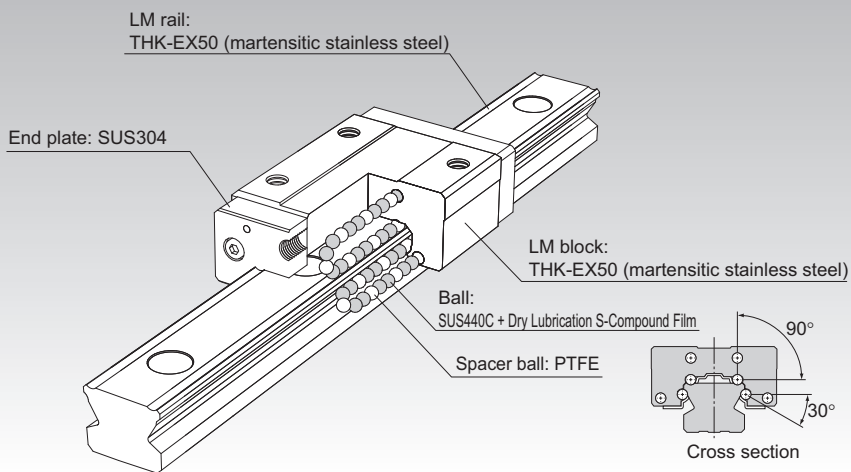


SR-MS

LM Guide Oil-Free for Special Environments Model SR-MS



Point of Selection **A1-10**

Point of Design **A1-436**

Options **A1-459**

Model No. **A1-524**

Precautions on Use **A1-532**

Accessories for Lubrication **A24-1**

Mounting Procedure and Maintenance **B1-89**

Equivalent moment factor **A1-43**

Rated Loads in All Directions **A1-58**

Equivalent factor in each direction **A1-60**

Radial Clearance **A1-72**

Accuracy Standards **A1-85**

Shoulder Height of the Mounting Base and the Corner Radius **A1-445**

Permissible Error of the Mounting Surface **A1-453**

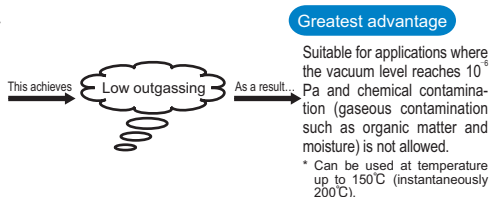
Flatness of the Mounting Surface **A1-454**

Dimensions of Each Model with an Option Attached **A1-472**

Structure and Features

[Structural Characteristics]

1. Uses stainless steel
All components are composed of parts for special environments such as stainless steel.
2. Degreased and cleaned
Special solvent is used to de-grease this model.
3. Does not use grease
Use of highly reliable dry lubricant S-compound film for stainless steel balls achieves grease-free lubrication.



[What is Dry Lubrication S-Compound Film]

Dry Lubrication S-Compound Film is a fully dry lubricant developed for use under atmospheric to high-vacuum environments.

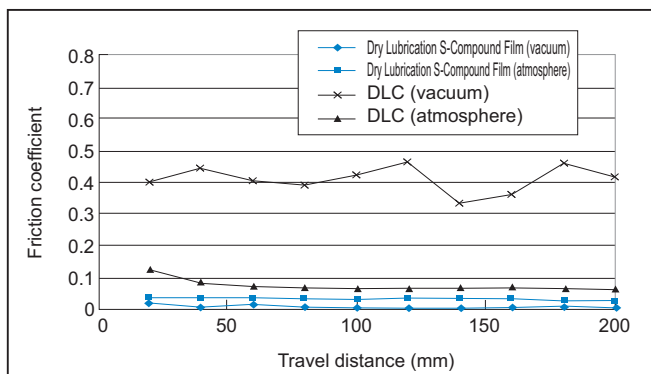
It has superior characteristics in load carrying capacity, wear resistance and sealability to other lubrication systems.

Comparison of dry lubrication material properties

Item	Friction coefficient (reference value)	Wear resistance	Hardness	Service environment
Molybdenum Disulfide (hexagonal form)	0.04	△	△	Vacuum
Soft metal	0.05 to 0.5	△	△	Atmosphere, vacuum
DLC (diamond like carbon)	0.08 to 0.15	△	○	Atmosphere, H ₂ O
Dry Lubrication S-Compound Film	0.02 to 0.05	○	○	Atmosphere, vacuum

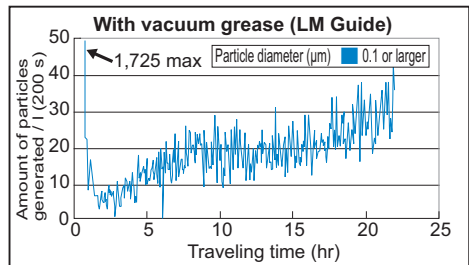
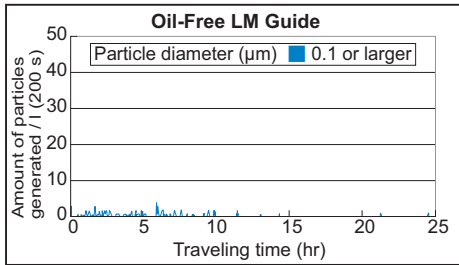
[Low Friction]

The Oil-Free LM Guide for special environments exerts superbly low frictional properties in atmospheric to vacuum environments.



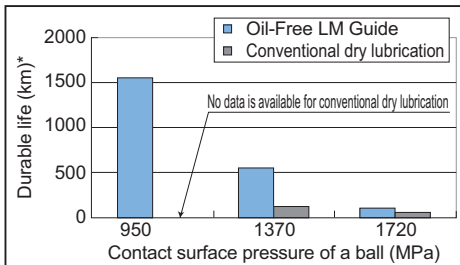
[Low Dust Generation]

The Oil-Free LM Guide for special environments exerts a lower level of dust generation than conventional vacuum grease lubricants.



[Long service life]

The Oil-Free LM Guide for special environments has a longer service life than conventional dry lubrication.



* The durable life represents the value at a point from which the Dry Lubrication S-Compound Film is no longer effective. Note that the durable life differs from the rated service life of the LM Guide.

[Applications of the Oil-Free LM Guide for Special Environments]

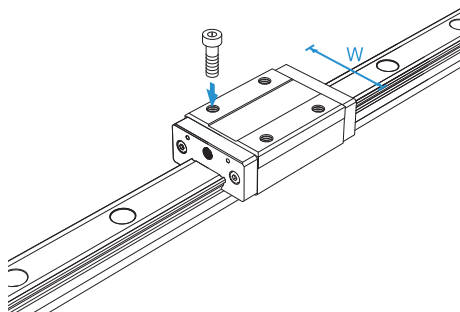
Industry	Equipment	Advantages of the oil-free LM Guide
Semiconductor / FPD manufacturing machine	Exposure machine, organic EL manufacturing machine, ion injection machine	<ul style="list-style-type: none"> • Little outgassing (water, organic matter) • Low dust generation • Operable at high temperature (up to 150°C)

Types and Features

Model SR-MSW

With this type, the LM block has a smaller width (W) and tapped holes.

Specification Table⇒ **A1-390**

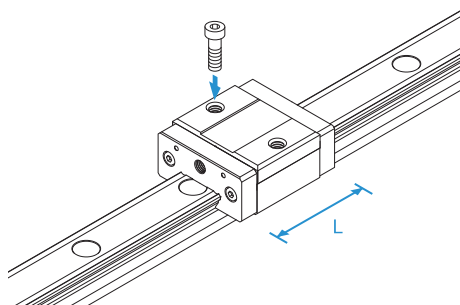


LM Guide

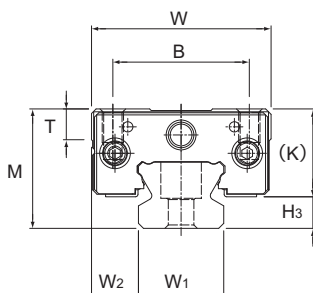
Model SR-MSV

A space-saving type whose LM block has the same cross-sectional shape as model SR-MSW, but has a smaller overall LM block length (L).

Specification Table⇒ **A1-390**



Models SR-MSV and SR-MSW



Model No.	Outer dimensions			LM block dimensions							H ₃
	Height	Width	Length	B	C	S × ℓ	L ₁	T	K		
	M	W	L								
SR15MSV SR15MSW	24	34	36.6 53.2	26	— 26	M4 × 7	22.9 39.5	5.7	19.5	4.5	
SR20MSV SR20MSW	28	42	41.3 60.2	32	— 32	M5 × 8	27.8 46.7	7.2	22	6	

Model number coding

SR15MSV 1 CS + 340L Y P - II

Model No.

LM rail length
(mm)

Radial clearance
symbol (*1) Applied to
only 15

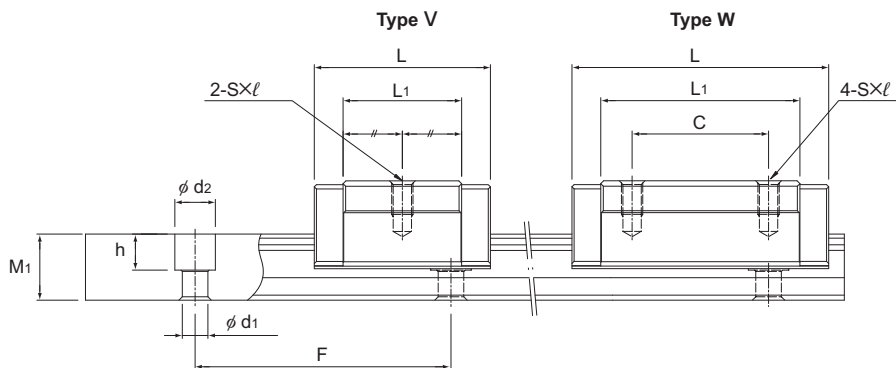
Symbol for
No. of rails used on the
same plane (*3)

No. of LM blocks
used on the same rail

Accuracy symbol (*2)

(*1) See **A1-72**. (*2) See **A1-85**. (*3) See **A1-13**.

Note) With this model, a single-rail unit constitutes one set (i.e., the required number of sets when 2 rails are used in parallel is 2).



Unit: mm

LM rail dimensions						Permissible load F_0	Permissible moment N·m						Mass	
Width W_1 ± 0.05	Height W_2	Pitch M_1	Pitch F	Length* $d_1 \times d_2 \times h$ Max	N		M_A		M_B		M_C		LM block kg	LM rail kg/m
							1 block	Double blocks	1 block	Double blocks	1 block			
15	9.5	12.5	60	$3.5 \times 6 \times 4.5$	400	320	0.80	5.43	0.51	3.60	1.16	0.12	1.2	
						570	2.35	13.0	1.47	8.31	2.08	0.2		
20	11	15.5	60	$6 \times 9.5 \times 8.5$	400	430	1.35	8.44	0.87	5.52	2.05	0.2	2.1	
						750	3.76	19.9	2.36	12.6	3.59	0.3		

Note1) The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See **A1-392**.)

For the durability of the Oil-Free LM Guide for special environment, contact THK.

The value of permissible load F_0 represents the permissible value for the strength of the dry lubricant S-compound film. Since the service life of the S film may vary according to the environment or the operating conditions, be sure to evaluate and validate the life under the service conditions and operating conditions at the customer.

Note2) For model SR15, two types of rails with different mounting hole dimensions are offered (see Table1).

When, replacing this model with model SSR, pay attention to the mounting hole dimension of the LM rail. Contact THK for details.

Table1 The dimension of the rail mounting hole

Model No.	Standard rail	Semi-Standard rail
SR 15	For M3 (No symbol)	For M4 (Symbol Y)

Standard Length and Maximum Length of the LM Rail

The following table shows the standard length and the maximum length of the LM rail of the Oil-Free LM Guide for special environments. If the overall rail length exceeds the maximum length, contact THK.

For dimension G if you require a special length, we recommend using the dimensions in the table. If dimension G is longer, the respective part tends to become unstable after installation, which may negatively affect the accuracy.

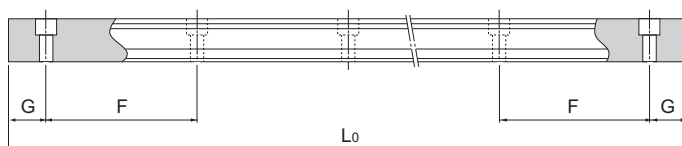


Table1 Standard Length and Maximum Length of the LM Rail for Model SR-MS

Unit: mm

Model No.	SR15MS	SR20MS
LM rail standard length (L_0)	160 220 280 340 400	220 280 340 400
Standard pitch F	60	60
G	20	20
Max length	400	400

Note1) If you desire a rail length larger than the maximum length, contact THK.

Note2) A connected-rail type is not available.

Structure and Features of the Caged Roller LM Guide

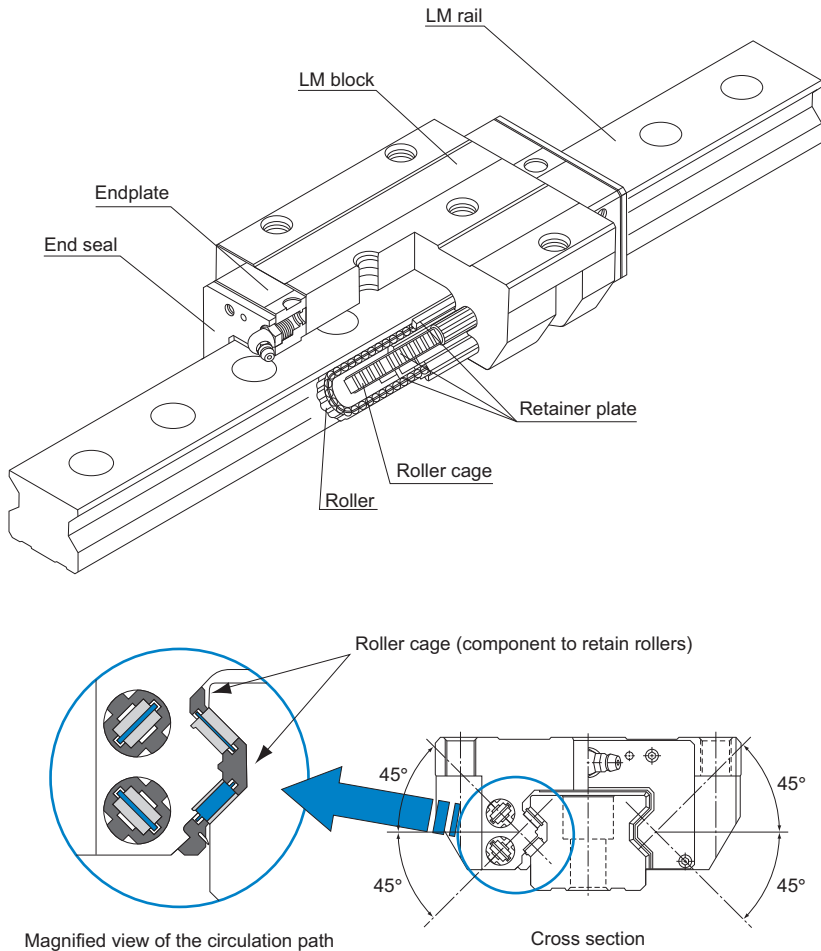


Fig.1 Structural Drawing of the Caged Roller LM Guide Model SRG

Caged Roller LM Guide is a roller guide that achieves low-friction, smooth motion and long-term maintenance-free operation by using a roller cage. In addition, to ensure ultra-high rigidity, rollers with low elastic deformation are used as the rolling elements and the roller diameter and the roller length are optimized.

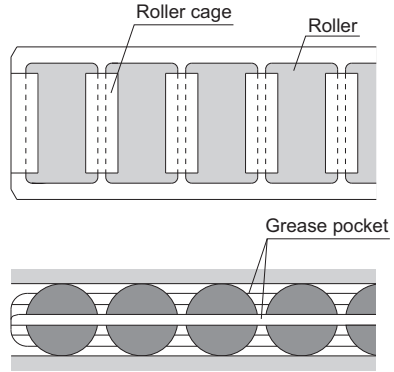
Furthermore, the lines of rollers are placed at a contact angle of 45° so that the same rated load is applied in all (radial, reverse and lateral) directions.

Features and Dimensions of Each Model

Structure and Features of the Caged Roller LM Guide

Advantages of the Caged Roller Technology

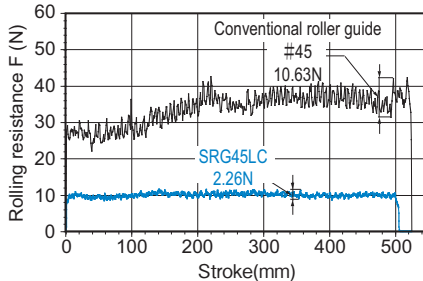
- (1) Evenly spaced and aligned rollers circulate, preventing the rollers from skewing, minimizing rolling resistance fluctuations and achieving smooth and stable motion.
- (2) The absence of friction between rollers allows grease to be retained in grease pockets and achieves long-term maintenance-free operation.
- (3) The absence of friction between rollers achieves low heat generation and superbly high speed.
- (4) The absence of roller-to-roller collision ensures low noise and acceptable running sound.



[Smooth Motion]

● Rolling Resistance Data

Evenly spaced and aligned rollers circulate, minimizing rolling resistance fluctuations and achieving smooth and stable motion.

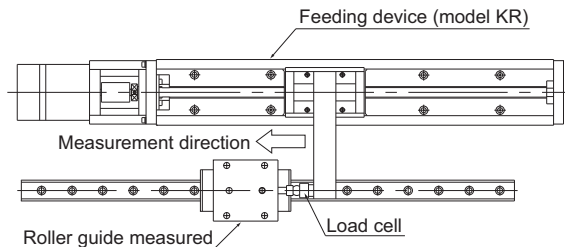


Result of Measuring Rolling Resistance Fluctuations

[Conditions]

Feeding speed: 10mm/s

Applied load: no load (one block)



Rolling Resistance Measuring Machine

[Long-term Maintenance-free Operation]

● High-speed Durability Test Data

Use of a roller cage eliminates friction between rollers, minimizes heat generation and increases grease retention, thus to achieve long-term maintenance-free operation.

[Conditions]

Model No.: SRG45LC

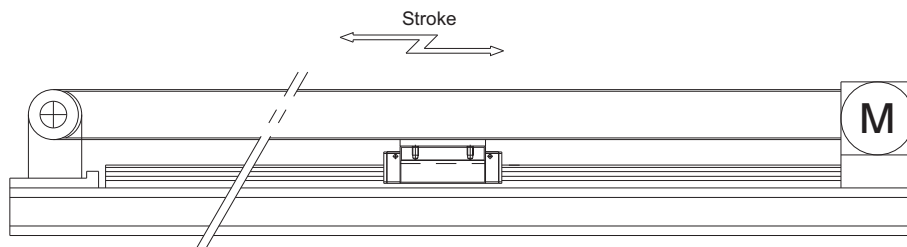
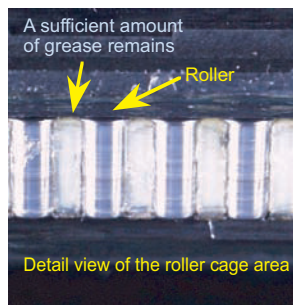
Magnitude of preload: clearance C0

Speed: 180m/min

Acceleration: 1.5G

Stroke: 2300mm

Lubrication : Initial lubrication only
(THKAFB-LF Grease)



Test result: No anomaly observed after running 15,000 km

Result of High-speed Durability Test

Features and Dimensions of Each Model

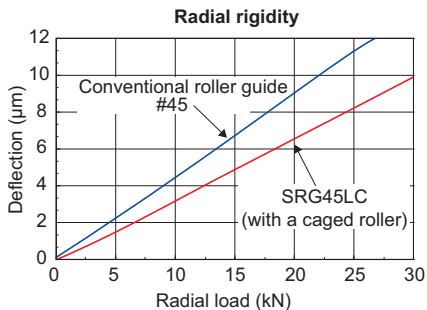
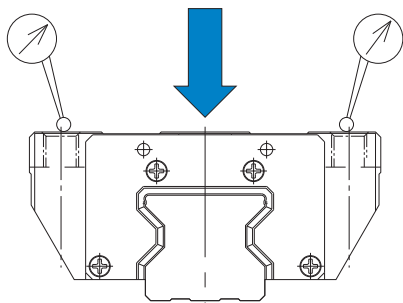
Structure and Features of the Caged Roller LM Guide

[Ultra-high Rigidity]

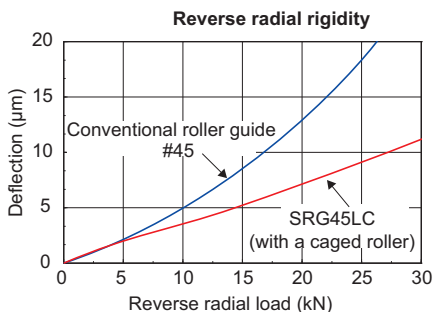
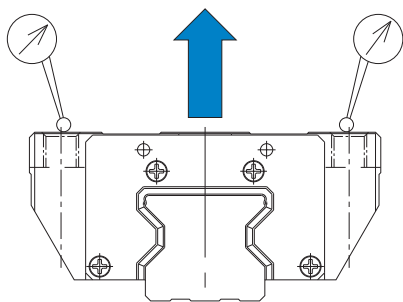
● High Rigidity Evaluation Data

[Preload] SRG : radial clearance C0
 Conventional type : radial clearance equivalent to C0

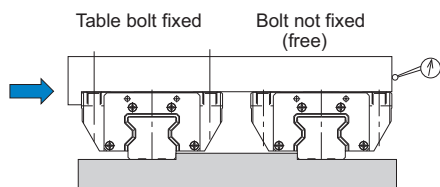
Radial rigidity



Reverse radial rigidity



Horizontal rigidity



Rigidity is measured with the two axes placed in parallel and one of the axes not fixed with a bolt in order not to apply a moment.

