

NSKHPS HIGH PERFORMANCE STANDARD

ANGULAR CONTACT BALL BEARINGS - HIGH CAPACITY



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SETTING THE FUTURE IN MOTION

We are among the leading manufacturers for rolling bearings, linear technology components and steering systems worldwide. We can be found on almost every continent – with production facilities, sales offices and technology centres – because our customers appreciate short decision-making channels, prompt deliveries and local service.



The NSK company

NSK commenced operations as the first Japanese manufacturer of rolling bearings back in 1916. Ever since, we have been continuously expanding and improving not only our product portfolio but also our range of services for various industrial sectors. In this context our worldwide research and production facilities are linked together in a global network. Here we concentrate not only on the

development of new technologies, but also on the continuous optimisation of quality – at every process stage. Among other things, our research activities include product design, simulation applications using a variety of analytical systems and the development of different steels and lubricants for rolling bearings.

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OUR MOST IMPORTANT PRODUCT: OUR CUSTOMERS' SATISFACTION

One thing keeps us moving: we want to help you increase the reliability of your vehicles and equipment, not only with excellent products, but above all with excellent service. Our experienced engineers have a deep understanding of systems – together with you, they work to optimise products and processes and develop solutions for the future. The goal that we are dedicated to every day is ensuring that you remain competitive over the long run.

More about NSK on www.nsk europe.com



ANGULAR CONTACT BALL BEARINGS - HIGH CAPACITY

NSK Ball Bearings

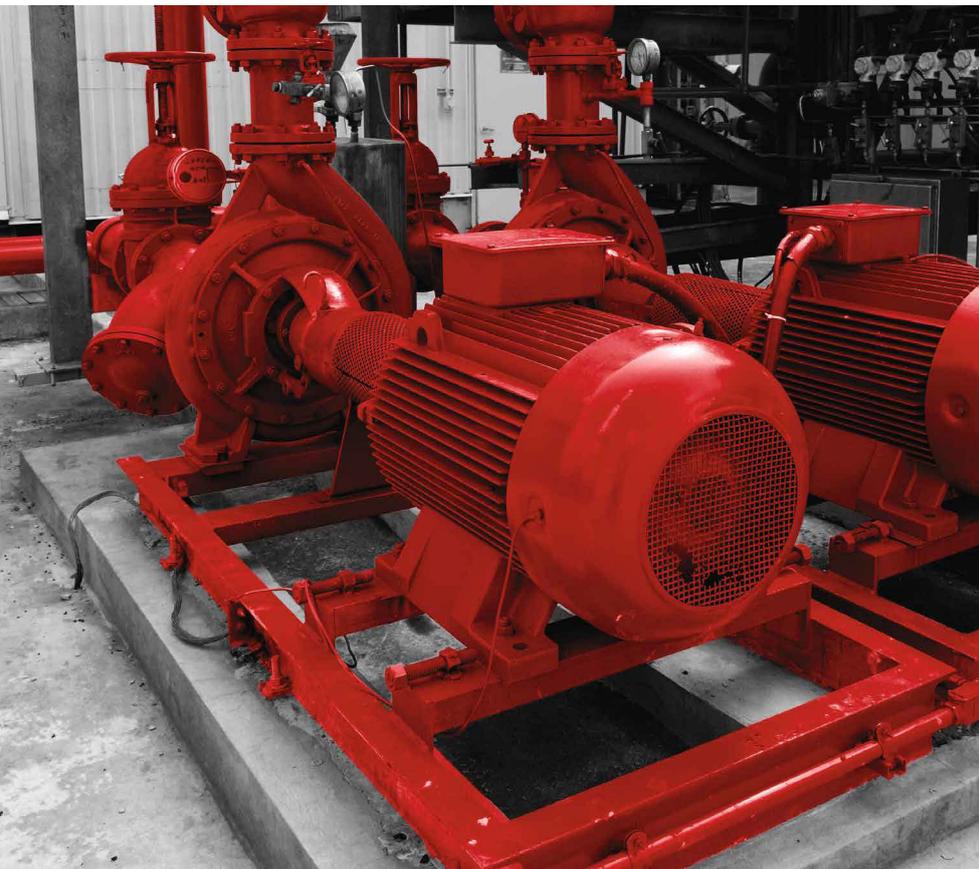
NSK high capacity angular contact ball bearings are designed to operate under high loads, at high speeds, with accuracy, in mission-critical machinery and equipment.

In API pumps for petroleum and chemical industries. ANSI pumps in pulp and paper production. In screw compressors, fans and blowers supplying air, gas and refrigerant to production processes in a wide range of industries.

Unexpected component failure in this machinery can bring production to a standstill. At a significant cost.

Reliability is paramount.

With a lineup that is designed to accommodate diverse operating stresses and increasing demands on bearing performance, NSK high capacity angular contact ball bearings optimize machine performance, deliver predictable reliability and promote total cost-efficiency.



Performance you can count on

With our NSKHPS series high capacity angular contact ball bearings, NSK delivers a high performance standard engineered to exceed the demands of their industrial applications. Through proprietary materials, optimized design and applied precision manufacturing technologies, our NSKHPS series contributes to highly efficient machine and equipment performance with:

- Increased load capacity derived from optimized internal design
- Bearing fatigue life increased as much as 90%
- Higher limiting speeds, increased by 15-20%
- Highly accurate axial positioning achieved with high precision tolerances and standard universal arrangement
- Reduced heat generation, vibration and noise

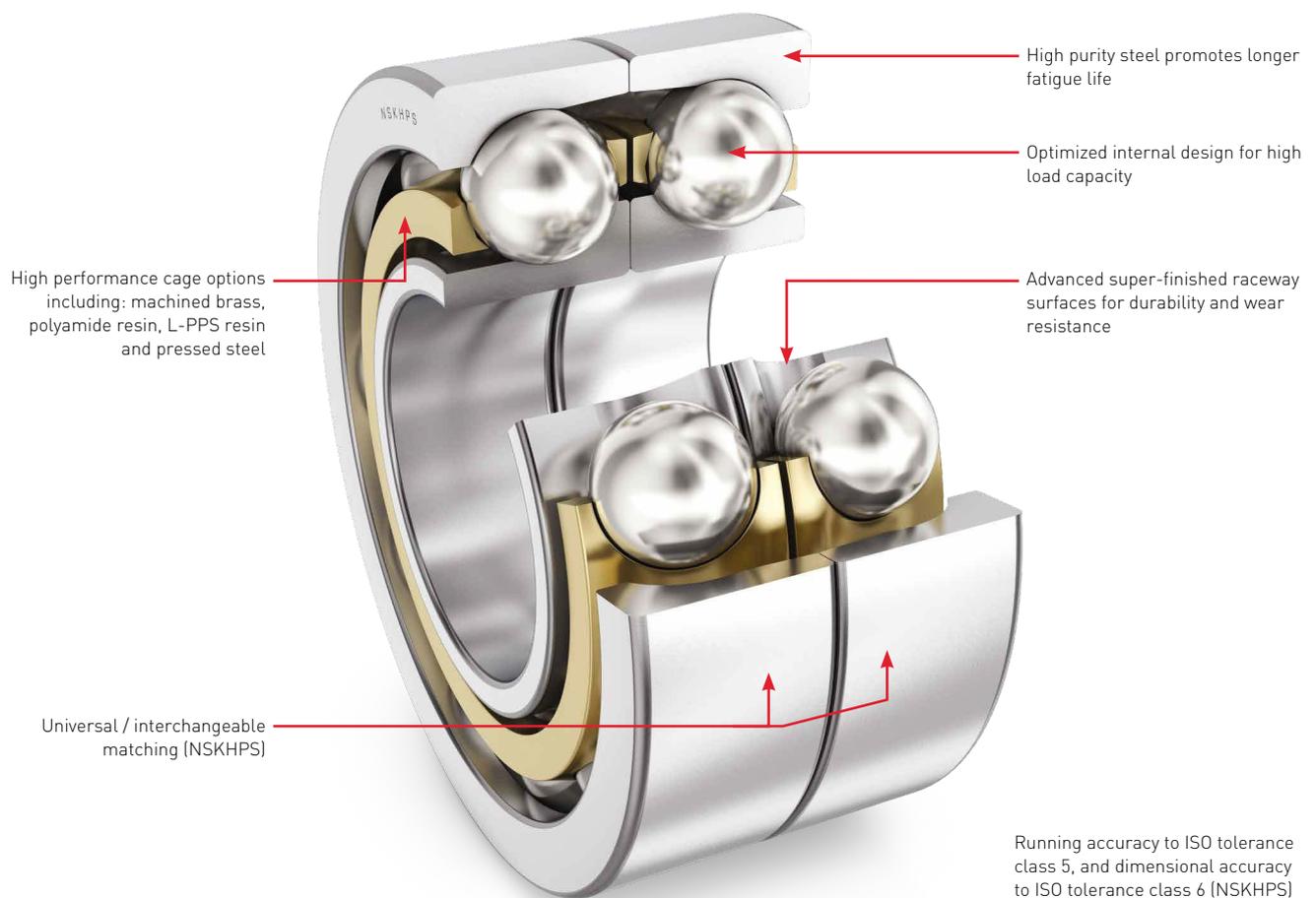
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DESIGN FEATURES AND OPERATING ADVANTAGES

NSK High Capacity Angular Contact Ball Bearings have an optimized internal design that delivers significantly higher load carrying capabilities. Under conventional application conditions this translates into longer operating life with reduced maintenance intervals, but also facilitates downsizing the design envelope for certain applications.



Design features

- Optimized internal design delivers high capacity and high speed performance
- Cage material options suited to a wide variety of applications
- Available in dimensional series 72 and 73 for bore diameters from 12 to 120 mm
- NSKHPS series available from 12 to 80 mm
- Running accuracy to ISO tolerance class 5, and dimensional accuracy to ISO tolerance class 6 (NSKHPS)
- Universal / interchangeable matching, ensuring highly accurate positioning (NSKHPS)
- Narrow axial clearance / preload range (NSKHPS)
- With 40° contact angle

CAGE OPTIONS

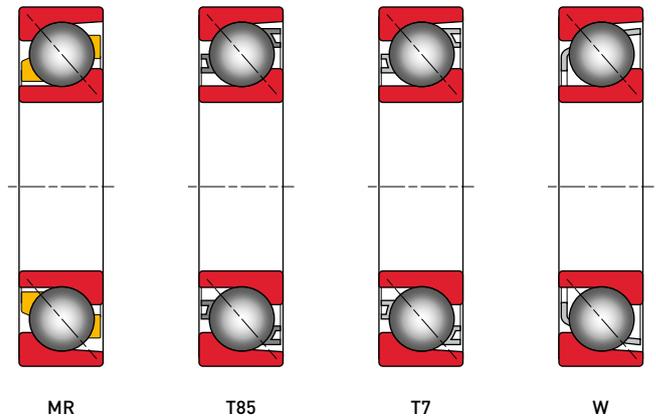
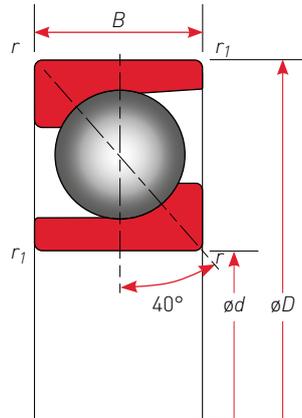
Cage selection can have a significant impact on rolling bearing performance. Operating stresses inherent to the application should be carefully considered. For high capacity angular contact ball bearings, NSK offers cage material options suited to a wide array of applications.

	<p>Machined Brass Cage (MR)</p> <ul style="list-style-type: none"> - Heavy-duty design, well suited to high loads in chemical, petroleum, pulp and paper applications (API, ANSI) - Optimal internal geometry achieved with ball-guided design promotes improved lubricant flow and reduced heat generation during operation
	<p>Polyamide Resin Cage (T85)</p> <ul style="list-style-type: none"> - Well suited to standard duty, high speed applications - For operating temperatures ranging from -40 to 150°C
	<p>L-PPS Resin Cage (T7)</p> <ul style="list-style-type: none"> - Ideally developed for screw compressor applications - Exceptional resistance to oil and chemicals - Dimensional stability at temperatures as high as 200°C
	<p>Pressed Steel Cage (W)</p> <ul style="list-style-type: none"> - High-strength pressed steel design, suitable for medium to high loads and high speeds

Range of availability - cage type

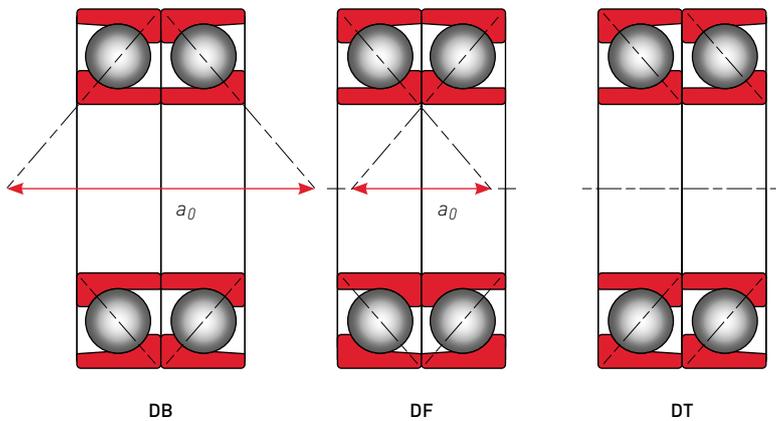
Bearing Type	Cage Type	MR	T85	T7	W
	Series	Machined Brass	Polyamid Resin	L-PPS Resin	Pressed Steel
	72 NSKHPS	7206 to 7216	7201 to 7216	7203 to 7216	-
	72	7217 to 7224	7217 to 7224	7217 to 7224	-
	73 NSKHPS	7304 to 7316	7301 to 7316	7304 to 7316	-
	73	7317 to 7324	7317 to 7324	7317 to 7324	7307 to 7316

BEARING DIMENSIONS



Bearing Numbers					Boundary Dimensions					Basic Load Ratings		Limiting Speeds	
Basic Number & Internal Design	Cage				(mm)					(kN)		(rpm)	
	MR	T85	T7	W	d	D	B	r _(min.)	r _{1 (min.)}	Dynamic	Static	Grease	Oil
7201BEA*		*			12	32	10	0.6	0.3	8.2	3.8	20 000	30 000
7301BEA*		*				37	12	1.0	0.6	11.1	5.0	18 000	26 000
7202BEA*		*			15	35	11	0.6	0.3	9.8	4.8	18 000	26 000
7302BEA*		*				42	13	1.0	0.6	14.3	6.9	16 000	22 000
7203BEA*		*	*		17	40	12	0.6	0.3	11.6	6.1	16 000	22 000
7303BEA*		*				47	14	1.0	0.6	16.8	8.3	14 000	20 000
7204BEA*		*	*		20	47	14	1.0	0.6	15.6	8.2	13 000	19 000
7304BEA*	*	*	*			52	15	1.1	0.6	19.8	10.5	13 000	18 000
7205BEA*		*	*		25	52	15	1.0	0.6	17.6	10.2	12 000	17 000
7305BEA*	*	*	*			62	17	1.1	0.6	27.2	14.9	10 000	15 000
7206BEA*	*	*	*		30	62	16	1.0	0.6	23.7	14.3	10 000	14 000
7306BEA*	*	*	*			72	19	1.1	0.6	36.5	20.6	9 000	13 000
7207BEA*	*	*	*		35	72	17	1.1	0.6	32.5	19.6	8 500	12 000
7307BEA*	*	*	*	*		80	21	1.5	1.0	40.5	24.4	8 000	11 000
7307BEAW				*		80	21	1.5	1.0	40.5	24.4	5 600	7 500

* Denotes NSKHPS high capacity series single-row angular contact ball bearings, universally matched, with running accuracy to ISO tolerance class 5 and dimensional accuracy to ISO tolerance class 6 Bearing types 72/73BEA without asterisk are high capacity single-row angular contact ball bearings, universally matched, with running accuracy P6 and dimensional accuracy P6 Bearing types 73BEAW are high load capacity angular contact ball bearings with steel cage. Special accuracy and matched sets must be specified with order.



Arr.	Radial/axial	Moment load
DB	both directions	suitable
DF	both directions	less suitable
DT	heavy, one direction	less suitable

Arrangements and moment loads - suitability to accommodate moment loads is determined by the distance between the effective load centers (a_0).

Bearing Numbers					Boundary Dimensions					Basic Load Ratings		Limiting Speeds	
Basic Number & Internal Design	Cage				(mm)					(kN)		(rpm)	
	MR	T85	T7	W	d	D	B	$r_{(min.)}$	$r_{1 (min.)}$	Dynamic	Static	Grease	Oil
7208BEA*	*	*	*		40	80	18	1.1	0.6	38.5	24.5	7 500	11 000
7308BEA*	*	*	*	*		90	23	1.5	1.0	53.0	33.0	7 100	10 000
7308BEAW				*		90	23	1.5	1.0	53.0	33.0	5 000	6 700
7209BEA*	*	*	*		45	85	19	1.1	0.6	40.5	27.1	7 100	10 000
7309BEA*	*	*	*	*		100	25	1.5	1.0	62.5	39.5	6 300	9 000
7309BEAW				*		100	25	1.5	1.0	62.5	39.5	4 500	6 000
7210BEA*	*	*	*		50	90	20	1.1	0.6	42.0	29.7	6 300	9 500
7310BEA*	*	*	*	*		110	27	2.0	1.0	78.0	50.5	5 600	8 000
7310BEAW				*		110	27	2.0	1.0	78.0	50.5	4 000	5 600
7211BEA*	*	*	*		55	100	21	1.5	1.0	51.5	37.0	6 000	8 500
7311BEA*	*	*	*	*		120	29	2.0	1.0	89.0	58.5	5 000	7 500
7311BEAW				*		120	29	2.0	1.0	89.0	58.5	3 600	5 000
7212BEA*	*	*	*		60	110	22	1.5	1.0	61.5	45.0	5 300	7 500
7312BEA*	*	*	*	*		130	31	2.1	1.1	102.0	68.5	4 800	6 700
7312BEAW				*		130	31	2.1	1.1	102.0	68.5	3 400	4 500
7213BEA*	*	*	*		65	120	23	1.5	1.0	70.0	53.5	4 800	7 100
7313BEA*	*	*	*	*		140	33	2.1	1.1	114.0	77.0	4 300	6 300
7313BEAW				*		140	33	2.1	1.1	114.0	77.0	3 200	4 300

BEARING DIMENSIONS

Bearing Numbers					Boundary Dimensions					Basic Load Ratings		Limiting Speeds	
Basic Number & Internal Design	Cage				(mm)					(kN)		(rpm)	
	MR	T85	T7	W	<i>d</i>	<i>D</i>	<i>B</i>	<i>r</i> _(min.)	<i>r</i> _{1 (min.)}	Dynamic	Static	Grease	Oil
7214BEA*	*	*	*		70	125	24	1.5	1.0	75.5	58.5	4 500	6 700
7314BEA*	*	*	*	*		150	35	2.1	1.1	124.0	87.5	4 000	6 000
7314BEAW				*		150	35	2.1	1.1	124.0	87.5	2 800	4 000
7215BEA*	*	*	*		75	130	25	1.5	1.0	78.5	63.5	4 300	6 300
7315BEA*	*	*	*	*		160	37	2.1	1.1	134.0	98.5	3 800	5 600
7315BEAW				*		160	37	2.1	1.1	134.0	98.5	2 800	3 800
7216BEA*	*	*	*		80	140	26	2.0	1.0	87.5	70.0	4 000	6 000
7316BEA*	*	*	*	*		170	39	2.1	1.1	144.0	110.0	3 600	5 300
7316BEAW				*		170	39	2.1	1.1	144.0	110.0	2 600	3 400

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BEARING NOMENCLATURE

Example: **73** **10** **B** **EA** **MR** **SU** **CNB**

73	Dimension Series	72	light duty type
		73	medium duty type
10	Bore Reference Number	multiply x 5 for bore diameter in mm available for bore numbers 01 to 24 (12 mm to 120 mm)	
B	Contact Angle	B	40° contact angle
EA	Internal Design	EA	high capacity design
MR	Cage Type	MR	machined brass
		T85	polyamide resin
		T7	L-PPS resin
		W	pressed steel
SU	Bearing Arrangement ¹	SU	single universal matching
		DB	duplex, back to back arrangement
		DF	face to face arrangement
		DT	tandem arrangement
CNB	Axial Internal Clearance ²	CNB	standard axial clearance
		GA	light preload
-	Tolerance Class ³	NSKHPS standard is running accuracy ISO tolerance class P5 and dimensional accuracy ISO tolerance class 6	

¹ Bearing types 72/73BEA with machined brass, polyamid and L-PPS resin cage types are universally matched (SU). For bearing types 73BEAW with pressed steel cages, matched sets (DB, DF, DT) must be specified with order.

² Refer to Matched Measured Axial Clearance table below. Bearing types 73BEAW with pressed steel cages have unique axial clearance and preload specifications - contact NSK.

³ For bearing types BEAW with pressed steel cage, standard ISO tolerance class is P0. If a special accuracy class is required, please contact NSK.

Matched measured axial clearance

Bore diameter		CNB		GA	
mm		µm		µm	
over	including	min	max	min	max
12	18	17	25	-2	6
18	30	20	28		
30	50	24	32		
50	80	29	41	-3	9

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