PRUS

YRT Rotary Table Bearings

YRT回转支承轴承

● YRT系列轴承主要用于加工中心、数控设备的回转工作台。其内部的三列圆柱滚子可同时承受较大的轴向负荷和径向负荷，具有很高的抗颠覆力矩能力。极高的旋转精度为高精密设备的加工精度等级提供了强有力的支持。产品的集成化设计可有效减少安装空间，并使设计得到了简化。

YRT bearings are mainly used in machning center and rotary disk of numerical-control equipment. Due to the triple-row cylindrical roller, the YRT bearing is able to afford heavy load both from radial and axial direction at the same time as well as good anti-turnover capability. Due to the extremely high running accuracy, the machining precision of those high-precise equipments are well guaranteed. The intergration design can help to save mounting space and simplize the equipment configuration design.

Features:

YRT precision rotary table bearing is a kind of bearing fixed by a bidirectional thrust bearing and a centripetal-guided bearing. They can support radial loads, axial loads from both directions and tilting moments free from clearance and are particularly suitable for bearing arrangements with high requirements for running accuracy, like rotary tables, millings heads and reversible clamps.Due to the fixing holes in the bearing rings, the units are very easy to fit.

The bearings are radially and axially preloaded after fitting.

Sealing/Lubricant:

YRT bearings are supplied with seals. YRT bearings are greased by a lithium complex soap grease and can be lubricated via the outer ring and L-section ring.

Operating temperature:

YRT bearings are suitable for operating temperatures from 30℃ to 120℃

Design and safety guidelines

Basic rating life:

The load carrying capacity and life must be checked for the radial and axial bearing component.

Please contact us in relation to checking of the basic rating life .The speed ,load and operating duration must be given.

Static load safety factor:

The static load safety factor S0 indicates the security against impermissible permanent deformations in the bearing.

It is determined as follows:

$$S_0 = \frac{C_{0r}}{F_{0r}} \text{ or } \frac{C_{0a}}{F_{0a}}$$

Static load safety factor :Cor Coa N

Basic static load rating according to dimension tables: For Foa N

Maximum static load on the radial or axial bearing.

Caution! In machine tools and similar areas of application,S0 should be > 4

Limiting speeds:

The bearings allow the limiting speeds given in the dimension tables. The operating temperatures occurring are heavily dependent on the environmental conditions. Calculation is possible by means of a thermal balance analysis based on frictional torque data.

Frictional torque:

The bearing frictional torque MRL is influenced primarily by the viscosity and quantity of the lubricant and the bearing preload.

The lubricant viscosity and quantity are dependent on the lubricant grade and operating temperature.

The bearing preload is dependent on the mounting fits, the geometrical accuracy of the adjacent parts, the temperature difference between the inner and outer ring, the screw tightening torque and the mounting situation.

Starting torque:

For YRT bearing, it must be taken into consideration that the frictional torque can increase by a factor of between 2 and 2.5 with increasing speed.

Accuracy of adjacent construction:

The adjacent construction should be produced in accordance with Figure and the tolerances must be in accordance with the tables starting on page. Any deviations will influence the bearing frictional torque ,running accuracy and running characteristics.
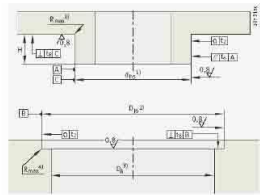
Requirements for the adjacent construction–YRT.

Legend to Figure：

1.Support over whole bearing height. It must be ensured that the means of support has adequate rigidity.
2.A precise fit is only necessary if radial support due to the load or a precise bearing position is required.
3.Note the bearing diameter D1 according to the dimension tables. Ensure that there is sufficient distance between the rotating bearing rings and the adjacent construction.
Geometrical and positional accuracy of the adjacent construction:

Nominal shaft diameter d mm		Deviation d		Roundness Parallelism Perpendicularity t_2, t_2, t_8
over	incl.	for tolerance zone h5 μm		μm
50	80	0	−13	3
80	120	0	−15	4
120	150	0	−18	5
150	180	0	−18	5
180	250	0	−20	7
250	315	0	−23	8
315	400	0	−25	9
400	500	0	−27	10
500	630	0	−28	11
630	800	0	−32	12
800	1000	0	−36	14

Geometrical and positional accuracy for shafts–YRT

Nominal shaft diameter D mm		Deviation D		Roundness Parallelism Perpendicularity t_2, t_2, t_8
over	incl.	for tolerance zone h5 μm		μm
120	150	+18	−7	5
150	180	+18	−7	5
180	250	+22	−7	7
150	315	+25	−7	8
315	400	+29	−7	9
400	500	+33	−7	10
500	630	+34	−7	11
630	800	+38	−8	12
800	1000	+44	−12	14
1000	1250	+52	−14	16

Geometrical and positional accuracy for housings–YRT
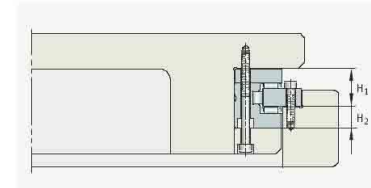
Mounting dimensions H1、H 2 :

Figure 15
Mounting dimension H1、H 2

L–section ring without support ring：
For the case "L–section ring without support ring" , the bearing designation is :YRT<bore diameter>
L–section ring with support ring:YRT bore diameter VSP
For the case "L–section ring with support ring" , the bearing designation is :YRT<bore diameter>VSP
Caution! For bearing arrangements with a supported L–section ring , only bearings with the suffix VSP、EB or T52EA can be ordered. If the normal design is mounted with a supported L–section ring, there will be a considerable increase in the bearing frictional torque .The support ring should be at least twice as the shaft locating washer of the bearing.
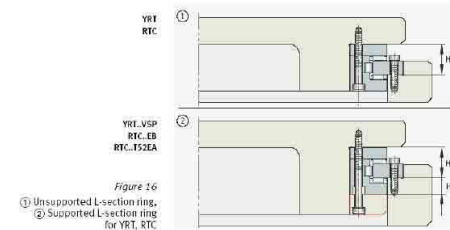

Figure 16
① Unsupported L-section ring,
② Supported L-section ring
for YRT, RTC

Fitting:

Retaining screws secure the bearing components during transport, For easier centring of the bearing ,the screws should be loosened before fitting and either secured again or removed after fitting. Tighten the fixing screws in crosswise sequence by using a torque wrench in three stages to the specified tightening torque MA, rotating the bearing:

Stage 1 40% of MA

Stage 2 70% of MA

Stage 3 100% of MA

Observe the correct grade of the fixing screws.

Caution! Mounting forces must only be applied to the bearing ring to be fitted, never through the rolling elements. Bearing components must not be separated or interchanged during fitting and dismantling. If the bearing is unusually difficult to move ,loosen the fixing screws and tighten them again in steps with a crosswise sequence. This will eliminate any distortion. Bearings should only be fitted in accordance with ,Fitting and Maintenance Manual.

YRT Dimensional tolerances, mounting dimensions, axial and radial runout YRT

Dimensional tolerances				Mounting dimensions					Axial and radial runout	
Bore		Outside diameter				Re-stric-ted		Re-stric-ted	Stan-dart	Re-stric-ted
d mm	Δds mm	D mm	ΔDs mm	H1 mm	ΔH1s mm	ΔH1s mm	H2 mm	ΔH2s mm	μm	μm
50	−0.008	126	−0.011	20	±0.125	±0.025	10	±0.02	2	1
80	−0.009	146	−0.011	23.35	±0.15	±0.025	11.7	±0.02	3	1.5
100	−0.01	185	−0.015	25	±0.175	±0.025	13	±0.02	3	1.5
120	−0.01	210	−0.015	26	±0.175	±0.03	14	±0.02	3	1.5
150	−0.013	240	−0.015	26	±0.175	±0.03	14	±0.02	3	1.5
180	−0.013	280	−0.018	29	±0.175	±0.03	14	±0.025	4	2
200	−0.015	300	−0.018	30	±0.175	±0.04	15	±0.025	4	2
260	−0.018	385	−0.02	36.5	±0.2	±0.05	18.5	±0.025	6	3
325	−0.023	450	−0.023	40	±0.2	±0.05	20	±0.025	6	3
395	−0.023	525	−0.028	42.5	±0.2	±0.05	22.5	±0.025	6	3
460	−0.023	600	−0.028	46	±0.225	±0.06	24	±0.03	6	5[3]
580	−0.025	750	−0.035	60	±0.25	±0.075	30	±0.03	10	5[3]
650	−0.038	870	−0.05	78	±0.25	±0.1	44	±0.03	10	5[3]
852	−0.05	1095	−0.063	80.5	±0.3	±0.12	43.5	±0.03	12	6[3]
950	−0.05	1200	−0.063	86	±0.3	±0.12	46	±0.03	12	6[3]
1030	−0.063	1300	−0.08	92.5	±0.3	±0.15	52.5	±0.03	12	6[3]

For rotating inner and outer ring,measured on fitted bearing,with ideal adjacent construction.
Special design,YRT only.
By agreement only for rotating outer ring.

Dimensional tolerances, mounting dimensions, axial and radial runout YRT speed

Dimensional tolerances				Mounting dimensions			Axial and radial runout
Bore		Outside diameter					
d mm	Δds mm	D mm	ΔDs mm	H1 mm	ΔH1s mm	H2 mm	μm
200	−0.015	300	−0.018	30	+0.04/−0.06	15	4
260	−0.018	385	−0.02	36.5	+0.05/−0.07	18.5	6
325	−0.023	450	−0.023	40	+0.06/−0.07	20	6
395	−0.023	525	−0.028	42.5	+0.06/−0.07	22.5	6
460	−0.023	600	−0.028	46	+0.07/−0.08	24	6

For rotating inner and outer ring,measured on fitted bearing,with ideal adjacent construction.

Special designs:
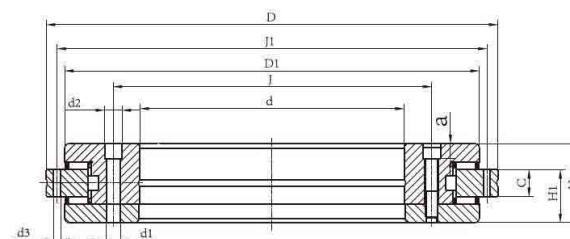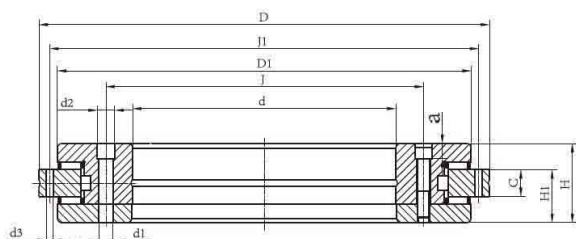
For YRT, axial and radial runout tolerances reduced by 50%,

Additional text: axial/radial runout 50%

For YRT, loser tolerance on mounting dimensions H1 and H2.

Additional text:H1 with tolerance ± ······, H2 with tolerance ± ······

YRT Rotary Table Bearing

Bearing Code	Boundary dimensions						Fixing holes — Inner ring						Outer ring		Number of retaining screws	Extraction thread		Number of pitches X angle of pitches	Screw tightening torque	Basic load rating — Axial		Radial		Limiting speed	Bearing frictional torque	Weight
	d mm	D mm	H mm	H1 mm	C mm	D,max mm	J mm	J1 mm	d1 mm	d2 mm	a mm	Quantity	d3 mm	Quantity		G	Quantity	Quantity	MA N m	Ca (Dynamic load)	Coa (Static load)	Cr (Dynamic load)	Cor (Static load)	Grease r/min	N m	Kg
YRT50	50	126	30	20	10	105	63	116	5.6			10	5.6	12	2			12X30°	8.5	56	280	28.5	49.5	440	2.5	1.6
YRT80–TV	80	146	35	23.35	12	130	92	138	5.6	10	4	10	4.6	12	2			12X30°	8.5/4.5	38	158	44	98	350	3	2.4
YRT100	100	185	38	25	12	160	112	170	5.6	10	5.4	16	5.6	15	2	M5	3	18X20°	8.5	73	370	52	108	280	3	4.1
YRT120	120	210	40	26	12	184	135	195	7	11	6.2	22	7	21	2	M8	3	24X15°	14	80	445	70	148	230	7	5.3
YRT150	150	240	40	26	12	214	165	225	7	11	6.2	34	7	33	2	M8	3	36X10°	14	85	510	77	179	210	13	6.2
YRT180	180	280	43	29	15	244	194	260	7	11	6.2	46	7	45	2	M8	3	48X7.5°	14	92	580	83	209	190	14	7.7
YRT200	200	300	45	30	15	274	215	285	7	11	6.2	46	7	45	2	M8	3	48X7.5°	14	98	650	89	236	170	15	9.7
YRT260	260	385	55	36.5	18	345	280	365	9.3	15	8.2	34	9.3	33	2	M12	3	36X10°	34	109	810	102	310	130	25	18.3
YRT325	325	450	60	40	20	415	342	430	9.3	15	8.2	34	9.3	33	2	M12	3	36X10°	34	186	1710	134	415	110	48	25
YRT395	395	525	65	42.5	20	486	415	505	9.3	15	8.2	46	9.3	45	2	M12	3	48X7.5°	34	202	2010	133	435	90	55	33
YRT460	460	600	70	46	22	560	482	580	9.3	15	8.2	46	9.3	45	2	M12	3	48X7.5°	34	217	2300	187	650	80	70	45
YRT580	580	750	90	60	30	700	610	720	11.4	18	11	46	11.4	42	2	M12	6	48X7.5°	68	390	3600	211	820	60	140	89
YRT650	650	870	122	78	34	800	680	830	14	20	13	46	14	42	2	M12	6	48X7.5°	116	495	5200	415	1500	55	200	170
YRT850	850	1095	124	80.5	37	1018	890	1055	18	26	17	58	18	54	2	M12	6	60X6°	284	560	6600	475	1970	40	300	253
YRT950	950	1200	132	86	40	1130	990	1160	18	26	17	58	18	54	2	M16	6	60X6°	284	1040	10300	600	2450	40	600	312
YRT1030	1030	1300	145	92.5	40	1215	1075	1255	18	26	17	60	18	66	12	M16	6	72X5°	284	1080	11000	620	2650	35	800	375