

DESIGN, TYPES, AND FEATURES

THRUST SPHERICAL ROLLER BEARINGS

These thrust bearings containing convex rollers have self-aligning capabilities and are free of any influence from mounting error or shaft deflection. E-type bearings (suffixed with E in the bearing tables) with pressed cages are available for high load applications.

Machined-brass cages are recommended for horizontal shafts or high-speed applications; please contact NSK for details.

Since there are several places where lubrication is difficult, such as the area between the roller heads and inner ring rib, the sliding surfaces between cage and guide sleeve, etc., oil lubrication should be used, even at low speeds.

Machined-brass cages are used in standard bearings of this type.

TOLERANCES AND RUNNING ACCURACY

THRUST SPHERICAL ROLLER BEARINGSTable 7.8 (Pages A145)

RECOMMENDED FITS

THRUST SPHERICAL ROLLER BEARINGSTable 8.4 (Pages A164)
Table 8.6 (Pages A165)

DIMENSIONS RELATED TO MOUNTING

Dimensions related to mounting of thrust spherical roller bearings are listed in the bearing tables.

If the bearing load is heavy, design the shaft shoulder with ample strength to provide sufficient support for the shaft washer.

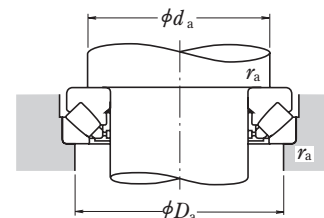
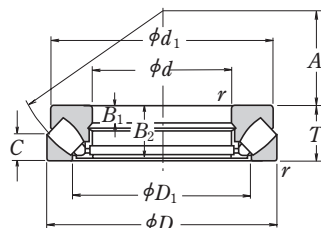
PERMISSIBLE MISALIGNMENT

The permissible misalignment of thrust spherical roller bearings varies depending on size, but it is approximately 0.018 to 0.036 radian (1° to 2°) with average loads.

MINIMUM AXIAL LOAD

Be sure to apply some axial load to thrust bearings to prevent slippage between the rolling elements and raceways. For more details, please refer to Page A198.

Bore Diameter 220 – 420 mm



Dynamic Equivalent Load

$$P = 1.2F_r + F_a$$

Static Equivalent Load

$$P_0 = 2.8F_r + F_a$$

However, $F_r/F_a \leq 0.55$ must be satisfied.

Boundary Dimensions (mm)				Basic Load Ratings (N)		Limiting Speeds (min ⁻¹) Oil	Bearing Designation	Dimensions (mm)						Abutment and Fillet Dimensions (mm)			Mass (kg) approx.
<i>d</i>	<i>D</i>	<i>T</i>	<i>r</i> min.	<i>C_a</i>	<i>C_{0a}</i>			<i>d</i> ₁	<i>D</i> ₁	<i>B</i> ₁	<i>B</i> ₂	<i>C</i>	<i>A</i>	<i>d</i> _a ⁽¹⁾ min.	<i>D</i> _a max.	<i>r</i> _a max.	
220	300	48	2	560 000	2 500 000	1 400	29244	285	254	15	46	24	117	260	275	2	9.2
	360	85	4	1 340 000	5 200 000	950	29344	335	280	29	81	41	125	285	315	3	33
	420	122	6	2 350 000	8 650 000	800	29444	385	308	43	117	58	132	310	355	5	74
240	340	60	2.1	800 000	3 450 000	1 200	29248	325	283	19	57	30	130	285	305	2	16.5
	380	85	4	1 360 000	5 400 000	950	29348	355	300	29	81	41	135	300	330	3	35.5
	440	122	6	2 420 000	9 100 000	750	29448	405	326	43	117	59	142	330	375	5	79
260	360	60	2.1	855 000	3 850 000	1 200	29252	345	302	19	57	30	139	305	325	2	18
	420	95	5	1 700 000	6 800 000	800	29352	390	329	32	91	45	148	330	365	4	48.5
	480	132	6	2 820 000	10 700 000	710	29452	445	357	48	127	64	154	360	405	5	105
280	380	60	2.1	885 000	4 100 000	1 100	29256	365	323	19	57	30	150	325	345	2	19
	440	95	5	1 830 000	7 650 000	800	29356	410	348	32	91	46	158	350	390	4	52.5
	520	145	6	3 400 000	13 100 000	630	29456	480	384	52	140	68	166	390	440	5	132
	520	145	6	3 950 000	14 900 000	630	29456 EM	480	380	52	140	70	166	410	445	5	134
300	420	73	3	1 160 000	5 150 000	950	29260	400	353	21	69	38	162	355	380	2.5	30
	480	109	5	2 190 000	9 100 000	710	29360	450	379	37	105	50	168	380	420	4	74
	540	145	6	3 500 000	13 700 000	630	29460	500	402	52	140	70	175	410	460	5	140
320	440	73	3	1 190 000	5 450 000	950	29264	420	372	21	69	38	172	375	400	2.5	32.5
	500	109	5	2 230 000	9 400 000	670	29364	470	399	37	105	53	180	400	440	4	77
	580	155	7.5	3 650 000	14 600 000	560	29464	555	436	55	149	75	191	435	495	6	175
340	460	73	3	1 230 000	5 750 000	900	29268	440	395	21	69	37	183	395	420	2.5	33.5
	540	122	5	2 640 000	11 200 000	630	29368	510	428	41	117	59	192	430	470	4	103
	620	170	7.5	4 400 000	17 400 000	530	29468	590	462	61	164	82	201	465	530	6	218
360	500	85	4	1 550 000	7 300 000	800	29272	480	423	25	81	44	194	420	455	3	51
	560	122	5	2 670 000	11 500 000	600	29372	525	448	41	117	59	202	450	495	4	107
	640	170	7.5	4 200 000	17 200 000	500	29472	610	480	61	164	82	210	485	550	6	228
	640	170	7.5	5 450 000	20 400 000	500	29472 EM	580	474	61	164	83	210	495	550	6	220
380	520	85	4	1 620 000	7 800 000	800	29276	496	441	27	81	42	202	440	475	3	52
	600	132	6	3 300 000	14 500 000	560	29376	568	477	44	127	63	216	480	525	5	140
	670	175	7.5	4 800 000	19 500 000	480	29476	640	504	63	168	85	230	510	575	6	254
400	540	85	4	1 640 000	8 000 000	750	29280	517	460	27	81	42	212	460	490	3	55
	620	132	6	3 250 000	14 500 000	530	29380	590	494	44	127	64	225	500	550	5	150
	710	185	7.5	5 400 000	22 100 000	450	29480	680	536	67	178	89	236	540	610	6	306
420	580	95	5	2 010 000	9 800 000	670	29284	553	489	30	91	46	225	490	525	4	72
	650	140	6	3 500 000	15 700 000	500	29384	620	520	48	135	68	235	525	575	5	170
	730	185	7.5	5 650 000	23 500 000	450	29484	700	556	67	178	89	244	560	630	6	323

Note ⁽¹⁾ For heavy load applications, ensure that the *d_a* value chosen is large enough to support the shaft washer rib.