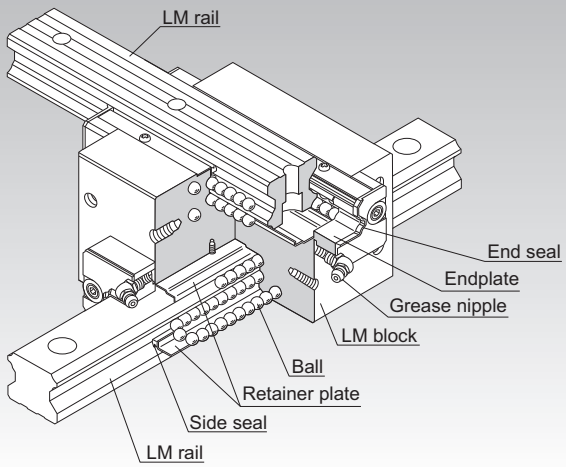
CSR

LM Guide Cross LM Guide Model CSR



Point of Selection	**A1-10**
Point of Design	**A1-436**
Options	**A1-459**
Model No.	**A1-523**
Precautions on Use	**A1-529**
Accessories for Lubrication	**A24-1**
Mounting Procedure and Maintenance	**B1-89**

Equivalent moment factor	A1-43
Rated Loads in All Directions	A1-58
Equivalent factor in each direction	A1-60
Radial Clearance	A1-71
Accuracy Standards	A1-79
Shoulder Height of the Mounting Base and the Corner Radius	A1-445
Permissible Error of the Mounting Surface	A1-452
Dimensions of Each Model with an Option Attached	A1-472

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Structure and Features

Balls roll in four rows of raceways precision-ground on a LM rail and a LM block, and endplates incorporated in the LM block allow the balls to circulate. Since retainer plates hold the balls, they do not fall off even if the LM rail is pulled out.
This model is an integral type of LM Guide that squares an internal structure similar to model HSR, which has a proven track record and is highly reliable, with another and uses two LM rails in combination. It is machined with high precision so that the perpendicularity of the hexahedron of the LM block is within 2 μm per 100 mm in error. The two rails are also machined with high precision in relative straightness. As a result, extremely high accuracy in orthogonality is achieved. Since an orthogonal LM system can be achieved with model CSR alone, a conventionally required saddle is no longer necessary, the structure for X-Y motion can be simplified and the whole system can be downsized.

[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 balls are arranged in four rows in a well-balanced manner, this model is stiff against a moment, and smooth straight motion is ensured even a preload is applied to increase the rigidity.
The rigidity of the LM blocks is 50% higher than that of a combination of two HSR LM blocks secured together back-to-back with bolts. Thus, CSR is an optimal LM Guide for building an X-Y table that requires high rigidity.

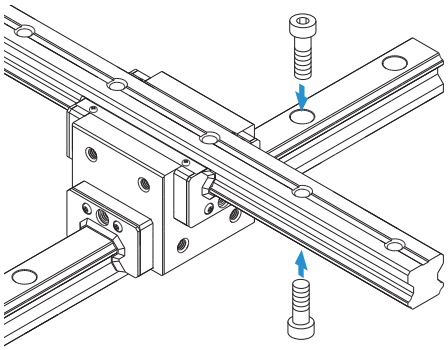
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Types and Features

Model CSR-S

Specification Table⇒A1-296

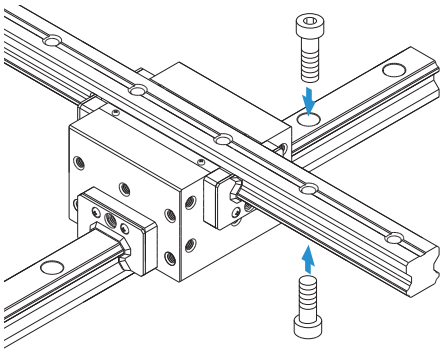
This model is a standard type.



Model CSR

Specification Table⇒A1-296

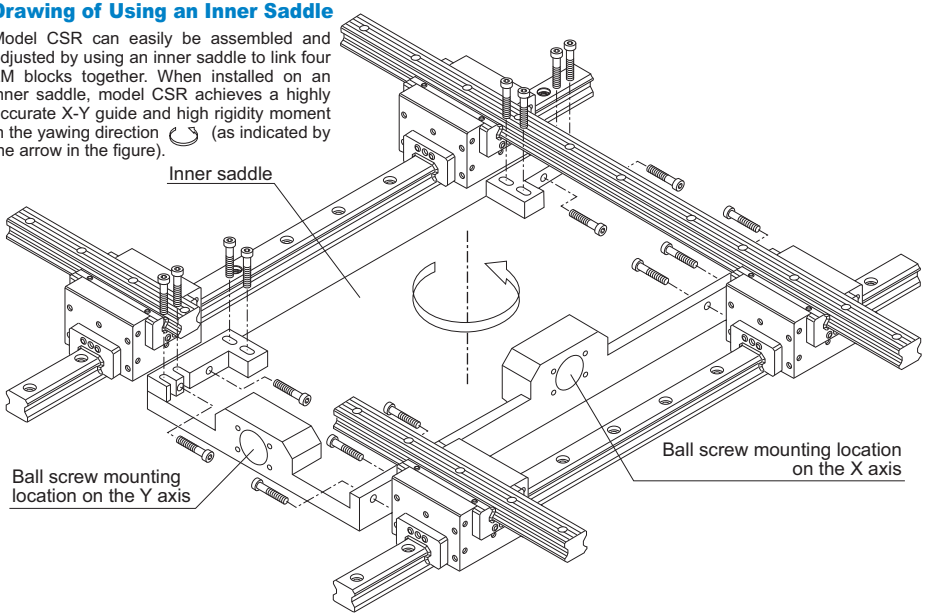
It has a longer overall LM block length (L) and a greater rated load.



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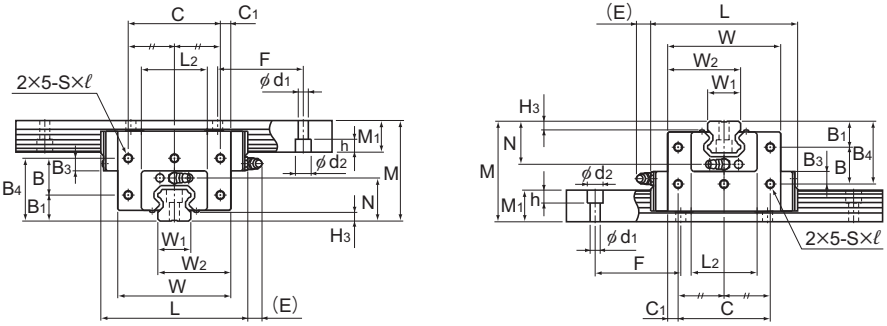
Drawing of Using an Inner Saddle

Model CSR can easily be assembled and adjusted by using an inner saddle to link four LM blocks together. When installed on an inner saddle, model CSR achieves a highly accurate X-Y guide and high rigidity moment in the yawing direction (as indicated by the arrow in the figure).



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Model CSR



Models CSR20 to 45

Model No.	Outer dimensions			LM block dimensions													H3
	Height M	Width W	Length L	B1	B3	B4	B	C	C1	S×ℓ	L2	H3	N	E	Grease nipple		
CSR 15	47	38.8	56.6	—	11.3	34.8	—	20	9.4	M4×6	32	3.5	19.5	5.5	PB1021B		3.5
CSR 20S CSR 20	57	50.8 66.8	74 90	— 13	13.3 7.8	42.5 37	— 24	30 56	10.4 5.4	M5×8	42	4	25	12	B-M6F		4
CSR 25S CSR 25	70	59.5 78.6	83.1 102.2	— 18	17 9	52 44	— 26	34 64	12.75 7.3	M6×10	46	5.5	30	12	B-M6F		5.5
CSR 30S CSR 30	82	70.4 93	98 120.6	— 21	20 12	61 53	— 32	40 76	15.2 8.5	M6×10	58	7	35	12	B-M6F		7
CSR 35	95	105.8	134.8	24	14	61	37	90	7.9	M8×14	68	7.5	40	12	B-M6F		7.5
CSR 45	118	129.8	170.8	30	16	75	45	110	9.9	M10×15	84	10	50	16	B-PT1/8		10

Model number coding

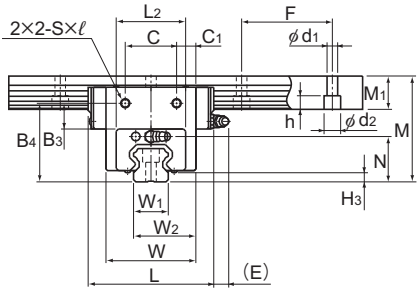
4 CSR25 UU C0 +1200/1000L P

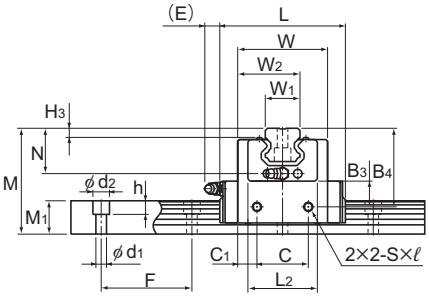
- 4: Total No. of LM blocks
- CSR25: Model number
- UU: Contamination protection accessory symbol (*1)
- C0: Radial clearance symbol (*2) — Normal (No symbol)/Light preload (C1) / Medium preload (C0)
- +1200/1000L: LM rail length on the X axis (in mm) / LM rail length on the Y axis (in mm)
- P: Accuracy symbol (*3) — Precision grade (P)/Super precision grade (SP) / Ultra precision grade (UP)

(*1) See contamination protection accessory on **A1-496**. (*2) See **A1-71**. (*3) See **A1-79**.

Download data by searching for the corresponding model number on the Technical Support site. https://tech.thk.com

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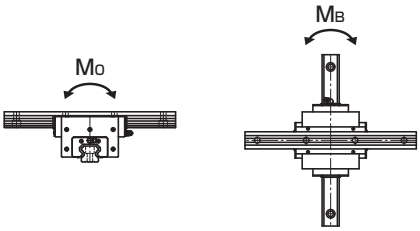


Models CSR15, 20S to 30S

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment*		Mass	
	Width		Height	Pitch		Length*	C	C_0	M_0	M_B	LM block	LM rail
	W_1 ±0.05	W_2	M_1	F	$d_1 \times d_2 \times h$	Max	kN	kN	kN-m	kN-m	kg	kg/m
	15	26.9	15	60	4.5×7.5×5.3	3000	10.9	15.7	0.0998	0.0945	0.34	1.5
	20	35.4 43.4	18	60	6×9.5×8.5	3000	19.8 23.9	27.4 35.8	0.235 0.307	0.218 0.363	0.73 1.3	2.3
	23	41.25 50.8	22	60	7×11×9	3000	27.6 35.2	36.4 51.6	0.366 0.518	0.324 0.627	1.2 2.2	3.3
	28	49.2 60.5	26	80	9×14×12	3000	40.5 48.9	53.7 70.2	0.652 0.852	0.599 0.995	2 3.6	4.8
	34	69.9	29	80	9×14×12	3000	65	91.7	1.37	1.49	5.3	6.6
	45	87.4	38	105	14×20×17	3090	100	135	2.6	2.59	9.8	11

Note) The maximum length under "Length*" indicates the standard maximum length of an LM rail. (See **A1-298**.)
Static permissible moment* 1 block: the static permissible moment with one LM block
Total block length L : The total block length L shown in the table is the length with the dust proof parts, code UU or SS. If other contamination protection accessories or lubricant equipment are installed, the total block length will increase.
(See **A1-472** or **A1-492**)



Options⇒A1-459

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Standard Length and Maximum Length of the LM Rail

Table1 shows the standard lengths and the maximum lengths of model CSR variations.
For the G dimension when a special length is required, we recommend selecting the corresponding G value from the table. The longer the G dimension is, the less stable the G area may become after installation, thus causing an adverse impact to accuracy.

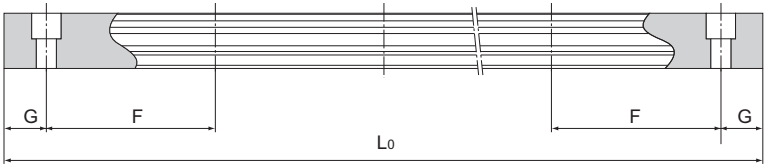


Table1 Standard Length and Maximum Length of the LM Rail for Model CSR

Unit: mm

Model No.	CSR 15	CSR 20	CSR 25	CSR 30	CSR 35	CSR 45
LM rail standard length (L_0)	160 220 280 340 400 460 520 580 640 700 760 820 940 1000 1060 1120 1180 1240 1360 1480 1600	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
Standard pitch F	60	60	60	80	80	105
G	20	20	20	20	20	22.5
Max length	3000	3000	3000	3000	3000	3090

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

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Tapped-hole LM Rail Type of Model CSR

The model CSR variations include a type with its LM rail bottom tapped. With the X-axis LM rail having tapped holes, this model can be secured with bolts from the top.

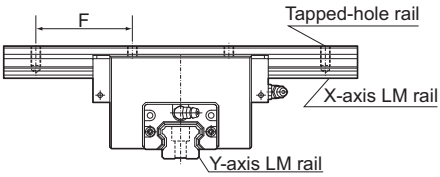


Table2 Dimensions of the LM Rail Tap Unit: mm

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

Model number coding

4 CSR25 UU C0 +1200L P K/1000L P

Symbol for
tapped-hole LM rail type

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