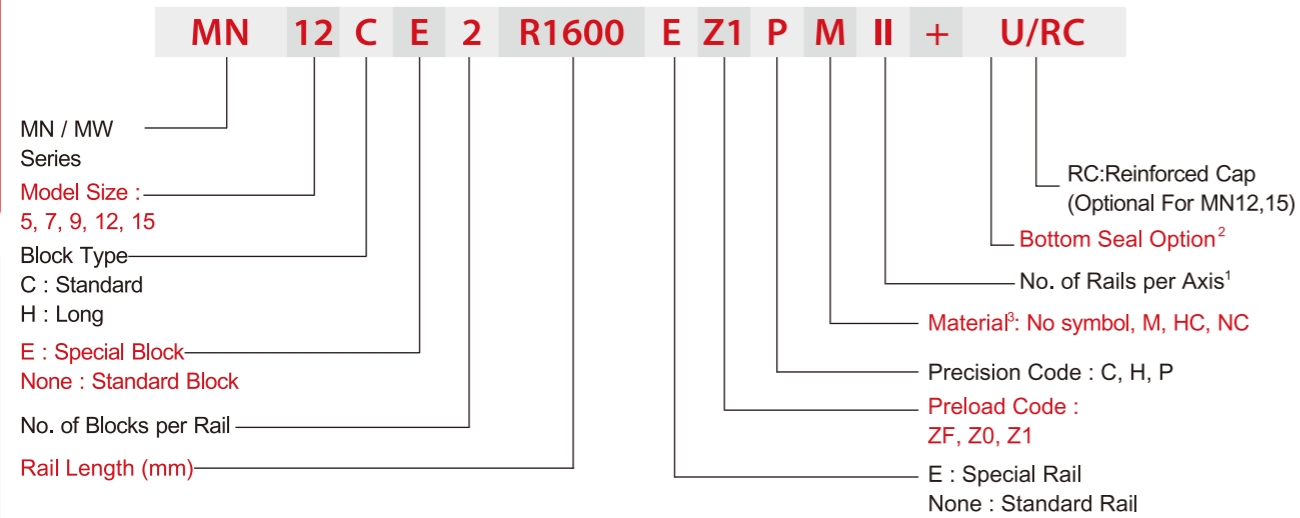


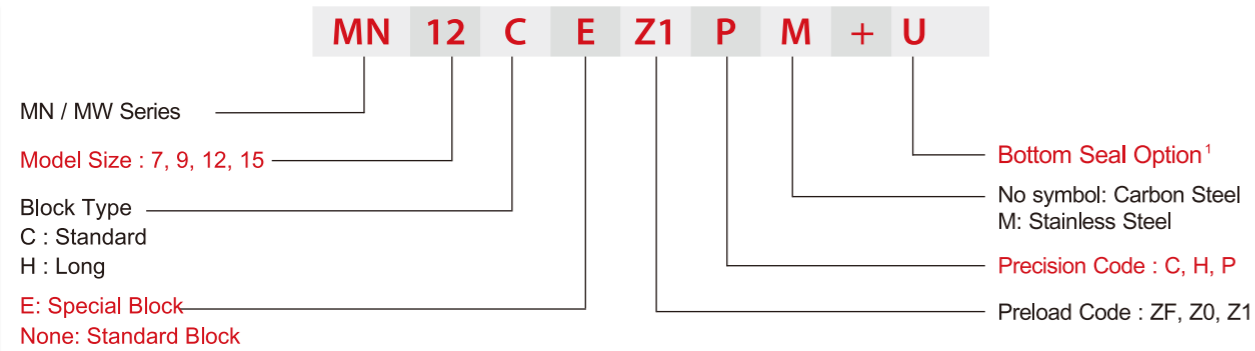


2-6 M Series - Miniature Type Linear Guideway

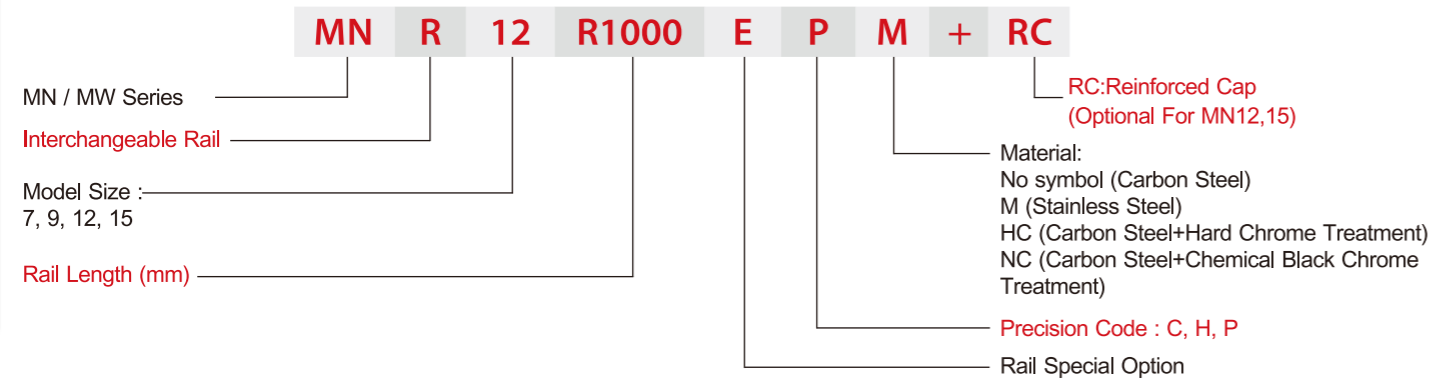
(1) Non-interchangeable type



(2) Interchangeable type
 Interchangeable Block



Interchangeable Rail



2-6-1 Types

(1) Block types

LIMON offers two types of linear guideways, standard and widen types.

Table 2-6-1 Block Types

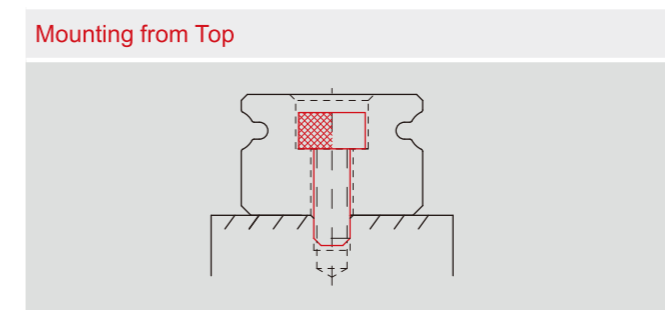
Type	Model	Shape	Height (mm)	Rail Length (mm)	Main Applications
standard	MN-C MN-H		8	100	<input type="checkbox"/> Printer <input type="checkbox"/> Robotics <input type="checkbox"/> Precision measure equipment <input type="checkbox"/> Semiconductor equipment
			↓	↓	
widen	MW-C MW-H		9	100	
			↓	↓	

*Please refer to the chapter 2-6-5 for the dimensional detail.

(2) Rail types

LIMON offers standard top mounting type.

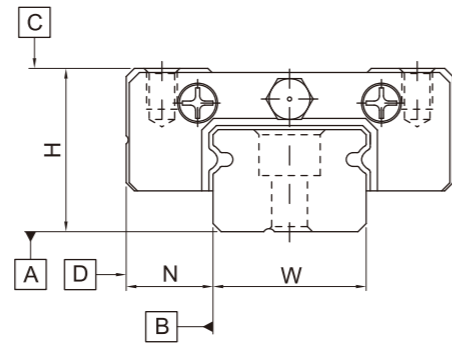
Table 2-6-2 Rail Types





2-6-2 Accuracy

The accuracy of MN/MW 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 2-6-3 Accuracy Standard of Non-interchangeable Type

Unit: mm

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 2-6-5		
Running parallelism of block surface D to surface B	See Table 2-6-5		

(2) Accuracy of interchangeable guideways

Table 2-6-4 Accuracy Standard of Interchangeable Type

Unit: mm

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	0.03	0.015
	Pair Variation of width N	0.03	0.02
Pair Variation of width N (Master Rail)	0.07	0.04	0.02
Running parallelism of block surface C to surface A	See Table 2-6-5		
Running parallelism of block surface D to surface B	See Table 2-6-5		



(3) Accuracy of running parallelism

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

Table 2-6-5 Accuracy of Running Parallelism

Rail Length (mm)	Accuracy (μm)			Rail Length (mm)	Accuracy (μm)		
	(C)	(H)	(P)		(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				

2-6-3 Preload

MN/MW series provides three different preload levels for various applications.

Table 2-6-6 Preload Classes

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

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

2-6-4 Dust Proof Accessories

End seals and standard accessories fixed on both sides of the block can prevent dust from entering the block, so the accuracy and service life of a linear guideway can be maintained. 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 and 15 provide bottom seals as an option, but size 5, 7 do not offer the option due to the space limit of H₁. Note that "H₁" would be reduced if bottom seals are attached, be aware of possible interference between block and mounting surface.

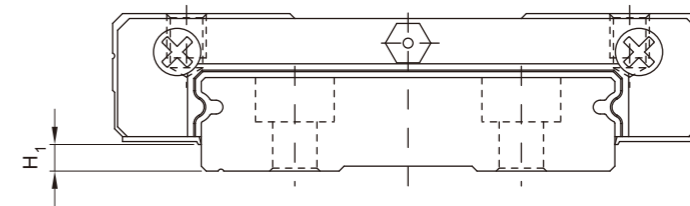


Table 2-6-7

Size	Bottom seal	H ₁ mm	Size	Bottom seal	H ₁ mm
MN 5	-	-	MW 5	-	-
MN 7	-	-	MW 7	-	-
MN 9	•	1	MW 9	•	1.9
MN 12	•	2	MW 12	•	2.4
MN 15	•	3	MW 15	•	2.4



Linear Guideways

Ball Screw

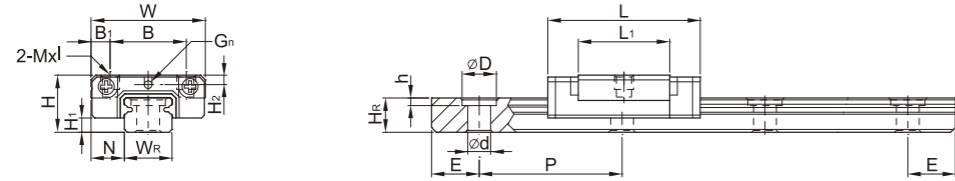
Support

Linear Bushing

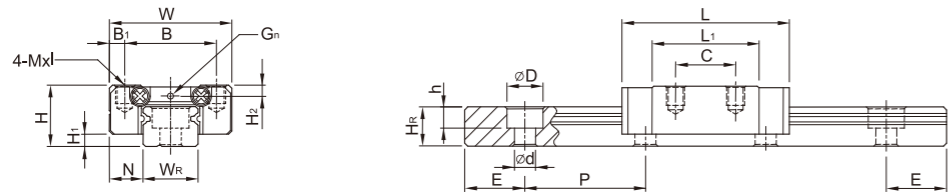
2-6-5 Dimensions for MN/MW Series

(1) MN-C / MN-H

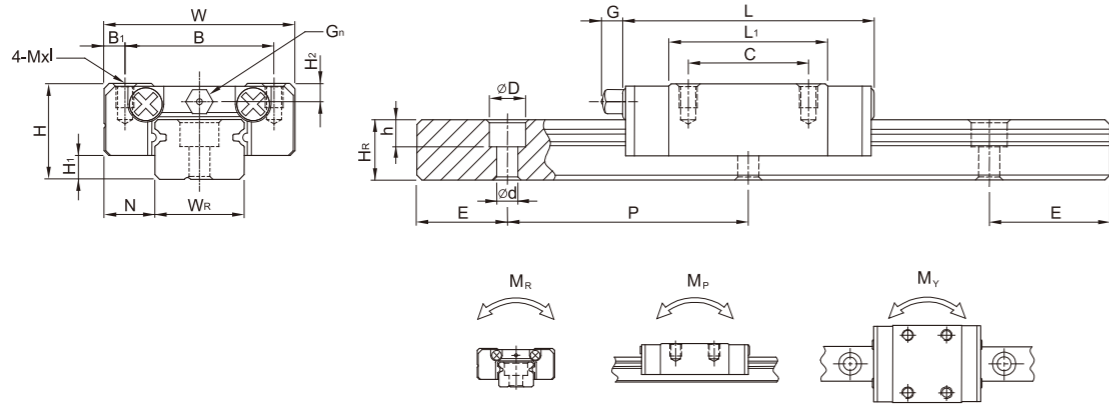
MN5



MN7, MN9, MN12

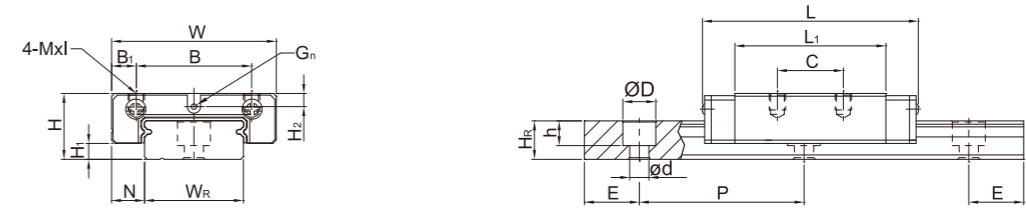


MN15

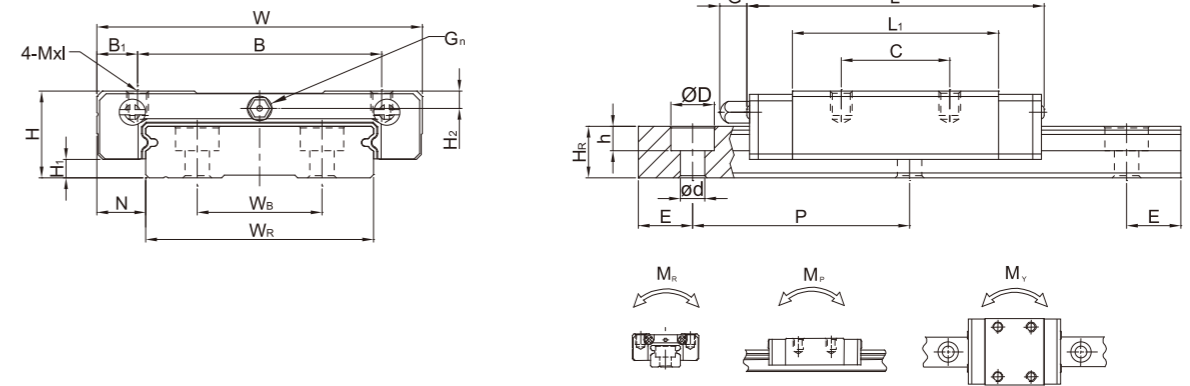


(2) MW-C / MW-H

MW7, MW9, MW12



MW15



Linear Guideways

Ball Screw

Support

Linear Bushing

Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)										Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C ₀ (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 _n	MxI	H ₂				W _R	H _R	D	h	d	P	E	M _R	M _P	M _V	Block	Rail
	kg	kg	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm				mm	mm	mm	mm	mm	mm	mm	mm	mm	N-m	N-m	N-m
MN5C	6	1.5	3.5	12	8	2	-	9.6	16	-	∅0.8	M2x1.5	1	5	3.6	3.6	0.8	2.4	15	5	M2x6	0.54	0.86	2	1.3	1.3	0.008	0.15
MN7C	8	1.5	5	17	12	2.5	8	13.5	22.5	-	∅1.2	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
MN7H	8	1.5	5	17	12	2.5	13	21.8	30.8	-	∅1.2	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	0.015	0.22
MN9C	10	2	5.5	20	15	2.5	10	18.9	28.9	-	∅1.4	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
MN9H	10	2	5.5	20	15	2.5	16	29.9	39.9	-	∅1.4	M3x3	1.8	9	6.5	6	3.5	3.5	20	7.5	M3x8	2.55	4.02	19.60	18.62	18.62	0.026	0.38
MN12C	13	3	7.5	27	20	3.5	15	21.7	34.7	-	∅2	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
MN12H	13	3	7.5	27	20	3.5	20	32.4	45.4	-	∅2	M3x3.5	2.5	12	8	6	4.5	3.5	25	10	M3x8	3.72	5.88	38.22	36.26	36.26	0.054	0.65
MN15C	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
MN15H	16	4	8.5	32	25	3.5	25	43.4	58.8	4.5	M3	M3x4	3	15	10	6	4.5	3.5	40	15	M3x10	6.37	9.11	73.50	57.82	57.82	0.092	1.06

Note : 1 kgf = 9.81 N

Model No.	Dimensions of Assembly (mm)			Dimensions of Block (mm)										Mounting Bolt for Rail (mm)	Basic Dynamic Load Rating C ₀ (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 _n	MxI	H ₂				W _R	W _B	H _R	D	h	d	P	E	M _R	M _P	M _V	Block	Rail
	kg	kg	kg	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm				mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	N-m	N-m	N-m
MW7C	9	1.9	5.5	25	19	3	10	21	31.2	-	∅1.2	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
MW7H	9	1.9	5.5	25	19	3	19	30.8	41	-	∅1.2	M3x3	1.85	14	-	5.2	6	3.2	3.5	30	10	M3x6	1.77	3.14	23.45	15.53	15.53	0.029	0.51
MW9C	12	2.9	6	30	21	4.5	12	27.5	39.3	-	∅1.2	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
MW9H	12	2.9	6	30	23	3.5	24	38.5	50.7	-	∅1.2	M3x3	2.4	18	-	7	6	4.5	3.5	30	10	M3x8	3.43	5.89	54.54	34.00	34.00	0.057	0.91
MW12C	14	3.4	8	40	28	6	15	31.3	46.1	-	∅1.2	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
MW12H	14	3.4	8	40	28	6	28	45.6	60.4	-	∅1.2	M3x3.6	2.8	24	-	8.5	8	4.5	4.5	40	15	M4x8	5.10	8.24	102.70	57.37	57.37	0.103	1.49
MW15C	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
MW15H	16	3.4	9	60	45	7.5	35	57	73.8	5.2	M3	M4x4.2	3.2	42	23	9.5	8	4.5	4.5	40	15	M4x10	8.93	13.38	299.01	122.60	122.60	0.215	2.86

Note : 1 kgf = 9.81 N