



Miniature Guide Way



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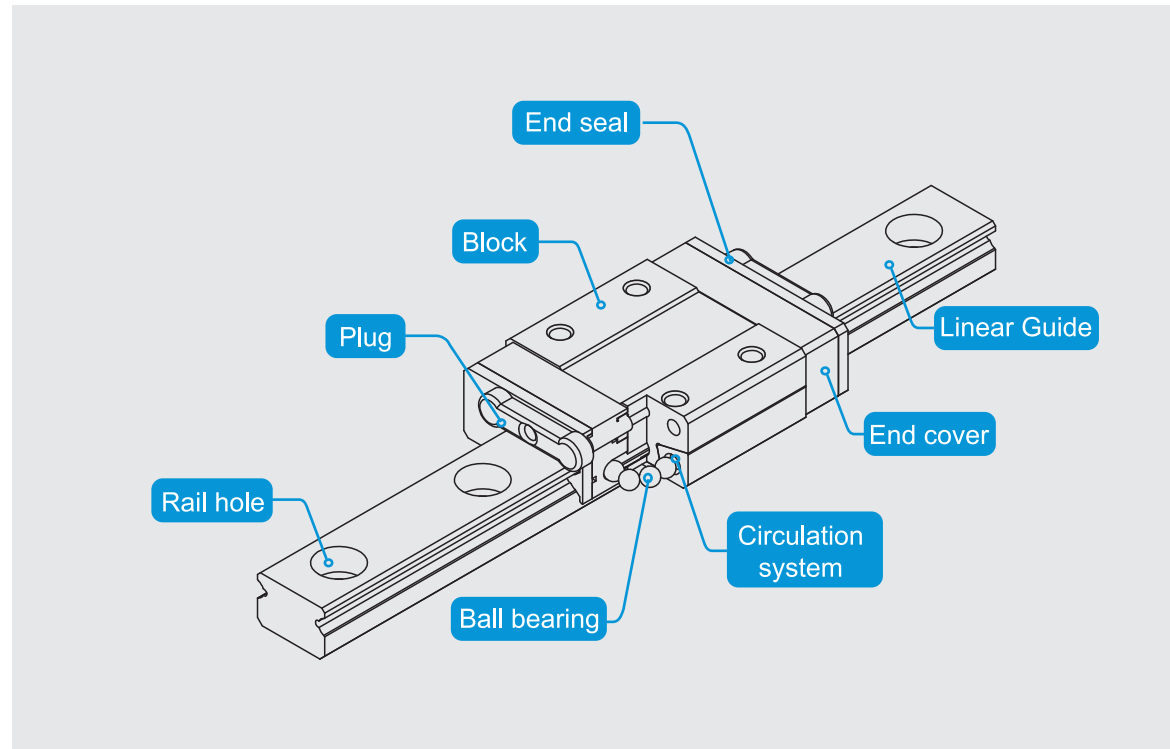


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Product Structure



Product Character

- ⊙ 4 contact points formed by circulated ball bearings in 45 degrees contact to the guide rail surface to produce an even-loading performance of each side of the guide.
- ⊙ Circulation system is a plastic part designed to reduce friction noise during block running.
- ⊙ End and bottom seals design to prevent dust and foreign objects entering from block running, to extend product usage life.

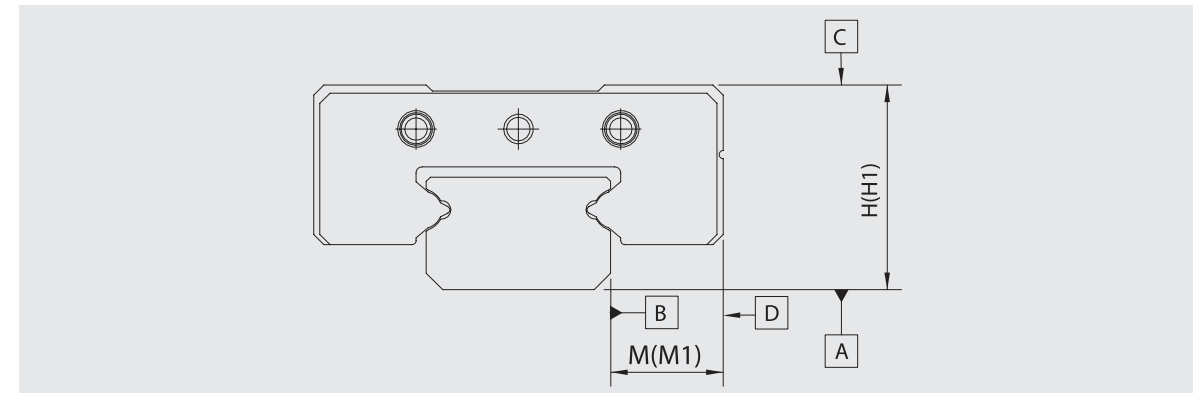
【Standard Rail Width】

- ⊙ Fit to low profile equipment.
- ⊙ Stainless steel material
- ⊙ High rigidity and accuracy.

【Wide Rail Width】

- ⊙ Suitable for single axis usage.
- ⊙ High loading capacity.
- ⊙ High rigidity and accuracy.
- ⊙ Stainless steel material.

Accuracy Reference Table



Accuracy Reference of GSN and GSW

Accuracy	Code	Standard (N)	High (H)	Precision
H tolerance	H	±35(μm)	±15(μm)	±10(μm)
H tolerance between multiple blocks	H1	20(μm)	15(μm)	10(μm)
M tolerance	M	±35(μm)	±15(μm)	±10(μm)
M tolerance between multiple blocks	M1	25(μm)	15(μm)	10(μm)

Dynamics Straightness (A-C)/(B-D) Compare to Rail Length

Rail Length	Accuracy		
	Standard Grade(N)	High Grade (H)	Precision Grade (P)
50Less	12	6	2
50-100	14	8	4
100~200	15	9	4
200~300	17	11	5
300~400	18	11	6
400~500	19	12	6
500~600	20	13	7
600~700	21	13	7
700~800	22	14	8
800~900	23	16	9
900~1000	25	18	11

Usage Life Calculation

Usage life is a total moving distance achieved while the contact surface between the guide rails has been scratched that means limited critical conditions are produced after contact friction force circulated continuously between ball bearings and guide rails surface during block running with loading.

◎ Rated Usage Life Definition

Rated usage life means 90% of the tested linear guide rail surface without scratch situation from a certain quantity of linear guide moving under same conditions and rated loading.

◎ Usage Life Calculation

Usage life is considered basic rated loading and total loading for calculation due to different working conditions.

C : Basic rated dynamic loading(kN)

L : Rated usage life(km)

P_c : Radial loading calculation(kN)

f_t : Temperature factor

f_w : Loading factor

$$L = \left(\frac{f_t}{f_w} \cdot \frac{C}{P_c} \right)^{10/3} \times 100$$

◎ Usage Life Time(L_h)

Please refer to the following calculation formula to have an idea usage life time if stroke and repeatable cycles per minute are fixed situation upon rated usage life figure is calculated.

L_h : Working life hours (hr)

ℓ_s : Stroke length (mm)

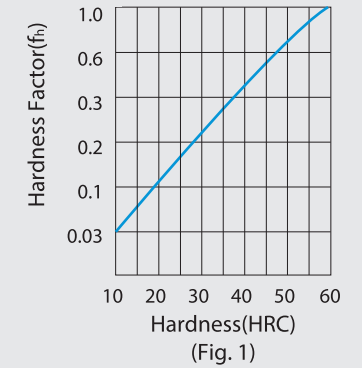
n₁ : Travel times per minute (min⁻¹)

$$L_h = \frac{L \times 10^6}{2 \times \ell_s \times n_1 \times 60}$$

Life Factor

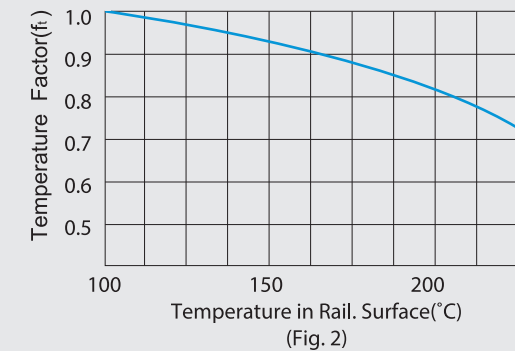
◎ Hardness Factor(f_h)

Hardness of contact surface on cycling guide rails requires HRC56-58. Guide rail rated life and usage life will be reduced in case lower hardness. Use Hardness factor shown on (Fig. 1) to multiple the rated dynamic and static loading equals to available reference figures.



◎ Temperature Factor(f_t)

Use Temperature factor shown on (Fig. 2) to multiple the basic rated loading equals to available reference figures when the working environment temperature is more than 100°C.



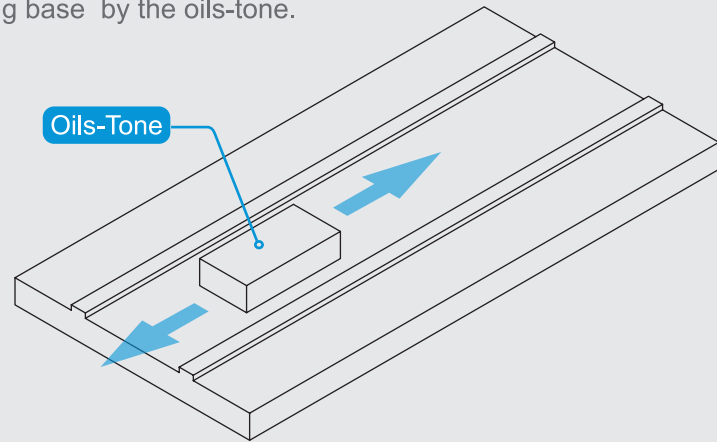
◎ Loading Factor(f_w)

Use the following loading factor (f_w) generated from experienced vibration & drive force to calculate a reference loading figure due to rapid vibration or strong drive force during high speed running. As hardly getting precise calculations.

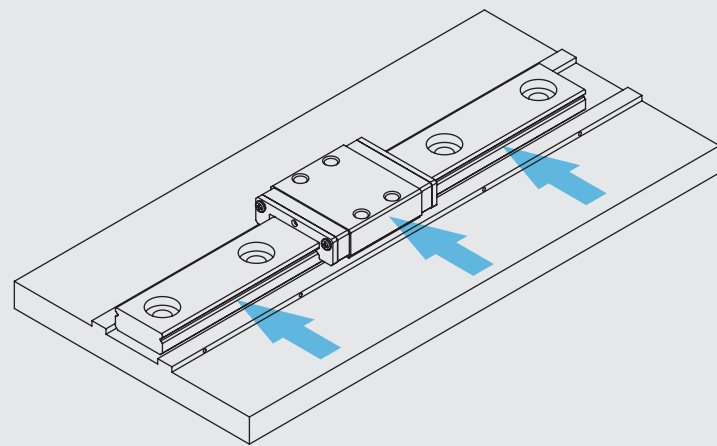
Vibration / Drive Force	Velocity (V)	Loading Factor (f _w)
Softly	Slight speed V ≤ 0.25m/s	1 ~ 1.2
Light	Low speed 0.25 < V ≤ 1m/s	1.2 ~ 1.5

Mounting Method

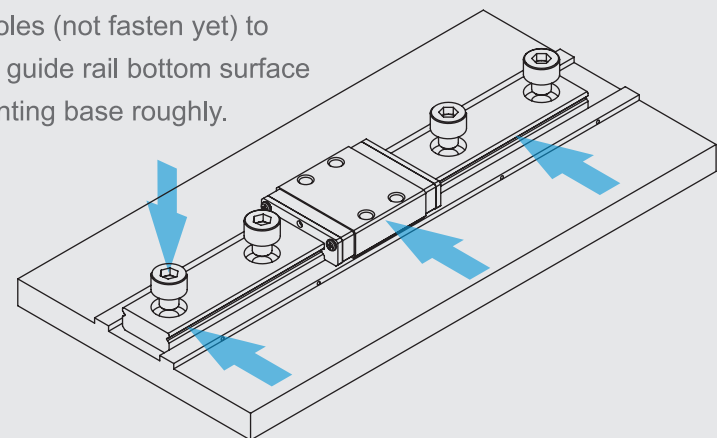
Remove and clean dust and foreign objects from assembly surface of the mounting base by the oils-tone.



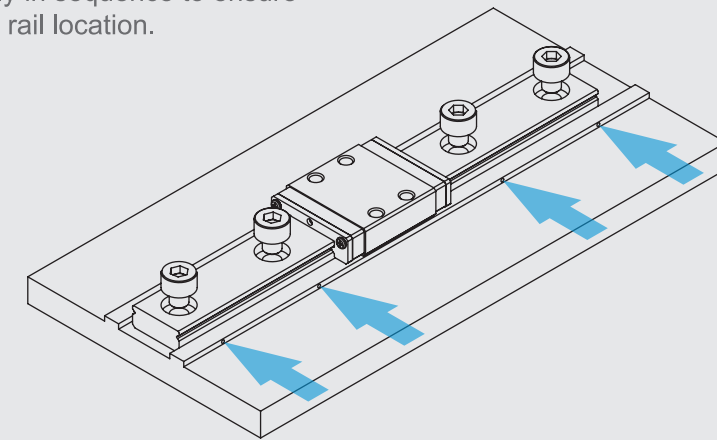
Put and align the miniature guide rail on the mounting base.



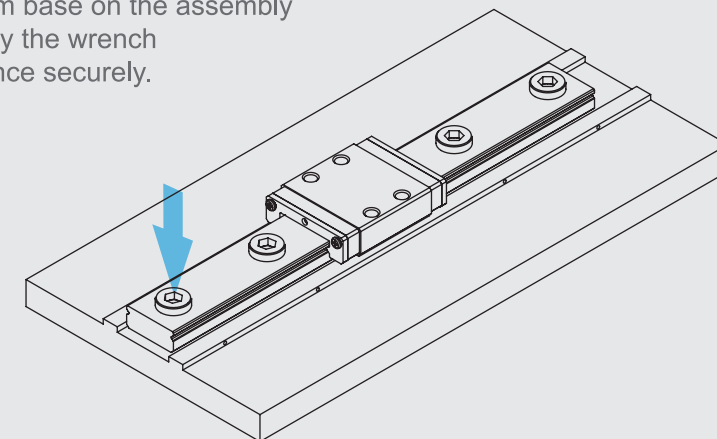
Slightly screw on bolts to check mounting holes (not fasten yet) to position the guide rail bottom surface on the mounting base roughly.



Use side-fixing screws to force the guide rail side datum surface to the assembly side tightly in sequence to ensure the guide rail location.



Tighten each bolt to force the guide rail bottom base on the assembly surface by the wrench in sequence securely.



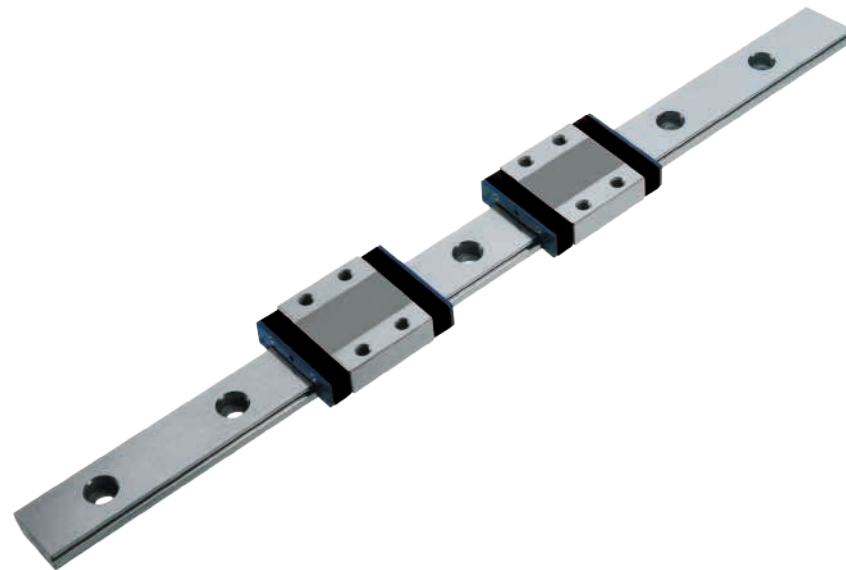
Follow step 1 to step 5 repeatably to assembly other guide rails.

Specification Introduction

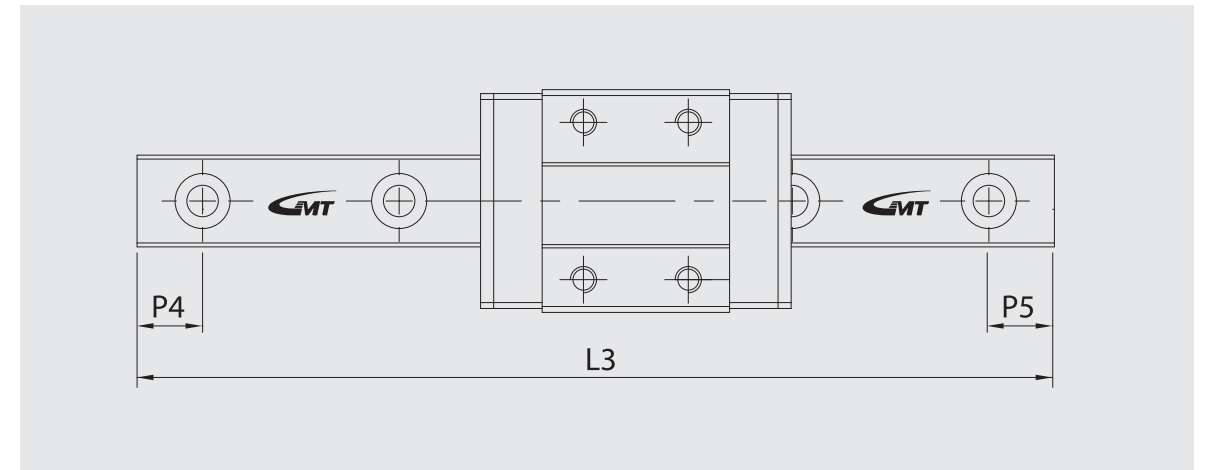
Product Type	Block Type		Block Quantity	Accuracy Grade		Preload Grade	
Miniature	N	Standard length	Blocks on each rail	P	Precision grade	F	Micro-clearance
	L	Long block		H	High grade	0	No preload
				N	Standard grade	1	Light preload

GS 05 2 1 2 2 0L P 0

Nominal Dimensions	Rail Type		Rail Quantity	Rail Length
05	N	Standard width	Required rail quantity per axis	Refer to P. 9 for standard length. Note: Length out of standard is available on request.
07	W	Wide rail		
09				
12				
15				



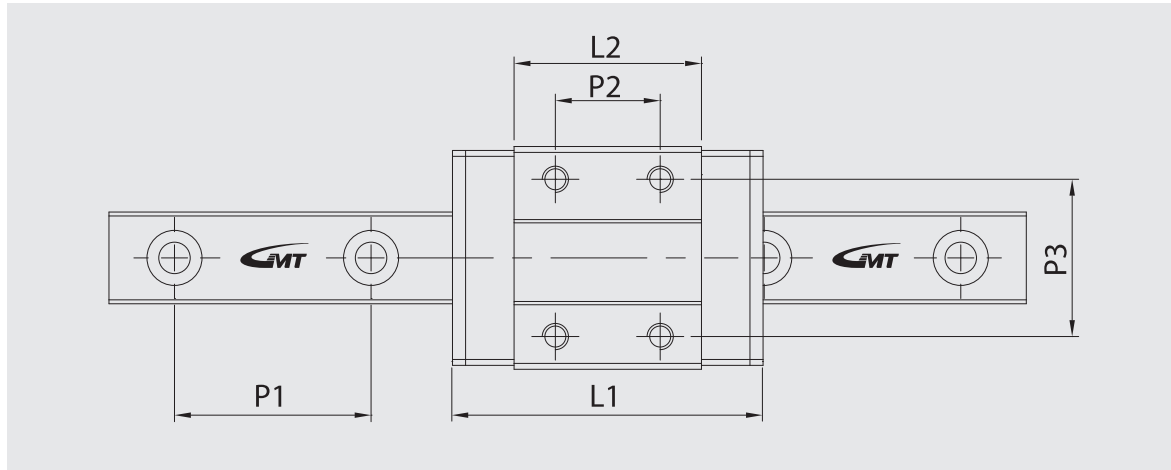
End Pitch & Rail Length



Unit : mm

Specifications	GSN					GSW						
	5N	7N	9N	12N	15N	5W	7W	9W	12W	15W		
Standard Length	40	40	55	70	70	50	50	50	70	110		
	55	55	75	95	110	70	80	80	110	150		
	70	70	95	120	150	90	110	110	150	190		
	85	85	115	145	190	110	140	140	190	230		
	100	100	135	170	230	130	170	170	230	270		
	N/A	N/A	130	155	195	270	150	200	200	270	310	
			175	220	310	170	260	260	310	430		
			195	245	350	N/A	N/A	N/A	290	290	390	550
			275	270	390				320	470	670	
			375	320	430				550	790		
			470	550	N/A				N/A	N/A		
	570	670	N/A	N/A	N/A							
N/A	870	N/A	N/A	N/A								
Pitch	15	15	20	25	40	20	30	30	40	40		
Standard End Pitch(P4)	3	3	4	4	4	4	3	4	4	4		
Standard End Pitch (P5)	3	3	4	4	4	4	3	4	4	4		
Available Max. End Pitch	10	10	20	20	35	15	25	25	35	35		
Max. Rail Length	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000		

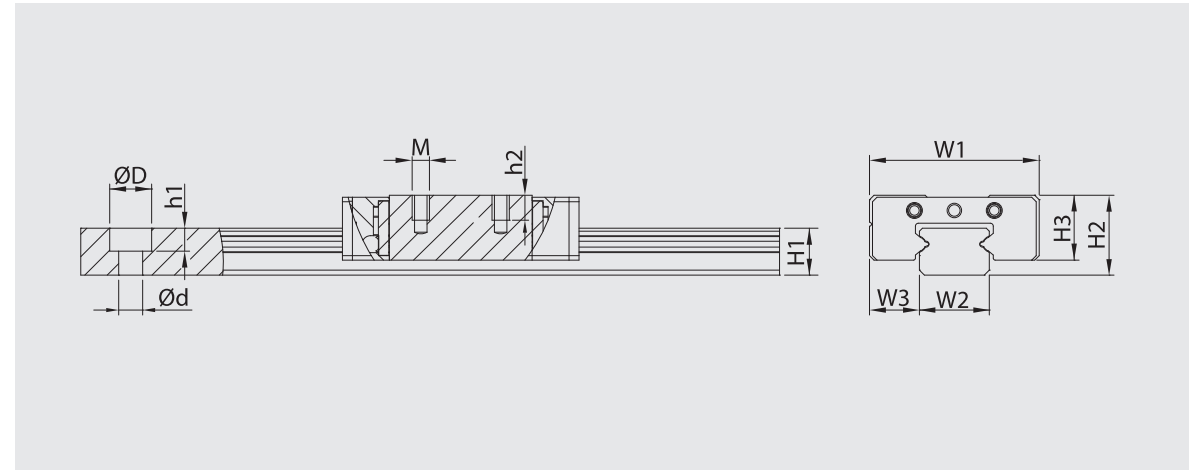
Standard Width Type



Model No.	Assembled Dimensions		Rail Dimensions				Block Dimensions			
	H2	W3	W2	H1	P1	ØDxØdxh1	W1	L1	L2	H3
GS05-N-N	6	3.5	5	3.5	15	3.5x2.4x1	12	17.1	10	4.5
GS05-N-L	6	3.5	5	3.5	15	3.5x2.4x1	12	20.6	13.5	4.5
GS07-N-N	8	5	7	4.7	15	4.2x2.4x2.3	17	23.7	14.3	6.5
GS07-N-L	8	5	7	4.7	15	4.2x2.4x2.3	17	31.2	21.8	6.5
GS09-N-N	10	5.5	9	5.5	20	6x3.5x3.5	20	30.6	20.5	7.8
GS09-N-L	10	5.5	9	5.5	20	6x3.5x3.5	20	40.9	30.8	7.8
GS12-N-N	13	7.5	12	7.5	25	6x3.5x4.5	27	35.4	22	10
GS12-N-L	13	7.5	12	7.5	25	6x3.5x4.5	27	47.4	34	10
GS15-N-N	16	8.5	15	9.5	40	6x3.5x4.5	32	43	27	12
GS15-N-L	16	8.5	15	9.5	40	6x3.5x4.5	32	60	44	12

© Plug thickness 1.5 mm of each is not included in block length L1.

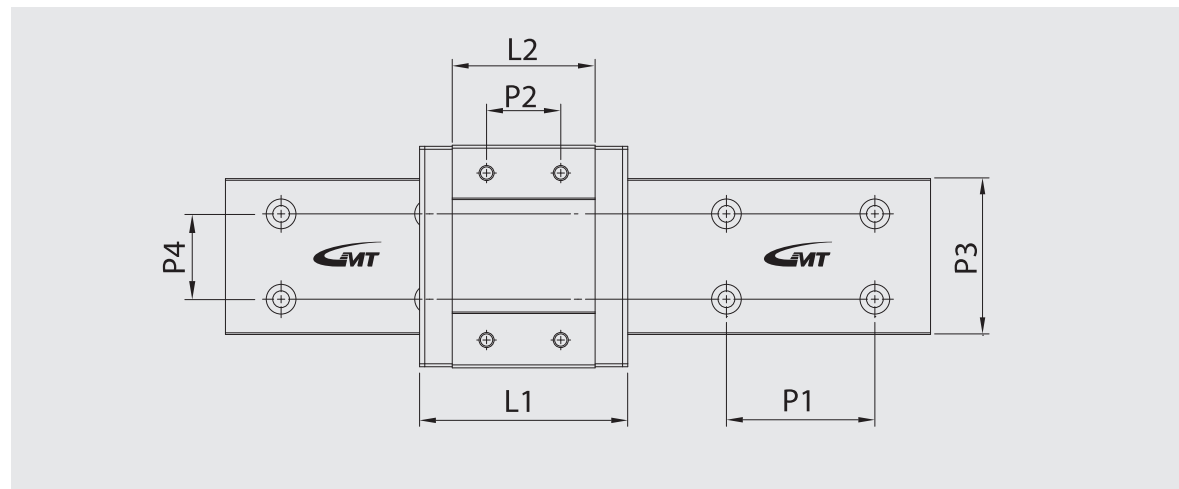
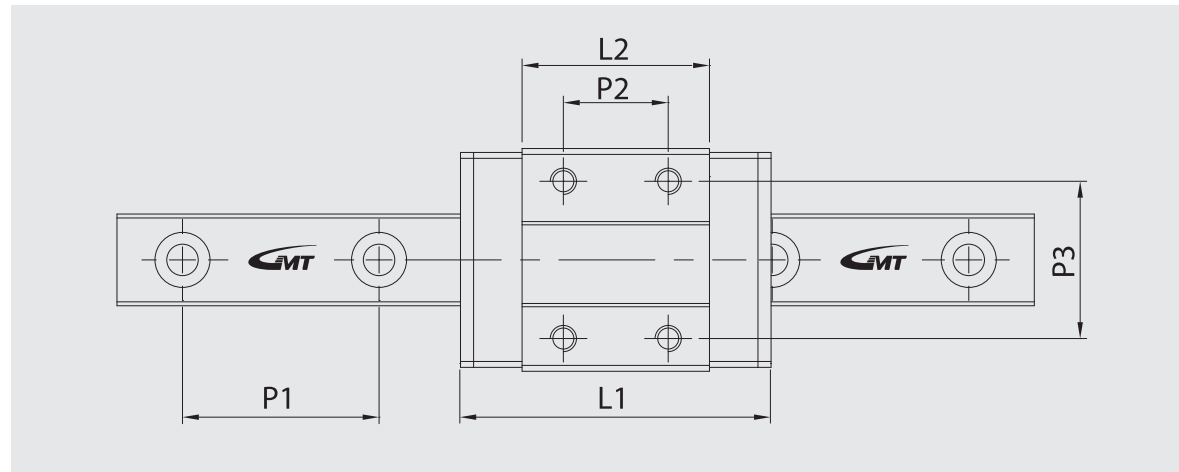
Standard Width Type



Model No.	Block Dimensions			Rated Loading		Static Torque			Weight	
	P2	P3	Mxh2	C	C0	M _R	M _p	M _y	Block	Rail
GS05-N-N	-	8	M2x1.5	318	523	1.6	1.0	1.0	3	114
GS05-N-L	-	8	M2x1.5	447	855	2.3	2.0	2.0	4	114
GS07-N-N	8	12	M2x2.5	846	1330	4.9	3.1	3.1	8	211
GS07-N-L	13	12	M2x2.5	1245	2318	8.6	7.3	7.3	14	211
GS09-N-N	10	15	M3x3.0	1492	2370	11.1	6.1	6.1	18	295
GS09-N-L	16	15	M3x3.0	2028	3686	17.3	11.8	11.8	27	295
GS12-N-N	15	20	M3x3.5	2193	3292	20.4	12.3	12.3	33	590
GS12-N-L	20	20	M3x3.5	3078	5349	33.2	28.7	28.7	50	590
GS15-N-N	20	25	M3x5.5	3620	5311	41.4	25.7	25.7	60	911
GS15-N-L	25	25	M3x5.5	5083	8626	66.5	60.1	60.1	88	911

© Plug thickness 1.5 mm of each is not included in block length L1.

Wide Rail Type

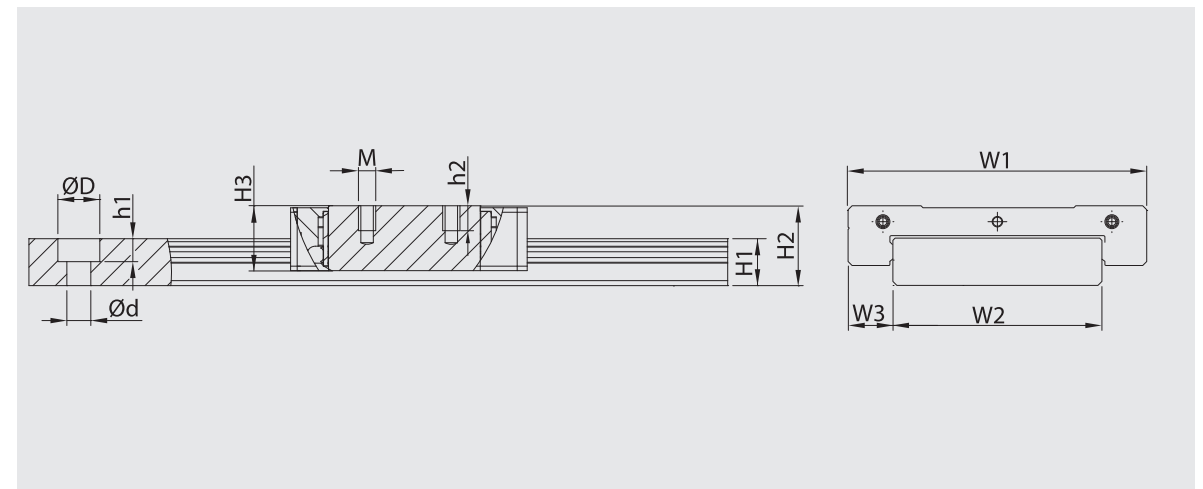
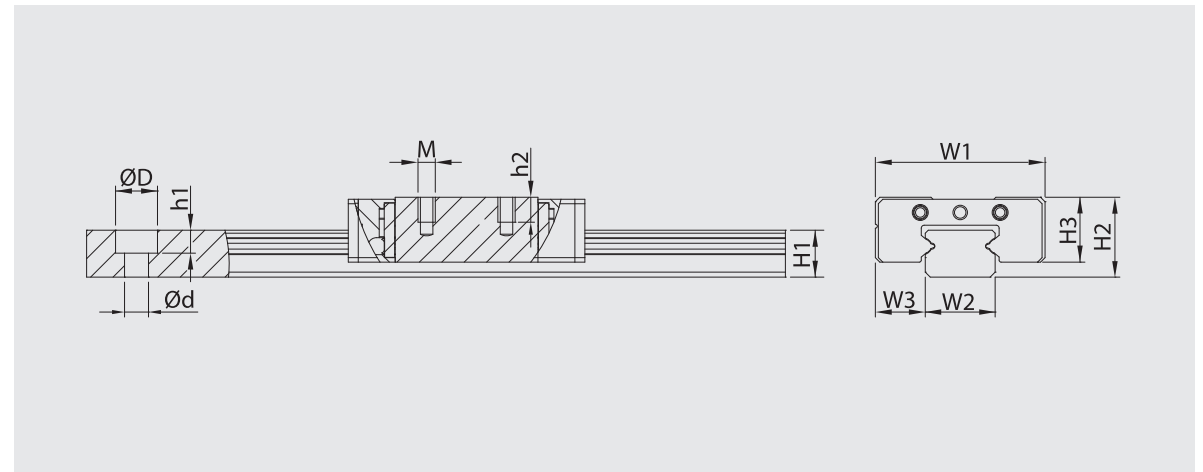


© Dimension P4 is referred to GS15-W-N / GS15-W-L models.

Model No.	Assembled Dimensions		Rail Dimensions				ØDxØdxh1	Block Dimensions			
	H2	W3	W2	H1	P1	P4		W1	L1	L2	H3
GS05-W-N	6.5	3.5	10	4	20	23	5.5x3x1.6	17	22.1	15.1	5
GS05-W-L	6.5	3.5	10	4	20		5.5x3x1.6	17	28.2	21.2	5
GS07-W-N	9	5.5	14	5.2	30		6x3.5x3.5	25	31.6	21.2	7
GS07-W-L	9	5.5	14	5.2	30		6x3.5x3.5	25	40.5	30.1	7
GS09-W-N	12	6	18	7.3	30		6x3.5x4.5	30	39.1	27.9	8.6
GS09-W-L	12	6	18	7.3	30		6x3.5x4.5	30	50.7	39.5	8.6
GS12-W-N	14	8	24	8.5	40		8x4.5x4.5	40	44.4	31	10.1
GS12-W-L	14	8	24	8.5	40		8x4.5x4.5	40	59.4	46	10.1
GS15-W-N	16	9	42	9.5	40		8x4.5x4.5	60	56.1	38.5	12
GS15-W-L	16	9	42	9.5	40		8x4.5x4.5	60	75.2	57.6	12

© Plug thickness 1.5 mm of each is not included in block length L1.

Wide Rail Type



© Dimension P4 is referred to GS15-W-N / GS15-W-L models.

Model No.	Block Dimensions			Rated Loading		Static Torque			Weight	
	P2	P3	Mxh2	C	C0	M _R	M _p	M _y	Block	Rail
GS05-W-N	6.5	13	M2.5x1.5	451	855	4.4	2.1	2.1	6	274
GS05-W-L	6.5	13	M2.5x1.5	584	1249	6.5	3.9	3.9	8	274
GS07-W-N	10	19	M3x3	1121	1990	14.3	6.9	6.9	19	506
GS07-W-L	19	19	M3x3	1492	2983	21.5	14.2	14.2	26	506
GS09-W-N	12	21	M3x3	1929	3425	31.5	13.0	13.0	36	921
GS09-W-L	24	23	M3x3	2423	4741	43.6	25.4	25.4	50	921
GS12-W-N	15	28	M3x3.5	2912	4940	60.5	25.0	25.0	64	1443
GS12-W-L	28	28	M3x3.5	3867	7410	90.8	53.6	53.6	91	1443
GS15-W-N	20	45	M4x4.5	4812	7966	163.1	43.4	43.4	134	2762
GS15-W-L	35	45	M4x4.5	6389	11951	244.7	88.4	88.4	196	2762

© Plug thickness 1.5 mm of each is not included in block length L1.

