

SUPER PRECISION BEARING
CONVERSION DATA



As technologies evolve, all manufacturers share a global responsibility to respect and protect the environment.

NSK Motion and Control products reflect our corporate commitment to being environmentally responsible. While our products improve the performance of machines in a variety of industries, they also save energy and conserve resources because of our superior precision machining technologies.

INTRODUCTION



In order to meet the needs of the highly specialized machine tool industry, we have enhanced every and all aspects of our R & D capability at our Technology Centers. As a result, NSK's precision bearings are also used in a wide variety of industries, such as semiconductor production and industrial robots, and have earned a reputation for excellent performance.

NSK's purchase of RHP (Europe) allowed us to combine our collective experience and expertise, and to unify our strengths in design. As a result, our bearings are known for their exceptional accuracy and reliability.

This manual is designed to explain the components part of super precision designation systems. This enables the most appropriate NSK product to be selected.

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Angular Contact Ball Bearings



Outer Ring Guided Phenolic Cage (T, TR) Phenolic Resin

■ The rotational movement of the outer ring guided cage is more stable in high speed operation.



Ball Guided Polyamide Cage (TYN) Engineered Polymer

■ This special design allows the bearing to have lower friction and lower noise. The temperature rise of the bearing with a TYN cage is lower than that with a Phenolic cage at a rotational speed lower than 1.4 million dmn .*

* dmn : " Pitch Circle diameter of rolling elements(mm) " × " Speed(min⁻¹) "

NSK CAGE VARIATIONS AND COMBINATION OF ANGULAR CONTACT BALL BEARINGS

Combination of Angular Contact Ball Bearings

		When using SU or DU Bearings*1	
DB			
DF		SU×2	DU×1
DT			
DBD 3 rows Arrangement			
DFD 3 rows Arrangement		SU×3 SU×1+DU×1	DU×2 (The remainder is a reserve.)
DTD 3 rows Arrangement			
DBB 4 rows Arrangement			
DFB 4 rows Arrangement			
DBT 4 rows Arrangement		SU×4 SU×2+DU×1	DU×2
DFT 4 rows Arrangement			
DTT 4 rows Arrangement			

*1 X(number) means the number of the bearings.

Cylindrical Roller Bearings



High Strength Roller Guided PPS Cage (TB) Engineered Polymer

■ Physical properties include high strength, toughness, wear and fatigue resistance relative to current Polyamide cage material.



Roller Guided Machined Brass Cage (MB)

■ This cage demonstrates high temperature resistance, high strength, and high rigidity.



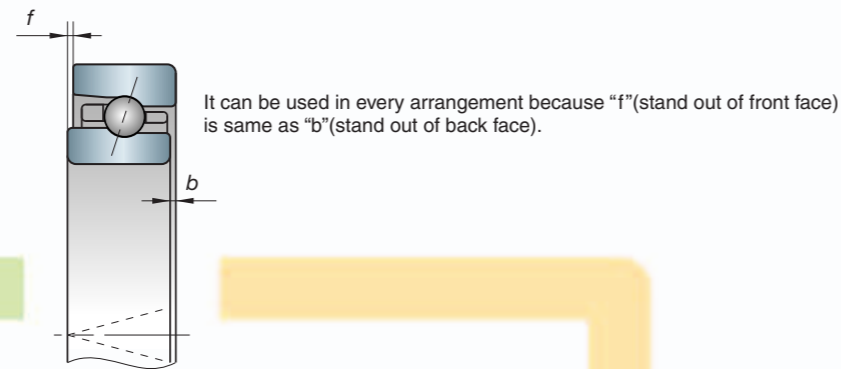
Outer Ring Guided PEEK Cage with Ultra High Temperature Resistance (TP) Engineered Polymer

■ High temperature resistance to a maximum of 240°C.
■ Dimensional stability results in minimal deformation during high speed operation.

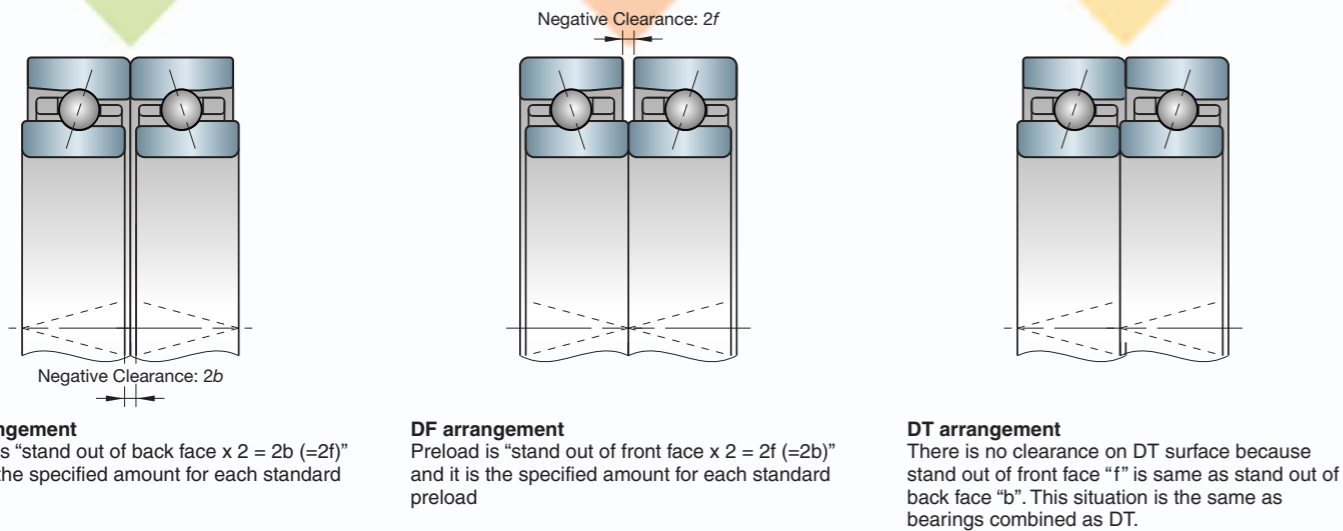
Universal Combination

NSK supplies universal combination angular contact ball bearings that have the same amount of stand out on both the front and back face. This means that when bearings that have the same reference number are combined, they have the specified amount for each standard preload.

For universal combination bearings, the “V” combination marks on the outer diameter surface of outer ring prevent “direction” mistakes, ensure correct matching when they are mounted, and indicate the direction of the contact angle.



ANGULAR CONTACT BALL BEARING COMBINATIONS



Difference between SU and DU Bearings

There are 2 types of NSK universal combination bearings as shown in the table below.

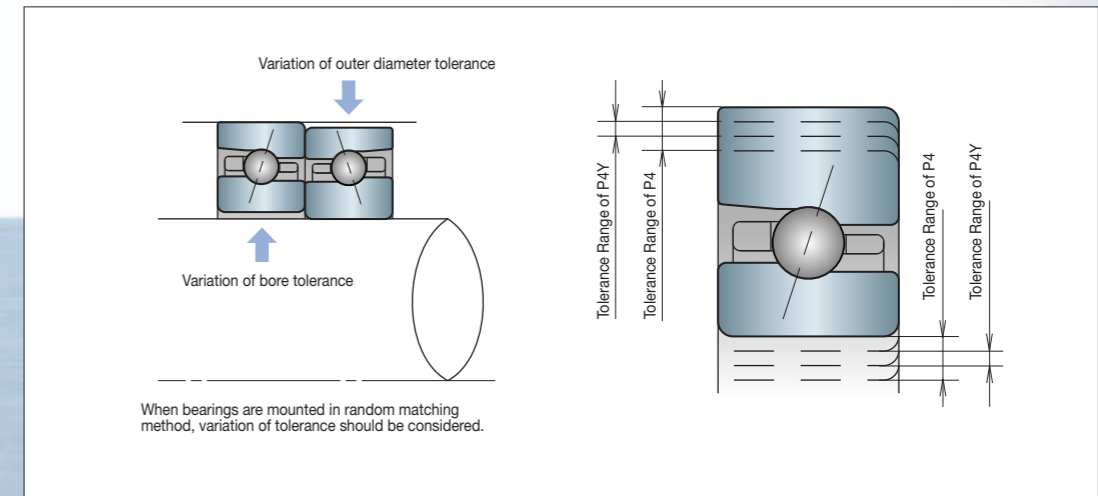
Features of SU and DU Bearings

	SU	DU
Row of bearings	1	2
Variation of bore and outer diameter tolerance	—	Controlled in 1/3 of tolerance

Notice for Using of Single Universal (SU) Bearings

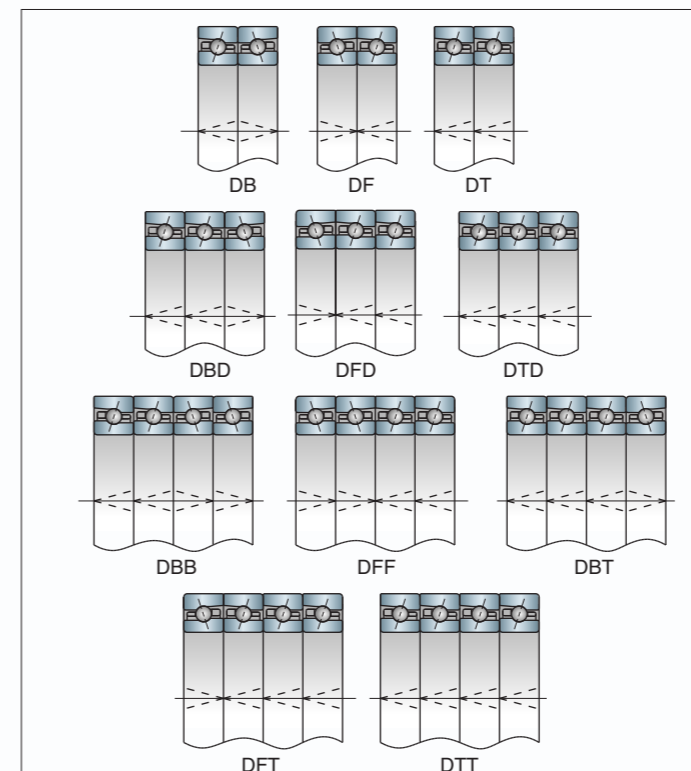
- When these bearings are used as part of multiple combined bearings, it is recommended that the variation of bore and outer diameter tolerance is within 1/3 of tolerance range.
- There are also special bearings with special accuracy “P4Y” that can accommodate small variations of bore and outer diameter tolerance. “P4Y” tolerance has the same running accuracy as P4 but has a narrower tolerance range of bore and outer diameter than P4. It is suitable for “random matching method” universal combination bearings.
- “P4Y” is suitable for use “random matching method” universal combination bearings. However, when these bearings are operated over 1,500,000 d_{mn} , there is a possibility that this very small variation of fits with either the shaft or the housing can cause bearing failure because of imbalance of internal load in each row. If these bearings are considered for such high speed applications, this issue should be taken into account.

Tolerance of P4 and P4Y Accuracy



Combination Mark and Matching Method for Universal Combination Bearings

Universal Bearings Combinations



Bore and Outer Diameter Tolerance (P4Y Accuracy)

Tolerance of Bore Diameter of Inner Ring Unit: μm

Bore diameter(mm)	P4		P4Y (Controlled to medium value)			
	Over	Incl	High	Low		
30	50		0	-6	-1	-3
50	80		0	-7	-2	-5
80	120		0	-8	-3	-6
120	150		0	-10	-3	-7

* Tolerances for bearings under 30mm bore are the same as values quoted between 30-50 mm bore.

Tolerance of Outer Diameter of Outer Ring Unit: μm

Outer diameter(mm)	P4		P4Y (Controlled to medium value)			
	Over	Incl	High	Low		
50	80		0	-7	-2	-6
80	120		0	-8	-2	-6
120	150		0	-9	-3	-7
150	180		0	-10	-3	-7
180	200		0	-11	-4	-9
200	Under 215		0	-11	-2	-9

* Tolerances for bearings under 50mm outer diameter are the same as values quoted between 50 80 mm outer diameter.

USE OF THE MANUAL AND THE CONVERSION TABLE

Use of The Manual

1. Determine the manufacturer of the bearing, this should be marked on the bearing and / or the packaging
2. Determine the reference of the bearing, this should be marked on the bearing (generally the outer ring) and / or the packaging
3. Find the relevant page for the bearing manufacturer in this manual
4. Use the breakdown columns to identify each feature, including relevant prefixes and suffixes
5. Use the NSK page to construct the NSK reference in it's correct sequence

If the reference is not recognizable, or is incomplete, provide as much information as possible to the NSK Technical Department in your territory who will endeavour to recommend the correct replacement.

This information should preferably include:

- a) The external dimensions:
Bore diameter, outside diameter and width
- b) The type of bearing
Single row angular contact ball bearing – standard speed
Single row angular contact ball bearing – high speed
Cylindrical roller bearing – single or double row, with or without tapered bore
Thrust angular contact bearing
Ball screw support bearing
- c) The type of cage
Polyamide, phenolic resin, brass, etc.
- d) Number of rolling elements
- e) Matching
Singles, pairs or sets (and in what arrangement)
- f) Machine details
Make and type of machine
Position of the bearing on the machine
Machine manufacturer's part number for the bearing

Limitations

In some cases the NSK product will not be a direct equivalent to the competitor designation, in all cases please ensure that the NSK bearing suggested will meet the customer's requirements.

This manual includes information from current competitor catalogues and does not necessarily include all variants offered.

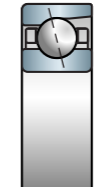
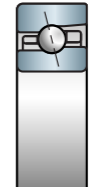
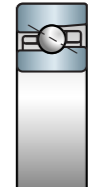
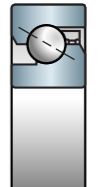
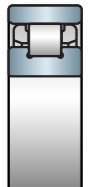

Inclusion of a suggested designation is not an indication of intention to manufacture or of its availability.

Every care has been taken to ensure the accuracy of the information contained in this manual, but no liability can be accepted for any loss or damage suffered through errors or omissions.

Symbols used for bearing number conversion table of each manufacturer

- : Symbol of bearing number is omitted
- : Symbol of bearing number is nonexistent

The Conversion Table

	Angular Contact Ball Bearings (Standard Series)	High-Speed Angular Contact Ball Bearings	Angular Contact Thrust Ball Bearings	Angular Contact Thrust Ball Bearings for Ball Screw Support	Cylindrical Roller Bearings (Single Row)	Cylindrical Roller Bearings (Double Row)
						
NSK	○	○	○	○	○	○
FAG	○	○	○	○	○	○
SKF	○	○	○	○	○	○
SNFA	○	○	—	○	—	—
GMN	○	○	—	—	—	—
RHP	○	○	—	○	○	○
SNR	○	○	—	—	—	—
NTN	○	○	○	○	○	○
KOYO	○	○	○	○	○	○
BARDEN	○	○	—	○	—	—
FAFNIR	○	○	—	○	—	—

Angular Contact Ball Bearings (Standard Series)

Bearing number example



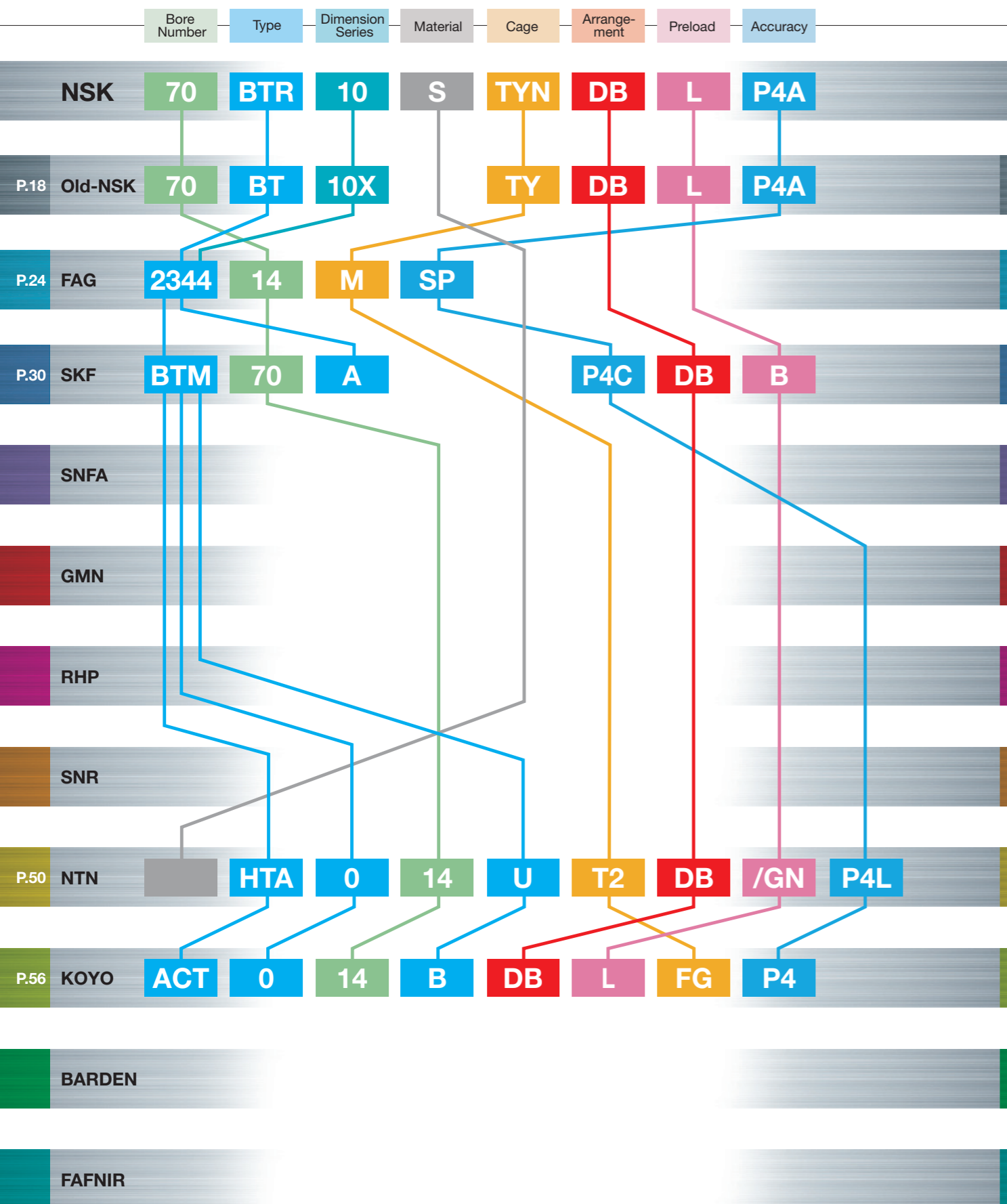
High-Speed Angular Contact Ball Bearings

Bearing number example



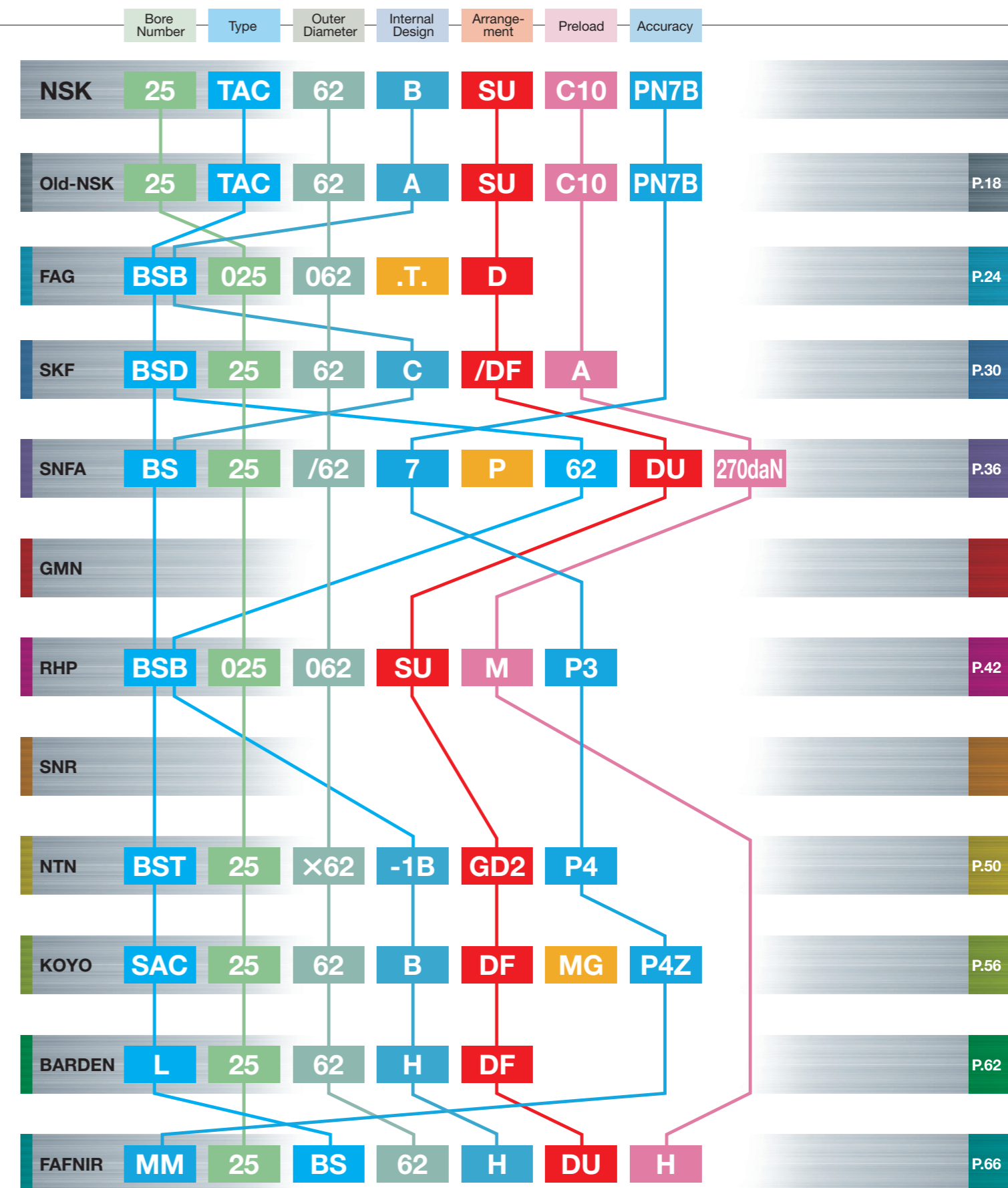
Angular Contact Thrust Ball Bearings

Bearing number example



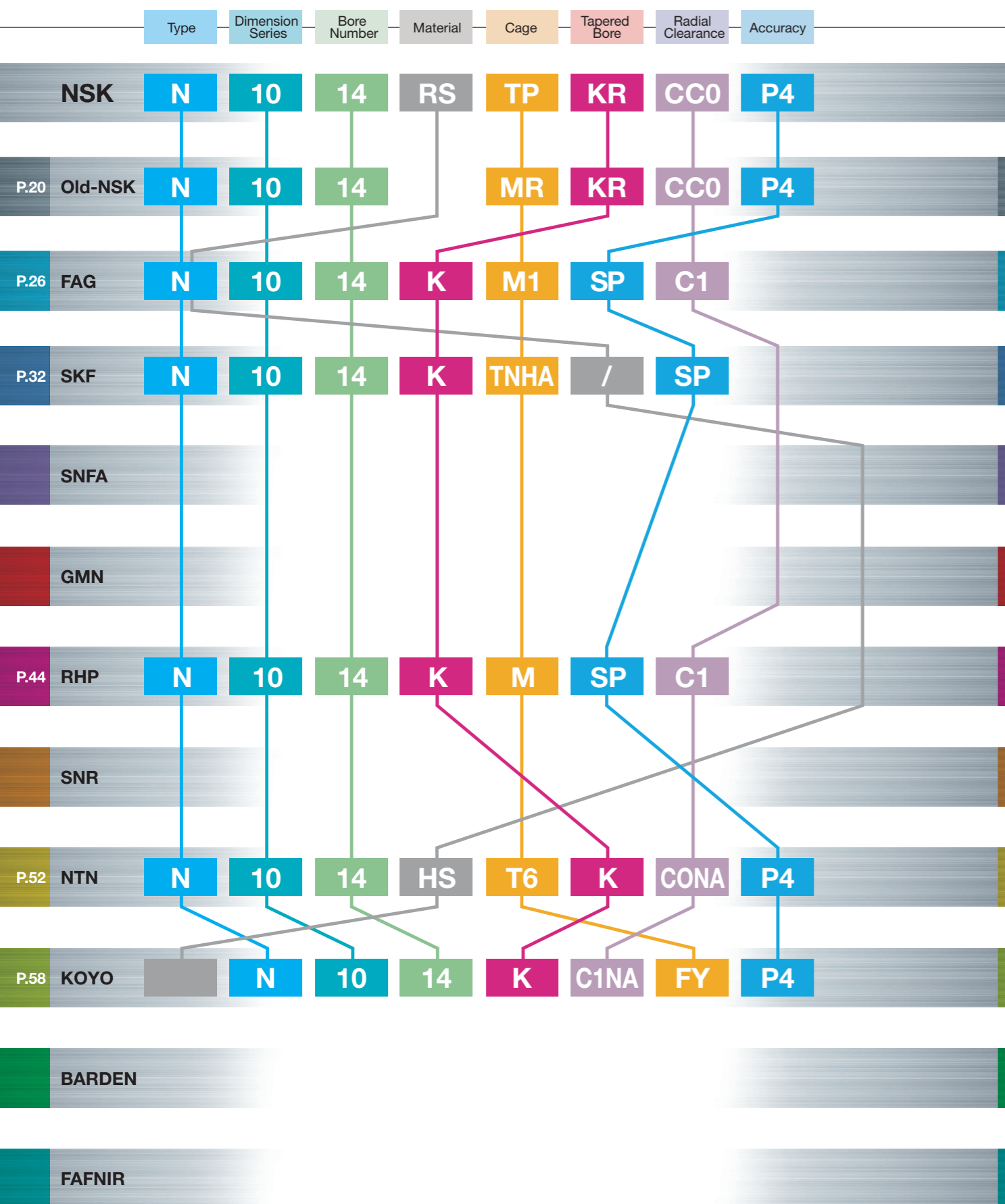
Angular Contact Thrust Ball Bearings for Ball Screw Support

Bearing number example



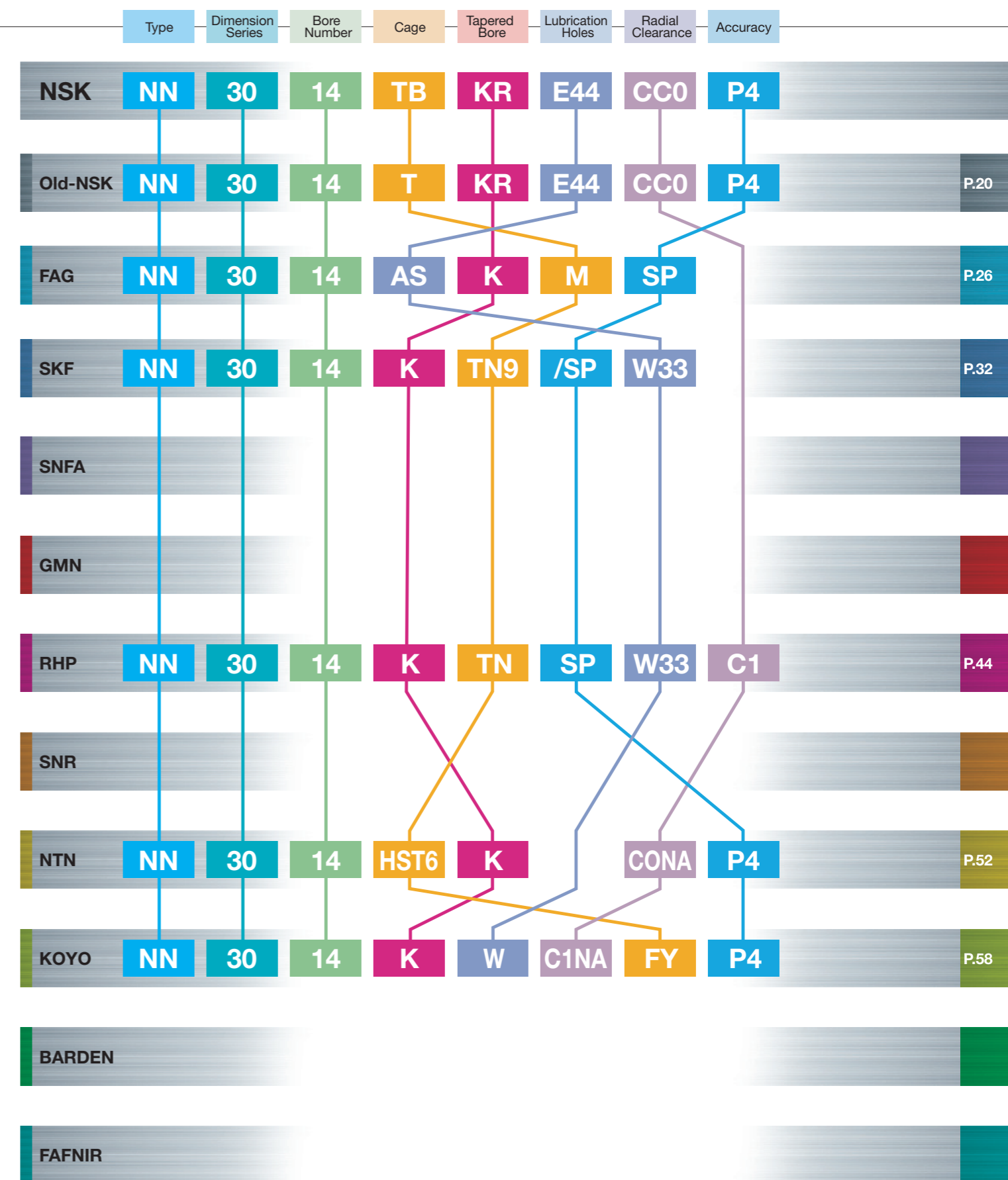
Cylindrical Roller Bearings (Single Row)

Bearing number example



Cylindrical Roller Bearings (Double Row)

Bearing number example



Angular Contact Ball Bearings (Standard Series)

Old-NSK

Type			Dimension Series			Bore Number			Contact Angle			Material			Cage				Seal			Arrangement			Preload			Accuracy				
7			0			14			C						TY							DB			C7			P4				
Old-NSK	NSK	Type	Old-NSK	NSK	ISO	Old-NSK	NSK	Bore Dia.	Old-NSK	NSK	Angle	Old-NSK	NSK	Balls	Old-NSK	NSK	Material	Guided	Old-NSK	NSK	Seal Type	Old-NSK	NSK	Arrangement	Old-NSK	NSK	Preload	Old-NSK	NSK	ISO Class		
7	7	Single Row ACBB	9	9	19	00	00	10mm	C	C	15°	●	●	Bearing Steel					●	●	-			SU	SU	Single Universal	C2	EL	Extra Light	P5	P5	5
			0	0	10	01	01	12mm	A5	A5	25°			SN24	SN24	Ceramics			-	V1V	Non-contact			DU	DU	Duplex Universal	C7	L	Light	P4	P4	4
			2	2	02	02	02	15mm	A	A	30°													DB	DB	φ φ	C8	M	Medium	P4Y	P4Y	4 with Narrower Bore & O.D.
						03	03	17mm																DF	DF	φ φ	C9	H	Heavy	-	P3	Dimension : 4
						04	04	20mm																DT	DT	φ φ	CP	CP	Special Preload			Running Accuracy : 2
						...	...	Bore Number×5(mm)																DBD	DBD	φ φ φ	CA	CA	Special Clearance	P2	P2	2
																								DBB	DBB	φ φ φ φ						

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *3. Although P3 is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.

SAMPLE

Old-NSK	7020CTYDBC7P4	7020CTYNDBLP4	NSK
Old-NSK	7020A5TSUMP4	7020A5TYNSUMP4	NSK
Old-NSK	7020A5TSUMP4	7020A5TRSUMP4	NSK

High-Speed Angular Contact Ball Bearings

Old-NSK

Bore Diameter			Type			Dimension Series			Material				Cage				Seal			Arrangement			Preload			Accuracy						
70			BNC			10			SN24				TY							DB			L			P4						
Old-NSK	NSK	Bore Dia.	Old-NSK	NSK	Contact Angle	Old-NSK	NSK	ISO	Old-NSK	NSK	Rings	Balls	Old-NSK	NSK	Material	Guided	Old-NSK	NSK	Seal Type	Old-NSK	NSK	Arrangement	Old-NSK	NSK	Preload	Old-NSK	NSK	ISO Class				
10	10	10mm	BNC	BNR	15° → 18°	19	19	19	●	S	Bearing Steel	Bearing Steel	TY	TYN	Polyamide	Balls			●	●	-	SU	SU	Single Universal	EL	EL	Extra Light	P4	P4	4		
20	20	20mm	-	BER	25°	10	10	10	SN24	H	Bearing Steel	Ceramics	T	T	Phenolic	O.R.			-	V1V	Non-contact	DU	DU	Duplex Universal	L	L	Light	P4Y	P4Y	4 with Narrower Bore & O.D.		
30	30	30mm	BNT	BGR	15°				-	X	SHX Steel	Ceramics	TA	T	Phenolic	O.R.								DB	DB	φ φ	-	M	Medium	-	P3	Dimension : 4
40	40	40mm																					DF	DF	φ φ	CP	CP	Special Preload			Running Accuracy : 2	
...	...	(mm)																					DT	DT	φ φ	CA	CA	Special Clearance	P2	P2	2	
																							DBD	DBD	φ φ φ							
																							DBB	DBB	φ φ φ φ							

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *3. Although P3 is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.

SAMPLE

Old-NSK	70BNC10SN24TYSULP4	70BNR10HTYNSULP4	NSK
Old-NSK	100BNC10TSUEL P4	100BNR10STSUEL P4	NSK
Old-NSK	10BNT10TADTP2	10BGR10STDUEL P2	NSK

Angular Contact Thrust Ball Bearings

Old-NSK

Bore Diameter			Type ^{*1}			Dimension Series			Material				Cage				Arrangement			Preload			Accuracy ^{*2}		
70			BT			10X							TY				DB			L			P4A		
Old-NSK	NSK	Bore Dia.	Old-NSK	NSK	Contact Angle	Old-NSK	NSK	ISO	Old-NSK	NSK	Rings	Balls	Old-NSK	NSK	Material	Guided	Old-NSK	NSK	Arrangement	Old-NSK	NSK	Preload	Old-NSK	NSK	ISO Class
50	50	50mm	BT	BTR	40°	10X	10	10 : Bore & O.D.	●	S	Bearing Steel	Bearing Steel	●	●	Machined Brass	O.R.	DB	DB	φ φ	EL	EL	Extra Light	P4A	P4A	4 with Special O.D.
55	55	55mm	BA	BAR	30°			Special Width	●	H	Bearing Steel	Ceramics	T	T	Phenolic	O.R.				L	L	Light	P2A	P2A	2 with Special O.D.
60	60	60mm											TY	TYN	Polyamide	Balls				CPxx	CPxx	Special Preload			
...	...	(mm)																		CAxx	CAxx	Special Clearance			

NSK	70	BTR	10	S	TYN	DB	L	P4A
Bore Diameter	Type	Dimension Series	Material	Cage	Arrangement	Preload	Accuracy	

SAMPLE

Old-NSK	100BT10XTYDBLP4A	100BTR10STYNDBLP4A	NSK
Old-NSK	70BA10XSN24TYDBELP4A	70BAR10HTYNDBELP4A	NSK
Old-NSK	160BT10XDBLP4A	160BTR10SDBLP4A	NSK

* 1. Angular Contact Thrust Ball Bearings belong to ROBUST Series, suitable for high speed application.
 * 2. These bearings are used with cylindrical roller bearings, close to each other, the O.D. tolerance of this bearings are special.

Angular Contact Thrust Ball Bearings for Ball Screw Support

Old-NSK

Bore Diameter			Type			Outer Diameter			Internal Design		Seal			Arrangement ^{*1}			Preload			Accuracy					
25			TAC			62			A					SU			C10			PN7B					
Old-NSK	NSK	Bore Dia.	Old-NSK	NSK	Contact Angle	Old-NSK	NSK	Outer Dia.	Old-NSK	NSK	Old-NSK	NSK	Old-NSK	NSK	Seal Type	Old-NSK	NSK	Arrangement	Old-NSK	NSK	Preload	Old-NSK	NSK	Accuracy	
15	15	15mm	TAC	TAC	60°	47	47	47mm	A	B	●	●	-	SU	SU	Single Universal	C10	C10	Standard	PN7A	PN7A	Standard Accuracy			
20	20	20mm				62	62	62mm			-	DDG	Contact	DU	DU	Duplex Universal	C9	C9	Light Preload			(Equivalent to ISO Class 4)			
25	25	25mm				72	72	72mm						DB	DB	φ φ			(for Lower Torque)	PN7B	PN7B	Tighter Bore & O.D. tolerance			
...	...	(mm)				...	...	(mm)						DF	DF	φ φ						+PN7A (for Single Universal)			
														DFD	DFD	φ φ φ									
														DFF	DFF	φ φ φ φ									

NSK	25	TAC	62	B	SU	C10	PN7B
Bore Diameter	Type	Outer Diameter	Internal Design	Seal	Arrangement	Preload	Accuracy

SAMPLE

Old-NSK	20TAC47ASUC10PN7B	20TAC47BSUC10PN7B	NSK
Old-NSK	50TAC100ADFFC9PN7A	50TAC100BSUC9PN7B(4rows)	NSK

* 1. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

Cylindrical Roller Bearings (Single Row)

Old-NSK

Type			Dimension Series			Bore Number			Material				Cage				Tapered Bore			Radial Clearance			Accuracy			
N			10			14											KR			CC0			P4			
Old-NSK	NSK	Type	Old-NSK	NSK	ISO	Old-NSK	NSK	Bore Dia.	Old-NSK	NSK	Rings	Rollers	Old-NSK	NSK	Material	Guided	Old-NSK	NSK	Bore	Old-NSK	NSK	Old-NSK	NSK	Old-NSK	NSK	ISO Class
N	N	Flanges on I.R.	10	10	10	06	06	30mm	●	● or RS	Bearing Steel	Bearing Steel	●	MR or TP	Machined Brass	Rollers	●	●	Straight	CC1	CC1	STD for Straight Bore	P4	P4	4	
						07	07	35mm	-	RX	SHX Steel	SHX Steel		MR	Machined Brass	Rollers	KR	KR	1:12 Taper	CC0	CC0	STD for Taper Bore	P4Y	P4Y	4 with Narrower Bore & O.D.	
						08	08	40mm	-	RXH	SHX Steel	Ceramics		BT	PEEK	O.R.				CC9	CC9	Taper Bore	P2	P2	2	
						Bore Number×5(mm)						-	TP	PEEK	O.R.				CC1	CC1	Taper Bore			
																				CCG	CCG	Special Clearance				

*1. The cage type of the bearings with material symbols, RS, RX, RXH, is TP (PEEK cage).
 *2. The bearings with MR cage can be replaced by the bearings with TP cage (PEEK Material).
 *3. This radial clearance is applied to matched bearings.
 The bearings with CC9 or CC1 clearance can be replaced by the bearings with CC0 clearance.

SAMPLE

Old-NSK	N1014BTKRCC0P4	N1014RSTPKRCC0P4	NSK
Old-NSK	N1020CC1P4	N1020MRCC1P4	NSK

Cylindrical Roller Bearings (Double Row)

Old-NSK

Type			Dimension Series			Bore Number			Cage				Tapered Bore			Lubrication Holes			Radial Clearance			Accuracy			
NN			30			14			MB				KR						CC0			P4			
Old-NSK	NSK	Type	Old-NSK	NSK	ISO	Old-NSK	NSK	Bore Dia.	Old-NSK	NSK	Material	Guided	Old-NSK	NSK	Bore	Old-NSK	NSK	Lubrication Holes	Old-NSK	NSK	Old-NSK	NSK	Old-NSK	NSK	ISO Class
NN	NN	Flanges on I.R.	30	30	30	05	05	25mm	●	TB or ●	PPS	Rollers	●	●	Straight	●	●	No Lubrication Holes	CC1	CC1	STD for Straight Bore	P4	P4	4	
NNU	NNU	Flanges on O.R.	39	39	39	06	06	30mm	MB	MB or TB	Machined Brass	Rollers	●	●	1:12 Taper	Exx	E44	Oil Holes on O.R.	CC0	CC0	STD for Taper Bore	P4Y	P4Y	4 with Narrower Bore & O.D.	
			49	49	49	07	07	35mm	T8	TB	PPS	Rollers				-	E44	STD Oil Holes on O.R.	CC9	CC9	Taper Bore	P2	P2	2	
						...	...	Bore Number×5(mm)	T	TB	PPS	Rollers							CC1	CC1	Taper Bore			
																			CCG	CCG	Special Clearance				

*1. The bearings with TP cage can be replaced to any double row cylindrical bearings.
 *2. Exx (xx : numeric number) means that this bearing obtain special lubrication holes.
 For special lubrication holes, ask NSK.
 *3. This radial clearance is applied to matched bearings.
 The bearings with CC9 or CC1 clearance can be replaced by the bearings with CC0 clearance.

SAMPLE

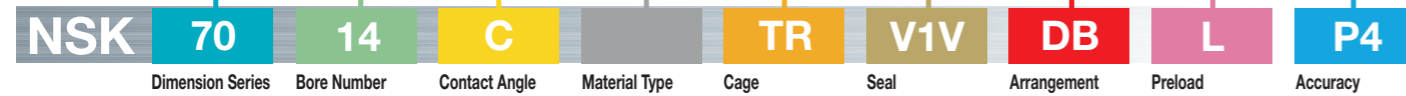
Old-NSK	NN3014MBKRE44CC0P4	NN3014TBKRE44CC0P4	NSK
Old-NSK	NN3020TKRCC1P4	NN3020TBKRE44CC0P4	NSK
Old-NSK	NN3014TCCG5P4Y	NN3014TBCCG5P4Y	NSK

Angular Contact Ball Bearings (Standard Series)

FAG

Type, Material			Dimension Series			Bore Number			Contact Angle			Seal		
B			70			14			C			.2RSD		
FAG	NSK	Construction	FAG	NSK	ISO	FAG	NSK	Bore Dia.	FAG	NSK	Contact Angle	FAG	NSK	Seal Type
B	●	Normal	719	79	19	00	00	10mm	C	C	15°	●	●	-
HCB	SN24	Ceramic ball	70	70	10	01	01	12mm	E	A5	25°	.2RSD	V1V	Non-contact
			72	72	02	02	02	15mm						
						03	03	17mm						
						04	04	20mm						
			...	...	...	...	...	Bore Number×5(mm)						

Cage				Accuracy			Arrangement			Preload		
.T.				P4.			DB			L		
FAG	NSK	Material	Guided	FAG	NSK	ISO Class	FAG	NSK	Arrangement	FAG	NSK	Preload
T	TR	Phenolic	O.R.	P4	P4	4	U	SU	Single Universal	-	EL	Extra Light
TPA	TR	Phenolic	O.R.	HG	P4 or P3	Dimension : 4	DU	DU	Duplex Universal	L	L	Light
TX	TR	Polyamide	O.R.			Running Accuracy : Better than 4	TU	DUD	Triplex Universal	M	M	Medium
-	TYN	Polyamide	Balls	P4S	P4 or P3	Dimension : 4	QU	QU	Quadruplex Universal	H	H	Heavy
						Running Accuracy : Better than 4	DB	DB	φ φ	S	H	Heavy
				P2	P2	2	TBT	DBD	φ φ φ φ			
							QBC	DBB	φ φ φ φ φ			



*1. The limiting d_{min} of the bearings with TYN cage is 1.4 Million.
 *2. Although HG and P4S are higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

SAMPLE

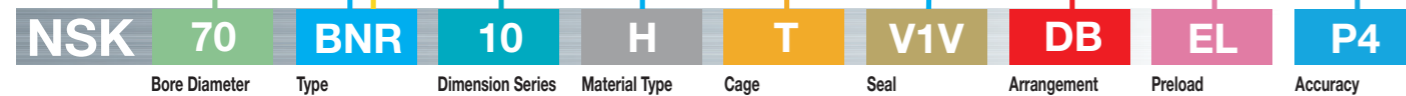
	B7014C.TP4S.UL	7014CTRSULP3	
FAG	B7014C.TP4S.UL	7014CTYNSULP4	NSK
	B7020C.2RSD.TP4S.DUL	7020CTRV1VDULP3	

High-Speed Angular Contact Ball Bearings

FAG

Type, Material, seal			Dimension Series			Bore Number			Contact Angle			Lubrication		
HCS			70			14			C			-		
FAG	NSK	Construction	FAG	NSK	ISO	FAG	NSK	Bore Dia.	FAG	NSK	Contact Angle	FAG	NSK	Lubrication
HS	BGR or BNR or BER,S	Small ball	719	19	19	00	10	10mm	C	BNR	15°	●	●	-
HSS	BNR or BER,S,V1V	Small ball with seal	70	10	10	01	12	12mm	C	BGR	15°	.DLR	- *4	Direct Lubrication
HC	BGR or BNR or BER,H	Small ball(ceramics)				02	15	15mm	E	BER	25°			
HCS	BNR or BER,H,V1V	Small ball(ceramics) with seal				03	17	17mm						
XC	BGR or BNR or BER,X	Small ball(ceramic) with Cronidour30 rings				04	20	4×5=20mm						
XCS	BNR or BER,X,V1V	Small ball(ceramics) with Cronidour30 rings & seal	...	...	...	...	...	Bore Number×5(mm)						

Cage				Accuracy			Arrangement			Preload		
.T.				P4.			DB			L		
FAG	NSK	Material	Guided	FAG	NSK	ISO Class	FAG	NSK	Arrangement	FAG	NSK	Preload
T	T	Phenolic	O.R.	P4	P4	4	U	SU	Single Universal	L	EL	Extra Light
TPA	T	Phenolic	O.R.	HG	P4 or P3	Dimension : 4	DU	DU	Duplex Universal	M	L	Light
TX	T	Polyamide	O.R.			Running Accuracy : Better than 4	TU	DUD	Triplex Universal	H	M	Medium
-	TYN	Polyamide	Balls	P4S	P4 or P3	Dimension : 4	QU	QU	Quadruplex Universal			
						Running Accuracy : Better than 4	DB	DB	φ φ			
				P2	P2	2	TBT	DBD	φ φ φ φ			
							QBC	DBB	φ φ φ φ φ			



*1. The limiting d_{min} of the bearings with TYN cage is 1.4 Million.
 *2. Although P3 is higher precision class than P4, NSK's P4 can be replaced to the bearings with this accuracy.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *4. Ask NSK to substitute to this type.

SAMPLE

	HS7014E.TP4S.UL	70BER10STSUELP3	
FAG	HS7014E.TP4S.UL	70BER10STYNSUEL P4	NSK
	XC7000C.TP4S.DUL	10BGR10XTDUEL P2	

Angular Contact Thrust Ball Bearings

FAG

Type, Dimension Series, Contact Angle ^{*1}				Bore Number			Cage			
2344				14			M			
FAG	NSK	Contact Angle	Combined with CRB	FAG	NSK	Bore Dia.	FAG	NSK	Material	Guided
2344	BTR10S	60° (FAG), 40° (NSK)	NN30	10	50	50mm	M	●	Machined Brass	Balls
				11	55	55mm	-	TYN	Polyamid	Balls
				12	60	60mm				
				...	...	Bore Number×5(mm)				

Accuracy			Arrangement, Preload		
SP					
FAG	NSK	ISO Class	FAG	NSK	Preload
SP	P4A	Similar to Class4	●	DBL	Standard
UP	P2A	Similar to Class2	-	DBEL	Extra Light



SAMPLE

FAG	234440MSP	200BTR10SDBLP4A	
FAG	234412MUP	60BTR10STYNDBLP2A	NSK

*1. Angular Contact Thrust Ball Bearings belong to ROBUST Series, suitable for high speed application. For detail information, see Page 18.

Angular Contact Thrust Ball Bearings for Ball Screw Support

FAG

Type			Bore Diameter			Outer Diameter			Seal			Cage			
BSB			025			062			.2RS			.T.			
FAG	NSK	Contact Angle	FAG	NSK	Bore Dia.	FAG	NSK	Outer Dia.	FAG	NSK	Seal type	FAG	NSK	Material	Guided
BSB	TACxxB	60°	015	15	15mm	047	47	47mm	●	●	-	T	●	Polyamide	Balls
			020	20	20mm	062	62	62mm	.2RS	DDG	Contact				
			025	25	25mm	072	72	72mm							
			...	...	(mm)	...	...	(mm)							

Arrangement			Accuracy			Preload			Lubricant		
.D									L55		
FAG	NSK	Arrangement	FAG	NSK	Accuracy	FAG	NSK	Preload	FAG	NSK	Grease
U	SU	Single Universal	●	PN7B	ISO 4 Equivalent	●	C10	Standard	L55	AS2S	Standard Grease(Open Type)
D	SU×2	Duplex Set							L55	WPHL	Standard Grease(Sealed Type)
T	SU×3	Triplex Set									
Q	SU×4	Quad Set									



SAMPLE

FAG	BSB015047.T.D	15TAC47BSUC10PN7B(2rows)	
FAG	BSB030062.2RS.T.Q	30TAC62BDDGSUC10PN7B(4rows)	NSK

*1. X (number) means the number of the bearings. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

Cylindrical Roller Bearings (Single Row)

FAG

Type, Material			Dimension Series			Bore Number							
N			10			14							
FAG	NSK	Type	FAG	NSK	ISO	FAG	NSK	Bore Dia.	FAG	NSK	Rings	Rollers	*3
N	N	Flanges on I.R.	10	10	10	06	06	30mm	●	●	Bearing Steel	Bearing Steel	
HCN	N,RXH	Flanges on I.R. with Ceramic Rollers				07	07	35mm	●	RS	Bearing Steel	Bearing Steel	
						08	08	40mm	-	RX	SHX Steel	SHX Steel	
						...	...	Bore Number×5(mm)	HCN	RXH	SHX Steel	Ceramics	

Tapered Bore			Cage				Accuracy			Radial Clearance		
K			M1				SP			C1		
FAG	NSK	Bore	FAG	NSK	Material	Guided	FAG	NSK	ISO Class	FAG	NSK	
●	●	Straight	M1	MR	Machined Brass	Rollers	SP	P4	4	C1	CC1	STD for Straight Bore
K	KR	1:12 Taper	-	TP	PEEK	O.R.	UP	P2	2	C1	CC1	STD for Taper Bore
										C1	CC0	NSK's STD for Taper Bore



SAMPLE

	N1014KM1SPC1	N1014MRKRCC0P4	
FAG	N1014KM1SPC1	N1014RSTPKRCC0P4	NSK
	HCN1012KM1UPC1	N1012RXHTPKRCC0P2	

*1. The bearings with machined brass cage can be replaced by the bearings with TP cage (PEEK material).
 *2. This radial clearance is applied to matched bearings.
 *3. The cage type of the bearings with material symbols, RS, RX, RXH, is TP (PEEK cage).

Cylindrical Roller Bearings (Double Row)

FAG

Type, Material			Dimension Series			Bore Number			Lubrication Holes		
NN			30			14			AS		
FAG	NSK	Type	FAG	NSK	ISO	FAG	NSK	Bore Dia.	FAG	NSK	Lubrication Holes
NN	NN	Flanges on I.R.	30	30	30	05	05	25mm	●	●	No Lubrication Holes
NNU	NNU	Flanges on O.R.	39	39	39	06	06	30mm	AS	E44	STD. Oil Holes on O.R. (NN Type)
			49	49	49	07	07	35mm	S	E44	STD. Oil Holes on O.R. (NNU Type)
						...	...	Bore Number×5(mm)			

Tapered Bore			Cage				Accuracy			Radial Clearance		
K			M				SP			C1		
FAG	NSK	Bore	FAG	NSK	Material	Guided	FAG	NSK	ISO Class	FAG	NSK	
●	●	Straight	M	MB	Machined Brass	Rollers	SP	P4	4	C1	CC1	STD for Straight Bore
K	KR	1:12 Taper	-	TB	PPS	Rollers	UP	P2	2	C1	CC1	STD for Taper Bore
										C1	CC0	NSK's STD for Taper Bore



SAMPLE

	NN3014MSPC1	NN3014TBCC1P4	
FAG	NN3014MSPC1	NN3014MBCC1P4	NSK
	NN3014ASKMSPC1	NN3014TBKRE44CC0P4	

*1. The bearings with machined brass cage can be replaced by the bearings with TB cage (PPS material).
 *2. This radial clearance is applied to matched bearings.

Angular Contact Ball Bearings (Standard Series)

SKF

Type, Dimension Series			Bore Number			Contact Angle			Cage *1			
70			14			CD						
SKF	NSK	ISO	SKF	NSK	Bore Dia.	SKF	NSK	Contact Angle	SKF	NSK	Material	Guided
719	79	19	00	00	10mm	ACD	A5	25°	●	TR	Phenolic	O.R.
70	70	10	01	01	12mm	ACX	A5	25°	TNH	TYN	PEEK	Balls
72	72	02	02	02	15mm	CD	C	15°				
			03	03	17mm							
			04	04	20mm							
			...	...	Bore Number × 5(mm)							

Material			Accuracy *2			Arrangement *3			Preload		
/			P4			B			B		
SKF	NSK	Balls	SKF	NSK	ISO Class	SKF	NSK	Arrangement	SKF	NSK	Preload
/	●	Bearing Steel	P5	P5	5	G	SU	Single Universal	A	EL	Extra Light
/HC	SN24	Ceramics	P4	P4	4	DG	DU	Duplex Universal	B	L	Light
			P4A	P4 or P3	Dimension : 4	B or DB	DB	φ φ	C	M	Medium
					Running Accuracy : Better than 4	F or DF	DF	φ φ	G...	CP or CA	Special
			PA9A	P2	2	T or DT	DT	φ φ			
						BT or TBT	DBD	φ φ φ			
						BC or QBC	DBB	φ φ φ φ			



*1. The limiting $d/m7$ of the bearings with TYN cage is 1.4 Million.
 *2. Although P4A is higher precision class than P4, NSK's P4 can be substituted to the bearings with this accuracy.
 *3. SU(Single Universal) bearings can be used in every arrangement. (see Page 05)

SAMPLE

SKF	7014CD/P4AGA	7014CTRSUELP3	NSK
	7014CD/P4AGA	7014CTYNSUELP4	
	7012CDTNH/HCP4ABA	7012CSN24TYNDBELP3	

High-Speed Angular Contact Ball Bearings

SKF

Type, Dimension Series			Bore Number			Contact Angle			Cage *1			
70			14			CE						
SKF	NSK	ISO	SKF	NSK	Bore Dia.	SKF	NSK	Contact Angle	SKF	NSK	Material	Guided
719	19	19	00	10	10mm	CE	BGR	15°	●	T	Phenolic	O.R.
70	10	10	01	12	12mm	CE	BNR	15°	TNH	TYN	PEEK	Balls
			02	15	15mm	ACE	BER	25°				
			03	17	17mm							
			04	20	20mm							
			...	...	Bore Number × 5(mm)							

Material			Accuracy *2			Arrangement *3			Preload		
/HC			P4A			DB			A		
SKF	NSK	Balls	SKF	NSK	ISO Class	SKF	NSK	Arrangement	SKF	NSK	Preload
/	S	Steel	P4	P4	4	G	SU	Single Universal	A	EL	Extra Light
/HC	H	Ceramics	P4A	P4 or P3	Dimension : 4	DG	DU	Duplex Universal	B	L	Light
					Running Accuracy : Better than 4	B or DB	DB	φ φ	G...	CP or CA	Special
			PA9A	P2	2	F or DF	DF	φ φ			
						T or DT	DT	φ φ			
						BT or TBT	DBD	φ φ φ			
						BC or QBC	DBB	φ φ φ φ			



*1. The limiting $d/m7$ of the bearings with TYN cage is 1.4 Million.
 *2. Although P4A is higher precision class than P4, NSK's P4 can be substituted to the bearings with this accuracy.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

SAMPLE

SKF	7014CE/HCP4AGA	70BNR10HTSUELP3	NSK
	7014CE/HCP4AGA	70BNR10HTYNSUELP4	
	7000CE/PA9ADGA	10BGR10STDUELP2	

Angular Contact Thrust Ball Bearings

SKF

Type, Dimension Series, Contact Angle *1			Bore Number			Internal Design, Cage				Material			
2344			14			TN9				/			
SKF	NSK	Contact Angle	SKF	NSK	Bore Dia.	SKF	NSK	Material	Guided	SKF	NSK	Rings	Balls
2344	BTR10	60° (SKF), 40° (NSK)	10	50	50mm	BM1 ●		Machined Brass	Balls	/	S	Bearing Steel	Bearing Steel
			11	55	55mm	TN9	TYN	Polyamide	Balls	/HC	H	Bearing Steel	Ceramics
			12	60	60mm								
			...	...	Bore Number × 5 (mm)								

Accuracy			Arrangement, Preload		
SP					
SKF	NSK	ISO Class	SKF	NSK	Preload
SP	P4A	ISO4 Equivalent	●	DBL	Standard
UP	P2A	ISO2 Equivalent	-	DBEL	Extra Light

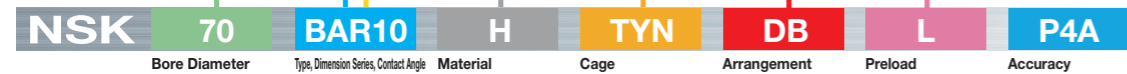
SAMPLE

SKF	234440BM1/SP	200BTR10SDBLP4A	NSK
	234412TN9/HCUP	60BTR10HTYNDBLP2A	
	BTM70A/P4CDBA	70BAR10STYNDBELP4A	
	BTM120BN/A/P4CDBB	120BTR10STYNDBLP4A	



Type			Bore Diameter			Contact Angle			Cage		
BTM			70			A					
SKF	NSK	ISO	SKF	NSK	Bore Dia.	SKF	NSK	Contact Angle	SKF	NSK	Material
BTM	BAR10 or BTR10	10 : Bore & O.D. Special Width	60	60	60mm	A	BAR	30°	●	TYN	Polyamide
			65	65	65mm	B	BTR	40°	-	●	Machined Brass
			70	70	70mm						
			...	...	(mm)						

Material				Accuracy			Arrangement			Preload		
HC				P4C			DB			B		
SKF	NSK	Rings	Balls	SKF	NSK	ISO Class	SKF	NSK	Arrangement	SKF	NSK	Preload
●	S	Bearing Steel	Bearing Steel	P4C	P4A	ISO4 Equivalent	DB	DB	φ φ	A	EL	Extra Light
HC	H	Bearing Steel	Ceramics							B	L	Light
										G...	CP or CA	Special



*1. Angular Contact Thrust Ball Bearings belong to ROBUST Series, suitable for high speed application. For detail information, see Page 18.

Angular Contact Thrust Ball Bearings for Ball Screw Support

SKF

Type, Contact Angle			Bore Diameter			Outer Diameter			Internal Design		
BSD			25			62			C		
SKF	NSK	Contact Angle	SKF	NSK	Bore Dia.	SKF	NSK	Outer Dia.	SKF	NSK	Internal Design
BSD	TAC	60°	20	20	20mm	47	47	47mm	C	B	Special
			25	25	25mm	62	62	62mm			
			30	30	30mm	72	72	72mm			
			...	...	(mm)	...	...	(mm)			

Arrangement			Preload			Accuracy		
/DF			A					
SKF	NSK *1	Arrangement	SKF	NSK	Preload	SKF	NSK	Accuracy
G	SU	Single Universal	A	C10	Light	●	PN7B	ISO 4 Equivalent
DG	SU×2	Duplex Universal	B	C11	Medium			
DB	SU×2	φ φ	G...	-	Special			
DF	SU×2	φ φ						
TFT	SU×3	φ φ φ						
QFC	SU×4	φ φ φ φ						



SAMPLE

SKF	BSD2047C/GA	20TAC47BSUC10PN7B	NSK
	BSD50100C/TFTA	50TAC100BSUC10PN7B(3 Row)	

*1. X (number) means the number of the bearings. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

Cylindrical Roller Bearings (Single Row)

SKF

Type			Dimension series			Bore Number			Tapered Bore			Cage				Material				Radial Clearance			Accuracy		
N			10			14			K			TNHA				/							SP		
SKF	NSK	Type	SKF	NSK	ISO	SKF	NSK	Bore Dia.	SKF	NSK	Bore	SKF	NSK	Material	Guided	SKF	NSK	Rings	Rollers	SKF	NSK	*3	SKF	NSK	ISO Class
N	N	Flanges on I.R.	10	10	10	06	06	30mm	●	●	Straight	●	MR	Machined Brass	Rollers	/	●	Bearing Steel	Bearing Steel	●	CC0	C1(Standard)	SP	P4	4
						07	07	35mm	K	KR	1:12 Taper					/	RS	Bearing Steel	Bearing Steel				UP	P2	2
						08	08	40mm								/HC5	RXH	Bearing Steel	Ceramics						
						...	...	Bore Number×5(mm)																	

NSK	N	10	14	RS	TP	KR	CC0	P4
Type	Dimension Series	Bore Number	Material	Cage	Tapered Bore	Radial Clearance	Accuracy	

*1. The bearings with machined brass cage can be substituted by the bearings with TP cage (PEEK material).
 *2. The cage type of the bearings with material symbols, RS, RX, RXH, is TP (PEEK cage).
 *3. This radial clearance is applied to matched bearings.

SAMPLE

SKF	N1014K/SP	N1014MRKRCC0P4	NSK
	N1014K/SP	N1014RSTPKRCC0P4	
	N1015KTNHA/HC5SP	N1015RXHTPKRCC0P4	

Cylindrical Roller Bearings (Double Row)

SKF

Type			Dimension Series			Bore Number			Design Symbol			Tapered Bore			Cage				Material				Radial Clearance			Accuracy			Lubrication Holes		
NN			30			14			B			K			TN				/							SP			W33		
SKF	NSK	Type	SKF	NSK	ISO	SKF	NSK	Bore Dia.	SKF	NSK	Design	SKF	NSK	Bore	SKF	NSK	Material	Guided	SKF	NSK	Rollers	SKF	NSK	Rings	Rollers	SKF	NSK	ISO Class	SKF	NSK	Lubrication Holes
NN	NN	Flanges on I.R.	30	30	30	05	05	25mm	B	-	* Applied to NNU49	●	●	Straight	●	MB	Brass	Rollers	/	●	Bearing Steel	●	CC0	C1(Standard)	SP	P4	4	●	●	No Lubrication Holes	
NNU	NNU	Flanges on O.R.	39	39	39	06	06	30mm				K	KR	1:12 Taper					/HC5	-	Ceramics				UP	P2	2	W33	E44	STD. Oil Holes on O.R.	
			49	49	49	07	07	35mm																							
						...	...	Bore Number×5(mm)																						

NSK	NN	30	14	TB	KR	E44	CC0	P4
Type	Dimension Series	Bore Number	Cage	Tapered Bore	Lubrication Holes	Radial Clearance	Accuracy	

*1. The bearings with machined brass cage can be replaced by the bearings with TB cage (PPS material).

SAMPLE

SKF	NN3014K/SPW33	NN3014TBKRE44CC0P4	NSK
	NN3017TN9/SP	NN3017TBCC1P4	
	NN3020/UP	NN3020TBCC1P2	

Angular Contact Ball Bearings (Standard Series)

SNFA

Type, Dimension Series			Bore Diameter			Material, Seal			Accuracy *1		
EX			70			/NS			7		
SNFA	NSK	ISO	SNFA	NSK	Bore Dia.	SNFA	NSK	Feature	SNFA	NSK	ISO Class
SEB	79	19	10	00	10mm	●	●	Standard	5	P5	5
EX	70	10	12	01	12mm	/S	V1V	with Seal	7	P4	4
E200	72	02	15	02	15mm	/NS	SN24	Ceramic Balls	9	P2	2
E2	72	02	17	03	17mm				SQ	P4 or P3	Dimension : 4
			20	04	20mm						Running Accuracy : Better than 4
			...	...	(mm)						
			Bore Number×5(mm)								

Cage *2				Contact Angle			Arrangement *3			Preload		
PE				1			DD			L		
SNFA	NSK	Material	Guided	SNFA	NSK	Contact Angle	SNFA	NSK	Arrangement	SNFA	NSK	Preload
CE	TR	Phenolic	O.R.	0	C	12°	U	SU	Single Universal	L	L	Light
PE	TYN	Polyamide	O.R.	1	C	15°	DU	DU	Duplex Universal	M	M	Medium
				2	C	18°	TU	DUD	Triplex Universal	F	H	Heavy
				3	A5	25°	DD	DB	φ φ			
							FF	DF	φ φ			
							T	DT	φ φ			
							TD	DBD	φ φ φ			
							TDT	DBB	φ φ φ φ			



SAMPLE

SNFA	EX707CE1UL	7014CTRSULP4	NSK
	EX707CE1UL	7014CTYNSULP4	
	EX60/S/NSSQCE1DDL	7012CSN24TRV1VDBLP3	

*1. Although SQ is higher precision class than P4, NSK's P4 can be replaced to the bearings with this accuracy.
 *2. The limiting d_{min} of the bearings with TYN cage is 1.4 Million.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

High-Speed Angular Contact Ball Bearings

SNFA

Type, Dimension Series			Bore Diameter			Material, Seal, Holes			Accuracy *1		
HX			70			/NS			7		
SNFA	NSK	ISO	SNFA	NSK	Bore Dia.	SNFA	NSK	Feature *4	SNFA	NSK	ISO Class
VEB	BGR19 or BNR19 or BER19	19	10	10	10mm	●	S	Standard	7	P4	4
VEX	BGR10 or BNR10 or BER10	10	15	15	15mm	/NS	H	Ceramic Balls	9	P2	2
HB	BGR19 or BNR19 or BER19	19	20	20	20mm	/XN	X	Ceramic Balls+Special Rings	SQ	P4 or P3	Dimension : 4
HX	BGR10 or BNR10 or BER10	10	...	...	(mm)	/S	V1V	with Seal			Running Accuracy : Better than 4
ED	BGR10	10				/H1	-	DLR			
						/GH	-	Holes on O.R.			
						/G1	-	Holes on O.R.			

Cage *2				Contact Angle			Arrangement *3			Preload		
PE				2			DD			L		
SNFA	NSK	Material	Guided	SNFA	NSK	Contact Angle	SNFA	NSK	Arrangement	SNFA	NSK	Preload
CE	TR	Phenolic	O.R.	0	BGR or BNR	12°	U	SU	Single Universal	L	L	Light
PE	TYN	Polyamide	O.R.	1	BGR or BNR	15°	DU	DU	Duplex Universal	M	M	Medium
				2	BGR or BNR	18°	TU	DUD	Triplex Universal	F	-	Heavy
				3	BER	25°	DD	DB	φ φ			
							FF	DF	φ φ			
							T	DT	φ φ			
							TD	DBD	φ φ φ			
							TDT	DBB	φ φ φ φ			



SAMPLE

SNFA	VEX70/XN7CE1DUL	70BNR10XTDULP4	NSK
	VEB70/SSQCE3DUL	70BER19STV1VDULP3	
	HB10/NS9CE1UL	10BGR19HTSULP2	

*1. Although SQ is higher precision class than P4, NSK's P4 can be replaced to the bearings with this accuracy.
 *2. The limiting d_{min} of the bearings with TYN cage is 1.4 Million.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *4. Ask NSK to substitute to this type.

Angular Contact Thrust Ball Bearings for Ball Screw Support

SNFA

Type			Bore Diameter			Outer Diameter			Seal			Accuracy		
BS			25			/62			/S			7		
SNFA	NSK	Contact Angle	SNFA	NSK	Bore Dia.	SNFA	NSK	Outer Dia.	SNFA	NSK	Seal Type	SNFA	NSK	ISO Class
BS	TACxxB	60°	20	20	20mm	47	47	47mm	●	●	-	5	PN7B	ISO 4 Equivalent
			25	25	25mm	62	62	62mm	/S	DDG	Contact	7	PN7B	ISO 4 Equivalent
			30	30	30mm	72	72	72mm						
			...	...	(mm)	...	...	(mm)						

Cage				Contact Angle			Arrangement			Preload		
P				62			DU			270daN		
SNFA	NSK	Material	Guided	SNFA	NSK	Contact Angle	SNFA	NSK	Arrangement	SNFA	NSK	Value
P	●	Polyamide	Balls	62	TAC	62°	U	SU	Single Universal	xxxxdaN	-	(daN)
							DU	SU×2	Duplex Universal			
							TU	SU×3	Triplex Universal			
							FF	SU×2	φ φ			
							TD	SU×3	φ φ φ			
							TDT	SU×2	φ φ φ φ			



SAMPLE

SNFA	BS15/477P62FF270daN	15TAC47BSUC10PN7B(2rows)	NSK
SNFA	BS50/100B7P62U270daN	50TAC100BSUC10PN7B	NSK

*1. X (number) means the number of the bearings.
 SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *2. Ask NSK to substitute for this arrangement.

Angular Contact Ball Bearings (Standard Series)

GMN

Material			Type, Dimension Series			Bore Number			Contact Angle			Cage *1			
GMN	NSK	Material	GMN	NSK	ISO	GMN	NSK	Bore Dia.	GMN	NSK	Contact Angle	GMN	NSK	Material	Guided
●	●	Bearing Steel	S619	79	19	00	00	10mm	C	C	15°	TA	TR or TYN	Phenolic	O.R.
HY	SN24	Ceramics	S60	70	10	01	01	12mm	E	A5	25°	TB	TR	Phenolic	I.R.
			S62	72	02	02	02	15mm				TAM	TR	Phenolic	O.R.
						03	03	17mm				TXM	T42	PEEK	O.R.
						04	04	20mm							
						...	...	Bore Number×5(mm)							

Accuracy *2			Special Feature			Arrangement *3			Preload		
GMN	NSK	ISO Class	GMN	NSK	Feature	GMN	NSK	Arrangement	GMN	NSK	Preload
P4	P4	4	R	●	Radial Runout Mark	U	SU	Single Universal	L	L	Light
P2	P2	2	X	●	Graded Bore and O.D.	DU	DU	Duplex Universal	M	M	Medium
A7	P4	4				TU	DUD	Triplex Universal	S	H	Heavy
A9	P2	2				DB	DB	φ φ			
A7/9	P4 or P3	Dimension : 4				DF	DF	φ φ			
		Running Accuracy : Better than 4				DT	DT	φ φ			



SAMPLE

GMN	HYS6014CTAP4UL	7014CSN24TRSULP4	NSK
	HYS6014CTAP4UL	7014CSN24TYNSULP4	
	S61920ETAMA7DUM	7920A5TRDUMP4	

*1. The limiting d_{mn} of the bearings with TYN cage is 1.4 Million.
 *2. Although A7/9 is higher precision class than P4, NSK's P4 can be replaced to the bearings with this accuracy.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

High-Speed Angular Contact Ball Bearings

GMN

Material				Type, Dimension Series			Bore Number			Seal			Contact Angle		
GMN	NSK	Ring	Balls	GMN	NSK	ISO	GMN	NSK	Bore Dia.	GMN	NSK	Seal Type	GMN	NSK	Contact Angle
●	S	Bearing Steel	Bearing Steel	SM60	BGR10 or BNR10 or BER10	10	00	10	10mm	●	●	-	C	BGR or BNR	15°
HY	H	Bearing Steel	Ceramics	SH60	BGR10 or BNR10 or BER10	10	01	12	12mm	X-2Z *5	-	Non-contact	E	BER	25°
M	X	Heat-resisting Steel	Heat-resisting Steel	BHT60 *4	BGR10 or BNR10 or BER10	10	02	15	15mm	-	V1V	Non-contact			
				BNT02	BGR02	02	03	17	17mm						
				BNT60	BGR10 or BNR10 or BER10	10	04	20	20mm						
				SMI60	-	10	...	...	Bore Number×5(mm)						

Cage *1			Accuracy *2			Special Feature			Arrangement *3			Preload			
GMN	NSK	Material	Guided	GMN	NSK	ISO Class	GMN	NSK	Feature	GMN	NSK	Arrangement	GMN	NSK	Preload
TA	T or TYN	Phenolic	O.R.	P4	P4	4	R	●	Radial Runout Mark	U	SU	Single Universal	L	L	Light
TB	T	Phenolic	I.R.	P2	P2	2	X	●	Graded Bore and OD	DU	DU	Duplex Universal	M	M	Medium
TAM	T	Phenolic	O.R.	A7	P4	4				TU	DUD	Triplex Universal			
TXM	T42	PEEK	O.R.	A9	P2	2				DB	DB	φ φ			
				A7/9	P4 or P3	Dimension : 4				DF	DF	φ φ			
						Running Accuracy : Better than 4				DT	DT	φ φ			



SAMPLE

GMN	SM6012CTAA9DBL	R10STYNDBLP2	NSK
	SH6014ETAMA7/9DUL	70BER10STDULP3	
	HYBHT6000CTAP2GUL	10BGR10HTSULP2	

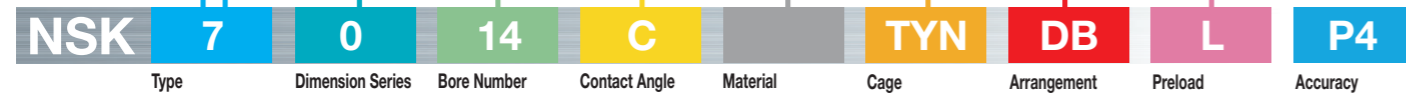
*1. The limiting d_{mn} of the bearings with TYN cage is 1.4 Million.
 *2. Although A7/9 is higher precision class than P4, NSK's P4 can be replaced to the bearings with this accuracy.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *4. The inner rings can be removed from the outer rings, in case of BHT and BNT.
 *5. The width of the GMN's bearings with seal is wider relative to the bearings with ISO dimension.

Angular Contact Ball Bearings (Standard Series)

RHP

Construction			Type			Dimension Series			Bore Number			Material			
RHP NSK Range			RHP NSK Type			RHP NSK ISO			RHP NSK Bore Dia.			RHP NSK Rings Balls			
●	●	Normal	7	7	Single Row ACBB	9	9	19	00	00	10mm	●	●	Bearing Steel	Bearing Steel
B	●	Normal				0	0	10	01	01	12mm	S	SN24	Bearing Steel	Ceramics
						2	2	02	02	02	15mm				
									03	03	17mm				
									04	04	20mm				
									...	...	Bore Number×5(mm)				

Contact Angle			Cage				Arrangement			Preload			Accuracy		
C			TN				DB			L			P4		
RHP	NSK	Angle	RHP	NSK	Guided	Guided	RHP	NSK	Arrangement	RHP	NSK	Preload	RHP	NSK	ISO Class
C	C	15°	T	TR	Phenol	O.R.	U or SU	SU	Single Universal	X	EL	Extra Light	P5	P5	5
●	C	20°	TA	TR	Phenol	O.R.	DU	DU	Duplex Universal	L	L	Light	EP5	P5	5
E	A5	25°	ETA	TR	Phenol	O.R.	TU	DUD	Triplex Universal	M	M	Medium	P4	P4	4
A	A	30°	TN	TYN	Polyamide	O.R.	QU	QU	Quadruplex Universal	H	H	Heavy	EP7	P4	4
X2	C	15°	TNH	TYN	Polyamide	O.R.	DB	DB		Gxx	CP	Special Preload	P3	P4 or P3	Dimension : 4
X3	A5	25°					DF	DF		Axx	CA	Spacial Clearance	EP7/9		Running Accuracy : 2
X4	A	30°					DT	DT					P2	P2	2
							2TB	DBD					EP9	P3	6
							QB or 2TB2T	DBB							



SAMPLE

RHP	7014SCTDBXP3	7014CSN24TRDBELP3	NSK
	7014SCTDBXP3	7014CSN24TYNDBELP4	
	B7020X3TAUMEP5	7020A5TRSUMP5	

* 1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 * 2. Although P3 is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.
 * 3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

High-Speed Angular Contact Ball Bearings

RHP

Type, Dimension Series			Bore Number			Material				Contact Angle		
X70			14			S				C		
RHP	NSK	ISO	RHP	NSK	Bore Dia.	RHP	NSK	Rings	Balls	RHP	NSK	Contact Angle
X70	BGR10 or BNR10 or BER10	10	00	10	10mm	●	S	Bearing Steel	Bearing Steel	C	BGR or BNR	15°
T70	BGR10 or BNR10 or BER10	10	01	12	12mm	S	H	Bearing Steel	Ceramics	●	BGR or BNR	20°
			02	15	15mm					E	BER	25°
			03	17	17mm							
			04	20	20mm							
			...	...	Bore Number×5(mm)							

Cage				Arrangement			Preload			Accuracy		
TN				DB			L			P4		
RHP	NSK	Material	Guided	RHP	NSK	Arrangement	RHP	NSK	Preload	RHP	NSK	ISO Class
T	T	Phenol	O.R.	U or SU	SU	Single Universal	X	EL	Extra Light	P4	P4	4
TA	T	Phenol	O.R.	DU	DU	Duplex Universal	L	L	Light	EP4	P2	4
ETA	T	Phenol	O.R.	TU	DUD	Triplex Universal	M	M	Medium	P3	P4 or P3	Dimension : 4
TN	TYN	Polyamide	O.R.	QU	QU	Quadruplex Universal	Gxx	CP	Special Preload	EP7/9		Running Accuracy : 2
TNH	TYN	Polyamide	O.R.	DB	DB		Axx	CA	Spacial Clearance	P2	P2	2
				DF	DF					EP9	P3	6
				DT	DT							
				2TB	DBD							
				QB or 2TB2T	DBB							



SAMPLE

RHP	X7014CTULP4	70BNR10STSULP4	NSK
	X7016ET2TBLP4	80BER10STYNDBBLP4	
	T7000SCTDBGXP2	10BGR10HTDBELP2	

* 1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 * 2. Although P3 is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.
 * 3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

Angular Contact Thrust Ball Bearings for Ball Screw Support

RHP

Type			Bore Diameter			Outer Diameter			Arrangement		
BSB			025			062			SU		
RHP	NSK	Contact Angle	RHP	NSK	Bore Dia.	RHP	NSK	Outer Dia.	RHP	NSK *1	Arrangement
BSB	TACxxB	60°	015	15	15mm	047	47	47mm	SU	SU	Single Universal
			020	20	20mm	062	62	62mm	DU	SU×2	Duplex Set
			025	25	25mm	072	72	72mm	3U	SU×3	Triplex Set
			...	...	(mm)	...	...	(mm)	QU	SU×4	Quad Set

Preload			Accuracy			Lubricant		
L			P3			SRIY		
RHP	NSK	Preload	RHP	NSK	ISO	RHP	NSK	Grease
L	C9	Light	P3	PN7B	Equivalent to ISO Class 4	SRIY	AS2S	Standard Grease
M	C10	Medium	EP7	PN7B	Equivalent to ISO Class 4			



SAMPLE

RHP	BSB015047DUMP3 SRIY	15TAC47BSUC10PN7B AS2S(2rows)	NSK
RHP	BSB050100QULEP7	50TAC100BSUC9PN7B(4rows)	NSK

* 1. X (number) means the number of the bearings.
 SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

Cylindrical Roller Bearings (Single Row)

RHP

Type, Material			Dimension Series			Bore Number			Tapered Bore			Cage				Accuracy ^{*1}			Radial Clearance ^{*2}						
N			10			14			K			M				SP			C1						
RHP	NSK	Type	RHP	NSK	ISO	RHP	NSK	Bore Dia.	RHP	NSK	Bore	RHP	NSK	Rings	Rollers ^{*3}	RHP	NSK	Material	Guided	RHP	NSK	ISO Class	RHP	NSK	
N	N	Flanges on I.R.	10	10	10	06	06	30mm	●	●	Straight	●	●	Bearing Steel	Bearing Steel	M	MR	Machined Brass	Rollers	EP5	P5	5	C1	CC1	Standard
						07	07	35mm	K	KR	1:12 Taper	●	●	Bearing Steel	Bearing Steel	-	TP	PEEK	O.R.	SP	P4	4	C1	CC0	NSK's STD for Taper Bore
						08	08	40mm												UP	P2	2			
						...	...	Bore Number×5(mm)																	

NSK	N	10	14	MR	KR	CC1	P4
Type	Dimension Series	Bore Number	Cage	Material	Tapered Bore	Radial Clearance	Accuracy

*1. The bearings with machined brass cage can be replaced by the bearings with TP cage (PEEK material) .
 *2. This radial clearance is applied to matched bearings.
 *3. The cage type of the bearings with material symbols, RS is TP. (PEEK cage)

SAMPLE

RHP	N1014MSPC1	N1014RSTPCC1P4	NSK
RHP	N1016KMUPC1	N1016MRKRCC0P2	NSK

Cylindrical Roller Bearings (Double Row)

RHP

Type, Material			Dimension Series			Bore Number			Tapered Bore			Cage ^{*1}				Accuracy			Lubrication Holes			Radial Clearance ^{*2}		
NN			30			14			K			TN				SP			W33			C1		
RHP	NSK	Type	RHP	NSK	ISO	RHP	NSK	Bore Dia.	RHP	NSK	Bore	RHP	NSK	Material	Guided	RHP	NSK	ISO Class	RHP	NSK	Lubrication Holes	RHP	NSK	
NN	NN	Flanges on I.R.	30	30	30	05	05	25mm	●	●	Straight	TN	MB or TB	Polyamide	Rollers	SP	P4	4	W33	E44	No Lubrication Holes	C1	CC1	Standard
						06	06	30mm	K	KR	1:12 Taper					UP	P2	2	W33	E44	STD. Oil Holes on O.R.	C1	CC0	NSK's STD for Taper Bore
						07	07	35mm																
						...	...	Bore Number×5(mm)																

NSK	NN	30	14	TB	KR	E44	CC0	P4
Type	Dimension Series	Bore Number	Cage	Tapered Bore	Lubrication Holes	Radial Clearance	Accuracy	

*1. The bearings with machined brass cage can be replaced by the bearings with TB cage (PPS material) .
 *2. This radial clearance is applied to matched bearings.

SAMPLE

RHP	NN3014TNSPC1	NN3014TBCC1P4	NSK
RHP	NN3014KTNUPW33C1	NN3014TBKRE44CC0P2	NSK

Angular Contact Ball Bearings (Standard Series)

SNR

Material			Dimension Series			Bore Number			Contact Angle			Cage *1				Arrangement *2			Separator Letter		Preload			Accuracy *3			Lubrication *4		
SNR	NSK	Material	SNR	NSK	ISO	SNR	NSK	Bore Dia.	SNR	NSK	Contact Angle	SNR	NSK	Material	Guided	SNR	NSK	Arrangement	SNR	NSK	SNR	NSK	Preload	SNR	NSK	ISO Class	SNR	NSK	Lubrication
●	●	Bearing Steel	719	79	19	00	00	10mm	C	C	15°	V	TR	Phenolic	O.R.	U	SU	Single Universal	J	●	7	L	Light	5	P5	5	●	●	-
CH	SN24	Ceramics	70	70	10	01	01	12mm	H	A5	25°	G1	TR	Phenolic	O.R.	DU	DU	Duplex Universal			8	M	Medium	4	P4	4	D	-	Greased Bearing
			72	72	02	02	02	15mm				G45	TR	Phenolic	O.R.	DB	DB	φ φ			9	H	Heavy	4S	P4 or P3	Dimension : 4			
						03	03	17mm								DF	DF	φ φ			X	CP	Special			Running Accuracy : Better than 4			
						04	04	20mm								DT	DT	φ φ						2	P2	2			
						...	...	Bore Number×5(mm)								Q16	DBD	φ φ φ											
																Q21	DBB	φ φ φ φ											

NSK	70	14	C		TR	DB	L	P4	
Dimension Series	Bore Number	Contact Angle	Material	Cage	Arrangement	Preload	Accuracy	Lubrication	

SAMPLE

	CH71912CVUJ74S	7912CSN24TRSULP3	
SNR	CH71912CVUJ74S	7912CSN24TYNSULP4	NSK
	7020HVDBJ84	7020A5TRDUMP4	

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *3. Although 4S is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.
 *4. Ask NSK to substitute to this type.

High-Speed Angular Contact Ball Bearings

SNR

Bearing Type			Seal			Material			Dimension Series			Bore Number			Contact Angle			Cage *1				Arrangement *2			Separator Letter		Preload			Accuracy *3			Lubrication *4		
SNR	NSK	Type	SNR	NSK	Seal type	SNR	NSK	Material	SNR	NSK	ISO	SNR	NSK	Bore Dia.	SNR	NSK	Contact Angle	SNR	NSK	Material	Guided	SNR	NSK	Arrangement	SNR	NSK	SNR	NSK	Preload	SNR	NSK	ISO Class	SNR	NSK	Lubrication
ML	BGR or BNR or BER	High-Speed Type	●	●	-	●	S	Bearing Steel	719	19	19	00	10	10mm	C	BGR or BNR	15°	V	T	Phenolic	O.R.	U	SU	Single Universal	J	●	7	L	Light	5	P5	5	●	●	-
			E	V1V	Non-contact	CH	H	Ceramics	70	10	10	01	12	12mm	H	BER	25°	G1	T	Phenolic	O.R.	DU	DU	Duplex Universal			8	M	Medium	4	P4	4	D	-	Greased Bearing
									02	15	15mm							G45	T	Phenolic	O.R.	DB	DB	φ φ			9	H	Heavy	4S	P4 or P3	Dimension : 4			
									03	17	17mm											DF	DF	φ φ			X	CP	Special			Running Accuracy : Better than 4			
									04	20	20mm											DT	DT	φ φ						2	P2	2			
									...	...	Bore number×5(mm)											Q16	DBD	φ φ φ											
																						Q21	DBB	φ φ φ φ											

NSK	70	BNR	10	H	T	V1V	DB	L	P4	
Bore Dimension	Bearing Type	Dimension Series	Material	Cage	Seal	Arrangement	Preload	Accuracy	Lubrication	

SAMPLE

	ML7014HVDUJ74S	70BER10STDULP3	
SNR	ML7014HVDUJ74S	70BER10STYNDULP4	NSK
	MLCH7000CVDJTJ72	10BGR10HTDTP2	

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *3. Although 4S is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.
 *4. Ask NSK to substitute to this type.

Angular Contact Ball Bearings (Standard Series)

NTN

Material				Type			Dimension Series			Bore Number			Contact Angle			Cage				Seal			Arrangement			Preload			Accuracy			Lubricant				
				7			0			14			UC			T1							DB			/GN			P4			/L448				
NTN	NSK	Rings	Balls	NTN	NSK	Type	NTN	NSK	ISO	NTN	NSK	Bore Dia.	NTN	NSK	Contact Angle	NTN	NSK	Material	NTN	NSK	Seal	NTN	NSK	Arrangement	NTN	NSK	Preload	NTN	NSK	ISO Class	NTN	NSK	Grease			
●	●	Bearing Steel	Bearing Steel	7	7	Single Row ACBB	9	9	19	00	00	10mm	●	A	30°	T2	TYN	Polyamide	Balls	●	●	Open	G	SU	Single Universal	/GL	EL	Extra Light	P5	P5	5	/L448	MTSX	Standard Grease		
5S-	SN24	Bearing Steel	Ceramics				0	0	10	01	01	12mm	U	A	30°	T1	TR	Phenolic	O.R.	LLB	V1V	Sealed	GD2	DU	Duplex Universal	/GN	L	Light	P4	P4	4	(Sealed Type)				
							2	2	02	02	02	15mm	AD	A5	25°								DB	DB	φ φ	/GM	M	Medium	P42	P4 or P3	Dimension : 4					
										03	03	17mm	DF	DF	φ φ	DT	DT	φ φ	/G	CP	Special Preload				DBT	DBD	φ φ φ	/CS	CA	Special Clearance			Running Accuracy : Better than 4			
										04	04	20mm	UC	C	15°	DTBT	DBB	φ φ φ φ																		
										Bore Number×5(mm)	CD	C	15°																					

* 1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 * 2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 * 3. Although P42 is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.

SAMPLE

NTN	7014T1G/GNP42	7014CTRSULP3	NSK	7014T1G/GNP42	7014CTYNSULP4
	7010T1LLBGD2/GNP42/L448	7010CTRV1VDULP3	MTSX		

High-Speed Angular Contact Ball Bearings

NTN

Material, Type						Dimension Series			Bore Number			Contact Angle			Cage				Seal			Arrangement			Preload			Accuracy			Lubricant							
5S-2LA-HSE						0			14			C			T1				LLB			DB			/GN			P4			/L448							
NTN	NSK	NTN	NSK	NTN	NSK	NTN	NSK	ISO	NTN	NSK	Bore Dia.	NTN	NSK	Contact Angle	NTN	NSK	Material	NTN	NSK	Seal	NTN	NSK	Arrangement	NTN	NSK	Preload	NTN	NSK	ISO Class	NTN	NSK	Grease						
2LA-HSExxxC	xxxBNRxxS	5S-2LA-HSF	xxxBNRxxX	HSE(HSB)	BNR or BER	9	9	19	00	00	10mm	C	BGR or BNR	15°	T2	TYN	Polyamide	Balls	●	●	Open	G	SU	Single Universal	/GL	EL	Extra Light	P5	P5	5	/L448	MTSX	Standard Grease					
2LA-HSExxx	xxxBNRxxS	5S-HSCxxx	xxxBNRxxX	HSL	BNR or BER, XE	0	0	10	01	01	12mm	●	BNR	20°	T1	T	Phenolic	O.R.	LLB	V1V	Sealed	GD2	DU	Duplex Universal	/GN	L	Light	P4	P4	4	(Sealed Type)							
2LA-HSExxxAD	xxxBERxxS	5S-2LA-HSLxxxC	xxxBNRxxXE	HSF	BNR	2	2	02	02	02	15mm	AD	BER	25°								DB	DB	φ φ	/GM	M	Medium	P42	P4 or P3	Dimension : 4								
HSBxxxC	xxxBNRxxS	5S-2LA-HSLxxx	xxxBNRxxXE	BNS	BNR or BER, Sealed				03	03	17mm				DF	DF	φ φ	DT	DT	φ φ	/G	CP	Special Preload				DBT	DBD	φ φ φ	/CS	CA	Spacial Clearance			Running Accuracy : Better than 4			
		5S-2LA-HSLxxxAD	xxxBERxxXE	BNT	BGR				04	04	20mm				DTBT	DBB	φ φ φ φ																					
		5S-2LA-HSFLxxx	xxxBNRxxXE						...	...	Bore Number ×5(mm)																									
5S-2LA-HSExxxC	xxxBNRxxH	5S-2LA-BNSxxxC,LLB	xxxBNRxxH,V1V																																			
5S-2LA-HSExxx	xxxBNRxxH	5S-2LA-BNSxxx,LLB	xxxBNRxxH,V1V																																			
5S-2LA-HSExxxAD	xxxBERxxH	5S-2LA-BNSxxxAD,LLB	xxxBERxxH,V1V																																			

* 1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 * 2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 * 3. Although P42 is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.

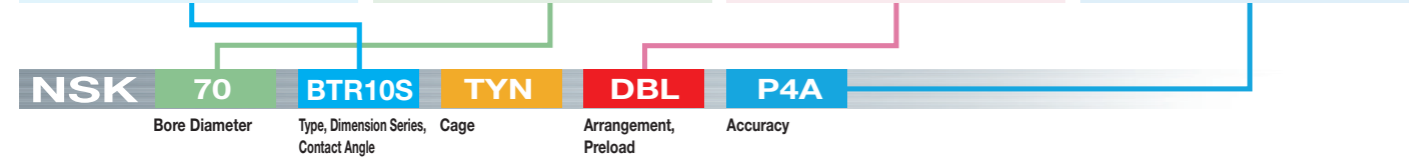
SAMPLE

NTN	2LA-HSE014ADT1GD2/GLP42	70BER10STDUEL P3	NSK	5S-2LA-BNS914LLBG/GLP2/L448	70BNR19HV1VTSUEL P2
			MTSX	5S-BNT000T1DTBT/GNP42	10BGR10XTDBBL P3

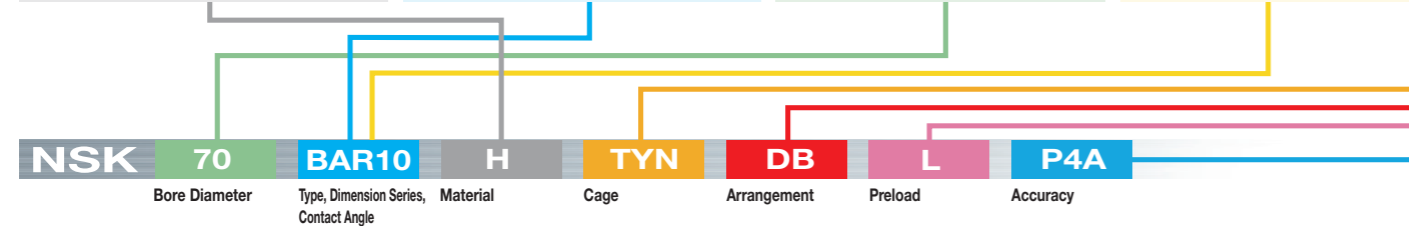
Angular Contact Thrust Ball Bearings

NTN

Type, Dimension Series, Contact Angle *1			Bore Number			Preload			Accuracy		
5620			14			GN			P5		
NTN	NSK	Contact Angle	NTN	NSK	Bore Dia.	NTN	NSK	Preload	NTN	NSK	Accuracy
5620	BTR10S	60° (NTN), 40° (NSK)	06	30	30mm	GN	DBL	Light	P5	P4A	ISO 5 Equivalent
			07	35	45mm	GM	DBM	Medium	P4	P4A	ISO 4 Equivalent
			08	40	40mm						
			...	...	Bore Number×5(mm)						



Material				Type, Dimension Series			Bore Number			Contact Angle		
5S-				HTA0			14			UA		
NTN	NSK	Rings	Balls	NTN	NSK	ISO	NTN	NSK	Bore Dia.	NTN	NSK	Contact Angle
●	S	Bearing Steel	Bearing Steel	HTA0	BAR10 or BTR10	10 : Bore & O.D. Special Width	10	50	50mm	●	BTR	40°
5S-	H	Bearing Steel	Ceramics				11	55	55mm	U	BTR	40°
							12	60	60mm	A	BAR	30°
							...	...	Bore Number×5(mm)	UA	BAR	30°



*1. Angular Contact Thrust Ball Bearings belong to ROBUST Series, suitable for high speed application. For detail information, see Page 18.

SAMPLE

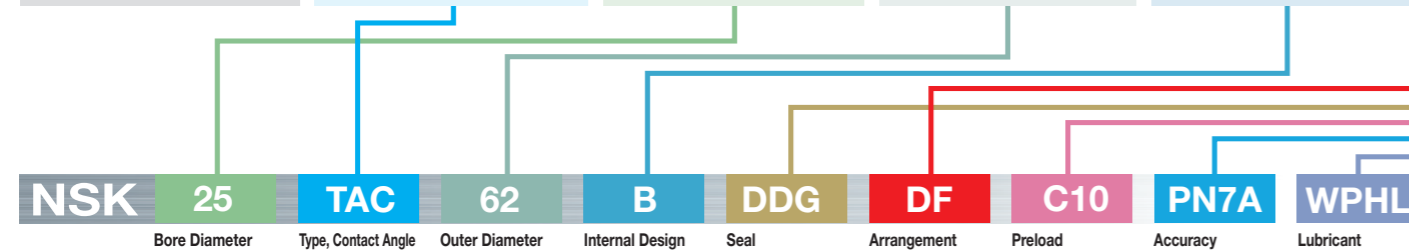
	562040/GNP4	200BTR10SDBLP4A	
NTN	HTA014AT2DB/GNP5L	70BAR10STYNDLBP4A	NSK
	5S-HTA020DB/GNP4L	100BTR10HTYNDLBP4A	

Cage				Arrangement			Preload			Accuracy		
T2				DB			/GN			P4L		
NTN	NSK	Material	Guided	NTN	NSK	Arrangement	NTN	NSK	Preload	NTN	NSK	Accuracy
●	● or TYN	Phenolic	O.R.	DB	DB	φ φ	/GN	EL	Extra Light	P5L	P4A	ISO 5 Equivalent
T2	TYN	Polyamide	Balls	DBT	DBD	φ φ φ	/GM	L	Light	P4L	P4A	ISO 4 Equivalent
L1	● or TYN	Mahined Brass	Balls	DTBT	DBB	φ φ φ φ						

Angular Contact Thrust Ball Bearings for Ball Screw Support

NTN

Special		Type, Contact Angle		Bore Diameter			Outer Diameter			Internal Design				
		BST		25			X62			-1B				
NTN	NSK	NTN	NSK	Contact Angle	NTN	NSK	Bore Dia.	NTN	NSK	Outer Dia.	NTN	NSK	Internal Design	
●	●	Normal	BST	TAC	60°	17	17	17mm	47	47	47mm	-1B	B	Special
2A-	-	Special processing				20	20	20mm	62	62	62mm			
						25	25	25mm	72	72	72mm			
						...	...	(mm)	...	...	(mm)			



*1. X (number) means the number of the bearings. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

Arrangement			Seal		Preload		Accuracy			Lubricant				
DF			LXL				P4			/L588				
NTN	NSK	*1 Arrangement	NTN	NSK	Seal type	NTN	NSK	Preload	NTN	NSK	Accuracy	NTN	NSK	Grease
G	SU	Single Universal	●	●	-	●	C10	Standard	P5	PN7A or PN7B	ISO 4 Equivalent	/L588	AS2S	Standard Grease
GD2	SU×2	Duplex Universal	LXL	DDG	Contact				P4	PN7A or PN7B	ISO 4 Equivalent			(Open Type)
DB	SU×2	φ φ							UP	PN7A or PN7B	ISO 4 Equivalent	/L588	WPHL	Standard Grease
DF	SU×2	φ φ φ												(Sealed Type)
DT	SU×2	φ φ φ φ												
DFT	SU×3	φ φ φ φ φ												
DTFT	SU×4	φ φ φ φ φ φ												

SAMPLE

	BST20×47-1BGP4/L588	20TAC47BSUC10PN7B AS2S	
NTN	BST50×100-1BDFTP5	50TAC100BSUC10PN7B(3 Row)	NSK

Cylindrical Roller Bearings (Single Row)

NTN

Type			Dimension Series			Bore number			Material ^{*1}			
N			10			14						
NTN	NSK	Type	NTN	NSK	ISO	NTN	NSK	Bore Dia.	NTN	NSK	Rings	Rollers
N	N	Flanges on I.R.	10	10	10	06	06	30mm	●	●	Bearing Steel	Bearing Steel
						07	07	35mm	HS	● or RS	Bearing Steel	Bearing Steel
						08	08	40mm	HSR	RS or RX	Special Steel	Special Steel
						...	...	Bore Number×5(mm)				

Cage ^{*2}				Tapered Bore			Radial Clearance ^{*3}			Accuracy			
T6				K			C0NA			P4			
NTN	NSK	Material	Guided	NTN	NSK	Bore	NTN	NSK	NTN	NSK	NTN	NSK	ISO Class
T6	MR or TP	PEEK	O.R.	●	●	Straight	C1NA	CC1	P5	P5	5		
●	MR	Machined Brass	Rollers	K	KR	1:12 Taper	C0NA	CC0	P4	P4	4		
T2	MR or TP	Polyamide	Rollers				C9NA	CC0	P2	P2	2		



SAMPLE

	N1014HST6C1NAP4	N1014MRCC1P4	
NTN	N1014HST6C1NAP4	N1014RSTPCC1P4	NSK
	N1015HSRKC0NAP4	N1015RSTPKRCC1P4	

*1. The cage type of the bearings with material symbols, RS, RX, is TP (PEEK cage).
 *2. The bearings with machined brass cage can be replaced by the bearings with TP cage (PEEK material).
 *3. This radial clearance is applied to matched bearings.

Cylindrical Roller Bearings (Double Row)

NTN

Type			Dimension Series			Bore Number			Speed Range			Cage ^{*1}			
NN			30			14			HS			T6			
NTN	NSK	Type	NTN	NSK	ISO	NTN	NSK	Bore Dia.	NTN	NSK	Range	NTN	NSK	Material	Guided
NN	NN	Flanges on I.R.	30	30	30	05	05	25mm	●	●+MB or	Standard	T6	TB	PEEK	Rollers
NNU	NNU	Flanges on O.R.	39	39	39	06	06	30mm	●	●+TB		●	TB or MB	Machined Brass	Rollers
			49	49	49	07	07	35mm	HS	●+TB	High-Speed	T2	TB	Polyamide	Rollers
						...	...	Bore Number×5(mm)	HSR	●+TB	Ultra High-Speed				

Tapered Bore			Lubrication Holes			Radial Clearance ^{*2}			Accuracy			
K						C0NA			P4			
NTN	NSK	Bore	NTN	NSK	Lubrication Holes	NTN	NSK	NTN	NSK	NTN	NSK	ISO Class
●	●	Straight	●	●	No Lubrication Holes	C1NA	CC1	P5	P5	5		
K	KR	1:12 Taper	-	E44	STD. Oil Holes on O.R.	C0NA	CC0	P4	P4	4		
						C9NA	CC0	P2	P2	2		



SAMPLE

	NN3014T2C1NAP4	NN3014TBCC1P4	
NTN	NN3014T2C1NAP4	NN3014MBCC1P4	NSK
	NN3015HSRKC0NAP4	NN3015TBKRCC0P4	

*1. The bearings with machined brass cage can be replaced by the bearings with TB cage (PPS material).
 *2. This radial clearance is applied to matched bearings.

Angular Contact Ball Bearings (Standard Series)

KOYO

Material	Type, Dimension Series	Bore Number	Contact Angle	Cage (Guided) *1	Special																																																															
KOYO NSK Rings Balls	7	14	C	-5																																																																
<ul style="list-style-type: none"> ● ● Bearing Bearing Steel Steel 3NC SN24 Bearing Ceramics Steel 	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>ISO</th></tr> <tr><td>79</td><td>79</td><td>19</td></tr> <tr><td>70</td><td>70</td><td>10</td></tr> <tr><td>72</td><td>72</td><td>02</td></tr> </table>	KOYO	NSK	ISO	79	79	19	70	70	10	72	72	02	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Bore Dia.</th></tr> <tr><td>00</td><td>00</td><td>10mm</td></tr> <tr><td>01</td><td>01</td><td>12mm</td></tr> <tr><td>02</td><td>02</td><td>15mm</td></tr> <tr><td>03</td><td>03</td><td>17mm</td></tr> <tr><td>04</td><td>04</td><td>20mm</td></tr> <tr><td>...</td><td>...</td><td>Bore Number×5(mm)</td></tr> </table>	KOYO	NSK	Bore Dia.	00	00	10mm	01	01	12mm	02	02	15mm	03	03	17mm	04	04	20mm	Bore Number×5(mm)	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Angle</th></tr> <tr><td>C</td><td>C</td><td>15°</td></tr> <tr><td>CA</td><td>A5</td><td>20°</td></tr> <tr><td>●</td><td>A</td><td>30°</td></tr> </table>	KOYO	NSK	Angle	C	C	15°	CA	A5	20°	●	A	30°	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Guided</th></tr> <tr><td>●</td><td>TR or TYN</td><td>I.R.</td></tr> <tr><td>PA</td><td>TR</td><td>O.R.</td></tr> <tr><td>-5</td><td>TYN</td><td>Balls</td></tr> </table>	KOYO	NSK	Guided	●	TR or TYN	I.R.	PA	TR	O.R.	-5	TYN	Balls	<table border="1"> <tr><th>KOYO</th><th>NSK</th></tr> <tr><td>● ●</td><td>Normal</td></tr> <tr><td>K5</td><td>P4Y ISO 4 with Tighter Bore & O.D.</td></tr> </table>	KOYO	NSK	● ●	Normal	K5	P4Y ISO 4 with Tighter Bore & O.D.
KOYO	NSK	ISO																																																																		
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K5	P4Y ISO 4 with Tighter Bore & O.D.																																																																			

Arrangement *2	Preload	Spacer	Cage (Material) *1	Accuracy																																																																																				
DB	L	/27A	FT	P4																																																																																				
<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Arrangement</th></tr> <tr><td>G</td><td>SU</td><td>Single Universal</td></tr> <tr><td>G□×2</td><td>DU</td><td>Duplex Universal</td></tr> <tr><td>G□×3</td><td>DUD</td><td>Triplex Universal</td></tr> <tr><td>G□×4</td><td>QU</td><td>Quadruplex Universal</td></tr> <tr><td>DB</td><td>DB</td><td>φ φ</td></tr> <tr><td>DF</td><td>DF</td><td>φ φ φ</td></tr> <tr><td>DT</td><td>DT</td><td>φ φ φ φ</td></tr> <tr><td>DBD</td><td>DBD</td><td>φ φ φ φ φ</td></tr> <tr><td>DBB</td><td>DBB</td><td>φ φ φ φ φ φ</td></tr> </table>	KOYO	NSK	Arrangement	G	SU	Single Universal	G□×2	DU	Duplex Universal	G□×3	DUD	Triplex Universal	G□×4	QU	Quadruplex Universal	DB	DB	φ φ	DF	DF	φ φ φ	DT	DT	φ φ φ φ	DBD	DBD	φ φ φ φ φ	DBB	DBB	φ φ φ φ φ φ	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Preload</th></tr> <tr><td>S</td><td>EL</td><td>Extra Light</td></tr> <tr><td>L</td><td>L</td><td>Light</td></tr> <tr><td>M</td><td>M</td><td>Medium</td></tr> <tr><td>H</td><td>H</td><td>Heavy</td></tr> <tr><td>CY</td><td>CP</td><td>Special Preload</td></tr> <tr><td>CS</td><td>CA</td><td>Spacial Clearance</td></tr> </table>	KOYO	NSK	Preload	S	EL	Extra Light	L	L	Light	M	M	Medium	H	H	Heavy	CY	CP	Special Preload	CS	CA	Spacial Clearance	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Type</th></tr> <tr><td>● ●</td><td>-</td><td></td></tr> <tr><td>/xx</td><td>+KLxx</td><td>Oil Holes on O.R.</td></tr> <tr><td>/xxA</td><td>+KLxx</td><td>No Oil Holes</td></tr> </table>	KOYO	NSK	Type	● ●	-		/xx	+KLxx	Oil Holes on O.R.	/xxA	+KLxx	No Oil Holes	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Material</th></tr> <tr><td>FG</td><td>TYN</td><td>Plastics</td></tr> <tr><td>FT</td><td>TR</td><td>Phenolic</td></tr> </table>	KOYO	NSK	Material	FG	TYN	Plastics	FT	TR	Phenolic	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>ISO Class</th></tr> <tr><td>P5</td><td>P5</td><td>5</td></tr> <tr><td>P4</td><td>P4</td><td>4</td></tr> <tr><td>P2</td><td>P2</td><td>2</td></tr> </table>	KOYO	NSK	ISO Class	P5	P5	5	P4	P4	4	P2	P2	2
KOYO	NSK	Arrangement																																																																																						
G	SU	Single Universal																																																																																						
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SAMPLE

KOYO	7014CAPAGMFTP4	7014A5TRSUMP4	NSK
	7014CAPAGMFTP4	7014A5TYNSUMP4	
	3NC7014C-5DBLFGP4	7014CSN24TYNDBLP4	

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 □:Preload symbol

High-Speed Angular Contact Ball Bearings

KOYO

Material	Type	Dimension Series	Bore Number	Contact Angle	Cage (Guided) *1																																																															
3NC	HAR	0	14	C	-5																																																															
<ul style="list-style-type: none"> ● S Bearing Bearing Steel Steel 3NC H or X Bearing Ceramics Steel 	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Type</th></tr> <tr><td>HAR</td><td>BGR or BNR or BER</td><td>High-Speed</td></tr> <tr><td>ACH</td><td>BGR or BNR or BER</td><td>High-Speed</td></tr> <tr><td>HAD</td><td>BNRxxXE</td><td>Under Race Lubrication</td></tr> </table>	KOYO	NSK	Type	HAR	BGR or BNR or BER	High-Speed	ACH	BGR or BNR or BER	High-Speed	HAD	BNRxxXE	Under Race Lubrication	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>ISO</th></tr> <tr><td>9</td><td>19</td><td>19</td></tr> <tr><td>0</td><td>10</td><td>10</td></tr> </table>	KOYO	NSK	ISO	9	19	19	0	10	10	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Bore</th></tr> <tr><td>00</td><td>10</td><td>10mm</td></tr> <tr><td>01</td><td>12</td><td>12mm</td></tr> <tr><td>02</td><td>15</td><td>15mm</td></tr> <tr><td>03</td><td>17</td><td>17mm</td></tr> <tr><td>04</td><td>20</td><td>4×5=20mm</td></tr> <tr><td>...</td><td>...</td><td>Bore Number×5(mm)</td></tr> </table>	KOYO	NSK	Bore	00	10	10mm	01	12	12mm	02	15	15mm	03	17	17mm	04	20	4×5=20mm	Bore Number×5(mm)	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Contact Angle</th></tr> <tr><td>C</td><td>BGR or BNR</td><td>15°</td></tr> <tr><td>CA</td><td>BER</td><td>25°</td></tr> <tr><td>●</td><td>BER</td><td>30°</td></tr> </table>	KOYO	NSK	Contact Angle	C	BGR or BNR	15°	CA	BER	25°	●	BER	30°	<table border="1"> <tr><th>KOYO</th><th>NSK</th><th>Guided</th></tr> <tr><td>●</td><td>T</td><td>O.R.</td></tr> <tr><td>-5</td><td>TYN</td><td>Balls</td></tr> </table>	KOYO	NSK	Guided	●	T	O.R.	-5	TYN	Balls
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Special	Arrangement *2	Preload	Spacer	Cage (Material) *1	Accuracy																																																																																							
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P2	P2	2																																																																																										



SAMPLE

KOYO	3NCACH914CK5DBLFTP4	70BNR19XTDBLP4Y	NSK
	ACH020CA-5DBBLFGP4	100BER10STYNDBBLP4	
	HAR005CGS×2FTP2	25BGR10STDUPLP2	

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 □:Preload symbol

Angular Contact Thrust Ball Bearings

KOYO

Type, Dimension Series, Contact Angle *1			Bore Number			Design			Cage		
2344			14			B			FY		
KOYO	NSK	Contact Angle	KOYO	NSK	Bore Dia.	KOYO	NSK	Design	KOYO	NSK	Material
2344	BTR10	60° (Koyo), 40° (NSK)	10	50	50mm	B	●	Single-Piece O.R.	FY	● or TYN	Machined Brass
			11	55	55mm						
			12	60	60mm						
			...	...	Bore Number×5(mm)						

Accuracy		
P4		
KOYO	NSK	ISO Class
P5	P4A	ISO4 Equivalent
P4	P4A	ISO4 Equivalent

SAMPLE			
KOYO	234440BFYP4	200BTR10SDBLP4A	NSK
	234412BFYP4	60BTR10STYNDBLP4A	
	ACT14DBLFGP4	70BAR10STYNDBLP4A	
	ACT24BDBMFYP5	120BTR10STYNDBLP4A	



KOYO

Type, Dimension Series			Bore Number			Contact Angle			Arrangement		
ACT0			14						DB		
KOYO	NSK	ISO	KOYO	NSK	Bore Dia.	KOYO	NSK	Contact Angle.	KOYO	NSK	Arrangement
ACT	BAR10S or BTR10S	10 : Bore & O.D. Special Width	06	30	30mm	●	BAR	30°	DB	DB	φ φ
			07	35	35mm	B	BTR	40°			
			08	40	40mm						
			...	...	Bore Number×5(mm)						

Preload		
M		
KOYO	NSK	Preload
L	L	Light
M	L	Medium

Cage		
FG		
KOYO	NSK	Material
FG	TYN	Plastics
FT	TYN or ●	Phenolic
FY	● or TYN	Machined Brass

Accuracy		
P4		
KOYO	NSK	ISO Class
P5	P4A	ISO4 Equivalent
P4	P4A	ISO4 Equivalent



*1. Angular Contact Thrust Ball Bearings belong to ROBUST Series, suitable for high speed application. For detail information, see Page 18.

Angular Contact Thrust Ball Bearings for Ball Screw Support

KOYO

Type, Contact Angle			Bore Diameter			Outer Diameter			Internal Design		
SAC			25			62			B		
KOYO	NSK	Contact Angle	KOYO	NSK	Bore Dia.	KOYO	NSK	Outer Dia.	KOYO	NSK	Internal Design
SAC	TAC	60°	17	17	17mm	47	47	47mm	B	B	Special
			20	20	20mm	62	62	62mm			
			25	25	25mm	72	72	72mm			
			...	...	(mm)	...	...	(mm)			

Arrangement *1		
DB		
KOYO	NSK	Arrangement
DB	DB	φ φ
DF	DF	φ φ
DT	DT	φ φ
DFD	DFD	φ φ φ
DFF	DFF	φ φ φ φ

Preload		
C10		
KOYO	NSK	Preload
●	C10	Standard

Cage			
MG			
KOYO	NSK	Material	Guided
MG	●	Polyamide	Balls
MM	●	Polyamide	Balls

Accuracy		
P4Z		
KOYO	NSK	Accuracy
P5Z	PN7A or PN7B	Equivalent to ISO Class 5
P4Z	PN7A or PN7B	Equivalent to ISO Class 4



*1. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

SAMPLE			
KOYO	SAC1547BDFMGP4Z	15TAC47BDFC10PN7A	NSK
	SAC50100BDFMMP5Z	50TAC100BDFPN7A	

Cylindrical Roller Bearings (Single Row)

KOYO

Material ^{*1}				Type			Dimension Series			Bore Number		
				N			10			14		
KOYO	NSK	Rings	Rollers	KOYO	NSK	Type	KOYO	NSK	ISO	KOYO	NSK	Bore Dia.
●	● or RS	Bearing Steel	Bearing Steel	N	N	Flanges on I.R.	10	10	10	06	06	30mm
3NC	RX or RXH	Bearing Steel	Ceramics							07	07	35mm
										08	08	40mm
										...	...	Bore Number×5(mm)

Tapered Bore			Radial Clearance ^{*2}			Cage ^{*3}			Accuracy		
K			C1NA			FY			P4		
KOYO	NSK	Bore	KOYO	NSK		KOYO	NSK	Material	KOYO	NSK	ISO Class
●	●	Straight	C9NA	CC9	For Taper Bore	FY	MR or TR	Machined Brass	P5	P5	5
K	KR	1:12 Taper	C0NA	CC0	STD for Taper Bore				P4	P4	4
			C1NA	CC1	STD for Straight Bore				P2	P2	2



SAMPLE

KOYO	N1014KC0NAFY P4	N1014MRKRCC0P4	NSK
	N1014KC0NAFY P4	N1014RSTPKRCC0P4	
	3NCN1015C1NAFY P4	N1015RXHTPC0P4	

*1. The cage type of the bearings with material symbols, RS, RX, RXH, is TP (PEEK cage).
 *2. This radial clearance is applied to matched bearings.
 *3. The bearings with MR cage can be replaced by the bearings with TP cage (PEEK Material).

Cylindrical Roller Bearings (Double Row)

KOYO

Type			Dimension Series			Bore Number			Tapered Bore		
NN			30			14			K		
KOYO	NSK	Type	KOYO	NSK	ISO	KOYO	NSK	Bore Dia.	KOYO	NSK	Bore
NN	NN	Flanges on I.R.	30	30	30	05	05	25mm	●	●	Straight
NNU	NNU	Flanges on O.R.	39	39	39	06	06	30mm	K	KR	1:12 Taper
			49	49	49	07	07	35mm			
						...	...	Bore Number×5(mm)			

Lubrication Holes			Radial Clearance ^{*1}			Cage ^{*2}			Accuracy		
			C1NA			FY			P4		
KOYO	NSK	Lubrication Holes	KOYO	NSK		KOYO	NSK	Material	KOYO	NSK	ISO Class
●	●	No Lubrication Holes	C9NA	CC9	For Taper Bore	FW	TB or MB	Machined Brass	P5	P5	5
W	E44	STD Oil Holes on O.R.	C0NA	CC0	STD for Taper Bore	FY	TB or MB	Machined Brass	P4	P4	4
			C1NA	CC1	STD for Straight Bore				P2	P2	2



SAMPLE

KOYO	NN3014KWC0NAFY P4	NN3014TBKRE44CC0P4	NSK
	NN3014KWC0NAFY P4	NN3014MBKRE44CC0P4	
	NN3020C1NAFW P4	NN3020TBCC1P4	

*1. This radial clearance is applied to matched bearings.
 *2. The bearings with machined brass cage can be replaced by the bearings with TB cage (PPS material).

Angular Contact Ball Bearings (Standard Series)

BARDEN

Material				Contact Angle			Dimension Series			Bore Number			Type			Cage			Arrangement			Preload			Accuracy			Lubricant		
BARDEN NSK Rings Balls				BARDEN NSK Angle			BARDEN NSK ISO			BARDEN NSK Bore Dia.			BARDEN NSK Construction			BARDEN NSK Material Guided			BARDEN NSK Arrangement			BARDEN NSK Preload			BARDEN NSK ISO Class			BARDEN NSK Lubricant		
●	●	Bearing Steel	Bearing Steel	●	C	15°	19	9	19	00	00	10mm	H	7	Counter-Bore O.R.	●	TR	Phenolic O.R.	D	SU	Single Universal	L	L	Light	●	P4	4	●	●	-
C	SN24	Bearing Steel	Ceramics	2	A5	25°	1	0	10	01	01	12mm				B	TYN	Phenolic Balls	DB	DB	φ φ	M	M	Medium	●	P2	2	O-...	-	Oil
							2	2	02	02	02	15mm							DF	DF	φ φ	H	H	Heavy				G-...	-	Grease
										03	03	17mm							DT	DT	φ φ									
										04	04	20mm							DD	DBD	φ φ φ									
										...	...	Bore Number×5(mm)							DBT	DBB	φ φ φ φ									

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *3. Ask NSK to substitute to this type.

SAMPLE

BARDEN	C114HBDBL	7014CSN24TRDBLP4	NSK
	C114HBDBL	7014CSN24TYNDBLP4	
	2120HDM	7020A5TRSUMP4	

High-Speed Angular Contact Ball Bearings

BARDEN

Material				Contact Angle			Dimension Series			Bore Number			Seal			Type			Cage			Arrangement			Preload			Accuracy			Lubricant		
BARDEN NSK Rings Balls				BARDEN NSK Contact Angle			BARDEN NSK ISO			BARDEN NSK Bore Dia.			BARDEN NSK Seal type			BARDEN NSK Type			BARDEN NSK Material Guided			BARDEN NSK Arrangement			BARDEN NSK Preload			BARDEN NSK ISO Class			BARDEN NSK Lubricant		
●	S	Bearing Steel	Bearing Steel	ZSB	BNR	15°	1	0	10	00	10	10mm	●	●	-	J	BNR	High-Speed	●	T	Phenolic O.R.	D	SU	Single Universal	L	L	Light	●	P4	4	●	●	-
C	H	Bearing Steel	Ceramics	ZSB	BGR	15°				01	12	12mm	SS	V1V	Non-contact	B	BGR	High-Speed	B	TYN	Phenolic Balls	DB	DB	φ φ	M	M	Medium	●	P2	2	O-...	-	Oil
CS	X	Special Steel	Ceramics							02	15	15mm							DF	DF	φ φ										G-...	-	Grease
CM	X	Special Steel	Ceramics							03	17	17mm							DT	DT	φ φ												
										04	20	20mm							DD	DBD	φ φ φ												
										...	...	Bore Number×5(mm)							DBT	DBB	φ φ φ φ												

*1. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *2. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *3. Ask NSK to substitute to this type.

SAMPLE

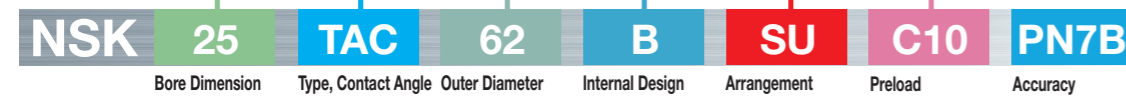
BARDEN	CZSB114SSJDLG-xxx	70BNR10HTV1VSULP4 MTSX	NSK
	CZSB114SSJDLG-xxx	70BNR10HTYNNV1VSULP4 MTSX	
	CSZSB100BDTL	10BGR10XTDTLP2	

Angular Contact Thrust Ball Bearings for Ball Screw Support

BARDEN

Type, Contact Angle			Bore Dimension			Outer Diameter			Internal Design		
L			25			62			H		
BARDEN	NSK	Contact Angle	BARDEN	NSK	Bore Dia.	BARDEN	NSK	Outer Dia.	BARDEN	NSK	Construction
L	TAC	65°	20	20	20mm	47	47	47mm	H	B	Counter-Bore O.R.
			25	25	25mm	62	62	62mm			
			30	30	30mm	72	72	72mm			
			...	...	(mm)	...	...	(mm)			

Arrangement			Preload			Accuracy		
DF								
BARDEN	NSK	*1 Arrangement	BARDEN	NSK	Preload	BARDEN	NSK	Accuracy
D	SU	Single Universal	●	C10	Standard	●	PN7B	ISO 4 Equivalent
DB	SU×2	φ φ						
DF	SU×2	φ φ						
DT	SU×2	φ φ						
DD	SU×3	φ φ φ						
DFT	SU×4	φ φ φ φ						



SAMPLE

BARDEN	L2547HD	20TAC47BSUC10PN7B	
BARDEN	L50100HDFT	50TAC100BSUC10PN7B (4 Row)	NSK

* 1. X (number) means the number of the bearings.
 SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

Angular Contact Ball Bearings (Standard Series)

FAFNIR

Contact Angle			Accuracy *1			Material			Dimension Series			Bore Number			Construction			Cage *2				Arrangement *3			Preload		
2			MM						91			14			W1			CR				DU			L		
FAFNIR	NSK	Contact Angle	FAFNIR	NSK	ISO Class	FAFNIR	NSK	Balls	FAFNIR	NSK	ISO	FAFNIR	NSK	Bore Dia.	FAFNIR	NSK	Construction	FAFNIR	NSK	Material	Guided	FAFNIR	NSK	Arrangement	FAFNIR	NSK	Preload
2	C	15°	MM	P4	4	●	●	Bearing Steel	93	79	19	00	00	10mm	W1	●	Counter-Bore O.R.	●	-	Nylon	O.R.	SU	SU	Single Universal	X	EL	Extra Light
3	A5	25°	MMV	P4 or P3	Dimension : 4 Running Accuracy : Better than 4	C	SN24	Ceramics	91	70	10	01	01	12mm				CR	TR	Phenolic	O.R.	DU	DU	Duplex Universal	L	L	Light
			MMX	P2	2				2	72	02	02	02	15mm				PRB	-	Nylon	O.R.	TU	DUD	Triplex Universal	M	M	Medium
												03	03	17mm				PRC	-	Nylon	O.R.	QU	QU	Quadruplex Universal	H	H	Heavy
												04	04	20mm				-	TYN	Polyamide	Balls						
												...	...	Bore Number×5(mm)													

NSK	70	14	C	TR	DU	L	P4
Dimension Series	Bore Number	Contact Angle	Material	Cage	Arrangement	Preload	Accuracy

*1. Although MMV is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.
 *2. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

SAMPLE

FAFNIR	2MMVC9312W1CRSUL	7912CSN24TRSULP3	NSK
	2MMVC9312W1CRSUL	7912CSN24TYNSULP4	
	3MM9110W1PRBDUL	7010A5TRDULP4	

High-Speed Angular Contact Ball Bearings

FAFNIR

Contact Angle			Accuracy *1			Material			Dimension Series			Bore Number			Construction			Cage *2				Arrangement *3			Preload			Special Feature		
2			MM			C			91			14			HX			PRB				DU			L					
FAFNIR	NSK	Contact Angle	FAFNIR	NSK	ISO Class	FAFNIR	NSK	Balls	FAFNIR	NSK	ISO	FAFNIR	NSK	Bore Dia.	FAFNIR	NSK	Construction	FAFNIR	NSK	Material	Guided	FAFNIR	NSK	Arrangement	FAFNIR	NSK	Preload	FAFNIR	NSK	
2	BGR or BNR	15°	MM	P4	4	●	S	Bearing Steel	93	19	19	00	10	10mm	WO	●	Counter-Bore I.R.	●	-	Nylon	O.R.	SU	SU	Single Universal	-	EL	Extra Light	XXXX	-	*4
3	BER	25°	MMV	P4 or P3	Dimension : 4 Running Accuracy : Better than 4	C	H	Ceramics	991	10	10	01	12	12mm	WN	●	High-Speed	CR	T	Phenolic	O.R.	DU	DU	Duplex Universal	L	L	Light			
			MMX	P2	2							02	15	15mm	HX	●	High-Speed	PRB	-	Nylon	O.R.	TU	DUD	Triplex Universal	M	M	Medium			
												03	17	17mm				PRC	-	Nylon	O.R.	QU	QU	Quadruplex Universal						
												04	20	20mm				-	TYN	Polyamide	Balls									
												...	...	Bore Number×5(mm)															

NSK	70	BNR	10	H	TYN	DU	L	P4
Bore Dimension	Bearing Type	Dimension Series	Material	Cage	Arrangement	Preload	Accuracy	

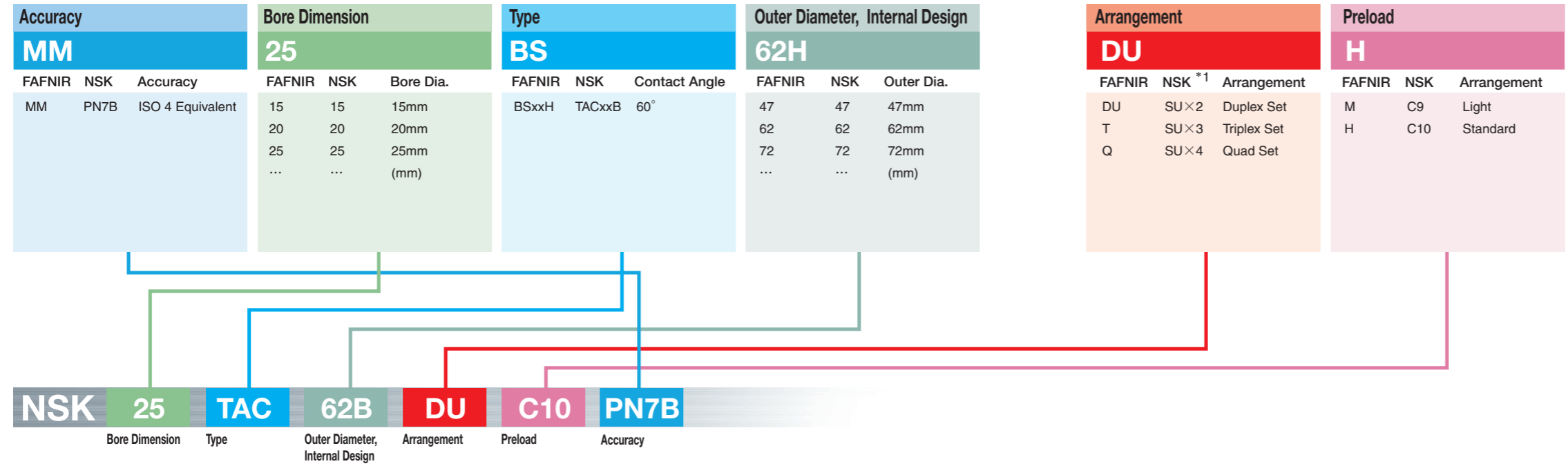
*1. Although MMV is higher precision class than P4, NSK's P4 can be replaced to the bearings with P3.
 *2. The limiting d_{mr} of the bearings with TYN cage is 1.4 Million.
 *3. SU (Single Universal) bearings can be used in every arrangement. (see Page 05)
 *4. Ask NSK to substitute to this type.

SAMPLE

FAFNIR	3MMV99114WNCRSUL	70BER10STSULP3	NSK
	3MMV99114WNCRSUL	70BER10STYNSULP4	
	2MMXC99100WOCRDL	10BGR10HTDULP2	

Angular Contact Thrust Ball Bearings for Ball Screw Support

FAFNIR



* 1. X (number) means the number of the bearings.
 SU (Single Universal) bearings can be used in every arrangement. (see Page 05)

SAMPLE

	MM15BS47H DUH	15TAC47BSUC10PN7B(2rows)	
FAFNIR	MM50BS100HTH	50TAC100BSUC9PN7B(3rows)	NSK



Part 1 NSK Super Precision Bearings

- Global Network
- Research and Development
- Quality and Production

Part 2 Features of Precision Bearings

- Metallurgical Technology to Extend Bearing Life
- Ceramic Rolling Elements
- Cages
- Product Range
- Performance of Each Bearing Type

Part 3 Selection of Precision Bearings

Part 4 Bearing Types

- Angular Contact Ball Bearings (ACBB)
- Cylindrical Roller Bearings (CRB)
- Angular Contact Thrust Ball Bearings
- Angular Contact Thrust Ball Bearings for Ball Screw Support
- Precision Deep Groove Ball Bearings
- Gauges and Oil-Air Lubricators

Part 5 Technical Guide

Part 6 Bearing Handling

Part 7 Appendices

*NSK's catalogue, "SUPER PRECISION BEARINGS" is available in the following languages, English, Chinese, German, Italian, Spanish, French, and Japanese.

*For further details, please request this catalog from NSK.

