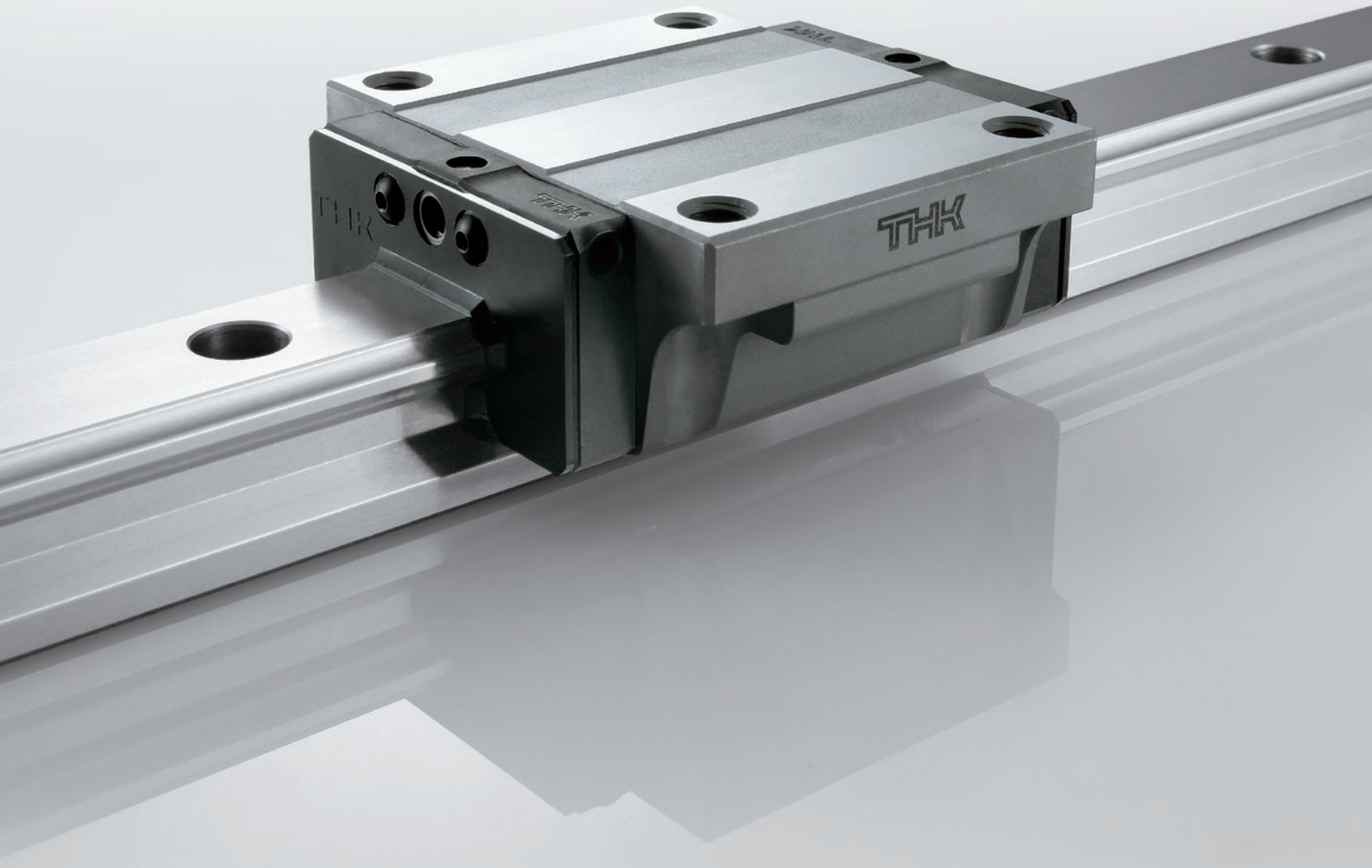
Global Standard LM Guide

HSR



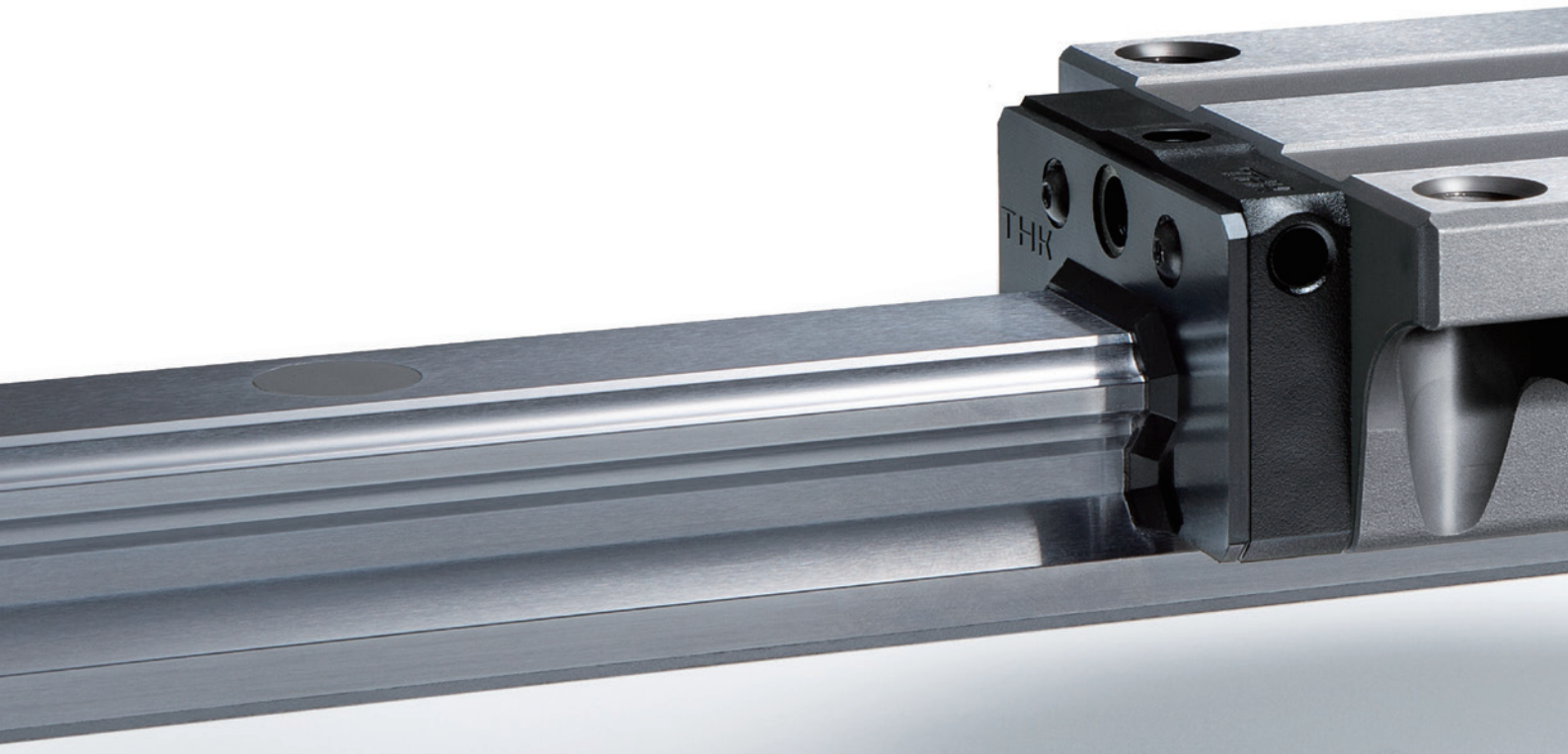
There's a reason it's a long-time bestseller

Delivering the Essence of THK

There's a reason it's a long-time bestseller.

LM GUIDE

HSR Series



In 1972, THK introduced the world's first linear motion system, the LM (Linear Motion) Guide Model LSR. The HSR series, a 4-way equal load type LM Guide, was later developed in 1981. It has steadily won over more and more fans since it first went on the market thanks to its unprecedented robustness, load capacity, and high accuracy, as well as its efficiency and how easy it is to work with. This long-time bestselling LM Guide is now widely used in a variety of machines and devices around the world. With the HSR series, THK continues to share in the dream of revolutionizing and further developing the mechatronics industry.

Model LSR, the first LM Guide

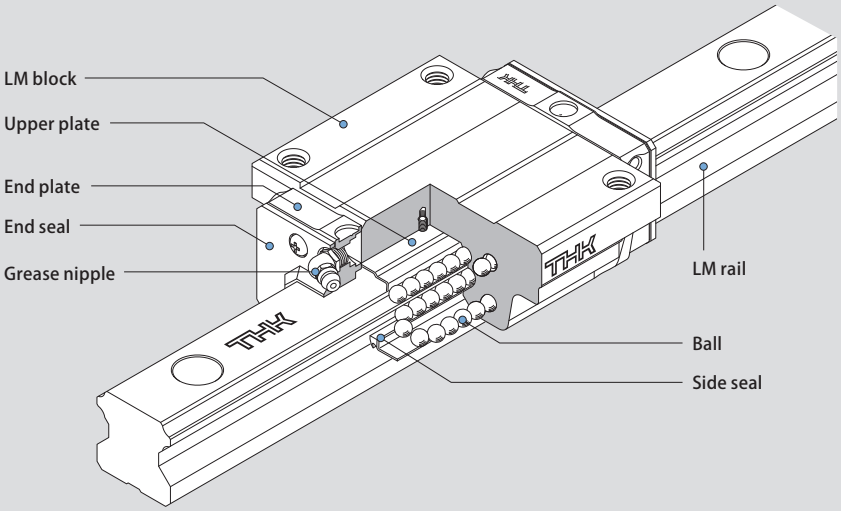
The THK logo is a mark of reliability.

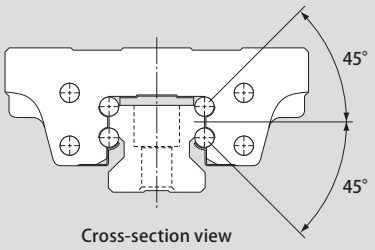
The THK logo is now stamped on the side of LM blocks and the top of end plates.
It attests to how highly reliable our products are.

WORLD QUALITY

High quality and high performance that have garnered trust worldwide since coming onto the scene.

The full-ball specification HSR has taken center stage among the different types of LM Guide. It achieves top-class quality and performance across various metrics, such as load capacity, high rigidity, automatic adjustment capabilities, durability, and low friction coefficients. Its excellent robustness provides linear motion that is highly accurate and stable over the long term.

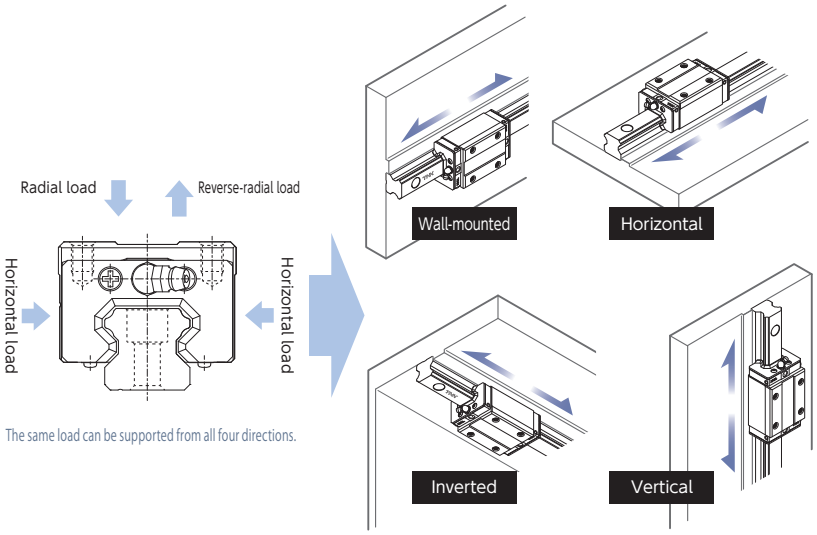




Quality Point

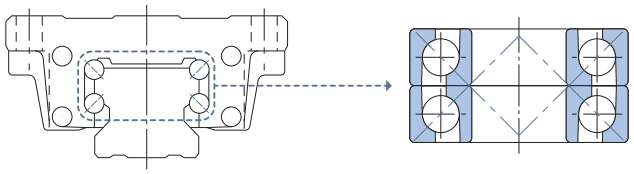
1 4-Way Equal Load

Each row of balls is arranged at a contact angle of 45° so that the rated load on the LM block is uniform under loads applied in four directions (radial, reverse-radial, and lateral directions). Due to this, the HSR can be used in a variety of orientations, which expands the range of applications for which it is suitable.



2 Automatic Adjustment Capabilities

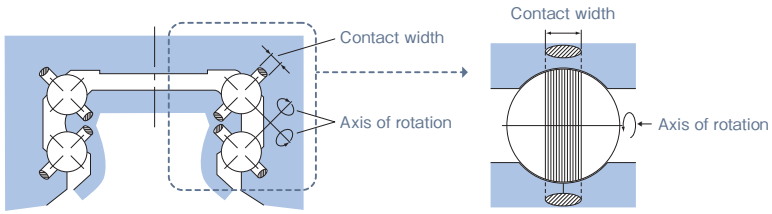
The face-to-face arrangement of THK's unique circular arc groove (DF set) has self-adjusting capabilities. This provides smooth, high-accuracy linear motion by absorbing mounting errors.



The angular contact structure of the 4-row Model DF enables a large permissible tilt angle and high self-adjustment capability.

3 Superior Durability

Balls undergo little differential slippage when rolling, even with a preload or unbalanced load applied, which enables smooth motion. Exceptional wear resistance means that the product's high degree of accuracy is maintained over the long term.



TProper rolling motion and wear resistance are maintained by keeping differential slippage low with two-point contact in the direction of a load.

4 High Rigidity Type

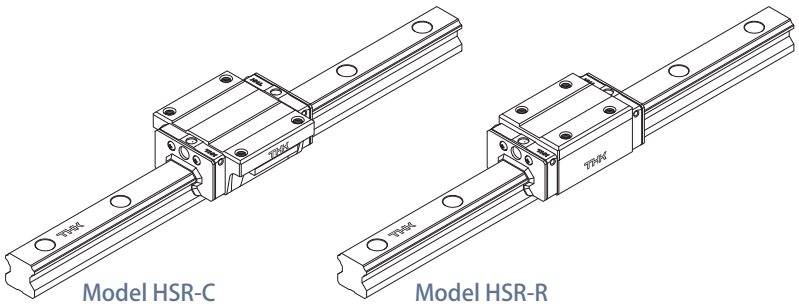
Since the balls are well-balanced in four rows, sufficient preload can be applied to easily increase rigidity in four directions while maintaining a low friction coefficient.

Providing globally standard, top-class quality.

The HSR series includes block shapes listed in the ISO standard that conform to ISO12090-1:2011 Rolling Bearings.

5 Globally Standard Dimensions

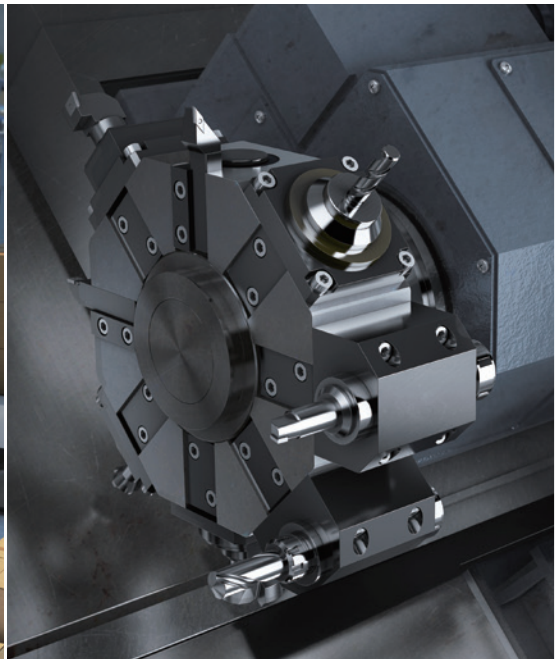
The HSR series was developed by THK, the pioneer of the LM Guide.
Conforming to ISO standards, it has come to define the globally standard dimensions of Full-Ball LM Guide units.



Model HSR-C　　Model HSR-R

LINE UP

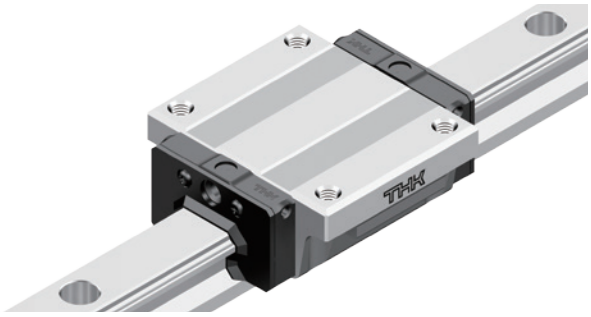
An extensive lineup to meet the needs of the market.



Flange type

SC/C/LC

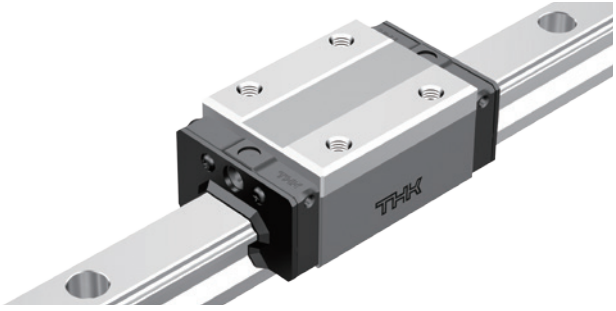
The flanged area of the LM block has tapped holes to accommodate mounting bolts from above or below, making this a highly practical block type.
The block types available include SC (short), C (standard), and LC (long).

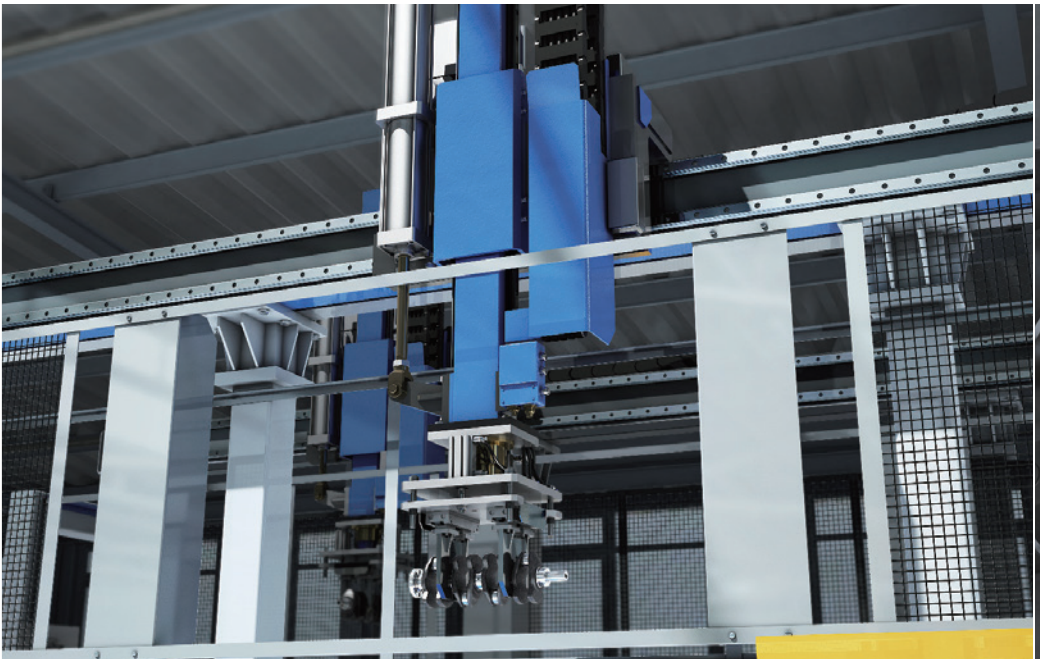


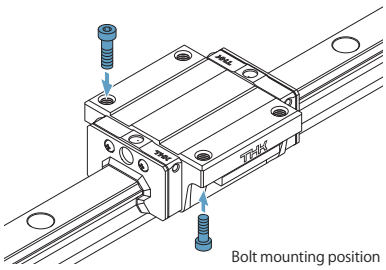
Compact type

SR/R/LR

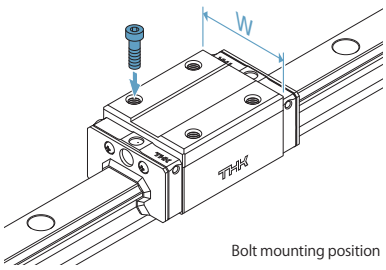
With this type, the LM block has a smaller width (W) and tapped holes. It is ideal for compact designs.
The block types available include SR (short), R (standard), and LR (long).







Bolt mounting position



Bolt mounting position

HSR Series Lineup

Model No.	Block type					
	Flange type			Compact type		
	SC	C	LC	SR	R	LR
HSR8X	●	●	●	●	●	●
HSR10X	●	●	●	●	●	●
HSR12X	●	●	●	●	●	●
HSR15	–	○	○	–	○	○
HSR20	–	○	○	–	○	○
HSR25	–	○	○	–	○	○
HSR30	–	○	○	–	○	○
HSR35	–	○	○	–	○	○
HSR45	–	○	○	–	○	○
HSR55	–	○	○	–	○	○
HSR65X	–	○	○	–	○	○

●: Newly added ○: Existing lineup

Contamination Protection Accessories

It is necessary to prevent foreign materials from getting inside the product, as it will lead to abnormal wear and a shortened service life. If it is likely that foreign materials will get inside, it is important to select an effective sealing or contamination protection device suited to the environmental conditions.

■ Seals

End seals made of synthetic rubber that are highly resistant to wear and side seals that further improve dust-proofing effectiveness are available. Use the symbols in the table to the right to specify if you need a contamination protection accessory.

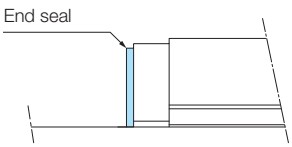
Option Compatibility

Symbol	Contamination protection accessories
UU	End seals
SS	End seals + side seals
DD	Double seals + side seals
ZZ	End seals + side seals + metal scrapers
KK	Double seals + side seals + metal scrapers

Note: 8X, 10X, and 12X are only available with UU or SS.

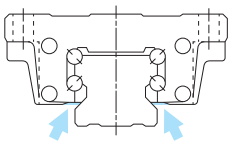
End Seal

Used in locations exposed to dust



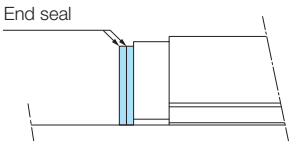
Side Seal

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



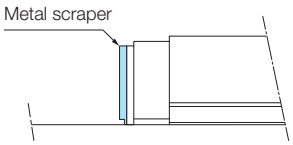
Double Seals

Used in locations exposed to excessive dust or cutting chips



Metal Scraper (Non-Contact)

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



Seal Resistance Value

See the table to the right for the maximum seal resistance of UU seals per LM block when the product is lubricated.

Maximum Seal Resistance

Unit: N

Model series	Seal symbol	Maximum seal resistance
HSR8X	UU	0.24
HSR10X		0.41
HSR12X		0.64
HSR15		2.0
HSR20		2.5
HSR25		3.9
HSR30		7.8
HSR35		11.8
HSR45		19.6
HSR55		19.6
HSR65X		34.3

■ Laminated Contact Scraper LaCS Compatible sizes: 15 to 65X

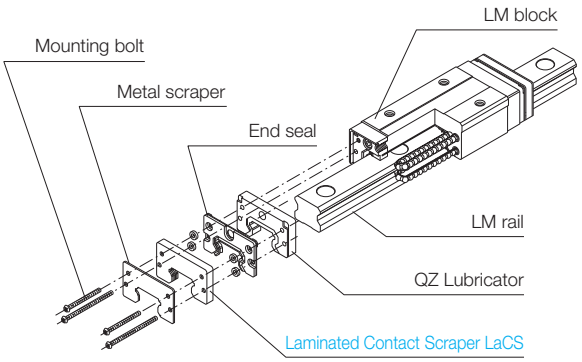
For locations with an adverse environment, Laminated Contact Scraper LaCS is available. LaCS removes minute foreign material adhering to the LM rail in multiple stages and prevents it from entering the LM block with a laminated contact structure (3-layer scraper).

Option Compatibility

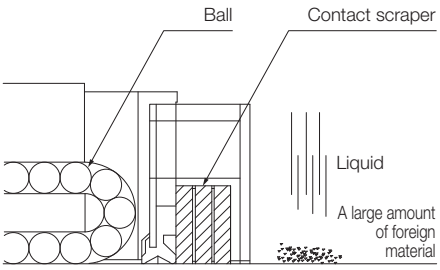
Symbol	Contamination protection accessories
SSHH	End seals + side seals + LaCS
DDHH	Double seals + side seals + LaCS
ZZHH	End seals + side seals + metal scrapers + LaCS
KKHH	Double seals + side seals + metal scrapers + LaCS

Features

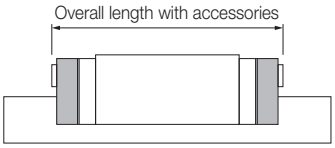
- Since the three layers of scrapers fully contact the LM rail, LaCS is highly capable of removing minute foreign material.
- Low friction resistance is achieved through the use of oil-impregnated, self-lubricating synthetic foam rubber.



Exterior Drawing



Structural Drawing



LM Block Dimension (L Dimension) with LaCS and Seals Attached

Unit: mm

Model series	UU/SS	DD	ZZ	KK	SSHH	DDHH	ZZHH	KKHH
HSR15C/R	56.6	61.8	58.2*	63.4*	76	81.2	77.2	82.4
HSR15LC/LR	74.6	79.8	76.2	81.4	94	99.2	95.2	100.4
HSR20C/R	74	80.6	76.6	83.2	92	98.6	95.2	101.8
HSR20LC/LR	90	96.6	92.6	99.2	108	114.6	111.2	117.8
HSR25C/R	83.1	90.7	86.7	94.3	101	108.6	105.3	112.9
HSR25LC/LR	102.2	109.8	105.8	113.4	120.1	127.7	124.4	132
HSR30C/R	98	105.6	101.6	109.2	119.9	127.5	124.2	131.8
HSR30LC/LR	120.6	128.2	124.2	131.8	142.5	150.1	146.8	154.4
HSR35C/R	109.4	117	113	120.6	132.4	140	135.6	143.2
HSR35LC/LR	134.8	142.4	138.4	146	157.8	165.4	161	168.6
HSR45C/R	138.9	146.1	144.1	151.3	168	175.2	171.2	178.4
HSR45LC/LR	170.7	177.9	175.9	183.1	199.8	207	203	210.2
HSR55C/R	162.9	170.1	168.1	175.3	192.6	199.8	195.8	203
HSR55LC/LR	201	208.2	206.2	213.4	230.7	237.9	233.9	241.1
HSR65XC/XR	190.5	197.7	195.3	202.5	224.3	231.5	227.5	234.7
HSR65XLC/XLR	250	257.2	254.8	262	283.8	291	287	294.2

*Grease nipple cannot be installed.

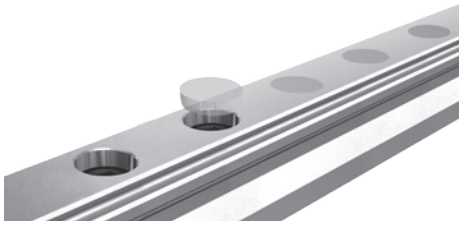
Maximum Resistance Value When LaCS is Applied

Model series	Maximum sliding resistance (N)
HSR15	3.8
HSR20	5.6
HSR25	7.5
HSR30	14.9
HSR35	22.4
HSR45	32.1
HSR55	36.5
HSR65X	43.8

Note: This represents only the resistance of the LaCS and excludes resistance from the LM block and seals.
Please contact THK about the maximum speed when using LaCS.

■ Dedicated Cap for LM Rail Mounting Holes

Using dedicated caps to cover the LM rail mounting holes helps prevent foreign material from entering the mounting holes and LM block.



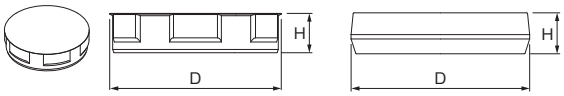
Option Compatibility

Model No.	C cap	CV cap	GC cap
HSR12X	○	–	–
HSR15	○	–	–
HSR20	–	○	○
HSR25	–	○	○
HSR30	–	○	○
HSR35	–	○	○
HSR45	–	○	○
HSR55	–	○	○
HSR65X	–	○	○

○: Available, —: Not available

CV Caps/C Caps

The caps are made of a special synthetic resin.
The CV cap is the successor to the C cap, and its new structure makes it easier to insert.

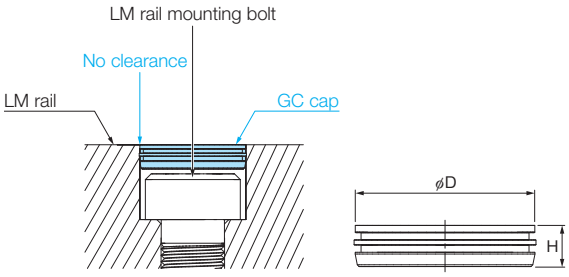


CV cap　　C cap

Model No.	Cap model	Bolts used	Main dimensions (mm)	
			D	H
HSR12X	C3	M3	6.3	1.2
HSR15	C4	M4	7.9	1
HSR20	CV5	M5	9.8	2.6
HSR25	CV6	M6	11.4	2.6
HSR30, HSR35	CV8	M8	14.4	3.3
HSR45	CV12	M12	20.4	3.4
HSR55	CV14	M14	23.4	5.5
HSR65X	CV16	M16	26.4	5.6

GC Caps

GC caps are made of metal. (They are RoHS compliant.)
GC caps adhere closer to the counterbore than CV caps and C caps, so there is no clearance once they are inserted.



Model No.	Cap model	Bolts used	Main dimensions (mm)	
			D	H
HSR20	GC5	M5	9.86	2.5
HSR25	GC6	M6	11.36	2.5
HSR30, HSR35	GC8	M8	14.36	3.5
HSR45	GC12	M12	20.36	4.6
HSR55	GC14	M14	23.36	5
HSR65X	GC16	M16	26.36	5

Notes: GC caps are only sold with an LM Guide. They are not sold separately.
The LM Guide model number code will have "GC" at the end when it is delivered.

Model Number Coding

HSR25 LC 2 UU C0 + 1200L P GC

GC caps attached

GC caps cannot be used with LM rails that have undergone surface treatment.
LM rail mounting holes for GC caps are special. (The mouth is not chamfered.)
Be careful not to injure your hand when inserting GC caps.
Be sure to make the GC caps level with the upper surface of the LM rail and clean (wipe) that surface after insertion.
Contact THK if this product will be used in special environments such as in a vacuum or extreme heat or cold.

Lubrication

Standard Grease AFB-LF Compatible sizes: 15 to 65X

AFB-LF Grease is a general-purpose grease that provides excellent extreme pressure resistance and mechanical stability through the use of a refined mineral oil base oil and a lithium-based consistency enhancer.

Representative Physical Properties

Item		Representative property	Testing method
Consistency enhancer		Lithium-based	
Base oil		Rened mineral oil	
Base oil kinematic viscosity: mm²/s (40°C)		170	JIS K 2220 23
Worked penetration (25°C, 60 W)		275	JIS K 2220 7
Mixing stability (100,000 W)		345	JIS K 2220 15
Dropping point: °C		193	JIS K 2220 8
Evaporation volume: mass% (99°C, 22 h)		0.4	JIS K 2220 10
Oil separation rate: mass% (100°C, 24 h)		0.6	JIS K 2220 11
Copper plate corrosion (B method, 100°C, 24 h)		Passed	JIS K 2220 9
Low-temperature torque: mN·m (-20°C)	Starting	130	JIS K 2220 18
	Rotational	51	
4-ball testing (welding load): N		3089	ASTM D2596
Operating temperature range: °C		-15 to 100	
Color		Yellowish brown	

Standard Grease AFF Compatible sizes: 8X,10X,12X

AFF Grease uses a high-grade synthetic oil for the base oil, a lithium-based consistency enhancer, and a special additive. As a result, it achieves stable rolling resistance, low dust generation, and high fretting resistance at a level that conventional vacuum greases or low dust-generating greases have not.

Representative Physical Properties

Item		Representative property	Testing method
Consistency enhancer		Lithium-based	
Base oil		High-grade synthetic oil	
Base oil kinematic viscosity: mm²/s (40°C)		100	JIS K 2220 23
Worked penetration (25°C, 60 W)		315	JIS K 2220 7
Mixing stability (100,000 W)		345	JIS K 2220 15
Dropping point: °C		220	JIS K 2220 8
Evaporation volume: mass% (99°C, 22 h)		0.7	JIS K 2220 10
Oil separation rate: mass% (100°C, 24 h)		2.6	JIS K 2220 11
Copper plate corrosion (B method, 100°C, 24 h)		Passed	JIS K 2220 9
Low-temperature torque: mN·m (-20°C)	Starting	220	JIS K 2220 18
	Rotational	60	
4-ball testing (welding load): N		1236	ASTM D2596
Operating temperature range: °C		-40 to 120	
Color		Reddish brown	

Note: Non-standard greases are also available. Contact THK for details.

■ QZ Lubricator Compatible sizes: 15 to 65X

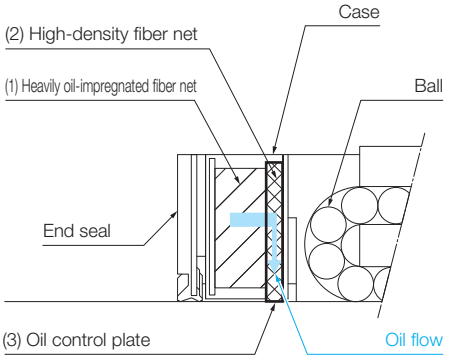
The QZ Lubricator feeds the right amount of lubricant to the LM rail raceway. This allows an oil film to be constantly formed between the balls and the raceway and significantly extends the lubrication maintenance interval.

Features

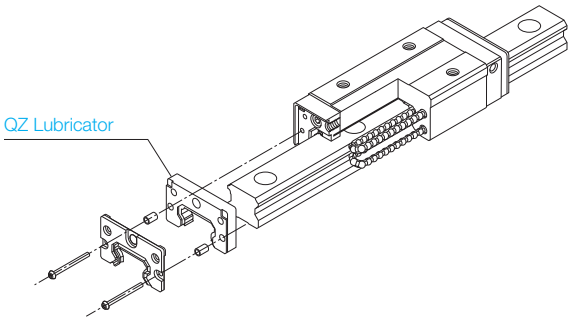
- Since it compensates for oil loss, the lubrication maintenance interval can be significantly extended.
- It is an eco-friendly lubrication system that does not contaminate the surrounding area, as it feeds the right amount of lubricant to the ball raceway.

The QZ Lubricator is made primarily of three components:
(1) a highly oil-impregnated fiber net (which stores lubricant)
(2) a high-density fiber net (which applies the lubricant to the raceways)
(3) an oil control plate (which adjusts the amount of oil being applied)

The lubricant is supplied from within the QZ Lubricator using the basic principle of capillary action, as used in felt-tip pens.



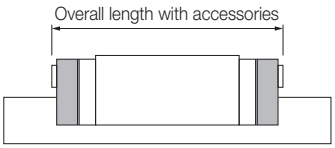
Structural Drawing



External view

Option Compatibility

Symbol	Contamination protection accessories
QZUU	End seals + QZ
QZSS	End seals + side seals + QZ
QZDD	Double seals + side seals + QZ
QZZZ	End seals + side seals + metal scrapers + QZ
QZKK	Double seals + side seals + metal scrapers + QZ
QZSSHH	End seals + side seals + LaCS + QZ
QZDDHH	Double seals + side seals + LaCS + QZ
QZZZHH	End seals + side seals + metal scrapers + LaCS + QZ
QZKKHH	Double seals + side seals + metal scrapers + LaCS + QZ



LM Block Dimension (L Dimension) with QZ Lubricator and Seals Attached

Unit: mm

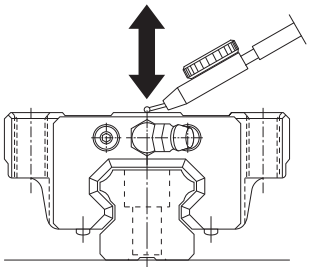
Model series	QZUU	QZSS	QZDD	QZZZ	QZKK	QZSSHH	QZDDHH	QZZZHH	QZKKHH
HSR15C/R	76.6	76.6	84.6	81.2	89.2	95.8	103.8	97	105
HSR15LC/LR	94.6	94.6	102.6	99.2	107.2	113.8	121.8	115	123
HSR20C/R	93	93	101.2	98.8	107	110.4	118.6	112.8	121
HSR20LC/LR	109	109	117.2	114.8	123	126.4	134.6	128.8	137
HSR25C/R	100.9	100.9	108.9	106.6	114.6	118.2	126.2	120.6	128.6
HSR25LC/LR	120	120	128	125.7	133.7	137.3	145.3	139.5	147.7
HSR30C/R	115.8	115.8	123.8	121.5	129.5	137.1	145.1	139.5	147.5
HSR30LC/LR	138.4	138.4	146.4	144.1	152.1	159.7	167.7	162.1	170.1
HSR35C/R	129	129	138.8	135.8	145.6	151.4	161.2	153.8	163.6
HSR35LC/LR	154.4	154.4	164.2	161.2	171	176.8	186.6	179.2	189
HSR45C/R	168.5	168.5	178.3	176.7	186.5	197.4	207.2	200.6	210.4
HSR45LC/LR	200.3	200.3	210.1	208.5	218.3	229.2	239	232.4	242.2
HSR55C/R	193.4	193.4	204.6	202.1	213.3	223.4	234.6	226.6	237.8
HSR55LC/LR	231.5	231.5	242.7	240.2	251.4	261.5	272.7	264.7	275.9
HSR65XC/XR	222.7	222.7	233.9	232.5	243.7	258.3	269.5	261.5	272.7
HSR65XLC/XLR	282.2	282.2	293.4	292	303.2	317.8	329	321	332.2

Note: Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ.

Radial Clearance Specifications

The radial clearance significantly affects the running accuracy, load resistance, and rigidity. Therefore, it is necessary to select a clearance that is appropriate for the application. An appropriate radial clearance will prevent vibrations and impacts from occurring when the device is running, as well as improve the service life and accuracy of the LM Guide. The Model HSR has three types of radial clearance (preload): normal, light preload, and medium preload.

Radial clearance



Radial Clearance Specifications Unit: μm

Model No.	Normal	Light preload	Medium preload
	No symbol	C1	C0
HSR8X	−1 to +1	−4 to −1	−
HSR10X	−2 to +2	−5 to −1	−
HSR12X	−3 to +3	−6 to −2	−
HSR15	−4 to +2	−12 to −4	−
HSR20	−5 to +2	−14 to −5	−23 to −14
HSR25	−6 to +3	−16 to −6	−26 to −16
HSR30	−7 to +4	−19 to −7	−31 to −19
HSR35	−8 to +4	−22 to −8	−35 to −22
HSR45	−10 to +5	−25 to −10	−40 to −25
HSR55	−12 to +5	−29 to −12	−46 to −29
HSR65X	−14 to +7	−32 to −14	−50 to −32

Accuracy Standards

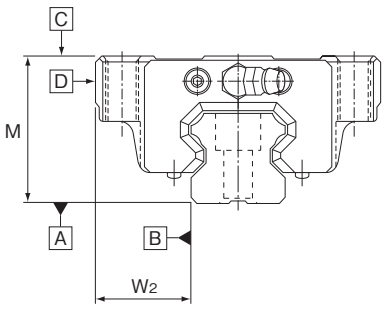
The accuracy of the LM Guide is specified for each model in terms of the dimensional tolerance for height and width, the difference between height and width in a pair, and running parallelism.
The Model HSR has five types of accuracy standards: normal grade, high accuracy grade, precision grade, super precision grade, and ultra precision grade.

■ Difference in Height M

Indicates the difference between the minimum and maximum values of the height (M) of each LM Guide used on the same plane in combination.

■ Difference in Width W_2

Indicates a 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.

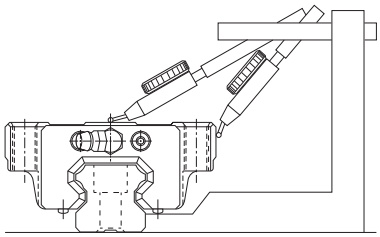


Accuracy Standards Unit: mm

Model No.	Item	Normal grade	High accuracy grade	Precision grade	Super precision grade	Ultra precision grade
		No symbol	H	P	SP	UP
8X 10X 12X	Dimensional tolerance in height M	±0.07	±0.03	±0.015	±0.007	−
	Difference in height M	0.015	0.007	0.005	0.003	−
	Dimensional tolerance in width W_2	±0.04	±0.02	±0.01	±0.007	−
	Difference in width W_2	0.02	0.01	0.006	0.004	−
	Running parallelism of surface C against surface A Running parallelism of surface D against surface B	See the table on p.13				−
15 20	Dimensional tolerance in height M	±0.07	±0.03	0 −0.03	0 −0.015	0 −0.008
	Difference in height M	0.02	0.01	0.006	0.004	0.003
	Dimensional tolerance in width W_2	±0.06	±0.03	0 −0.02	0 −0.015	0 −0.008
	Difference in width W_2	0.02	0.01	0.006	0.004	0.003
	Running parallelism of surface C against surface A Running parallelism of surface D against surface B	See the table on p.13				
25 30 35	Dimensional tolerance in height M	±0.08	±0.04	0 −0.04	0 −0.02	0 −0.01
	Difference in height M	0.02	0.015	0.007	0.005	0.003
	Dimensional tolerance in width W_2	±0.07	±0.03	0 −0.03	0 −0.015	0 −0.01
	Difference in width W_2	0.025	0.015	0.007	0.005	0.003
	Running parallelism of surface C against surface A Running parallelism of surface D against surface B	See the table on p.13				
45 55	Dimensional tolerance in height M	±0.08	±0.04	0 −0.05	0 −0.03	0 −0.015
	Difference in height M	0.025	0.015	0.007	0.005	0.003
	Dimensional tolerance in width W_2	±0.07	±0.04	0 −0.04	0 −0.025	0 −0.015
	Difference in width W_2	0.03	0.015	0.007	0.005	0.003
	Running parallelism of surface C against surface A Running parallelism of surface D against surface B	See the table on p.13				
65X	Dimensional tolerance in height M	±0.08	±0.04	0 −0.05	0 −0.04	0 −0.03
	Difference in height M	0.03	0.02	0.01	0.007	0.005
	Dimensional tolerance in width W_2	±0.08	±0.04	0 −0.05	0 −0.04	0 −0.03
	Difference in width W_2	0.03	0.02	0.01	0.007	0.005
	Running parallelism of surface C against surface A Running parallelism of surface D against surface B	See the table on p.13				

■ Running Parallelism

Refers to the tolerance for parallelism between the LM block and the LM rail datum surface when the LM block travels the whole length of the LM rail bolted to a reference surface.



LM Rail Length and Running Parallelism by Accuracy Standard

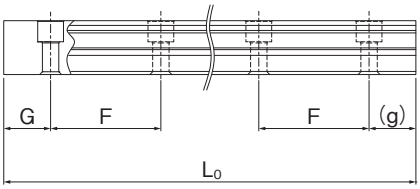
Unit: μm

LM rail length (mm)		Running parallelism value				
Above	Or less	Normal grade	High accuracy grade	Precision grade	Super precision grade	Ultra precision grade
—	50	5	3	2	1.5	1
50	80	5	3	2	1.5	1
80	125	5	3	2	1.5	1
125	200	5	3.5	2	1.5	1
200	250	6	4	2.5	1.5	1
250	315	7	4.5	3	1.5	1
315	400	8	5	3.5	2	1.5
400	500	9	6	4.5	2.5	1.5
500	630	11	7	5	3	2
630	800	12	8.5	6	3.5	2
800	1,000	13	9	6.5	4	2.5
1,000	1,250	15	11	7.5	4.5	3
1,250	1,600	16	12	8	5	4
1,600	2,000	18	13	8.5	5.5	4.5
2,000	2,500	20	14	9.5	6	5
2,500	3,090	21	16	11	6.5	5.5

Standard and Maximum Lengths of the LM Rail

The standard and maximum lengths of Model HSR LM rails are shown in the following table. If the maximum length of the desired LM rail exceeds these values, joint rails will be used. Contact THK for details. For special rail lengths, it is recommended to use a value corresponding to the G, g dimensions from the table. As the G, g dimensions increase, that portion becomes less stable, and the accuracy may be negatively affected.

Note: If joint rails are not allowed, and a length greater than the maximum values is required, contact THK.



Notes: The maximum length varies with accuracy grades. Contact THK for details.

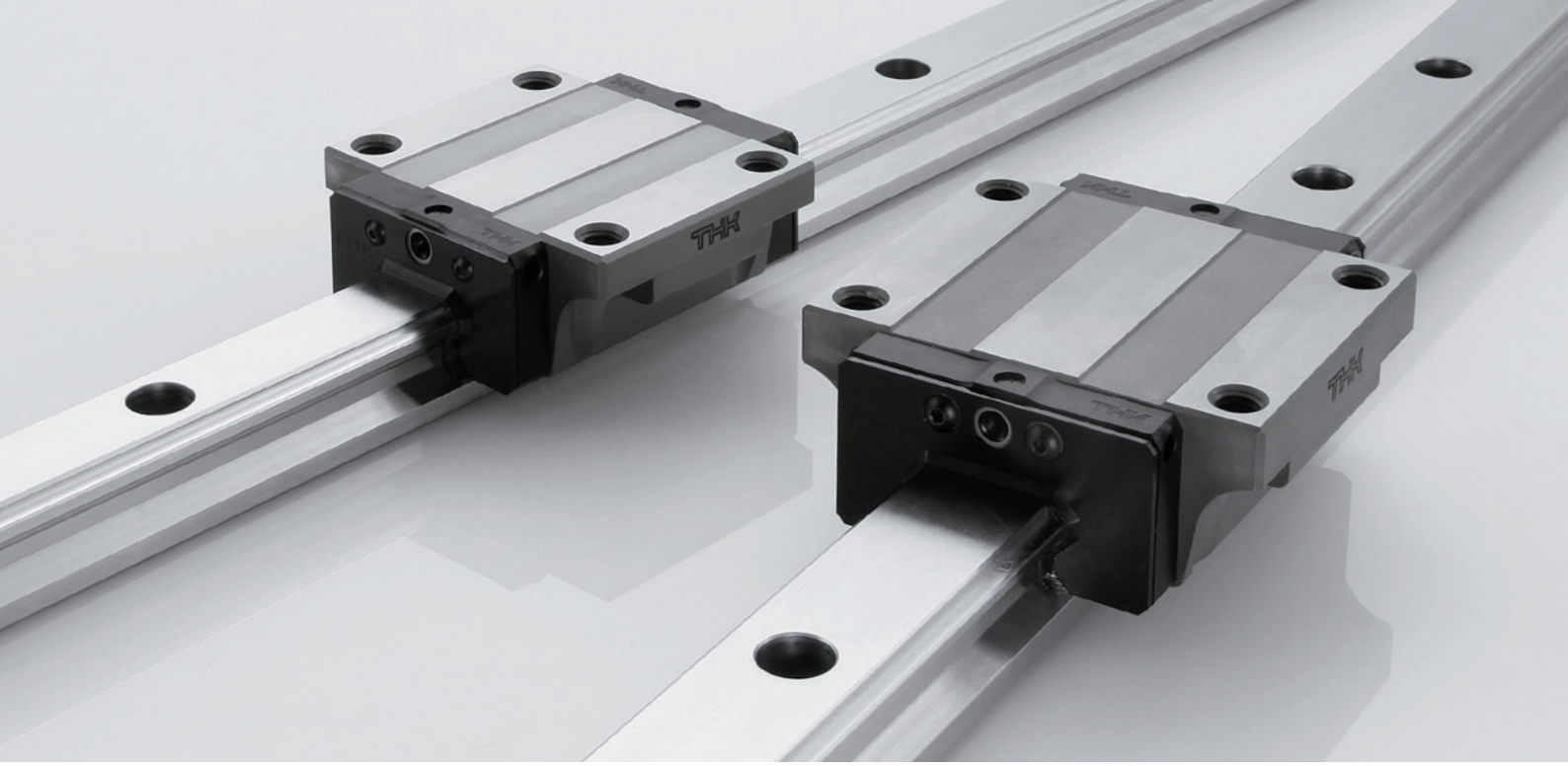
If jointed rails are not allowed and a greater length than the maximum values above is required, contact THK.

The figures in the parentheses indicate the maximum lengths of stainless steel made models.

Standard and Maximum Lengths of the LM Rail

Unit: mm

Model series	HSR8X	HSR10X	HSR12X	HSR15	HSR20	HSR25	HSR30	HSR35	HSR45	HSR55	HSR65X
LM rail standard length (L_0)	35	45	70	160	160	220	280	280	570	780	1,270
	55	70	110	220	220	280	360	360	675	900	1,570
	75	95	150	280	280	340	440	440	780	1,020	2,020
	95	120	190	340	340	400	520	520	885	1,140	2,620
	115	145	230	400	400	460	600	600	990	1,260	
	135	170	270	460	460	520	680	680	1,095	1,380	
	155	195	310	520	520	580	760	760	1,200	1,500	
	175	220	350	580	580	640	840	840	1,305	1,620	
	195	245	390	640	640	700	920	920	1,410	1,740	
	215	270	430	700	700	760	1,000	1,000	1,515	1,860	
	235	295	470	760	760	820	1,080	1,080	1,620	1,980	
	255	320	510	820	820	940	1,160	1,160	1,725	2,100	
	275	345	550	940	940	1,000	1,240	1,240	1,830	2,220	
		370	590	1,000	1,000	1,060	1,320	1,320	1,935	2,340	
		395	630	1,060	1,060	1,120	1,400	1,400	2,040	2,460	
		420	670	1,120	1,120	1,180	1,480	1,480	2,145	2,580	
		445		1,180	1,180	1,240	1,560	1,560	2,250	2,700	
		470		1,240	1,240	1,300	1,640	1,640	2,355	2,820	
				1,360	1,360	1,360	1,720	1,720	2,460	2,940	
				1,480	1,480	1,420	1,800	1,800	2,565	3,060	
				1,600	1,600	1,480	1,880	1,880	2,670		
					1,720	1,540	1,960	1,960	2,775		
					1,840	1,600	2,040	2,040	2,880		
					1,960	1,720	2,200	2,200	2,985		
					2,080	1,840	2,360	2,360	3,090		
					2,200	1,960	2,520	2,520			
						2,080	2,680	2,680			
						2,200	2,840	2,840			
						2,320	3,000	3,000			
						2,440					
Standard pitch F	20	25	40	60	60	60	80	80	105	120	150
G, g dimension	7.5	10	15	20	20	20	20	20	22.5	30	35
Maximum length	(1,000)	(1,000)	(1,480)	3,000 (1,240)	3,000 (1,480)	3,000 (2,020)	3,000 (2,520)	3,000 (2,520)	3,090	3,060	3,000

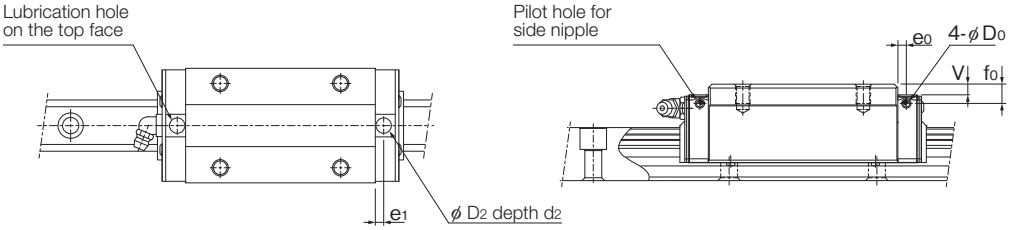


Lubrication Hole

The Model HSR allows lubrication from both the side and top faces of the LM block. Compatible sizes range from 15 to 65X. In order to prevent foreign material from entering the LM block, lubrication holes are not through holes in blocks with regular specifications. When using the lubrication hole, contact THK. When using the lubrication hole on the upper surface of models HSR-R/LR, a separate lubrication adapter is required. Contact THK for details.

The lubricant may not reach the raceway if the LM Guide is not installed in a horizontal orientation. Be sure to let THK know the mounting orientation and the exact position in each LM block where the grease nipple or the piping joint should be attached.

For details about lubrication, please see p.10 or the “Lubrication Accessories” section of the general catalog.



Note: Upper surface lubrication is for oil lubrication only. Contact THK if you are considering using the lubrication hole on the upper surface for grease lubrication.

Lubrication Hole for Model HSR

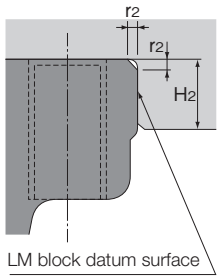
Unit: mm

Model No.	Pilot hole for side nipple			Applicable nipple	Lubrication hole on the top face				
	e_0	f_0	D_0		D_2	(O-ring)	V	e_1	d_2
HSR15C/LC	3.2	3.9	3	PB107	5.1	SS4	0.3	3.2	0.65
HSR15R/LR	3.2	7.9	3	PB107	5.1	SS4	4.3	3.2	0.65
HSR20C/LC	3.1	3.4	3	PB107	6	SS5	0.2	4.3	0.6
HSR20R/LR	3.1	3.4	3	PB107	6	SS5	0.2	4.3	0.6
HSR25C/LC	3.5	4	3	PB107	6.2	P3	0.4	3.9	1
HSR25R/LR	3.5	8	3	PB107	6.2	P3	4.4	3.9	1
HSR30C/LC	5.2	6.2	5.2	M6F	6.2	P3	0.4	5.2	1
HSR30R/LR	5.2	9.2	5.2	M6F	6.2	P3	3.4	5.2	1
HSR35C/LC	5.5	5.6	5.2	M6F	6.2	P3	0.4	5.5	1
HSR35R/LR	5.5	12.6	5.2	M6F	6.2	P3	7.4	5.5	1
HSR45C/LC	6.1	6.6	5.2	M6F	10.2	P7	0.4	8.2	1
HSR45R/LR	6.1	16.6	5.2	M6F	10.2	P7	10.4	8.2	1
HSR55C/LC	5.6	7.7	5.2	M6F	10.2	P7	0.4	9.1	1
HSR55R/LR	5.6	17.7	5.2	M6F	10.2	P7	10.4	9.1	1
HSR65XC/XLC	6.8	14.6	5.2	M6F	10.2	P7	5.9	9.5	1
HSR65XR/XLR	6.8	14.6	5.2	M6F	10.2	P7	5.9	9.5	1

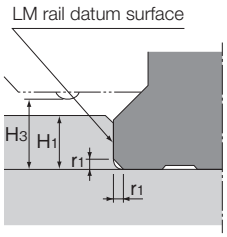
Shoulder Height of the Mounting Base and the Corner Radius

The mounting base for the LM rail and LM block has a reference surface on the side face to allow easy installation. The height of the datum shoulder varies based on the model. See below for details. 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.

The corner radius r varies based on the model. See below for details.



LM block



LM rail

Shoulder Height of the Mounting Base and the Corner Radius Unit: mm

Model series	LM rail corner radius r_1 (max)	LM block corner radius r_2 (max)	LM rail shoulder height H_1	LM block shoulder height H_2	H_3
HSR8X	0.3	0.5	1.6	6	2.1
HSR10X	0.3	0.5	1.7	5	2.2
HSR12X	0.8	0.5	2.6	4	3.1
HSR15	0.5	0.5	3	4	4.7
HSR20	0.5	0.5	3.5	5	4
HSR25	1	1	5	5	5.5
HSR30	1	1	5	5	7
HSR35	1	1	6	6	7.5
HSR45	1	1	8	8	10
HSR55	1.5	1.5	10	10	13
HSR65X	1.5	1.5	10	10	14

Static Safety Factor

To calculate a load applied to the LM Guide, you must first obtain the average load required to determine the service life and the maximum load needed to determine the static safety factor. In particular, if the system starts and stops frequently, if a cutting load acts on the system, or if a large moment caused by an overhanging load is applied, it may experience an unexpectedly large load. When selecting a model number, make sure that the desired model is capable of supporting the required maximum load (whether stationary or in motion).

Estimates for the static safety factor are shown in the table to the right.

Estimates of the Static Safety Factor (f_s)

Load conditions*	Lower limit of f_s
Without vibrations or impacts	2
With vibrations or impacts	5

* Vibrations and impacts are typically caused by factors such as acceleration and deceleration, sudden starting and stopping, vibrations and impacts from an external machine, and changes in processing power over time.

$$f_s = \frac{C_0}{P_{max}}$$

f_s: Static safety factor
C_0: Basic static load rating (N)
P_{max}: Maximum applied load (N)

Nominal Life and Service Life Time

■ Calculating the Nominal Life

The nominal life (L_{10}) is obtained from the following formulas using the basic dynamic load rating (C) and the calculated load acting on the LM Guide (P_C).
For this calculation, the basic dynamic load is to be based on a nominal life of 50 km in case of an LM Guide with balls, or 100 km in case of an LM Guide with rollers.

LM Guide with balls
(Using a basic dynamic load rating such that the nominal life will be 50 km)

$$L_{10} = \left(\frac{C}{P_C}\right)^3 \times 50$$

LM Guide with rollers
(Using a basic dynamic load rating such that the nominal life will be 100 km)

$$L_{10} = \left(\frac{C}{P_C}\right)^{\frac{10}{3}} \times 100$$

L_{10}: Nominal life (km)
C: Basic dynamic load rating (N)
P_C: Calculated load (N)

Note: These nominal life formulas may not apply if the length of the stroke is less than or equal to twice the length of the LM block.

When comparing the nominal life (L_{10}), you must take into account whether the basic dynamic load rating was defined based on 50 km or 100 km. Convert the basic dynamic load rating based on ISO 14728-1 as necessary.

ISO-regulated basic dynamic load rating conversion formulas:

• LM Guide with balls (Formula 1)

$$C_{100} = \frac{C_{50}}{1.26}$$

• LM Guide with rollers (Formula 2)

$$C_{100} = \frac{C_{50}}{1.23}$$

C_{50}: Basic dynamic load based on a nominal life of 50 km
C_{100}: Basic dynamic load based on a nominal life of 100 km

■ Calculating the Modified Nominal Life

During use, an LM Guide may be subjected to vibrations and shocks as well as fluctuating loads, which are difficult to detect. In addition, the surface hardness of the raceways, the operating temperature, and having LM blocks arranged directly behind one another will have a decisive impact on the service life. Taking these factors into account, the modified nominal life (L_{10m}) can be calculated according to the following formulas (3) and (4).

Modified factor α

$$\alpha = \frac{f_H \cdot f_T \cdot f_C}{f_W}$$

α: Modified factor
f_H: Hardness factor
f_T: Temperature factor
f_C: Contact factor
f_W: Load factor

Note: See the general catalog for details of the hardness factor, temperature factor, contact factor, and load factor.

Modified nominal life L_{10m}:

• LM Guide with balls (Formula 3)

$$L_{10m} = \left(\alpha \times \frac{C}{P_C}\right)^3 \times 50$$

• LM Guide with rollers (Formula 4)

$$L_{10m} = \left(\alpha \times \frac{C}{P_C}\right)^{\frac{10}{3}} \times 100$$

L_{10m}: Modified nominal life (km)
C: Basic dynamic load rating (N)
P_C: Calculated load (N)

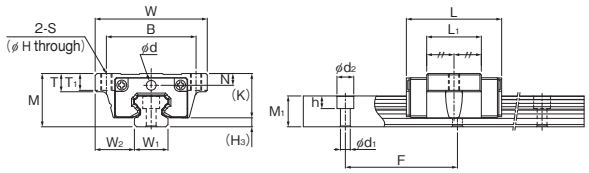
Once the nominal life (L_{10}) has been obtained, the service life time can be obtained using the following formula if the stroke length and the number of cycles are constant.

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

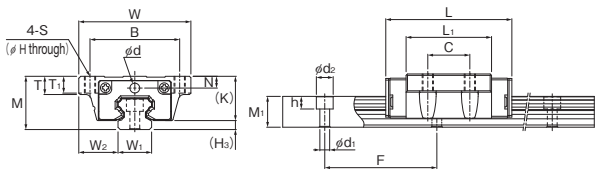
L_h: Service life time (h)
ℓ_s: Stroke length (mm)
n_1: Cycles per minute (min^{-1})

Dimensional Table

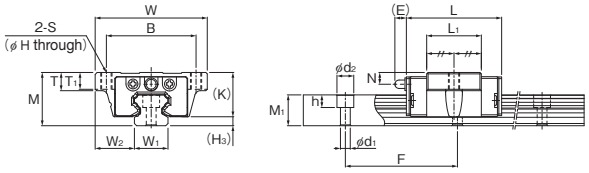
HSR-SC/C/LC



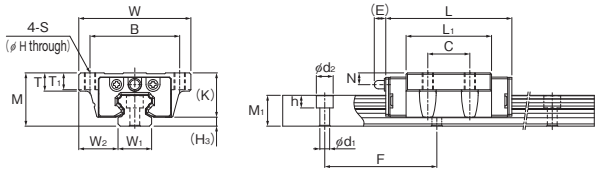
Models HSR8X and HSR10X SC



Models HSR8X and 10X C/LC



Model HSR12X SC



Model HSR12X C/LC

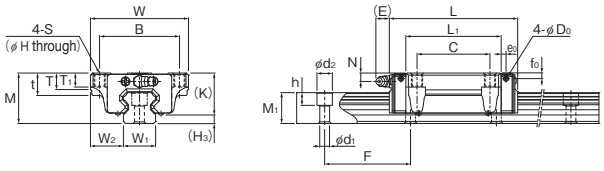
Model No.		External dimensions Height M	Width W	Length L	LM block dimensions B	C	Mounting hole S	H	L_1	t	T	T_1	K	N	E	d	Grease nipple	Pilot hole for side nipple e_0	f_0	D_0	H_3
HSR8X	SC	10	24	18	19	–	M2.3	1.9	9	–	4	3.5	7.9	1.6	–	2.2	–	–	–	–	2.1
	C			24		10			15												
	LC			30.5					21.5												
HSR10X	SC	12	30	24	24	–	M3	2.5	13.1	–	5	4.5	9.8	2.5	–	2.2	–	–	–	–	2.2
	C			31		12			20.1												
	LC			40					29.1												
HSR12X	SC	19	40	34	32	–	M4	3.3	19.5	–	6.5	6	15.9	4.2	4	–	PB107	–	–	–	3.1
	C			45		15			30.5												
	LC			58					43.5												
HSR15	C	24	47	56.6	38	30	M5	4.4	38.8	11	7	7	19.3	4.3	5.5	–	PB1021B	3.2	3.9	3	4.7
	LC			74.6					56.8												
HSR20	C	30	63	74	53	40	M6	5.4	50.8	10	9.5	10	26	5	12	–	B-M6F	3.1	3.4	3	4
	LC			90					66.8												
HSR25	C	36	70	83.1	57	45	M8	6.8	59.5	16	11	10	30.5	6	12	–	B-M6F	3.5	4	3	5.5
	LC			102.2					78.6												
HSR30	C	42	90	98	72	52	M10	8.5	70.4	18	9	10	35	7	12	–	B-M6F	5.2	6.2	5.2	7
	LC			120.6					93												
HSR35	C	48	100	109.4	82	62	M10	8.5	80.4	21	12	13	40.5	8	12	–	B-M6F	5.5	5.6	5.2	7.5
	LC			134.8					105.8												
HSR45	C	60	120	138.9	100	80	M12	10.5	98	25	13	15	50	10	16	–	B-PT1/8	6.1	6.6	5.2	10
	LC			170.7					129.8												
HSR55	C	70	140	162.9	116	95	M14	12.5	118	29	13.5	17	57	11	16	–	B-PT1/8	5.6	7.7	5.2	13
	LC			201					156.1												
HSR65X	C	90	170	190.5	142	110	M16	14.5	138.5	37	21.5	23	76	19	16	–	B-PT1/8	6.8	14.6	5.2	14
	LC			250					198												

Model Number Coding

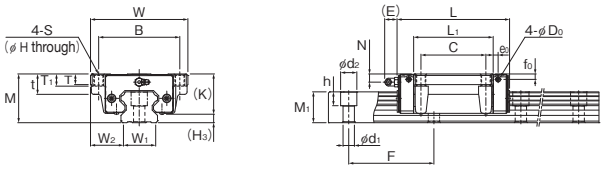
Select an option Fixed symbol

HSR12X C 2 UU C1 M +1200L P T M -II

- HSR12X: Model number HSR8X to 12X
- C: LM block type
- 2: Number of LM blocks used on a single rail
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol Normal (No symbol)/Light preload (C1)
- M: Stainless steel LM block
- +1200L: LM rail length (in mm)
- P: Accuracy symbol Normal grade (No symbol)/High accuracy grade (H)/ Precision grade (P)/Super precision grade (SP)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane



Models HSR15 to 35 C/LC



Models HSR45 to 65X C/LC

Unit: mm

	LM rail dimensions					Basic load rating		Static permissible moment* (kN·m)					Mass	
	Width W_1 ±0.05	W_2	Height M_1	Pitch F	Mounting hole $d_1 \times d_2 \times h$	C (kN)	C_0 (kN)	M_A 1 block	M_A 2 blocks	M_B 1 block	M_B 2 blocks	M_C 1 block	LM block (kg)	LM rail (kg/m)
	8	8	6	20	2.4×4.2×2.3	0.85	1.24	0.00179	0.0148	0.00179	0.0148	0.0043	0.007	0.3
						1.2	2.02	0.00457	0.0297	0.00457	0.0297	0.00698	0.013	
						1.5	2.8	0.00913	0.0502	0.00913	0.0502	0.00964	0.018	
	10	10	7	25	3.5×6×3.3	1.54	2.18	0.00464	0.0336	0.00464	0.0336	0.00949	0.017	0.45
						2.16	3.54	0.0114	0.0659	0.0114	0.0659	0.0154	0.026	
						2.72	4.9	0.0211	0.115	0.0211	0.115	0.0213	0.038	
	12	14	11	40	3.5×6×4.5	3.95	5.39	0.0171	0.116	0.0171	0.116	0.0277	0.059	0.83
						5.54	8.75	0.0421	0.234	0.0421	0.234	0.0449	0.092	
						6.96	12.1	0.0781	0.409	0.0781	0.409	0.0622	0.132	
	15	16	15	60	4.5×7.5×5.3	10.9	15.7	0.0945	0.527	0.0945	0.527	0.0998	0.2	1.5
						14.2	22.9	0.194	0.984	0.194	0.984	0.145	0.29	
	20	21.5	18	60	6×9.5×8.5	19.8	27.4	0.218	1.2	0.218	1.2	0.235	0.35	2.3
						23.9	35.8	0.363	1.87	0.363	1.87	0.307	0.47	
	23	23.5	22	60	7×11×9	27.6	36.4	0.324	1.8	0.324	1.8	0.366	0.59	3.3
						35.2	51.6	0.627	3.04	0.627	3.04	0.518	0.75	
	28	31	26	80	9×14×12	40.5	53.7	0.599	3.1	0.599	3.1	0.652	1.1	4.8
						48.9	70.2	0.995	4.89	0.995	4.89	0.852	1.3	
	34	33	29	80	9×14×12	53.9	70.2	0.895	4.51	0.895	4.51	1.05	1.6	6.6
						65	91.7	1.49	7.13	1.49	7.13	1.37	2.0	
	45	37.5	38	105	14×20×17	82.2	101	1.5	8.37	1.5	8.37	1.94	2.8	11
						100	135	2.59	13.4	2.59	13.4	2.6	3.3	
	53	43.5	44	120	16×23×20	121	146	2.6	14.1	2.6	14.1	3.43	4.5	15.1
						148	194	4.46	22.7	4.46	22.7	4.56	5.7	
	63	53.5	53	150	18×26×22	195	228	5.08	25	5.08	25	6.2	8.5	22.5
						249	323	9.81	45.6	9.81	45.6	8.79	10.7	

Note: Static permissible moment* 1 block: Static permissible moment value with 1 LM block
2 blocks: Static permissible moment value with 2 LM blocks in close contact with each other

Model Number Coding

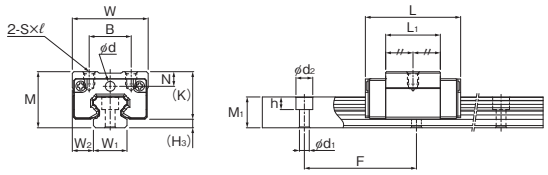
Select an option

HSR25 C 2 QZ UU C1 M +1200L P T M -II GC

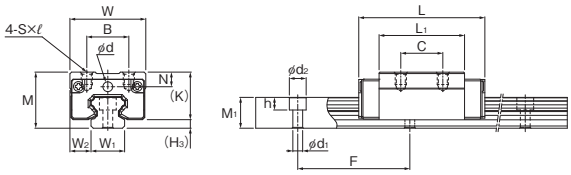
- HSR25: Model number HSR15 to 65X
- C: LM block type
- 2: Number of LM blocks used on a single rail
- QZ: With QZ Lubricator
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol Normal (No symbol)/Light preload (C1)/ Medium preload (C0)
- M: Stainless steel LM block HSR15 to 35
- +1200L: 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)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail HSR15 to 35
- -II: Symbol for No. of rails used on the same plane
- GC: GC caps attached

Dimensional Table

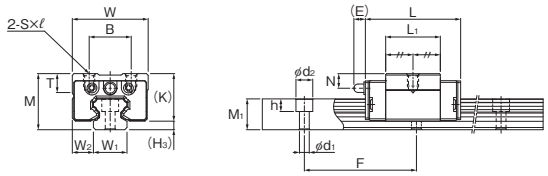
HSR-SR/R/LR



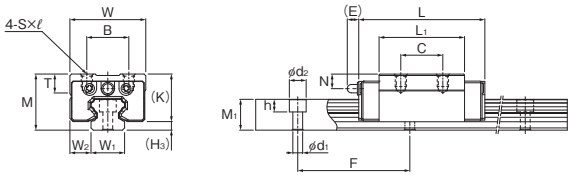
Models HSR8X and HSR10X SR



Models HSR8X and 10X R/LR



Model HSR12X SR



Model HSR12X R/LR

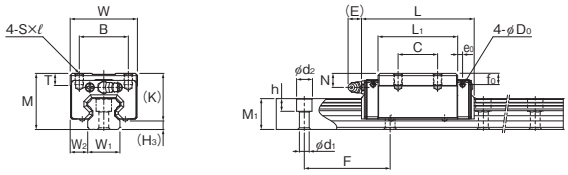
Model No.		External dimensions			LM block dimensions										Pilot hole for side nipple			H3	
		Height M	Width W	Length L	B	C	Mounting hole S×ℓ	L1	T	K	N	E	d	Grease nipple	e0	f0	D0		
HSR8X	SR	11	16	18	10	–	M2×2.5	9	–	8.9	2.6	–	2.2	–	–	–	–	2.1	
	R			24		10		15											
	LR			30.5				21.5											
HSR10X	SR	13	20	24	13	–	M2.6×2.5	13.1	–	10.8	3.5	–	2.2	–	–	–	–	2.2	
	R			31		12		20.1											
	LR			40				29.1											
HSR12X	SR	20	27	34	15	–	M4×4.5	19.5	6	16.9	5.2	4	–	PB107	–	–	–	3.1	
	R			45		15		30.5											
	LR			58				43.5											
HSR15	R	28	34	56.6	26	26	M4×5	38.8	6	23.3	8.3	5.5	–	PB1021B	3.2	7.9	3	4.7	
	LR			74.6		34		56.8											
HSR20	R	30	44	74	32	36	M5×6	50.8	8	26	5	12	–	B-M6F	3.1	3.4	3	4	
	LR			90		50		66.8											
HSR25	R	40	48	83.1	35	35	M6×8	59.5	9	34.5	10	12	–	B-M6F	3.5	8	3	5.5	
	LR			102.2		50		78.6											
HSR30	R	45	60	98	40	40	M8×10	70.4	9	38	10	12	–	B-M6F	5.2	9.2	5.2	7	
	LR			120.6		60		93											
HSR35	R	55	70	109.4	50	50	M8×12	80.4	11.7	47.5	15	12	–	B-M6F	5.5	12.6	5.2	7.5	
	LR			134.8		72		105.8											
HSR45	R	70	86	138.9	60	60	M10×17	98	15	60	20	16	–	B-PT1/8	6.1	16.6	5.2	10	
	LR			170.7		80		129.8											
HSR55	R	80	100	162.9	75	75	M12×18	118	20.5	67	21	16	–	B-PT1/8	5.6	17.7	5.2	13	
	LR			201		95		156.1											
HSR65X	R	90	126	190.5	76	70	M16×20	138.5	23	76	19	16	–	B-PT1/8	6.8	14.6	5.2	14	
	LR			250		120		198											

Model Number Coding

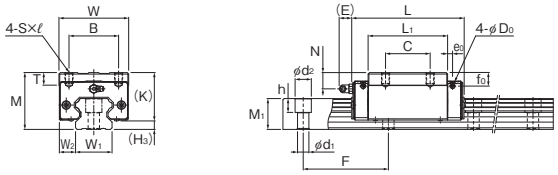
Select an option Fixed symbol

HSR12X SR 2 UU C1 M +1200L P T M -II

- HSR12X: Model number HSR8X to 12X
- SR: LM block type
- 2: Number of LM blocks used on a single rail
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol Normal (No symbol)/Light preload (C1)
- M: Stainless steel LM block
- +1200L: LM rail length (in mm)
- P: Accuracy symbol Normal grade (No symbol)/High accuracy grade (H)/ Precision grade (P)/Super precision grade (SP)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane



Models HSR15 to 35 R/LR



Models HSR45 to 65X R/LR

Unit: mm

	LM rail dimensions					Basic load rating		Static permissible moment* (kN·m)					Mass	
	Width W_1	W_2	Height M_1	Pitch F	Mounting hole $d_1 \times d_2 \times h$	C	C_0	M_A		M_B		M_C	LM block	LM rail
	±0.05					(kN)	(kN)	1 block	2 blocks	1 block	2 blocks	1 block	(kg)	(kg/m)
	8	4	6	20	2.4×4.2×2.3	0.85	1.24	0.00179	0.0148	0.00179	0.0148	0.0043	0.006	0.3
						1.2	2.02	0.00457	0.0297	0.00457	0.0297	0.00698	0.01	
						1.5	2.8	0.00913	0.0502	0.00913	0.0502	0.00964	0.015	
	10	5	7	25	3.5×6×3.3	1.54	2.18	0.00464	0.0336	0.00464	0.0336	0.00949	0.014	0.45
						2.16	3.54	0.0114	0.0659	0.0114	0.0659	0.0154	0.021	
						2.72	4.9	0.0211	0.115	0.0211	0.115	0.0213	0.031	
	12	7.5	11	40	3.5×6×4.5	3.95	5.39	0.0171	0.116	0.0171	0.116	0.0277	0.045	0.83
						5.54	8.75	0.0421	0.234	0.0421	0.234	0.0449	0.071	
						6.96	12.1	0.0781	0.409	0.0781	0.409	0.0622	0.102	
	15	9.5	15	60	4.5×7.5×5.3	10.9	15.7	0.0945	0.527	0.0945	0.527	0.0998	0.18	1.5
						14.2	22.9	0.194	0.984	0.194	0.984	0.145	0.26	
	20	12	18	60	6×9.5×8.5	19.8	27.4	0.218	1.2	0.218	1.2	0.235	0.25	2.3
						23.9	35.8	0.363	1.87	0.363	1.87	0.307	0.35	
	23	12.5	22	60	7×11×9	27.6	36.4	0.324	1.8	0.324	1.8	0.366	0.54	3.3
						35.2	51.6	0.627	3.04	0.627	3.04	0.518	0.67	
	28	16	26	80	9×14×12	40.5	53.7	0.599	3.1	0.599	3.1	0.652	0.9	4.8
						48.9	70.2	0.995	4.89	0.995	4.89	0.852	1.1	
	34	18	29	80	9×14×12	53.9	70.2	0.895	4.51	0.895	4.51	1.05	1.5	6.6
						65	91.7	1.49	7.13	1.49	7.13	1.37	2.0	
	45	20.5	38	105	14×20×17	82.2	101	1.5	8.37	1.5	8.37	1.94	2.6	11
						100	135	2.59	13.4	2.59	13.4	2.6	3.1	
	53	23.5	44	120	16×23×20	121	146	2.6	14.1	2.6	14.1	3.43	4.3	15.1
						148	194	4.46	22.7	4.46	22.7	4.56	5.4	
	63	31.5	53	150	18×26×22	195	228	5.08	25	5.08	25	6.2	7.3	22.5
						249	323	9.81	45.6	9.81	45.6	8.79	9.3	

Note: Static permissible moment* 1 block: Static permissible moment value with 1 LM block
2 blocks: Static permissible moment value with 2 LM blocks in close contact with each other

Model Number Coding

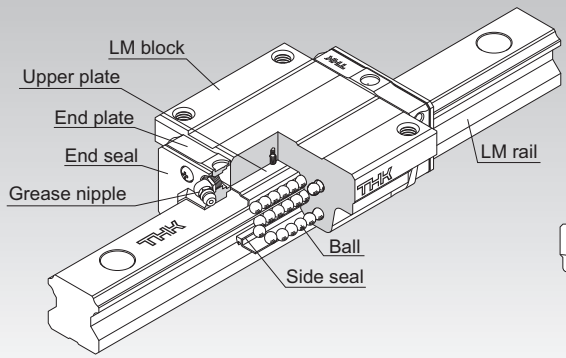
Select an option

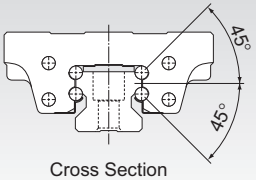
HSR25 R 2 QZ UU C1 M +1200L P T M -II GC

- HSR25: Model number HSR15 to 65X
- R: LM block type
- 2: Number of LM blocks used on a single rail
- QZ: With QZ Lubricator
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol Normal (No symbol)/Light preload (C1)/ Medium preload (C0)
- M: Stainless steel LM block HSR15 to 35
- +1200L: 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)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail HSR15 to 35
- -II: Symbol for No. of rails used on the same plane
- GC: GC caps attached

HSR

Global Standard LM Guide Model HSR





Cross Section

Structure and Features

Balls roll in four rows of raceways precision-ground on an LM rail and an LM block, and end plates incorporated in the LM block allow the balls to circulate. Since retainer plates hold the balls, they will not fall out even if the LM block is removed from the LM rail (except models HSR 8X, 10X, and 12X). Each row of balls is placed at a contact angle of 45° so that the rated loads applied to the LM block are uniform in four directions (radial, reverse radial and lateral directions), enabling the LM Guide to be used in all orientations. In addition, the LM block can receive a well-balanced preload, increasing the rigidity in the four directions while maintaining a constant, low friction coefficient. The low height of the LM block makes it highly rigid, achieving stable, high-precision linear motion.

4-Way Equal Load

Each row of balls is placed at a contact angle of 45° so that the rated loads applied to the LM block are uniform in the four directions (radial, reverse-radial, and lateral directions), enabling the LM Guide to be used in all orientations.

High Rigidity

Since the balls are well balanced in four rows, a large preload can be applied and the rigidity in four directions can easily be increased.

Self-Adjustment Capability

The self-adjustment capability through the front-to-front configuration of THK's unique circular-arc grooves (DF set) enables mounting error to be absorbed even under a preload, thus achieving highly accurate and smooth linear motion.

High Durability

Balls do not undergo differential slip, even under a preload or excessive biased load, allowing for smooth motion. Due to the product's high wear resistance, it maintains long-term accuracy.

Stainless Steel Type also Available

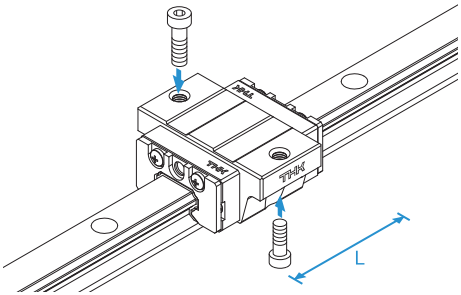
A special type whose LM block, LM rail, and balls are made of stainless steel is also available.

Types

Model HSR-XSC

Dimensional Table⇒A1-190

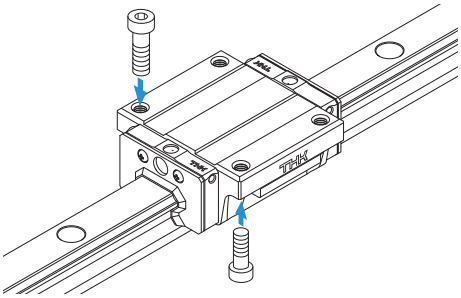
This type has a shorter overall LM block length (L) than the Model HSR-XC.



Models HSR-C/XC

Dimensional Table⇒A1-190

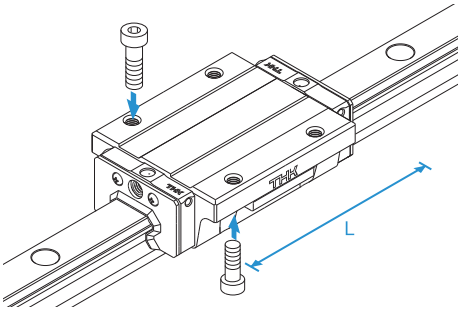
The flange of the LM block has tapped holes. This type can be mounted from the top or the bottom. It is used in places where the table cannot have through holes for mounting bolts.



Models HSR-LC/XLC

Dimensional Table⇒A1-190

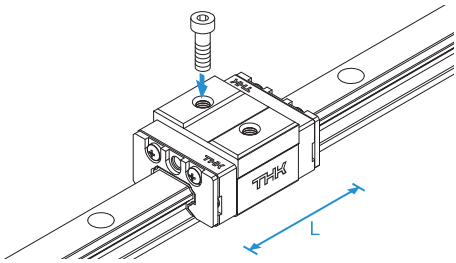
The LM block has the same cross-sectional shape as model HSR-C, but has a longer overall LM block length (L) and a greater load rating.



Model HSR-XSR

Dimensional Table⇒A1-194

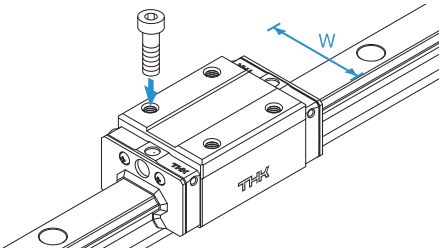
This type has a shorter overall LM block length (L) than the Model HSR-XR.



Models HSR-R/XR

Dimensional Table⇒A1-194

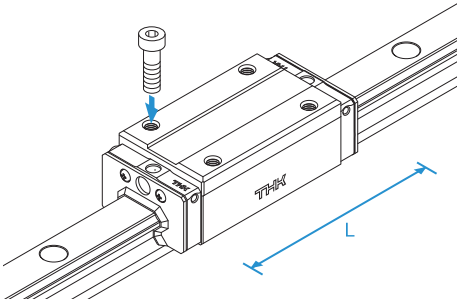
With this type, the LM block has a smaller width (W) and tapped holes. It is used in places where the space for table width is limited.



Models HSR-LR/XLR

Dimensional Table⇒A1-194

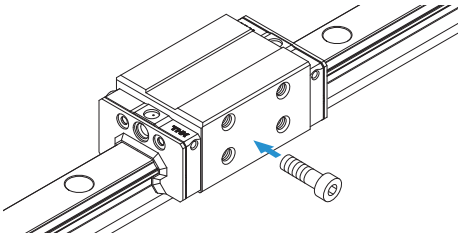
The LM block has the same cross-sectional shape as model HSR-R, but has a longer overall LM block length (L) and a greater load rating.



Models HSR-YR/XYR

Dimensional Table⇒A1-198

If using two conventional LM Guide units facing each other, it takes a long time to machine the table, and is difficult to achieve the desired accuracy and adjust the clearance. With the Model HSR-YR and Model HSR-XYR, the tapped holes on the side of the LM block simplify the structure, which drastically reduces labor time and increases accuracy.



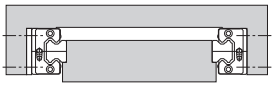


Fig. 1: Conventional Structure

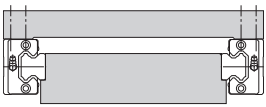
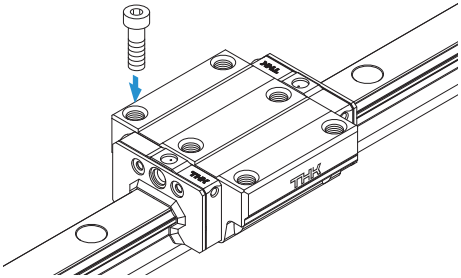


Fig. 2: Mounting Structure for Model HSR-YR

Models HSR-CA/XCA

Dimensional Table⇒A1-200

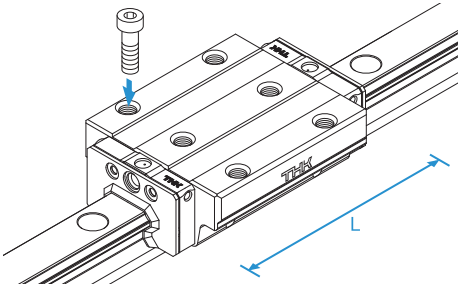
This model has six tapped holes on the LM block.



Models HSR-HA/XHA

Dimensional Table⇒A1-200

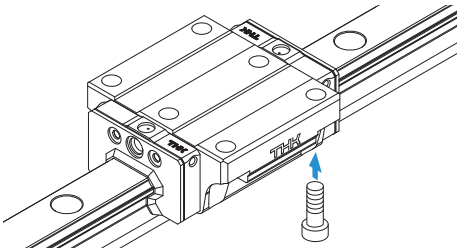
The LM block has the same cross-sectional shape as the Model HSR-CA, but it has a longer overall LM block length (L) and a greater load rating.



Models HSR-CB/XCB

Dimensional Table⇒A1-202

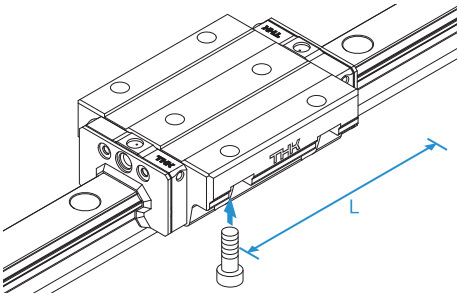
The LM block has six through holes. It is used in places where the table cannot have through holes for mounting bolts.



Models HSR-HB/XHB

Dimensional Table⇒A1-202

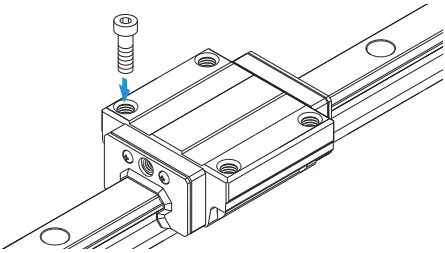
The LM block has the same cross sectional shape as model HSR-CB, but has a longer overall LM block length (L) and a greater load rating.



Model HSR85A

Dimensional Table⇒A1-204

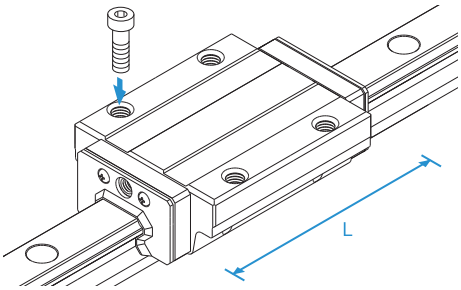
The flange of its LM block has tapped holes.



Model HSR85LA

Dimensional Table⇒A1-204

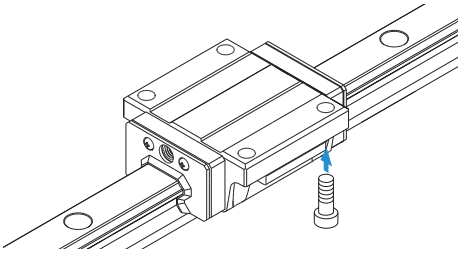
The LM block has the same cross-sectional shape as model HSR85A, but has a longer overall LM block length (L) and a greater load rating.



Model HSR85B

Dimensional Table⇒A1-204

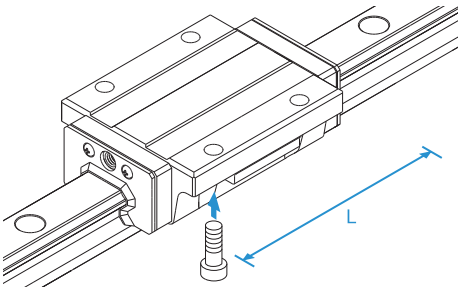
The flange of the LM block has through holes. It is used in places where the table cannot have through holes for mounting bolts.



Model HSR85LB

Dimensional Table⇒A1-204

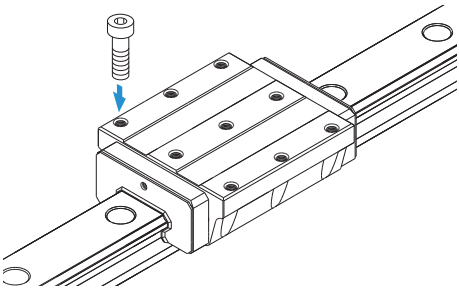
The LM block has the same cross-sectional shape as model HSR85B, but has a longer overall LM block length (L) and a greater load rating.



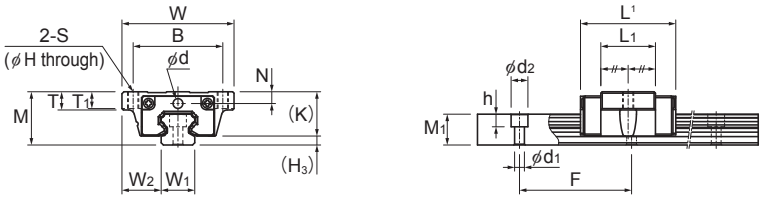
Models HSR 100/120/150 HA/HB/HR

Dimensional Table⇒A1-206

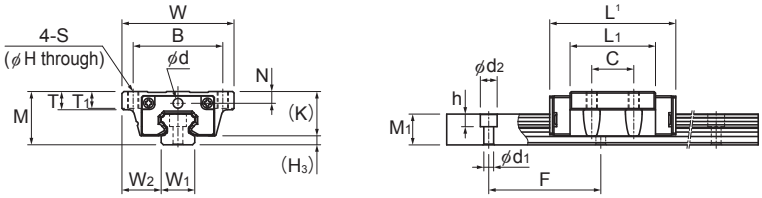
These are large types of model HSR that can be used in large-scale machine tools and building structures.
Models HSR100/120/150HA/HB have nine tapped holes on the LM block. Models HSR100/120/150HR have six tapped holes on the LM block.



Models HSR-XSCM, HSR-XCM, and HSR-XLCM



Models HSR8X SCM and 10X SCM



Models HSR8X CM/LCM and 10X CM/LCM

Model No.	Outer dimensions			LM block dimensions													
	Height	Width	Length[1]			Mounting hole								Lubrication hole	Grease nipple	
	M	W	L	B	C	S	H	L_1	T	T_1	K	N	E	d		H_3
HSR 8XSCM HSR 8XCM HSR 8XLCM	10	24	18 24 30.5	19	— 10 10	M2.3	1.5	9 15 21.5	4	3.5	7.9	1.6	—	2.2	—	2.1
HSR 10XSCM HSR 10XCM HSR 10XLCM	12	30	24 31 40	24	— 12 12	M3	2.5	13.1 20.1 29.1	5	4.5	9.8	2.5	—	2.2	—	2.2
HSR 12XSCM HSR 12XCM HSR 12XLCM	19	40	34 45 58	32	— 15 15	M4	3.3	19.5 30.5 43.5	6.5	6	15.9	4.2	4	—	PB107	3.1

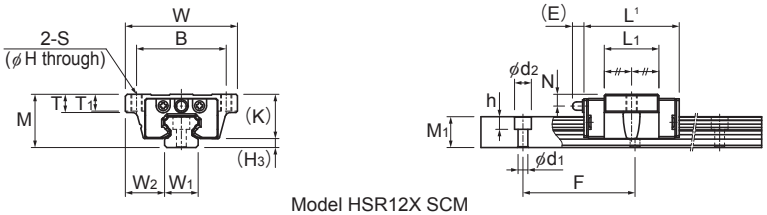
Model number coding

HSR12X C 2 UU C1 M +670L H T M -II

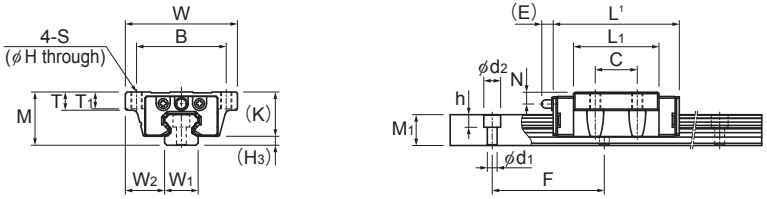
- HSR12X: Model number
- C: Type of LM block
- 2: No. of LM blocks used on the same rail
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol — Normal (No symbol), Light preload (C1)
- M: Stainless steel LM block
- +670L: LM rail length (in mm)
- H: Accuracy symbol — Normal grade (No Symbol)/High accuracy grade (H), Precision grade (P)/Super precision grade (SP)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane

Notes: 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).
See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

Download data from the THK Online Services website. https://www.thk.com/



Model HSR12X SCM



Models HSR12X CM/LCM

Unit: mm

	LM rail dimensions					Basic load rating		Static permissible moment kN·m [3]						Mass	
	Width		Height	Pitch		C	C_0	M_A		M_B		M_C		LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block		kg	kg/m
	8	8	6	20	2.4×4.2×2.3	0.85 1.2 1.5	1.24 2.02 2.8	0.00179 0.00457 0.00913	0.0148 0.0297 0.0502	0.00179 0.00457 0.00913	0.0148 0.0297 0.0502	0.0043 0.00698 0.00964		0.007 0.013 0.018	0.3
	10	10	7	25	3.5×6×3.3	1.54 2.16 2.72	2.18 3.54 4.9	0.00464 0.0114 0.0211	0.0336 0.0659 0.115	0.00464 0.0114 0.0211	0.0336 0.0659 0.115	0.00949 0.0154 0.0213		0.017 0.026 0.038	0.45
	12	14	11	40	3.5×6×4.5	3.95 5.54 6.96	5.39 8.75 12.1	0.0171 0.0421 0.0781	0.116 0.234 0.409	0.0171 0.0421 0.0781	0.116 0.234 0.409	0.0277 0.0449 0.0622		0.059 0.092 0.132	0.83

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

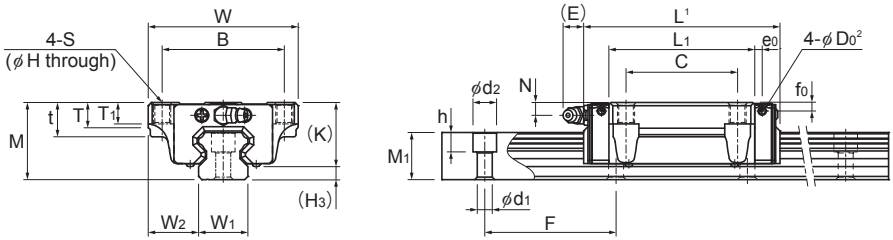
[2] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[3] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Models HSR-C, HSR-CM, HSR-LC, HSR-LCM, HSR-XC, and HSR-XLC



Models HSR15 to 35C/LC/CM/LCM

Model No.	Outer dimensions			LM block dimensions											Grease nipple	Pilot hole for side nipple			
	Height	Width	Length[1]			Mounting hole													
	M	W	L	B	C	S	H	L_1	t	T	T_1	K	N	E		e_0	f_0	D_0[2]	H_3
HSR 15C HSR 15CM	24	47	56.6	38	30	M5	4.4	38.8	11	7	7	19.3	4.3	5.5	PB1021B	3.2	3.9	3	4.7
HSR 15LC HSR 15LCM	24	47	74.6	38	30	M5	4.4	56.8	11	7	7	19.3	4.3	5.5	PB1021B	3.2	3.9	3	4.7
HSR 20C HSR 20CM	30	63	74	53	40	M6	5.4	50.8	10	9.5	10	26	5	12	B-M6F	3.1	3.4	3	4
HSR 20LC HSR 20LCM	30	63	90	53	40	M6	5.4	66.8	10	9.5	10	26	5	12	B-M6F	3.1	3.4	3	4
HSR 25C HSR 25CM	36	70	83.1	57	45	M8	6.8	59.5	16	11	10	30.5	6	12	B-M6F	3.5	4	3	5.5
HSR 25LC HSR 25LCM	36	70	102.2	57	45	M8	6.8	78.6	16	11	10	30.5	6	12	B-M6F	3.5	4	3	5.5
HSR 30C HSR 30CM	42	90	98	72	52	M10	8.5	70.4	18	9	10	35	7	12	B-M6F	5.2	6.2	5.2	7
HSR 30LC HSR 30LCM	42	90	120.6	72	52	M10	8.5	93	18	9	10	35	7	12	B-M6F	5.2	6.2	5.2	7
HSR 35C HSR 35CM	48	100	109.4	82	62	M10	8.5	80.4	21	12	13	40.5	8	12	B-M6F	5.5	5.6	5.2	7.5
HSR 35LC HSR 35LCM	48	100	134.8	82	62	M10	8.5	105.8	21	12	13	40.5	8	12	B-M6F	5.5	5.6	5.2	7.5
HSR 45C HSR 45LC	60	120	138.9 170.7	100	80	M12	10.5	98 129.8	25	13	15	50	10	16	B-PT1/8	6.1	6.6	5.2	10
HSR 55C HSR 55LC	70	140	162.9 201	116	95	M14	12.5	118 156.1	29	13.5	17	57	11	16	B-PT1/8	5.6	7.7	5.2	13
HSR 65XC HSR 65XLC	90	170	190.5 250	142	110	M16	14.5	138.5 198	37	21.5	23	76	19	16	B-PT1/8	6.8	14.6	5.2	14

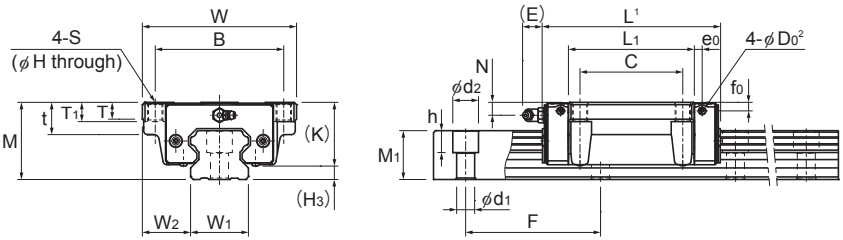
Model number coding

HSR25 C 2 QZ UU C0 M +1240L P T M -II

- HSR25: Model number
- C: Type of LM block
- 2: No. of LM blocks used on the same rail
- QZ: With QZ Lubricator
- UU: Contamination protection accessory symbol
- C0: Radial clearance symbol — Normal (No symbol), Light preload (C1), Medium preload (C0)
- M: Stainless steel LM block
- +1240L: 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)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane

Notes: 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). Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ. See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

Download data from the THK Online Services website. https://www.thk.com/



Models HSR45 to 65C/LC/XC/XLC

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN·m [4]					Mass	
	Width		Height	Pitch		Length[3]	C	C_0	M_A		M_B		M_C	LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m
	15	16	15	60	4.5×7.5×5.3	3000 (1240)	10.9	15.7	0.0945	0.527	0.0945	0.527	0.0998	0.2	1.5
	15	16	15	60	4.5×7.5×5.3	3000 (1240)	14.2	22.9	0.194	0.984	0.194	0.984	0.145	0.29	1.5
	20	21.5	18	60	6×9.5×8.5	3000 (1480)	19.8	27.4	0.218	1.2	0.218	1.2	0.235	0.35	2.3
	20	21.5	18	60	6×9.5×8.5	3000 (1480)	23.9	35.8	0.363	1.87	0.363	1.87	0.307	0.47	2.3
	23	23.5	22	60	7×11×9	3000 (2020)	27.6	36.4	0.324	1.8	0.324	1.8	0.366	0.59	3.3
	23	23.5	22	60	7×11×9	3000 (2020)	35.2	51.6	0.627	3.04	0.627	3.04	0.518	0.75	3.3
	28	31	26	80	9×14×12	3000 (2520)	40.5	53.7	0.599	3.1	0.599	3.1	0.652	1.1	4.8
	28	31	26	80	9×14×12	3000 (2520)	48.9	70.2	0.995	4.89	0.995	4.89	0.852	1.3	4.8
	34	33	29	80	9×14×12	3000 (2520)	53.9	70.2	0.895	4.51	0.895	4.51	1.05	1.6	6.6
	34	33	29	80	9×14×12	3000 (2520)	65	91.7	1.49	7.13	1.49	7.13	1.37	2.0	6.6
	45	37.5	38	105	14×20×17	3090	82.2 100	101 135	1.5 2.59	8.37 13.4	1.5 2.59	8.37 13.4	1.94 2.6	2.8 3.3	11 11
	53	43.5	44	120	16×23×20	3060	121 148	146 194	2.6 4.46	14.1 22.7	2.6 4.46	14.1 22.7	3.43 4.56	4.5 5.7	15.1 15.1
	63	53.5	53	150	18×26×22	3000	195 249	228 323	5.08 9.81	25 45.6	5.08 9.81	25 45.6	6.2 8.79	8.5 10.7	22.5 22.5

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] D_0 are the pilot holes for when a grease nipple is desired for a product with LaCS or a QZ Lubricator.
Pilot holes are not drilled through for models other than those stated above.
For grease nipple mount machining, contact THK.

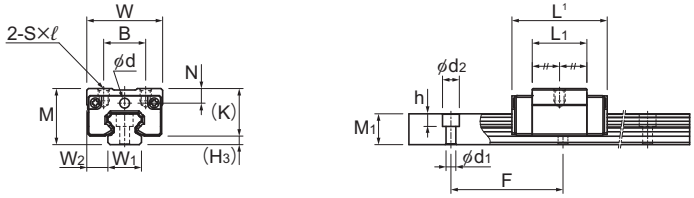
[3] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[4] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

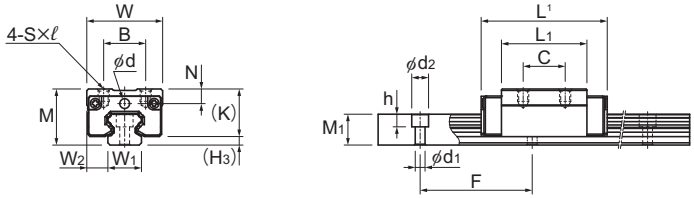
Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Models HSR-XSRM, HSR-XRM, and HSR-XLRM



Models HSR8X SRM and 10X SRM



Models HSR8X RM/LRM and 10X RM/LRM

Model No.	Outer dimensions			LM block dimensions										H3
	Height M	Width W	Length[1] L	B	C	S×ℓ	L1	T	K	N	E	Lubrication hole d	Grease nipple	
HSR 8XSRM HSR 8XRM HSR 8XLRM	11	16	18 24 30.5	10	— 10 10	M2×2.5	9 15 21.5	—	8.9	2.6	—	2.2	—	2.1
HSR 10XSRM HSR 10XRM HSR 10XLRM	13	20	24 31 40	13	— 12 12	M2.6×2.5	13.1 20.1 29.1	—	10.8	3.5	—	2.2	—	2.2
HSR 12XSRM HSR 12XRM HSR 12XLRM	20	27	34 45 58	15	— 15 15	M4×4.5	19.5 30.5 43.5	6	16.9	5.2	4	—	PB107	3.1

Model number coding

HSR12X R 2 UU C1 M +670L H T M -II

- HSR12X: Model number
- R: Type of LM block
- 2: No. of LM blocks used on the same rail
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol (Normal (No symbol), Light preload (C1))
- M: Stainless steel LM block
- +670L: LM rail length (in mm)
- H: Accuracy symbol (Normal grade (No Symbol)/High accuracy grade (H), Precision grade (P)/Super precision grade (SP))
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane

Notes: 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).
See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

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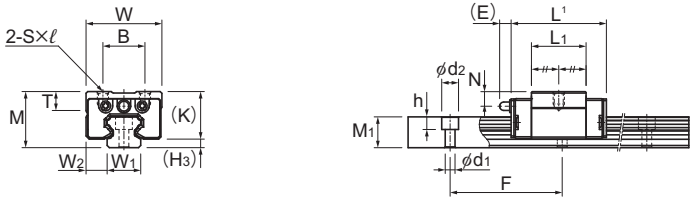
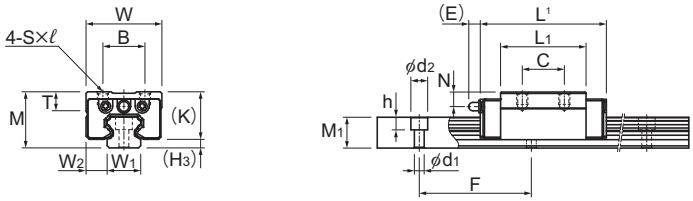


Model HSR12X SRM



Models HSR12X RM/LRM

Unit: mm

	LM rail dimensions					Basic load rating		Static permissible moment kN·m [3]					Mass	
	Width		Height	Pitch		C	C_0	M_A		M_B		M_C	LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m
	8	4	6	20	2.4×4.2×2.3	0.85 1.2 1.5	1.24 2.02 2.8	0.00179 0.00457 0.00913	0.0148 0.0297 0.0502	0.00179 0.00457 0.00913	0.0148 0.0297 0.0502	0.0043 0.00698 0.00964	0.006 0.01 0.015	0.3
	10	5	7	25	3.5×6×3.3	1.54 2.16 2.72	2.18 3.54 4.9	0.00464 0.0114 0.0211	0.0336 0.0659 0.115	0.00464 0.0114 0.0211	0.0336 0.0659 0.115	0.00949 0.0154 0.0213	0.014 0.021 0.031	0.45
	12	7.5	11	40	3.5×6×4.5	3.95 5.54 6.96	5.39 8.75 12.1	0.0171 0.0421 0.0781	0.116 0.234 0.409	0.0171 0.0421 0.0781	0.116 0.234 0.409	0.0277 0.0449 0.0622	0.045 0.071 0.102	0.83

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

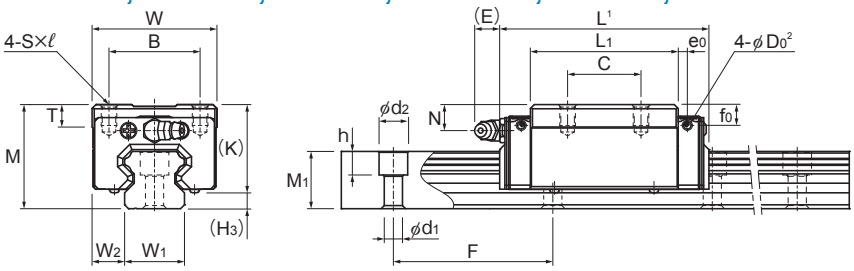
[2] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[3] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Models HSR-R, HSR-RM, HSR-LR, HSR-LRM, HSR-XR, and HSR-XLR



Models HSR15 to 35R/LR/RM/LRM

Model No.	Outer dimensions			LM block dimensions									Pilot hole for side nipple			
	Height M	Width W	Length[1] L	B	C	S×ℓ	L_1	T	K	N	E	Grease nipple	e_0	f_0	D_0[2]	H_3
HSR 15R HSR 15RM	28	34	56.6	26	26	M4×5	38.8	6	23.3	8.3	5.5	PB1021B	3.2	7.9	3	4.7
HSR 15LR HSR 15LRM	28	34	74.6	26	34	M4×5	56.8	6	23.3	8.3	5.5	PB1021B	3.2	7.9	3	4.7
HSR 20R HSR 20RM	30	44	74	32	36	M5×6	50.8	8	26	5	12	B-M6F	3.1	3.4	3	4
HSR 20LR HSR 20LRM	30	44	90	32	50	M5×6	66.8	8	26	5	12	B-M6F	3.1	3.4	3	4
HSR 25R HSR 25RM	40	48	83.1	35	35	M6×8	59.5	9	34.5	10	12	B-M6F	3.5	8	3	5.5
HSR 25LR HSR 25LRM	40	48	102.2	35	50	M6×8	78.6	9	34.5	10	12	B-M6F	3.5	8	3	5.5
HSR 30R HSR 30RM	45	60	98	40	40	M8×10	70.4	9	38	10	12	B-M6F	5.2	9.2	5.2	7
HSR 30LR HSR 30LRM	45	60	120.6	40	60	M8×10	93	9	38	10	12	B-M6F	5.2	9.2	5.2	7
HSR 35R HSR 35RM	55	70	109.4	50	50	M8×12	80.4	11.7	47.5	15	12	B-M6F	5.5	12.6	5.2	7.5
HSR 35LR HSR 35LRM	55	70	134.8	50	72	M8×12	105.8	11.7	47.5	15	12	B-M6F	5.5	12.6	5.2	7.5
HSR 45R HSR 45LR	70	86	138.9 170.7	60	60 80	M10×17	98 129.8	15	60	20	16	B-PT1/8	6.1	16.6	5.2	10
HSR 55R HSR 55LR	80	100	162.9 201	75	75 95	M12×18	118 156.1	20.5	67	21	16	B-PT1/8	5.6	17.7	5.2	13
HSR 65XR HSR 65XLR	90	126	190.5 250	76	70 120	M16×20	138.5 198	23	76	19	16	B-PT1/8	6.8	14.6	5.2	14
HSR 85R HSR 85LR	110	156	245.6 303	100	80 140	M18×25	178.6 236	29	94	23	16	B-PT1/8	—	—	—	16

Model number coding

HSR35 R 2 QZ SS C0 M +1400L P T M -II

- HSR35: Model number
- R: Type of LM block
- 2: No. of LM blocks used on the same rail
- QZ: With QZ Lubricator
- SS: Contamination protection accessory symbol
- C0: Radial clearance symbol — Normal (No symbol), Light preload (C1), Medium preload (C0)
- M: Stainless steel LM block
- +1400L: 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)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane

Notes: 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). Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ. See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

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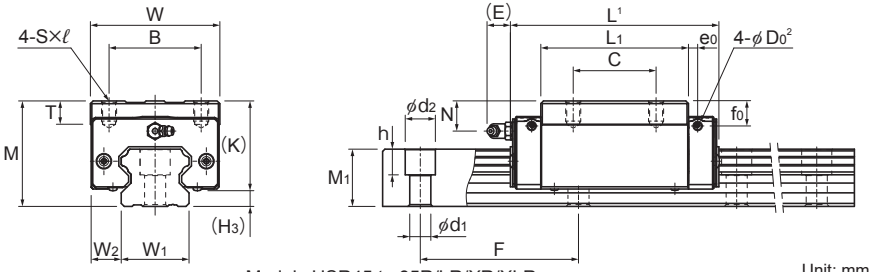


Models HSR45 to 85R/LR/XR/XLR

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN·m [4]						Mass	
	Width		Height	Pitch		Length [3]	C	C_0	M_A		M_B		M_C		LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block		kg	kg/m
	15	9.5	15	60	4.5×7.5×5.3	3000 (1240)	10.9	15.7	0.0945	0.527	0.0945	0.527	0.0998		0.18	1.5
	15	9.5	15	60	4.5×7.5×5.3	3000 (1240)	14.2	22.9	0.194	0.984	0.194	0.984	0.145		0.26	1.5
	20	12	18	60	6×9.5×8.5	3000 (1480)	19.8	27.4	0.218	1.2	0.218	1.2	0.235		0.25	2.3
	20	12	18	60	6×9.5×8.5	3000 (1480)	23.9	35.8	0.363	1.87	0.363	1.87	0.307		0.35	2.3
	23	12.5	22	60	7×11×9	3000 (2020)	27.6	36.4	0.324	1.8	0.324	1.8	0.366		0.54	3.3
	23	12.5	22	60	7×11×9	3000 (2020)	35.2	51.6	0.627	3.04	0.627	3.04	0.518		0.67	3.3
	28	16	26	80	9×14×12	3000 (2520)	40.5	53.7	0.599	3.1	0.599	3.1	0.652		0.9	4.8
	28	16	26	80	9×14×12	3000 (2520)	48.9	70.2	0.995	4.89	0.995	4.89	0.852		1.1	4.8
	34	18	29	80	9×14×12	3000 (2520)	53.9	70.2	0.895	4.51	0.895	4.51	1.05		1.5	6.6
	34	18	29	80	9×14×12	3000 (2520)	65	91.7	1.49	7.13	1.49	7.13	1.37		2	6.6
	45	20.5	38	105	14×20×17	3090	82.2 100	101 135	1.5 2.59	8.37 13.4	1.5 2.59	8.37 13.4	1.94 2.6		2.6 3.1	11
	53	23.5	44	120	16×23×20	3060	121 148	146 194	2.6 4.46	14.1 22.7	2.6 4.46	14.1 22.7	3.43 5.4		4.3 5.4	15.1
	63	31.5	53	150	18×26×22	3000	195 249	228 323	5.08 9.81	25 45.6	5.08 9.81	25 45.6	6.2 8.79		7.3 9.7	22.5 22.5
	85	35.5	65	180	24×35×28	3000	304 367	355 464	10.2 16.9	51.2 81	10.2 16.9	51.2 81	12.8 16.7		13 16	35.2

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] D_0 are the pilot holes for when a grease nipple is desired for a product with LaCS or a QZ Lubricator.
Pilot holes are not drilled through for models other than those stated above.
For grease nipple mount machining, contact THK.

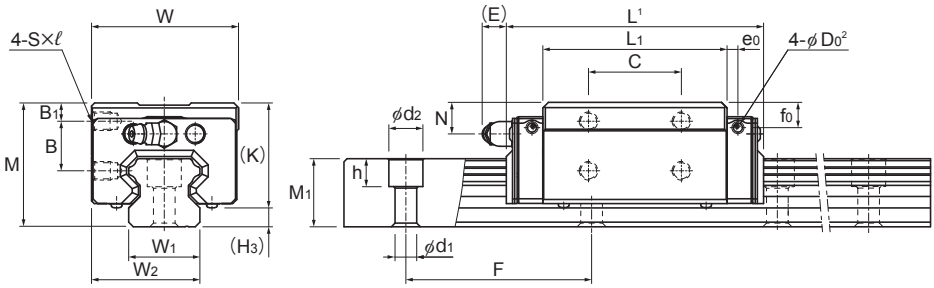
[3] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[4] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Models HSR-YR, HSR-YRM, and HSR-XYR



Models HSR15 to 35YR/YRM

Model No.	Outer dimensions			LM block dimensions								Grease nipple	Pilot hole for side nipple			
	Height M	Width W	Length[1] L	B_1	B	C	S×ℓ	L_1	K	N	E		e_0	f_0	D_0[2]	H_3
HSR 15YR HSR 15YRM	28	33.5	56.6	4.3	11.5	18	M4×5	38.8	23.3	8.3	5.5	PB1021B	3.2	7.9	3	4.7
HSR 20YR HSR 20YRM	30	43.5	74	4	11.5	25	M5×6	50.8	26	5	12	B-M6F	3.1	3.4	3	4
HSR 25YR HSR 25YRM	40	47.5	83.1	6	16	30	M6×6	59.5	34.5	10	12	B-M6F	3.5	8	3	5.5
HSR 30YR HSR 30YRM	45	59.5	98	8	16	40	M6×9	70.4	38	10	12	B-M6F	5.2	9.2	5.2	7
HSR 35YR HSR 35YRM	55	69.5	109.4	8	23	43	M8×10	80.4	47.5	15	12	B-M6F	5.5	12.6	5.2	7.5
HSR 45XYR	70	85.5	138.9	10	30	55	M10×12	98	60	20	16	B-PT1/8	6.1	16.6	5.2	10
HSR 45YR	70	85.5	138.9	10	30	55	M10×14	98	60	20	16	B-PT1/8	—	—	—	10
HSR 55XYR	80	99.5	162.9	12	32	70	M12×13	118	67	21	16	B-PT1/8	5.6	17.7	5.2	13
HSR 55YR	80	99.5	162.9	12	32	70	M12×15	118	67	21	16	B-PT1/8	—	—	—	13
HSR 65XYR	90	124.5	190.5	12	35	85	M16×18	138.5	76	19	16	B-PT1/8	6.8	14.6	5.2	14

Model number coding

HSR25 YR 2 UU C0 M +1240L P T M -II

- HSR25: Model number
- YR: Type of LM block
- 2: No. of LM blocks used on the same rail
- UU: Contamination protection accessory symbol
- C0: Radial clearance symbol — Normal (No symbol), Light preload (C1), Medium preload (C0)
- M: Stainless steel LM block
- +1240L: 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)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane

Notes: 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).
Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ.
See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

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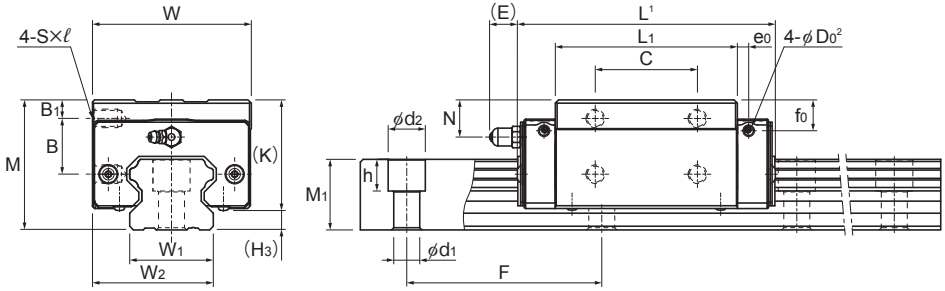


Models HSR45 to 65YR/XYR

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN·m [4]						Mass	
	Width		Height	Pitch		Length [3]	C	C_0	M_A		M_B		M_C		LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block		kg	kg/m
	15	24	15	60	4.5×7.5×5.3	3000 (1240)	10.9	15.7	0.0945	0.527	0.0945	0.527	0.0998		0.18	1.5
	20	31.5	18	60	6×9.5×8.5	3000 (1480)	19.8	27.4	0.218	1.2	0.218	1.2	0.235		0.25	2.3
	23	35	22	60	7×11×9	3000 (2020)	27.6	36.4	0.324	1.8	0.324	1.8	0.366		0.54	3.3
	28	43.5	26	80	9×14×12	3000 (2520)	40.5	53.7	0.599	3.1	0.599	3.1	0.652		0.9	4.8
	34	51.5	29	80	9×14×12	3000 (2520)	53.9	70.2	0.895	4.51	0.895	4.51	1.05		1.5	6.6
	45	65	38	105	14×20×17	3090	82.2	101	1.5	8.37	1.5	8.37	1.94		2.6	11
	45	65	38	105	14×20×17	3090	82.2	101	1.5	8.37	1.5	8.37	1.94		2.6	11
	53	76	44	120	16×23×20	3060	121	146	2.6	14.1	2.6	14.1	3.43		4.3	15.1
	53	76	44	120	16×23×20	3060	121	146	2.6	14.1	2.6	14.1	3.43		4.3	15.1
	63	93	53	150	18×26×22	3000	195	228	5.08	25	5.08	25	6.2		7.3	22.5

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] D_0 are the pilot holes for when a grease nipple is desired for a product with LaCS or a QZ Lubricator.
Pilot holes are not drilled through for models other than those stated above.
For grease nipple mount machining, contact THK.

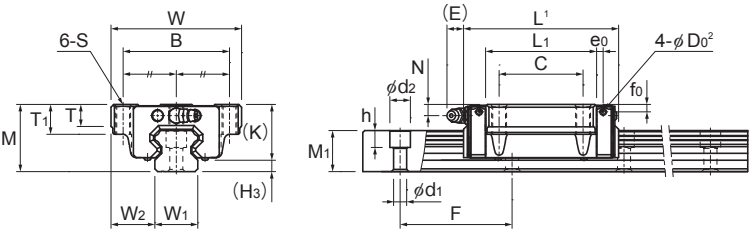
[3] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[4] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.
See **A1-483** or **A1-485** for how to install models HSR-YR/YRM.

Options⇒A1-507

Models HSR-CA, HSR-CAM, HSR-HA, HSR-HAM, HSR-XCA, and HSR-XHA



Models HSR20 to 35CA/HA/CAM/HAM

Model No.	Outer dimensions			LM block dimensions										Pilot hole for side nipple			
	Height M	Width W	Length[1] L	B	C	S	L_1	t	T	T_1	K	N	E	Grease nipple	e_0	f_0	D_0^2	H_3
HSR 20CA HSR 20CAM	30	63	74	53	40	M6	50.8	—	9.5	10	26	5	12	B-M6F	3.1	3.4	3	4
HSR 20HA HSR 20HAM	30	63	90	53	40	M6	66.8	—	9.5	10	26	5	12	B-M6F	3.1	3.4	3	4
HSR 25CA HSR 25CAM	36	70	83.1	57	45	M8	59.5	—	11	16	30.5	6	12	B-M6F	3.5	4	3	5.5
HSR 25HA HSR 25HAM	36	70	102.2	57	45	M8	78.6	—	11	16	30.5	6	12	B-M6F	3.5	4	3	5.5
HSR 30CA HSR 30CAM	42	90	98	72	52	M10	70.4	—	9	18	35	7	12	B-M6F	5.2	6.2	5.2	7
HSR 30HA HSR 30HAM	42	90	120.6	72	52	M10	93	—	9	18	35	7	12	B-M6F	5.2	6.2	5.2	7
HSR 35CA HSR 35CAM	48	100	109.4	82	62	M10	80.4	—	12	21	40.5	8	12	B-M6F	5.5	5.6	5.2	7.5
HSR 35HA HSR 35HAM	48	100	134.8	82	62	M10	105.8	—	12	21	40.5	8	12	B-M6F	5.5	5.6	5.2	7.5
HSR 45CA HSR 45HA	60	120	138.9 170.7	100	80	M12	98 129.8	25	13	15	50	10	16	B-PT1/8	6.1	6.6	5.2	10
HSR 55CA HSR 55HA	70	140	162.9 201	116	95	M14	118 156.1	29	13.5	17	57	11	16	B-PT1/8	5.6	7.7	5.2	13
HSR 65XCA HSR 65XHA	90	170	190.5 250	142	110	M16	138.5 198	37	21.5	23	76	19	16	B-PT1/8	6.8	14.6	5.2	14
HSR 85CA HSR 85HA	110	215	245.6 303	185	140	M20	178.6 236	55	28	30	94	23	16	B-PT1/8	—	—	—	16

Model number coding

HSR25 HA 2 QZ KKHH C0 M +1300L P T M -II

- HSR25: Model number
- HA: Type of LM block
- 2: No. of LM blocks used on the same rail
- QZ: With QZ Lubricator
- KKHH: Contamination protection accessory symbol
- C0: Radial clearance symbol — Normal (No symbol), Light preload (C1), Medium preload (C0)
- M: Stainless steel LM block
- +1300L: 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)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- II: Symbol for No. of rails used on the same plane

Notes: 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).
Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ.
See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

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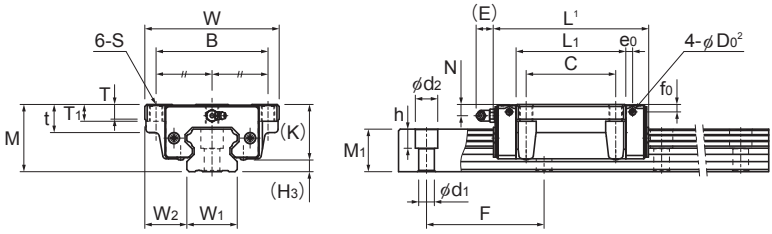


Models HSR45 to 85CA/HA/XCA/XHA

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN·m [4]						Mass	
	Width		Height	Pitch		Length [3]	C	C_0	M_A		M_B		M_C		LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block		kg	kg/m
	20	21.5	18	60	6×9.5×8.5	3000 (1480)	19.8	27.4	0.218	1.2	0.218	1.2	0.235		0.35	2.3
	20	21.5	18	60	6×9.5×8.5	3000 (1480)	23.9	35.8	0.363	1.87	0.363	1.87	0.307		0.47	2.3
	23	23.5	22	60	7×11×9	3000 (2020)	27.6	36.4	0.324	1.8	0.324	1.8	0.366		0.59	3.3
	23	23.5	22	60	7×11×9	3000 (2020)	35.2	51.6	0.627	3.04	0.627	3.04	0.518		0.75	3.3
	28	31	26	80	9×14×12	3000 (2520)	40.5	53.7	0.599	3.1	0.599	3.1	0.652		1.1	4.8
	28	31	26	80	9×14×12	3000 (2520)	48.9	70.2	0.995	4.89	0.995	4.89	0.852		1.3	4.8
	34	33	29	80	9×14×12	3000 (2520)	53.9	70.2	0.895	4.51	0.895	4.51	1.05		1.6	6.6
	34	33	29	80	9×14×12	3000 (2520)	65	91.7	1.49	7.13	1.49	7.13	1.37		2	6.6
	45	37.5	38	105	14×20×17	3090	82.2 100	101 135	1.5 2.59	8.37 13.4	1.5 2.59	8.37 13.4	1.94 2.6		2.8 3.3	11
	53	43.5	44	120	16×23×20	3060	121 148	146 194	2.6 4.46	14.1 22.7	2.6 4.46	14.1 22.7	3.43 4.56		4.5 5.7	15.1
	63	53.5	53	150	18×26×22	3000	195 249	228 323	5.08 9.81	25 45.6	5.08 9.81	25 45.6	6.2 8.79		8.5 10.7	22.5
	85	65	65	180	24×35×28	3000	304 367	355 464	10.2 16.9	51.2 81	10.2 16.9	51.2 81	12.8 16.7		17 23	35.2

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] D_0 are the pilot holes for when a grease nipple is desired for a product with LaCS or a QZ Lubricator.
Pilot holes are not drilled through for models other than those stated above.
For grease nipple mount machining, contact THK.

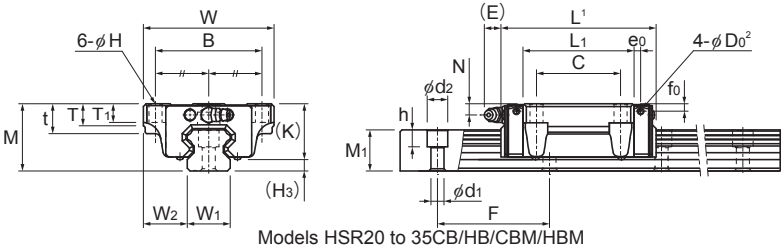
[3] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[4] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Models HSR-CB, HSR-CBM, HSR-HB, HSR-HBM, HSR-XCB, and HSR-XHB



Models HSR20 to 35CB/HB/CBM/HBM

Model No.	Outer dimensions			LM block dimensions										Grease nipple	Pilot hole for side nipple			
	Height	Width	Length[1]															
	M	W	L	B	C	H	L_1	t	T	T_1	K	N	E		e_0	f_0	D_0^2	H_3
HSR 20CB HSR 20CBM	30	63	74	53	40	6	50.8	10	9.5	10	26	5	12	B-M6F	3.1	3.4	3	4
HSR 20HB HSR 20HBM	30	63	90	53	40	6	66.8	10	9.5	10	26	5	12	B-M6F	3.1	3.4	3	4
HSR 25CB HSR 25CBM	36	70	83.1	57	45	7	59.5	16	11	10	30.5	6	12	B-M6F	3.5	4	3	5.5
HSR 25HB HSR 25HBM	36	70	102.2	57	45	7	78.6	16	11	10	30.5	6	12	B-M6F	3.5	4	3	5.5
HSR 30CB HSR 30CBM	42	90	98	72	52	9	70.4	18	9	10	35	7	12	B-M6F	5.2	6.2	5.2	7
HSR 30HB HSR 30HBM	42	90	120.6	72	52	9	93	18	9	10	35	7	12	B-M6F	5.2	6.2	5.2	7
HSR 35CB HSR 35CBM	48	100	109.4	82	62	9	80.4	21	12	13	40.5	8	12	B-M6F	5.5	5.6	5.2	7.5
HSR 35HB HSR 35HBM	48	100	134.8	82	62	9	105.8	21	12	13	40.5	8	12	B-M6F	5.5	5.6	5.2	7.5
HSR 45CB HSR 45HB	60	120	138.9 170.7	100	80	11	98 129.8	25	13	15	50	10	16	B-PT1/8	6.1	6.6	5.2	10
HSR 55CB HSR 55HB	70	140	162.9 201	116	95	14	118 156.1	29	13.5	17	57	11	16	B-PT1/8	5.6	7.7	5.2	13
HSR 65XCB HSR 65XHB	90	170	190.5 250	142	110	16	138.5 198	37	21.5	23	76	19	16	B-PT1/8	6.8	14.6	5.2	14
HSR 85CB HSR 85HB	110	215	245.6 303	185	140	18	178.6 236	55	28	30	94	23	16	B-PT1/8	—	—	—	16

Model number coding

HSR35 CB 2 QZ ZZHH C0 M +1400L P T M -II

- HSR35: Model number
- CB: Type of LM block
- 2: No. of LM blocks used on the same rail
- QZ: With QZ Lubricator
- ZZHH: Contamination protection accessory symbol
- C0: Radial clearance symbol — Normal (No symbol), Light preload (C1), Medium preload (C0)
- M: Stainless steel LM block
- +1400L: 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)
- T: Symbol for LM rail jointed use
- M: Stainless steel LM rail
- -II: Symbol for No. of rails used on the same plane

Notes: 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).
Grease nipples are not installed when there is a QZ Lubricator. Contact THK if you want to use a grease nipple for a model with a QZ.
See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

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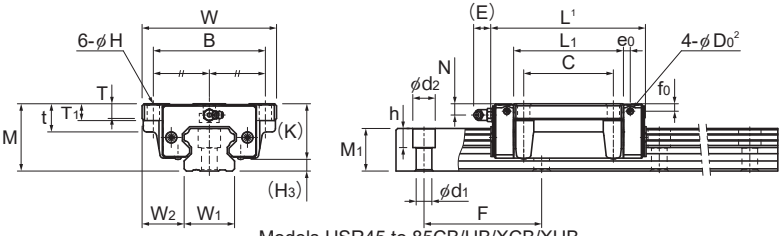


Models HSR45 to 85CB/HB/XCB/XHB

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN·m [4]						Mass	
	Width		Height	Pitch		Length [3]	C	C0	MA		MB		MC		LM block	LM rail
	W1 ±0.05	W2	M1	F	d1×d2×h	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block		kg	kg/m
	20	21.5	18	60	6×9.5×8.5	3000 (1480)	19.8	27.4	0.218	1.2	0.218	1.2	0.235		0.35	2.3
	20	21.5	18	60	6×9.5×8.5	3000 (1480)	23.9	35.8	0.363	1.87	0.363	1.87	0.307		0.47	2.3
	23	23.5	22	60	7×11×9	3000 (2020)	27.6	36.4	0.324	1.8	0.324	1.8	0.366		0.59	3.3
	23	23.5	22	60	7×11×9	3000 (2020)	35.2	51.6	0.627	3.04	0.627	3.04	0.518		0.75	3.3
	28	31	26	80	9×14×12	3000 (2520)	40.5	53.7	0.599	3.1	0.599	3.1	0.652		1.1	4.8
	28	31	26	80	9×14×12	3000 (2520)	48.9	70.2	0.995	4.89	0.995	4.89	0.852		1.3	4.8
	34	33	29	80	9×14×12	3000 (2520)	53.9	70.2	0.895	4.51	0.895	4.51	1.05		1.6	6.6
	34	33	29	80	9×14×12	3000 (2520)	65	91.7	1.49	7.13	1.49	7.13	1.37		2	6.6
	45	37.5	38	105	14×20×17	3090	82.2 100	101 135	1.5 2.59	8.37 13.4	1.5 2.59	8.37 13.4	1.94 2.6		2.8 3.3	11
	53	43.5	44	120	16×23×20	3060	121 148	146 194	2.6 4.46	14.1 22.7	2.6 4.46	14.1 22.7	3.43 4.56		4.5 5.7	15.1
	63	53.5	53	150	18×26×22	3000	195 249	228 323	5.08 9.81	25 45.6	5.08 9.81	25 45.6	6.2 8.79		8.5 10.7	22.5
	85	65	65	180	24×35×28	3000	304 367	355 464	10.2 16.9	51.2 81	10.2 16.9	51.2 81	12.8 16.7		17 23	35.2

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] D0 are the pilot holes for when a grease nipple is desired for a product with LaCS or a QZ Lubricator.
Pilot holes are not drilled through for models other than those stated above.
For grease nipple mount machining, contact THK.

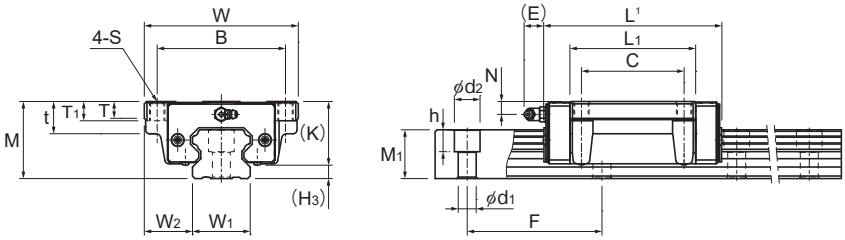
[3] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[4] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Notes: The M in the model number symbol indicates that the LM block, LM rail and balls are made of stainless steel.
The stainless steel provides excellent corrosion and environmental resistance.

Options⇒A1-507

Models HSR85A, HSR85LA, HSR85B, and HSR85LB



Models HSR85A/LA

Model No.	Outer dimensions			LM block dimensions												H3
	Height M	Width W	Length[1] L	B	C	H	S	L1	t	T	T1	K	N	E	Grease nipple	
HSR 85A HSR 85LA	110	215	245.6 303	185	140	—	M20	178.6 236	55	28	30	94	23	16	B-PT1/8	16
HSR 85B HSR 85LB	110	215	245.6 303	185	140	18	—	178.6 236	55	28	30	94	23	16	B-PT1/8	16

Model number coding

HSR85 A 2 UU C0 +2250L H T -II

- HSR85: Model number
- A: Type of LM block
- 2: No. of LM blocks used on the same rail
- UU: Contamination protection accessory symbol
- C0: Radial clearance symbol
  Normal (No symbol)
  Light preload (C1)
  Medium preload (C0)
- +2250L: LM rail length (in mm)
- H: Accuracy symbol
  Normal grade (No Symbol)/High accuracy grade (H)
  Precision grade (P)/Super precision grade (SP)
  Ultra precision grade (UP)
- T: Symbol for LM rail jointed use
- -II: Symbol for No. of rails used on the same plane

Notes: 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).
See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

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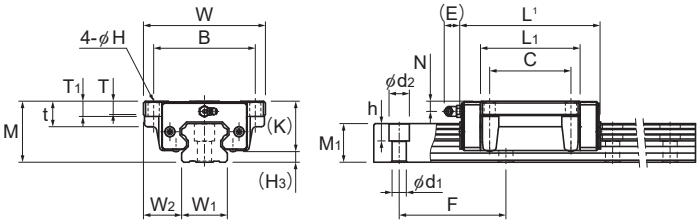


Models HSR85B/LB

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN·m [3]						Mass	
	Width		Height	Pitch		Length [2]	C	C_0	M_A		M_B		M_C		LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block		kg	kg/m
	85	65	65	180	24×35×28	3000	304 367	355 464	10.2 16.9	51.2 81	10.2 16.9	51.2 81	12.8 16.7		17 23	35.2
	85	65	65	180	24×35×28	3000	304 367	355 464	10.2 16.9	51.2 81	10.2 16.9	51.2 81	12.8 16.7		17 23	35.2

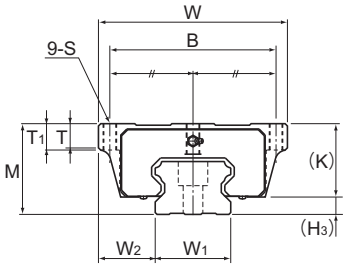
[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

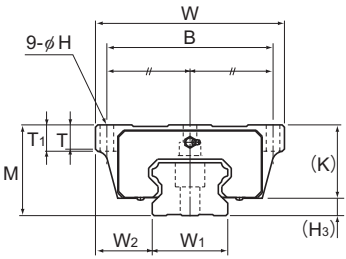
[3] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Options⇒A1-507

Models HSR-HA, HSR-HB, and HSR-HR



Models HSR100 to 150HA



Models HSR100 to 150HB

Model No.	Outer dimensions			LM block dimensions											H_3
	Height M	Width W	Length[1] L	B	C	H	S×ℓ	L_1	T	T_1	K	N	E	Grease nipple	
HSR 100HA	120	250	334	220	200	—	M18 through	261	32	35	100	23	16	B-PT1/4	20
HSR 100HB		250		220		20	—		32	35					
HSR 100HR		200		130		—	M18×27		33	—					
HSR 120HA	130	290	365	250	210	—	M20 through	287	34	38	110	26.5	16	B-PT1/4	20
HSR 120HB		290		250		22	—		34	38					
HSR 120HR		220		146		—	M20×30		33.7	—					
HSR 150HA	145	350	396	300	230	—	M24 through	314	36	40	123	29	16	B-PT1/4	22
HSR 150HB		350		300		26	—		36	40					
HSR 150HR		266		180		—	M24×35		33	—					

Model number coding

HSR150 HR 2 UU C1 +2350L H T -II

- HSR150: Model number
- HR: Type of LM block
- 2: No. of LM blocks used on the same rail
- UU: Contamination protection accessory symbol
- C1: Radial clearance symbol — Normal (No symbol), Light preload (C1), Medium preload (C0)
- +2350L: LM rail length (in mm)
- H: Accuracy symbol — Normal grade (No Symbol)/High accuracy grade (H), Precision grade (P)/Super precision grade (SP), Ultra precision grade (UP)
- T: Symbol for LM rail jointed use
- -II: Symbol for No. of rails used on the same plane

Notes: 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).
See **A1-547** for contamination protection accessories, see **A1-74** for radial clearance symbol. See **A1-79** for accuracy symbol. See **A1-13** for symbol for number of rails used on the same plane.

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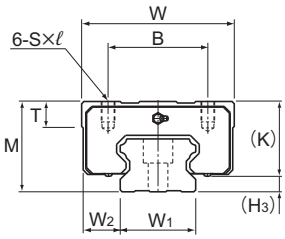
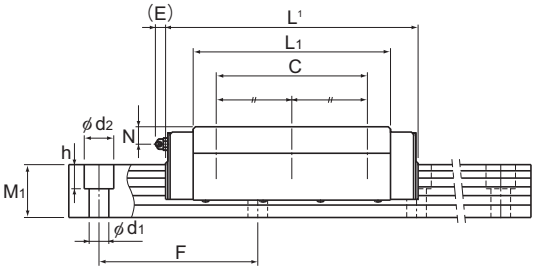




Models HSR100 to 150HR

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment kN·m [3]					Mass	
	Width		Height	Pitch		Length [2]	C	C_0	M_A		M_B		M_C	LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	1 block	2 blocks	1 block	2 blocks	1 block	kg	kg/m
	100	75 75 50	70	210	26×39×32	3000	441	540	20.7	105	20.7	105	24.1	32	49
	114	88 88 53	75	230	33×48×43	3000	540	653	27.5	138	27.5	138	33.3	43	61
	144	103 103 61	85	250	39×58×46	3000	518	728	33.6	167	33.6	167	45.2	62	87

[1] Length L shown in the table is the length with the contamination protection accessories, code UU or SS.
If other contamination protection accessories or lubricant equipment are installed, the total block length will increase. (See **A1-521** or **A1-543**)

[2] The maximum length indicates the standard maximum length of an LM rail. (See **A1-208**.)

[3] Static permissible moment 1 block: the static permissible moment with one LM block
2 blocks: the static permissible moment with two LM blocks in close contact with each other

Options⇒A1-507

Standard Lengths and Maximum Lengths of LM Rails

Table 1 shows the standard lengths and the maximum lengths of model HSR variations. If the maximum length of the desired LM rail exceeds these values, jointed rails will be used. Contact THK for details.

For special rail lengths, it is recommended to use a value corresponding to the G and g dimensions from the table. As the G and g dimensions increase, this portion becomes less stable, and the accuracy performance is severely impacted.

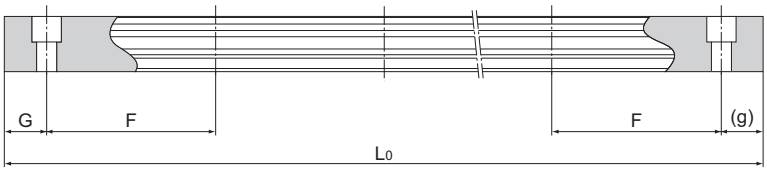


Table 1: Standard Lengths and Maximum Lengths of LM Rails for Model HSR

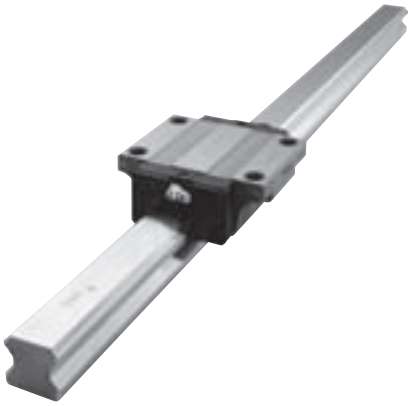
Unit: mm

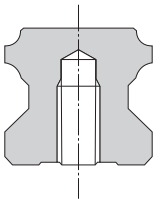
Model No.	HSR 8	HSR 10	HSR 12	HSR 15	HSR 20	HSR 25	HSR 30	HSR 35	HSR 45	HSR 55	HSR 65	HSR 85	HSR 100	HSR 120	HSR 150
LM rail standard lengths (L_0)	35 55 75 95 115 135 155 175 195 215 235 255 275	45 70 95 120 145 170 195 220 245 270 295 320 345 370 395 420 445 470	70 110 150 190 230 270 310 350 390 430 470 510 550 590 630 670	160 220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1360 1480 1600	160 220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1360 1480 1600 1720 1840 1960 2080 2200	220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1300 1360 1420 1480 1540 1600 1720 1840 1960 2080 2200 2320 2440	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1560 1640 1720 1800 1880 1960 2040 2200 2360 2520 2680 2840 3000	280 360 440 520 600 680 760 840 920 1000 1080 1160 1240 1320 1400 1480 1560 1640 1720 1800 1880 1960 2040 2200 2360 2520 2680 2840 3000	570 675 780 885 990 1095 1200 1305 1410 1515 1620 1725 1830 1935 2040 2145 2250 2355 2460 2565 2670 2775 2880 2985 3090	780 900 1020 1140 1260 1380 1500 1620 1740 1860 1980 2100 2220 2340 2460 2580 2700 2820 2940 3060	1270 1570 2020 2620	1530 1890 2250 2610	1340 1760 2180 2600	1470 1930 2390	1600 2100 2350
Standard pitch F	20	25	40	60	60	60	80	80	105	120	150	180	210	230	250
G, g	7.5	10	15	20	20	20	20	20	22.5	30	35	45	40	45	50
Max length	(975)	(995)	(1240)	3000 (1240)	3000 (1480)	3000 (2020)	3000 (2520)	3000 (2520)	3090	3060	3000	3000	3000	3000	3000

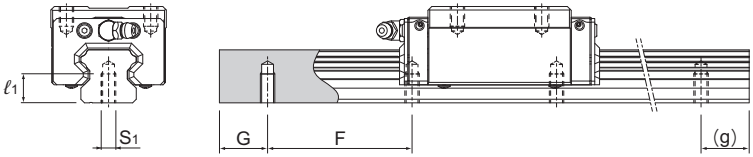
Notes: The maximum length varies with accuracy grades. Contact THK for details.
If jointed rails are not allowed and a greater length than the maximum values above is required, contact THK.
The figures in the parentheses indicate the maximum lengths of stainless steel made models.

Tapped-Hole Type LM Rail

HSR model rails also include a type where the LM rail is tapped from the bottom. This type is useful when mounting from the bottom of the base and when increased contamination protection is desired.







(1) A tapped-hole LM rail type is available only for Precision grade or lower grades.
(2) A tapped-hole LM rail type is also available for models HSR-YR and HSR-XYR.
(3) For standard pitches of the taps and the G and g dimensions, see Table 1 on A1-208.

Table 2: Dimensions of the LM Rail Tap

Unit: mm

Model No.	S_1	Effective tap depth ℓ_1
HSR 15	M5	8
HSR 20	M6	10
HSR 25	M6	12
HSR 30	M8	15
HSR 35	M8	17
HSR 45	M12	24
HSR 55	M14	24
HSR 65	M20	30

Model number coding

HSR30R2UU+1000LH K

Symbol for tapped-hole LM rail type

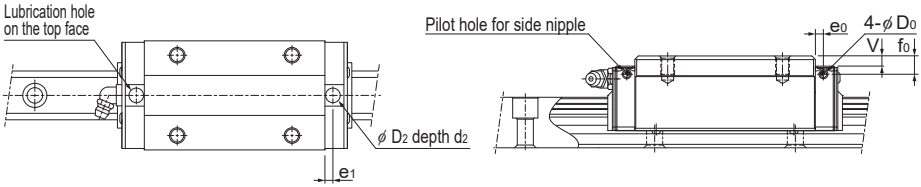
Preventing the LM Block from Falling off of the LM Rail

In miniature Model HSR, the balls fall out if the LM block comes off the LM rail.
For this reason, LM Guide assemblies are delivered with a part which prevents the LM block from coming off the rail. If you remove this part when using the product, please take precautions to avoid overrunning the blocks off of the rail.

Lubrication Hole

Lubrication Hole for Model HSR

The Model HSR LM block can be lubricated from the side or top surface. In order to prevent foreign material from entering the LM block, lubrication holes are not through holes in blocks with regular specifications. Contact THK if these will be used.
In addition, contact THK if you will use an upper surface greasing hole with a Model HSR-R/XR/LR/XLR/YR/XYR, as a lubrication adapter is required.
The lubricant may not reach the raceway if the LM Guide is not installed in a horizontal orientation. Be sure to let THK know the mounting orientation and the position where the grease nipple or plumbing fixture will be attached to each LM block.
See **A1-12** for the mounting orientation and **A24-2** for lubrication.



Notes: Upper surface lubrication is oil lubrication only. Contact THK if you are considering using the lubrication hole on the top face for grease lubrication.

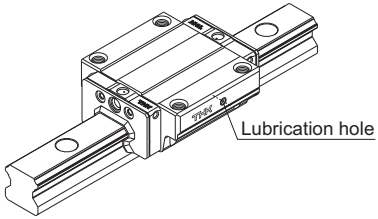
Unit: mm

Model No.		Pilot hole for side nipple			Applicable nipple	Lubrication hole on the top face				
		e_0	f_0	D_0		D_2	(O-ring)	V	e_1	d_2
HSR	15C 15LC 15CA 15HA 15CB 15HB	3.2	3.9	3	PB107	5.1	SS4	0.3	3.2	0.65
	15R 15LR 15YR	3.2	7.9	3				4.3		
	20C 20LC 20CA 20HA 20CB 20HB	3.1	3.4	3		6	SS5	0.2	4.3	0.6
	20R 20LR 20YR	3.1	3.4	3				0.2		

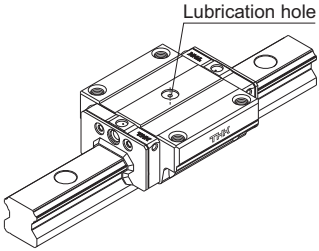
Model No.		Pilot hole for side nipple			Applicable nipple	Lubrication hole on the top face				
		e_0	f_0	D_0		D_2	(O-ring)	V	e_1	d_2
HSR	25C 25LC 25CA 25HA 25CB 25HB	3.5	4	3	PB107	6.2	P3	0.4	3.9	1
	25R 25LR 25YR	3.5	8	3				4.4		
	30C 30LC 30CA 30HA 30CB 30HB	5.2	6.2	5.2	M6F	6.2	P3	0.4	5.2	1
	30R 30LR 30YR	5.2	9.2	5.2				3.4		
	35C 35LC 35CA 35HA 35CB 35HB	5.5	5.6	5.2		6.2	P3	0.4	5.5	1
	35R 35LR 35YR	5.5	12.6	5.2				7.4		
	45C 45LC 45CA 45HA 45CB 45HB	6.1	6.6	5.2		10.2	P7	0.4	8.2	1
	45R 45LR 45XYR	6.1	16.6	5.2				10.4		
	55C 55LC 55CA 55HA 55CB 55HB	5.6	7.7	5.2		10.2	P7	0.4	9.1	1
	55R 55LR 55XYR	5.6	17.7	5.2				10.4		
	65XC 65XLC 65XCA 65XHA 65XCB 65XHB	6.8	14.6	5.2		10.2	P7	5.9	9.5	1
	65XR 65XLR 65XYR	6.8	14.6	5.2				5.9		

Semi-Standard Lubrication Hole for Model HSR

For model HSR, a semi-standard lubrication hole is available. Specify the appropriate model number according to the application.



Type with a Lubrication Hole Drilled on the Side Surface



Type with a Lubrication Hole Drilled on the Top Face