

2-9-12 Standard and Maximum Lengths of Rail

HIWIN offers a number of standard rail lengths. Standard rail lengths feature end mounting hole placements set to predetermined values (E). For non-standard rail lengths, be sure to specify the E-value to be no greater than 1/2 the pitch (P) dimension. An E-value greater than this will result in unstable rail ends.

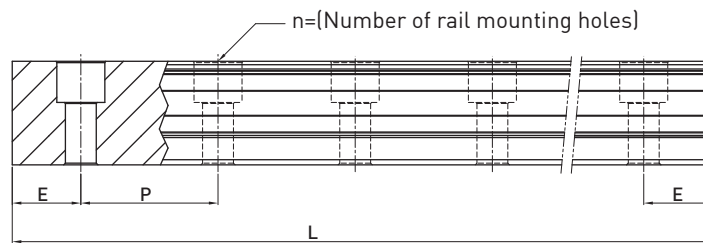


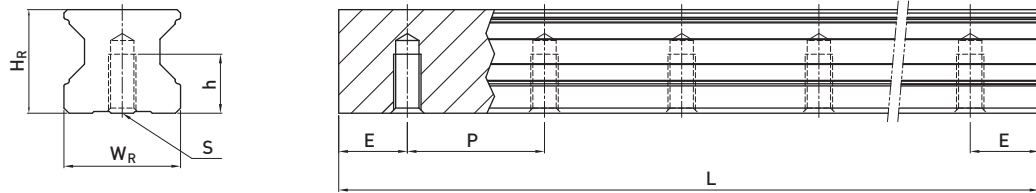
Table 2-9-28

unit: mm

| Item | RGR15 | RGR20 | RGR25 | RGR30 | RGR35 | RGR45 | RGR55 | RGR65 |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|--------------|------------|------------|
| Standard Length L(n) | 160 (5) | 220 (7) | 220 (7) | 280 (7) | 280 (7) | 570 (11) | 780 (13) | 1,270 (17) |
| | 220 (7) | 280 (9) | 280 (9) | 440 (11) | 440 (11) | 885 (17) | 1020 (17) | 1,570 (21) |
| | 340 (11) | 340 (11) | 340 (11) | 600 (15) | 600 (15) | 1,200 (23) | 1,260 (21) | 2,020 (27) |
| | 460 (15) | 460 (15) | 460 (15) | 760 (19) | 760 (19) | 1,620 (31) | 1,500 (25) | 2,620 (35) |
| | 580 (19) | 640 (21) | 640 (21) | 1,000 (25) | 1,000 (25) | 2,040 (39) | 1,980 (33) | - |
| | 700 (23) | 820 (27) | 820 (27) | 1,640 (41) | 1,640 (41) | 2,460 (47) | 2,580 (43) | - |
| | 940 (31) | 1000 (33) | 1,000 (33) | 2,040 (51) | 2,040 (51) | 2,985 (57) | 2,940 (49) | - |
| | 1120 (37) | 1180 (39) | 1,240 (41) | 2,520 (63) | 2,520 (63) | 3,090 (59) | 3,060 (51) | - |
| | 1360 (45) | 1360 (45) | 1,600 (53) | 3,000 (75) | 3,000 (75) | - | - | - |
| Pitch (P) | 30 | 30 | 30 | 40 | 40 | 52.5 | 60 | 75 |
| Distance to End (E _s) | 20 | 20 | 20 | 20 | 20 | 22.5 | 30 | 35 |
| Max. Standard Length | 4,000 (133) | 4,000 (133) | 4,000 (133) | 4,000 (100) | 4,000 (100) | 3,982.5 (76) | 3,960 (66) | 3,970 (53) |
| Max. Length | 4,000 | 4,000 | 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.

(6) Dimensions for RGR-T (Rail Mounting from Bottom)



| Model No. | Dimensions of Rail (mm) | | | | | | Weight |
|-----------|-------------------------|-------|-----------|----|------|------|--------|
| | W_R | H_R | S | h | P | E | (kg/m) |
| RGR15T | 15 | 16.5 | M5×0.8P | 8 | 30 | 20 | 1.86 |
| RGR20T | 20 | 21 | M6×1P | 10 | 30 | 20 | 2.76 |
| RGR25T | 23 | 23.6 | M6×1P | 12 | 30 | 20 | 3.36 |
| RGR30T | 28 | 28 | M8×1.25P | 15 | 40 | 20 | 4.82 |
| RGR35T | 34 | 30.2 | M8×1.25P | 17 | 40 | 20 | 6.48 |
| RGR45T | 45 | 38 | M12×1.75P | 24 | 52.5 | 22.5 | 10.83 |
| RGR55T | 53 | 44 | M14×2P | 24 | 60 | 30 | 15.15 |
| RGR65T | 63 | 53 | M20×2.5P | 30 | 75 | 35 | 21.24 |

RG Series

High Rigidity Roller Type

2-9-11 Cautions for Installation

(1) Shoulder heights and fillets

Improper shoulder heights and fillets of mounting surfaces will cause a deviation in accuracy and interference with the chamfered part of the rail or block.

By following the recommended shoulder heights and fillets, accuracy problems in installation can be eliminated.

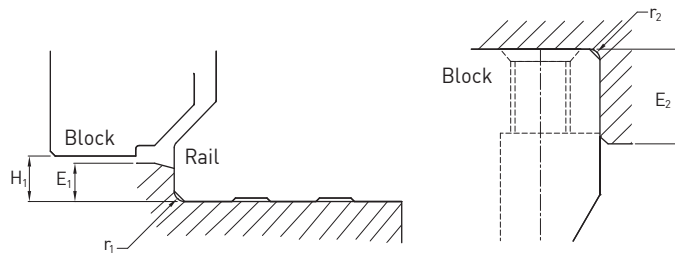


Table 2-9-26

| 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) |
|------|--------------------------------------|--------------------------------------|-------------------------------------------|--------------------------------------------|-------------------------------------|
| RG15 | 0.5 | 0.5 | 3 | 4 | 4 |
| RG20 | 0.5 | 0.5 | 3.5 | 5 | 5 |
| RG25 | 1.0 | 1.0 | 5 | 5 | 5.5 |
| RG30 | 1.0 | 1.0 | 5 | 5 | 6 |
| RG35 | 1.0 | 1.0 | 6 | 6 | 6.5 |
| RG45 | 1.0 | 1.0 | 7 | 8 | 8 |
| RG55 | 1.5 | 1.5 | 9 | 10 | 10 |
| RG65 | 1.5 | 1.5 | 10 | 10 | 12 |

(2) Tightening Torque of Mounting Bolts

Improper tightening of mounting bolts will seriously influence the accuracy of a linear guideway. The following tightening torque for the different sizes of bolt is recommended.

Table 2-9-27

| Size | Bolt size | Torque N-cm(kgf-cm) | | |
|------|---------------|---------------------|--------------|-------------|
| | | Iron | Casting | Aluminum |
| RG15 | M4×0.7P×16L | 392 [40] | 274 [28] | 206 [21] |
| RG20 | M5×0.8P×20L | 883 [90] | 588 [60] | 441 [45] |
| RG25 | M6×1P×20L | 1373 [140] | 921 [94] | 686 [70] |
| RG30 | M8×1.25P×25L | 3041 [310] | 2010 [205] | 1470 [150] |
| RG35 | M8×1.25P×25L | 3041 [310] | 2010 [205] | 1470 [150] |
| RG45 | M12×1.75P×35L | 11772 [1200] | 7840 [800] | 5880 [600] |
| RG55 | M14×2P×45L | 15696 [1600] | 10500 [1100] | 7840 [800] |
| RG65 | M16×2P×50L | 19620 [2000] | 13100 [1350] | 9800 [1000] |

RG Series

High Rigidity Roller Type

2-9-9 Friction

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

Table 2-9-23 Seal Resistance

| Size | Resistance N (kgf) | Size | Resistance N (kgf) |
|------|--------------------|------|--------------------|
| RG15 | 2.45 (0.25) | RG35 | 4.61 (0.47) |
| RG20 | 2.9 (0.3) | RG45 | 4.91 (0.5) |
| RG25 | 3.43 (0.35) | RG55 | 5.89 (0.6) |
| RG30 | 4.22 (0.43) | RG65 | 7.36 (0.75) |

Note: 1. 1kgf=9.81N
 2. Please inform HIWIN if low friction request is required.

2-9-10 The Accuracy Tolerance of Mounting Surface

(1) The accuracy tolerance of rail-mounting surface

As long as the accuracy requirements of the mounting surfaces shown in the following tables are met, the high accuracy, high rigidity and long life of the RG series linear guideway will be maintained without any difficulty.

- The parallelism tolerance of reference surface (P)

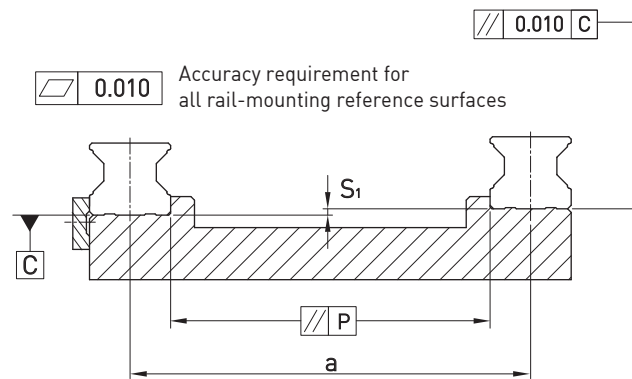


Table 2-9-24 Max. Parallelism Tolerance (P)

unit: μm

| Size | Preload classes | | |
|------|--------------------|---------------------|--------------------|
| | Light Preload (Z0) | Medium Preload (ZA) | Heavy Preload (ZB) |
| RG15 | 5 | 3 | 3 |
| RG20 | 8 | 6 | 4 |
| RG25 | 9 | 7 | 5 |
| RG30 | 11 | 8 | 6 |
| RG35 | 14 | 10 | 7 |
| RG45 | 17 | 13 | 9 |
| RG55 | 21 | 14 | 11 |
| RG65 | 27 | 18 | 14 |

- The accuracy tolerance of reference surface height (S_1)

$$S_1 = a \times K$$

S_1 : Max. tolerance of height

a : Distance between paired rails

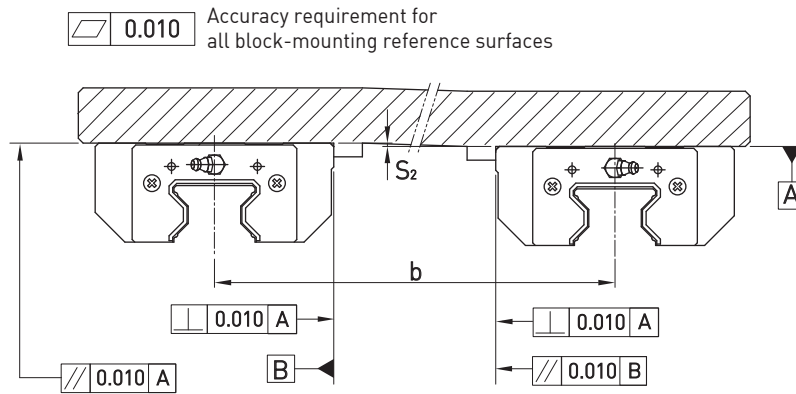
K : Coefficient of tolerance of height

Table 2-9-25 Coefficient of tolerance of height

| Size | Preload classes | | |
|------|----------------------|----------------------|----------------------|
| | Light Preload (Z0) | Medium Preload (ZA) | Heavy Preload (ZB) |
| K | 2.2×10^{-4} | 1.7×10^{-4} | 1.2×10^{-4} |

(2) The accuracy tolerance of block-mounting surface

- The tolerance of the height of reference surface when two or more pieces are used in parallel (S_2)

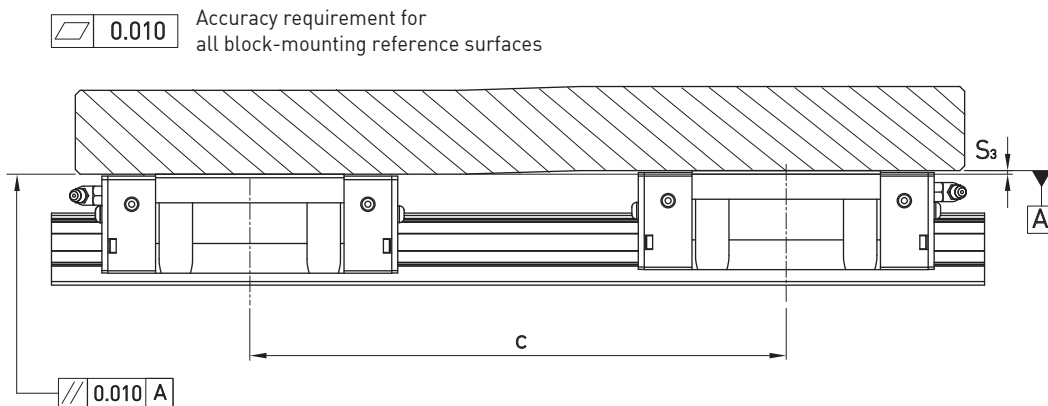


$$S_2 = b \times 4.2 \times 10^{-5}$$

S_2 : Max. tolerance of height

b : Distance between paired blocks

- The tolerance of the height of reference surface when two or more pieces are used in parallel (S_3)



$$S_3 = c \times 4.2 \times 10^{-5}$$

S_3 : Max. tolerance of height

c : Distance between paired blocks