	0.24	0.07
SR 20V ,SB	0.03	0.19	0.02	0.16	0.07
SR 20W,TB	0.07	0.43	0.06	0.37	0.12
SR 25V ,SB	0.05	0.37	0.04	0.32	0.12
SR 25W,TB	0.15	0.84	0.12	0.73	0.21
SR 30V ,SB	0.09	0.60	0.08	0.52	0.21
SR 30W,TB	0.25	1.41	0.21	1.22	0.36
SR 35V ,SB	0.14	0.94	0.12	0.81	0.34
SR 35W,TB	0.40	2.19	0.34	1.89	0.60
SR 45W,TB	0.65	3.26	0.56	2.80	1.05
SR 55W,TB	1.15	6.28	0.99	5.40	1.71
SR 70T	2.54	13.2	2.18	11.3	4.14
SR 85T	2.54	15.1	1.25	7.47	5.74
SR100T	3.95	20.9	1.95	10.3	8.55
SR120T	5.83	32.9	2.87	16.2	13.7
SR150T	9.98	55.8	4.92	27.5	24.3

Model-number coding

SR30 W 2 UU C0 M + 1200L P M – II

- II — No. of axes
- M — LM-rail material (stainless steel in this example)
- P — Accuracy grade
- 1200L — LM-rail length (in mm)
- M — LM-block material (stainless steel in this example)
- C0 — Radial clearance
- UU — Provision of end seals (attached to both end faces in this example; for end seal + side seal, this becomes "SS")
- 2 — No. of LM blocks combined on a single axis
- W — Classification of the LM block
- SR30 — Model No.

Note: This coding is based on the assumption of one set of code for a one-axis unit.
(A configuration of two axes installed in parallel is given at least two sets of code.)

Radial clearance

Table 4 presents the radial clearances of types SR.

Table 4 Type SR Radial Clearances

Unit : μm

Clearance symbol / Model No.	Normal	Under a light preload	Medium preload
	No symbol	C1	C0
SR 15	– 4 ~ + 2	– 10 ~ – 4	—
SR 20	– 5 ~ + 2	– 12 ~ – 5	– 17 ~ – 12
SR 25	– 6 ~ + 3	– 15 ~ – 6	– 21 ~ – 15
SR 30	– 7 ~ + 4	– 18 ~ – 7	– 26 ~ – 18
SR 35	– 8 ~ + 4	– 20 ~ – 8	– 31 ~ – 20
SR 45	– 10 ~ + 5	– 24 ~ – 10	– 36 ~ – 24
SR 55	– 12 ~ + 5	– 28 ~ – 12	– 45 ~ – 28
SR 70	– 14 ~ + 7	– 32 ~ – 14	– 50 ~ – 32
SR 85	– 20 ~ + 9	– 46 ~ – 20	– 70 ~ – 46
SR 100	– 22 ~ + 10	– 52 ~ – 22	– 78 ~ – 52
SR 120	– 25 ~ + 12	– 57 ~ – 25	– 87 ~ – 57
SR 150	– 29 ~ + 14	– 69 ~ – 29	–104 ~ – 69

Accuracy Standards

The accuracy of type SR is divided into five grades, normal, high, precision, super-precision, and ultra-precision, in accordance with the model numbers shown in Table 5.

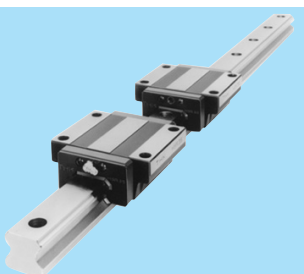


Fig. 8

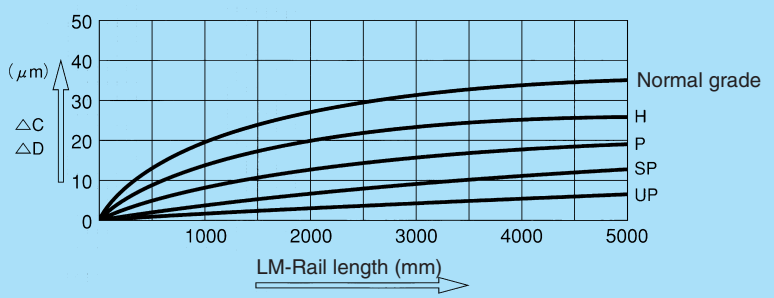


Fig. 9 Relationship Between LM-Rail Length and Running Parallelism

Table 5 Type SR Accuracy Standard

Unit : mm

Model No.	Accuracy standard	Normal	High	Precision	Super-precision	Ultra-precision
	Item	No symbol	H	P	SP	UP
SR 15 SR 20	Tolerance for height M	±0.1	±0.03	0 -0.03	0 -0.015	0 -0.008
	Tolerance for the height M difference among LM blocks	0.02	0.01	0.006	0.004	0.003
	Tolerance for rail-to-block lateral distance W_2	±0.1	±0.03	0 -0.03	0 -0.015	0 -0.008
	Tolerance for rail-to-block lateral distance W_2 difference among LM blocks	0.02	0.01	0.006	0.004	0.003
	Running Parallelism of surface C with surface A	C (as per Fig. 9)				
	Running parallelism of surface D with surface B	D (as per Fig. 9)				
SR 25 SR 30 SR 35	Tolerance for height M	±0.1	±0.04	0 -0.04	0 -0.02	0 -0.01
	Tolerance for the height M difference among LM blocks	0.02	0.015	0.007	0.005	0.003
	Tolerance for rail-to-block lateral distance W_2	±0.1	±0.04	0 -0.04	0 -0.02	0 -0.01
	Tolerance for rail-to-block lateral distance W_2 difference among LM blocks	0.03	0.015	0.007	0.005	0.003
	Running Parallelism of surface C with surface A	C (as per Fig. 9)				
	Running parallelism of surface D with surface B	D (as per Fig. 9)				
SR 45 SR 55	Tolerance for height M	±0.1	±0.05	0 -0.05	0 -0.03	0 -0.02
	Tolerance for the height M difference among LM blocks	0.03	0.015	0.007	0.005	0.003
	Tolerance for rail-to-block lateral distance W_2	±0.1	±0.05	0 -0.05	0 -0.03	0 -0.02
	Tolerance for rail-to-block lateral distance W_2 difference among LM blocks	0.03	0.02	0.01	0.007	0.005
	Running Parallelism of surface C with surface A	C (as per Fig. 9)				
	Running parallelism of surface D with surface B	D (as per Fig. 9)				
SR 70 SR 85 SR 100 SR 120 SR 150	Tolerance for height M	±0.1	±0.07	0 -0.07	0 -0.05	0 -0.03
	Tolerance for the height M difference among LM blocks	0.03	0.02	0.01	0.007	0.005
	Tolerance for rail-to-block lateral distance W_2	±0.1	±0.07	0 -0.07	0 -0.05	0 -0.03
	Tolerance for rail-to-block lateral distance W_2 difference among LM blocks	0.03	0.025	0.015	0.010	0.007
	Running Parallelism of surface C with surface A	C (as per Fig. 9)				
	Running parallelism of surface D with surface B	D (as per Fig. 9)				

Contamination Protection

Types SR is provided with end and side seals as standard contamination-protection accessories.

End seal

Standard accessory

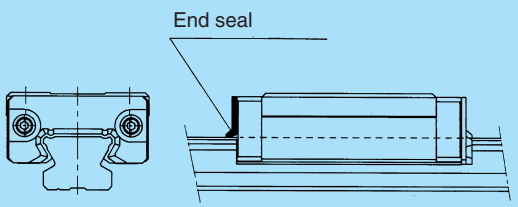


Fig. 10

Double seal

Use two end seals to enhance the contamination-protection capacity.

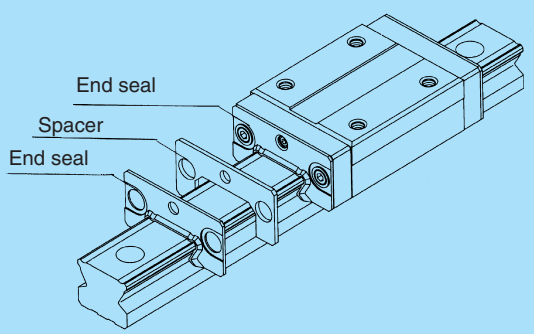


Fig. 11

Scraper

Removes spatters and similar large foreign matter.

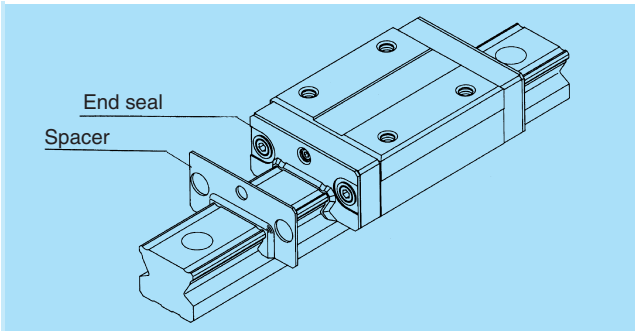


Fig. 12

Side seal

Prevents contaminants from entering an LM block from below.

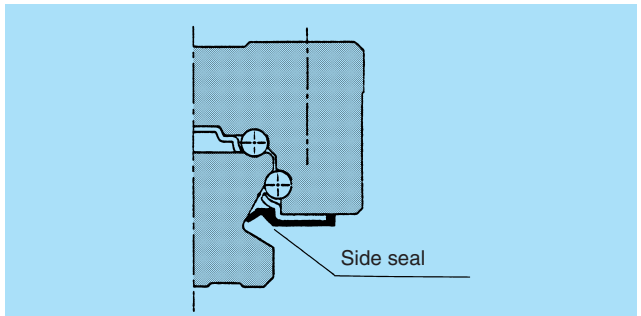


Fig. 13

Inner seal

Installed in a LM block.
Applicable model Nos.: SR45 and 55

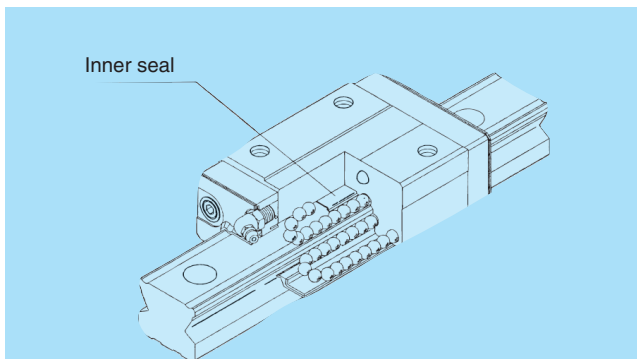


Fig. 14

Contamination-protection-accessory symbol

Where a contamination accessory is required, specify so using the symbols shown below.

Some models do not accept contamination-protection accessories. Confirm which parts are applicable by referring to Table 8.

Attaching a contamination-protection accessory to an LM block changes the block overall length. Add to dimension L the increment specified in the corresponding dimension table.

Table 6

Contamination-protection accessory	Symbol
End seal (on both end faces)	UU
End seal + side seal	SS
End seal + side seal + scraper	ZZ
Double seals + side seal	DD
Double seals + side seal + scraper	KK
End seal (low seal resistance)	LL
LL seal + side seal	RR

Seal resistance value

For the maximum value of seal resistance of seals type SR...UU per LM block, in which grease is applied, see Table 7.

Table 7 Maximum Resistance Value of Seals to Type SR

Unit : N

Model No.	Seal resistance value
SR 15	2.5
SR 20	3.4
SR 25	4.4
SR 30	8.8
SR 35	11.8
SR 45	12.7
SR 55	15.7
SR 70	19.6
SR 85	-
SR 100	-
SR 120	-
SR 150	-

Table 8 Applicability of Seals to Type SR, and the Increment to Be Added to the Block Overall Length

Unit : mm

Model. No.	No symbol		UU		SS		DD		ZZ		KK		LL		RR	
SR 15	O	-5.0	O	—	O	—	O	5.2	Δ	1.4	Δ	6.6	O	—	O	—
SR 20	O	-6.3	O	—	O	—	O	6.3	Δ	4.1	Δ	10.7	O	—	O	—
SR 25	O	-7.0	O	—	O	—	O	7.6	O	4.4	O	12.0	O	—	O	—
SR 30	O	-7.0	O	—	O	—	O	7.6	O	2.6	O	10.2	×		×	
SR 35	O	-7.0	O	—	O	—	O	7.6	O	2.6	O	10.2	×		×	
SR 45	O	-8.0	O	—	O	—	O	8.6	O	3.4	O	12.0	×		×	
SR 55	O	-8.0	O	—	O	—	O	8.6	O	3.4	O	12.0	×		×	
SR 70	O	-7.4	O	—	O	—	O	6.8	O	3.8	O	11.0	×		×	
SR 85	O	-8.0	O	—	O	—	×		×		×		×		×	
SR100	O	-8.0	O	—	O	—	×		×		×		×		×	
SR120	O	-9.0	O	—	O	—	×		×		×		×		×	
SR150		-9.0	O	—	O	—	×		×		×		×		×	

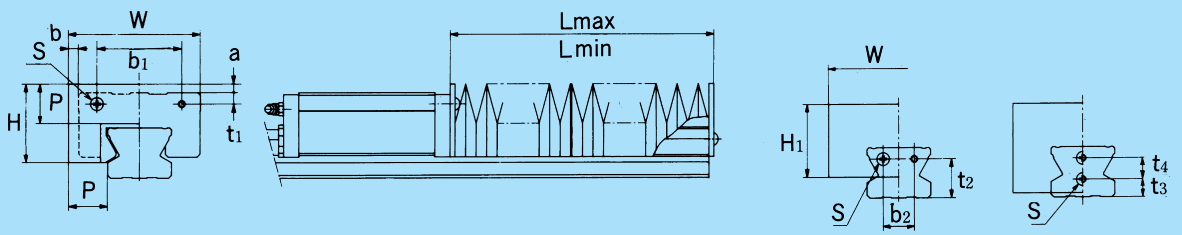
Note: O = Applicable

× = Inapplicable

Δ = Applicable, but a grease nipple cannot be attached; contact us

Dedicated Bellows JS for LM-Guide Type SR

Shown below are the dimensions of dedicated bellows JS for type SR. When ordering the bellows, specify the relevant model number shown in the table below.



Unit : mm

Model No.	Boundary dimensions												b		A (Lmax/Lmin)	Applicable LM-Guide model
	W	H	H_1	P	b_1	t_1	b_2	t_2	t_3	t_4	Mounting bolt	a	W/V type	TB/SB type		
JS15	51	24	26	15	22	3.4	—	—	8	—	M3×0.5×16	5	8.5	—	5	SR15
JS20	58	26	30	15	25	4.2	—	—	6	6	M3×0.5×16	4	8	0.5	5	SR20
JS25	71	33	38	20	29	5	—	—	6	7	M3×0.5×16	7	11.5	1	7	SR25
JS30	76	37.5	37.5	20	42	5	12	17	—	—	M4×0.7×18	3	8	—	7	SR30
JS35	84	39	39	20	44	6.5	14	20	—	—	M5×0.8×10	1.5	7	—	7	SR35
JS45	95	47.5	47.5	20	60	8	22	27	—	—	M5×0.8×10	—	5	—	7	SR45
JS55	108	55.5	55.5	25	70	10	24	28	—	—	M6×12	—	4	—	9	SR55
JS70	144	67	67	30	90	13	34	35	—	—	M6×12	—	9	—	10	SR70

Note 1: The expansion ratios in installation directions other than horizontal, e.g., vertical and wall-hung, differ from those specified in this table (guidelines: A – 1.5). When ordering bellows, please specify your installation direction.

Note 2: If bellows are attached to both ends of an LM block, a grease nipple cannot be installed there. In such a case, contact us.

Model-number coding

JS55 - 60/540

Bellows dimensions (length when compressed / length when expanded)

Model No. (bellows for type SR55 in this example)

Note: A bellows length can be calculated as shown below.

$$Lmin = \frac{S}{(A - 1)}$$ S: stroke length in (mm)

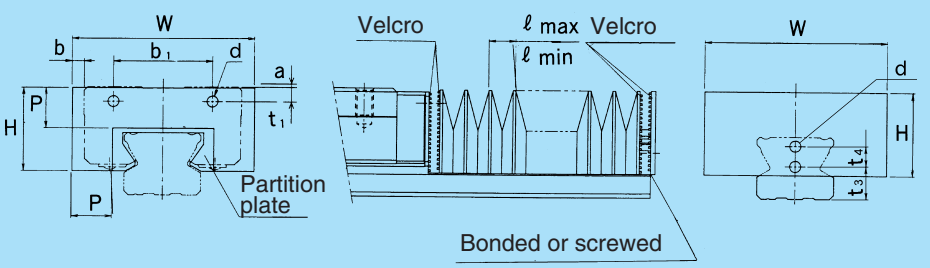
$$Lmax = Lmin \bullet A$$ A: expansion ratio

DS Bellows Designed for Type SR

For types SR15, SR20, and SR25, a bellows-type DS with the features specified below is available. When placing an order, specify model numbers, which are shown below.

Features

1. The width and height are smaller than those of conventional bellows. As a result, type DS does not protrude over the top surface of an LM block. The expansion ratio is equal to or greater than that of a conventional bellows.
2. Each ridge of the bellows has a partition plate to prevent the bellows from lifting. As a result, type DS can be used in the vertical, wall-hung, and tilted positions.
3. Excellent high-speed operation, up to as high as 120 m/min.
4. Can be equipped with Velcro, enabling use at any desired length, either by cutting a regular-length product into short sections or by joining more multiple pieces using an adhesive.
5. As with conventional types, type DS can also be fastened using screws. When doing so, hold the plate (1.6 mm in thickness) between the LM block and the bellows.



Unit : mm

Model No.	Boundary dimensions									b							Applicable LM-Guide model
	W	H	P	b_1	t_1	t_3	t_4	d	a	W/V type	TB/SB type	ℓmax	ℓmin	Expansion ratio A	E	Factor k	
DS 15	38	19	10	22	3.4	8	—	3.5	0	7	2	13	2.5	5	2	1.3	SR15
DS 20	49	22	10	25	4.2	6	6	4	0	5	3.5	13	2.5	5	2	1.3	SR20
DS 25	56	26	12	29	5	6	7	4	0	8.5	4	15	3	5	2	1.3	SR25

Note : If bellows are attached to both ends of an LM block, a grease nipple cannot be installed there. In such a case, contact us.

Model-number coding

DS20 - 50/250

- 50/250: Length when compressed / length when expanded
- DS20: Model No. (bellows for type SR20 in this example)

- Maximum length (regular length) as a separate part
  Lmax (Lmin) = lmax x (lmin) x 200
- Calculation example of bellows dimensions
  When SR15 stroke ls = 530 mm:

$$Lmin = \frac{\ell s}{(A - 1)} \quad \frac{530}{4} = 132.5 \cong 135$$

$$Lmax = A \bullet Lmin = 5 \times 135 = 675$$

Hence, the number of crests required is as follows:

$$n = \frac{Lmax}{P \bullet k} = \frac{675}{10 \times 1.3} = 51.9 \cong 52$$

$$Lmin = n \bullet \ell min + E = 52 \times 2.5 + 2 = 132$$

(E = plate thickness; 2 in the present example)
Thus, the bellows to be used are DS15-132/675.

LM Cover TPS Designed for Type SR

The dimensions of type-SR-dedicated LM cover type TPS are as shown below. When placing an order, specify by the following model numbers.

Table 11 Tapped-Hole Rail Dimensions

Unit : mm

Model No.	S_1	Effective tapped thread length ℓ_1
SR15	M5 ´ 0.8	7
SR20	M6	9
SR25	M6	10
SR30	M8	14
SR35	M8	16

Unit : mm

Model No.	Boundary dimensions										Applicable LM-Guide model
	W	D (max)	H	b_1	t_1	b_2	t_2	t_3	t_4	Mounting bolt S	
TPS25	42	30	26.5	29	5	–	–	6	7	M3×0.5×16	SR25
TPS30	54	37	34.5	42	5	12	17	–	–	M4×0.7×18	SR30
TPS35	64	42	38	44	6.5	14	20	–	–	M5×0.8×10	SR35
TPS45	76	55	48	60	8	22	27	–	–	M5×0.8×10	SR45
TPS55	90	61	54.5	70	10	24	28	–	–	M6×12	SR55

Unit : mm

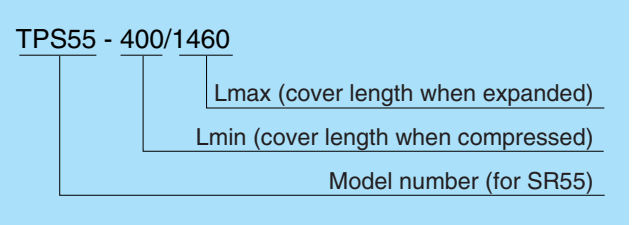
Model No.	No. of sectors	L		Stroke
		min	max	
TPS25	3	200	530	330
	3	150	380	230
	3	100	230	130
TPS30	3	250	680	430
	3	200	530	330
	3	150	380	230
TPS35	3	300	830	530
	3	250	680	430
	3	200	530	330
	3	150	380	230

Unit : mm

Model No.	No. of sectors	L		Stroke
		min	max	
TPS45	3	350	980	630
	3	300	830	530
	3	250	680	430
	3	200	530	330
TPS55	4	400	1460	1060
	4	350	1330	980
	4	300	1060	760
	4	250	860	610

Note : If bellows are attached to both ends of an LM block, a grease nipple cannot be installed there. In such a case, contact us.

Model-number coding



Precautions on Use

Mounting-Surface Height and Corner Profile

Normally, mounting surfaces for LM blocks and rails have lateral reference surfaces to aid in positioning rails and blocks with a high degree of accuracy.

For the reference-surface shoulder height, see Table 9.

Furthermore, provide enough space to the corner profile of a mounting surface so that the corner does not interfere with chamfers made on the LM blocks or rails, or provide the corner with a radius smaller than corner radius r specified in Table 9.

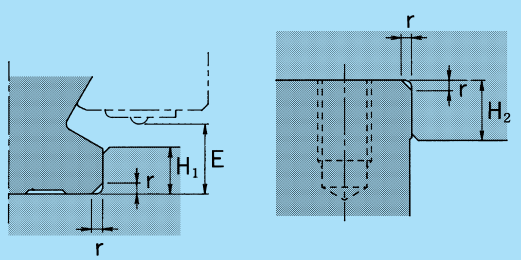


Fig. 15

Table 9 Mounting-Surface Shoulder Height and Corner Radius

Unit : mm

Model No.	Corner radius r (max.)	LM-rail shoulder height H_1	LM-block shoulder max. height H_2	E
SR 15	0.5	3.8	4	4.5
SR 20	0.5	5	5	6
SR 25	1.0	5.5	5	7
SR 30	1.0	8	6	9.5
SR 35	1.0	9	6	11.5
SR 45	1.0	10	8	12.5
SR 55	1.5	11	8	13.5
SR 70	1.5	12	10	15
SR 85	1.2	8	12	18.5
SR 100	1.2	10	15	19
SR 120	1.2	12	20	15
SR 150	1.2	12	20	22

LM-Rail Standard and Maximum Lengths

Table 10 presents the standard and maximum lengths of LM rails for type SR. If your maximum length is not within the range of this table, we offer special LM rails intended for connected use.

For dimension G when a special length is specified, we recommend those listed in Table 10. A large dimension G tends to reduce stability at the shaft ends, which may degrade accuracy.

For connected use, we offer LM rails that ensure the elimination of level differences at joints. Therefore, when placing an order, please specify the overall length of the LM rails you require.

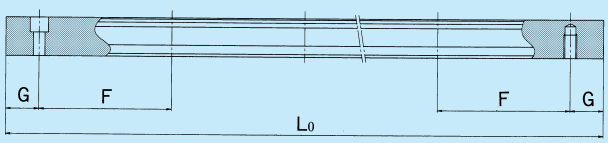


Table 10 Type-SR LM-Rail Standard and Maximum Lengths

Unit : mm

Model No.	SR15	SR20	SR25	SR30	SR35	SR45	SR55	SR70
LM-rail standard length (L_0)	160 220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1300 1360 1420 1480 1540	220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1300 1360 1420 1480 1540 1600 1660 1720 1780 1840 1900 1960 2020 2080 2140	220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1240 1300 1360 1420 1480 1540 1600 1660 1720 1780 1840 1900 1960 2020 2080 2140 2200 2260 2320 2380 2440	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1640 1720 1800 1880 1960 2040 2120 2200 2280 2360 2440 2520 2600 2680 2760 2840 2920	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1640 1720 1800 1880 1960 2040 2120 2200 2280 2360 2440 2520 2600 2680 2760 2840 2920	570 675 780 885 990 1095 1200 1305 1410 1515 1725 1830 1935 2040 2145 2250 2355 2460 2565 2670 2775 2880 2985	780 900 1020 1140 1260 1380 1500 1740 1860 1980 2100 2220 2340 2460 2580 2700 2820 2940	1270 1570 2020
Standard pitch F	60	60	60	80	80	105	120	150
G	20	20	20	20	20	22.5	30	35
Max. length	2500 (1240)	3000 (1480)	3000 (2020)	3000 (2520)	3000 (2520)	3000	3000	3000

Notes:
- In special cases in which connected use is impossible but one of the maximum lengths specified here is required, contact us.
- Model numbers SR85T and above are semi-standard. If any of these products are required, contact us.
- The maximum length differs by accuracy grade. Contact us for details
- Numbers in parentheses indicate the maximum lengths of stainless steel types.

Tapped-Hole Rail Models of Type SR

Type SR includes models with rails that do not have mounting bolt holes, and are instead provided with tapped holes drilled into the rail bodies from below. These models are useful where rails are to be bolted from below the base, and enhance the effect of contamination protection.

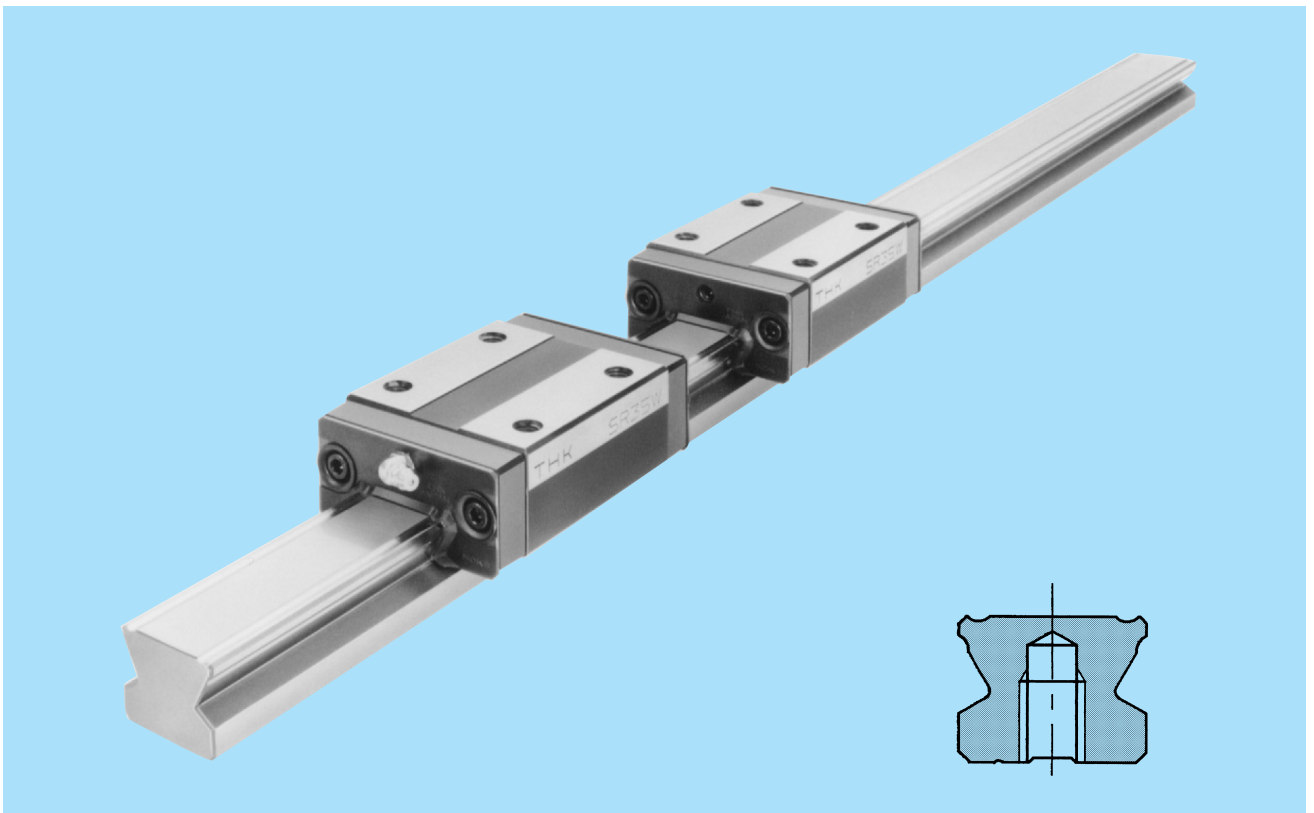


Table 11 Tapped-Hole Rail Dimensions

Unit : mm

Model No.	S_1	Effective tapped thread length ℓ_1
SR15	M5 ´ 0.8	7
SR20	M6	9
SR25	M6	10
SR30	M8	14
SR35	M8	16
SR45	M12	20
SR55	M14	22

1. Tapped-hole rail models of type SR are produced only at the high-accuracy grade or below.
2. Set a bolt length that leaves a clearance of 2 to 5 mm at the tip of each bolt when the bolt is tightened over the full length of the effective tapped thread (diagram shown above).
3. Model-number coding

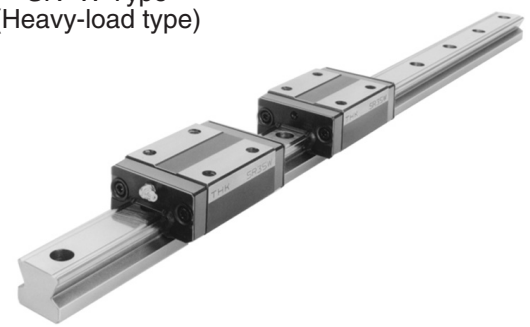
   SR30 W2UU + 1000LH K

   Tap type symbol
4. For the standard tapping pitch (F), see Table 10 on page A-188.

SR-W and SR-WM Type

Standard type

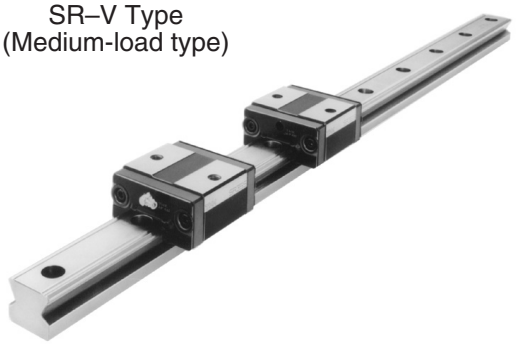
SR–W Type
(Heavy-load type)



SR-V and SR-VM Type

Stainless-steel type

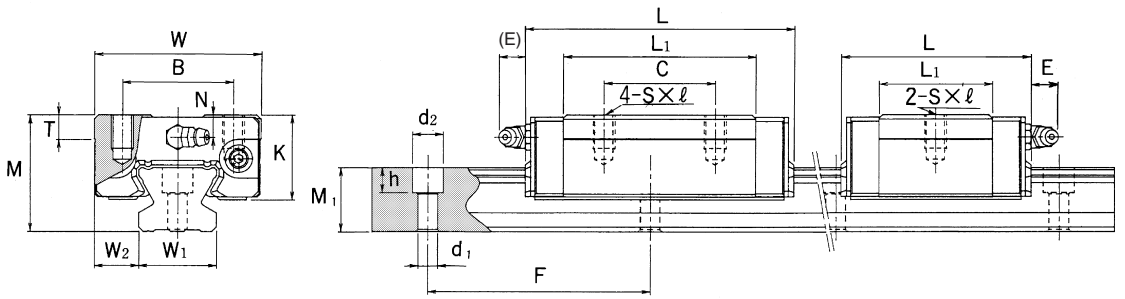
SR–V Type
(Medium-load type)



Model No.	External dimensions			LM-block dimensions							
	Height M	Width W	Length L	B	C	S × ℓ	L_1	T	K	N	E
*SR 15 W/WM *SR 15 V/VM	24	34	57 41	26	26 -	M4 × 7	39.5 22.9	6	19.5	6	5.5
*SR 20 W/WM *SR 20 V/VM	28	42	66.5 48	32	32 -	M5 × 8	46.7 27.8	7.5	22	6	12
*SR 25 WY/WMY *SR 25 VY/VMY	33	48	83 60	35	35 -	M6 × 9	59 35.2	8	26	7	12
*SR 30 W/WM *SR 30 V/VM	42	60	97 68	40	40 -	M8 × 12	69.3 40.4	9	32.5	8	12
*SR 35 W/WM *SR 35 V/VM	48	70	111 78	50	50 -	M8 × 12	79 45.7	13	36.5	8.5	12
SR 45 W	60	86	126	60	60	M10 × 15	90.5	15	47.5	11.5	16
SR 55 W	68	100	156	75	75	M12 × 20	117	17	54.5	12	16
SR 70 T	85	126	195	90	90	M16 × 25	147.6	25	70	12	16
SR 85 T	110	156	180	100	80		130	25	91.5	27	12
SR 100 T	120	178	200	120	100	M18 × 30	150	30	101	32	12
SR 120 T	110	205	235	160	120	M20 × 35	180	24	95	14	13.5
SR 150 T	135	250	280	200	160	M20 × 35	215	24	113	17	13.5

Notes:

- An “M” in a model number indicates that the corresponding LM blocks, rails, and balls are made of stainless steel and are therefore corrosion- and environment-resistant.
- For products marked with a “*”, stainless-steel end plates are available in cases in which they are to be used at 80°C or higher.
- Model numbers SR85T and above are semi-standard. If any of these products are required, contact us.
- For permissible static moments M_A, M_B, and M_C, see page A-179.



SR–W Type
(Heavy-load type)

SR–V Type
(Medium-load type)

Unit : mm

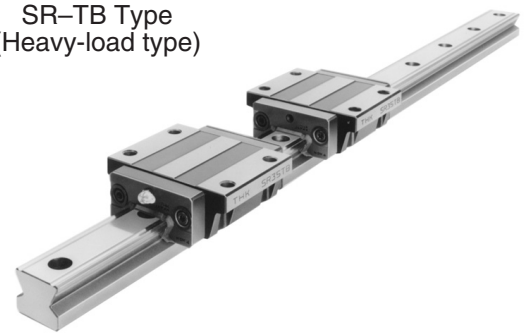
Grease nipple	LM-rail dimensions					Basic load rating		Mass	
	Width W_1 ±0.05	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	C kN	C_0 kN	LM block kg	LM rail kg/m
PB1021B	15	9.5	12.5	60	3.5 × 6 × 4.5	9.51 5.39	19.3 11.1	0.2 0.12	1.2
B-M6F	20	11	15.5	60	6 × 9.5 × 8.5	12.5 7.16	25.2 14.4	0.3 0.2	2.1
B-M6F	23	12.5	18	60	7 × 11 × 9	20.3 11.7	39.5 22.5	0.4 0.3	2.7
B-M6F	28	16	23	80	7 × 11 × 9	30 17.2	56.8 32.5	0.8 0.5	4.3
B-M6F	34	18	27.5	80	9 × 14 × 12	41.7 23.8	77.2 44.1	1.2 0.8	6.4
B-PT1/8	45	20.5	35.5	105	11 × 17.5 × 14	55.3	101	2.2	11.3
B-PT1/8	48	26	38	120	14 × 20 × 17	89.1	157	3.6	12.8
B-PT1/8	70	28	47	150	18 × 26 × 22	156	266	7.0	22.8
A-PT1/8	85	35.5	65.5	180	18 × 26 × 22	120	224	10.1	34.9
A-PT1/8	100	39	70.3	210	22 × 32 × 25	148	283	14.1	46.4
B-PT1/4	114	45.5	65	230	26 × 39 × 30	279	377	-	-
B-PT1/4	144	53	77	250	33 × 48 × 36	411	537	-	-

- For standard LM-rail lengths, see page A-188.
- For model-number coding, see page A-180.
- SR85T and SR100T are provided with a grease nipple on the sides of their LM blocks.

SR-TB and SR-TBM Type

Standard type

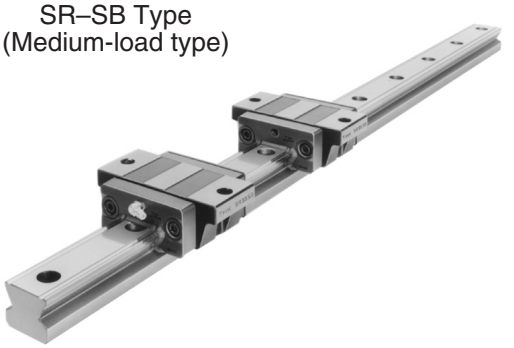
SR–TB Type
(Heavy-load type)



SR-SB and SR-SBM Type

Stainless-steel type

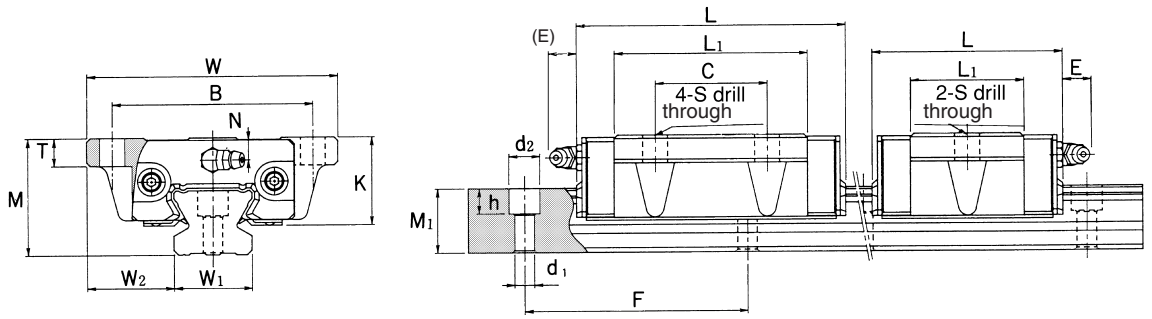
SR–SB Type
(Medium-load type)



Model No.	External dimensions			LM-block dimensions							
	Height M	Width W	Length L	B	C	S	L_1	T	K	N	E
*SR 15 TB/TBM *SR 15 SB/SBM	24	52	57 41	41	26 -	4.5	39.5 22.9	7	19.5	6	5.5
*SR 20 TB/TBM *SR 20 SB/SBM	28	59	66.5 48	49	32 -	5.5	46.7 27.8	9	22	6	12
*SR 25 TBY/TBMY *SR 25 SBY/SBMY	33	73	83 60	60	35 -	7	59 35.2	10	26	7	12
*SR 30 TB/TBM *SR 30 SB/SBM	42	90	97 68	72	40 -	9	69.3 40.4	10	32.5	8	12
*SR 35 TB/TBM *SR 35 SB/SBM	48	100	111 78	82	50 -	9	79 45.7	13	36.5	8.5	12
SR 45 TB	60	120	126	100	60	11	90.5	15	47.5	11.5	16
SR 55 TB	68	140	156	116	75	14	117	17	54.5	12	16

Notes:

- An “M” in a model number indicates that the corresponding LM blocks, rails, and balls are made of stainless steel and are therefore corrosion- and environment-resistant.
- For products marked with a “*”, stainless-steel end plates are available in cases in which they are to be used at 80°C or higher.
- For permissible static moments M_A, M_B, and M_C, see page A-179.



SR–TB Type (Heavy-load type)

SR–SB Type (Medium-load type)

Unit : mm

Grease nipple	LM-rail dimensions					Basic load rating		Mass	
	Width W_1 ±0.05	W_2	Height M_1	Pitch F	$d_1 \times d_2 \times h$	C kN	C_0 kN	LM block kg	LM rail kg/m
PB1021B	15	18.5	12.5	60	3.5 × 6 × 4.5	9.51 5.39	19.3 11.1	0.2 0.15	1.2
B–M6F	20	19.5	15.5	60	6 × 9.5 × 8.5	12.5 7.16	25.2 14.4	0.4 0.3	2.1
B–M6F	23	25	18	60	7 × 11 × 9	20.3 11.7	39.5 22.5	0.6 0.4	2.7
B-M6F	28	31	23	80	7 × 11 × 9	30 17.2	56.8 32.5	1.1 0.8	4.3
B-M6F	34	33	27.5	80	9 × 14 × 12	41.7 23.8	77.2 44.1	1.5 1.0	6.4
B-PT1/8	45	37.5	35.5	105	11 × 17.5 × 14	55.3	101	2.5	11.3
B-PT1/8	48	46	38	120	14 × 20 × 17	89.1	157	4.2	12.8

- For standard LM-rail lengths, see page A-188.
- For model-number coding, see page A-180.