

LINEAR MOTION

Crossed Roller Way Unit

Mounting of CRW type

A general method of mounting CRW type is shown in Fig. 1. The general procedure is as follows.

1. Preparation for mounting

- The CRW type 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 up.
- Separate the end screws or end stoppers and wash the ways with a cleaning agent. After cleaning, apply rust preventative oil or lubricating oil.

2. Cleaning of mounting surfaces of table and bed

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

3. Mounting of ways at bed side (Fig.3)

- After fitting the mounting surfaces of the ways onto the corresponding mounting surfaces of the bed, temporarily tighten the mounting screws with uniform tightening torque.
- After closely fitting the way to B surfaces (see Fig.2), tighten the mounting screws to the prescribed tightening torque.
- If high accuracy is required, tighten the mounting screws to the prescribed tightening torque while checking the parallelism of the two ways along the overall way length.

4. Mounting of ways at table side (Fig.4)

- After fitting the mounting surfaces of ways to the mating mounting surfaces of table, temporarily tighten the mounting screws at the fixed side with uniform tightening torque.
- After closely fitting the ways at the fixed side to C surfaces (see Fig.2), tighten the mounting screws at the fixed side to the prescribed tightening torque.
- Loosen the preload adjusting screws and temporarily tighten the mounting screws of the way at adjusting side with uniform tightening torque.

5. Assembling of table and bed (Fig.5)

- Adjust the position of table and bed in height and width directions in order to insert roller cages between ways at table side and bed side.
- Insert the roller cages gradually and gently until the cages position at the centre 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.
- Stroke the table it's full length to position the roller cage near the centre of the stroke.

6. 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 centre of the way length, proceeding alternately to the left and right.

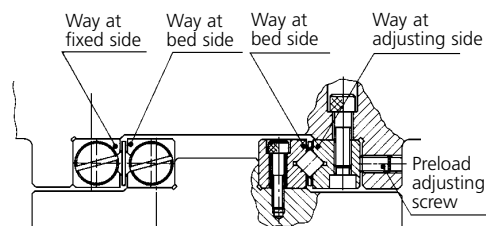


Fig. 1 Mounting example of CRW type

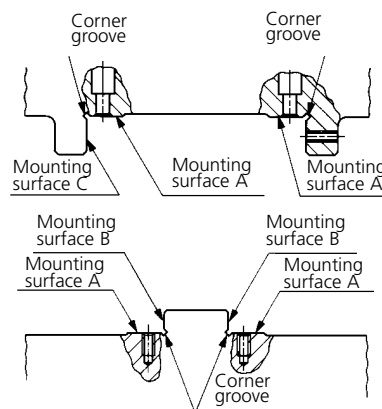


Fig. 2 Mounting surfaces for CRW type

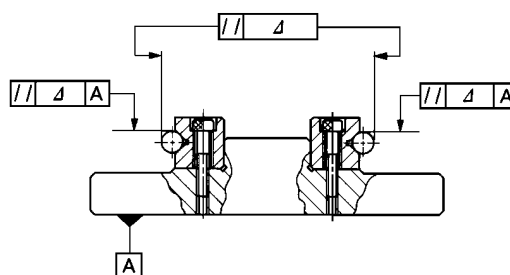


Fig. 3 Mounting accuracy of ways

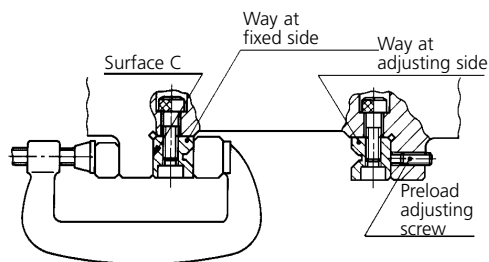


Fig. 4 Mounting of ways at table side

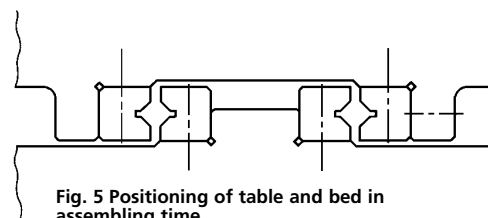


Fig. 5 Positioning of table and bed in assembling time

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6. Preload adjustment (Cont.)

- While checking the clearance (deflection) at the side face of table gradually tighten each adjusting screw until a dial gauge indicates zero-clearance. During this process, note the tightening torque of the adjusting screws.
- When adjusting the screw 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. Therefore, using the same process but with identical tightening torques, readjust all adjusting screws to a uniform amount.

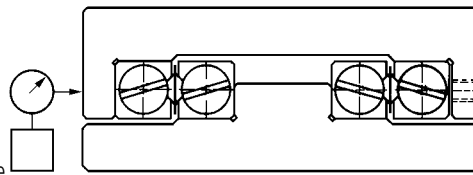


Fig. 6 Example of preload adjustment

7. Final fixing of way at adjusting side

- These mounting screws should also be tightened to a uniform torque. Similar to the adjustment of the preload adjusting screws, tighten the mounting screws at the adjusting side to a slightly lower tightening torque than the prescribed value. Start from the centre screw of the way length, proceed alternately to the left and right.
- When tightening the mounting screw 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 to the prescribed torque.

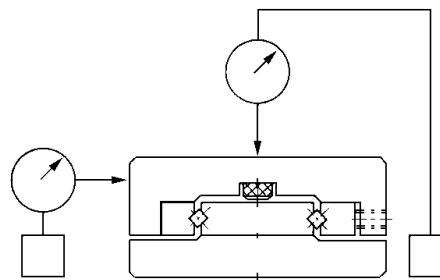


Fig. 7 Final check of operating accuracy

8. Final check (Fig.7)

- Stroke the table gradually it's 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.

In the Crossed Roller Way Unit series, the following three types are available.

Crossed Roller Way Unit CRWU

This type is a general purpose linear motion rolling guide unit. The table and bed are assembled with high accuracy, and can be quickly mounted onto machinery or equipment.

This type achieves highly accurate linear movement with easy installation.

Crossed Roller Way Unit CRWU---R

This type is a linear motion rolling guide unit featuring a low sectional height that is accomplished by simply removing the bed from the CRWU type. Stable accuracy and high rigidity in linear motion can be achieved against loads in any direction.

If a special table (or bed) is prepared and assembled with the centre way of the CRWU---R type, a linear motion assembly with excellent operating performance can be easily obtained.

Crossed Roller Way Unit CRWU---RS

This type is a compact linear motion rolling guide unit featuring a lightweight, simplified structure. The CRWU---RS is ideal for applications in which the centre way is stroked and high accuracy with low inertia is required.

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Accuracy

The accuracy of the Crossed Roller Way Unit series is as shown in table 1. Parallelism at table centre shows maximum deviation of table height when the table is stroked. Parallelism at table side shows maximum deviation at table side (opposite to adjusting side) when the table is stroked. The height tolerance of units are manufactured with a standard tolerance of $\pm 0.1\text{mm}$. If several units are used on the same mounting surface and the height of those units require a limited height variation, a height tolerance of less than 0.01mm along the several units to be used on the same mounting surface can be supplied on request.

If a special accuracy other than those shown in table 1 is desired, consult our technical department.

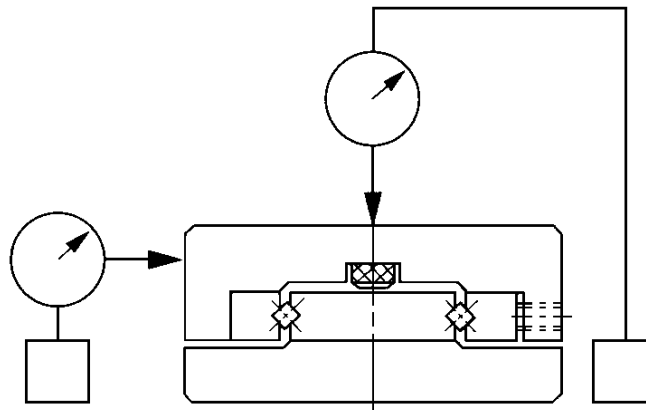


Table 1 Accuracy of Crossed Roller Way Unit Series

Unit Length Lmm over	incl.	Parallelism at table centre	Parallelism at table side
-	50	2	4
50	100	2	5
100	160	3	6
160	310	3	7
310	510	4	8
510	710	4	9
710	-	5	10

unit : μm

Caution in Using

1 Selection of Crossed Roller Way Unit Series

Check whether the specifications of the selected Crossed Roller Way Unit are suitable for the application.

2 Handling of Parts

Crossed Roller Way Units are finished very accurately, so careful handling is needed.

3. Mounting - (1) Tightening torque of mounting screws

Tightening torque of mounting screws is as shown in table 2. If vibration or shock is large, or if a moment load is applied, it is recommended to further tighten the screws to 1.3 times the listed values.

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(2) Mounting dimensions of CRWU---R type

In order to avoid reference of the mating table with the CRWU---R, carefully note H1 and H dimensions and design the height of the mating surface accordingly. Example of the mating mounting surface of the bed is shown in table 3.

Screw Size	Tightening Torque kgf•cm
M2 x 0.40	2.3
M2.5 x 0.45	4.7
M3 x 0.50	14.0
M4 x 0.70	32.0
M5 x 0.80	64.0
M6 x 1.00	110.0
M8 x 1.25	260.0

Table 2 Tightening torque of screws

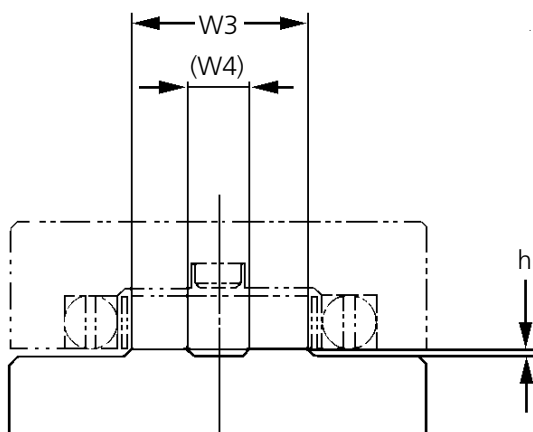


Table 3 Example of mating mounting surfaces for CRWU---R type

Model Number	h (minimum)	W3	W4
CRWU30---R	0.5	13.0	-
CRWU40-35R	0.5	18.0	-
CRWU40---R	0.5	3.0	-
CRWU60---R	0.5	26.5	-
CRWU80---R	0.5	38.0	16.0
CRWU100---R	0.5	42.0	14.0
CRWU145---R	1.0	68.5	28.5

unit : mm

4 Dowel pin hole

In the centre way of the CRWU---R type, dowel pin holes are prepared. When drilling a dowel pin hole in the bed affixed to the centre way, drill any required through-holes in the centre way of the CRWU---R and the bed at the same time. The hole diameters and their tolerances are shown in the dimension tables.

5 Readjustment of preload

Preloads of Crossed Roller Way Unit series are adjusted to zero clearance or minimum preload at the factory. Crossed Roller Way Units do not usually require any further adjustment. If preload readjustment of the CRWU or CRWU---R type is needed, adjust according to the preload methods of the CRW type shown previously.

6 Operating Speed

Crossed Roller Way Unit series can be used up to a speed of 30 metres per minute.
For temperatures over 100°C we can supply special high temperature grease (200°C - supplied in syringe) **CG2-SY : £31.80**

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