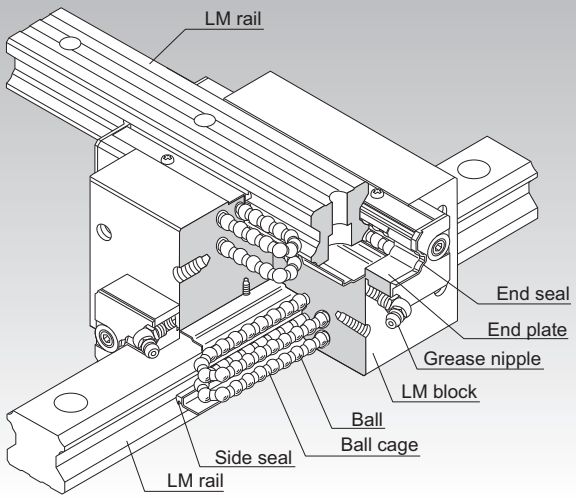
SCR

Caged Ball Cross LM Guide Model SCR



Note: For the ball cage, see A1-90.

Selection Criteria A1-10
Design Highlights A1-482
Options A1-507
Model No. A1-577
Handling Precautions A1-583
Accessories for Lubrication A24-1
Mounting Procedure B1-89

Equivalent Moment Factor A1-43
Rated Loads in All Directions A1-61
Equivalent Factor in Each Direction A1-63
Radial Clearance A1-73
Accuracy Standards A1-82
Shoulder Height of the Mounting Base and the Corner Radius A1-492
Reference Error Tolerance for the Mounting Surface A1-498
Dimensions of Each Model with Options Attached A1-521

Structure and Features

Balls roll in four rows of raceways precision-ground on an LM rail and an LM block, and ball cages and end plates incorporated in the LM block allow the balls to circulate.
This LM Guide has two rails intersecting at right angles integrated back-to-back into a single block with the same internal structure as the proven Caged Ball LM Guide Model SHS. Because an orthogonal LM System can be achieved with the Model SCR alone, conventional saddles are no longer necessary, enabling simplified X-Y motion and compact structure.

4-Way Equal Load

Each row of balls is placed at a contact angle of 45° so that the load ratings 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 and in extensive applications.

High Rigidity

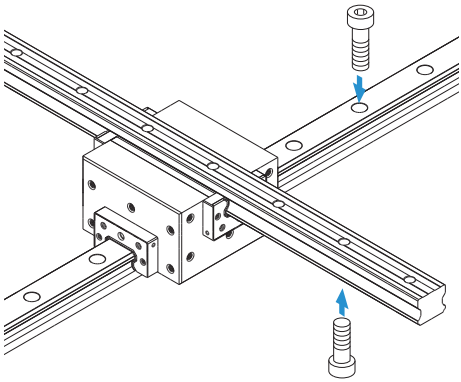
Since the balls are well balanced in four rows, this model is able to withstand moments, and it achieves smooth straight motion even when a preload is applied to increase the rigidity.
The rigidity of the single LM block is higher than that of a combination of two conventional LM blocks secured back-to-back with bolts, making this model optimal for building an X-Y table that requires high rigidity.

Types and Features

Model SCR

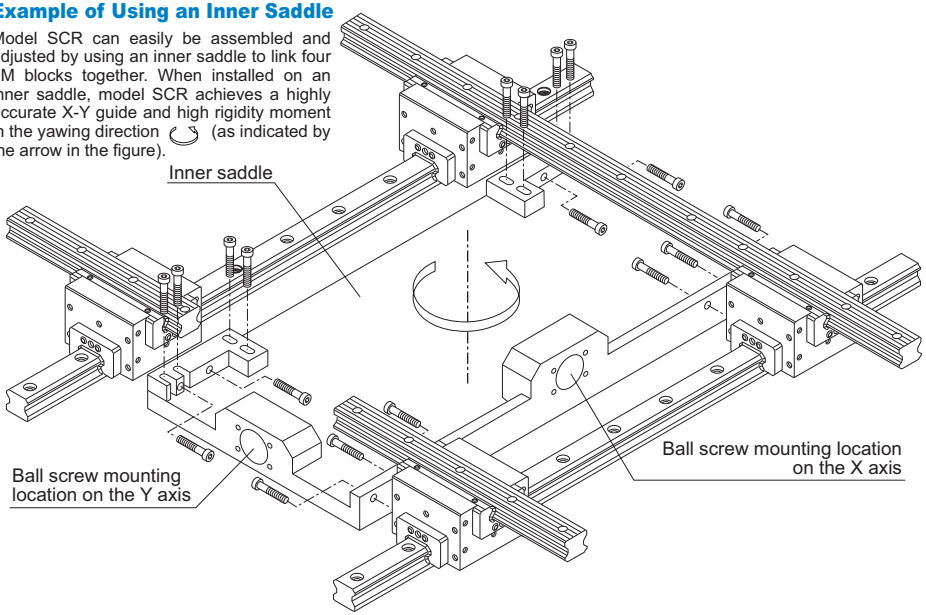
Dimensional Table⇒A1-170

This model is the standard type.

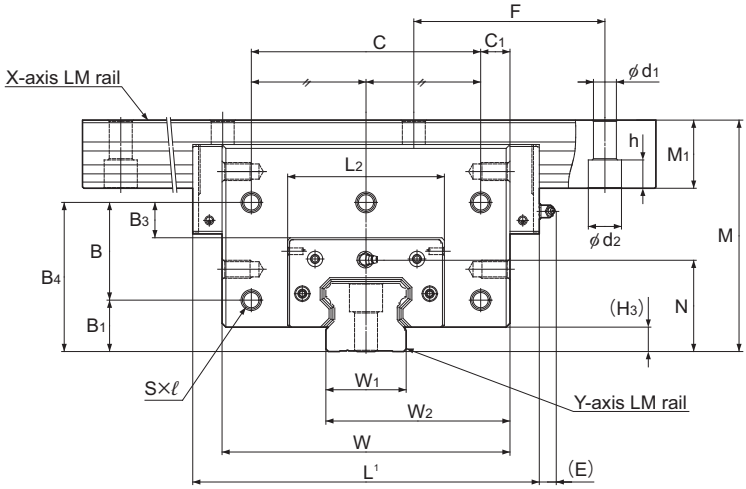


Example of Using an Inner Saddle

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



Model SCR



Model No.	Outer dimensions			LM block dimensions											
	Height M	Width W	Length[1] L	B_1	B_3	B_4	B	C	C_1	S×ℓ	L_2	H_3	N	E
SCR 15S	47	48	64.4	—	11.3	34.8	—	20	14	2×2-M4×6	33.4	3	18.5	5.5
SCR 20S	57	59	79	—	13	42.5	—	30	14.5	2×2-M5×8	43	4.6	23.5	12
SCR 20	57	78	98	13	7.5	37	24	56	11	2×5-M5×8	43	4.6	23.5	12
SCR 25	70	88	109	18	9	44	26	64	12	2×5-M6×10	47.4	5.8	28.5	12
SCR 30	82	105	131	21	12	53	32	76	14.5	2×5-M6×10	58	7	34	12
SCR 35	95	123	152	24	14	61	37	90	16.5	2×5-M8×14	68	7.5	40	12
SCR 45	118	140	174	30	16.5	75	45	110	15	2×5-M10×15	84.6	8.9	49.5	16
SCR 65	180	226	272	40	27.5	116	76	180	23	2×5-M14×22	123	19	71	16

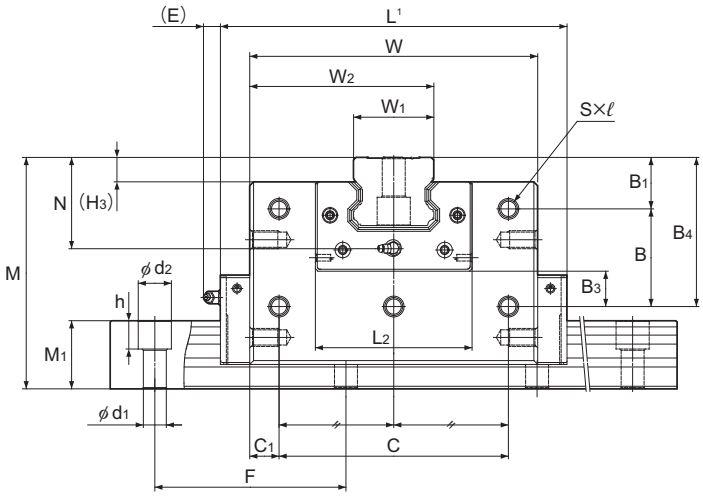
Model number coding

4 SCR25 QZ KKHH C0 +1240/1000L P

- **4**: Total No. of LM blocks
- **SCR25**: Model number
- **QZ**: With QZ Lubricator
- **KKHH**: Contamination protection accessory symbol
- **C0**: Radial clearance symbol — Normal (No symbol)/Light preload (C1) / Medium preload (C0)
- **+1240/1000L**: LM rail length on the X axis (in mm) / LM rail length on the Y axis (in mm)
- **P**: Accuracy symbol — Precision grade (P) / Super precision grade (SP) / Ultra precision grade (UP)

Notes: 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 contamination protection accessories on **A1-547**. See **A1-73** for radial clearance symbol. See **A1-82** for accuracy symbol.

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

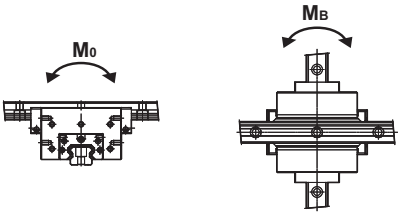


Unit: mm

		LM rail dimensions					Basic load rating		Static permissible moment[2]		Mass	
	Grease nipple	Width W_1 $^{0}_{-0.05}$	W_2	Height M_1	Pitch F	Mounting hole $d_1 \times d_2 \times h$	C kN	C_0 kN	M_O kN·m	M_B kN·m	LM block kg	LM rail kg/m
	PB1021B	15	31.5	13	60	4.5×7.5×5.3	14.2	24.2	0.16	0.175	0.54	1.3
	B-M6F	20	39.5	16.5	60	6×9.5×8.5	22.3	38.4	0.334	0.334	0.88	2.3
	B-M6F	20	49	16.5	60	6×9.5×8.5	28.1	50.3	0.473	0.568	1.7	2.3
	B-M6F	23	55.5	20	60	7×11×9	36.8	64.7	0.696	0.848	3.4	3.2
	B-M6F	28	66.5	23	80	9×14×12	54.2	88.8	1.15	1.36	4.6	4.5
	B-M6F	34	78.5	26	80	9×14×12	72.9	127	2.01	2.34	6.8	6.2
	B-PT1/8	45	92.5	32	105	14×20×17	100	166	3.46	3.46	10.8	10.4
	B-PT1/8	63	144.5	53	150	18×26×22	253	408	11.9	13.3	44.5	23.7

[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] Static permissible moment 1 block: the static permissible moment with one LM block



Options⇒A1-507

Standard Lengths and Maximum Lengths of LM Rails

Table 1 shows the standard and maximum lengths of the Model SCR rail. 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 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.

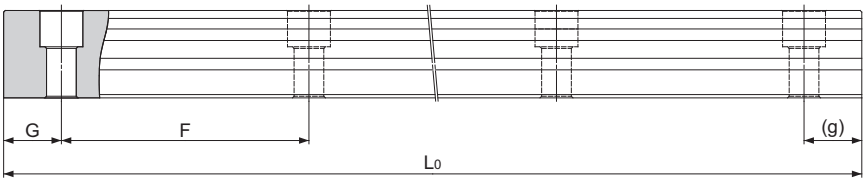


Table 1: Standard Lengths and Maximum Lengths of LM Rails for Model SCR

Unit: mm

Model No.	SCR 15	SCR 20	SCR 25	SCR 30	SCR 35	SCR 45	SCR 65
LM rail standard lengths (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	1270 1570 2020 2620
Standard pitch F	60	60	60	80	80	105	150
G, g	20	20	20	20	20	22.5	35
Max length	3000	3000	3000	3000	3000	3090	3000

Model SCR with Tapped Holes in the LM Rail

Model SCR rails also include a type where the LM rail is tapped from the bottom. With the X-axis LM rail having tapped holes, this model can be secured with bolts from the top.

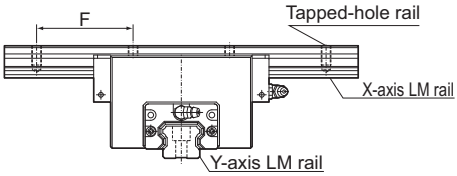


Table 2: Dimensions of the LM Rail Tap Unit: mm

Model No.	Tap diameter	Tap depth
15	M5	8
20	M6	10
25	M6	12
30	M8	15
35	M8	17
45	M12	20
65	M20	30

Model number coding

4SCR35KKHHC0+1000LP K /1000LP

Symbol for
tapped-hole LM rail type