Mounting and Fittting of Spherical Plain Bearings

Mounting

To facilitate mounting, the ends of pins or shafts and the edges of housing bores should have a lead chamfer of 10° to 20°. The bearings can be more easily pressed into position and there is little risk of damage to the mating surfaces being caused by skewing of the bearing.

When mounting spherical plain bearings with a fractured or two-part outer ring, it is essential that the joint should be positioned at 90° to the main load direction; otherwise the service life will be shortened, particularly under heavy loads. Also, the bearing's lubrication holes will be placed in the load zone, allowing lubricant distribution where it is needed most.

Bearing rings should NEVER be hammered into place. Only apply mounting forces onto the ring that is being mounted (i.e. force on outer ring if being pressed into a housing, force on inner ring if pressed onto a shaft). NEVER apply mounting forces though the bearing's sliding surfaces, this will damage the bearing and will severely decrease its service life. In the event that the bearing has a press fit on both the inner and outer rings, a special tool should be made to allow pressing of both components simultaneously.

Other ways of mounting with the facilitation of heat or refrigeration, or with the use of adhesives may be possible also, please contact AST Engineering for further assistance.

Fitting

Generally, outer rings of Spherical Plain bearings get press fit into housings. This allows the fracture to remain closed, and prevents rotation of the outer ring under heavy rotational or oscillating loads. Inner rings may have interference or clearance fits on shafts depending on the application. Below is a list of suggested fits for various conditions. Please contact AST Engineering for any further assistance needed.

Fits for radial spherical plain bearings

The following charts show the various fits for radial spherical plain bearings including: shaft and housing fits along with shaft diameter and housing bore tolerances.

Shaft fits

Operating Conditions	Sliding Contact Surface Combination	
	Requiring Maintenance	Maintenance-Free
Loads of all kinds clearance or transition fit	h6 hardened shaft ≥45Hrc	h6，g6
Loads of all kinds interference fit	m6	k6

Housing fits

Operating Conditions	Sliding Contact Surface Combination	
	Requiring Maintenance	Maintenance-Free
Light loads Axial displacement required	H7	H7
Heavy loads	M7	K7
Light alloy housings	N7	M7

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Shaft Diameter Tolerances

Shaft Diameter (mm)		Shaft Diameter Tolerances (µm)							
		g6		h6		k6		m6	
Over	Incl.	High	Low	High	Low	High	Low	High	Low
3	6	-4	-12	0	-8	9	1	12	4
6	10	-5	-14	0	-9	10	1	15	6
10	18	-6	-17	0	-11	12	1	18	7
18	30	-7	-20	0	-13	15	2	21	8
30	50	-9	-25	0	-16	18	2	25	9
50	80	-10	-29	0	-19	21	2	30	11
80	120	-12	-34	0	-22	25	3	35	13
120	180	-14	-39	0	-25	28	3	40	15
180	250	-15	-44	0	-29	33	4	46	17
250	315	-17	-49	0	-32	36	4	52	20
315	400	-18	-54	0	-36	40	4	57	21
400	500	-20	-60	0	-40	45	5	63	23
500	630	-22	-66	0	-44	44	0	70	26
630	800	-24	-74	0	-50	50	0	80	30

Housing Bore Tolerances

Housing Bore Diameter (mm)		Housing Bore Tolerances (µm)							
		H7		K7		M7		N7	
Over	incl.	Low	High	Low	High	Low	High	Low	High
10	18	0	18	-12	6	-18	0	-23	-5
18	30	0	21	-15	6	-21	0	-28	-7
30	50	0	25	-18	7	-25	0	-33	-8
50	80	0	30	-21	9	-30	0	-39	-9
80	120	0	35	-25	10	-35	0	-45	-10
120	150	0	40	-28	12	-40	0	-52	-12
150	180	0	40	-28	12	-40	0	-52	-12
180	250	0	46	-33	13	-46	0	-60	-14
250	315	0	52	-36	16	-52	0	-66	-14
315	400	0	57	-40	17	-57	0	-73	-16
400	500	0	63	-45	18	-63	0	-80	-17
500	630	0	70	-70	0	-96	-26	-114	-44
630	800	0	80	-80	0	-110	-30	-130	-50
800	1000	0	90	-90	0	-124	-34	-146	-56
1000	1250	0	105	-105	0	-145	-40	-171	-66

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