NACHI

Self-aligning Ball Bearings

● Design

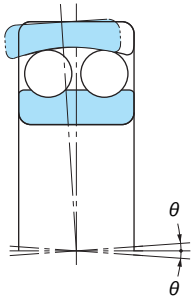
Self-aligning Ball Bearings are particularly suitable for applications where misalignment occurs from errors in mounting or from shaft deflection.
For applications where the bearing load (particularly axial load) carrying capacity is insufficient, spherical roller bearings, which have the same self-aligning property, should be used instead.

● Cage

Bearings are fitted with pressed steel cage or polyamide cage.
The suffix G of bearing number on the packing surface indicate polyamide cage.

● Attention

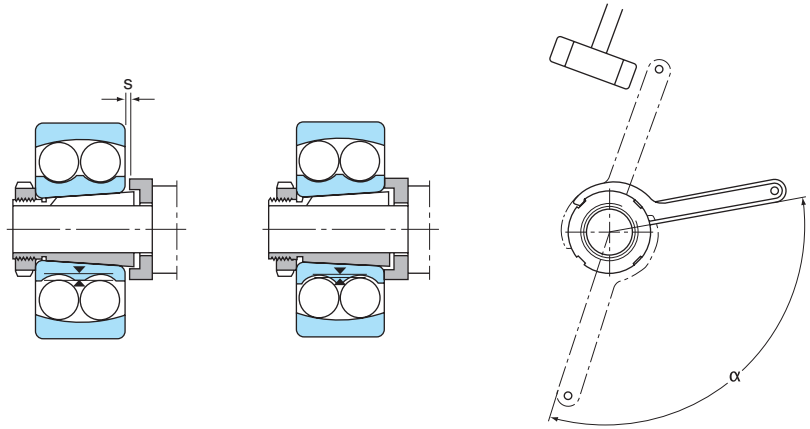
(1) Maximum permissible misalignment angle θ is about 2.5˚ in the 11 and 22 series, and about 3˚ in the 13 and 23 series under general service conditions. Care must be taken to provide sufficient clearance between the bearing and surrounding structure when bearing is operating in the full misaligned condition.
(2) Misaligned bearings will have a tendency to become noisy as speed increases. Due to noise-level constraints, the practical maximum misalignment may be considerably less than the maximum misalignment.
(3) The dimension tables show the width of the ball assembly as dimension B1 for larger bore sizes of Self-aligning Ball Bearings where width of the ball assembly extends beyond the ring width envelope.
(4) It is difficult to correctly measure the running clearance of bearings with tapered bore after mounting. Mounting of this type of bearing with tapered bores requires some experience and technique.
(5) The bearings with polyamide cage should be used at less than 120˚C operating temperature.



● Mounting bearings with tapered bore

Mounting bearings with a tapered bore requires some experience and technique. Bearings with tapered bore are always mounted with an interference fit on the shaft.
To measure the amount of interference fit on the shaft, the axial displacement of the inner ring or the reduction of radial internal clearance due to the interference fit can be used. Generally, the measurement of reduction in radial internal clearance is a more reliable method than measurement of the axial displacement of the inner ring.

Table 1. Mounting self-aligning ball bearings with tapered bore



Bearing Bore Diameter d (mm)	Tightening Angle α (degree)	Axial displacement s (mm)				Mean residual clearance after mounting bearings with initial clearance	
		Bearings series				Normal (μm)	C3 (μm)
		12K	13K	22K	23K		
20	70	0.22	0.23	—	—	10	20
25	70	0.22	0.23	0.22	0.23	10	20
30	70	0.22	0.23	0.22	0.23	10	20
35	70	0.30	0.30	0.30	0.30	10	20
40	70	0.30	0.30	0.30	0.30	10	20
45	70	0.31	0.34	0.31	0.33	15	25
50	70	0.31	0.34	0.31	0.33	15	25
55	90	0.40	0.41	0.39	0.40	15	30
60	90	0.40	0.41	0.39	0.40	15	30
65	90	0.40	0.41	0.39	0.40	15	30
75	120	0.45	0.47	0.43	0.46	20	40
80	120	0.45	0.47	0.43	0.46	20	40
85	120	0.58	0.60	0.54	0.59	20	40
90	120	0.58	0.60	0.54	0.59	20	40
95	120	0.58	0.60	0.54	0.59	20	40
100	120	0.58	0.60	0.54	0.59	20	40
105	120	0.67	—	0.66	—	25	55
110	120	0.67	0.70	0.66	0.69	25	55
120	120	0.67	—	—	—	25	55