

Linear Way Module

Linear Way Module

LWLM

LWM



LRWM



Variation of model corresponding to needs

Three models, which of ball type Linear Way Module, LWLM and LWM, and roller type, LRWM, are lined up.

Stainless steel

The main metal components of LWLM are made of corrosion resistant stainless steel. Therefore, they are most suitable for use in cleanroom environment and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

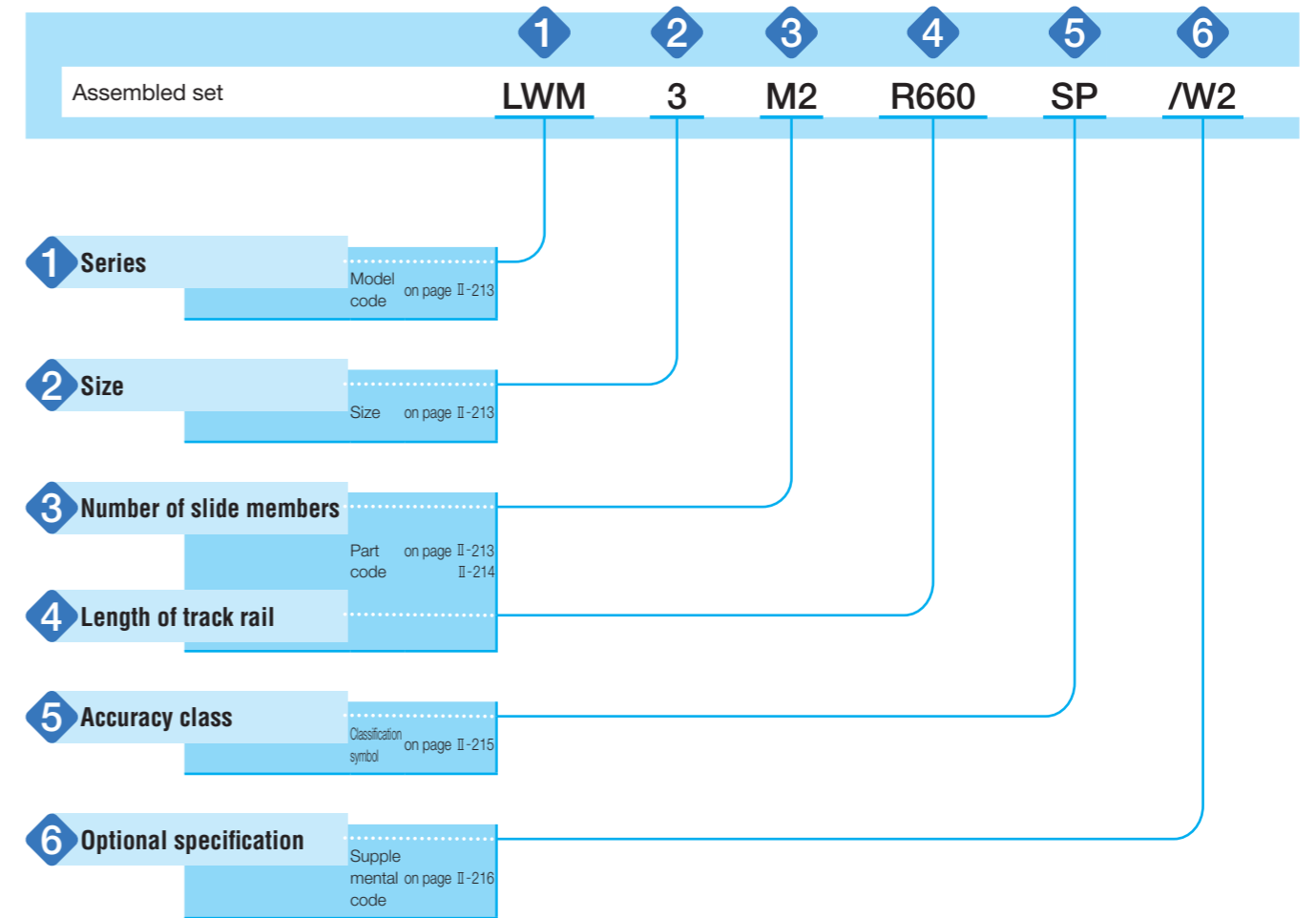
Features

Compact module type

Minimum unit consisted from combination of track rail and slide member makes linear motion rolling guide compact.

Identification number and specification

The specification of Linear Way Module is identified by the identification number, which consists of a model code, a size, a part code, a classification symbol and optional supplemental codes.



Identification number and specification — Series · Size · Number of slide

- 1 Series**
 Linear Way Module LM⁽¹⁾ : LWLM
 Linear Way Module M⁽¹⁾ : LWM
 Linear Roller Way Module M⁽¹⁾ : LRWM
 Applicable size and shape of slide member are shown in Table 1.1, Table 1.2, Table 1.3.
 Note⁽¹⁾ Linear Way Module without C-Lube.
- 2 Size**
 7, 9, 11
 1, 2, 3, 4, 5, 6
 Applicable size and shape of slide member are shown in Table 1.1, Table 1.2 and Table 1.3.
- 3 Number of slide members**
 : M○ Indicates the number of slide members assembled on one track rail.

Table 1.1 Model and size of LWLM

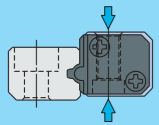
Shape	Model code	Size		
		7	9	11
	LWLM	○	○	○

Table 1.2 Model and size of LWM

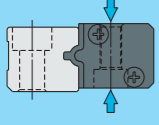
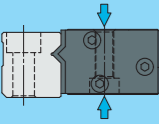
Shape	Model code	Size					
		1	2	3	4	5	6
	LWM	○	○	○	○	○	○

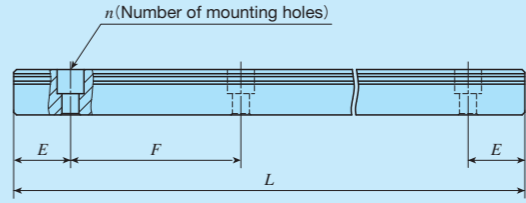
Table 1.3 Model and size of LRWM

Shape	Model code	Size				
		2	3	4	5	6
	LRWM	○	○	○	○	○

— Length of track rail —

- 4 Length of track rail**
 : R○ Indicate the length of track rail in mm.
 For standard and maximum lengths see "Track rail length" in Table 2.

Table 2 Standard and maximum length of track rail



Model number		LWLM7	LWLM9	LWLM11			
Item	Standard length $L(n)$	60 (3) 80 (4) 120 (6) 160 (8)	100 (4) 150 (6) 200 (8) 275 (11)	160 (4) 240 (6) 320 (8) 440 (11)			
	Pitch of mounting holes F	20	25	40			
E		10	12.5	20			
Standard range of E	Incl.	4.5	5	5.5			
	under	14.5	17.5	25.5			
Maximum length ⁽¹⁾		240 (500)	350 (900)	520 (1000)			
Model number		LWM1	LWM2	LWM3	LWM4	LWM5	LWM6
Item	Standard length $L(n)$	240 (6) 360 (9) 480 (12)	240 (4) 360 (6) 480 (8)	480 (8) 660 (11) 840 (14)	800 (10) 1040 (13) 1200 (15)	800 (8) 1200 (12) 1500 (15)	1200 (10) 1920 (16) 2520 (21)
	Pitch of mounting holes F	40	60	60	80	100	120
E		20	30	30	40	50	60
Standard range of E	Incl.	7	8	9	10	12	13
	under	27	38	39	50	62	73
Maximum length ⁽¹⁾		1240	1260	1260	1520	1500	2520
Model number		LRWM2	LRWM3	LRWM4	LRWM5	LRWM6	
Item	Standard length $L(n)$	480 (8) 660 (11) 840 (14)	480 (8) 660 (11) 840 (14)	800 (10) 1040 (13) 1200 (15)	800 (8) 1200 (12) 1500 (15)	1200 (10)	
	Pitch of mounting holes F	60	60	80	100	120	
E		30	30	40	50	60	
Standard range of E	Incl.	8	9	10	12	13	
	under	38	39	50	62	73	
Maximum length ⁽¹⁾		1800	1860	1920	1600	1200	

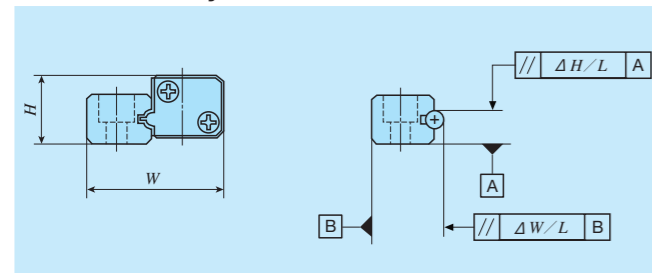
unit : mm

Note⁽¹⁾ : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.

5 Accuracy class

High : H For details of accuracy, see Table3.
 Precision : P
 Super precision : SP

Table 3 Accuracy



units : mm

Item	High (H)	Precision (P)	Super precision (SP)
Dim. <i>H</i> tolerance	±0.040	±0.020	±0.010
Dim. <i>W</i> tolerance	±0.050	±0.025	±0.015
Dim. Variation on <i>H</i> ⁽¹⁾	0.015	0.007	0.005
Dim. Variation on <i>W</i> ⁽¹⁾	0.020	0.010	0.007
Parallelism in operation Δ <i>H</i>	See Fig.1.1, Fig.1.2		
Parallelism in operation Δ <i>W</i>	See Fig.1.1, Fig.1.2		

Note (1) : It means the size variation between slide members mounted on the same track rail.

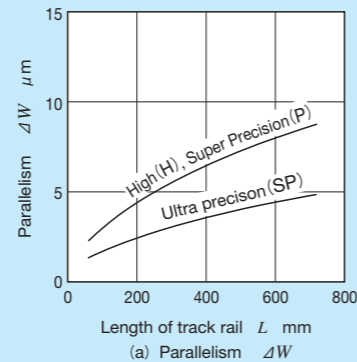
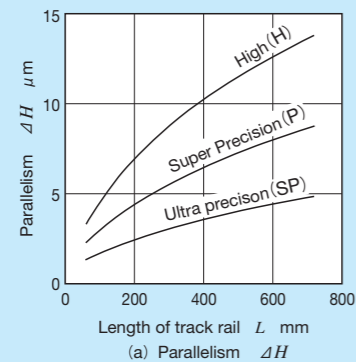


Fig.1.1 Parallelism in operation of LWLM

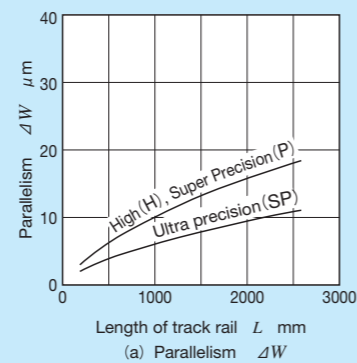
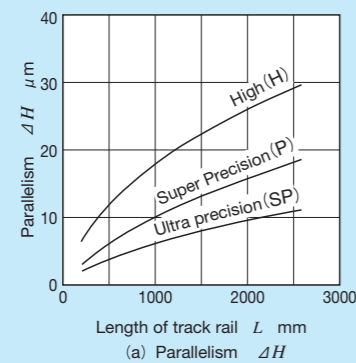


Fig.1.2 Parallelism in operation of LWM, LRWM

6 Special specification

/A, /E, /F, /I, /LR, /LFR, /MN, /W○, /Y○ For applicable special specifications, see Table 4. When several special specifications are combined, see Table3. For details of special specifications, see page III -28.

Table 4 Special specifications

Optional specification	Supplemental code	Size									
		7	9	11	1	2	3	4	5	6	
Butt-jointing track rails	/A	×	×	×	○	○	○	○	○	○	
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○	○	○	
Caps for rail mounting holes	/F	×	×	×	○	○	○	○	○	○	
Inspection sheet	/I	○	○	○	○	○	○	○	○	○	
Black chrome surface treatment	/LR	×	×	×	○	○	○	○	○	○	
Fluorine black chrome surface treatment	/LFR	×	×	×	○	○	○	○	○	○	
Without track rail mounting bolts	/MN	○	○	○	○ ⁽¹⁾	○ ⁽¹⁾	○ ⁽¹⁾	○ ⁽¹⁾	○ ⁽¹⁾	○ ⁽¹⁾	
Matched sets to be used as assembled group	/W○	○	○	○	○	○	○	○	○	○	
Specified grease	/Y○	○	○	○	○	○	○	○	○	○	

Note (1) : All mounting bolts for slide member and trackrail are not appended.

Table 5 Combination of special specifications

E	—								
F	○	○							
I	○	○	○						
LR	○	○	○	○					
LFR	○	○	○	○	—				
MN	○	○	○	○	○	○			
W	○	—	○	○	○	○	○		
Y	○	○	○	○	○	○	○	○	
	A	E	F	I	LR	LFR	MN	W	

Remarks 1 : The mark — indicates that this combination cannot be made.

2 : If a combination of special specifications is required, indicate the supplemental codes in alphabetical order.

Lithium-soap base grease (ALVANIA grease EP2 : SHELL) is pre-packed in Linear Way Module series slide members. Grease nipple is not prepared for Linear Way Module series, but an oil hole is available to lubricate with grease or oil supplied from machine or equipment to the recirculation pass in slide member. Structure of lubricating pass in machine or equipment as shown in Fig. 2 makes the lubrication easy.

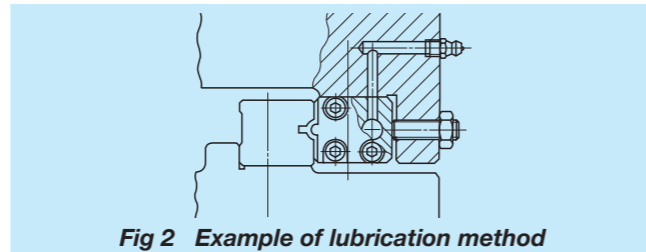


Fig 2 Example of lubrication method

Dust Protection

Linear Way Module is protected from dust by special rubber seals. But, if large amount of fine contaminants are present, or if large particles of foreign matters such as dust or chips may fall on the track rail, it is recommended to provide pro-

tective covers such as bellows for the entire linear motion mechanism. Bellows to match the dimensions of Linear Way Module are optionally available. They are easy to mount and highly effective for dust protection. If required, consult.

Precautions for Use

① Mounting surface, reference mounting surface, and general

To mount Linear Way Module series, correctly fit the reference mounting surface B and D of the slide member and track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig. 3)

The reference mounting surfaces B and D and mounting surfaces A and C of Linear Way Module are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.

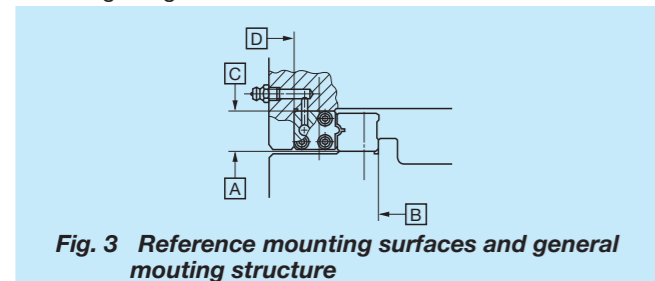


Fig. 3 Reference mounting surfaces and general mounting structure

② Mounting of Linear Way Module

Fig. 15 shows the standard mounting structure of Linear Way Module. As a convenient means to eliminate play or give preload, preload adjusting screws are often used in linear motion rolling guides.

Set the preload adjusting screws at the positions of fixing bolts of slide member and in the middle of the height of slide member, and then press the slide member by tightening the screw.

For mounting the slide member of Linear Way Module LM, it is recommended to fix the slide member from the table side, because the allowance for preload adjustment in the bolt hole of slide member is small. In this case, the bolt hole and the counter bore in the table should be made larger to give the adjustment allowance.

The preload amount differs depending on the operating conditions of machines or equipment. An excessive preload will result in short bearing life and raceway damage. The preload amount for general application should be adjusted to a zero or slight minus clearance in the ideal case.

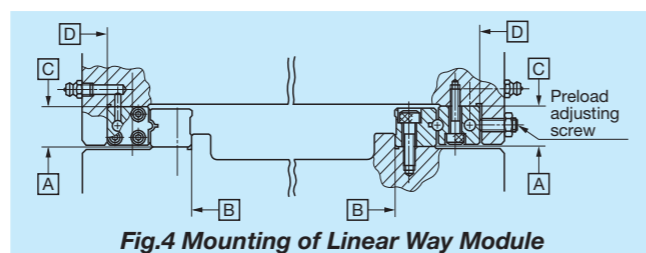


Fig.4 Mounting of Linear Way Module

③ Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surface as shown Fig. 5. Otherwise, corner radius R is recommended shown in Table 7.1, Table 7.2, Table 7.3.

Table 7.1, Table 7.2, Table 7.3 shows recommended shoulder heights and radius of the reference mounting surfaces.

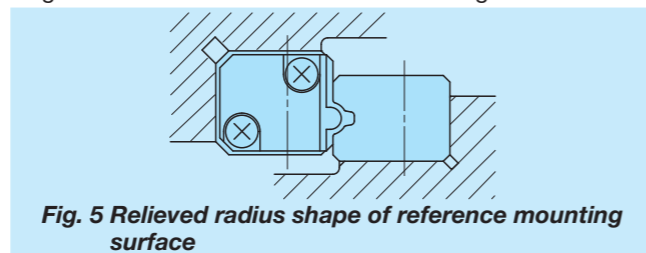


Fig. 5 Relieved radius shape of reference mounting surface

④ Tightening torque of mounting bolts

The standard torque values for Linear Way Module mounting bolts are shown Table 6. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown.

When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 6 Tightening torque of mounting bolts

Bolt size	Tightening torque N·m	
	Carbon steel bolt	Stainless steel bolt
M 2.6×0.45	—	0.7
M 3×0.5	1.7	1.1
M 4×0.7	4.0	—
M 5×0.8	7.9	—
M 6×1	13.3	—
M 8×1.25	32.0	—
M10×1.5	62.7	—
M12×1.75	108	—

Remark : The recommended tightening torque is for strength division 12.9 or property division A2-70.

Table 7.1 Corner radius and sholder height of reference mounting surfaces of Linear Way Module LM

unit : mm

Size	Track rail Shoulder height H
7	4
9	5
11	6

Table 7.2 Corner radius and sholder height of reference mounting surfaces of Linear Way Module M

unit : mm

Size	Slide member		Track rail	
	Corner radius R ₁ (max.)	Shoulder height h ₂	Shoulder height h ₂	Corner radius R ₂ (max.)
1	0.8	4	—	0.8
2	1	5	—	1
3	1	5	—	1
4	1.5	6	—	1
5	1.5	6	—	1
6	1.5	8	—	1.5

Table 7.3 Corner radius and sholder height of reference mounting surfaces of Linear Roller Way Module M

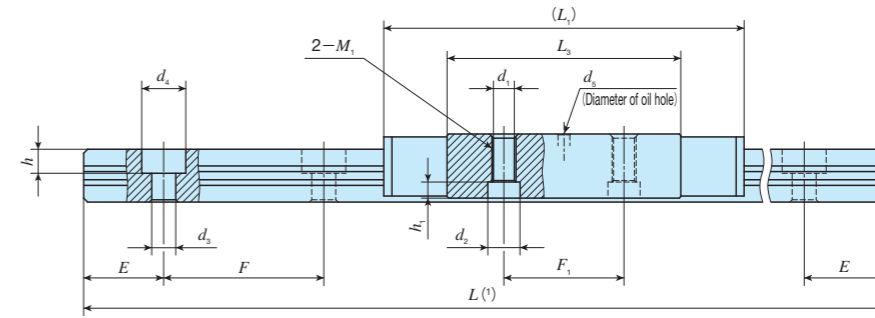
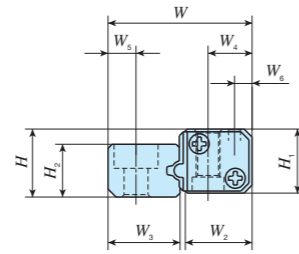
unit : mm

Size	Slide member		Track rail	
	Shoulder height h ₁	Corner radius R ₁ (max.)	Shoulder height h ₂	Corner radius R ₂ (max.)
2	7	1	5	1
3	8.5	1	6	1
4	10.5	1.5	6	1
5	12.5	1.5	8	1
6	14.5	2	8	1.5

IKO Linear Way Module

Linear Way Module LM

Shape			
Size	7	9	11



Model number	Mass(Ref.)		Dimensions of assembly mm		Dimensions of slide member mm										Dimensions of track rail mm						Mounting bolt for track rail ⁽³⁾ Bolt size×length	Basic dynamic load rating ⁽⁴⁾ C N	Basic static load rating ⁽⁴⁾ C ₀ N				
	Slide member g	Track rail g/m	H	W	H ₁	W ₂	W ₄	W ₆	L ₁	L ₃	F ₁	d ₁	d ₂	h ₁	M ₁	d ₅	H ₂	W ₃	W ₅	d ₃				d ₄	h	E	F
LWLM 7*	10	210	7	15	6.6	7.8	5	2.5	38	24	12	—	—	—	M2.6	1	4.8	6.8	3.3	3 ⁽⁴⁾	— ⁽⁴⁾	— ⁽⁴⁾	10	20	M2.6×8 ⁽⁴⁾	1 730	2 020
LWLM 9*	16	390	8.5	18	8	8.6	5.5	2.2	45	29.2	15	—	—	—	M3	1.5	6.6	9	3.5	3	5.5	3	12.5	25	M2.6×8	2 780	3 150
LWLM 11*	32	590	11	23	10	11.8	7	3	52	32.8	15	2.55	5	3	M3	2	8	10.8	5	3.5	6	4.5	20	40	M3×8	4 080	4 240

Notes⁽¹⁾ : Track rail lengths are shown in Table 2 on page II-214.

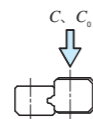
⁽²⁾ : The appended track rail mounting bolts are hexagon socket head stainless steel bolt of JIS B 1176 or equivalent.

⁽³⁾ : The directions of basic dynamic load rating (C), basic static load rating (C₀) and static moment rating (T₀, T_x, T_y) are shown in the sketches below.

⁽⁴⁾ : In LWLM7, counter bore is not provided to the track rail. Total height of track rail including bolt head is 7.4mm.

Remarks 1 : Slide member mounting bolt are not appended.

2 : Model numbers marked * are semi-standard items.



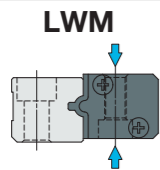
Example of identification number of assembled set

Model code	Size	Part code	Class symbol	Supplemental code
LWLM	9	M2 R200	P	/W2
①	②	③	④	⑤
① Series LWLM Linear Way LM	② Size 7, 9, 11	③ Number of slide unit (two units)	④ Accuracy class H High P Precision SP Super precision	⑤ Special specification E, I, MN, W, Y

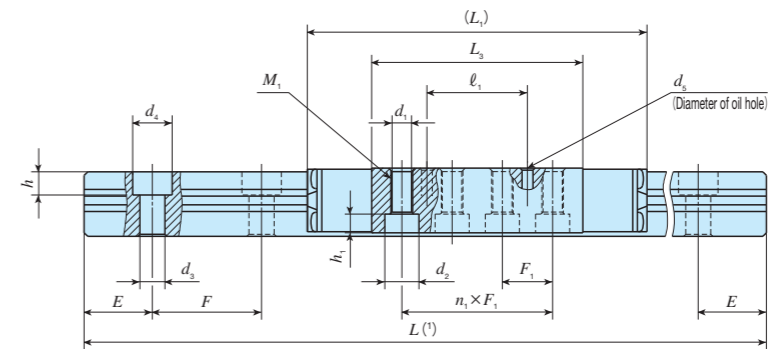
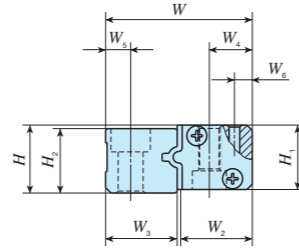
IKO Linear Way Module

Linear Way Module M

Shape



Size **1 2 3 4 5 6**



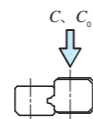
Model number	Mass(Ref.)		Dimensions of assembly mm		Dimensions of slide member mm										Mounting bolt for slide member ⁽²⁾ Bolt size×length	Dimensions of track rail mm							Mounting bolt for track rail ⁽²⁾ Bolt size×length	Basic dynamic load rating ⁽⁴⁾ C N	Basic static load rating ⁽⁴⁾ C ₀ N				
	Slide member kg	Track rail kg/m	H	W	H ₁	W ₂	W ₄	W ₆	L ₁	L ₃	n ₁ ×F ₁	d ₁	d ₂	h ₁		M ₁	ℓ ₁	d ₅	H ₂	W ₃	W ₅	d ₃				d ₄	h	E	F
LWM 1*	0.07	1.20	14	28	13	14.6	9	4	65	41.2	2×13	3.4	6.5	3.1	M 4	13	2	M3×14	13	13	5.5	4.5	8	4.5	20	40	M 4×14	4 720	6 410
LWM 2*	0.11	1.93	17	35	16	17	10	4	75	47.2	2×15	4.4	8	4.1	M 5	15	3	M4×18	16	17	6	6	9.5	5.4	30	60	M 5×18	7 150	9 240
LWM 3*	0.17	2.71	19	41	18	20	12	5	95	58.8	3×14	5.4	9.5	5.2	M 6	—	3	M5×20	18	20	7	7	11	6.5	30	60	M 6×20	13 700	16 600
LWM 4*	0.32	3.49	21	51	20	25	15	6	125	80.6	3×20	6.8	11	6.2	M 8	—	3	M6×22	20	25	9	9	14	9	40	80	M 8×22	23 200	27 400
LWM 5*	0.56	5.25	25	63	24	30	18	8	145	94.8	4×20	6.8	11	6.2	M 8	20	3	M6×28	24	31	12	11	17.5	11	50	100	M10×25	35 300	41 000
LWM 6*	1.35	7.56	31	78	30	40	24	11	180	131	5×22	8.6	14	8.2	M10	—	3	M8×35	30	36	14	14	20	13	60	120	M12×35	74 100	80 900

Notes⁽¹⁾ : Track rail lengths are shown in Table 2 on page II-214.

⁽²⁾ : The appended track rail mounting bolts are hexagon socket head bolt of JIS B 1176 or equivalent.

⁽³⁾ : The directions of basic dynamic load rating (C), basic static load rating (C₀) and static moment rating (T₀, T_x, T_y) are shown in the sketches below.

Remark : Model numbers marked * are semi-standard items.



Example of identification number of assembled set

Model code	Size	Part code	Class symbol	Supplemental code
LWM	3	M2 R660	P	/W2
①	②	③	④	⑤

① Series
LWM Linear Way M

② Size
1, 2, 3, 4, 5, 6

③ Number of slide unit (two units)

④ Length of track rail (660mm)

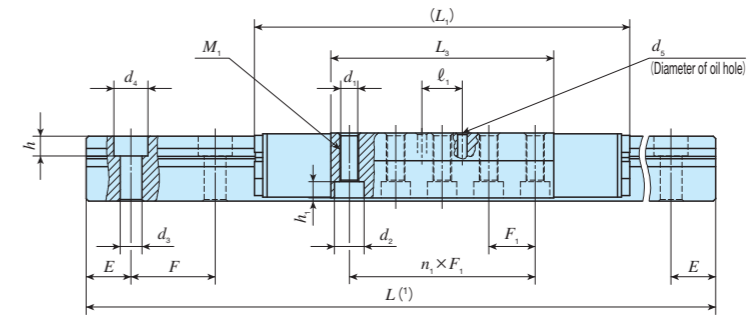
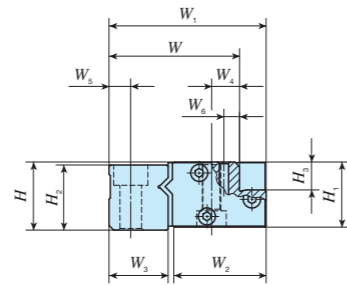
⑤ Accuracy class
H High
P Precision
SP Super precision

⑥ Special specification
A, E, F, I, LR, LFR
MN, W, Y

IKO Linear Way Module

Linear Roller Way Module M

Shape					
Size	2	3	4	5	6



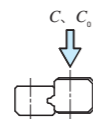
Model number	Mass(Ref.)		Dimensions of assembly mm			Dimensions of slide member mm											Mounting bolt for slide member ⁽²⁾ Bolt size×length	Dimensions of track rail mm						Mounting bolt for track rail ⁽²⁾ Bolt size×length	Basic dynamic load rating ⁽⁴⁾ C N	Basic static load rating ⁽⁴⁾ C ₀ N					
	Slide member kg	Track rail kg/m	H	W	W ₁	H ₁	H ₃	W ₂	W ₄	L ₁	L ₃	n×F ₁	M ₁	d ₁	d ₂	h ₁		W ₆	l ₁	d ₅	H ₂	W ₃	W ₅				d ₃	d ₄	h	E	F
LRWM 2*	0.26	1.98	19	33	39.6	18	7.5	22.9	8	105	63	4×12	M 5	4.4	8	4.1	4	10	3	M4×20	18	15	6	6	9.5	5.4	30	60	M 5×20	9 700	10 800
LRWM 3*	0.46	2.92	22	42	50.6	21	9	29.8	9	122	72	4×15	M 6	5.4	9.5	5.2	5	13	3	M5×25	21	19	7	7	11	6.5	30	60	M 6×25	18 500	20 300
LRWM 4*	0.98	4.64	28	56	65.6	27	11	39.4	13	158	96	5×16	M 8	6.8	11	6.2	6	—	3	M6×32	27	24	9	9	14	8.6	40	80	M 8×32	36 500	39 800
LRWM 5*	2.03	6.85	33	70	81.6	32	13	49.1	16	212	140	5×24	M10	8.6	14	8.2	7	—	3	M8×35	32	30	12	11	17.5	10.8	50	100	M10×35	67 900	75 500
LRWM 6*	3.42	9.25	38	83	96.6	37	15	58.6	21	256	168	6×25	M10	8.6	14	8.2	8	28	3	M8×40	37	35	14	14	20	13	60	120	M12×40	99 800	109 000

Notes⁽¹⁾ : Track rail lengths are shown in Table 2 on page II-214.

⁽²⁾ : The appended track rail mounting bolts are hexagon socket head bolt of JIS B 1176 or equivalent.

⁽³⁾ : The directions of basic dynamic load rating (C), basic static load rating (C₀) and static moment rating (T₀, T_x, T_y) are shown in the sketches below.

Remark : Model numbers marked * are semi-standard items.



Example of identification number of assembled set

Model code	Size	Part code	Class symbol	Supplemental code
LRWM	3	M2 R660	P	/W2
①	②	③	④	⑤

① Series
LRWM Linear Roller Way M

② Size
2, 3, 4, 5, 6

③ Number of slide unit (two units)

④ Length of track rail (660mm)

⑤ Accuracy class
H High
P Precision
SP Super precision

⑥ Special specification
A, E, F, I, LR, LFR
MN, W, Y