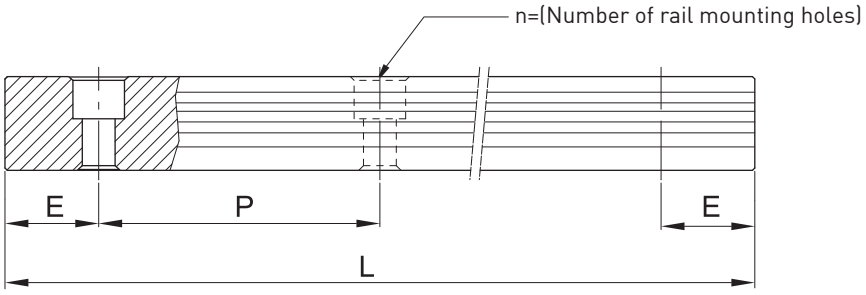
CG Series

Superior Rolling Moment with Cover Strip

2-8-12 Standard and Maximum Lengths of Rail

HIWIN offers standard rail lengths for customer needs. For non-standard E-values, the recommended dimension should not be greater than 1/2 of the pitch (P) dimension. This will prevent an unstable rail end.



$$L = (n-1) \times P + 2 \times E \quad \text{Eq.2.1}$$

L : Total length of rail (mm)
n : Number of mounting holes
P : Distance between any two holes (mm)
E : Distance from the center of the last hole to the edge (mm)

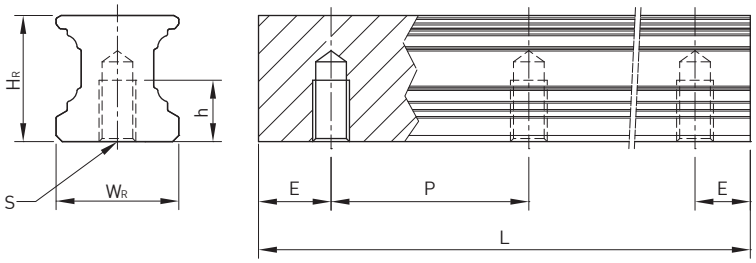
Table 2-8-24 **Rail Standard Length and Max. Length**

unit: mm

Item	CG15	CG20	CG25	CG30	CG35	CG45
Standard Length L(n)	160(3)	220(4)	220(4)	280(4)	280(4)	570(6)
	220(4)	280(5)	280(5)	440(6)	440(6)	885(9)
	280(5)	340(6)	340(6)	600(8)	600(8)	1,200(12)
	340(6)	460(8)	460(8)	760(10)	760(10)	1,620(16)
	460(8)	640(11)	640(11)	1,000(13)	1,000(13)	2,040(20)
	640(11)	820(14)	820(14)	1,640(21)	1,640(21)	2,460(24)
	820(14)	1,000(17)	1,000(17)	2,040(26)	2,040(26)	2,985(29)
		1,240(21)	1,240(21)	2,520(32)	2,520(32)	
			1,600(27)	3,000(38)	3,000(38)	
Pitch (P)	60	60	60	80	80	105
Distance to End (E_s)	20	20	20	20	20	22.5
Max. Standard Length	4,000(67)	4,000(67)	4,000(67)	3,960(50)	3,960(50)	3,930(38)
Max. Length	4,000	4,000	4,000	4,000	4,000	4,000

Note : 1. Tolerance of E value for standard rail is 0.5~-0.5 mm. Tolerance of E value for jointed rail is 0~-0.3 mm.
2. Maximum standard length means the max. rail length with standard E value on both sides.
3. If different E value is needed, please contact HIWIN.

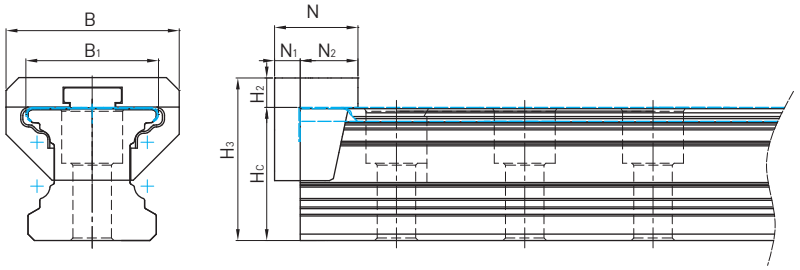
(5) Dimesions for CGR-T (Rail Mounting from Bottom)



Size	Dimensions of Rail (mm)					
	W_R	H_R	S	h	P	E
CGR15T	15	16.2	M5X0.8P	8	60	20
CGR20T	20	20.55	M6X1P	10	60	20
CGR25T	23	24.25	M6X1P	12	60	20
CGR30T	28	28.35	M8X1.25P	15	80	20
CGR35T	34	31.85	M8X1.25P	17	80	20
CGR45T	45	39.85	M12X1.75P	24	105	22.5

(6) Dimension of cover strip and plastic end jig

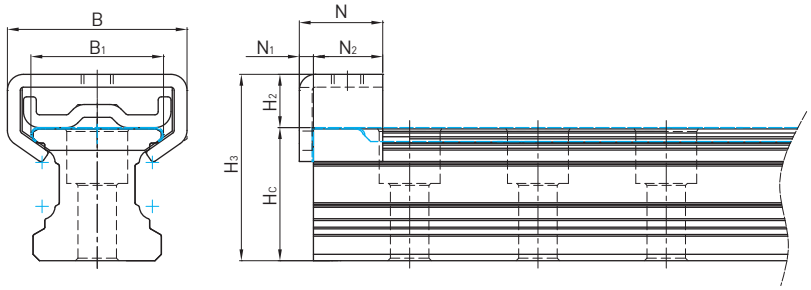
- plastic end jig (standard)



Size	H_3	H_C[1]	H_2	N	N_1	N_2	B	B_1
CG 15	20.8	16.4	4.4	13.0	3.7	9.3	20.0	15.8
CG 20	25.65	20.75	4.9	13.0	4.0	9.0	27.0	20.7
CG 25	29.55	24.45	5.1	15.0	4.2	10.8	31.5	23.9
CG 30	35.45	28.55	6.9	21.0	6.0	15.0	40.0	28.9
CG 35	40.75	32.05	8.7	21.5	6.2	15.3	46.0	34.8
CG 45	48.3	40.05	8.25	22.0	6.2	15.8	51.6	45.6

Note : 1. Dimension H_C with cover strip

- Metal end jig (optional)



Size	H_3	H_C[1]	H_2	N	N_1	N_2	B	B_1
CG 15	20.09	16.4	3.69	15.0	2.2	12.8	21.0	15.8
CG 20	29.05	20.75	8.3	13.0	2.2	10.8	28.0	20.7
CG 25	34.42	24.45	9.97	15.0	2.2	12.8	30.6	23.9
CG 30	37.80	28.55	9.25	12.0	2.2	9.8	34.0	28.9
CG 35	43.2	32.05	11.15	18.0	2.2	15.8	35.4	34.8
CG 45	52.66	40.05	12.61	18.0	2.2	15.8	53.6	45.6

Note : 1. Dimension H_C with cover strip

2-8-11 Cautions for Installation

(1) Shoulder heights and fillets

Improper shoulder heights and fillets of mounting surfaces will cause a deviation in accuracy and the interference with the chamfered part of the rail or block. As long as the recommended shoulder heights and fillets are followed, installation inaccuracies should be eliminated.

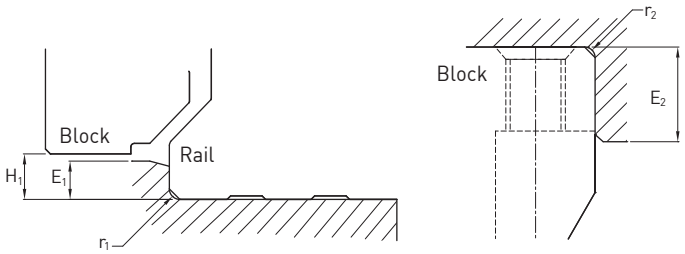


Table 2-8-22 **Shoulder Heights and Fillets**

Size	Max. radius of fillets r_1 (mm)	Max. radius of fillets r_2 (mm)	Shoulder height of the rail E_1 (mm)	Shoulder height of the block E_2 (mm)	Clearance under block H_1 (mm)
CG 15	0.5	0.5	3.0	4.0	4.3
CG 20	0.5	0.5	3.5	5.0	4.6
CG 25	1.0	1.0	5.0	5.0	5.5
CG 30	1.0	1.0	5.0	5.0	6.0
CG 35	1.0	1.0	6.0	6.0	7.5
CG 45	1.0	1.0	8.0	8.0	9.5

(2) Tightening Torque of Bolts for Installation

Improper tightening of bolts will seriously influence the accuracy of Linear Guideway installation. The following tightening torques for different sizes of bolts are recommended.

Table 2-8-23 **Mounting Torque**

Size	Bolt size	Torque N-cm (kgf-cm)		
		Iron	Casting	Aluminum
CG 15	M4×0.7P×16L	392(40)	274(28)	206(21)
CG 20	M5×0.8P×16L	883(90)	588(60)	441(45)
CG 25	M6×1P×20L	1373(140)	921(94)	686(70)
CG 30	M8×1.25P×25L	3041(310)	2010(205)	1470(150)
CG 35	M8×1.25P×25L	3041(310)	2010(205)	1470(150)
CG 45	M12×1.75P×35L	11772(1200)	7840(800)	5880(600)

Note : 1 kgf = 9.81N

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2-8-9 Friction

The maximum value of resistance per end seal are as shown in the table.

Table 2-8-19 **Seal Resistance**

Size	Resistance N (kgf)	Size	Resistance N (kgf)
CG15	0.98 (0.1)	CG30	3.43 (0.35)
CG20	1.96 (0.2)	CG35	3.92 (0.4)
CG25	3.43 (0.35)	CG45	4.9 (0.5)

Note : 1 kgf = 9.81N
Other specifications please contact HIWIN

2-8-10 The Accuracy Tolerance of Mounting Surface

CG rail designed with DB type (also known as o arrangemnt) which has better moment load capacity. Moreover, The CG series can compensate for some suface-error on installation and still maintain smooth linear motion due to circular-arc contact design.

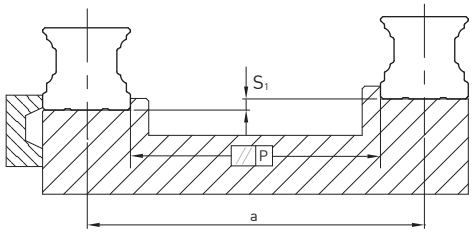

Table 2-8-20 **Max. Parallelism Tolerance (P)** unit: μm

Size	Preload classes		
	Z0	ZA	ZB
CG15	9	5	4
CG20	11	7	5
CG25	12	8	6
CG30	14	9	7
CG35	15	11	8
CG45	19	12	10

- The accuracy tolerance of reference surface height (S_1)

$$S_1 = K \cdot 10^{(-4)} \cdot a - T_H$$

S_1 : Max. tolerance of height
a : Distance between paired rails
K : Coefficient of tolerance of height
T_H : dimensional tolerance of height,please refer to accuracy class

Table 2-8-21 **Coefficient of tolerance of height**

Size	Preload classes		
	Light Preload (Z0)	Medium Preload (ZA)	Heavy Preload (ZB)
K [μm/mm]	2.8	1.7	1.2