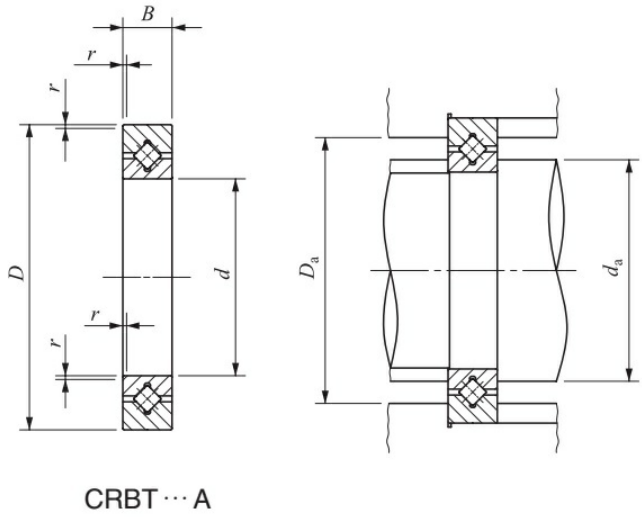
CRBT 305 A

Super Slim Type Crossed Roller Bearings Open Type With Separator



CRBT ··· A

Technical sheet of CRBT 305 A

What are the Benefits of choosing CRBT 305 A bearings?

- **Space-saving and compact design:** Compact structure, thin cross-section significantly reduces the size of the equipment, enabling the design of compact multi-axis joints and turntables.
- **High rigidity and composite load-bearing capacity:** The rollers are arranged in a cross pattern, allowing a single bearing to simultaneously withstand radial force, axial force, and tilting moment, making it less prone to deformation under load.
- **High rotational accuracy:** The rollers make contact with the raceway line, and the preload is adjustable, ensuring smooth and stable movement, guaranteeing machining accuracy and fluid operation.

Type :		Crossed Roller Bearings
Model :		CRBT 305 A
Old Code :		CRBT305
Main demensions :	30 mm × 41 mm × 5 mm	Bore Dia × Outside Dia × Width Dia
M kg:	0.0207	Mass
d mm:	30	inner ring diameter
D mm:	41	Outer ring diameter
B(T) mm:	5	Overall Width
Cr kN:	1.77	Radial dynamic load rating

C0r kN:	1.97	Radial static load rating
Grease r/min:	2113	Reference speed
Oil r/min:	4225	Limiting speed

Detailed parameters and installation dimensions:

Part Number	CRBT 305 A
Seal Type	No seal (Open)
Shaft diameter	30 mm | 1.181 inch
Bore Type	Cylindrical
Guidance of cylindrical roller	with separator
Temperature - T(min)	-20 °C
Temperature - T(max)	120 °C
Dimension Inside - d φ	30 mm | 1.181 inch
Dimension Outside - D Φ	41 mm | 1.614 inch
Dimension Width - B	5 mm | 0.197 inch
Dimension Chamfer - r min	0.15 mm | 0.006 inch
Type	CRBT..A
Rolling Element Type	cylindrical rollers
Oil holes	No
Accuracy class	P0 (ISO Class NORMAL / ABEC-1)
Internal Clearance	C1
Radial internal clearances - C1	min: 0 µm , max: 15 µm
Manufacturer Part Code	CRBT305A
Mounting holes	No
Load	radial, thrust and moment
Mounting dimensions - da	32.5 mm | 1.280 inch
Mounting dimensions - Da	37 mm | 1.457 inch
Rows NO.	One
Rolling Element Material	GCr15
Inner/Outer Ring Material	50Mn,42CrMo
Speed ratings (grease) - n_B	2113 min^{-1}
Speed ratings (oil) - n_G	4225 min^{-1}
Interchangeable	IKO CRBT 305 A
Bearing Type	Super Slim Type Crossed Roller Bearings Open Type With Separator
Units	Metric
Lubrication	ALVANIA EP grease 2 (pre-packed)
Bearing Mass - m	0.0207 kg | 0.046 lb
Radial Dynamic Capacity - C_r	1770 N | 397 lbf
Radial Static Capacity - C_{0r}	1970 N | 442 lbf
Similar Model	CRBT 305 A C1

What are the applications of the CRBT 305 A bearing?

- **Robotics Automation:** Achieves high-precision rotation and high-rigidity support, ensuring smooth, backlash-free joint movement.
- **Machine Tool Industry:** Improves machining accuracy and efficiency, enabling more precise rotary table indexing and tool holder switching.
- **Medical Equipment:** Ensures stable operation of equipment such as CT scanners, improving the clarity of medical imaging.
- **Semiconductor Manufacturing:** Provides extremely high positioning accuracy, meeting the dust-free and micron-level requirements of wafer handling.
- **Aerospace and Military:** Ensures stable tracking of radar/optoelectronic turrets, adapting to high-load-bearing demands in harsh environments.
- **Precision Measurement and Optics:** Achieves sensitive adjustment, ensuring repeatability and positioning accuracy of optical instruments and measuring equipment.
- **New Energy and General Machinery:** Enhances anti-tipping capabilities, improving the operational stability of wind turbines and heavy-duty machinery.

How should choose the right model for a Crossed Roller Bearings?

Selection of Crossed Roller Bearings

The core of selection is ensuring that the bearing's precision, rigidity, and load-bearing capacity meet the specific operating requirements of the equipment.

1. Structural Form: Selection is based on the installation requirements of the rotating parts: For outer ring rotation, use a split inner ring type; for inner ring rotation, use a split outer ring type; for both inner and outer rings rotating with high precision, use an integral structure (such as RU, CRBH type).

2. Size Range: The primary basis is the installation space of the equipment, determining the required inner diameter, outer diameter, and width.

3. Precision and Clearance: These are the core determinants of performance. Negative clearance improves rigidity and lifespan but increases friction; positive clearance is beneficial for high-speed operation but may reduce rigidity. A comprehensive selection must be made considering both speed and rigidity requirements.

4. Installation Method: Mainly divided into two categories: 1) Bearings with mounting holes on both inner and outer rings can be directly fixed with bolts; 2) Bearings without mounting holes require fixing via clamping flanges and bearing housings.

5. Load Capacity: Based on the radial force, axial force, and tilting moment that the equipment will bear, refer to the rated load table in the bearing catalog to select a model with sufficient load capacity and a certain margin.

6. Operating Environment: Consider the operating temperature, humidity, and cleanliness to select appropriate internal clearance, grease, and sealing type.

What is the mounting procedure for CRBT 305 A bearings?

Key Points for Installing Crossed Roller Bearings

Due to their thin-walled structure, improper installation can easily cause deformation. The following procedure must be strictly followed.

Preparation Before Installation

Environmental Inspection: Conduct the inspection in a dry, clean environment.

Component Cleaning: Clean the bearing housing and mounting surfaces to remove dirt and burrs.

Structural Rigidity Confirmation: The rigidity of the mounting section is crucial; insufficient rigidity will significantly reduce bearing performance.

Installation Process

Gently Press In: Apply even pressure to the end face of the raceway and gently tap it circumferentially with a plastic hammer. Slowly and horizontally install the bearing; direct tapping is strictly prohibited.

Flange Installation: After placing the flange, slightly wiggle it to adjust the bolt position. Tighten the bolts by hand to confirm accurate thread alignment.

Bolt Tightening: Tighten in 3 to 4 stages, repeatedly tightening diagonally to the specified torque. During tightening, the integral raceway can be slightly rotated to correct the joint of the split races.

Post-installation inspection

Rotation test: After manually confirming smooth rotation, conduct a no-load, low-speed test run, gradually increasing the speed and load while monitoring noise, vibration, and temperature rise. Stop immediately if any abnormality is detected.

Special Note for mounting CRBT 305 A bearings?

Special Notes

Seam Treatment of Split Rings: Before installation, if any misalignment is found in the seam of the inner or outer ring, loosen the fixing bolts, gently tap it with a plastic hammer to correct the misalignment, and then install. Do not force assembly.

Precautions for Fixing Bolts: During installation or disassembly, never apply additional external force (such as hammering) to the connecting bolts to avoid damaging the threads or bolts.

Grease Management: The bearings come with grease at the factory and can be used directly. Afterward, high-quality grease should be added every 3 to 6 months. Initially, resistance will be higher after adding grease; after operation, excess grease will overflow, and the torque will return to normal.

Operating Temperature Limits: The standard operating temperature range for crossed roller bearings is -20 to 120°C. However, for types with spacers or seals, the maximum allowable temperature and continuous operating temperature will be lower, requiring special attention.

Positioning Holes and Plugs: For bearings with mounting holes, the roller insertion holes usually have plugs. During installation, ensure that the plugs are positioned away from the area of maximum load to prevent stress concentration.

If you can provide more specific application scenarios (such as robot joints, machine tool turntables) or load parameters, I can do a more in-depth selection analysis for you.

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