NSKHPS Angular Contact Thrust Ball Bearings for Ball Screw Support

Features

NSKHPS bearings improve reliability by focusing on material cleanliness, which has the biggest impact on bearing life, by employing NSK's proprietary material evaluation technologies to improve dynamic load ratings by 5% compared with conventional bearings.

The NSKTAC C Series features high axial rigidity suitable for machine tool fee mechanisms, while the NSKTAC 03 Series with its high axial load capacity is well-suited for the support of large ball screws in high-load drive applications such as electric injection molding machines. With these series, users can achieve much lower torque and higher accuracy than with roller bearings.

NSKTAC C Angular Contact Thrust Ball Bearings for Ball Screw Support in High-Rigidity Applications

A larger number of balls and a 60° contact angle provide high axial rigidity that makes NSKTAC C bearings ideally suited for machine tool feeding mechanisms.

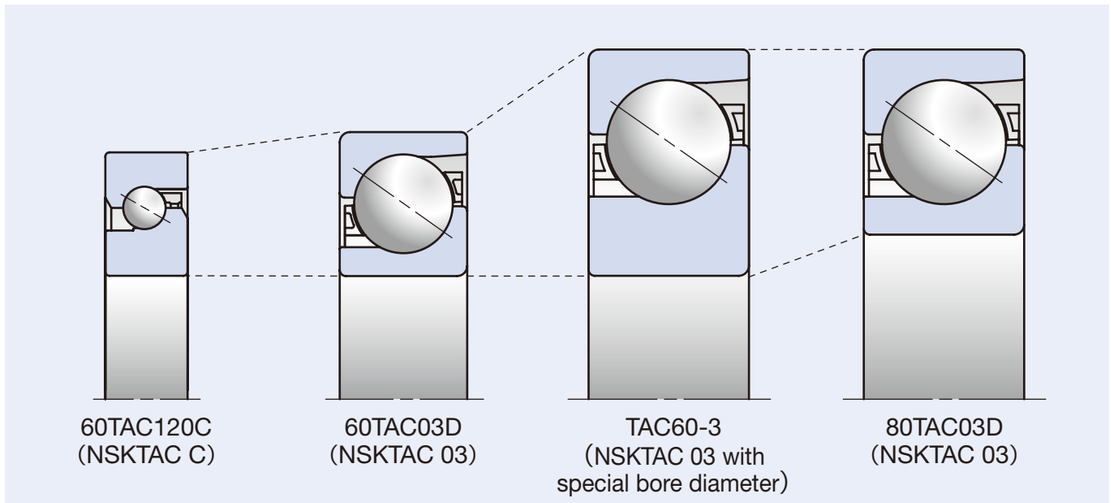
The DDG seals used for the sealed bearings of this series are light-contact seals for high speeds; a strong sealing effect is achieved by a labyrinth between the seal lip and the seal groove of the inner ring. This ensures that no foreign particles can get into the bearing and no grease can leak out, thus helping to keep the surrounding area clean. Some bearings from this series are also available as non-contact sealed bearings for even lower torque and lower heat generation.

For ease of handling and increased efficiency, NSKTAC C bearings come prepacked with WPH grease that resists high temperatures and is less likely to soften and leak.

NSKTAC 03 Angular Contact Thrust Ball Bearings for Ball Screw Support in High-Load Drive Applications

An optimized internal design provides NSKTAC 03 bearings with higher limiting axial loads, allowing for fewer bearing rows and smaller equipment. We also offer bearings with special bore diameters. That way, bearings with higher load capacity may be employed without any need to modify the shaft diameter, allowing for more compact screw shaft ends.

Please consult with NSK to confirm the suitability of NSKTAC 03 bearings for applications outside of injection molding machines and machine tools.



Numbering System for NSKTAC C Angular Contact Thrust Ball Bearings for Ball Screw Support (for High-Rigidity Applications)

Designation example: 30 | TAC | 62 | C | | SU | H | PN7C

- 30 — Nominal bore diameter
- TAC — Bearing type
- 62 — Nominal outside diameter
- C — Internal design
- (blank) — Seal
- SU — Arrangement
- H — Preload
- PN7C — Accuracy

			Reference pages
30	Nominal bore diameter	Bore diameter (mm)	146-147
TAC	Bearing type	Angular contact thrust ball bearing	30, 144
62	Nominal outside diameter	Outside diameter (mm)	146-147
C	Internal design	Contact angle 60°	–
	Seal	No code: Open type DDG: Contact rubber seal V1V: Non-contact rubber seal	144
SU	Arrangement	SU: Universal arrangement (single-row)	200-205
H	Preload	H: Heavy preload (standard in the NSKHPS Series)	146-147
PN7C	Accuracy	PN7C: NSKTAC C standard accuracy (NES Class 7C, axial runout equivalent to P2)	229

Numbering System for NSKTAC 03 Angular Contact Thrust Ball Bearings for Ball Screw Support (for High-Load Drive Applications)

Designation example: 60 | TAC | 03 | D | T85 | SU | M | PN5D

- 60 — Nominal bore diameter
- TAC — Bearing type
- 03 — Dimension series
- D — Internal design
- T85 — Cage
- SU — Arrangement
- M — Preload
- PN5D — Accuracy

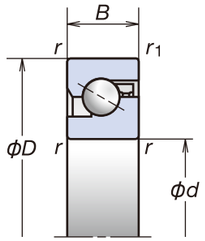
			Reference pages
60	Nominal bore diameter	Bore diameter (mm)	148-149
TAC	Bearing type	Angular contact thrust ball bearing	30, 144
03	Dimension series	02: 02 Series 03: 03 Series	144
D	Internal design	Contact angle 55°	–
T85	Cage	T85: Polyamide cage M: Brass Cage	–
SU	Arrangement	SU: Universal arrangement (single-row)	200-205
M	Preload	M: Medium preload EL: Extra light preload	148-149
PN5D	Accuracy	PN5D: NSKTAC 03 standard accuracy (NES Class 5D)	229

NSKHPS is not applicable for TAC100-3 to 180TAC03DM.

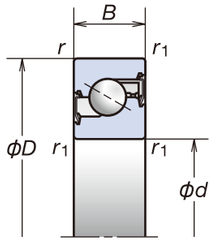
4. Ball Screw Support Bearings

Bore Diameter 15-60 mm

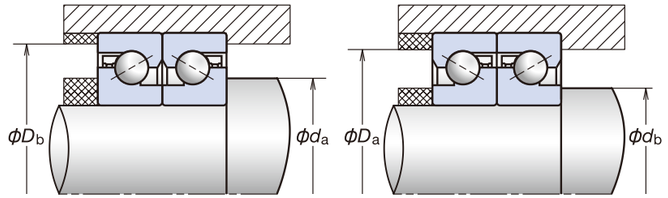
for High-Rigidity



Open type



Sealed type DDG



Calculation of preload, axial rigidity and starting torque for bearing arrangements
Multiply by factors in table B.

Table B

	DFD	DFF	DFT
	DBD	DBB	DBT
Preload factor	1.36	2.00	1.57
Axial rigidity	1.49	2.00	1.89
Starting torque	1.35	2.00	1.55

(Open type)

Designation	Boundary Dimensions (mm)					Abutment and Fillet Dimensions (mm)				Recommended Grease Quantities (g/brg)	Contact Angle (°)	Limiting Speeds (2) (min⁻¹)		Mass (kg) (approx.)
	d	*D*	*B*	*r* (min.)	r_1 (min.)	D_b (max.)	d_a (min.)	D_a (max.)	d_b (min.)			Grease	Oil	
15TAC47C	**15**	**47**	**15**	1	0.6	42	19.5	41	19.5	2.0	60	6 900	9 200	0.146
17TAC47C	**17**	**47**	**15**	1	0.6	42	23	41	23	2.0	60	6 900	9 200	0.140
20TAC47C	**20**	**47**	**15**	1	0.6	42	25	41	25	2.0	60	6 900	9 200	0.135
25TAC62C	**25**	**62**	**15**	1	0.6	57	31	56	31	2.8	60	5 200	6 900	0.252
30TAC62C	**30**	**62**	**15**	1	0.6	57	36	56	36	3.0	60	4 900	6 400	0.224
30TAC72C	**30**	**72**	**19**	1	0.6	67	36	66	36	4.6	60	4 100	5 800	0.427
35TAC72C	**35**	**72**	**15**	1	0.6	67	42	66	42	3.5	60	4 100	5 800	0.310
40TAC72C	**40**	**72**	**15**	1	0.6	67	47	66	47	3.6	60	4 100	5 500	0.275
40TAC90C	**40**	**90**	**20**	1	0.6	85	48	84	48	8.2	60	3 500	4 600	0.674
45TAC75C	**45**	**75**	**15**	1	0.6	68	54	67	54	3.9	60	3 700	4 900	0.270
45TAC100C	**45**	**100**	**20**	1	0.6	93	55	92	55	9.0	60	3 000	4 100	0.842
50TAC100C	**50**	**100**	**20**	1	0.6	92	60	91	60	9.5	60	3 000	3 900	0.778
55TAC100C	**55**	**100**	**20**	1	0.6	92	63	91	63	9.5	60	3 000	3 900	0.714
55TAC120C	**55**	**120**	**20**	1	0.6	112	63	111	63	11	60	2 500	3 500	1.23
60TAC120C	**60**	**120**	**20**	1	0.6	112	70	111	70	11	60	2 500	3 500	1.16

DB/DF Arrangement H preload				Basic dynamic load rating Ca by number of rows sustaining Fa			Limiting static axial load by number of rows sustaining Fa (3)		
Preload (N)	Axial Rigidity (N/μm)	Starting Torque (4) (N·m)	Measured Axial Clearance (μm)	1 row (kN)	2 rows (kN)	3 rows (kN)	1row (kN)	2 rows (kN)	3 rows (kN)
1 450	630	0.09	− 13	27.6	45.0	59.5	26.6	53.0	79.5
1 450	630	0.09	− 13	27.6	45.0	59.5	26.6	53.0	79.5
1 450	630	0.09	− 13	27.6	45.0	59.5	26.6	53.0	79.5
2 280	850	0.15	− 15	36.0	58.5	77.5	40.5	81.5	122
2 400	890	0.16	− 15	37.0	59.5	79.5	43.0	86.0	129
2 750	1 030	0.18	− 15	39.0	63.5	84.5	50.0	100	150
2 750	1 030	0.18	− 15	39.0	63.5	84.5	50.0	100	150
2 860	1 080	0.19	− 15	40.0	65.0	86.5	52.0	104	157
3 450	1 150	0.29	− 17	74.5	121	160	89.5	179	269
3 100	1 170	0.20	− 15	41.5	67.0	89.5	57.0	114	170
4 440	1 340	0.40	− 19	77.5	126	167	99.0	198	298
4 650	1 410	0.42	− 19	79.0	129	171	104	208	310
4 650	1 410	0.42	− 19	79.0	129	171	104	208	310
5 450	1 660	0.49	− 19	85.0	138	183	123	246	370
5 450	1 660	0.49	− 19	85.0	138	183	123	246	370

(Sealed type)

Designation (1)	Boundary Dimensions (mm)					Abutment and Fillet Dimensions (mm)				Contact Angle (°)	Limiting Speeds (2) (min⁻¹)	Mass (kg) (approx.)
	d	*D*	*B*	*r* (min.)	r_1 (min.)	D_b (max.)	d_a (min.)	D_a (max.)	d_b (min.)		Grease	
***15TAC47CDDG**	**15**	**47**	**15**	1	0.6	42	19.5	41	19.5	60	6 900	0.146
***17TAC47CDDG**	**17**	**47**	**15**	1	0.6	42	22	41	22	60	6 900	0.140
***20TAC47CDDG**	**20**	**47**	**15**	1	0.6	42	25	41	25	60	6 900	0.135
***25TAC62CDDG**	**25**	**62**	**15**	1	0.6	57	30	56	30	60	5 200	0.252
30TAC62CDDG	**30**	**62**	**15**	1	0.6	57	36	56	36	60	4 900	0.224
35TAC72CDDG	**35**	**72**	**15**	1	0.6	67	41	66	41	60	4 100	0.310
40TAC72CDDG	**40**	**72**	**15**	1	0.6	67	46	66	46	60	4 100	0.275
40TAC90CDDG	**40**	**90**	**20**	1	0.6	85	47	84	47	60	3 500	0.674
45TAC100CDDG	**45**	**100**	**20**	1	0.6	93	54	92	54	60	3 000	0.842
50TAC100CDDG	**50**	**100**	**20**	1	0.6	92	59	91	59	60	3 000	0.778
55TAC100CDDG	**55**	**100**	**20**	1	0.6	92	63	91	63	60	3 000	0.714

DB and DF Arrangement H preload				Basic dynamic load rating Ca by number of rows sustaining Fa			Limiting static axial load by number of rows sustaining Fa (3)		
Preload (N)	Axial Rigidity (N/μm)	Starting Torque (4) (N·m)	Measured Axial Clearance (μm)	1 row (kN)	2 rows (kN)	3 rows (kN)	1 row (kN)	2 rows (kN)	3 rows (kN)
1 450	630	0.09	− 13	27.6	45.0	59.5	26.6	53.0	79.5
1 450	630	0.09	− 13	27.6	45.0	59.5	26.6	53.0	79.5
1 450	630	0.09	− 13	27.6	45.0	59.5	26.6	53.0	79.5
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2 750	1 030	0.18	− 15	39.0	63.5	84.5	50.0	100	150
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3 450	1 150	0.29	− 17	74.5	121	160	89.5	179	269
4 440	1 340	0.40	− 19	77.5	126	167	99.0	198	298
4 650	1 410	0.42	− 19	79.0	129	171	104	208	310
4 650	1 410	0.42	− 19	79.0	129	171	104	208	310

(1) An asterisk (*) indicates bearings that are also available as non-contact sealed bearings.
(2) Limiting speeds are based on high preload (H). The values shown are valid for all types of bearing arrangement.
(3) To calculate permissible axial load, multiply limiting axial load by 0.7.
(4) The starting torque values in the table apply to grease lubricated bearings. Contact seal torque is not included. For oil lubricated bearings, multiply by 1.4.
(5) Abutment and fillet dimensions are recommendable values for the use of standard Machine tool applications. For heavy load applications, please ask NSK