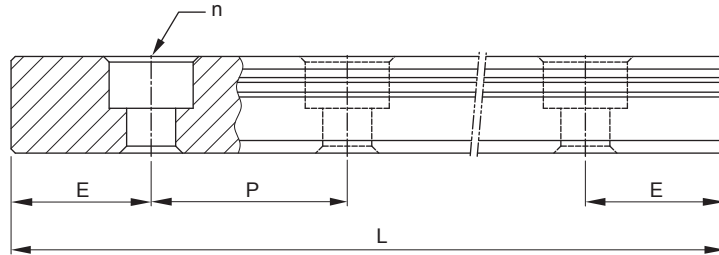


2-4-17 Standard and Maximum Lengths of Rail

Hiwin offers standard lengths of rail for instant requirements. For non-standard rail lengths, it's recommended that the E value is no greater than 1/2 of the pitch(P) to prevent instability at the end of the rail, and the E value should be no less than Emin to avoid a broken mounting hole.



$$L = (n - 1) \times P + 2 \times E \quad \text{Eq.2.4}$$

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 2-4-15

unit: mm

Item	MGNR3	MGNR5	MGNR7	MGNR9	MGNR12	MGNR15	MGWR2	MGWR3	MGWR5	MGWR7	MGWR9	MGWR12	MGWR14	MGWR15
Standard Length L (n)	30(3)	40(3)	40(3)	55(3)	70(3)	70(2)	40(4)	40(3)	50(3)	50(2)	80(3)	110(3)	110(3)	110(3)
	40(4)	55(4)	55(4)	75(4)	95(4)	110(3)	60(6)	55(4)	70(4)	80(3)	110(4)	150(4)	150(4)	150(4)
	50(5)	70(5)	70(5)	95(5)	120(5)	150(4)	70(7)	70(5)	90(5)	110(4)	140(5)	190(5)	190(5)	190(5)
	60(6)	100(7)	85(6)	115(6)	145(6)	190(5)	80(8)	100(7)	110(6)	140(5)	170(6)	230(6)	230(6)	230(6)
	80(8)	130(9)	100(7)	135(7)	170(7)	230(6)	100(10)	130(9)	130(7)	170(6)	200(7)	270(7)	270(7)	270(7)
	100(10)	160(11)	130(9)	155(8)	195(8)	270(7)		160(11)	150(8)	200(7)	230(8)	310(8)	310(8)	310(8)
				175(9)	220(9)	310(8)			170(9)	260(9)	260(9)	350(9)	350(9)	350(9)
				195(10)	245(10)	350(9)				290(10)	290(10)	390(10)	390(10)	390(10)
				275(14)	270(11)	390(10)					350(14)	430(11)	430(11)	430(11)
				375(19)	320(13)	430(11)					500(19)	510(13)	510(13)	510(13)
					370(15)	470(12)					710(24)	590(15)	590(15)	590(15)
					470(19)	550(14)					860(29)	750(19)	750(19)	750(19)
				570(23)	670(17)						910(23)	910(23)	910(23)	
				695(28)	870(22)						1070(27)	1070(27)	1070(27)	
Pitch (P)	10	15	15	20	25	40	10	15	20	30	30	40	40	40
Distance to End (E _s)	5	5	5	7.5	10	15	5	5	5	10	10	15	15	15
Max. Standard Length	250(24)	250(17)	595(40)	1195(60)	1995(80)	1990(50)	250(24)	250(17)	250(13)	590(20)	1970(66)	1990(50)	1790(45)	1990(50)
Max. Length	250 ⁶	250 ⁶	600	1200 ⁷	2000	2000	250 ⁶	250 ⁶	250 ⁶	600 ⁸	2000	2000	1800	2000

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 indicates the max. rail length with standard E value on both sides.

3. Fixing screws for MGN5's mounting holes are appended.

4. If smaller E value is needed, please contact HIWIN.

5. MGWR14 is only supplied with carbon steel.

6. MGWR2, MGNR3, MGWR3, MGNR5, MGWR5 are only supplied with stainless steel.

7. MGNR9 of stainless steel is supplied with the maximum length of 1200mm; MGNR9 of carbon steel is supplied with the maximum length of 1000mm.

8. MGWR7 of stainless steel is supplied with the maximum length of 600mm; MGWR7 of carbon steel is supplied with the maximum length of 2000mm .

MG Series

Miniature Type

2-4-16 Cautions for Installation

- Shoulder heights and fillets

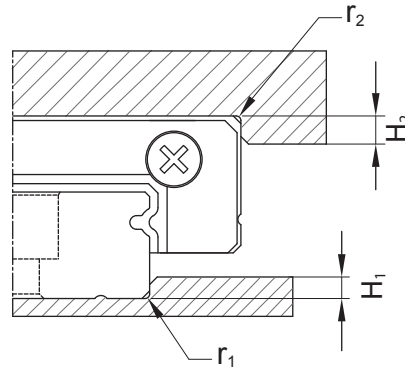


Table 2-4-13 Shoulder Heights and Fillets

Size	Max. radius of fillets r_1 (mm)	Max. radius of fillets r_2 (mm)	Shoulder height H_1 (mm)	Shoulder height H_2 (mm)
MGN3	0.1	0.2	0.6	1.5
MGN5	0.1	0.2	1.2	2
MGN7	0.2	0.2	1.2	3
MGN9	0.2	0.3	1.7	3
MGN12	0.3	0.4	1.7	4
MGN15	0.5	0.5	2.5	5
MGW2	0.1	0.2	0.6	1.5
MGW3	0.1	0.2	0.6	2
MGW5	0.1	0.2	1.2	2
MGW7	0.2	0.2	1.7	3
MGW9	0.3	0.3	2.5	3
MGW12	0.4	0.4	3	4
MGW14	0.4	0.4	3	5
MGW15	0.4	0.8	3	5

- Tightening torque of bolts for installation

Improper tightening of rail mounting bolts will seriously affect the accuracy of the linear guideway. The following table lists the recommended tightening torque for the specific bolt sizes.

Table 2-4-14 Tightening Torque

Size	Bolt size	Torque, N-cm (kgf-cm)		
		Iron	Casting	Aluminum
MGN5	M2×0.4P×6L	57(5.9)	39.2(4)	29.4(3)
MGN7	M2×0.4P×6L	57(5.9)	39.2(4)	29.4(3)
MGN9	M3×0.5P×8L	186(19)	127(13)	98(10)
MGN12	M3×0.5P×8L	186(19)	127(13)	98(10)
MGN15	M3×0.5P×10L	186(19)	127(13)	98(10)
MGW3	M2×0.4P×6L	57(5.9)	39.2(4)	29.4(3)
MGW5	M2.5×0.45P×7L	118(12)	78.4(8)	58.8(6)
MGW7	M3×0.5P×6L	186(19)	127(13)	98(10)
MGW9	M3×0.5P×8L	186(19)	127(13)	98(10)
MGW12	M4×0.7P×8L	392(40)	274(28)	206(21)
MGW14	M4×0.7P×8L	392(40)	274(28)	206(21)
MGW15	M4×0.7P×10L	392(40)	274(28)	206(21)

Note : 1 kgf = 9.81 N

● Bolt caps for rail mounting holes

Rail mounting hole caps prevent foreign matter from accumulating in the mounting holes. Caps are included with the rail package.

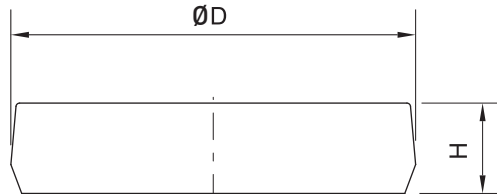


Table 2-4-9 Dimensions of Bolt Caps for Rail Mounting Holes

Rail size	Bolt size	Diameter(D) (mm)	Thickness(H) (mm)
MGN12	M3	6.15	1.2
MGN15	M3	6.15	1.2
MGW12	M4	8.15	2.2
MGW15	M4	8.15	2.2

2-4-15 Mounting Surface Accuracy Tolerance

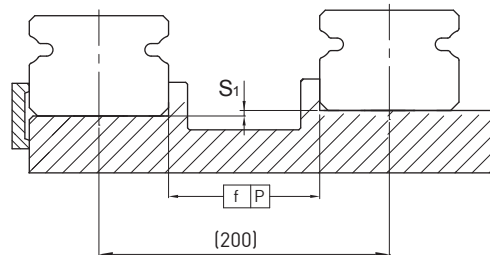


Table 2-4-10 Max. Parallelism Tolerance (P)

unit: μm

Size	Preload classes			Size	Preload classes		
	ZF	Z0	Z1		ZF	Z0	Z1
MG2	2	2	2	MG9	4	4	3
MG3	2	2	2	MG12	9	9	5
MG5	2	2	2	MG14	10	10	6
MG7	3	3	3	MG15	10	10	6

Table 2-4-11 Max. Tolerance of Reference Surface Height (S_1)

unit: μm

Size	Preload classes			Size	Preload classes		
	ZF	Z0	Z1		ZF	Z0	Z1
MG2	15	15	2	MG9	35	35	6
MG3	15	15	2	MG12	50	50	12
MG5	20	20	2	MG14	60	60	20
MG7	25	25	3	MG15	60	60	20

Table 2-4-12 Permissible Error of Mounting Surface

unit: mm

Size	Flatness of the Mounting Surface	Size	Flatness of the Mounting Surface
MG2	0.012/200	MG9	0.035/200
MG3	0.012/200	MG12	0.050/200
MG5	0.015/200	MG14	0.060/200
MG7	0.025/200	MG15	0.060/200

Note: The values above are suitable for preload of ZF/Z0. For preload of Z1 or using two(or more) rails on the same plane, 50% or less of the values above are recommended.