



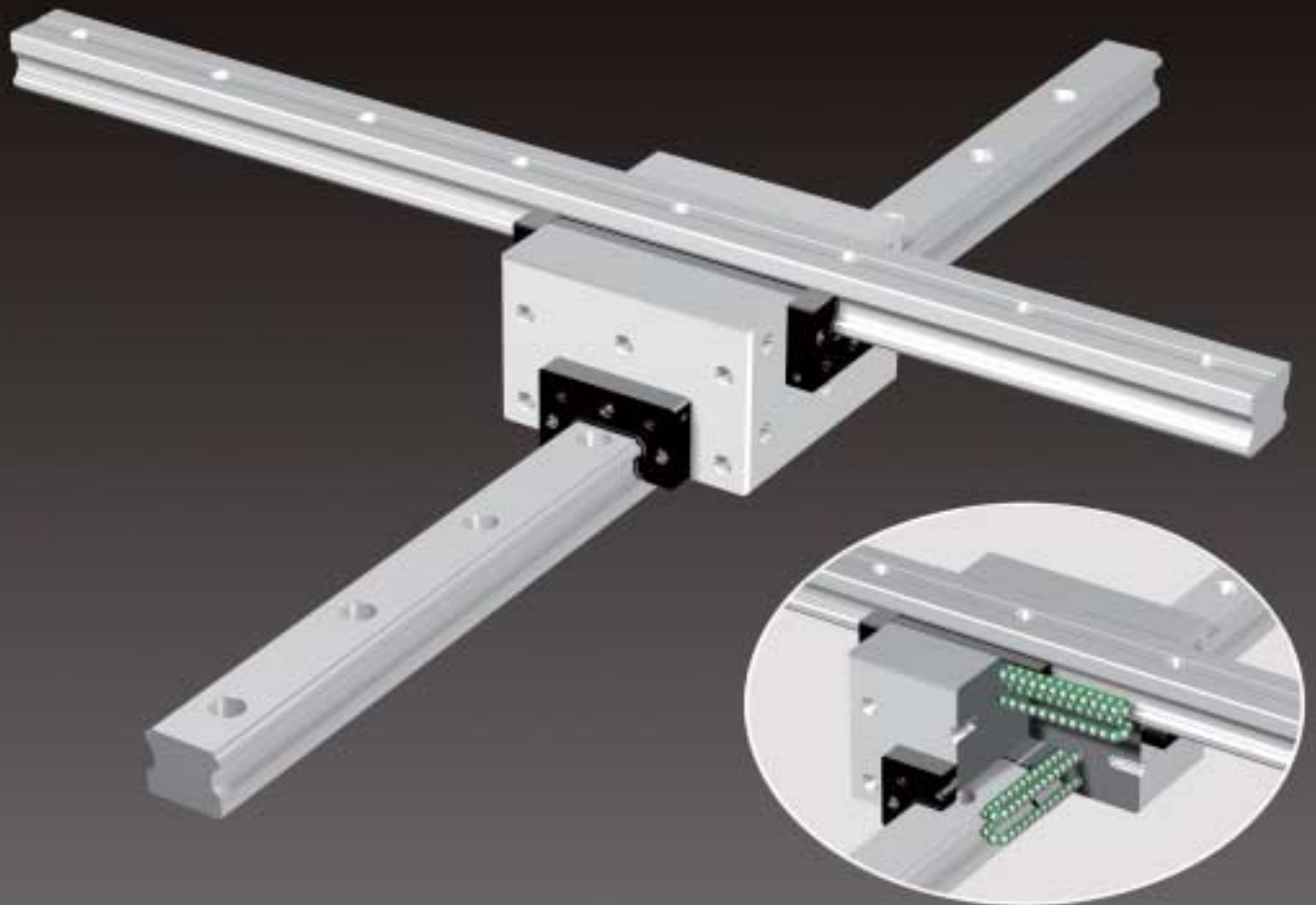
**New**

# Caged Ball Cross LM Guide

Ball Cage Effect

Cross-structured in a single piece with high rigidity

# SCR



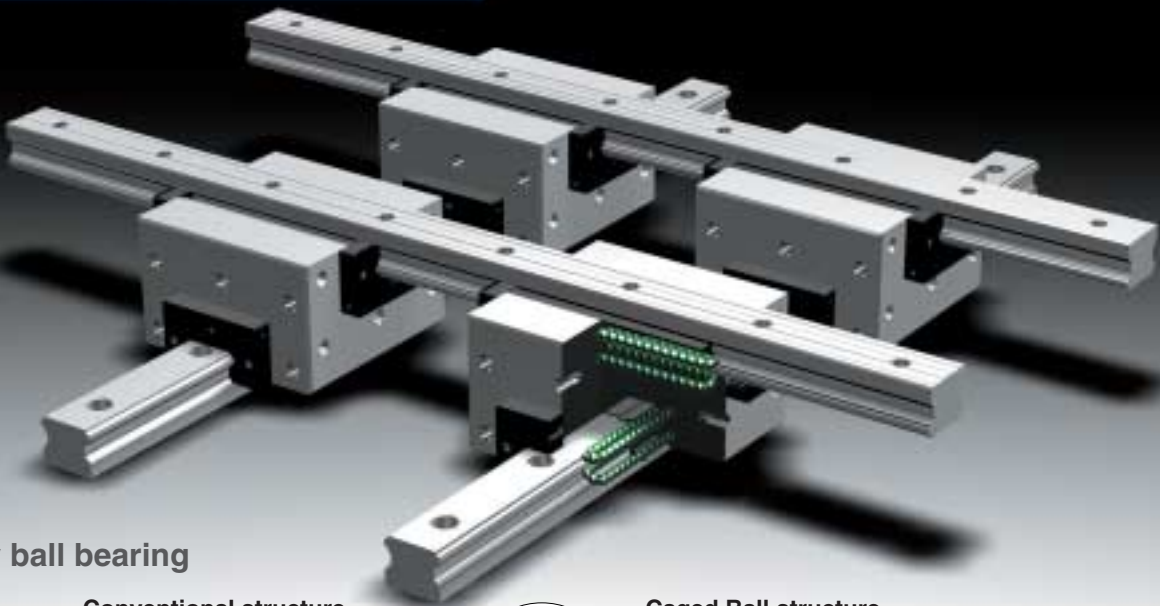
# Ball Cage Effect

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.

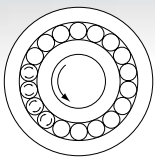
Similarly, the quality of needle bearings was significantly improved by the caged needle structure. With cage-less, full-ball types of ball bearings, balls make metallic contact with one another and produce loud noise. In addition, they rotate in opposite directions, causing the sliding contact between 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

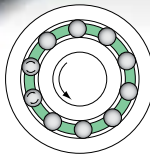


## Rotary ball bearing



### 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.

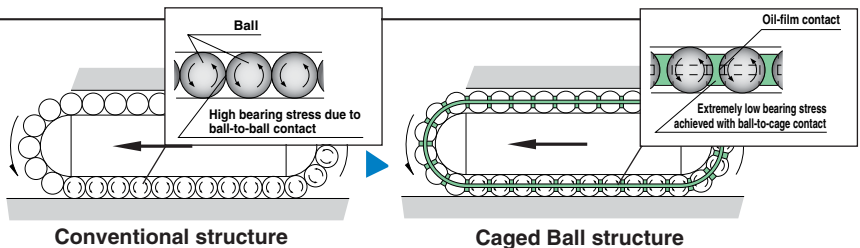


### Caged Ball structure

- 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.

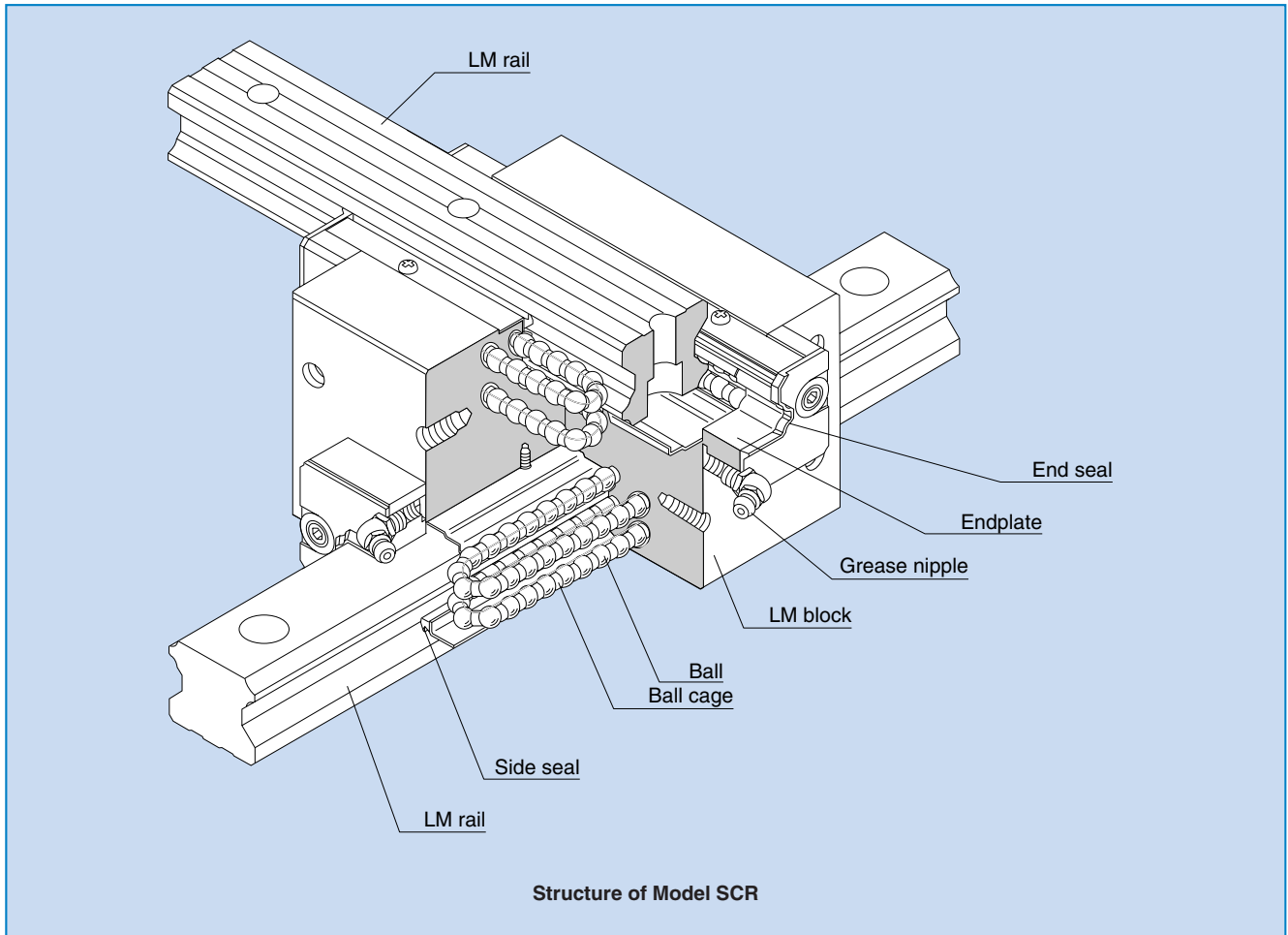
## Caged Ball LM Guide

With the Caged Ball LM Guide, the use of a ball cage allows lines of evenly spaced balls to circulate, thus to 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.



# Compact, Highly Rigid Caged Ball Cross LM Guide

# SCR



Balls roll in four rows of raceways precision-ground on an LM rail and an LM block, and endplates incorporated in the LM block allow the balls to circulate.

This model is an integral type of LM Guide that squares an internal structure similar to model SHS, which has a proven track record, with another and uses two LM rails in combination. Since an orthogonal LM system can be achieved with model SCR alone, a conventionally required saddle is no longer necessary, the structure for X-Y motion can be simplified and the whole system can be downsized.

## ● Four-way equal-load type

Since each row of balls is arranged at a contact angle of  $45^\circ$  so that a uniform rated load on the LM block is achieved in the four directions (radial, reverse-radial and lateral directions), this model can be used in any orientation and in a broad range of applications.

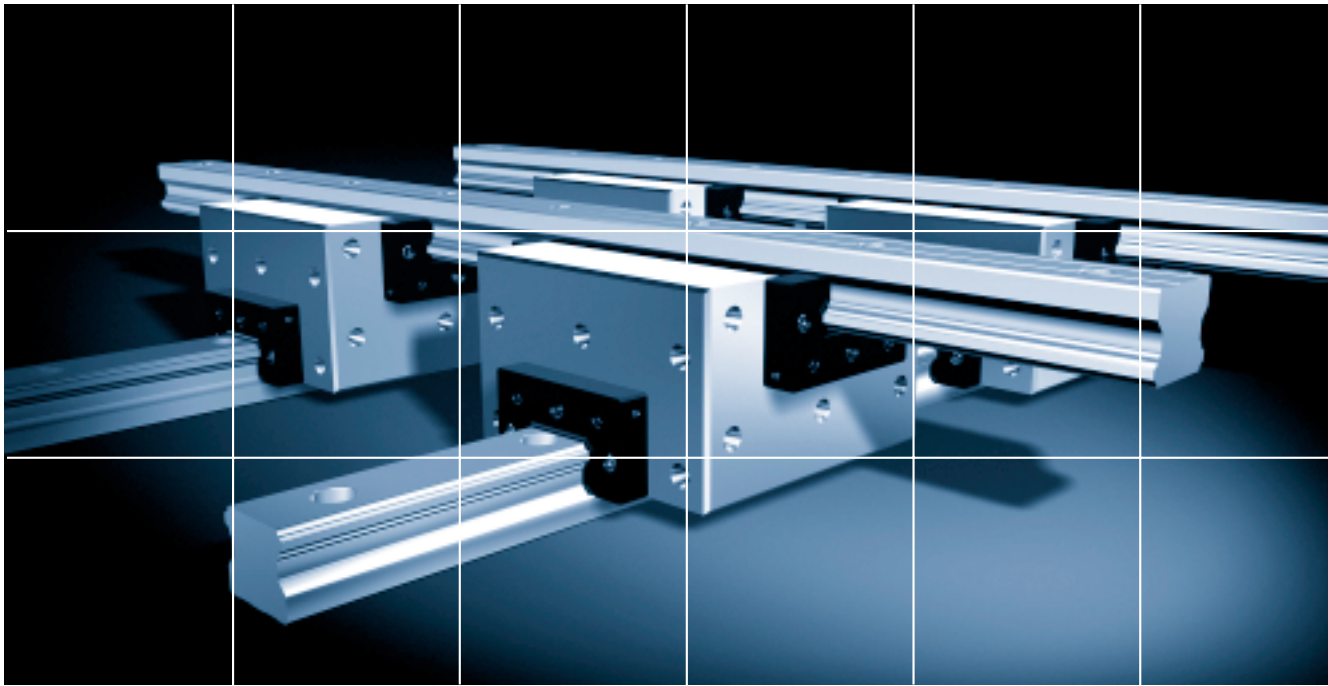
## ● High rigidity

Since balls are arranged in a well-balanced, four-row configuration, this model is robust against a moment and ensures smooth linear motion even under a preload to increase rigidity.

Since the rigidity of the LM block is higher than a system comprising two blocks of a conventional model arranged back-to-back, model SCR is optimal for building a high-rigidity XY table.

## ● Compact

Model SCR is an integral type of LM Guide in which two units of an internal structure similar to that of Caged Ball LM Guide model SHS are orthogonally crossed back-to-back with two LM rails mounted on each block. Since a cross LM system is achieved with model SCR alone, it eliminates the need for a saddle required with the conventional type, and simplifies the structure for X-Y motion, thus enabling the whole system to be downsized.



# SCR Outline

## Model SCR - Product Overview

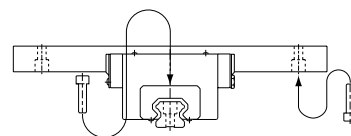
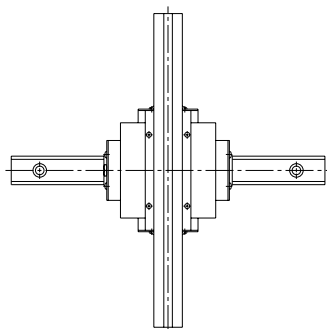
Since its LM blocks are integrated crosswise on the XY axes, this model ensures a compact XY structure.

It also allows a structure without a saddle, enabling the reduction of the weight and size of the system.

**Major applications** XY table / hollow XY table / NC lathe

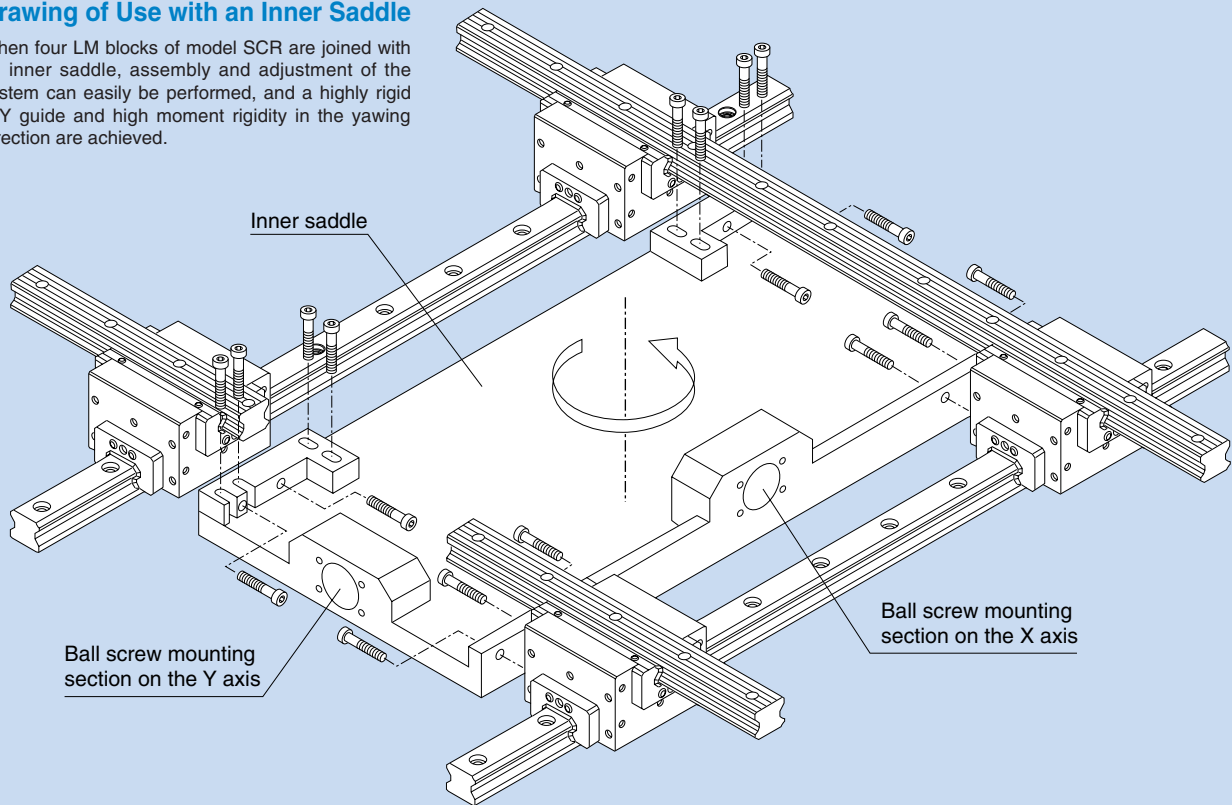
### Model SCR

- SCR 25      ● SCR 45
- SCR 30      ● SCR 65
- SCR 35



**Drawing of Use with an Inner Saddle**

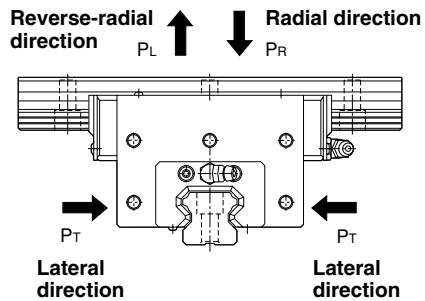
When four LM blocks of model SCR are joined with an inner saddle, assembly and adjustment of the system can easily be performed, and a highly rigid X-Y guide and high moment rigidity in the yawing direction are achieved.



**Rated Loads in All Directions**

**Model SCR is capable of receiving loads in all directions: radial, reverse-radial and lateral directions.**

Its basic load rating is defined between one LM rail and one LM block, and uniform in four directions (radial, reverse-radial and lateral directions). The specific value is indicated in the dimensional table\*1 for model SCR.



\*1: Dimensional table for model SCR  
Model SCR  
→ pages 7-8

**Equivalent Load**

The equivalent load when the LM block of model SCR simultaneously receives loads in all four directions is obtained from the following equation.

$$P_E = P_R(P_L) + P_T$$

where

- |                           |     |                            |     |
|---------------------------|-----|----------------------------|-----|
| $P_E$ :Equivalent load    | (N) | $P_R$ :Radial load         | (N) |
| ·Radial direction         |     | $P_L$ :Reverse-radial load | (N) |
| ·Reverse-radial direction |     | $P_T$ :Lateral load        | (N) |
| ·Lateral direction        |     |                            |     |

\*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.

## 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.

### 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.

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

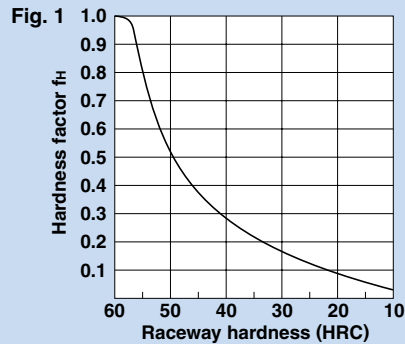
L	: Rated life	(km)
C	: Basic dynamic load rating*	(N)
P <sub>C</sub>	: Calculated load	(N)
f <sub>H</sub>	: Hardness factor	(see Fig. 1)
f <sub>T</sub>	: Temperature factor	(see Fig. 2)
f <sub>C</sub>	: Contact factor	(see Table 1)
f <sub>W</sub>	: Load factor	(see Table 2)

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

L <sub>h</sub>	: Service life time	(h)
ℓ <sub>s</sub>	: Stroke length	(mm)
n <sub>1</sub>	: No. of reciprocations per min	(min <sup>-1</sup> )

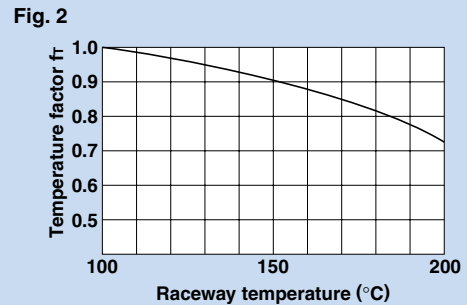
#### f<sub>H</sub> : Hardness factor

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<sub>H</sub>). Since the LM Guide has sufficient hardness, the f<sub>H</sub> value for the LM Guide is normally 1.0 unless otherwise specified.



#### f<sub>T</sub> : Temperature factor

Since the service temperature of Caged Ball LM Guides is normally 80°C or below, the f<sub>T</sub> value is 1.0.



#### f<sub>C</sub> : 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<sub>s</sub>) 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<sub>C</sub>)

Number of blocks used in close contact	Contact factor f <sub>C</sub>
2	0.81
3	0.72
4	0.66
5	0.61
6 or more	0.6
Normal use	1

#### f<sub>W</sub> : 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<sub>W</sub>)

Vibration/impact	Speed (V)	f <sub>W</sub>
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

## Radial Clearance Standards

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.

Unit:  $\mu\text{m}$

Model No.	Indicator symbol	Normal	Light preload	Moderate preload
	No symbol	C1	C0	
25		- 8 to 0	-14 to - 8	-20 to -14
30		- 9 to 0	-17 to - 9	-27 to -17
35		-11 to 0	-19 to -11	-29 to -19
45		-12 to 0	-22 to -12	-32 to -22
65		-18 to 0	-34 to -18	-45 to -34

### \*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 SCR units is adjusted to the designated value before being shipped. Therefore, it is unnecessary to adjust the preload.

## Accuracy Standards

The accuracy of model SCR is specified in terms of running parallelism (\*2), dimensional tolerance for height and width, and height and width difference between a pair (\*3,\*4) 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 SCR is categorized into Precision grade (P), Super-precision grade (SP) and Ultra-super-precision grade (UP) by model numbers, as indicated in the table on the right.

Unit: mm

Model No.	Accuracy standard	Precision grade	Super-precision grade	Ultra-super-precision grade
	Item	P	SP	UP
25	Difference in height M	0.010	0.007	0.005
	Perpendicularity of face D to face B	0.008	0.006	0.004
	Running parallelism of face E to face B	$\Delta C$ (as shown in Fig. 3)		
	Running parallelism of face F to face D	$\Delta D$ (as shown in Fig. 3)		
30	Difference in height M	0.010	0.007	0.005
	Perpendicularity of face D to face B	0.010	0.007	0.005
	Running parallelism of face E to face B	$\Delta C$ (as shown in Fig. 3)		
	Running parallelism of face F to face D	$\Delta D$ (as shown in Fig. 3)		
35	Difference in height M	0.010	0.007	0.005
	Perpendicularity of face D to face B	0.010	0.007	0.005
	Running parallelism of face E to face B	$\Delta C$ (as shown in Fig. 3)		
	Running parallelism of face F to face D	$\Delta D$ (as shown in Fig. 3)		
45	Difference in height M	0.012	0.008	0.006
	Perpendicularity of face D to face B	0.012	0.008	0.006
	Running parallelism of face E to face B	$\Delta C$ (as shown in Fig. 3)		
	Running parallelism of face F to face D	$\Delta D$ (as shown in Fig. 3)		
65	Difference in height M	0.018	0.012	0.009
	Perpendicularity of face D to face B	0.018	0.012	0.009
	Running parallelism of face E to face B	$\Delta C$ (as shown in Fig. 3)		
	Running parallelism of face F to face D	$\Delta D$ (as shown in Fig. 3)		

### \*2: 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.

### \*3: 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.

### \*4: 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.

Fig. 1

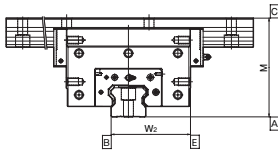


Fig. 2

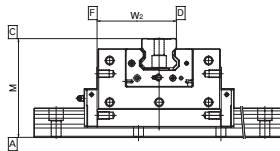
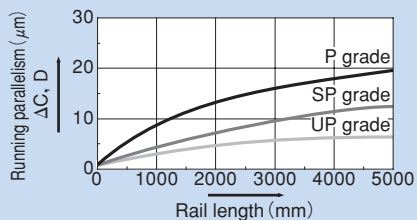


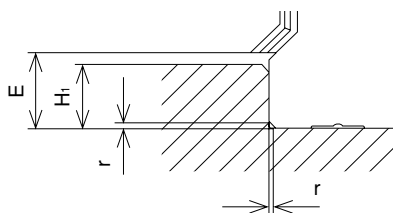
Fig. 3 LM Rail Length and Running Parallelism for Model SCR



## 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.



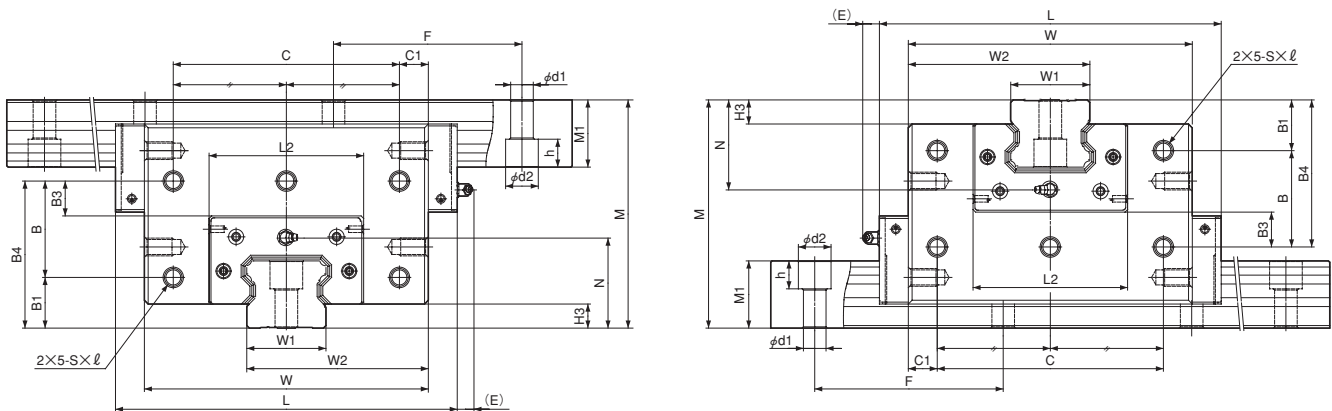
Shoulder for the LM rail

Unit:  $\mu\text{m}$

Model No.	Corner radius r (max)	Shoulder height for the LM rail H1	E
25	1	5	5.8
30	1	5	7
35	1	6	7.5
45	1	7.5	8.9
65	1.5	15	19

# Model SCR

## Dimensional Table for Models SHS-V/SHS-LV



Model No.	External dimensions			LM block length										
	Height M	Width W	Length L	B <sub>1</sub>	B <sub>3</sub>	B <sub>4</sub>	B	C	C <sub>1</sub>	S×ℓ	L <sub>2</sub>	H <sub>3</sub>	N	E
<b>SCR25</b>	70	88	109	18	9	44	26	64	12	M6×10	47.4	5.8	30	12
<b>SCR30</b>	82	105	131	21	12	53	32	76	14.5	M6×10	58	7	35	12
<b>SCR35</b>	95	123	152	24	14	61	37	90	16.5	M8×14	68	7.5	40	12
<b>SCR45</b>	118	140	174	30	16.5	75	45	110	15	M10×15	84.6	8.9	50	16
<b>SCR65</b>	180	226	272	40	27.5	116	76	180	23	M14×22	123	19	71	16

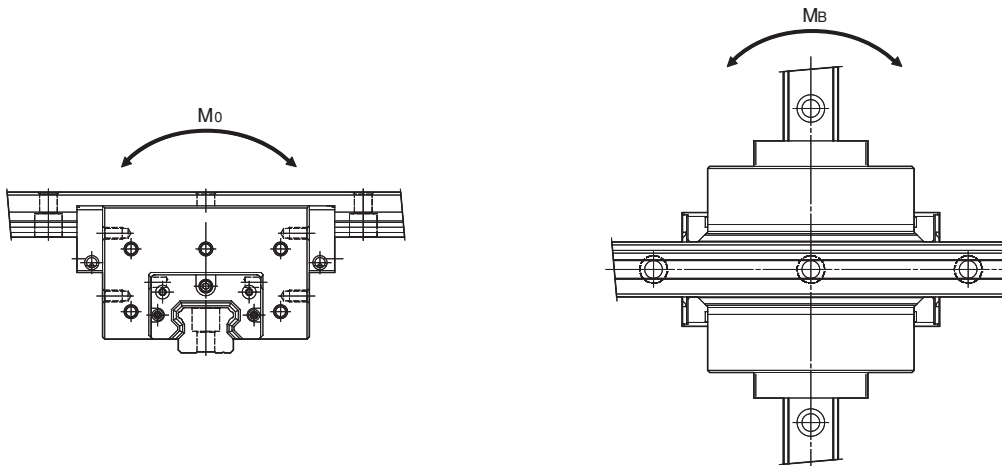
### ■ Example of model number coding

**4 SCR25 QZ KKHH C0 +1200/1000L P**

**1 2 3 4 5 6 7 8**

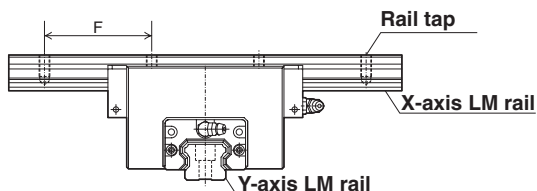
**1** Total number of LM blocks **2** Model number **3** With QZ Lubricator **4** Dust prevention accessory symbol (see page 11)

**5** Radial clearance symbol (see page 6) **6** X axis LM rail length (in mm) **7** Y axis LM rail length (in mm) **8** Accuracy symbol (see page 6)



Unit: mm

Grease nipple	LM rail dimensions						Basic load rating		Static permissible moment		Mass	
	Width W <sub>1</sub> 0 -0.05	W <sub>2</sub>	Height M <sub>1</sub>	Pitch F	Mounting hole d <sub>1</sub> ×d <sub>2</sub> ×h	C kN	C <sub>0</sub> kN	M <sub>0</sub> kN·m	M <sub>a</sub> kN·m	LM block kg	LM rail kg/m	
B-M6F	23	55.5	20	60	7×11×9	36.8	64.7	0.696	0.85	3.4	3.2	
B-M6F	28	66.5	23	80	9×14×12	54.2	88.8	1.15	1.36	4.6	4.5	
B-M6F	34	78.5	26	80	9×14×12	72.9	127	2.01	2.34	6.8	6.2	
B-PT1/8	45	92.5	32	105	14×20×17	100	166	3.53	3.46	10.8	10.4	
B-PT1/8	63	144.5	53	150	18×26×22	253	408	11.9	13.3	44.5	23.7	



LM rail tap dimensional table Unit: mm

Model No.	Tap diameter	Tap depth
25	M6	12
30	M8	15
35	M8	17
45	M12	20
65	M20	30

The X-axis LM rail is tapped to allow the Cross LM Guide to be secured with bolts from the top face.

■ Example of model number coding

**4 SCR35 QZ KKHH C0 +1000L P K/1000L P**

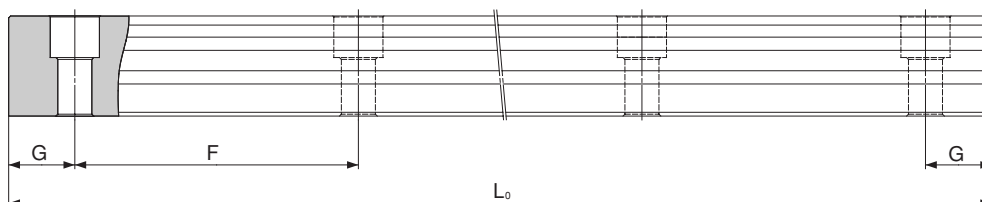
- 1 Total No. of LM blocks
- 2 Model number
- 3 With QZ Lubricator
- 4 Dust prevention accessory symbol (see page 11)
- 5 Radial clearance symbol (see page 6)
- 6 X-axis LM rail length (in mm)
- 7 Accuracy symbol (see page 6)
- 8 LM rail tap type symbol
- 9 Y-axis LM rail length (in mm)

# SCR

## Standard Length and Maximum Length of the LM Rail for Model SCR

The table below shows the standard LM rail lengths and the maximum lengths of model SCR variations. If the maximum length of the desired LM rail exceeds them, connected rails will be used. Contact THK for details.

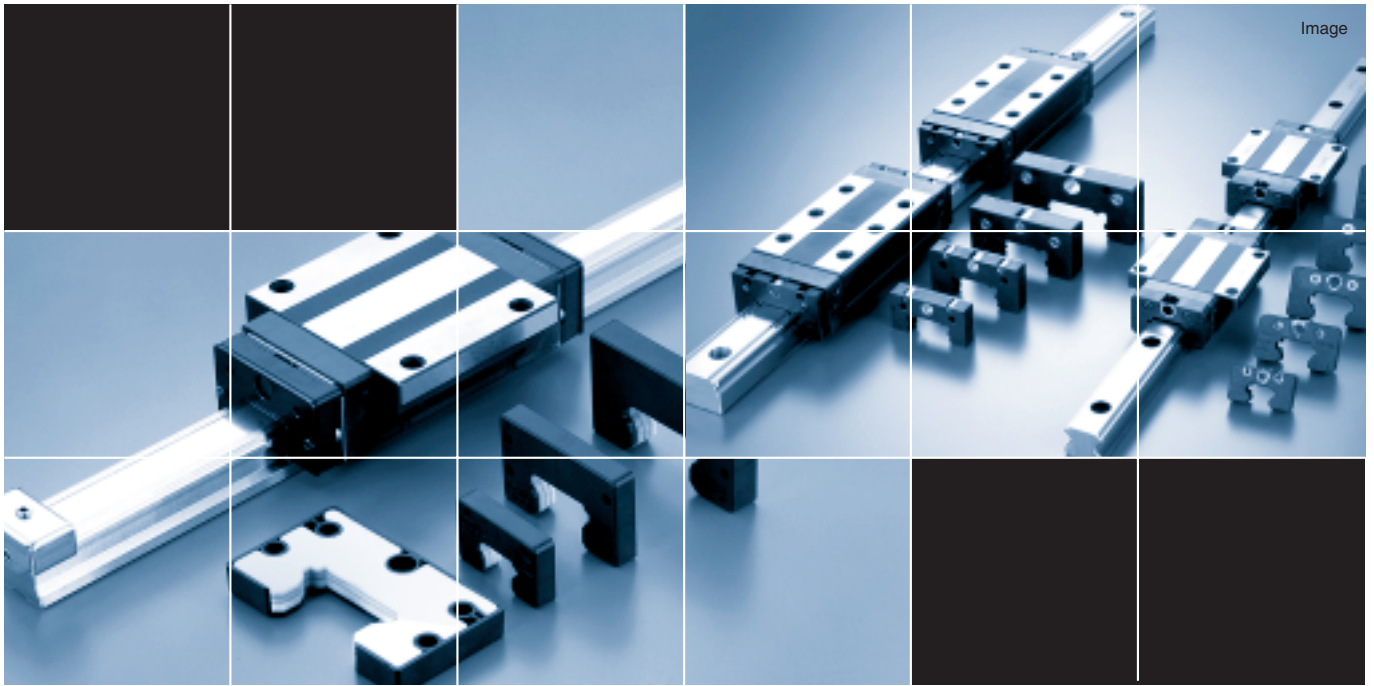
For the G dimension when a special length is required, we recommend selecting the corresponding G value from the table. The longer the G dimension is, the less stable the G area may become after installation, thus adversely affecting accuracy.



Standard Length and Maximum Length of the LM Rail for Model SCR

Unit: mm

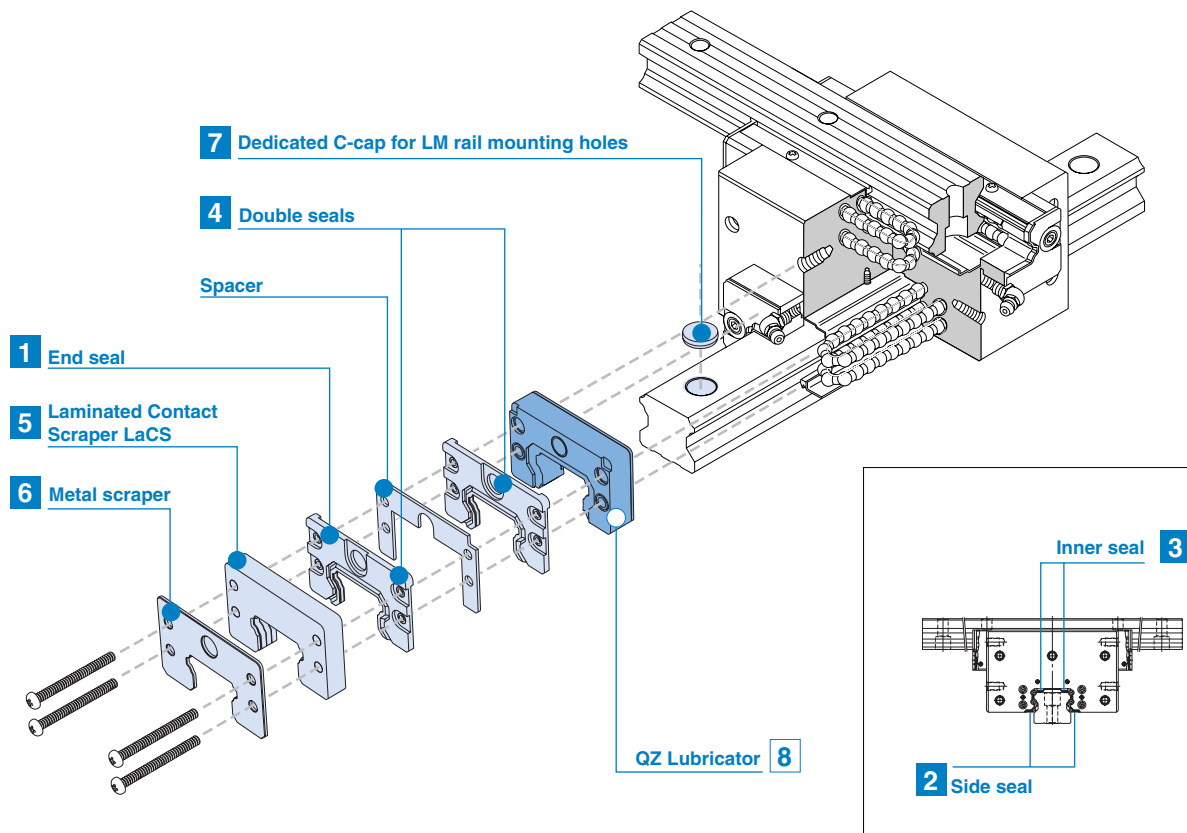
Model No.	SCR25	SCR30	SCR35	SCR45	SCR65
Standard LM rail length ( $L_0$ )	220	280	280	570	1270
	280	360	360	675	1570
	340	440	440	780	2020
	400	520	520	885	2620
	460	600	600	990	
	520	680	680	1095	
	580	760	760	1200	
	640	840	840	1305	
	700	920	920	1410	
	760	1000	1000	1515	
	820	1080	1080	1620	
	940	1160	1160	1725	
	1000	1240	1240	1830	
	1060	1320	1320	1935	
	1120	1400	1400	2040	
	1180	1480	1480	2145	
	1240	1560	1560	2250	
	1300	1640	1640	2355	
	1360	1720	1720	2460	
	1420	1800	1800	2565	
	1480	1880	1880	2670	
	1540	1960	1960	2775	
	1600	2040	2040	2880	
	1720	2200	2200	2985	
1840	2360	2360	3090		
1960	2520	2520			
2080	2680	2680			
2200	2840	2840			
2320	3000	3000			
2440					
Standard pitch F	60	80	80	105	150
G	20	20	20	22.5	35
Max length	3000	3000	3000	3090	3000



# SCR OPTIONS

## Options

For model SCR, dust-prevention and lubrication accessories are available. Make a selection according to the application and the installation site.

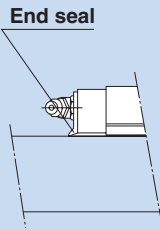


## Dust Prevention Accessories

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.

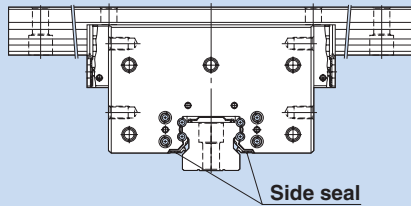
### 1 End seal

Used in locations exposed to dust.



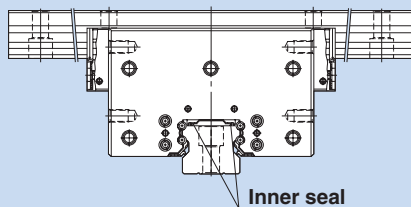
### 2 Side seal

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



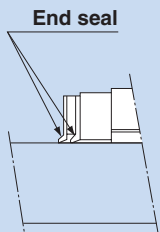
### 3 Inner seal

Used in locations severely exposed to dust or cutting chips.



### 4 Double seals

Used in locations exposed to much dust or many 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 model numbers for dust-prevention accessories and the overall LM block length with a dust-prevention accessory attached (dimension L), see table 4.

### Seal resistance value

For the maximum seal resistance value per LM block when a lubricant is applied on seal SCR ∙ UU, refer to the corresponding value provided in table 1.

Table 1 Maximum Seal Resistance Value of Seal SCR ∙ UU Unit: N

Model No.	Seal resistance value
25	5 MAX
30	10 MAX
35	12 MAX
45	20 MAX
65	30 MAX

### 5 6 Scrapers

#### Laminated Contact Scraper LaCS

For locations with an even more adverse working conditions, the Laminated Contact Scraper LaCS is available.

LaCS prevents minute foreign matter from entering the LM block by removing such foreign matter adhering to the LM rail in multiple stages through a laminated contact structure (3-layered 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

Model No.	Resistance of LaCS
25	11.7
30	18.2
35	20.8
45	26.0
65	39.0

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 Model SCR

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

Table 4 Overall LM Block Length (Dimension L) of Model SCR with a Dust Prevention Accessory Attached

Model No.	Unit: mm								
	UU	SS	DD	ZZ	KK	SSHH	DDHH	ZZHH	KKHH
SCR25	109	109	118.6	117.4	124.6	129	136.2	131.4	138.6
SCR30	131	131	141	138.8	147.4	154.4	163	156.8	165.4
SCR35	152	152	164.8	162.4	172.2	178	187.8	180.4	190.2
SCR45	174	174	186.8	185.2	195	203	212.8	206.2	216
SCR65	272	272	289.6	287.2	299.6	309	321.4	312.2	324.6

### 7 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 is 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.

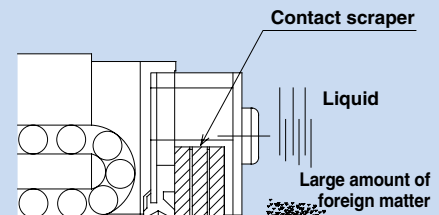
When placing an order, specify the desired cap type with the corresponding cap number indicated in the table on the right.

Model No.	C-cap model No.	Bolt used	Major dimensions mm	
			D	H
25	C 6	M 6	11.4	2.7
30	C 8	M 8	14.4	3.7
35	C 8	M 8	14.4	3.7
45	C12	M12	20.5	4.7
65	C16	M16	26.5	5.7

### LaCS

5

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

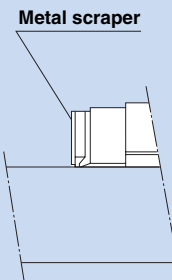


Structural drawing

### Metal scraper

6

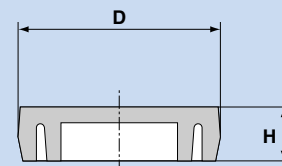
Used in locations where welding spatter may adhere to the LM rail.



### Dedicated C-cap

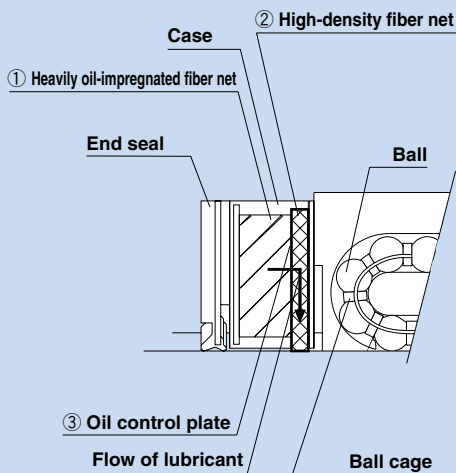
7

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



## Lubrication Accessories

### 8 QZ Lubricator



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.

### 8 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 overall LM block length with the QZ Lubricator attached (dimension L), see table 2.

#### 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 SCR 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 Model SCR with the QZ Lubricator Attached

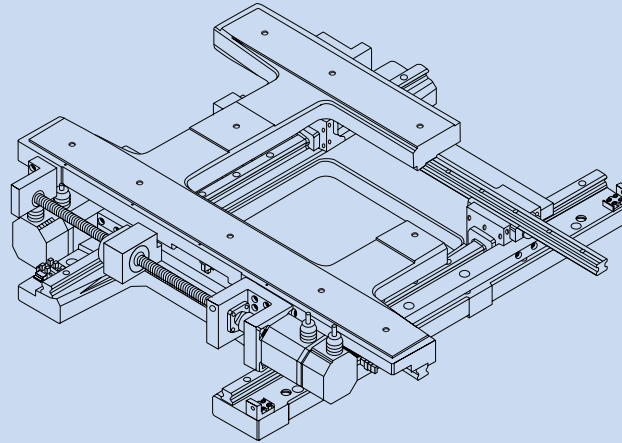
Model No.	Unit: mm								
	QZUU	QZSS	QZDD	QZZZ	QZKK	QZSSHH	QZDDHH	QZZZHH	QZKKHH
SCR25	131.4	131.4	138.6	137.4	144.6	149	156.2	151.4	158.6
SCR30	152.4	152.4	161	158.8	167.4	174.4	183	176.8	185.4
SCR35	175	175	184.8	182.4	192.2	198	207.8	200.4	210.2
SCR45	207	207	216.8	215.2	225	233	242.8	236.2	246
SCR65	307.2	307.2	319.6	317.2	329.6	339	351.4	342.2	354.6

# SCR Application

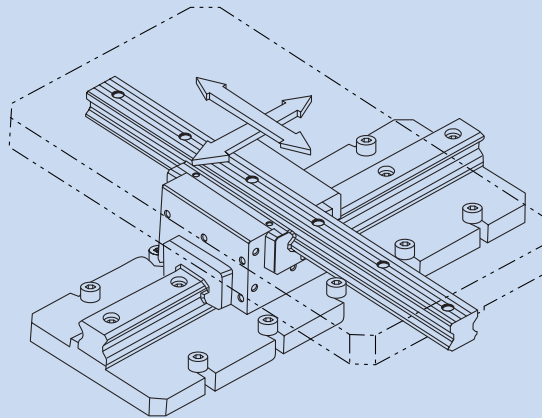
## Applications of Model SCR

### Examples of applications

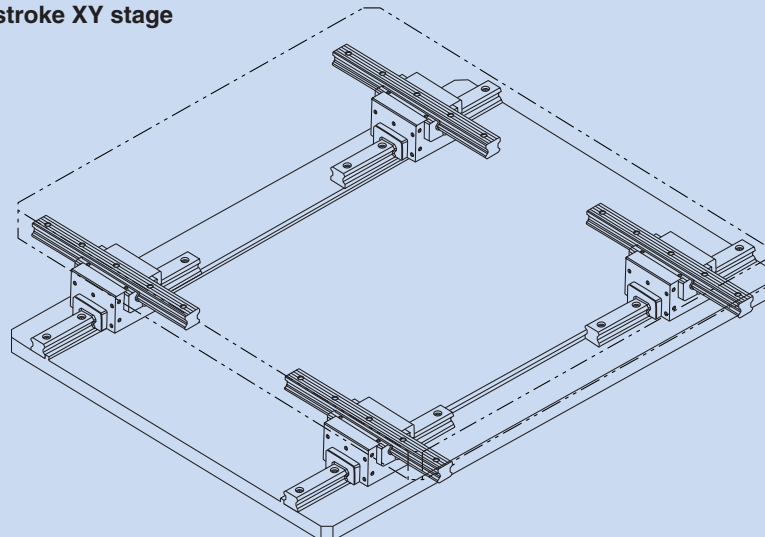
Hollow XY stage



Single-axis XY stage



Large table, small stroke XY stage



# THK Caged Ball Cross LM Guide Model SCR

## 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°C or higher. When desiring to use the system at temperature of 80°C 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.

### ● “LM Guide,” “Ball Cage,” “,” and “QZ” are registered trademarks of THK CO., LTD.

- The photo may differ slightly in appearance from the actual product.
  - The appearance and specifications of the product are subject to change without notice. Contact THK before placing an order.
  - Although great care has been taken in the production of this catalog, THK will not take any responsibility for damage resulting from typographical errors or omissions.
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