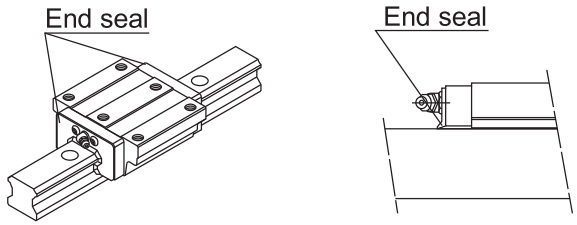
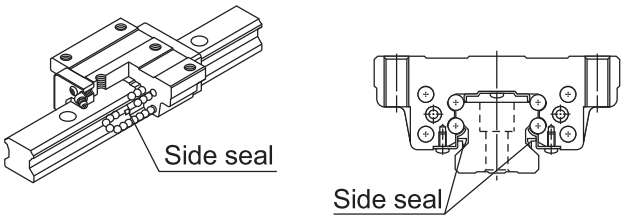
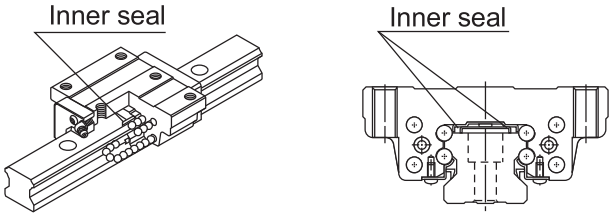
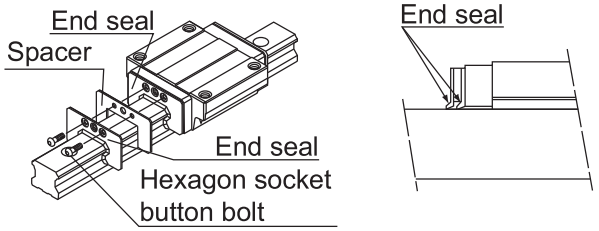
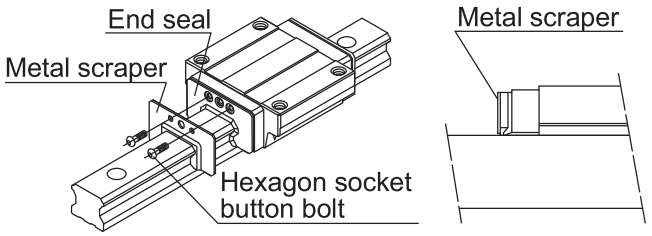
Seal and Metal scraper

●For the supported models, see the table of options by model number on A1-494.
●For the LM block dimension (dimension L) with seal attached, see A1-507 to A1-514.
●For the maximum seal resistance, see A1-520 to A1-522.

Item name	Schematic diagram / mounting location	Purpose/location of use
End Seal		Used in locations exposed to dust
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
Inner Seal		Used in locations severely exposed to dust or cutting chips
Double Seals		Used in locations exposed to much dust or many cutting chips
Metal Scraper (Non-contact)		Used in locations where welding spatter may adhere to the LM rail

Options

Seal and Metal scraper

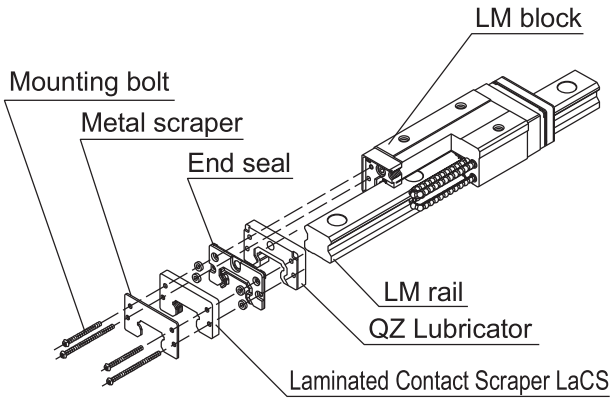
Symbol	Contamination Protection Accessories
UU	With end seal
SS	With end seal + side seal + inner seal*
DD	With double seals + side seal + inner seal*
ZZ	With end seal + side seal + inner seal* + metal scraper
KK	With double seals + side seal + inner seal* + metal scraper

* Some models are not equipped with inner seals.(See A1-494)

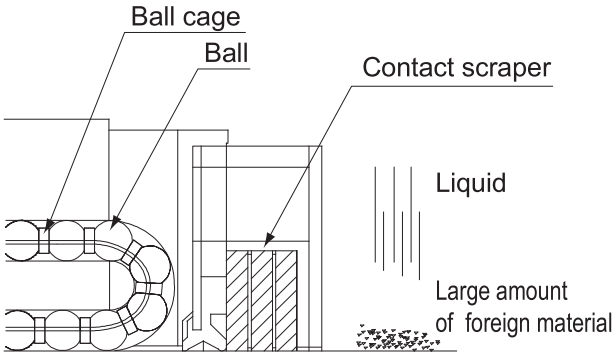
Laminated Contact Scraper LaCS

●For the supported models, see the table of options by model number on A1-494.
●For the LM block dimension (dimension L) with LaCS attached, see A1-507 to A1-514.
●For the resistance of LaCS, see A1-523.
●For notes regarding how to handle the LaCS, refer to A1-568.

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



Appearance Drawing



Structural Drawing

[Features]

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

Symbol	Contamination Protection Accessories
SSHH	With end seal + side seal + inner seal*1 + LaCS
DDHH	With double seals + side seal + inner seal *1 + LaCS
ZZHH	With end seal + side seal + inner seal *1 + metal scraper + LaCS
KKHH	With double seals + side seal + inner seal *1 + metal scraper + LaCS
JJHH*2	With end seal + side seal + inner seal*1 + LaCS + protector (serving also as metal scraper)
TTHH*2	With double seals + side seal + inner seal*1 + LaCS + protector (serving also as metal scraper)

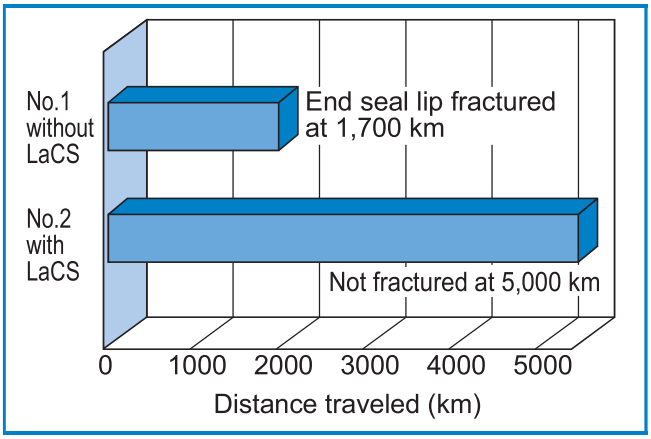
*1 Some models are not equipped with inner seals.(See A1-494)
*2 JJHH and TTHH are only available for models SVR/SVS, NR/NRS-X and SRG.
Note) HH type (with LaCS) for models SVR/SVS, NR/NRS-X, and SRG comes with a protector (see A1-503).
Contact THK if you want to use the Protector with other options.

● Test under an Environment with a Water-soluble Coolant

[Test conditions] Test environment: water-soluble coolant

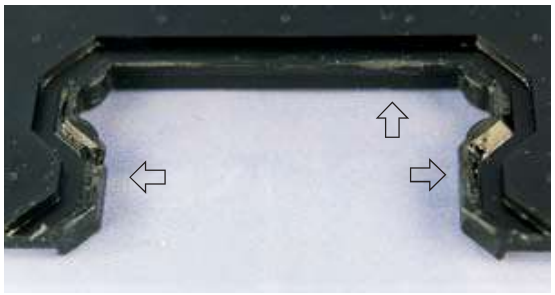
Item		Description
Tested model	No.1	SHS45R1SS+3000L (end seal only)
	No.2	SHS45R1SSHH+3000L (end seal and LaCS)
Maximum speed		200m/min
Environmental conditions		Coolant sprayed: 5 time per day

[Test result]



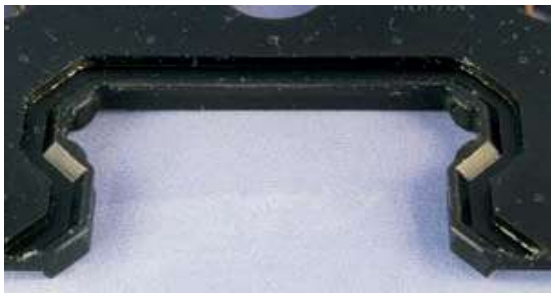
Magnified view of the end seal lip

No. 1: without LaCS - lip fractured at 1,700 km



⇦Areas marked with arrow are fractured

No. 2: with LaCS - no anomaly observed after traveling 5,000 km



Lip has not been fractured

● Test under an Environment with Minute Foreign Matter

[Test conditions] Test environment: minute foreign material

Item		Description
Tested model	No.1	Caged Ball LM Guide #45R (DD+600L) double seals only
	No.2	Caged Ball LM Guide #45R (HH+600L) LaCS only
Max speed/ acceleration		60m/min, 1G
External load		9.6kN
Foreign material conditions		Type: FCD450#115 (particle diameter: 125 μm or less)
		Sprayed amount: 1g/1hour (total sprayed amount: 120 g)

[Test result] Amount of foreign material entering the raceway

Seal configuration		Amount of foreign material entering the raceway g
Double-seal configuration (2 end seals superposed with each other)	Tested model 1	0.3
	Tested model 2	0.3
	Tested model 3	0.3
LaCS	Tested model 1	0
	Tested model 2	0
	Tested model 3	0

No. 1 Traveled 100 km (double-seal configuration)

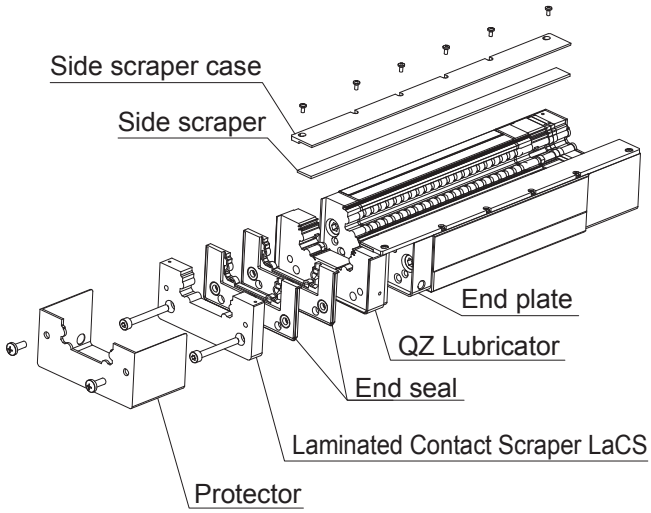
Large amount of foreign matter has entered the raceway

No. 2 Traveled 100 km (LaCS only)

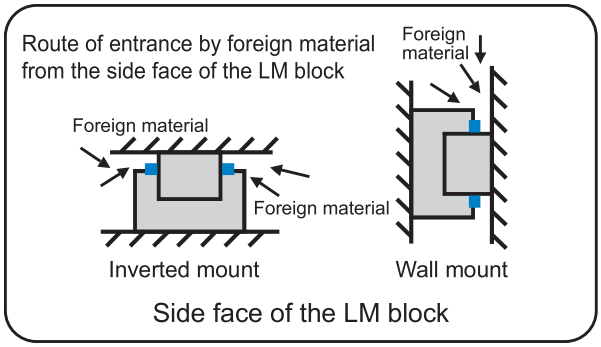
No foreign matter entering the raceway observed

Side Scraper

- Applicable models: models SVR/SVS, NR/NRS-X and SRG
- For the resistance of side scraper, see A1-524.
- For the LM block dimension (dimension L) with side scraper attached, see A1-507.
- For notes regarding how to handle the side scraper, see A1-568.

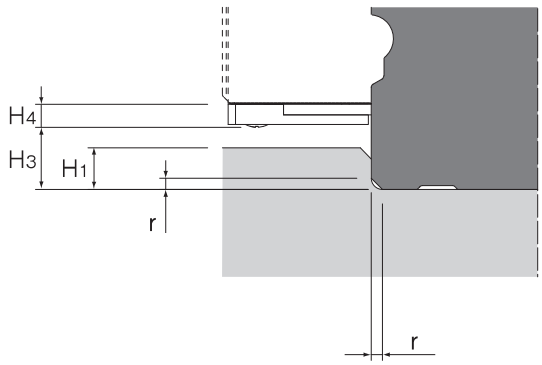


Outline view
(Ex: in case of QZTTHHYY type)



[Features]

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



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

Note) Note that the side scraper is not sold alone.

The shoulder height of the mounting surface and the corner radius of model SVR/SVS or NR/NRS-X after side scraper is mounted

Unit: mm

Model No.	Corner radius r(max)	Shoulder height of the LM rail H_1	H_3	Side scraper thickness H_4
25	0.5	2	2.9	2.6
30	1	3.5	4.4	
35	1	5.5	6.4	
45	1	8	9	
55	1.5	10.5	11.4	
65	1.5	11	12.3	

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

Unit: mm

Model No.	Corner radius r(max)	Shoulder height of the LM rail H_1	H_3	Side scraper thickness H_4
35	1	3	4	2
45	1	3.5	5.5	2.5
55	1.5	5.5	7.5	2.5
65	1.5	6	8.5	3

Model number coding

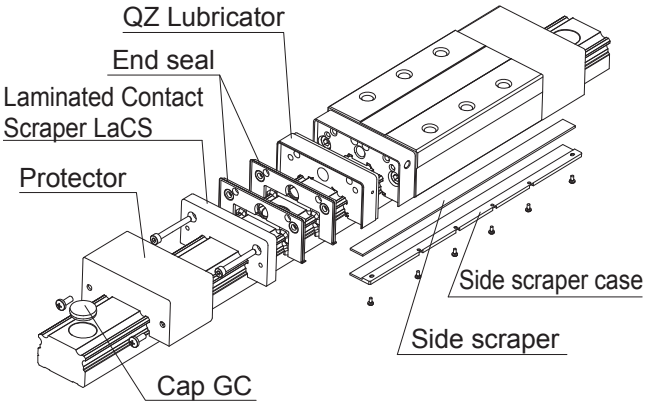
SVR45 LR 1 QZ JJHH YY C1 +1200L

YY: With side scraper*

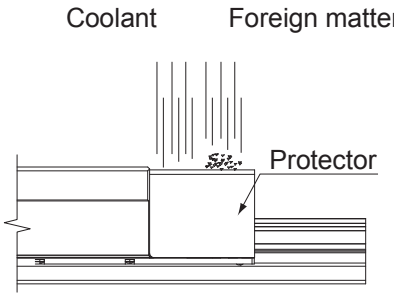
* The side scraper can accommodate various options of dust control accessories and lubrication accessories. For details, contact THK.

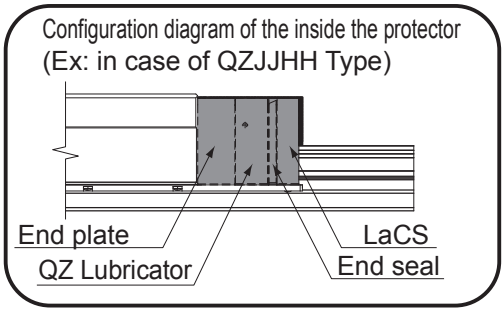
Protector

●Applicable models: models SVR/SVS, NR/NRS-X and SRG
●HH type (with LaCS) for models SVR/SVS, NR/NRS-X and SRG is provided with the protector.
●For the LM block dimension (dimension L) with protector attached, see A1-507.



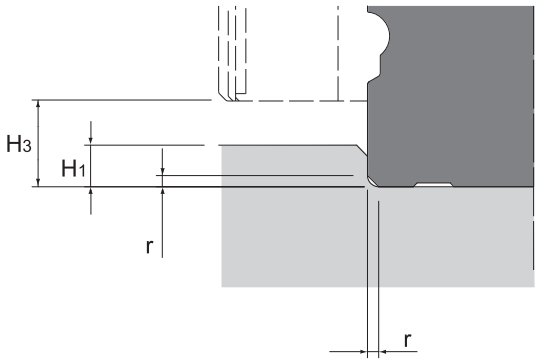
Outline view
(Ex: in case of QZTTHHYY type)





[Features]

- The protector minimizes the entrance of foreign material even in harsh environments where foreign material such as fine particles and liquids are present.



Side view of the LM block after the protector is mounted

The shoulder height of the mounting surface and the corner radius of model SVR/SVS or NR/NRS-X after protector is mounted

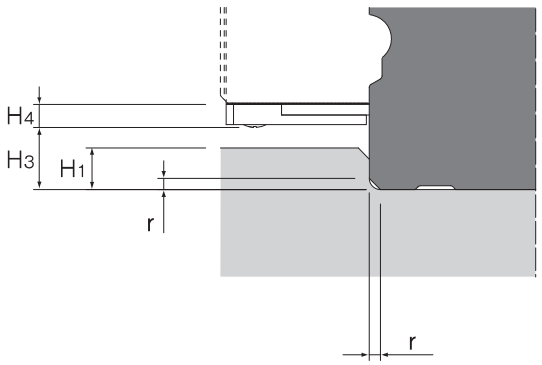
Unit: mm

Model No.	Corner radius r(max)	Shoulder height of the LM rail H_1	H_3
25	0.5	4	5.5
30	1	5	7
35	1	6	9
45	1	8	11.6
55	1.5	10	14
65	1.5	10	15

The shoulder height of the mounting surface and the corner radius after the protector of model SRG is mounted

Unit: mm

Model No.	Corner radius r(max)	Shoulder height of the LM rail H_1	H_3
35	1	5	6
45	1.5	6	8
55	1.5	8	10
65	1.5	9	11.5



Side view of the LM block after the protector and side scraper are mounted

The shoulder height of the mounting surface and the corner radius of Model SVR/SVS or NR/NRS-X after the protector and side scraper are mounted

Unit: mm

Model No.	Corner radius r(max)	Shoulder height of the LM rail H_1	H_3	Side scraper thickness H_4
25	0.5	2	2.9	2.6
30	1	3.5	4.4	
35	1	5.5	6.4	
45	1	8	9	
55	1.5	10.5	11.4	
65	1.5	11	12.3	

The shoulder height of the mounting surface and the corner radius after the protector and side scraper of Model SRG are mounted

Unit: mm

Model No.	Corner radius r(max)	Shoulder height of the LM rail H_1	H_3	Side scraper thickness H_4
35	1	3	4	2
45	1	3.5	5.5	2.5
55	1.5	5.5	7.5	2.5
65	1.5	6	8.5	3

Note1) Those models equipped with QZ Lubricator cannot have a grease nipple. When desiring a grease nipple for a model attached with QZ, contact THK.
Note2) Contact THK if you want to use the protector with other options.

Light-Resistance Contact Seal LiCS

●For the supported models, see the table of options by model number on A1-494.
●For the LM block dimension (dimension L) with LiCS attached, see A1-517.
●For the resistance of LiCS, see A1-524.
●For notes regarding how to handle the LiCS, see A1-569.

LiCS is a light sliding resistance contact seal. It is effective in removing dust on the raceway and retaining a lubricant such as grease. It achieves extremely low drag and smooth, stable motion.

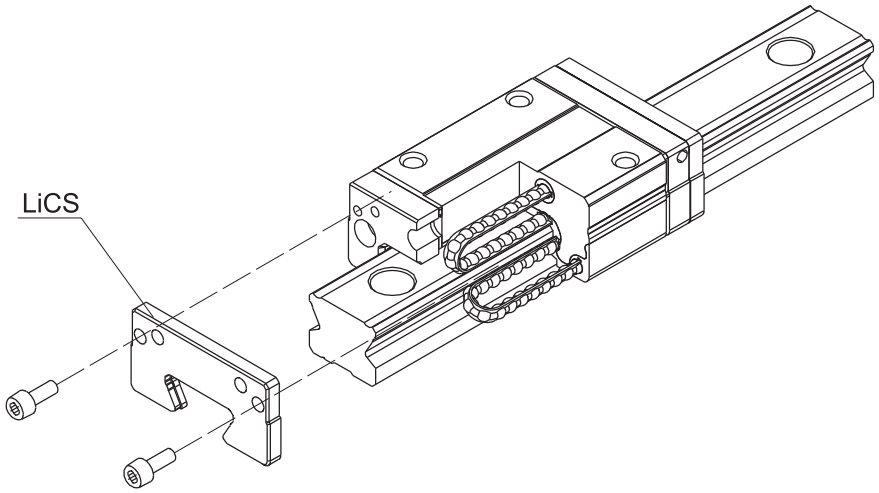


Fig.1 Structural Drawing of SSR + LiCS

[Features]

Light-Resistance Contact Seal LiCS is a seal that uses a light-resistance material in its sealing element and contacts the LM rail raceway to achieve low drag resistance. It is optimal for applications where low drag resistance is required, such as semiconductor-related devices, inspection devices and OA equipment all of which are used in favorable environments.

- Since the sealing element contacts the LM rail raceway, it is effective in removing dust on the raceway.
- Use of oil-impregnated, expanded synthetic rubber, which has excellent self-lubricating property, achieves low drag resistance.

Model number coding

SSR20 XW 2 GG C1 +600L P -II

- SSR20: LM Guide model number
- XW: Type of LM block
- 2: No. of LM blocks used on the same rail
- GG: With LiCS seal on both ends
- C1: Radial clearance symbol
  Normal (No symbol)
  Light preload (C1)
  Medium preload (C0)
- +600L: LM rail length (in mm)
- P: Accuracy symbol
  Normal grade (No Symbol) / High accuracy grade (H)
  Precision grade (P) / Super precision grade (SP)
  Ultra precision grade (UP)
- -II: Symbol for No. of rails used on the same plane

Symbol	Contamination Protection Accessories
GG	LiCS
PP	With LiCS + side seal + inner seal*

* Some models are not equipped with inner seals.(See A1-494)