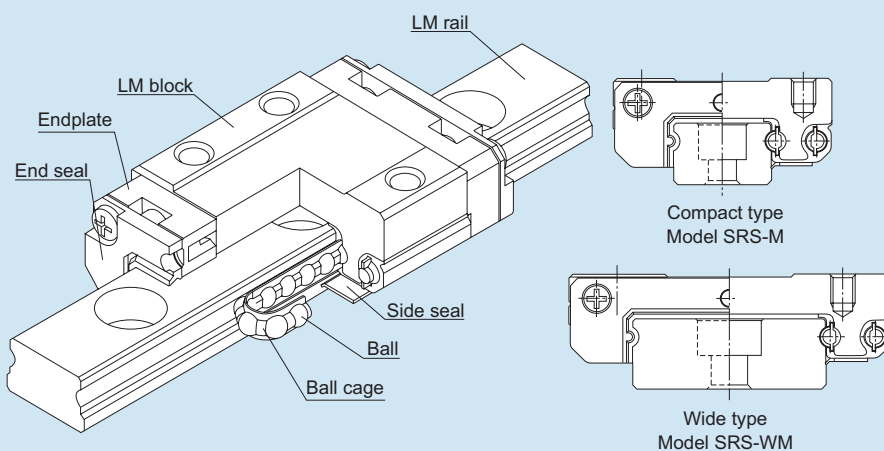


SRS



Caged Ball LM Guide Miniature Type Model SRS



* For the ball cage, see A-130.

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Structure and Features

Caged Ball LM Guide model SRS has a structure where two raceways are incorporated into the compact body, enabling the model to receive loads in all directions, and to be used in locations where a moment is applied with a single rail. In addition, use of ball cages eliminates friction between balls, thus achieving high speed, low noise, acceptable running sound, long service life, and long-term maintenance-free operation.

[Low Dust Generation]

Use of ball cages eliminates friction between balls and retains lubricant, thus achieving low dust generation. In addition, the LM block and LM rail use stainless steel, which is highly resistant to corrosion.

[4-way Equal Load Type]

Since the right and left rows of balls under a load contact the raceway at 45°, this LM Guide is capable of receiving loads in the radial, reverse radial and lateral directions at equal values and being used in any orientations. With this well-balanced structure, this model can be used in extensive applications.

[Compact]

Since SRS has a compact structure where the rail cross section is designed to be low and that contains only two rows of balls, it can be installed in space-saving locations.

[Lightweight]

Since part of the LM block (e.g., around the ball relief hole) is made of resin and formed through insert molding, SRS is a lightweight, low inertia type of LM Guide.



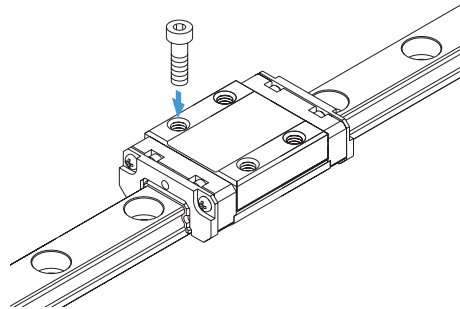
Types and Features

Model SRS-M

Specification Table⇒B-50

A standard type of SRS.

Note) In addition to model SRS-M, a full-ball type without ball cage is also available. If desiring this type, indicate type "SRS-G" when placing an order. However, since SRS-G does not have a ball cage, its dynamic load rating is smaller than SRS-M. See the table of basic load ratings for SRS-G on B-51 for details.

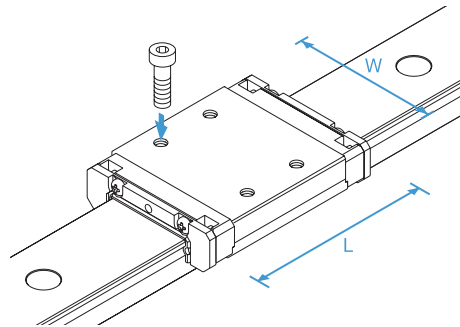


Model SRS-WM

Specification Table⇒B-52

Has a longer overall LM block length (L), a greater width and a larger rated load and permissible moment than SRS-M.

Note) In addition to model SRS-WM, a full-ball type without ball cage is also available. If desiring this type, indicate type "SRS-G" when placing an order. However, since SRS-G does not have a ball cage, its dynamic load rating is smaller than SRS-WM. See the table of basic load ratings for SRS-G on B-53 for details.



Rated Loads in All Directions

Model SRS is capable of receiving loads in four directions: radial, reverse radial and lateral directions.

Their basic dynamic load ratings are represented by the symbols in the radial direction indicated in Fig.1, and the actual values are provided in the specification table for SRS. The values in the reverse radial and lateral directions are obtained from Table1 below.

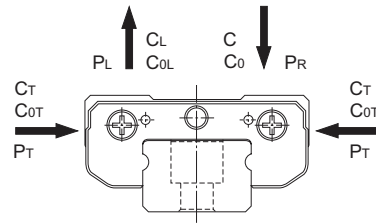


Fig.1

LM Guide

Table1 Rated Loads of Model SRS in All Directions

Direction	Basic dynamic load rating	Basic static load rating
Radial direction	C	C ₀
Reverse radial direction	C _r =C	C _{0L} =C ₀
Lateral directions (7M/7WM/9M/ 9M/9WM/20M)	C _T =1.19C	C _{0T} =1.19C ₀
Lateral directions (12M/12WM/ 15M/15WM/25M)	C _T =C	C _{0T} =C ₀

Equivalent Load

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

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

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 Table2)

Table2 Equivalent Factor of Model SRS

Equivalent Load P _E	Model No.	X	Y
Radial and reverse radial direction	7M/7WM/9M/ 9WM/20M	1	0.839
	12M/12WM/15M/ 15WM/25M	1	1
Lateral directions	7M/7WM/9M/ 9WM/20M	1.192	1
	12M/12WM/15M/ 15WM/25M	1	1

Service Life

For details, see A-100.

Radial Clearance Standard

For details, see A-113.

Accuracy Standards

For details, see A-126.

Shoulder Height of the Mounting Base and the Corner Radius

For details, see A-332.

Error Allowance in the Parallelism between Two Rails

For details, see A-334.

Error Allowance in Vertical Level between Two Rails

For details, see A-337.

Flatness of the LM Rail and the LM Block Mounting Surface

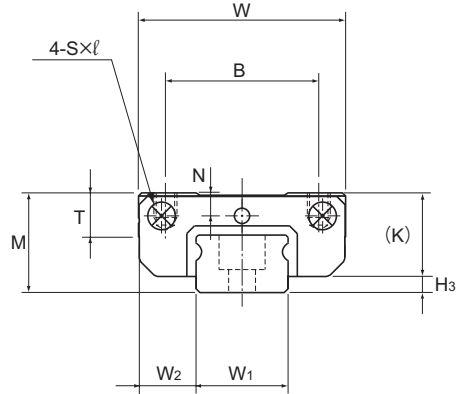
The values in Table3 apply when the clearance is a normal clearance. If the clearance is C1 clearance and two rails are used in combination, we recommend using 50% or less of the value in the table.

Note) Since SRS has Gothic-arch grooves, any accuracy error in the mounting surface may negatively affect the operation. Therefore, we recommend using SRS on a highly accurate mounting surface.

Table3 Flatness of the LM Rail and the LM Block Mounting Surface
Unit: mm

Model No.	Flatness error
SRS 7M	0.025/200
SRS 7WM	0.025/200
SRS 9M	0.035/200
SRS 9WM	0.035/200
SRS 12M	0.050/200
SRS 12WM	0.050/200
SRS 15M	0.060/200
SRS 15WM	0.060/200
SRS 20M	0.070/200
SRS 25M	0.070/200

Model SRS-M



Model No.	Outer dimensions			LM block dimensions							
	Height M	Width W	Length L	B	C	S×l	L ₁	T	K	N	H ₃
SRS 7M	8	17	23.4	12	8	M2×2.3	13.4	3.3	6.7	1.6	1.3
SRS 9M	10	20	30.8	15	10	M3×2.8	19.8	4.9	9.1	2.4	0.9
SRS 12M	13	27	34.4	20	15	M3×3.2	20.6	5.7	11	3	2
SRS 15M	16	32	43	25	20	M3×3.5	25.7	6.5	13.3	3	2.7
SRS 20M	20	40	50	30	25	M4×6	34	9	16.6	4	3.4
SRS 25M	25	48	77	35	35	M6×7	56	11	20	5	5

Note) Since stainless steel is used in the LM block, LM rail and balls, these models are highly resistant to corrosion and environment.

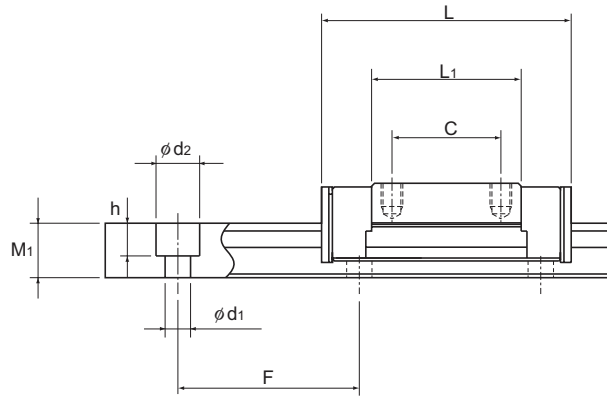
Model number coding

2 SRS20M QZ UU C1 +220L P M - II

<p>No. of LM blocks used on the same rail</p>	<p>Model number</p>	<p>With QZ Lubricator</p>	<p>Contamination protection accessory symbol (*1)</p>	<p>LM rail length (in mm)</p>	<p>Stainless steel LM rail</p>	<p>Symbol for No. of rails used on the same plane (*4)</p>
			<p>Radial clearance symbol (*2)</p> <p>Normal (No symbol)</p> <p>Light preload (C1)</p> <p>Medium preload (C0)</p>		<p>Accuracy symbol (*3)</p> <p>Normal grade (No Symbol)/High accuracy grade (H)</p> <p>Precision grade (P)/Super precision grade (SP)</p> <p>Ultra precision grade (UP)</p>	

(*1) See contamination protection accessory on A-368. (*2) See A-113. (*3) See A-126. (*4) See A-59.

Note) This model number indicates that a single-rail unit constitutes one set. (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum.)
Those models equipped with QZ Lubricator cannot have a grease nipple.



Unit: mm

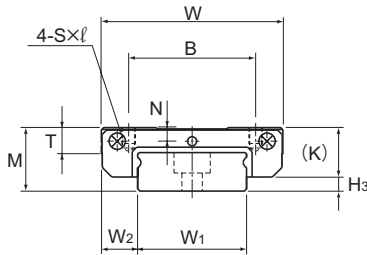
	LM rail dimensions						Basic load rating		Static permissible moment N-m*					Mass	
	Width	Height	Pitch		Length*	C	C ₀	M _A		M _B		M _C	LM block	LM rail	
	W ₁	W ₂	M ₁	F	d ₁ × d ₂ × h	Max	kN	kN	1 block	Double blocks	1 block	Double blocks	1 block	kg	kg/m
	7 ⁰ _{-0.02}	5	4.7	15	2.4 × 4.2 × 2.3	300	1.51	1.29	3.09	—	3.69	—	5.02	0.009	0.25
	9 ⁰ _{-0.02}	5.5	5.5	20	3.5 × 6 × 3.3	1000	2.69	2.31	7.82	43.9	9.03	50.8	10.6	0.016	0.32
	12 ⁰ _{-0.02}	7.5	7.5	25	3.5 × 6 × 4.5	1340	4	3.53	12	78.5	12	78.5	23.1	0.027	0.65
	15 ⁰ _{-0.02}	8.5	9.5	40	3.5 × 6 × 4.5	1430	6.66	5.7	26.2	154	26.2	154	40.4	0.047	0.96
	20 ⁰ _{-0.03}	10	11	60	6 × 9.5 × 8	1800	7.75	9.77	54.3	296	62.4	341	104	0.11	1.68
	23 ⁰ _{-0.03}	12.5	15	60	7 × 11 × 9	1800	16.5	20.2	177	932	177	932	248	0.24	2.6

Note) If a grease nipple is required, indicate "with grease nipple". (available for models SRS 15M/15WM/20M/25M)
 If a greasing hole is required, indicate "with greasing hole". (available for models SRS 7M/7WM/9M/9WM/12M/12WM).
 The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See B-54.)
 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

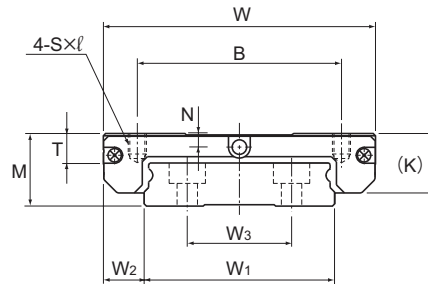
SRS-G Basic Load Ratings

Model No.	Basic load rating	
	C kN	C ₀ kN
SRS 9GM	2.07	2.32
SRS 12GM	3.36	3.55
SRS 15GM	5.59	5.72
SRS 20GM	5.95	9.40
SRS 25GM	13.3	22.3

Model SRS-WM



Models SRS7WM, 9WM and 12WM



Model SRS15WM

Model No.	Outer dimensions			LM block dimensions							H ₃
	Height M	Width W	Length L	B	C	S × l	L ₁	T	K	N	
SRS 7WM	9	25	31	19	10	M3 × 2.8	20.4	3.8	7.2	1.8	1.8
SRS 9WM	12	30	39	21	12	M3 × 2.8	27	4.9	9.1	2.3	2.9
SRS 12WM	14	40	44.5	28	15	M3 × 3.5	30.9	5.7	11	3	3
SRS 15WM	16	60	55.5	45	20	M4 × 4.5	38.9	6.5	13.3	3	2.7

Note) Since stainless steel is used in the LM block, LM rail and balls, these models are highly resistant to corrosion and environment.

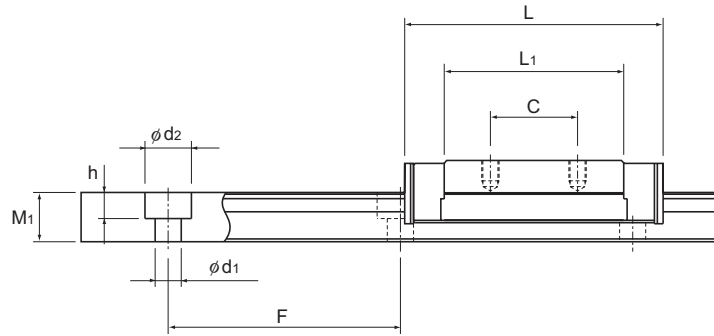
Model number coding

2 SRS15WM QZ UU C1 +550L P M -II

2	SRS15WM	QZ	UU	C1	+550L	P	M	-II
No. of LM blocks used on the same rail	Model number	With QZ Lubricator	Contamination protection accessory symbol (*1)	Radial clearance symbol (*2) Normal (No symbol) Light preload (C1) Medium preload (C0)	LM rail length (in mm)	Accuracy symbol (*3) Normal grade (No Symbol)/High accuracy grade (H) Precision grade (P)/Super precision grade (SP) Ultra precision grade (UP)	Stainless steel LM rail	Symbol for No. of rails used on the same plane (*4)

(*1) See contamination protection accessory on A-368. (*2) See A-113. (*3) See A-126. (*4) See A-59.

Note) This model number indicates that a single-rail unit constitutes one set. (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum.)
Those models equipped with QZ Lubricator cannot have a grease nipple.



LM Guide

Unit: mm

	LM rail dimensions							Basic load rating		Static permissible moment N-m*					Mass	
	Width W ₁	W ₂	W ₃	Height M ₁	Pitch F	Length* d ₁ × d ₂ × h	Max	C	C ₀	M _A		M _B		M _C	LM block	LM rail
										1 block	Double blocks	1 block	Double blocks	1 block	kg	kg/m
	14 ⁰ _{-0.02}	5.5	—	5.2	30	3.5×6×3.2	400	2.01	1.94	6.47	—	7.71	—	14.33	0.018	0.56
	18 ⁰ _{-0.02}	6	—	7.5	30	3.5×6×4.5	1000	3.29	3.34	14	78.6	16.2	91	31.5	0.031	1.01
	24 ⁰ _{-0.02}	8	—	8.5	40	4.5×8×4.5	1430	5.48	5.3	26.4	143	26.4	143	66.5	0.055	1.52
	42 ⁰ _{-0.02}	9	23	9.5	40	4.5×8×4.5	1800	9.12	8.55	51.2	290	51.2	290	176	0.13	2.87

Note) If a grease nipple is required, indicate "with grease nipple". (available for models SRS 15M/15WM/20M/25M)
 If a greasing hole is required, indicate "with greasing hole". (available for models SRS 7M/7WM/9M/9WM/12M/12WM).
 The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See B-54.)
 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

SRS-G Basic Load Ratings

Model No.	Basic load rating	
	C	C ₀
	kN	kN
SRS 9WGM	2.67	3.35
SRS 12WGM	4.46	5.32
SRS 15WGM	7.43	8.59

Standard Length and Maximum Length of the LM Rail

Table1 shows the standard lengths and the maximum lengths of model SRS variations. If the maximum length of the desired LM rail exceeds them, jointed 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 causing an adverse impact to accuracy.

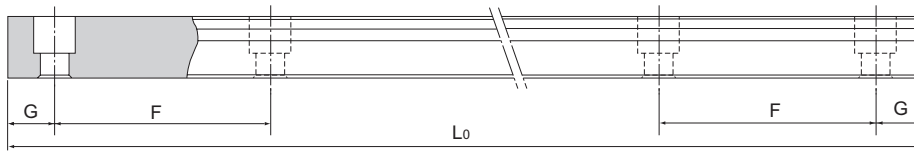


Table1 Standard Length and Maximum Length of the LM Rail for Model SRS

Unit: mm

Model No.	SRS 7M	SRS 7WM	SRS 9M	SRS 9WM	SRS 12M	SRS 12WM	SRS 15M	SRS 15WM	SRS 20M	SRS 25M
LM rail standard length (L ₀)	40	50	55	50	70	70	70	110	220	220
	55	80	75	80	95	110	110	150	280	280
	70	110	95	110	120	150	150	190	340	340
	85	140	115	140	145	190	190	230	460	460
	100	170	135	170	170	230	230	270	640	640
	115	200	155	200	195	270	270	310	880	880
	130	260	175	260	220	310	310	430	1000	1000
		290	195	290	245	390	350	550		
			275	320	270	470	390	670		
			375		320	550	430	790		
					370		470			
					470		550			
					570		670			
						870				
Standard pitch F	15	30	20	30	25	40	40	40	60	60
G	5	10	7.5	10	10	15	15	15	20	20
Max length	300	400	1000	1000	1340	1430	1430	1800	1800	1800

Note1) The maximum length varies with accuracy grades. Contact THK for details.

Note2) If jointed rails are not allowed and a greater length than the maximum values above is required, contact THK.