

MG Series

Miniature Type

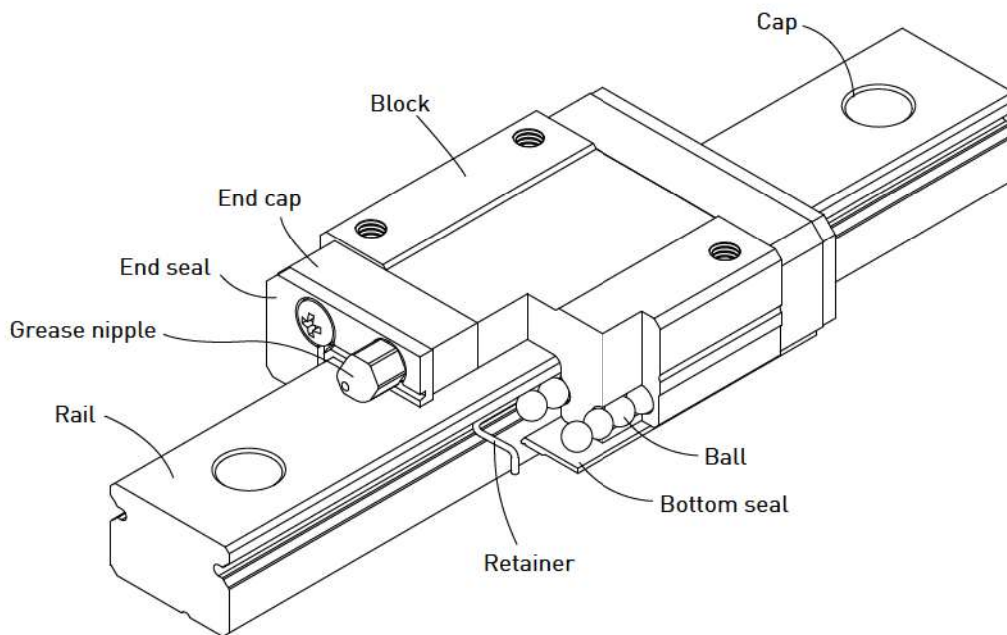
2-4 MG Series - Miniature Linear Guideway

2-4-1 Features of MGN Series

Design features of narrow type miniature guideways- MGN:

1. Tiny and light weight, suitable for miniature equipment.
2. Gothic arch contact design can sustain loads from all directions and offer high rigidity and high accuracy.
3. Specification with ball retainers would avoid ball falling when the blocks are removed from rails.
4. Interchangeable types are available in certain sizes and precision grades.

2-4-2 Construction of MGN Series



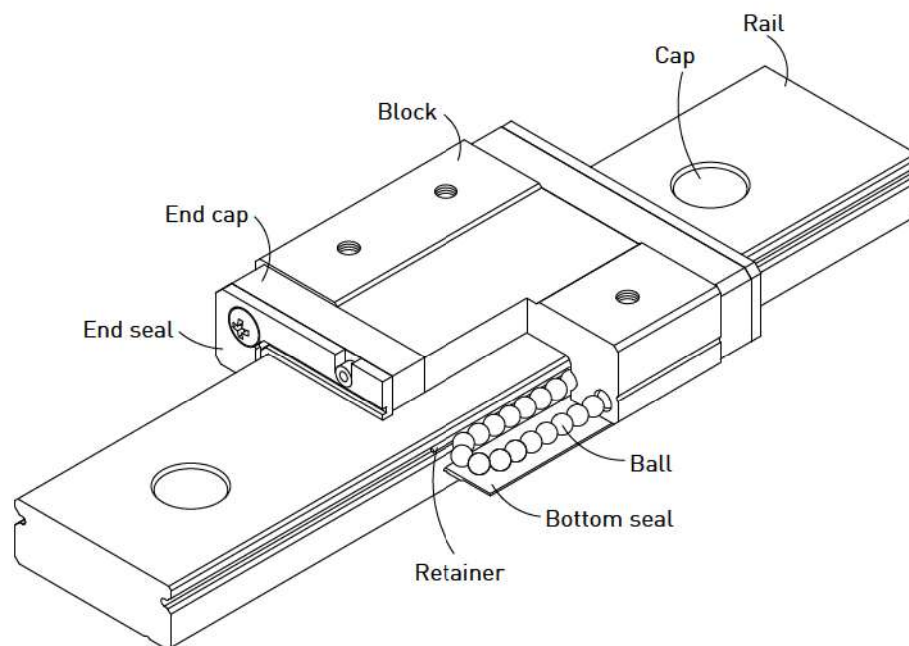
- Rolling circulation system: Block, rail, ball, end cap and retainer (except size 2, 3)
- Lubrication system: Grease nipple is available for MGN15, lubricated by grease gun. MGN7, 9, 12 are lubricated by the hole at the side of the end cap.
- Dust protection system: End seal (except size 2), bottom seal (optional size 9,12,15), cap (size 12,15)

2-4-3 Features of MGW Series

Design features of wide type miniature guideways- MGW:

1. The enlarged width design increases the capacity of moment loading.
2. Gothic arch contact design has high rigidity characteristic in all directions.
3. Specification with ball retainers would avoid ball falling when the blocks are removed from rails.
4. Interchangeable types are available in certain sizes and precision grades.

2-4-4 Construction of MGW Series



- Rolling circulation system: Block, rail, ball, end cap and retainer (except size 2)
- Lubrication system: Grease nipple is available for MGW14, 15, lubricated by grease gun. MGW3, 7, 9, 12 are lubricated by the hole at the side of the end cap.
- Dust protection system: End seal (except size 2), bottom seal (optional size 9,12,14,15), cap (size12,14,15)

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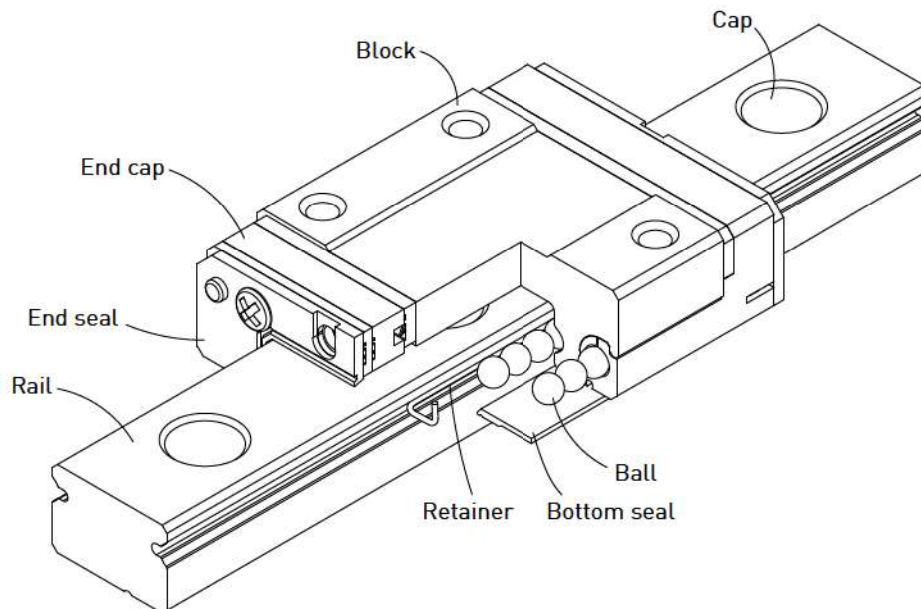
Miniature Type

2-4-5 Features of MGN-0 Series

Design features of narrow type miniature guideways- MGN-0:

1. Reduce 20% weight of block by using resin in the recirculation unit. The compact size and light weight is suitable for miniaturized machinery.
2. Gothic arch contact design can sustain loads from all directions and offer high rigidity and high accuracy.
3. Interchangeable types are available in certain precision grades.
4. The design of resin recirculation unit which is able to eliminate the collision with the metal block.
5. Integrated design for recirculation system.

2-4-6 Construction of MGN-0 Series



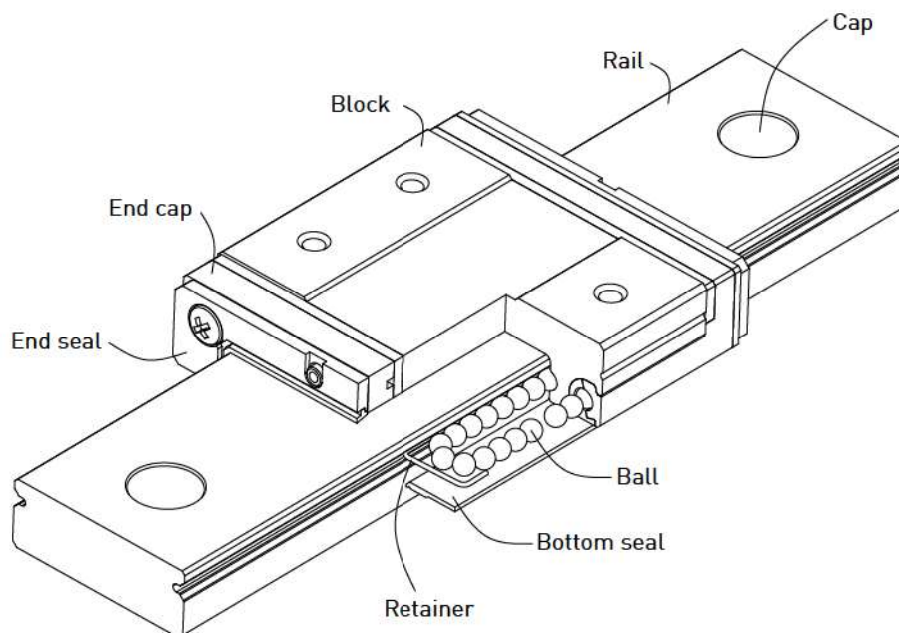
- Rolling circulation system: Block, rail, ball, end cap and retainer
- Lubrication system: Grease nipple is available for MGN15-0, lubricated by grease gun. MGN5-0, MGN7-0, MGN9-0, MGN12-0 are lubricated by the hole at the side of the end cap.
- Dust protection system: End seal, bottom seal (optional size 9,12,15), cap (size12,15)

2-4-7 Features of MGW-O Series

Design features of wide type miniature guideways- MGW-O:

1. The enlarged width design increases the capacity of moment loading.
2. Gothic arch contact design has high rigidity characteristic in all directions.
3. Steel balls are held by a miniature retainer to keep balls from falling out, even when the blocks are removed from the rail.
4. Integrated design for recirculation system, which reduce 20% weight of block by using resin in the recirculation unit.

2-4-8 Construction of MGW-O Series



- Rolling circulation system: Block, rail, ball, end cap and retainer
- Lubrication system: Grease nipple is available for MGW15-O, lubricated by grease gun. MGW5-O, MGW7-O, MGW9-O, MGW12-O are lubricated by the hole at the side of the end cap.
- Dust protection system: End seal, bottom seal (optional size 9, 12, 15), cap (size12, 15)

2-4-9 Application

MGN/MGW series can be used in various applications, such as semiconductor equipment, PCB /IC equipment, medical, robotics, measuring equipment, automation equipment, and other miniature sliding machinery.

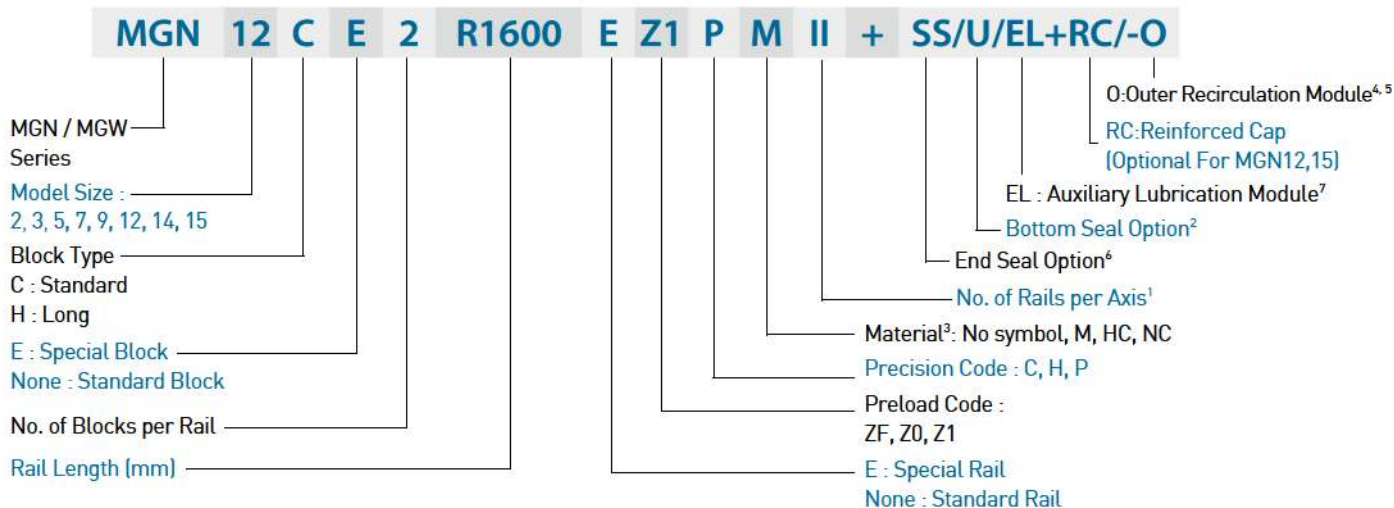
2-4-10 Model Number of MG Series

MG Series linear guideway can be classified into non-interchangeable and interchangeable types, which are the same size. The interchangeable type is more convenient due to replaceable rails; however, the precision is less than non-interchangeable type. With strict dimension and quality control, the interchangeable type linear guideways are a suitable choice for customers when rails don't need to be paired. The model number contains information for the size, type, accuracy, preload, and so on.

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Miniature Type

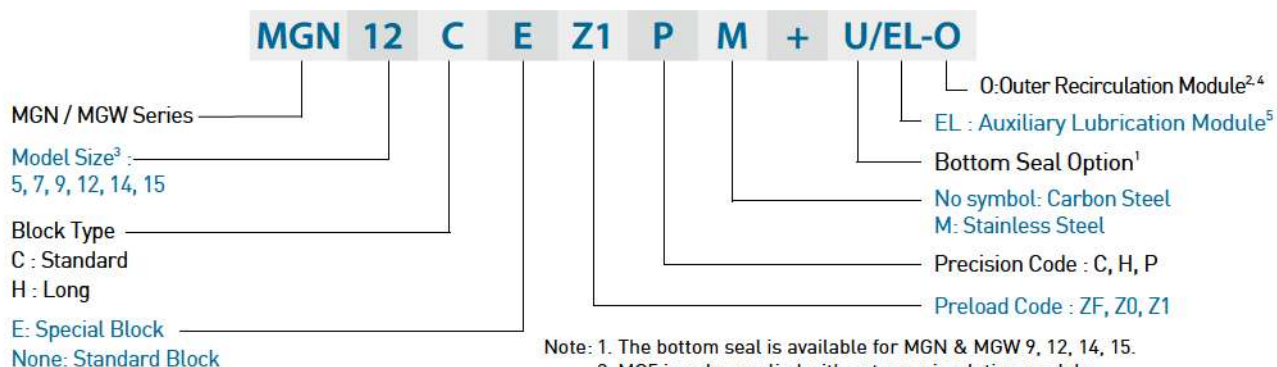
(1) Non-interchangeable type



- Note: 1. Symbol for No. of rails used on the same plane.
 No symbol indicates single rail in a axis.
 2. The bottom seal is available for MGN & MGW 9, 12, 14, 15.
 3. No symbol: Carbon Steel
 M: Stainless Steel
 HC: Carbon Steel+Hard Chrome Treatment
 NC: Carbon Steel+hicoating Treatment
 4. MG5 is only supplied with outer recirculation module.
 5. MG2, MG3 and MGW14 are only supplied without outer recirculation module.
 6. The end seal is optional for MGN3, and it's available for SS symbol.
 7. The available size for EL auxiliary lubrication module are , MGN7,9,12 & MGW9,12.

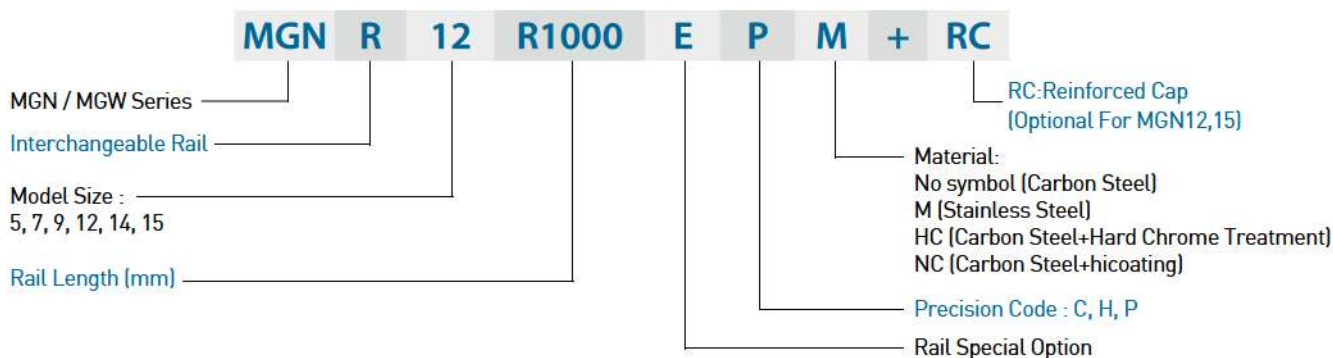
(2) Interchangeable type

Interchangeable Block



- Note: 1. The bottom seal is available for MGN & MGW 9, 12, 14, 15.
 2. MG5 is only supplied with outer recirculation module.
 3. No interchangeable offer of MG2 and MG3.
 4. MGW14 is only supplied without outer recirculation module.
 5. The available size for EL auxiliary lubrication module are , MGN7,9,12 & MGW9,12.

Interchangeable Rail

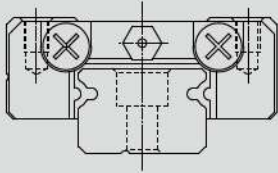
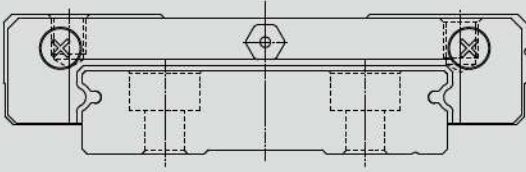


2-4-11 Types

(1) Block types

HIWIN offers two types of linear guideways, flange and square types.

Table 2-4-1 Block Types

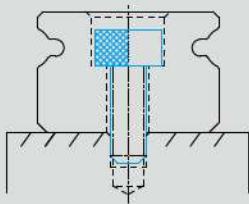
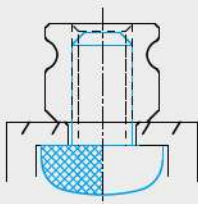
Type	Model	Shape	Height (mm)	Rail Length (mm)	Main Applications
Square	MGN-C MGN-H		3.2	30	- Printer - Robotics - Precision measure equipment - Semiconductor equipment
			↓	↓	
			16	2000	
Flange	MGW-C MGW-H		4	40	
			↓	↓	
			16	2000	

*Please refer to the chapter 2-4-14 for the dimensional detail.

(2) Rail types

HIWIN offers standard top mounting and bottom mounting type.

Table 2-4-2 Rail Types

Mounting from Top	Mounting from bottom (MGN2, MGN3)
	

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2-4-12 Accuracy Classes

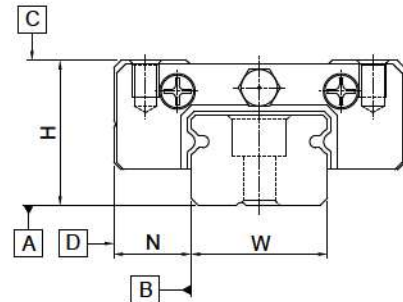
The accuracy of MGN/MGW series can be classified into three classes: normal (C), high (H), precision (P). Choices for different accuracy classes are available according to various requirements.

(1) Accuracy of non-interchangeable guideways

Table 2-4-3 Accuracy Standard of Non-interchangeable Type

Accuracy Classes	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.04	± 0.02	± 0.01
Dimensional tolerance of width N	± 0.04	± 0.025	± 0.015
Pair Variation of height H	0.03	0.015	0.007
Pair Variation of width N (Master Rail)	0.03	0.02	0.01
Running parallelism of block surface C to surface A	See Table 2-4-5		
Running parallelism of block surface D to surface B	See Table 2-4-5		

Unit: mm



(2) Accuracy of interchangeable guideways

Table 2-4-4 Accuracy Standard of Interchangeable Type

Accuracy Classes	Normal (C)	High (H)	Precision (P)
Dimensional tolerance of height H	± 0.04	± 0.02	± 0.01
Dimensional tolerance of width N	± 0.04	± 0.025	± 0.015
One Set	Pair Variation of height H	0.015	0.007
	Pair Variation of width N	0.02	0.01
Pair Variation of width N (Master Rail)	0.07	0.04	0.02
Running parallelism of block surface C to surface A	See Table 2-4-5		
Running parallelism of block surface D to surface B	See Table 2-4-5		

Unit: mm

(3) Accuracy of running parallelism

The running parallelism C to A and D to B are related to the rail length.

Table 2-4-5 Accuracy of Running Parallelism

Rail Length				Accuracy (μm)			
(mm)	(C)	(H)	(P)	(mm)	(C)	(H)	(P)
~ 50	12	6	2	1,000 ~ 1,200	25	18	11
50 ~ 80	13	7	3	1,200 ~ 1,300	25	18	11
80 ~ 125	14	8	3.5	1,300 ~ 1,400	26	19	12
125 ~ 200	15	9	4	1,400 ~ 1,500	27	19	12
200 ~ 250	16	10	5	1,500 ~ 1,600	28	20	13
250 ~ 315	17	11	5	1,600 ~ 1,700	29	20	14
315 ~ 400	18	11	6	1,700 ~ 1,800	30	21	14
400 ~ 500	19	12	6	1,800 ~ 1,900	30	21	15
500 ~ 630	20	13	7	1,900 ~ 2,000	31	22	15
630 ~ 800	22	14	8	2,000 ~	31	22	16
800 ~ 1,000	23	16	9				

2-4-13 Preload

MGN/MGW series provides three different preload levels for various applications.

Table 2-4-6 Preload Classes

Class	Code	Preload	Accuracy
Light Clearance	ZF	Clearance 4~10μm	C
Very Light Preload	Z0	Clearance 0~3μm	C~P
Light Preload	Z1	0.02C	C~P

Note: "C" in column preload means basic dynamic load rating.

○ Stiffness performance

Stiffness depends on preload. The following table shows stiffness value of each size.

Table 2-4-7 Radial stiffness for MG Series

Load type	Series / Size	Stiffness (N/μm)		Series / Size	Stiffness (N/μm)	
		Z0	Z1		Z0	Z1
Standard	MGN5C-0	20	61	MGW5C-0	32	85
	MGN7C	26	73	MGW7C	44	112
	MGN9C	38	102	MGW9C	62	140
	MGN12C	44	105	MGW12C	72	148
	MGN15C	58	126	MGW15C	85	154
Long	MGN5H-0	26	79	-	-	-
	MGN7H	42	122	MGW7H	64	168
	MGN9H	56	153	MGW9H	81	190
	MGN12H	70	175	MGW12H	102	217
	MGN15H	89	202	MGW15H	122	235

2-4-14 Dust Proof Accessories

End seals on both sides of the block can prevent dust from entering the block and maintain the accuracy and service life of a linear guideway. End seals for MGN3 are optional, customers can order it by adding the mark "+SS" followed by the model number. For other size of MG series, end seals are standard accessories. Bottom seals are fixed under the skirt portion of the block to prevent dust from entering. Customers can order bottom seals by adding the mark "+U" followed by the model number. Sizes 9, 12, 14 and 15 provide bottom seals as an option, but size 2, 3, 5, 7 do not offer the option due to the space limit of H₁. Note that "H₁" would reduced if bottom seals are attached, be aware of possible interference between block and mounting surface.

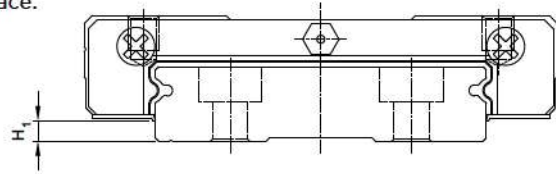


Table 2-4-8

Size	Bottom seal	H ₁ mm	Size	Bottom seal	H ₁ mm
MGN2	-	-	MGW2	-	-
MGN3	-	-	MGW3	-	-
MGN7	-	-	MGW7	-	-
MGN9	●	1	MGW9	●	1.9
MGN12	●	2	MGW12	●	2.4
-	-	-	MGW14	●	2.4
MGN15	●	3	MGW15	●	2.4
MGN5-0	-	-	MGW5-0	-	-
MGN7-0	-	-	MGW7-0	-	-
MGN9-0	●	1.2	MGW9-0	●	1.95
MGN12-0	●	2	MGW12-0	●	2.45
MGN15-0	●	3	MGW15-0	●	2.45

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● 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.

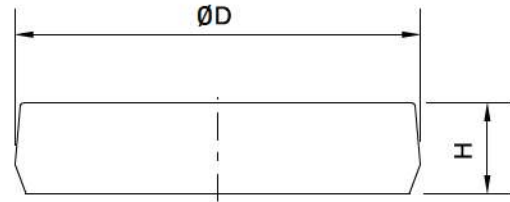


Table 2-4-9 Dimensions of Bolt Caps for Rail Mounting Holes

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
MGW14	M4	8.15	2.2
MGW15	M4	8.15	2.2

2-4-15 Mounting Surface Accuracy Tolerance

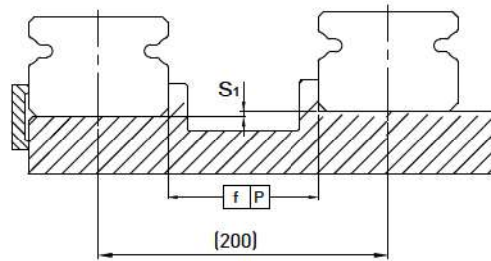


Table 2-4-10 Max. Parallelism Tolerance (P)

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 (S₁)

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.

2-4-16 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 rail or block. As long as the recommended shoulder heights and fillets are followed, installation inaccuracies should be eliminated.

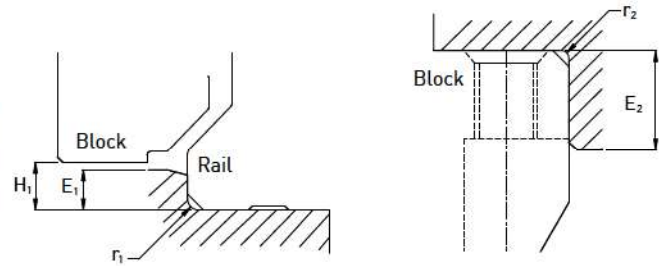


Table 2-4-13 Shoulder Heights and Fillets

Size	Max. radius of fillets r_1 (mm)	Max. radius of fillets r_2 (mm)	Shoulder height beside the rail E_1 (mm)	Shoulder height beside the block E_2 (mm)	Clearance under block H_1 (mm)
MGN2	0.1	0.2	0.5	1.5	0.7
MGN3	0.1	0.2	0.6	1.5	1
MGN5	0.1	0.2	1.2	2	1.5
MGN7	0.2	0.2	1.2	3	1.5
MGN9	0.2	0.3	1.7	3	2
MGN12	0.3	0.4	1.7	4	3
MGN15	0.5	0.5	2.5	5	4
MGW2	0.1	0.2	0.6	1.5	1
MGW3	0.1	0.2	0.6	2	1
MGW5	0.1	0.2	1.2	2	1.5
MGW7	0.2	0.2	1.7	3	1.9
MGW9	0.3	0.3	2.5	3	2.9
MGW12	0.4	0.4	3	4	3.4
MGW14	0.4	0.4	3	5	3.5
MGW15	0.4	0.8	3	5	3.4

(2) 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)
MGW2	M1.6×0.35P×4.4L	27.6(2.8)	19(1.94)	14.2(1.45)
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×10L	392(40)	274(28)	206(21)
MGW15	M4×0.7P×10L	392(40)	274(28)	206(21)

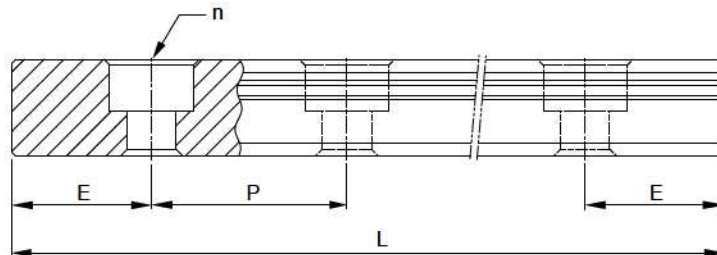
Note : 1 kgf = 9.81 N

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2-4-17 Standard and Maximum Lengths of Rail

HIWIN offers standard lengths of rail for fast shipping. 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 E-min 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	MGNR2	MGNR3	MGNR5	MGNR7	MGNR9	MGNR12	MGNR15	MGWR2	MGWR3	MGWR5	MGWR7	MGWR9	MGWR12	MGWR14	MGWR15
Standard Length L (n)	32(4)	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(5)	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)
	56(7)	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)
	80(10)	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)
	104(13)	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)
Pitch (P)	8	10	15	15	20	25	40	10	15	20	30	30	40	40	40
Distance to End (E)	4	5	5	5	7.5	10	15	5	5	5	10	10	15	15	15
Max. Standard Length	248(31)	250(25)	250(17)	595(40)	1195(60)	1995(80)	1990(50)	250(25)	250(17)	250(13)	590(20)	1970(66)	1990(50)	1790(45)	1990(50)
Max. Length	250 ⁶	250 ⁶	250 ⁶	600	1200 ⁷	2000	2000	250 ⁶	250 ⁶	250 ⁶	600 ⁸	2000	2000	1800 ⁵	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.

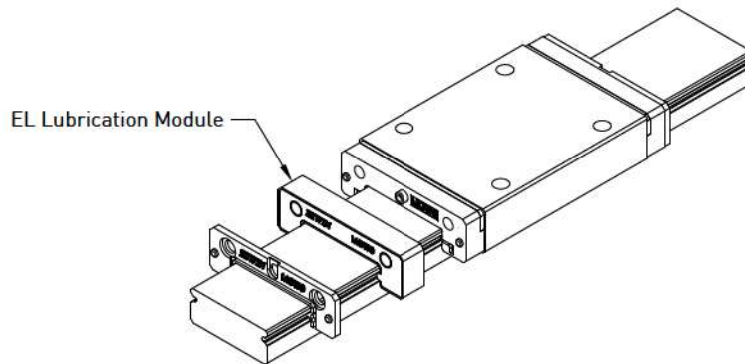
6. MGNR2, MGWR2, MGNR3, MGWR3, MGNR5, MGWR5 are only supplied with stainless steel.

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.

2-4-18 EL Auxiliary Lubrication Module

The EL Auxiliary Lubrication Module is an environment friendly lubrication system that can extend the maintenance life of HIWIN and guideways up to 10,000 km. The module is installed on either end of a guideway block and provides extended lubrication through a no-drip encapsulated material for a cleaner environmental solution.



(1) Feature

1. Extend maintenance period up to 10,000km
2. Contained lubrication fluid prevents spills
3. Direct lubrication in ball rolling raceway.
4. Compatible with most HIWIN guideways.
5. Conform to cleanroom class 1000 regulation.

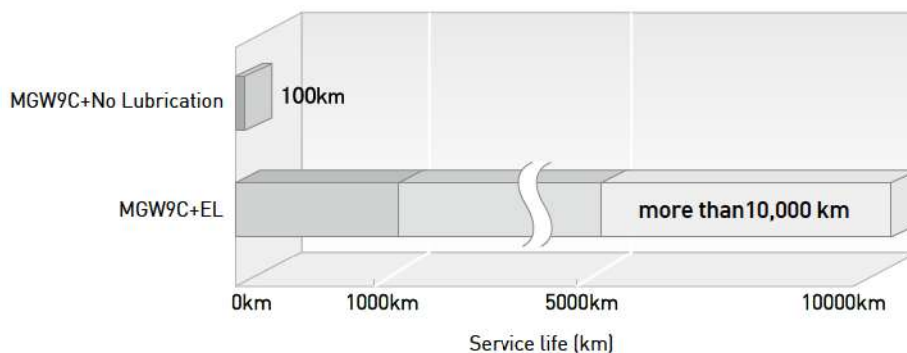
Notes : 1. Service life will vary from application environment, lubrication conditions, and assembly accuracy.
2. Not for use in high heat conditions greater than 50°C, and if lower than 25° C please contact HIWIN.
3. Standard parts must be pregreased with HIWIN G05. If there is no pregreasing, the maintenance mileage will be shortened.

(2) Applications

Broadly applicable in automation, conveying equipment, Industrial machine, Semi-conductor, and inspection machine.

(3) Lubrication Capability

- High speed life testing with light load

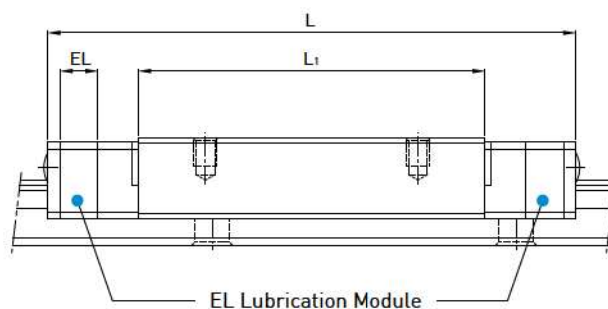


Test Specification	MGW9C1R1000Z0CM+EL
Velocity	5 m/s
Acceleration	50 m/s ²
Applied Load	0.2 kgf
Stroke	850 mm
Lubrication	Lithium Soap Grease+EL
Distance travel	10,000 km

MG Series

Miniature Type

(4) Dimension Table for EL Type



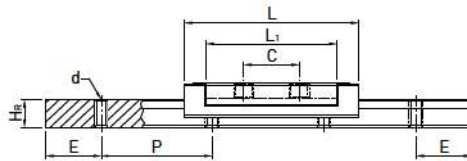
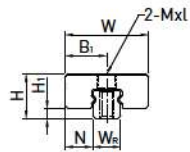
unit : mm

Model No.	Lubrication device (R ₁)	Block length (L ₁)	Total length (L)
MGN7C	3.5	13.5	29.5
MGN7H		21.8	37.8
MGN9C	5	18.9	38.9
MGN9H		29.9	49.9
MGN12C	5	21.7	44.7
MGN12H		32.4	55.4
MGW9C	5	27.5	49.3
MGW9H		38.5	60.7
MGW12C	5	31.3	56.1
MGW12H		45.6	70.4

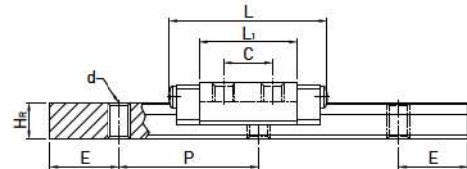
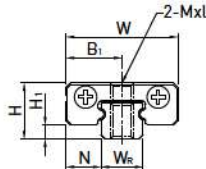
2-4-19 Dimensions for MGN/MGW Series

(1) MGN-C / MGN-H

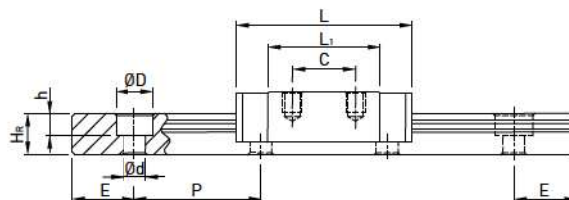
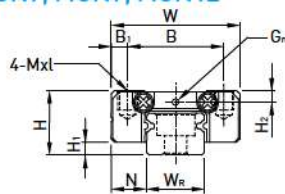
MGN2



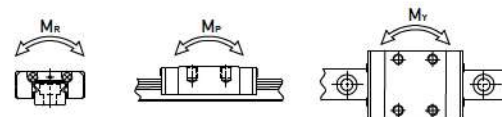
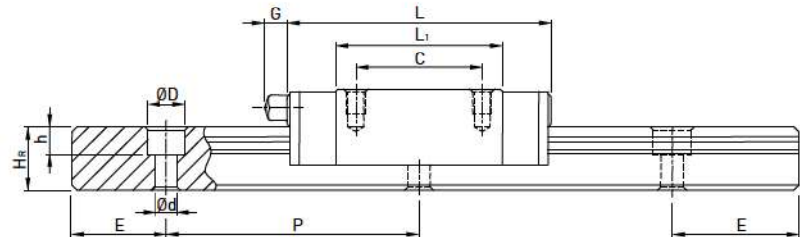
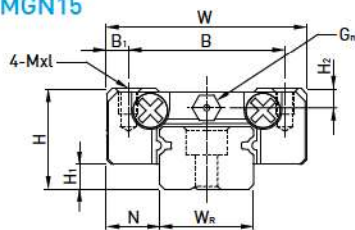
MGN3



MGN7, MGN9, MGN12



MGN15



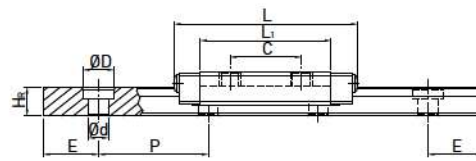
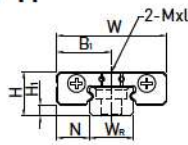
Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)										Dimensions of Rail (mm)						Mounting Bolt for Rail	Basic Dynamic Load Rating	Basic Static Load Rating	Static Rated Moment			Weight		
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _s	MxL	H ₂	W _r	H _r	D	h	d	P	E	(mm)	C(kN)	C _s (kN)	M _r N-m	M _p N-m	M _v N-m	Block kg	Rail kg/m
MGN 2C	3.2	0.7	2	6	-	3	4	9.5	12.5	-	-	M1.4 THRU	-	2	2	M1 THRU	8	4			M1	0.22	0.4	0.42	0.63	0.63	0.001	0.03
MGN 3C	4	1	2.5	8	-	4	3.5	7	11.3	-	-	M1.6x1.3	-	3	2.6	M1.6 THRU	10	5	M1.6	0.29	0.44	0.7	0.5	0.5	0.001	0.05		
MGN 3H							5.5	11	15.3			M2x1.3								0.39	0.68	1.0	1.3	1.3	0.002			
MGN 7C	8	1.5	5	17	12	2.5	8	13.5	22.5	-	Ø1.2	M2x2.5	1.5	7	4.8	4.2	2.3	2.4	15	5	M2x6	0.98	1.24	4.70	2.84	2.84	0.010	0.22
MGN 7H							13	21.8	30.8													1.37	1.96	7.64	4.80	4.80	0.015	
MGN 9C	10	2	5.5	20	15	2.5	10	18.9	28.9	-	Ø1.4	M3x3	1.8	9	6.5	6	3.5	3.5	20	7.5	M3x8	1.86	2.55	11.76	7.35	7.35	0.016	0.38
MGN 9H							16	29.9	39.9													2.55	4.02	19.60	18.62	18.62	0.026	
MGN 12C	13	3	7.5	27	20	3.5	15	21.7	34.7	-	Ø2	M3x3.5	2.5	12	8	6	4.5	3.5	25	10	M3x8	2.84	3.92	25.48	13.72	13.72	0.034	0.65
MGN 12H							20	32.4	45.4													3.72	5.88	38.22	36.26	36.26	0.054	
MGN 15C	16	4	8.5	32	25	3.5	20	26.7	42.1	4.5	M3	M3x4	3	15	10	6	4.5	3.5	40	15	M3x10	4.61	5.59	45.08	21.56	21.56	0.059	1.06
MGN 15H							25	43.4	58.8													6.37	9.11	73.50	57.82	57.82	0.092	

Note : 1. 1 kgf = 9.81N

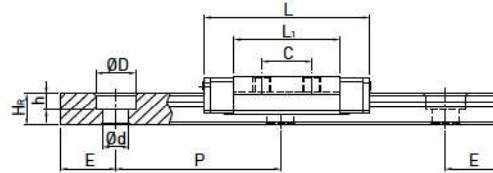
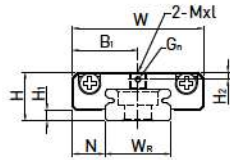
2. MG2, MG3 blocks should not be removed from the rail. If removing the blocks is necessary, the blocks should be kept on the block inserts.

[2] MGW-C / MGW-H

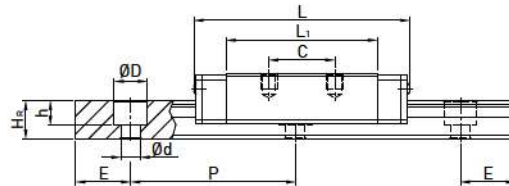
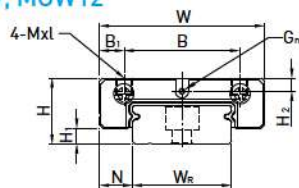
MGW2



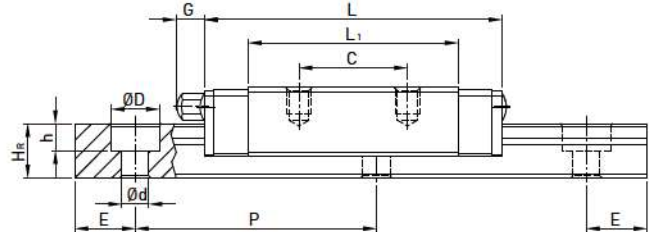
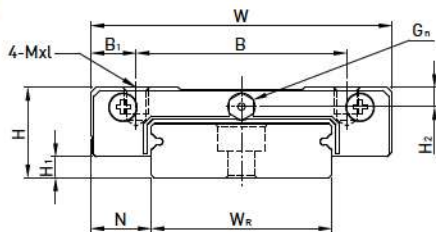
MGW3



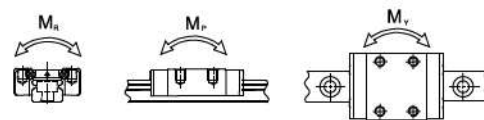
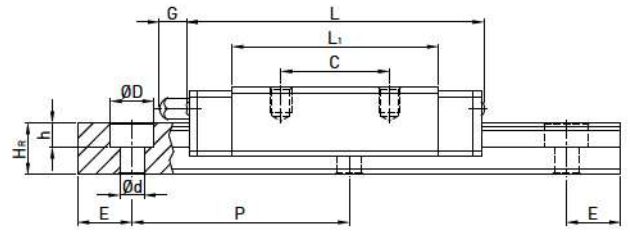
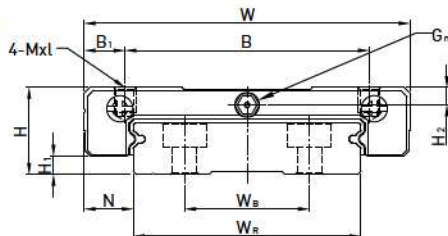
MGW7, MGW9, MGW12



MGW14



MGW15



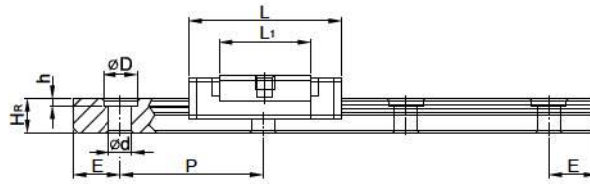
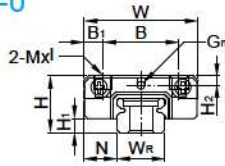
Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)										Dimensions of Rail (mm)										Mounting Bolt for Rail	Basic Dynamic Load Rating	Basic Static Load Rating	Static Rated Moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _s	MxL	H ₂	W _s	W _B	H _s	D	h	d	P	E	(mm)	C(kN)	C _s (kN)	M _g	M _p	M _y	Block kg	Rail kg/m		
MGW 2C	4	1	3	10	-	5	6.5	11.9	16.7	-	-	M2x1.3	-	4	-	2.6	2.8	1	1.8	10	5	M1.6	0.41	0.73	1.1	2.2	2.2	0.002	0.07		
MGW 3C	4.5	1	3	12	-	6	4.5	9.6	15	-	Ø0.5	M2-THRU	0.65	6	-	2.9	3.6	1.5	2.4	15	5	M2	0.54	0.84	2.3	1.3	1.3	0.003	0.13		
MGW 3H							8	14.2	19.6														0.68	1.18	3.3	2.7	2.7	0.004			
MGW 7C	9	1.9	5.5	25	19	3	10	21	31.2	-	Ø1.2	M3x3	1.85	14	-	5.2	6	3.2	3.5	30	10	M3x6	1.37	2.06	15.70	7.14	7.14	0.020	0.51		
MGW 7H							19	30.8	41														1.77	3.14	23.45	15.53	15.53	0.029			
MGW 9C	12	2.9	6	30	23	4.5	12	27.5	39.3	-	Ø1.2	M3x3	2.4	18	-	7	6	4.5	3.5	30	10	M3x8	2.75	4.12	40.12	18.96	18.96	0.040	0.91		
MGW 9H							3.5	24	38.5														50.7	3.43	5.89	54.54	34.00	34.00		0.057	
MGW 12C	14	3.4	8	40	28	6	15	31.3	46.1	-	Ø1.2	M3x3.6	2.8	24	-	8.5	8	4.5	4.5	40	15	M4x8	3.92	5.59	70.34	27.80	27.80	0.071	1.49		
MGW 12H							28	45.6	60.4														5.10	8.24	102.70	57.37	57.37	0.103			
MGW 14C	15	3.5	10	50	35	7.5	18	34.8	49.4	4.7	M3	M4x4.5	3.2	30	-	9	8	4.5	4.5	40	15	M4	5.90	8.44	116.96	48.91	48.91	0.110	1.98		
MGW 14H							35	53	67.6														7.70	12.33	170.94	102.12	102.12	0.162			
MGW 15C	16	3.4	9	60	45	7.5	20	38	54.8	5.2	M3	M4x4.2	3.2	42	23	9.5	8	4.5	4.5	40	15	M4x10	6.77	9.22	199.34	56.66	56.66	0.143	2.86		
MGW 15H							35	57	73.8														8.93	13.38	299.01	122.60	122.60	0.215			

Note : 1. 1 kgf = 9.81N

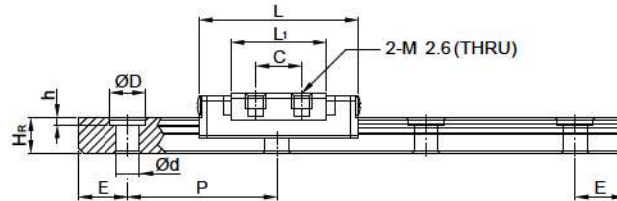
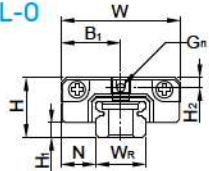
2. MG2 and MG3 blocks should not be removed from the rail. If removing the blocks is necessary, the blocks should be kept on the block inserts.

(3) MGN-C-O / MGN-H-O

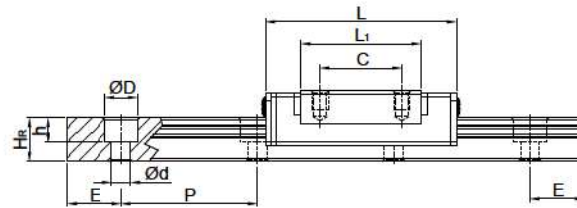
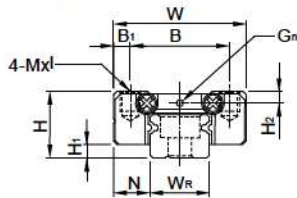
MGN5-O



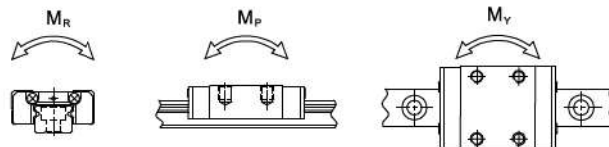
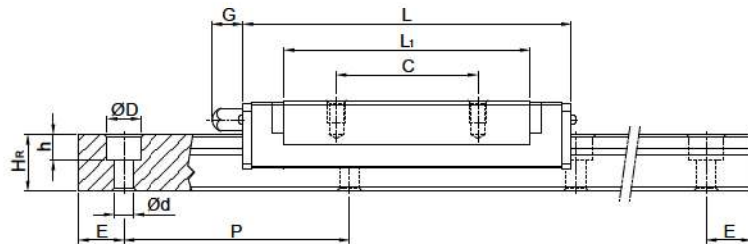
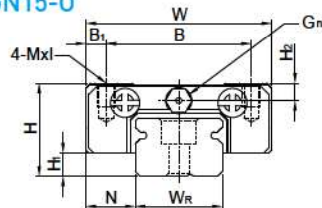
MGN5HL-O



MGN7-O, MGN9-O, MGN12-O



MGN15-O

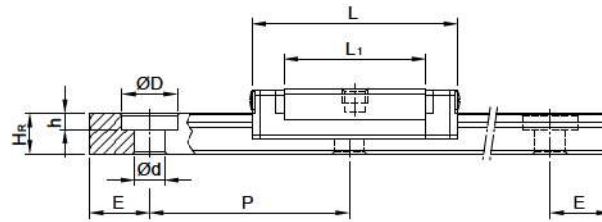
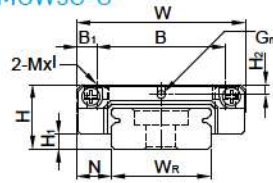


Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)										Dimensions of Rail (mm)								Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C(kN)	Basic Static Load Rating C ₀ (kN)	Static Rated Moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _s	MxI	H ₂	W _R	H _R	D	h	d	P	E	M _R N-m				M _P N-m	M _Y N-m	Block kg	Rail kg/m	
MGN 5C-O					8	2	-	9.6	16			M2x1.5										0.54	0.84	2	1.3	1.3	0.003		
MGN 5H-O	6	1.5	3.5	12	8	2	-	12.6	19		0.8	M2x1.5	1	5	3.6	3.6	0.8	2.4	15	5	M2x6	0.67	1.08	2.6	2.3	2.3	0.004	0.15	
MGN 5HL-O					-	6	7	12.6	19			M2.6-THRU										0.67	1.08	2.6	2.3	2.3	0.004		
MGN7C-O					12	2.5	8	13.5	22.5			M2x2.5										0.98	1.24	4.70	2.84	2.84	0.008		
MGN7H-O	8	1.5	5	17	12	2.5	13	21.8	30.8		Ø1.2	M2x2.5	1.5	7	4.8	4.2	2.3	2.4	15	5	M2x6	1.37	1.96	7.64	4.80	4.80	0.012	0.22	
MGN 9C-O					15	2.5	10	19.4	30			M3x3										2.01	2.84	13.05	8.97	8.97	0.012		
MGN9H-O	10	2.2	5.5	20	15	2.5	16	29.3	39.9		Ø1.4	M3x3	1.8	9	6.5	6	3.5	3.5	20	7.5	M3x8	2.5	3.93	19.71	21.47	21.47	0.02	0.38	
MGN 12C-O					20	3.5	15	22	35			M3x3.5										2.84	3.92	25.48	13.72	13.72	0.025		
MGN12H-O	13	3	7.5	27	20	3.5	20	34.6	47.6		Ø2	M3x3.5	2.5	12	8	6	4.5	3.5	25	10	M3x8	4.27	5.9	38.4	37.49	37.49	0.047	0.65	
MGN 15C-O					25	3.5	20	26.7	41.3			M3x4										4.61	5.59	45.08	21.56	21.56	0.057		
MGN 15H-O	16	4	8.5	32	25	3.5	25	43.4	58	4.50	M3	M3x4	3	15	10	6	4.5	3.5	40	15	M3x10	6.37	9.11	73.5	57.82	57.82	0.088	1.06	

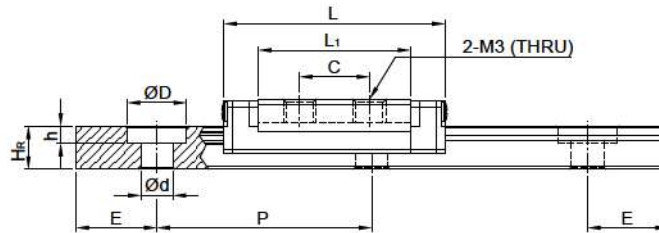
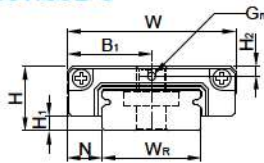
Note : 1 kgf = 9.81 N

(4) MGW-C-0 / MGW-H-0

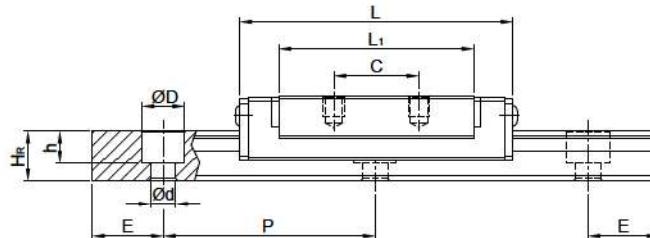
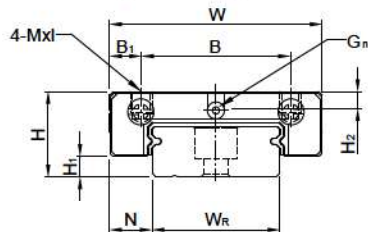
MGW5C-0



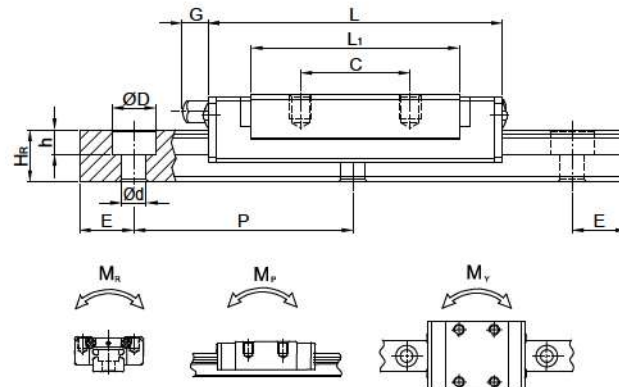
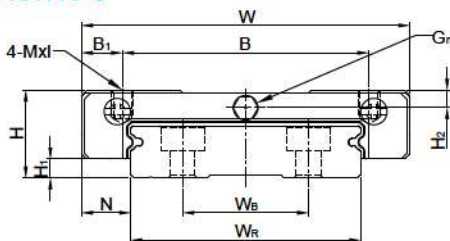
MGW5CL-0



MGW7-0, MGW9-0, MGW12-0



MGW15-0



Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)										Dimensions of Rail (mm)										Mounting Bolt for Rail	Basic Dynamic Load Rating	Basic Static Load Rating	Static Rated Moment			Weight	
	H	H ₁	N	W	B	B ₁	C	L ₁	L	G	G _s	Mx1	H ₂	W _R	W _B	H _R	D	h	d	P	E	(mm)	C(kN)	C ₀ (kN)	M _R N-m	M _P N-m	M _Y N-m	Block kg	Rail kg/m		
MGW 5C-0	6.5	1.5	3.5	17	13	2	-	14.1	20.5	-	Ø0.8	M2.5x1.5	1	10	-	4	5.5	1.6	3	20	5	M2.5X7	0.68	1.18	5.5	2.7	2.7	0.006	0.34		
MGW 5CL-0					-	8.5	6.5	14.1	20.5	M3-THRU	0.68	1.18											5.5	2.7	2.7	0.006					
MGW 7C-0	9	1.9	5.5	25	19	3	10	21	31.2	-	Ø1.2	M3x3	1.85	14	-	5.2	6	3.2	3.5	30	10	M3x6	1.37	2.06	15.70	7.14	7.14	0.018	0.51		
MGW 7H-0					19	3	19	30.8	41	M3x3	1.77	3.14											23.45	15.53	15.53	0.026					
MGW 9C-0	12	2.95	6	30	21	4.5	12	27.5	39.7	-	Ø1.2	M3x3	2.65	18	-	7	6	4.5	3.5	30	10	M3x8	2.75	4.12	40.12	18.96	18.96	0.038	0.91		
MGW 9H-0					23	3.5	24	38.5	50.7	M3x3	3.43	5.89											54.54	34.00	34.00	0.053					
MGW 12C-0	14	3.45	8	40	28	6	15	31.3	45.1	-	Ø1.2	M3x3.6	2.8	24	-	8.5	8	4.5	4.5	40	15	M4x8	3.92	5.59	70.34	27.8	27.8	0.066	1.49		
MGW 12H-0					28	6	28	45.6	59.4	M3x3.6	5.1	8.24											102.7	57.37	57.37	0.093					
MGW 15C-0	16	3.45	9	60	45	7.5	20	38	53.8	5.2	M3	M4x4.2	3.2	42	23	9.5	8	4.5	4.5	40	15	M4x10	6.77	9.22	199.34	56.66	56.66	0.138	2.86		
MGW 15H-0					45	7.5	35	57	72.8	M4x4.2	8.93	13.38											299.01	122.60	122.60	0.200					

Note : 1 kgf = 9.81 N