

## Crossed Roller Bearing

### RAU slim thin section crossed roller bearing-40



Shaft diameter	<b>40</b>
Model No.	RAU4005
Main dimensions	
Inner diameter	<b>40</b>
Outer diameter	51
Roller pitch circle diameter	44.7
Width	5
Greasing hole d0	1
rmin	0.15
Shoulder dimensions	
ds(max)	42.5
Dh (min)	47
Basic load rating	
C kN	2.14
C0 kN	2.74
Mass	
g	27

## Micro Cross-Roller Ring RAU

### ● Model composition

Model Number Coding



Considerations for model RAU (Small-diameter thin type. Width: 5mm)

\*Seals are not available.\* The only radial clearance available is C0.\* The only accuracy available is normal grade (grade 0).

For a compact and lightweight system

□Micro Cross-Roller Ring with inner diameter of 10 mm and outer diameter of 21 mm

□More compact than a conventional angular contact ball bearing

□Spacer retainer enables smooth movement and high rotation accuracy.



## Structure

In the RAU, the rollers travel on the V-shaped raceways ground into the inner and outer rings.

Alternating rollers are arrayed orthogonally so that one bearing can support loads and moments in any direction.

Also, because of the integrated structure, the RAU can be used for either inner ring or outer ring rotation.

Fig. 1 Structure of Cross Roller-Ring Model RAU

### 1. Compact and Rigid

The RAU is more compact and lighter weight than a double row angular contact ball bearing. It is also more rigid, even though it is made as compact as possible.

●Comparison, 50 mm inner diameter



Moment Rigidity Comparison



Comparison of cross-sectional area and mass

Model No.	RAU5005	7910 (DB)
Cross-sectional area	27.5mm <sup>2</sup>	264mm <sup>2</sup>
Mass	32g	260g

2. Light Weight

The cross-sectional area of the model RAU is 57% smaller than the Cross-Roller Ring model RA, which was previously the thinnest ever. This enables further weight reduction. The line-up also includes other models

whose inner diameters are the smallest to date: 10, 15, 20, 30, and 40mm.

●Comparison of cross section and mass, 50 mm inner diameter



Model No.	RAU5005	RA5008
Cross-sectional area	27.5mm <sup>2</sup>	64mm <sup>2</sup>
Mass	32g	80g

# Accuracy standards

## Rotational accuracy

- Rotational Accuracy of the Inner Ring Unit:  $\mu\text{m}$  - Rotational Accuracy of the Outer Ring Unit:  $\mu\text{m}$

Nominal dimension of bearing inner diameter (d) (mm)		Radial runout tolerance of inner ring				Axial runout tolerance of inner ring			
Above	Or less	Grade 0	Grade P6	Grade P5	Grade P4	Grade 0	Grade P6	Grade P5	Grade P4
--	18	10	--	--	--	10	--	--	--
18	40	13	--	--	--	13	--	--	--
40	65	13	10	5	4	13	10	5	4
65	80	15	10	5	4	15	10	5	4
80	100	15	13	6	5	15	13	6	5
100	120	20	13	6	5	20	13	6	5
120	140	25	18	8	6	25	18	8	6
140	180	25	18	8	6	25	18	8	6
180	200	30	20	10	8	30	20	10	8

Nominal dimension of bearing outer diameter (D) (mm)		Radial runout tolerance of outer ring			Axial runout tolerance of outer ring		
Above	Or less	Grade 0	Grade P5	Grade P4	Grade P6	Grade P5	Grade P4
--	65	13	--	--	13	--	--
65	80	13	8	5	13	8	5
80	100	15	10	6	15	10	6
100	120	15	10	6	15	10	6
120	140	20	11	7	20	11	7
140	180	25	11	7	25	11	7
180	200	25	15	10	25	15	10
200	250	30	15	10	30	15	10

- The rotational accuracy of model RAU (Small-diameter thin type, Width: 5mm) is only available in normal grade (grade 0).

## Dimensional accuracy

Unit:  $\mu\text{m}$

Basic dimension d, D [mm]		Bearing inner diameter: Dimensional tolerance of dm		Bearing outer diameter: Dimensional tolerance of Dm		Bearing width: Dimensional tolerance of B, B1	
Above	Or less	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit
--	18	0	-8	--	--	0	-120
18	30	0	-10	0	-9	0	-120
30	50	0	-12	0	-11	0	-120
50	80	0	-15	0	-13	0	-120
80	120	0	-20	0	-15	0	-120
120	150	0	-25	0	-18	0	-120
150	180	0	-25	0	-25	0	-120
180	250	0	-30	0	-30	0	-120

- dm and Dm represent the arithmetic averages of the maximum and minimum diameters obtained by measuring the inner and outer diameters of the bearing at two points.

## Radial clearance standard

Unit:  $\mu\text{m}$

Roller Pitch circle diameter (dp) [mm]		CC0		C0	
Above	Or less	Min.	Max.	Min.	Max.
--	18	--	--	0	15
18	30	--	--	0	15
30	50	--	--	0	15
50	80	-8	0	0	15
80	120	-8	0	0	15
120	140	-8	0	0	15
140	160	-8	0	0	15
160	180	-10	0	0	20
180	200	-10	0	0	20
200	225	-10	0	0	20