Crossed Roller Way

CRW／CRWM

IKO Crossed Roller Way is a linear motion rolling guide in which a roller cage is incorporated between two ways with V-shaped raceways. As the cylindrical rollers are alternately crossed, Crossed Roller Way can receive loads in any direction and can achieve very smooth linear motion with very high accuracy.
Wide variations in size are available for selections suitable for each application.

Standard type and module type

Two types are available: the standard type and the module type. In the standard type four ways and two roller cages are used as one set, while in the module type two inner ways are integrated into a single piece.

Very smooth operation

Precisely finished raceways are combined with roller cages, in which the length of super precise rollers is accurately controlled to avoid skewing. Very smooth linear motion with very little frictional resistance and free from stick-slip can be achieved.

High carbon chromium bearing steel type and stainless steel type

Standard types include high carbon chromium bearing steel type and stainless steel type.

Easy mounting

The mounting holes of the ways are female thread holes with a counter bore. So the mounting method is flexible, allowing the ways to be mounted either by using the female threads of the ways together with bolts inserted through the holes prepared on machines or by using the female threads prepared on machines. Mounting structure can be designed freely.
Two inner ways of module type are integrated into a single piece. The mounting structure can be made simple and, furthermore, as errors from extra machining of the mounting parts can be avoided, accuracy of linear motion can be improved.

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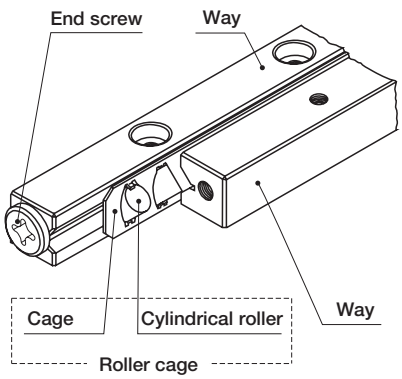
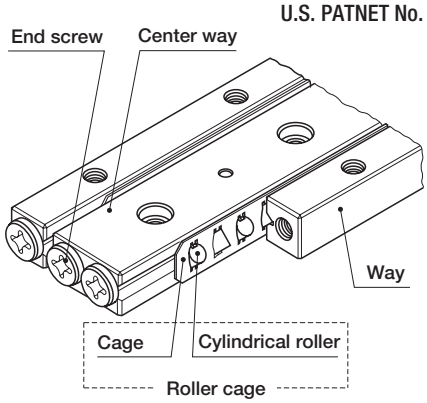


Note : One set consists of four ways and two roller cages.

CRW

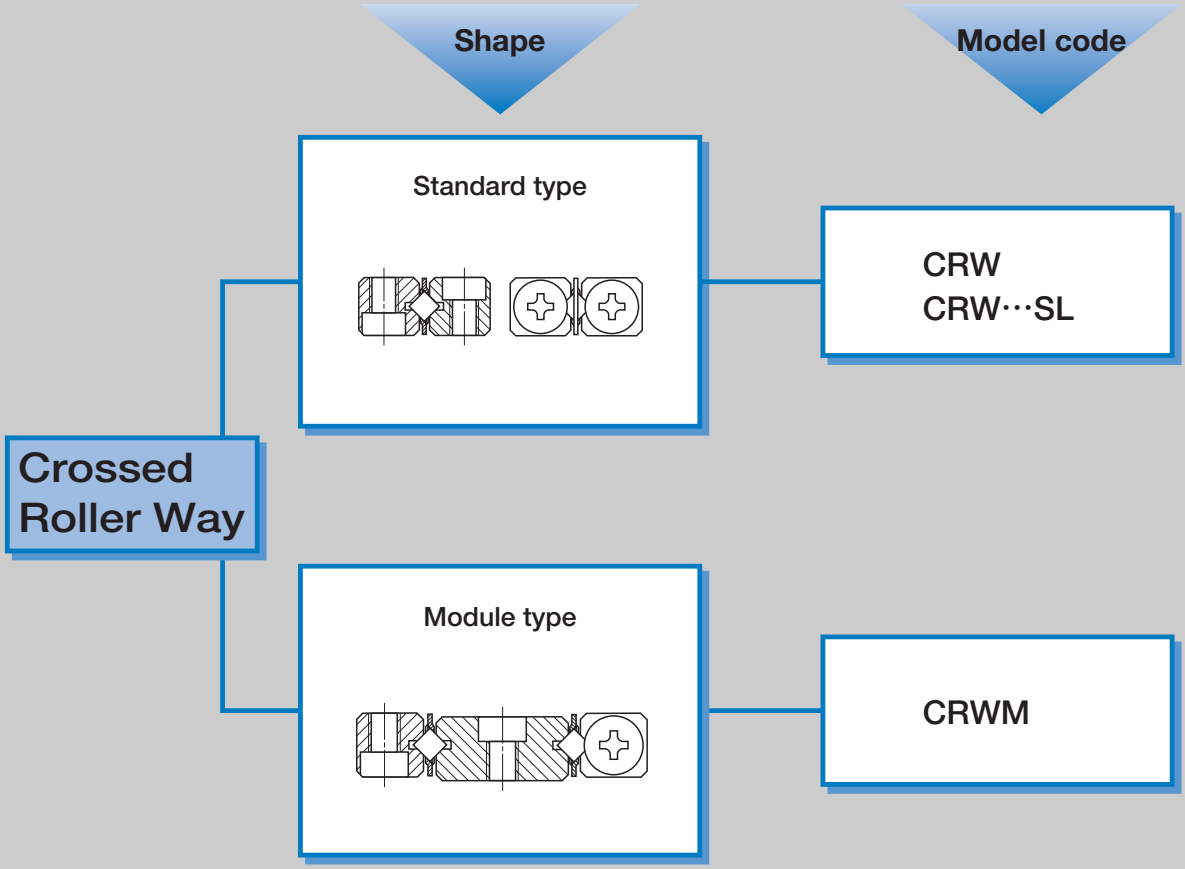


Note : One set consists of one center way, two ways and two roller cages.

CRWM

Structure of Crossed Roller Way

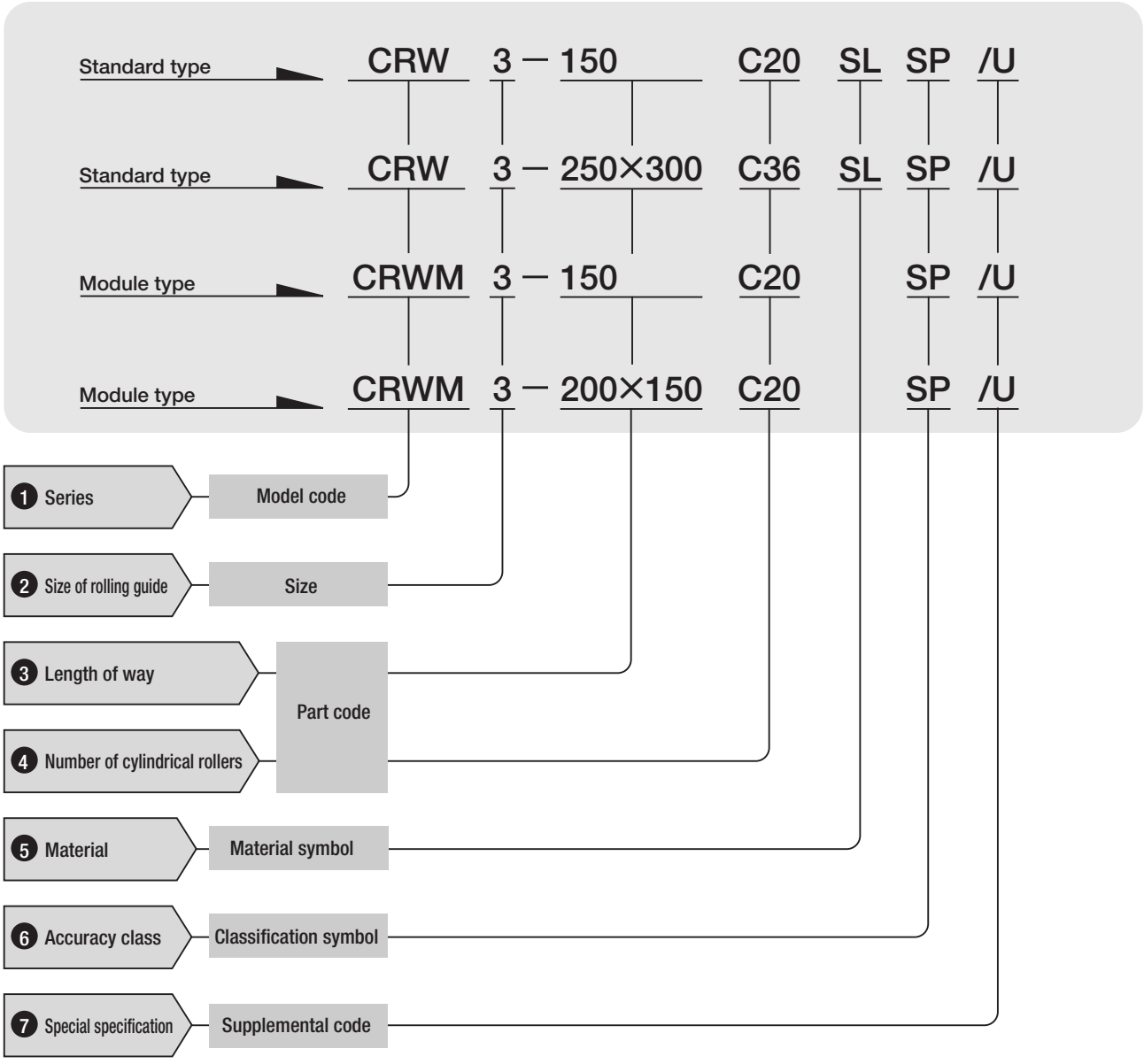
Crossed Roller Way series



Remark : Models with "SL" are stainless steel type.

Identification number and specification

The specification of Crossed Roller Way is indicated by the identification number, consisting of a model code, a size, a part code, a material symbol, a classification symbol and any supplemental codes.



1 Series

Standard type : CRW
Module type : CRWM

For available models and sizes, see Table 1.

2 Size of rolling guide

3 Length of way

○
○×○

Indicate the length of way in mm. Ways with different lengths can be combined. For the lengths of ways, see the table of dimensions.
To indicate a combination of ways with different lengths, see "Combination of way lengths ".

4 Number of cylindrical rollers

No symbol
C○

The number of cylindrical rollers incorporated in one cage is indicated. When this number is not indicated, the number of cylindrical rollers shown in the table of dimensions are incorporated in one cage.

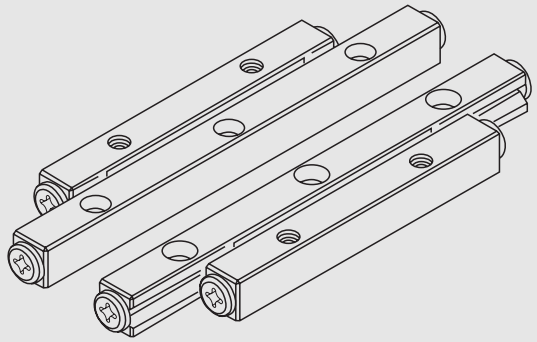
Combination of way lengths

Combination for the standard type

One set consists of two short ways and two long ways together with two roller cages.
As standard, the number of rollers in one cage is the number of rollers for the shorter of the two way lengths shown in the dimension tables. If a different number of rollers is required, indicate it in the identification number.

Example
CRW 6 − 300 × 400 C24

24 pcs. of rollers incorporated in one cage
Long way length : 400 mm
Short way length : 300 mm

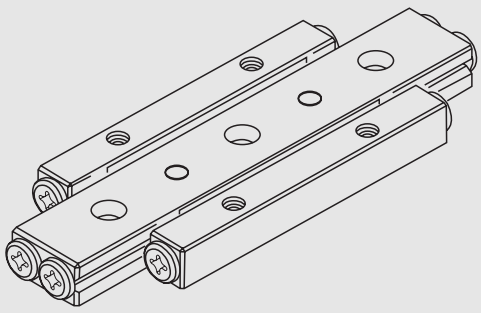


Combination for the module type

One set consists of one center way, two ways together with two roller cages.
As standard, the number of rollers in one cage is the number of rollers for the shorter of the two way lengths shown in the dimension tables. If a different number of rollers is required, indicate it in the identification number.

Example
CRWM 3 − 200 × 150 C20

20pcs. of rollers incorporated in one cage
Way length : 150 mm
Center way length : 200 mm



5 Material

High carbon steel made : No symbol
Stainless steel made : SL

For applicable material types, see Table 1.

Table 1 Types and sizes

Type / Size	Standard type		Module type
	High carbon steel made	Stainless steel made	High carbon steel made
1	○	○	○
2	○	○	○
3	○	○	○
4	○	○	○
6	○	○	—
9	○	—	—
12	○	—	—
15	○	—	—
18	○	—	—
24	○	—	—

6 Accuracy class

Standard : No symbol
Super precision : SP

For the allowable values of parallelism of the raceway to the reference mounting surface and of parallelism between two raceways of CRWM, see Fig. 1.

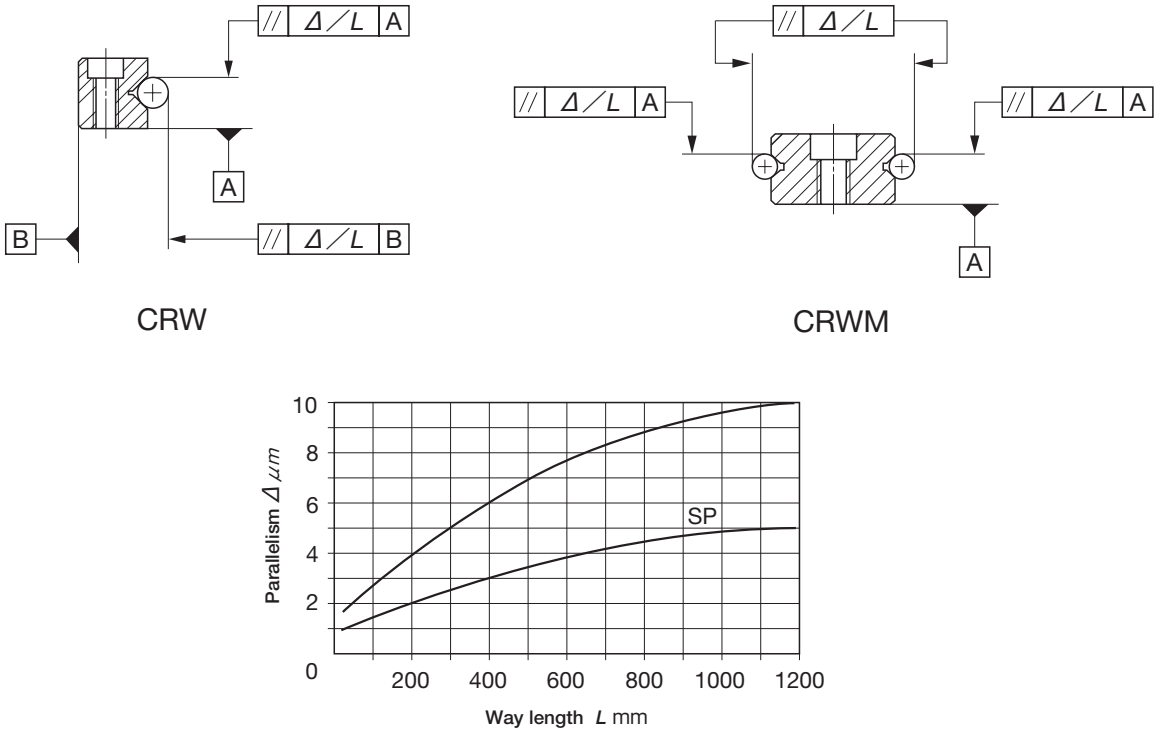


Fig. 1 Accuracy of Crossed Roller Way

7 Special specification

For applicable special specifications, see Table 2.
When several special specifications are required, see Table 3.
For details of special specifications, see page E-8.

Table 2 Special specifications

Special specification	Supplemental code	Standard type		Module type
		High carbon steel made	Stainless steel made	High carbon steel made
Special mounting screws	B	△ (1)	—	△ (1)
High rigidity roller cage	M	△ (2)	△ (2)	—
End stopper SA	SA	△ (3)	△ (3)	△ (3)
End stopper SB	SB	△ (3)	△ (3)	△ (3)
Wiper seal	U	△ (3)	△ (3)	△ (3)

Note(1) : Not applicable to size 1 and 2 models.
(2) : Not applicable to size 1, 2, 3 and 4 models.
(3) : Not applicable to size 1 models.
Remark : In the table, the mark △ indicates that it is applicable to some sizes.

Table 3 Combinations of special specifications

	B	M	SA	SB
M	○			
SA	○	○		
SB	○	○	—	
U	○	○	—	—

Remark 1 : In the table, the mark – indicates that this combination can not be made.
2 : When several special specifications are required, arrange the supplemental codes alphabetically.

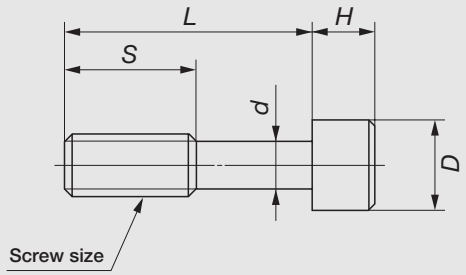
Special specifications

Details of special specifications of Crossed Roller Way are shown below. Indicate any specification by adding the supplemental code to the end of the identification number.

Special mounting screws /B

Since the way at the adjusting side moves when the preload is set, some clearance between the mounting screw and the mounting hole is necessary. However, if sufficient clearance can not be provided or if the mounting screw is fixed from the way side to the table as shown in Fig. 2, special mounting screws may be needed.
Further, if the positioning accuracy of mounting holes in table or bed are not good, special screws can also be used. The special mounting screws are delivered as appended parts upon request, but available in carbon steel type only.

Table 4 Dimensions of special mounting screws



unit : mm

Size	Screw size	*d*	*D*	*H*	*L*	*S*
3	M 3	2.3	5	3	12	5
4	M 4	3.1	6	4	15	6
6	M 5	3.9	8	5	20	8
9	M 6	4.6	8.5	6	30	12
12	M 8	6.2	11.5	8	40	17
15	M10	7.9	14	10	45	16
18	M12	9.6	16	12	50	19
24	M14	11.2	19.5	14	70	26

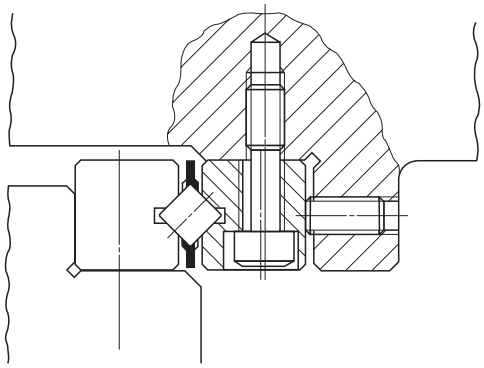


Fig. 2 Mounting example with special mounting screw

High rigidity roller cage /M

High rigidity cages made of copper alloy, which are suitable for use in vertical applications, are optionally available. This cage is designed to prevent rollers from falling out in one direction. (See Fig. 3.)
For vertical usage, it is recommended to use this cage together with the end stopper SB.

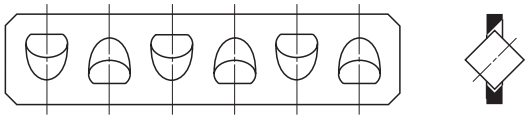
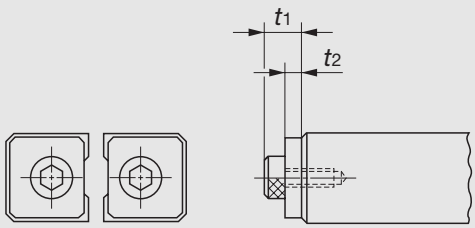


Fig. 3 High rigidity cage

End stopper SA /SA

When the cage is stroked frequently or subjected to vibration or unevenly distributed load, the cage position may shift while in operation. It is recommended, in such cases, to replace the end screw with the end stopper SA.
Size 1 models are assembled with stoppers similar to the SA end stopper as standard.

Table 5 Dimensions of end stopper SA



unit : mm

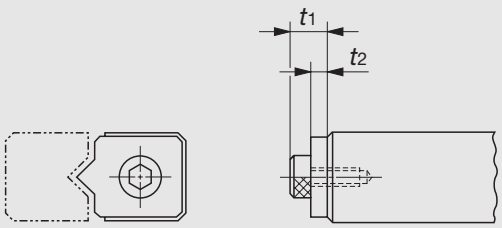
Size	t_1	t_2
2	4.5	2
3	5	2
4	7	3
6	8	3
9	10	4

Size	t_1	t_2
12	11	5
15	14	6
18	14	6
24	16	6

End stopper SB /SB

When the high rigidity cage is used on a vertical axis, the end screw is replaced with the end stopper SB to limit the stroking of the cage at the way end.
The end stopper SB can not be mounted on all ends of the ways in the assembly. Fig. 4 shows the standard mounting arrangement. The mounting arrangement can be changed by loosening screws and resetting the end stoppers.

Table 6 Dimensions of end stopper SB



unit : mm

Size	t_1	t_2
2	4.5	2
3	5	2
4	7	3
6	8	3
9	10	4

Size	t_1	t_2
12	11	5
15	14	6
18	14	6
24	16	6

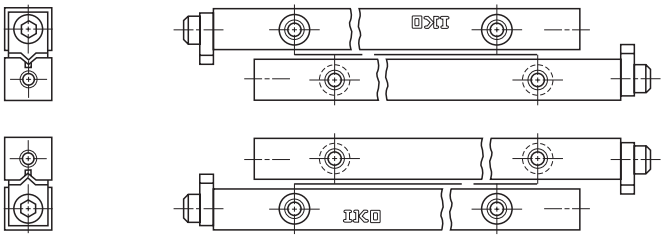
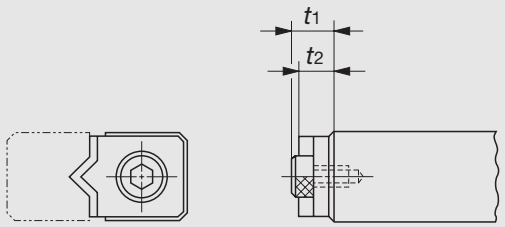


Fig. 4 Arrangement of end stoppers SB

Wiper seal /U

The end screw is replaced with the wiper seal to prevent foreign particles from intruding into the raceways. The wiper seal also serves as the end stopper providing the same function as the end stopper SB.
The wiper seal cannot be mounted on every way end. Fig. 5 shows the standard mounting arrangement. The mounting arrangement can be changed by loosening screws and resetting the wiper seals.

Table 7 Dimensions of wiper seal



unit : mm

Size	t_1	t_2
2	4.5	4
3	5	4
4	7	6
6	8	6
9	10	7.5

Size	t_1	t_2
12	11	8.5
15	14	11
18	14	11
24	16	11

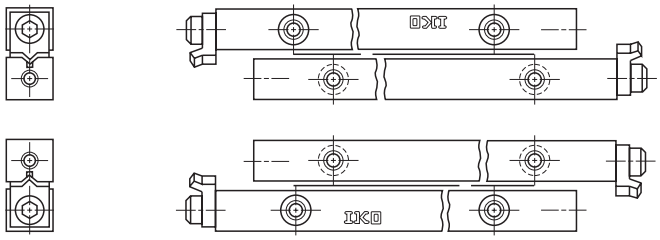


Fig. 5 Arrangement of wiper seals

Load Rating and Allowable Load

Summarized descriptions of load ratings of Crossed Roller Way are given below. For details of load rating definitions and load calculations, see "General description".

● Basic dynamic load rating *C*

The basic dynamic load rating is defined as the constant load both in direction and magnitude under which a group of identical Crossed Roller Ways are individually operated and 90% of the units in the group can travel 100 x 10^3 meters free from material damage due to rolling contact fatigue.

● Basic static load rating C_0

The basic static load rating is defined as the static load that gives a prescribed constant contact stress at the center of the contact area between the rolling element and raceway receiving the maximum load.

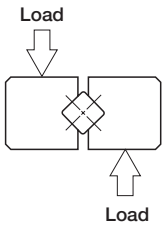
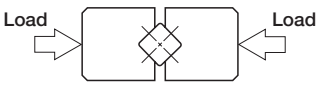
● Allowable load *F*

The allowable load is a load under which the sum of elastic deformations of the rolling element and the raceway in the contact area subjected to the maximum contact stress is small enough to guarantee accuracy and smooth rolling movement.
Therefore, when very smooth and highly accurate linear motion is required, make sure that the applied load is well within the allowable load value.

● Calculation of load ratings and allowable load

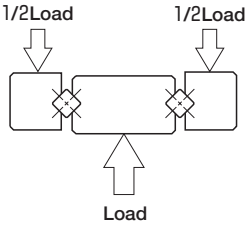
In Crossed Roller Way, the number of cylindrical rollers sharing a load differs according to the load direction. Therefore, it is necessary to obtain load ratings and allowable load for each direction.
The basic dynamic load rating C_U, basic static load rating C_{0U} and allowable load F_U shown in the table of dimensions indicate values per one roller.
The basic dynamic load rating *C*, basic static load rating C_0 and allowable load *F* of Crossed Roller Way are obtained from the formulae shown in Tables 8.1 and 8.2.

Table 8.1 Calculation formulae for load ratings and allowable loads of CRW

	Upward/downward load (1)	Lateral load
Load condition		
Basic dynamic load rating C N	$C_r = \left\{\left(\frac{Z}{2}-1\right)2p\right\}^{1/36}\left(\frac{Z}{2}\right)^{3/4}C_U \cdots (1)$	$C_a = \left\{\left(\frac{Z}{2}-1\right)2p\right\}^{1/36}\left(\frac{Z}{2}\right)^{3/4}2^{7/9}C_U \cdots (4)$
Basic static load rating C_0 N	$C_{0r} = \left(\frac{Z}{2}\right)C_{0U} \cdots (2)$	$C_{0a} = 2\left(\frac{Z}{2}\right)C_{0U} \cdots (5)$
Allowable load F N	$F_r = \left(\frac{Z}{2}\right)F_U \cdots (3)$	$F_a = 2\left(\frac{Z}{2}\right)F_U \cdots (6)$
Meaning of symbols	C_r : Basic dynamic load rating for upward / downward load, N C_a : Basic dynamic load rating for lateral load, N C_{0r} : Basic static load rating for upward / downward load, N C_{0a} : Basic static load rating for lateral load, N F_r : Allowable load for upward / downward load, N F_a : Allowable load rating for lateral load, N Z : Number of cylindrical rollers incorporated in one roller cage (Disregard any decimal for Z/2) p : Pitch between cylindrical rollers, mm C_U : Basic dynamic load rating per one roller, N C_{0U} : Basic static load rating per one roller, N F_U : Allowable load per one roller, N	

Note(1) : When using one set of CRW type (four ways and two roller cages) in parallel in this load direction, use formulae (7), (8) and (9) in Table 8.2.

Table 8.2 Calculation formulae for load ratings and allowable loads of CRWM

	Upward/downward load	Lateral load
Load condition		
Basic dynamic load rating C N	$C_r = \left\{\left(\frac{Z}{2}-1\right)2p\right\}^{1/36}\left(\frac{Z}{2}\right)^{3/4}2^{7/9}C_U \cdots (7)$	$C_a = \left\{\left(\frac{Z}{2}-1\right)2p\right\}^{1/36}\left(\frac{Z}{2}\right)^{3/4}2^{7/9}C_U \cdot (10)$
Basic static load rating C_0 N	$C_{0r} = 2\left(\frac{Z}{2}\right)C_{0U} \cdots (8)$	$C_{0a} = 2\left(\frac{Z}{2}\right)C_{0U} \cdots (11)$
Allowable load F N	$F_r = 2\left(\frac{Z}{2}\right)F_U \cdots (9)$	$F_a = 2\left(\frac{Z}{2}\right)F_U \cdots (12)$
Meaning of symbols	C_r : Basic dynamic load rating for upward / downward load, N C_a : Basic dynamic load rating for lateral load, N C_{0r} : Basic static load rating for upward / downward load, N C_{0a} : Basic static load rating for lateral load, N F_r : Allowable load for upward / downward load, N F_a : Allowable load rating for lateral load, N Z : Number of cylindrical rollers incorporated in one roller cage (Disregard any decimal for Z/2) p : Pitch between cylindrical rollers, mm C_U : Basic dynamic load rating per one roller, N C_{0U} : Basic static load rating per one roller, N F_U : Allowable load per one roller, N	

Selection of Specification

When selecting the specification of Crossed Roller Way, stroke length and number of rollers should be considered as well as the accuracy, load ratings and allowable load.

● Stroke length and number of rollers

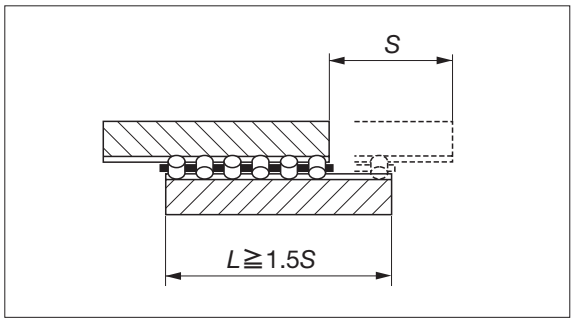
Stroke length of Crossed Roller Way is related to the way length and number of rollers in a roller cage, etc. Therefore, selection procedure is as follows while considering the operating stroke length and applied loads.

❶ Calculation of way length

Way length is generally more than 1.5 times of operating stroke length and is obtained from the following formula.

$$L \geqq 1.5S \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (10)$$

where, L: Way length, mm
S: Operating stroke length, mm



❷ Calculation of maximum stroke length

It is suggested that the operating stroke length is 80% or less of the maximum stroke length. The maximum stroke length is obtained from the following formula.

$$S_1 \geqq \frac{1}{0.8} S \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots (11)$$

where, S_1: Maximum stroke length, mm
S: Operating stroke length, mm

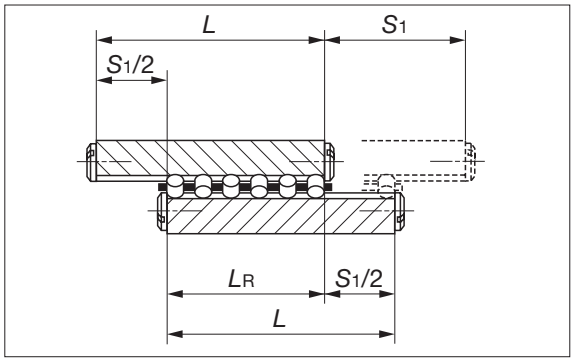
❸ Calculation of cage length and number of rollers

Cage length is determined by the way length and maximum stroke length.
In calculation of cage length, the calculation method is different according to the specification of end screws, end stoppers, etc.

(1) With standard end screws or end stoppers SA (except size 1 models)
The distance between rollers at both ends in one cage is that way length minus half of maximum stroke length as in the following formula.

$$L_R = L - \frac{S_1}{2} \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots (12)$$

where, L_R: Allowable distance between rollers at both ends in one cage, mm
L: Way length, mm
S_1: Maximum stroke length, mm

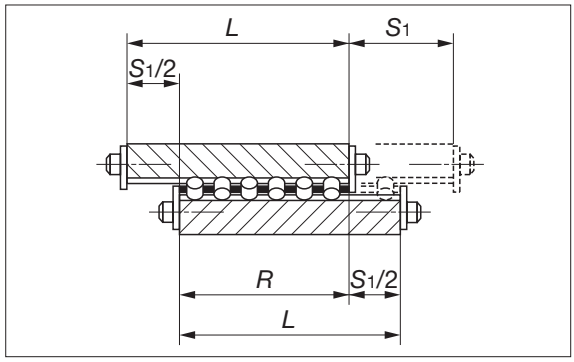


Number of rollers in one cage is obtained from the following formula.

$$Z = \frac{L_R - D_W}{p} + 1 \quad \cdots\cdots\cdots\cdots\cdots\cdots (13)$$

where, Z: Number of rollers in one cage (Disregard any decimal.)
L_R: Allowable distance between rollers at both ends in one cage, mm
D_W: Roller diameter (See dimension tables.), mm
p: Roller pitch (See dimension tables.), mm

(2) In case of size 1 models
Stroke length is limited by the cage and end stoppers.
The cage length is obtained from the following formula.



$$R = L - \frac{S_1}{2} \quad \cdots\cdots\cdots\cdots\cdots\cdots (14)$$

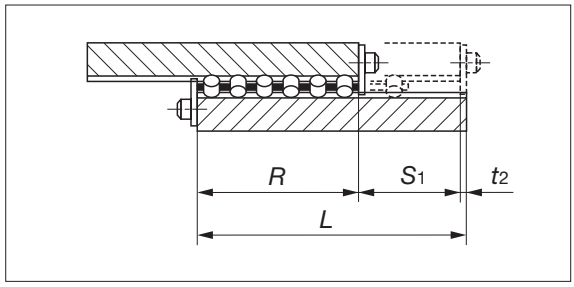
where, R: Allowable cage length, mm
L: Way length, mm
S_1: Maximum stroke length, mm

Number of rollers in one cage is obtained from the following formula.

$$Z = \frac{R - 2e}{p} + 1 \quad \cdots\cdots\cdots\cdots\cdots\cdots (15)$$

where, Z: Number of rollers in one cage (Disregard any decimal.)
R: Allowable cage length, mm
e: End dimension of cage (See dimension tables.), mm
p: Roller pitch (See dimension tables.), mm

(3) With end stoppers SB or wiper seals
Stroke length is limited by the cage and end stoppers or wiper seals. The cage length is obtained from the following formula.



$$R = L - t_2 - S_1 \quad \cdots\cdots\cdots\cdots\cdots\cdots (16)$$

where, R: Allowable cage length, mm
L: Way length, mm
S_1: Maximum stroke length, mm
t_2: Thickness of end stopper SB or wiper seal, mm (See Table 6 on page E-10 or Table 7 on page E-11.)

The number of rollers in a roller cage is obtained from formula (15) in the same way as size 1 models.

Calculation example

Model ····· CRW 6

Applied load ····· $P = 7000$ N

Stroke length ····· $S = 195$ mm

For parallel use of Crossed Roller Ways under the above specified conditions (See Fig. 12 on page E-21.), select the suitable specification.

❶ Calculation of way length

From formula (10), way length L is;

$$L \geqq 1.5S = 1.5 \times 195 = 292.5$$

Therefore, standard way length L = 300 mm is selected from dimension tables.

❷ Calculation of maximum stroke length

From formula (11), maximum stroke length S_1 is;

$$S_1 \geqq \frac{1}{0.8} S = \frac{1}{0.8} \times 195 \fallingdotseq 244$$

From formula (12), allowable distance between rollers at both ends in one cage L_R is;

$$L_R = L - \frac{S_1}{2} = 300 - \frac{244}{2} = 178$$

❸ Calculation of number of rollers

From formula (13), number of rollers in one cage is;
(D_W = 6 mm and p = 9 mm from dimension tables)

$$Z = \frac{L_R - D_W}{p} + 1 = \frac{178 - 6}{9} + 1 \fallingdotseq 20.1$$

Therefore, number of rollers Z = 20 in one cage is obtained by disregarding any decimal.

❹ Calculation of allowable load

From formula (9) in Table 8.2 on page E-13, allowable load F in parallel usage is;
(allowable load per one roller F_U = 764 N from dimension tables)

$$F = 2\left(\frac{Z}{2}\right) F_U = 2\left(\frac{20}{2}\right) \times 769 = 15380$$

In the calculation result, the allowable load F is larger than the applied load P = 7000 N. Therefore, this model can be used within the allowable load. If the applied load exceeds the calculated allowable load, it is necessary to consider increasing the way length and number of rollers, or to select a model with larger diameter rollers.

❺ Determination of specification

As a result of the above calculations, CRW 6-300 with 20 rollers is suitable.
The selected model number is CRW 6-300 C20.

Lubrication and Dust Protection

Oil or grease is used as a lubricant for Crossed Roller Way. Oil is generally used for high speed or low friction operation. On the other hand, grease is used when operating speed is low. In case of grease lubrication, a good quality lithium-soap base grease is recommended. When operation speed is low and load is light, coat the raceways with grease before use and relubricate periodically. Structure shown in Fig. 6 makes the relubrication easy.
Crossed Roller Ways are finished very accurately. However, if dust or foreign particles intrude, life and accuracy will be adversely affected. In order to prevent the intrusion of dust, dirt, water, etc., it is recommended to use non-contact type shields (labyrinth seal) as shown in Fig. 7 or contact type wiper seals shown in Fig.8 at the outside of installed unit.

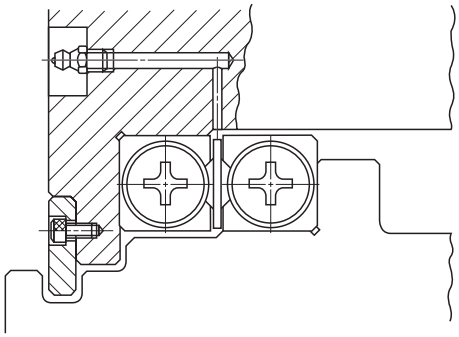


Fig. 6 Example of lubrication method

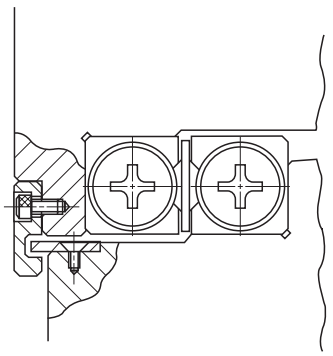


Fig. 7 Example of non-contact type shield (Labyrinth seal)

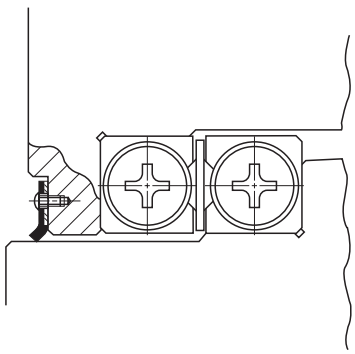


Fig. 8 Example of wiper seal

❶ Specification of Crossed Roller Way

Check whether the specification of selected Crossed Roller Way meets the requirements for the application of the machine or equipment.

❷ Handling of Crossed Roller Way

Crossed Roller Way is a high precision product, so handle it with care. The cage can be modified by cutting it to the required cage length. When cutting, do not deform the cage.

❸ Accuracy of mating mounting surfaces

The general configurations of mating mounting surfaces for CRW and CRWM are shown in Figs. 9.1 and 9.2, respectively.
Accuracy of the mating mounting surfaces is, in general, as shown in Table 9. The accuracy of mating mounting surfaces directly affects the operating accuracy and performance of Crossed Roller Way. If very high operating accuracy is required, higher accuracy of mating mounting surfaces than the values shown in Table 9 may be needed.

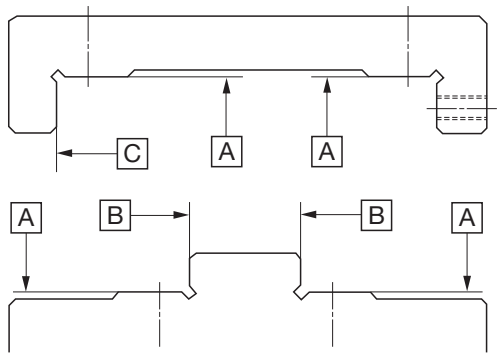


Fig. 9.1 Example of mating mounting surfaces for CRW

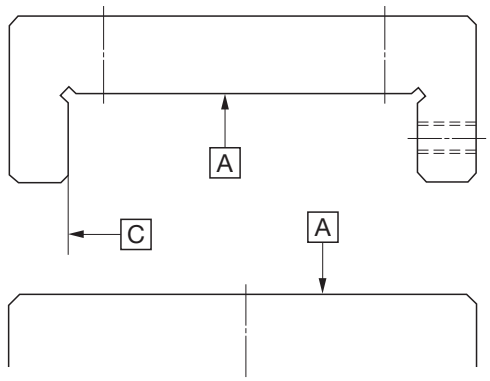


Fig. 9.2 Example of mating mounting surfaces for CRWM

Table 9 Accuracy of mating mounting surfaces

A surface	・This accuracy directly affects the operating accuracy. Flatness of A surface (four places) should be equal or nearly equal to the value of parallelism in Fig. 1 on page E-6.
B and C surfaces	・Flatness Flatness of these surfaces directly affects preload. The value of flatness should be equal or nearly equal to the value of parallelism in Fig. 1 on page E-6. ・Squareness Squareness to A surface affects the rigidity of assembled unit in the preload direction. Consequently, a high accuracy finish is necessary.

❹ Preload method

Preload adjusting screws are generally used for setting preload, as shown in Fig. 10. The size of the preload adjusting screws are the same as that of the mounting screws for the ways. The position of the preload adjusting screws is at the same position as the mounting screws of the ways. For centering, use half of way height *H*.

Preload amounts differ according to the application of machine or equipment. Excessive preloads deteriorate life and often damage the raceways. Therefore, zero or minimal preload is recommended in general. If accuracy and rigidity are important, a setting plate as shown in Fig. 11.1 or a tapered jib as shown in Fig. 11.2 may be used.

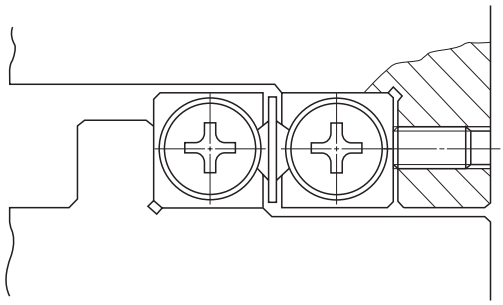


Fig. 10 General example of preload

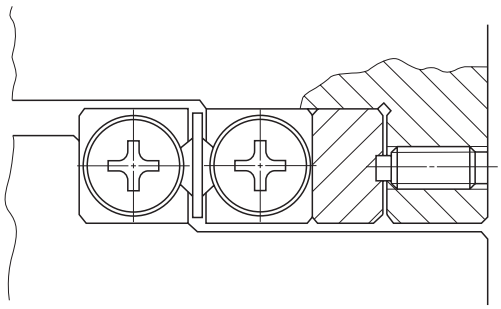


Fig. 11.1 Example of setting plate

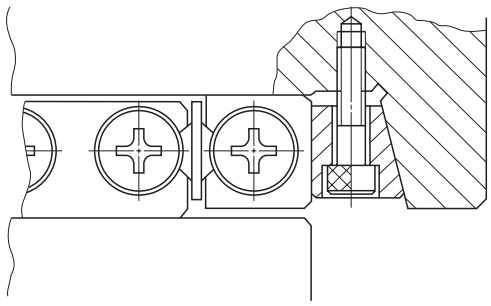


Fig. 11.2 Example of tapered jib

❺ Crossed Roller Way does not contain synthetic resin parts and can be operated at high temperatures. But, when the temperature exceeds 100℃, consult IKO.

❻ The operating speed of Crossed Roller Way should not exceed 30 m/min.

❼ Tightening torque of mounting screws

Tightening torque of mounting screws is shown in Table 10. If vibration or shock is large, or moment load is applied, it is recommended to tighten the screws to about 1.3 times the values shown in Table 10. If vibration and shock are not present and high operating accuracy is needed, a lower tightening torque than the values shown in Table 10 is suggested. In this case, adhesive or lock-screws may be used to prevent any subsequent loosening of the mounting screws.

Table 10 Tightening torque of screws

Screw size	Tightening torque N·m
M 2×0.4	0.23
M 3×0.5	1.4
M 4×0.7	3.2
M 5×0.8	6.3
M 6×1	10.7
M 8×1.25	25.6
M10×1.5	50.1
M12×1.75	86.5
M14×2	137
M16×2	211

Remark : If the screw sizes on table side and bed side are different, use the tightening torque of the smaller screw size for both screws.

Mounting of CRW

A general method for mounting CRW is shown in Fig. 12. The general procedure is as follows.

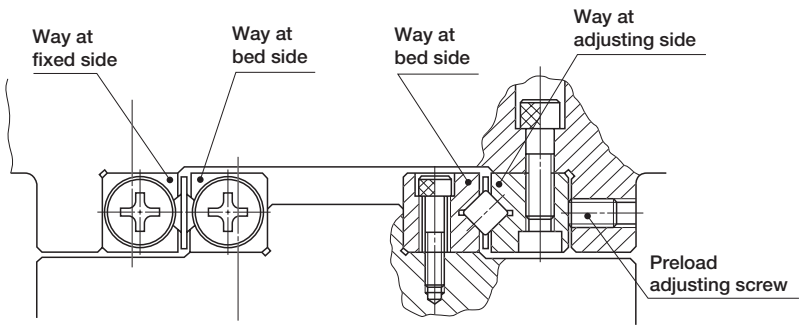


Fig. 12 Mounting example of CRW

❶ Preparation for mounting

- CRW is delivered as an individual package containing four ways and two roller cages. The ways in each package are not interchangeable with ways in other packages, so do not mix them.
- Separate the end screws or end stoppers and wash the ways with a clean cleaning agent. After cleaning, apply rust preventive oil or lubricating oil.

❷ Cleaning of mounting surfaces of table and bed

- Remove burrs and blemishes from mounting surfaces of table and bed with an oil-stone, etc. During this process, also pay attention to the corner grooves of the mounting surfaces.
- Wipe off dust with clean cloth and apply rust preventive oil or lubricating oil.

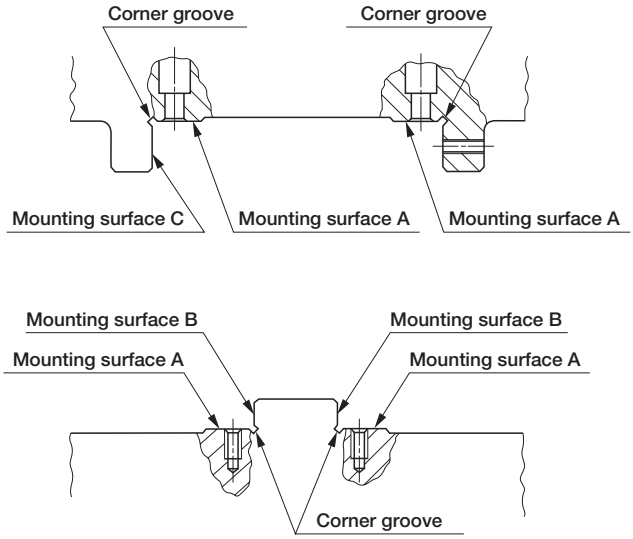


Fig. 13 Mounting surfaces for CRW

❸ Mounting of ways at bed side (Fig. 14)

- After fitting the mounting surfaces of ways onto the mating mounting surfaces of bed, temporarily tighten the mounting screws with uniform tightening torque.
- After closely fitting the ways to B surfaces (See Fig. 13.), tighten the mounting screws uniformly to the prescribed tightening torque.
- If high accuracy is required, tighten the mounting screws uniformly to the prescribed tightening torque while checking the parallelism of the two ways along the overall way length.
- General tightening torque of mounting screws is shown in Table 10 on page E-20.

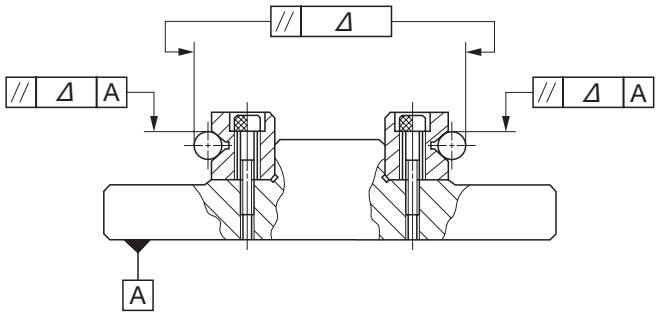


Fig. 14 Mounting accuracy of ways

❹ Mounting of ways at table side (Fig. 15)

- After fitting the mounting surfaces of the way at the fixed side to the mating mounting surfaces of table, temporarily tighten the mounting screws at the fixed side with uniform tightening torque.
- After closely fitting the way at the fixed side to C surface, tighten the mounting screws at the fixed side uniformly to the prescribed tightening torque.
- Loosen the preload adjusting screws and temporarily tighten the mounting screws of the way at adjusting side with uniform and light tightening torque.

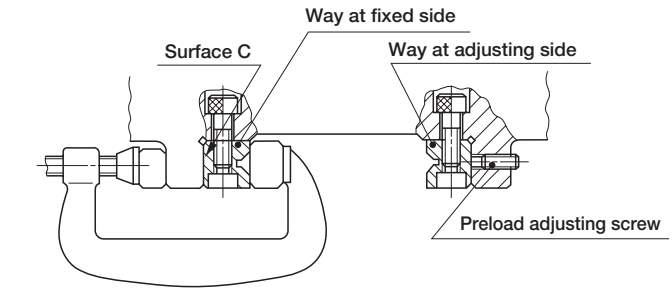


Fig. 15 Mounting of ways at table side

❺ Assembling of table and bed (Fig. 16)

- Adjust the positions of table and bed in height and width directions in order to insert roller cages between the ways at table side and bed side.
- Insert the roller cages gradually and gently until the cages position roughly at the center of way length. In this process, do not deform the cages.
- Assemble end screws or end stoppers.
- Push the table to the preload adjusting side, and temporarily tighten the preload adjusting screws until the clearance at raceways is near zero.
- Gently stroke the table its full stroke length to position the roller cage at the center of the stroke.

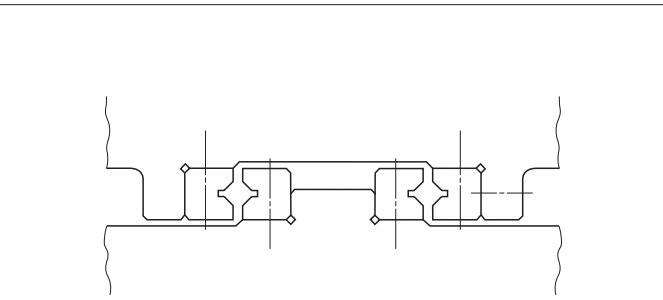


Fig. 16 Positioning of table and bed in assembling time

❻ Preload adjustment (Fig. 17)

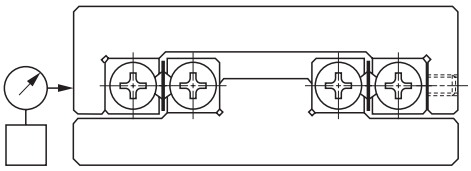


Fig. 17 Example of preload adjustment

- Preload adjustment is done only when mounting screws for the way at the adjusting side are temporarily tightened.
- Preload adjustment is started from the adjusting screw at the center of the way length, proceeding alternately to the left and right.
- While checking the clearance (deflection) at the side face of table, tighten each adjusting screw lightly to a uniform amount, then repeat the same process applying a higher tightening torque until a dial gauge indicates zero-clearance (no more change in deflection). Record the tightening torque of the adjusting screws at zero-clearance.
- When adjusting the screws close to the end of the way, gradually stroke the table and ensure that the roller cage is positioned at the adjusting screw.
- Using the above process, the internal clearance becomes zero or minimal preload, but the preload amount is not uniform along the way length. Therefore, repeat the same process and tighten all adjusting screws uniformly to the recorded tightening torque.

❼ Final fixing of way at adjusting side

- The mounting screws have been tightened lightly to a uniform torque. Similar to the adjustment of the preload adjusting screws, temporarily tighten the mounting screws at the adjusting side to a slightly lower tightening torque than the prescribed value. Start from the center screw of the way length and proceed alternately to the left and right.
- When tightening the mounting screws close to the end of the way, gradually stroke the table and ensure that the roller cage is positioned at the mounting screw.
- Finally, tighten all mounting screws at the adjusting side uniformly to the prescribed torque similar to the adjustment of the preload adjusting screws.

❽ Final check (Fig. 18)

- Stroke the table gradually its full stroke length, ensuring that the stroke is smooth and quiet.
- Check the operating accuracy by measuring the upper and side faces of table with a dial gauge.

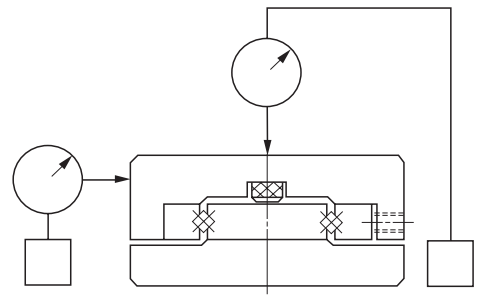


Fig. 18 Final check of operating accuracy

Mounting of CRWM

A general mounting example of CRWM is shown in Fig. 19. The general mounting procedure is as follows.

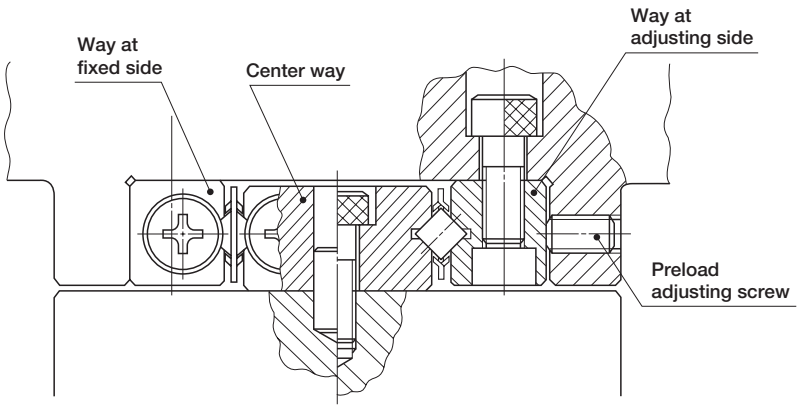


Fig. 19 Mounting example of CRWM

❶ Preparation for mounting

- CRWM is delivered as an individual package containing one center way, two side ways and two roller cages. The ways in each package are not interchangeable with ways in other packages, so do not mix them.
- Separate the end screws or end stoppers and wash the ways with a clean cleaning agent. After cleaning, apply rust preventive oil or lubricating oil.

❷ Cleaning of mounting surfaces on table and bed

- Use the same procedure as that for CRW.

❸ Mounting of center way (Fig. 20)

- Roughly position the center way to the mounting surface of bed and lightly tighten the mounting screws.
- Temporarily tighten the mounting screws with uniform tightening torque while adjusting the position of the center way by checking the parallelism between the datum surface in the operating direction and the raceways of the center way with a dial gauge.
- Finally, tighten all mounting screws uniformly to the prescribed torque.

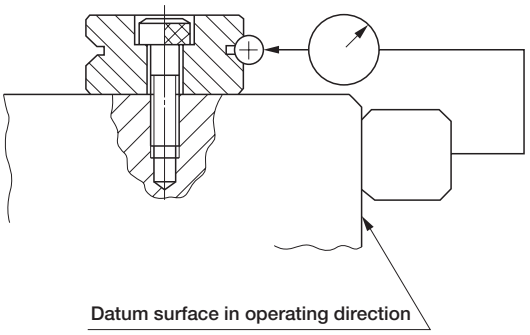


Fig. 20 Checking of mounting accuracy for center way

❹ Drilling for dowel pin hole (Fig. 21)

- If dowel pins are needed to fix the center way to the bed, drill holes to the bed through the dowel pin holes of the center way while assembling the center way on the bed and locating the drill tool to dowel pin holes near the way ends. The holes for dowel pins in the center way are manufactured to H7 tolerance. Therefore, the holes in bed should have the same tolerance.
- Hole diameters and their tolerances are shown in the dimension tables.
- Remove any drilling chips and, if necessary, wash again the table assembly. If the table assembly of the machine is large, first disassemble the center way. Then wash the table and the center way individually before re-assembly.
- Insert dowel pins and check the parallelism between the datum surface in the operating direction and the raceways of the center way.

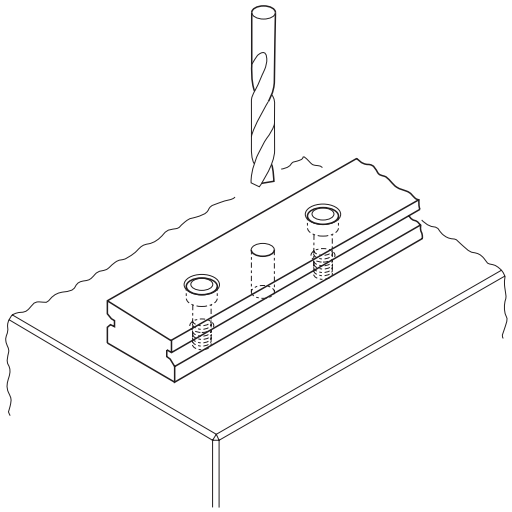


Fig. 21 Drilling of dowel pin hole

❺ Mounting of way at table side

- Use the same procedure as that for CRW.

❻ Assembling of table and bed

- Use the same procedure as that for CRW.

❼ Preload adjustment

- Use the same procedure as that for CRW.

❽ Final fixing of way at adjusting side

- Use the same procedure as that for CRW.

❾ Final check

- Use the same procedure as that for CRW.

● Match marks of CRWM

Ways of CRWM have match marks so that they can be assembled with the best operating results. When assembling ways, the match marks on the way end should be positioned at the same end as shown in Fig. 22.

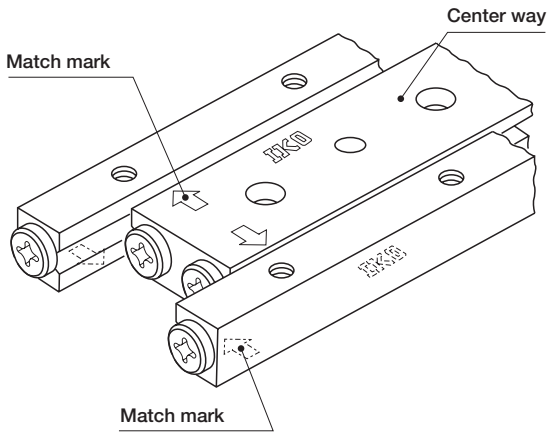
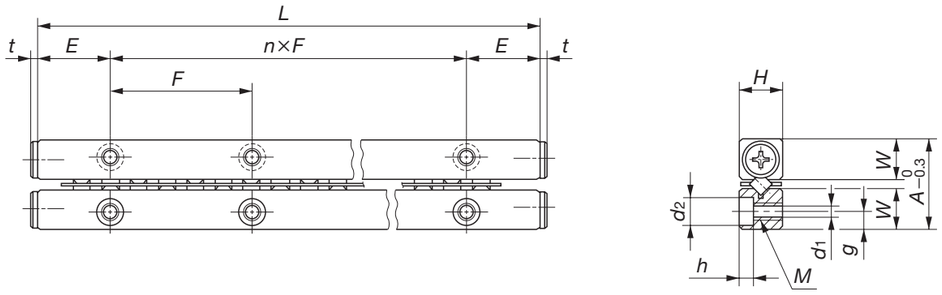
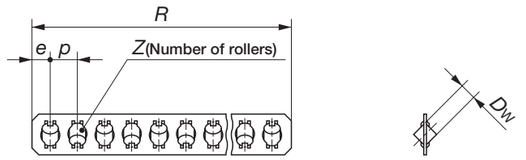


Fig. 22 Match marks on CRWM

IKO Crossed Roller Way

Standard type
CRW
CRW ···SL(Stainless steel made)





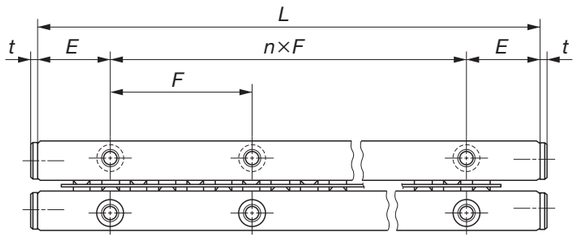
Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 1- 20	0.12	0.38	8.5	4	20 (1×10)	5	1.5	16.5
CRW 1- 20 SL								
CRW 1- 30					30 (2×10)			25.5
CRW 1- 30 SL								
CRW 1- 40					40 (3×10)			31.5
CRW 1- 40 SL								
CRW 1- 50					50 (4×10)			37.5
CRW 1- 50 SL								
CRW 1- 60					60 (5×10)			43.5
CRW 1- 60 SL								
CRW 1- 70					70 (6×10)			52.5
CRW 1- 70 SL								
CRW 1- 80					80 (7×10)			61.5
CRW 1- 80 SL								

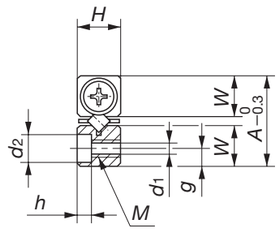
Nominal dimensions mm Z	p	e	W	g	Mounting dimensions M	d1	d2	h	t	Basic dynamic load rating Cu(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
5	3	2.25	3.9	1.8	M2	1.65	3	1.4	1.7	125	120	39.8
8												
10												
12												
14												
17												
20												

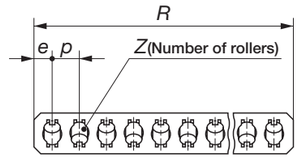
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

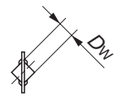
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Standard type
CRW
CRW ···SL(Stainless steel made)









Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 2- 30	0.24	0.98	12	6	30 (1×15)	7.5	2	29.6
CRW 2- 30 SL								
CRW 2- 45					45 (2×15)			41.6
CRW 2- 45 SL								
CRW 2- 60					60 (3×15)			53.6
CRW 2- 60 SL								
CRW 2- 75					75 (4×15)			65.6
CRW 2- 75 SL								
CRW 2- 90					90 (5×15)			77.6
CRW 2- 90 SL								
CRW 2-105					105 (6×15)			89.6
CRW 2-105 SL								
CRW 2-120					120 (7×15)			101.6
CRW 2-120 SL								
CRW 2-135					135 (8×15)			113.6
CRW 2-135 SL								
CRW 2-150					150 (9×15)			125.6
CRW 2-150 SL								
CRW 2-165					165 (10×15)			137.6
CRW 2-165 SL								
CRW 2-180					180 (11×15)			149.6
CRW 2-180 SL								

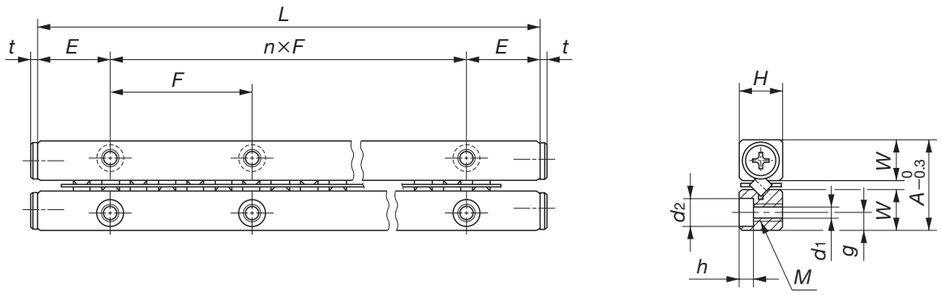
Nominal dimensions mm Z	p	e	W	g	Mounting dimensions M	d1	d2	h	t	Basic dynamic load rating Cu(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
7	4	2.8	5.5	2.5	M3	2.55	4.4	2	1.5	293	294	97.9
10												
13												
16												
19												
22												
25												
28												
31												
34												
37												

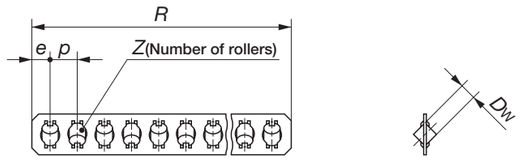
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Crossed Roller Way

Standard type
CRW
CRW ···SL(Stainless steel made)





Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 3- 50	0.50	2.96	18	8	50 (1×25)	12.5	3	42
CRW 3- 50 SL								
CRW 3- 75					75 (2×25)			62
CRW 3- 75 SL								
CRW 3-100								
CRW 3-100 SL					100 (3×25)			82
CRW 3-125								
CRW 3-125 SL					125 (4×25)			102
CRW 3-150								
CRW 3-150 SL					150 (5×25)			122
CRW 3-175								
CRW 3-175 SL					175 (6×25)			142
CRW 3-200								
CRW 3-200 SL					200 (7×25)			162
CRW 3-225								
CRW 3-225 SL					225 (8×25)			182
CRW 3-250								
CRW 3-250 SL					250 (9×25)			202
CRW 3-275								
CRW 3-275 SL					275 (10×25)			222
CRW 3-300								
CRW 3-300 SL					300 (11×25)			242

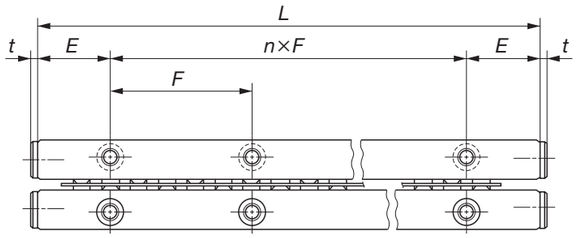
Nominal dimensions mm Z	p	e	W	g	Mounting dimensions M	d1	d2	h	t	Basic dynamic load rating Cu(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
8	5	3.5	8.3	3.5	M4	3.3	6	3.1	2	638	609	203
12												
16												
20												
24												
28												
32												
36												
40												
44												
48												

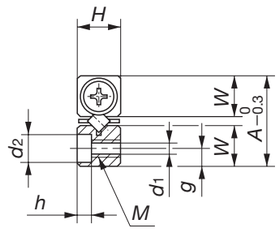
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

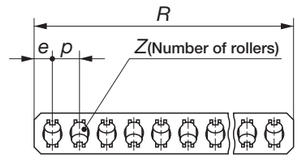
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

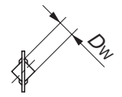
IKO Crossed Roller Way

Standard type
CRW
CRW ···SL(Stainless steel made)









Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 4- 80	0.82	6.91	22	11	80 (1×40)	20	4	73
CRW 4- 80 SL								
CRW 4-120					120 (2×40)			101
CRW 4-120 SL								
CRW 4-160					160 (3×40)			136
CRW 4-160 SL								
CRW 4-200					200 (4×40)			164
CRW 4-200 SL								
CRW 4-240					240 (5×40)			199
CRW 4-240 SL								
CRW 4-280					280 (6×40)			227
CRW 4-280 SL								
CRW 4-320					320 (7×40)			262
CRW 4-320 SL								
CRW 4-360					360 (8×40)			297
CRW 4-360 SL								
CRW 4-400					400 (9×40)			325
CRW 4-400 SL								
CRW 4-440					440 (10×40)			360
CRW 4-440 SL								
CRW 4-480					480 (11×40)			388
CRW 4-480 SL								

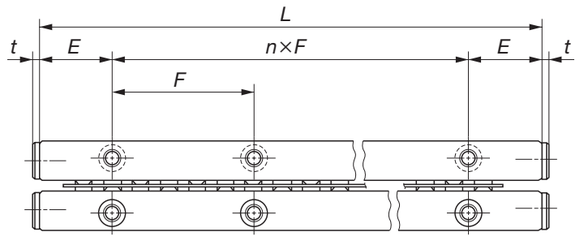
Nominal dimensions mm Z	p	e	W	g	Mounting dimensions M	d1	d2	h	t	Basic dynamic load rating Cu(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
10	7	5	10	4.5	M5	4.3	7.5	4.1	2	1 230	1 180	392
14												
19												
23												
28												
32												
37												
42												
46												
51												
55												

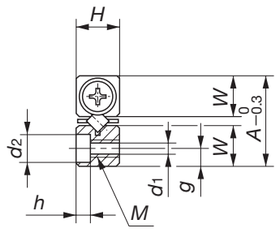
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

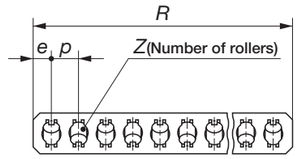
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

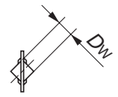
IKO Crossed Roller Way

Standard type
CRW
CRW ···SL(Stainless steel made)









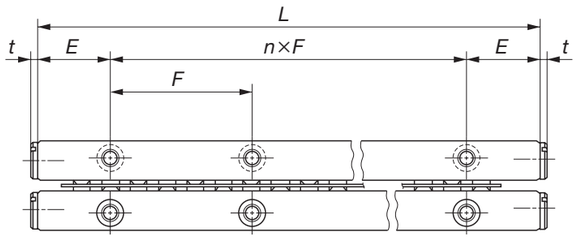
Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 6-100	1.57	20.3	31	15	100 (1×50)	25	6	84
CRW 6-100 SL								
CRW 6-150					150 (2×50)			129
CRW 6-150 SL								
CRW 6-200					200 (3×50)			165
CRW 6-200 SL								
CRW 6-250					250 (4×50)			210
CRW 6-250 SL								
CRW 6-300					300 (5×50)			246
CRW 6-300 SL								
CRW 6-350					350 (6×50)			282
CRW 6-350 SL								
CRW 6-400					400 (7×50)			327
CRW 6-400 SL								
CRW 6-450					450 (8×50)			363
CRW 6-450 SL								
CRW 6-500					500 (9×50)			408
CRW 6-500 SL								
CRW 6-550					550 (10×50)			444
CRW 6-550 SL								
CRW 6-600					600 (11×50)			489
CRW 6-600 SL								

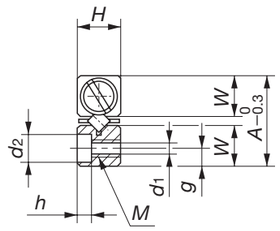
Z	p	e	W	g	M	d1	d2	h	t	Basic dynamic load rating Cu(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
9	9	6	14	6	M6	5.3	9.5	5.2	3	2 570	2 310	769
14												
18												
23												
27												
31												
36												
40												
45												
49												
54												

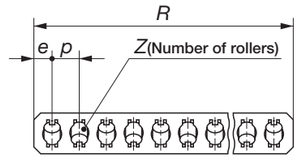
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

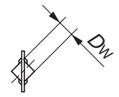
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Standard type
CRW









Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 9- 200					200 (1×100)			173
CRW 9- 300					300 (2×100)			257
CRW 9- 400					400 (3×100)			327
CRW 9- 500					500 (4×100)			411
CRW 9- 600					600 (5×100)			495
CRW 9- 700	3.3	64.8	44	22	700 (6×100)	50	9	565
CRW 9- 800					800 (7×100)			649
CRW 9- 900					900 (8×100)			733
CRW 9-1000					1 000 (9×100)			817
CRW 9-1100					1 100 (10×100)			887
CRW 9-1200					1 200 (11×100)			971
CRW 12- 200					200 (1×100)			168
CRW 12- 300					300 (2×100)			258
CRW 12- 400					400 (3×100)			330
CRW 12- 500					500 (4×100)			420
CRW 12- 600					600 (5×100)			492
CRW 12- 700	5.57	146	58	28	700 (6×100)	50	12	564
CRW 12- 800					800 (7×100)			654
CRW 12- 900					900 (8×100)			726
CRW 12-1000					1 000 (9×100)			816
CRW 12-1100					1 100 (10×100)			888
CRW 12-1200					1 200 (11×100)			978

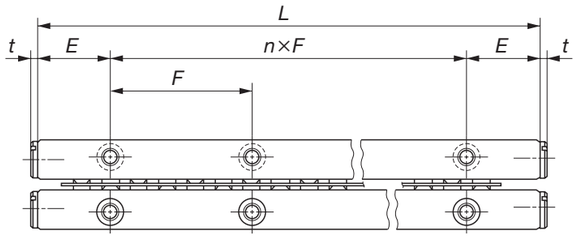
Nominal dimensions mm Z	p	e	W	g	Mounting dimensions M	d1	d2	h	t	Basic dynamic load rating Cu(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
12												
18												
23												
29												
35												
40	14	9.5	20.2	9	M 8	6.8	10.5	6.2	3	7 190	6 600	2 200
46												
52												
58												
63												
69												
9												
14												
18												
23												
27												
31	18	12	26.9	12	M10	8.5	13.5	8.2	3	14 700	13 600	4 540
36												
40												
45												
49												
54												

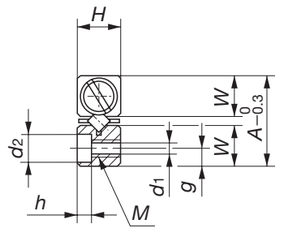
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass per one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

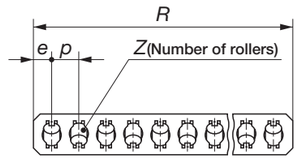
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

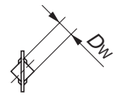
IKO Crossed Roller Way

Standard type
CRW









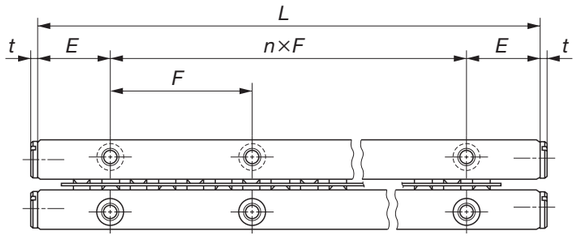
Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 15- 300	8.75	273	71	36	300 (2×100)	50	15	261
CRW 15- 400					400 (3×100)			330
CRW 15- 500					500 (4×100)			422
CRW 15- 600					600 (5×100)			491
CRW 15- 700					700 (6×100)			583
CRW 15- 800					800 (7×100)			652
CRW 15- 900					900 (8×100)			744
CRW 15-1000					1 000 (9×100)			813
CRW 15-1100					1 100 (10×100)			905
CRW 15-1200					1 200 (11×100)			974
CRW 18- 300	11.3	447	83	40	300 (2×100)	50	18	262
CRW 18- 400					400 (3×100)			346
CRW 18- 500					500 (4×100)			430
CRW 18- 600					600 (5×100)			514
CRW 18- 700					700 (6×100)			570
CRW 18- 800					800 (7×100)			654
CRW 18- 900					900 (8×100)			738
CRW 18-1000					1 000 (9×100)			822
CRW 18-1100					1 100 (10×100)			906
CRW 18-1200					1 200 (11×100)			990

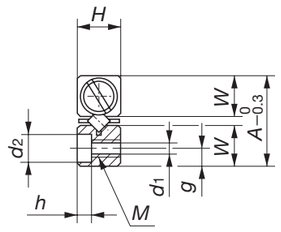
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

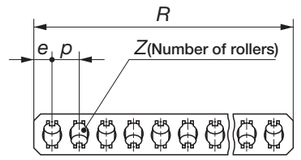
Nominal dimensions mm Z	p	e	Mounting dimensions W	g	M	d1	d2	h	t	Basic dynamic load rating C0u(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
11	23	15.5	33	14	M12	10.5	16.5	10.2	5	23 800	21 900	7 300
14												
18												
21												
25												
28												
32												
35												
39												
42												
9	28	19	38.5	18	M14	12.5	18.5	12.2	5	35 800	32 700	10 900
12												
15												
18												
20												
23												
26												
29												
32												
35												

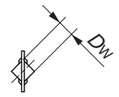
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Standard type
CRW









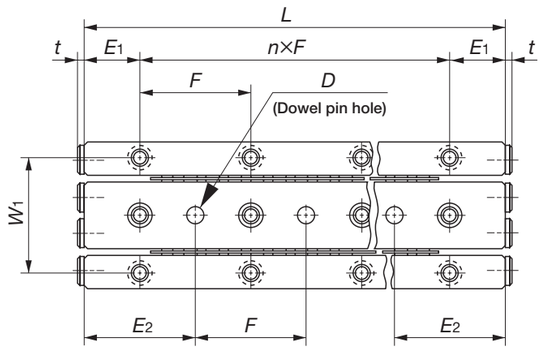
Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions E	Dimensions of roller cage Dw	Dimensions of roller cage R
CRW 24- 400					400 (3×100)			336
CRW 24- 500					500 (4×100)			408
CRW 24- 600					600 (5×100)			516
CRW 24- 700					700 (6×100)			588
CRW 24- 800	20.6	1 060	110	55	800 (7×100)	50	24	660
CRW 24- 900					900 (8×100)			732
CRW 24-1000					1 000 (9×100)			840
CRW 24-1100					1 100 (10×100)			912
CRW 24-1200					1 200 (11×100)			984

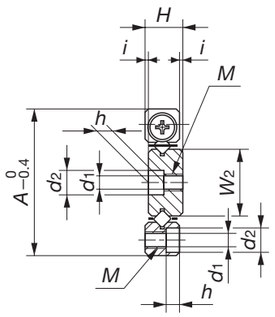
Nominal dimensions mm Z	p	e	Mounting dimensions W	g	M	d1	d2	h	t	Basic dynamic load rating Cu(3) N	Basic static load rating C0u(3) N	Allowable load Fu(3) N
9												
11												
14												
16												
18	36	24	51.5	24	M16	14.5	22.5	14.2	5	69 600	63 500	21 200
20												
23												
25												
27												

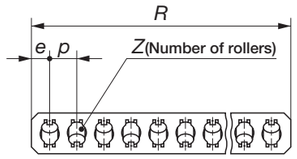
Note(1) : This value shows mass per one meter for individual way.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

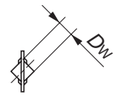
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Module type
CRWM









Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions i	Dimensions of roller cage Dw	Dimensions of roller cage R	Dimensions of roller cage Z
CRWM 1- 20	0.49	0.38	17	4.5	20 (1×10)	0.5	1.5	16.5	5
CRWM 1- 30					30 (2×10)			25.5	8
CRWM 1- 40					40 (3×10)			31.5	10
CRWM 1- 50					50 (4×10)			37.5	12
CRWM 1- 60					60 (5×10)			43.5	14
CRWM 1- 70					70 (6×10)			52.5	17
CRWM 1- 80					80 (7×10)			61.5	20
CRWM 2- 30	0.99	0.98	24	6.5	30 (1×15)	0.5	2	29.6	7
CRWM 2- 45					45 (2×15)			41.6	10
CRWM 2- 60					60 (3×15)			53.6	13
CRWM 2- 75					75 (4×15)			65.6	16
CRWM 2- 90					90 (5×15)			77.6	19
CRWM 2-105					105 (6×15)			89.6	22
CRWM 2-120					120 (7×15)			101.6	25
CRWM 2-135					135 (8×15)			113.6	28
CRWM 2-150					150 (9×15)			125.6	31
CRWM 2-165					165 (10×15)			137.6	34
CRWM 2-180					180 (11×15)			149.6	37

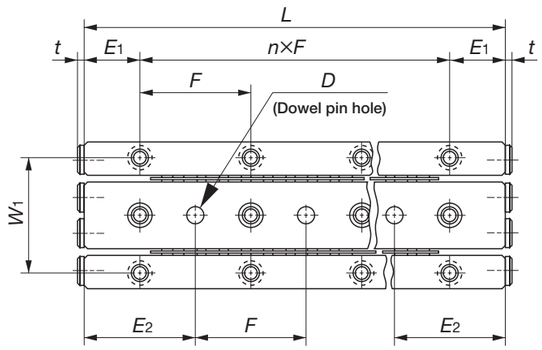
Note(1) : This value shows mass per one set of ways (one center way and two side ways) per one meter.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

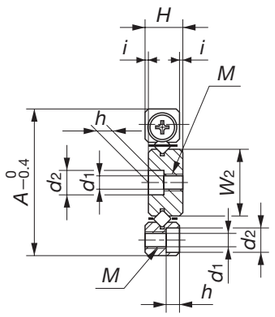
Nominal dimensions and tolerances mm

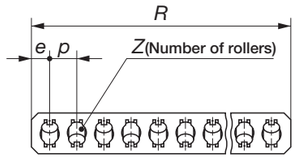
p	e	W1	W2	E1	E2	M	d1	d2	h	D	Tolerance	t	Basic dynamic load rating CU(3) N	Basic static load rating C0U(3) N	Allowable load FU(3) N
3	2.25	13.4	7.8	5	10	M2	1.65	3	1.4	2	+0.010 0	1.7	125	120	39.8
4	2.8	19	11	7.5	15	M3	2.55	4.4	2	3	+0.010 0	1.5	293	294	97.9

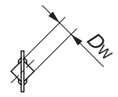
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Module type
CRWM









Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions i	Dimensions of roller cage Dw	Dimensions of roller cage R	Dimensions of roller cage Z
CRWM 3- 50					50 (1×25)			42	8
CRWM 3- 75					75 (2×25)			62	12
CRWM 3-100					100 (3×25)			82	16
CRWM 3-125					125 (4×25)			102	20
CRWM 3-150					150 (5×25)			122	24
CRWM 3-175	1.99	2.96	36	8.5	175 (6×25)	0.5	3	142	28
CRWM 3-200					200 (7×25)			162	32
CRWM 3-225					225 (8×25)			182	36
CRWM 3-250					250 (9×25)			202	40
CRWM 3-275					275 (10×25)			222	44
CRWM 3-300					300 (11×25)			242	48
CRWM 4- 80					80 (1×40)			73	10
CRWM 4-120					120 (2×40)			101	14
CRWM 4-160					160 (3×40)			136	19
CRWM 4-200					200 (4×40)			164	23
CRWM 4-240					240 (5×40)			199	28
CRWM 4-280	3.28	6.91	44	11.5	280 (6×40)	0.5	4	227	32
CRWM 4-320					320 (7×40)			262	37
CRWM 4-360					360 (8×40)			297	42
CRWM 4-400					400 (9×40)			325	46
CRWM 4-440					440 (10×40)			360	51
CRWM 4-480					480 (11×40)			388	55

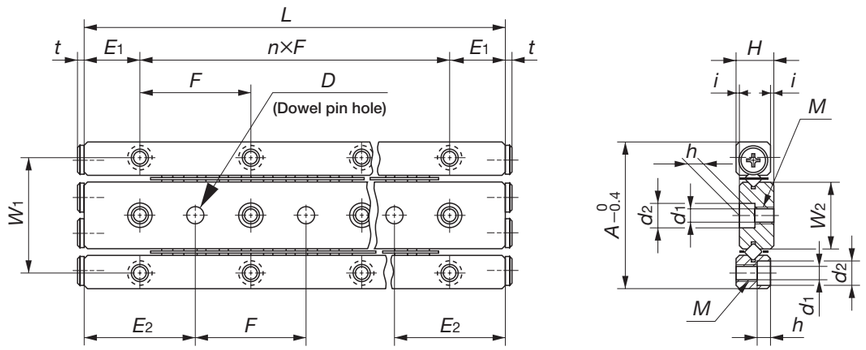
Nominal dimensions and tolerances mm

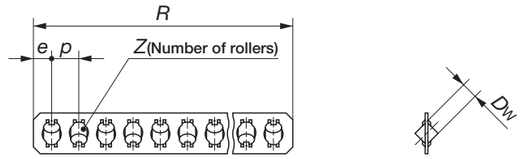
Mounting dimensions p	e	W1	W2	E1	E2	M	d1	d2	h	D	Tolerance	t	Basic dynamic load rating CU(3) N	Basic static load rating COU(3) N	Allowable load FU(3) N
5	3.5	29	16.6	12.5	25	M4	3.3	6	3.1	4	+0.012 0	2	638	609	203
7	5	35	20	20	40	M5	4.3	7.5	4.1	5	+0.012 0	2	1 230	1 180	392

Note(1) : This value shows mass per one set of ways (one center way and two side ways) per one meter.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Module type
CRWM





Model number	Mass (Ref.) Way(1) kg/m	Mass (Ref.) Roller cage(2) g	Boundary dimensions A	Boundary dimensions H	Boundary dimensions L (n×F)	Boundary dimensions i	Dimensions of roller cage Dw	Dimensions of roller cage R	Dimensions of roller cage Z
CRWM 4- 80A					80 (1×40)			73	10
CRWM 4-120A					120 (2×40)			101	14
CRWM 4-160A					160 (3×40)			136	19
CRWM 4-200A					200 (4×40)			164	23
CRWM 4-240A					240 (5×40)			199	28
CRWM 4-280A	3.96	6.91	48	12.5	280 (6×40)	0.5	4	227	32
CRWM 4-320A					320 (7×40)			262	37
CRWM 4-360A					360 (8×40)			297	42
CRWM 4-400A					400 (9×40)			325	46
CRWM 4-440A					440 (10×40)			360	51
CRWM 4-480A					480 (11×40)			388	55

Note(1) : This value shows mass per one set of ways (one center way and two side ways) per one meter.
(2) : This value shows mass of one roller cage in which ten rollers are incorporated.
(3) : This value shows load per one roller.

Nominal dimensions and tolerances mm p	e	Mounting dimensions W1	W2	E1	E2	M	d1	d2	h	D	Tolerance	t	Basic dynamic load rating CU(3) N	Basic static load rating C0U(3) N	Allowable load FU(3) N
7	5	38	22	20	40	M5	4.3	8	4.1	5	+0.012 0	2	1 230	1 180	392

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch