



Tolerances and adjacent parts

ARTB bearings from IBC are produced in a high-precision class and an extended precision class. Table 1 shows the limit values for dimensional and running tolerances.

Basic designation	Dimensional tolerance			Mounting dimensions		Face/radial runout	
	Δ_d	Δ_D	Δ_H	Δ_{H_1}	Δ_{H_2}	t_1	t_1
	μm	mm		mm	PW	μm	PW
ARTB 50	-8	-11	± 0.125	± 0.025	± 0.125	1	2
ARTB 80	-9		± 0.150		± 0.150	1.5	3
ARTB 100	-10	-15	± 0.175		± 0.175		
ARTB 120							
ARTB 150	-13			± 0.030			
ARTB 180		-18				2	4
ARTB 200		-15					
ARTB 260	-18	-20	± 0.200	± 0.040	± 0.200	3	6
ARTB 325	-23	-23		± 0.050			
ARTB 395		-28					
ARTB 460			± 0.225	± 0.060	± 0.225		

Table 1: Tolerances for ARTB bearings

The geometry of the adjacent parts for the shaft disk and outer ring influences the running precision and frictional torque of the ARTB bearing.

Recommendations for their design can be found in Fig. 2.

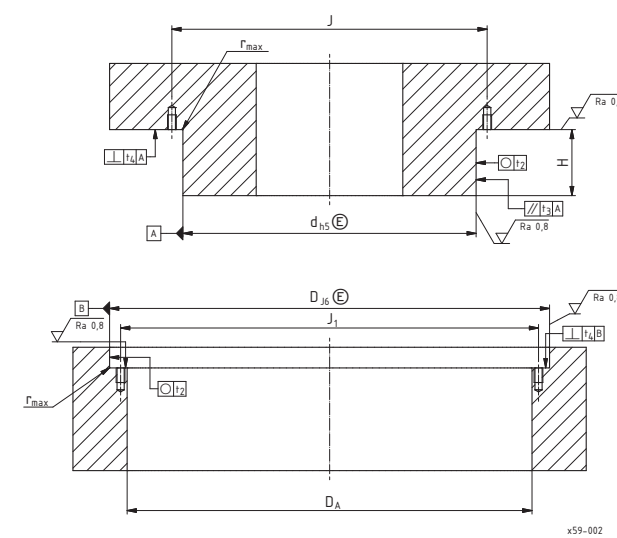


Fig. 2: Tolerances for adjacent parts

The recommended tolerance values and corner radii are given in Tables 2 to 4, depending on the relevant diameter.

Shaft diameter d	Roundness tolerance t_2	Parallelism tolerance t_3	Squareness tolerance t_4	
				more than mm
50	80	3	1	3
80	120	4	2	4
120	180	5	2	5
180	250	7	3	7
250	315	8	4	8
315	400	9	4	9
400	460	10	5	10

Table 2: Form accuracy for shafts

Housing diameter d	Roundness tolerance t_2	Squareness tolerance t_3	
			more than mm
120	180	5	5
180	250	7	7
250	315	8	8
315	400	9	9
400	500	10	10
500	600	11	11

Table 3: Form accuracy for housings

Bore diameter d	Maximum corner radius r_{max}	
		more than mm
50	200	0.1
200	460	0.3

Table 4: Radii for adjacent parts

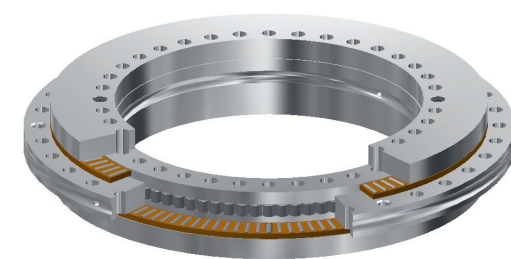


Fig. 3: ARTB bearings in a sectional view



ARTB
ARTB

Axial-radial bearings

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Rotary tables in machine tools

Rotary tables are used in machining operations and are used in machine tools, among other things as workpiece- and clamping device holders. Related applications with similar requirements are indexing tables, horizontal tables, reversible clamping devices and swivel-type milling heads.

The bearings must meet a wide variety of demands, depending on the application and the design.

Requirements for the bearings

The main requirement criteria for the bearings for rotary tables are:

- Load carrying capacity
- Stiffness
- Tilting moment
- Running accuracy
- Space
- Service life
- Suitability for high speeds
- Operating temperature

Various bearing concepts can be applied, depending on actual requirements and specification criteria. These range from two-row angular contact ball bearings to four-point contact bearings to tapered roller bearings and thrust bearings, together with elaborate combinations made up of several thrust and radial rolling bearings.

An alternative solution that meets a wide range of requirements is the **ARTB** bearing.

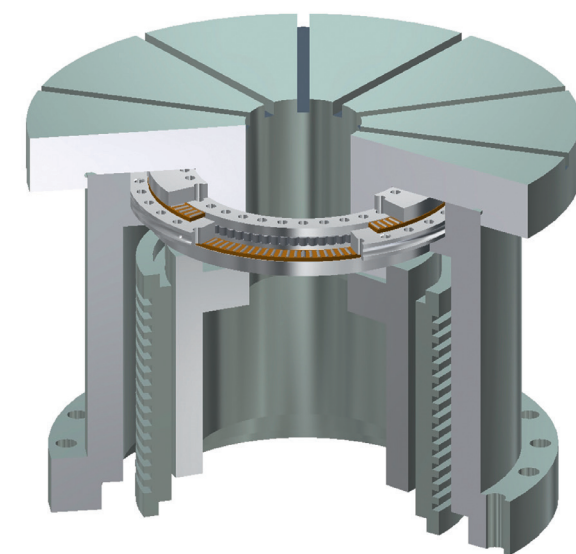


Fig. 1: Bearing of a rotary table with ARTB bearings

Rotary table bearings with axial-radial bearings

ARTB bearings are axial-radial bearings. They consist of an angle ring, an outer ring and a shield disk, of two axial roller assemblies and one radial roller assembly. This allows combined loads in the axial and radial directions to be taken up and results in a **one-bearing solution that is ready and easy to install.**

Design features of **ARTB** bearings from IBC are:

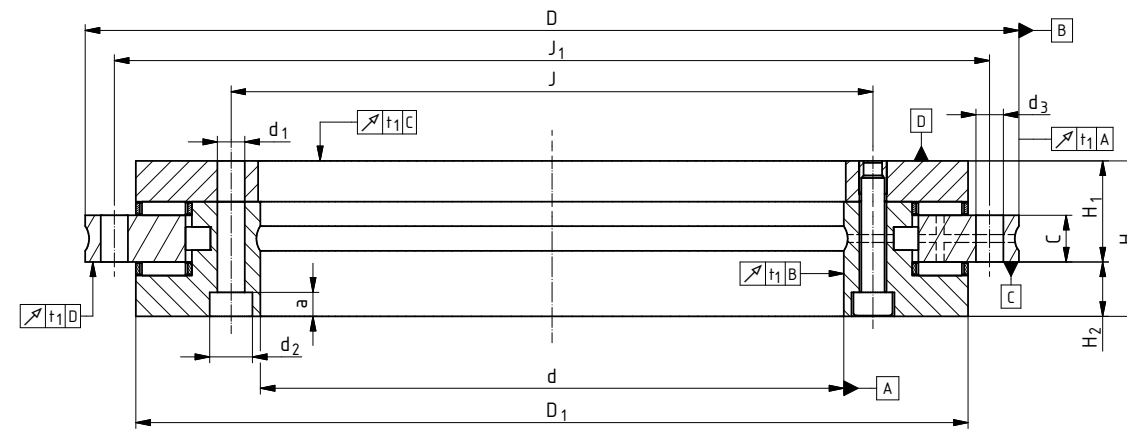
- Available sizes for bore diameters $d = 50 \text{ mm}$ to $d = 460 \text{ mm}$
- Use of high-precision components
- Full complement radial roller assembly
- Cages of the axial roller assemblies in standard version made of brass, cages made of steel (.J), or polyamide (.P) available on request
- Open bearings without sealing
- Lubricated at the factory with special GN33 grease for the running-in cycle
- Lubrication grooves with radial lubrication holes on inner and outer ring for external lubrication

Due to the features listed above, **ARTB** bearings not only exhibit a **high load capacity** and **stiffness** but also guarantee **axial runout and radial runout values for precise positioning.** The limiting speeds quoted apply for swivelling movements and brief start-up periods with the maximum permissible speed.

For applications with higher speeds **ARTB** bearings with modified internal design are available on request.

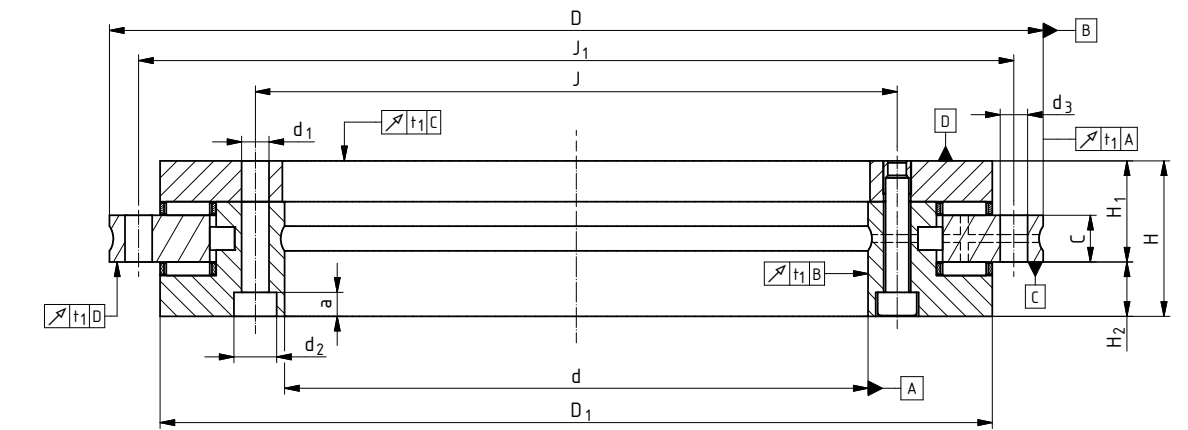
The preload is applied by screwing in the bearing with specified tightening torque M_A . This process requires the screws to be tightened in 3 stages by increasing the tightening torque alternately between opposite sides.

If the angle ring is to be supported axially over its entire surface, the **ARTB** bearing has to be specially matched and in this situation please contact the IBC Technical Department for more information.



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Basic designation	Basic dimensions			Axial load ratings		Radial load ratings		Stiffness of the bearing position			Limiting speed (of rotation)	Frictional torque	Mass
	d	D	H	C _a	C _{oa}	C _r	C _{or}	S _a	S _r	S _k			
	mm			kN		kN		kN/μm			min ⁻¹	Nm	kg
ARTB 50	50	126	30	56	280	28.5	49.5	1.3	1.1	1.25	440	2.5	1.6
ARTB 80	80	146	35	62	320	44	98	1.6	1.8	2.5	350	3	2.4
ARTB 100	100	185	38	73	370	52	108	2.0	2.0	5.0	280	3	4.1
ARTB 120	120	210	40	80	445	70	148	2.1	2.2	7.0	230	7	5.3
ARTB 150	150	240	40	85	510	77	179	2.3	2.6	11.0	210	13	6.2
ARTB 180	180	280	43	92	580	83	209	2.6	3.0	17.0	190	14	7.7
ARTB 200	200	300	45	98	650	89	236	3.0	3.5	23.0	170	15	9.7
ARTB 260	260	385	55	109	810	102	310	3.5	4.5	45.0	130	25	18.3
ARTB 325	325	450	60	186	1,710	134	415	4.3	5.0	80.0	110	48	25.0
ARTB 395	395	525	65	202	2,010	133	435	4.9	6.0	130.0	90	55	33.0
ARTB 460	460	600	70	217	2,300	187	650	5.7	7.0	200.0	80	70	45.0



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Basic designation	Dimensions						Fastening holes				Pitch	Threaded extraction hole		Tightening torque	
	H ₁	H ₂	C	D ₁	J	J ₁	Inner ring		Outer ring			Size	No.		M _A
	mm						mm		mm				Nm		
ARTB 50	20	10	10	105	63	116	5.6	-	-	10	5.6	12	12x30°	-	8.5
ARTB 80	23.35	11.65	12	130	92	138	5.6	10	6.0	10	4.6	12	12x30°	-	8.5
ARTB 100	25	13	12	160	112	170	5.6	10	6.0	16	5.6	15	18x20°	M8	3
ARTB 120	26	14	12	184	135	195	7.0	11	6.2	22	7.0	21	24x15°	M8	3
ARTB 150	26	14	12	214	165	225	7.0	11	6.2	34	7.0	33	36x10°	M8	3
ARTB 180	29	14	15	244	194	260	7.0	11	6.2	46	7.0	45	48x7.5°	M8	3
ARTB 200	30	15	15	274	215	285	7.0	11	6.2	46	7.0	45	48x7.5°	M8	3
ARTB 260	36.5	18.5	18	345	280	365	9.3	15	8.2	34	9.3	33	36x10°	M12	3
ARTB 325	40	20	20	415	342	430	9.3	15	8.2	34	9.3	33	36x10°	M12	3
ARTB 395	42.5	22.5	20	486	415	505	9.3	15	8.2	46	9.3	45	48x7.5°	M12	3
ARTB 460	46	24	22	560	482	580	9.3	15	8.2	46	9.3	45	48x7.5°	M12	3

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