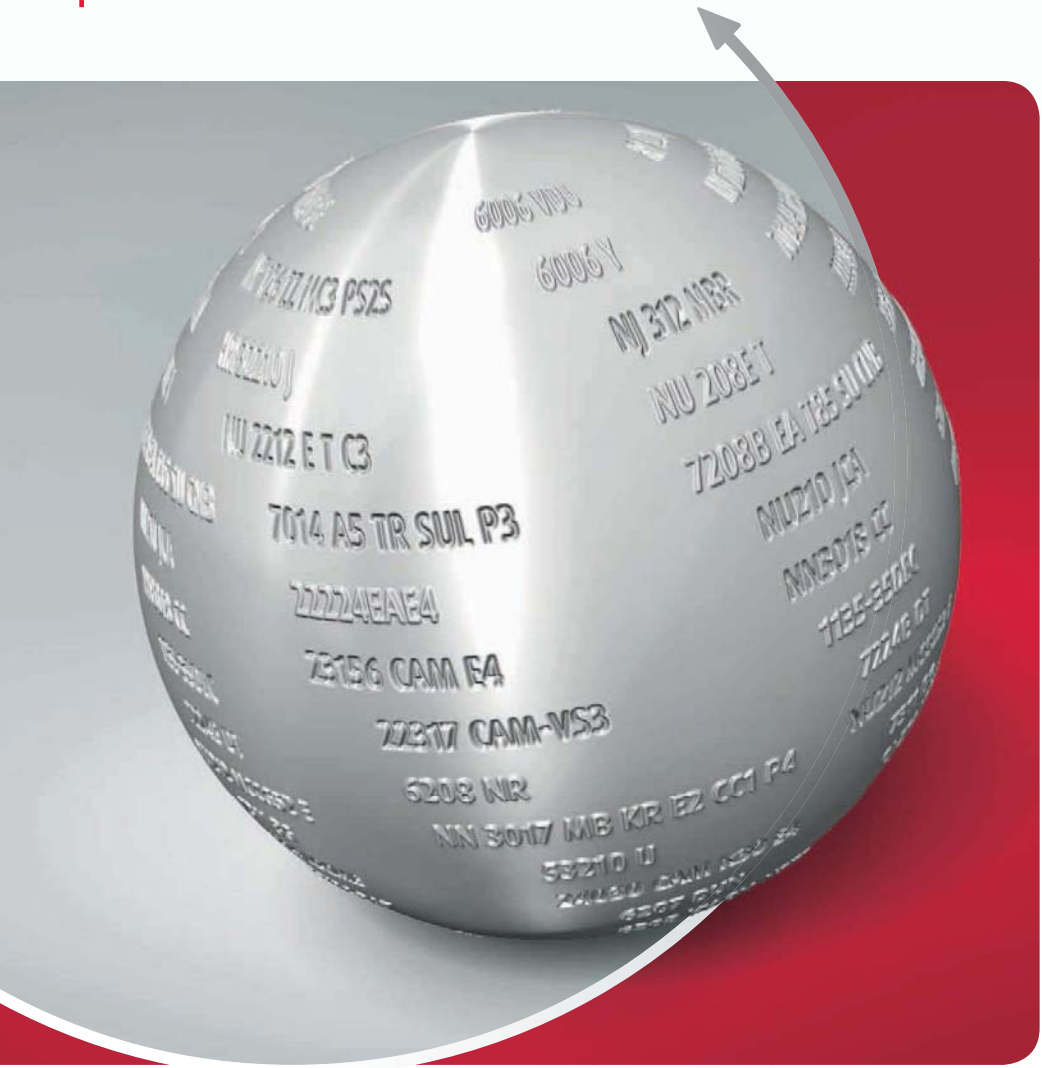
MOTION & CONTROL™

NSK

BEARING DESIGNATION SYSTEMS



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Contents

Introduction

Order codes for bearings are made up of a combination of letters and numbers. This alphanumeric combination denotes the type, size and structure of the bearing.

Within each order code, a distinction is made between the basic designation and any suffixes and/or prefixes. The basic designation indicates the bearing type and the bore size. These basic designations are defined in the German DIN 623 standard and the relevant ISO standard. For most bearing types, the basic designation is made up of numbers, but some are alphanumeric. Prefixes and suffixes denote special modifications, for example if the internal clearance or accuracy deviate from the norm. The use of prefixes and suffixes is only partially standardised. Suffixes differ the most, with the various bearing manufacturers using different codes for certain modifications. This brochure serves to explain the various bearing codes used by NSK and RHP and helps you to compare them with other manufacturers' designations.

NSK is one of the world's largest bearing manufacturers. In the early 1990s, it took over the RHP Group, UK's biggest producer of bearings. Since then, NSK has been distributing bearings using the NSK and RHP brand names. In some cases, the two brands' bearings use different supplementary designations. If no supplementary designation is listed under the NSK or RHP brand name, it means that there is no equivalent to the other brand's designation.

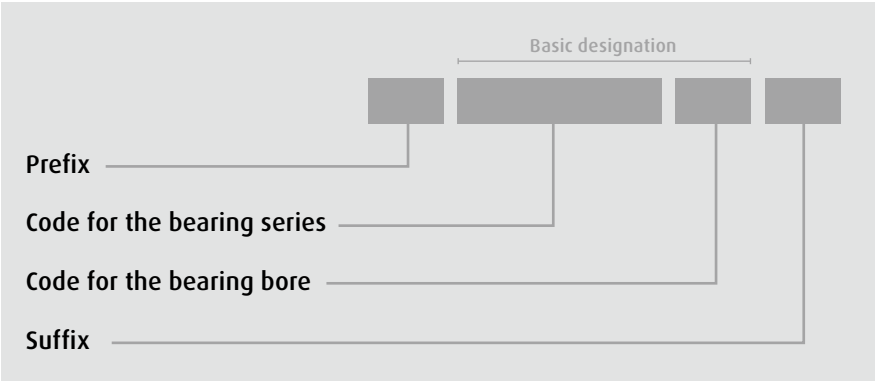
This brochure also uses . or .. in some designations. This indicates that the dot(s) can be replaced with different numbers or letters.

Table 4 (page 38) compares NSK's and RHP's supplementary designations with the codes used by a number of competitors. This table was prepared carefully based on the material available to us from the relevant competitors. However, we cannot guarantee that the information is correct.

Introduction

How the order codes for bearings are made up

The diagram below shows how the order codes are made up. There should be spaces separating the individual sections of an order code from one another.



Examples:

HR	313	09	J
F	60	8	MC3

Designation of tapered roller bearings as per ISO 355

Example

T	2	C	D	025

- Letter designating a tapered roller bearing
- Code for contact angle
- Letter designating the ratio between the outside diameter and the bore
- Letter designating the ratio between the width and the section height
- Bore size in mm

1 Basic designations

The basic designation consists of the code for the bearing series and the code for the bearing bore. The most important codes for metric bearing series are listed in table 1.1.

Table 1.1 – Basic designations at a glance

Metric bearing series	Basic designation
Deep-groove ball bearing	42, 43, 60, 62, 63, 64, 68, 69, 160, 161
Angular-contact ball bearing	32, 33, 52, 53, 70, 72, 73, 78, 79
Self-aligning ball bearing	12, 13, 22, 23, 112, 113, 115
Separable ball bearing	BO, E, L
Cylindrical roller bearing	N2, N3, N4, N22, N23
NJ2	NJ3, NJ4, NJ22, NJ23
NU2	NU3, NU4, NU22, NU23
NUP2	NUP3, NUP4, NUP22, NUP23
NF2	NF3, NF4
NN	NN30, NNU49
Tapered roller bearing	302, 303, 313, 320, 322, 323, 329, 330, 331, 332
Spherical roller bearing	213, 222, 223, 230, 231, 232, 239, 240, 241
Thrust ball bearing	511, 512, 513, 514, 522, 523, 524
Spherical roller thrust bearing	292, 293, 294

RHP still produces deep-groove ball bearings, separable ball bearings, angular-contact ball bearings, four-point contact bearings, thrust ball bearings, cylindrical roller bearings and self-aligning bearings in imperial dimensions (inches). Please refer to our catalogue for these bearing series' codes.

1 Basic designations

1.2 Code for the bearing bore

The code for the bearing bore indicates the bearing's bore size. A two-digit number is used for bore sizes from 20 mm to 480 mm. This number is multiplied by five to give the bore size.

For example, the code 6224 stands for a deep-groove ball bearing with a bore size of 120 mm. Diameters of 10, 12, 15 and 17 mm are an exception.

In these cases, 00 indicates a diameter of 10 mm, 01 stands for 12 mm, 02 means 15 mm and the code 03 corresponds to a diameter of 17 mm.

The diameter is stated in mm for bore sizes up to 9 mm and over 480 mm. However, a deep-groove ball bearing with the code 688 MC3 has a bore size of 8 mm and a spherical roller bearing designated as 230/560 CAM E4 has a bore size of 560 mm.

The bore size is separated from the bearing series code using a slash in the case of bearings with bore sizes that cannot be divided by five, e.g. 63/22.


JAPAN

1 Basic designations

1.3 Letters and their different meanings

Prefixes and suffixes can have different meanings depending on the bearing series in question.

Examples:

HR 33206 **J** Contact angle as per ISO
6204 ZZ C3E AS2S 5 **J** Individually wrapped and boxed

6304 C3 **E** Low noise bearing
NJ 204 **E** T Extra capacity cylindrical roller bearing

R NU 207 Cylindrical roller bearing with no inner ring
R 4 ZZ Miniature bearing with imperial dimensions

1.4 Use of codes on bearings and packaging

The full bearing code – including all prefixes and suffixes – always appears on the packaging. The bearing rings themselves usually only feature the basic designation and some supplementary designations, such as radial clearance and accuracy. Information about the cage is not normally provided on the rings.

Should a replacement bearing be needed, users have to check the bearing which has been removed to see what type of cage is required. The lubricant used in sealed deep-groove ball bearings, for example, cannot be indicated on the bearing itself due to the large number of different options available.

In most cases, the basic designation is stamped or lasered onto NSK and RHP bearings, while the supplementary designation is added using a laser etch. As well as the bearing code, the rings are marked with the NSK or RHP company name, the country of manufacture and internal production codes. However, these are not placed immediately next to the type code.

2 Prefixes

Prefixes are used comparatively rarely. They serve almost exclusively to indicate individual components of complete bearings or to designate miniature bearings. The codes are listed in **table 2**.

Table 2 – Prefixes at a glance

NSK	RHP	Definition
B		Bearing with special dimensions, example: **B** 15
	B	Housing insert with no eccentric ring, example: **B**1030-30DEC
F		Bearing with flanged outer ring, example: **F** 684 ZZ MC3 NS7L
HR		For tapered roller bearings and deep-groove ball bearings: higher load rating, example: **HR** 32210 J
	J	Lubrication hole on the same side as the mounting screws or eccentric collar lock, example: **J**1020-20G
MF		Miniature metric bearing with special dimensions and flanged outer ring
MR		Miniature metric bearing with special dimensions Example: **MR** 126 ZZ MC3 PS2S
R	**R**	Bearing outer ring with rollers and cage, no inner ring Example: **R** NU 207 For NU 207 cylindrical roller bearing: outer ring with roller crown and cage Instead of the prefix R, the following designation can also be used at NSK: (example) RUS . . . instead of RNU . . .
R		Miniature imperial bearing, example: **R** 4 Z MC3
-H-		Miniature bearing made from extra corrosion-resistant steel Example: 608 -**H**- 20 T1X ZZ NS7 S
	T	Mounted unit insert with triple lip seal Example: **T**1025-25G

3 Suffixes

A large number of suffixes are used to denote structural modifications. Specifically, the suffixes provide information about the:

- Gage Type
  - Internal design
  - Seal
  - Lubricant used
  - Tolerances
  - Internal clearance
  - External design

The suffixes are listed in **table 3** (page 20). **Table 4** (page 38) compares NSK's and RHP's most important suffixes with those used by two of their competitors.

3 Suffixes

Table 3.1 – Internal design

	Definition
A	These codes do not have set meanings when they are used directly after the basic designation. They are used when necessary to denote modifications to the bearing's internal design. Normally, they are only used for a limited amount of time to prevent confusion during a transitional period.
B	
C	
D	
E	
F	

However, in some cases they are used permanently to designate bearings of the same type and dimensions which have different internal designs.

NSK	RHP	Definition
A	**A**	Angular-contact ball bearing with 30° contact angle Example: 7014 **A** TR SUL P3
A5	**E**	Angular-contact ball bearing with 25° contact angle Example: 7014 **A5** TR SUL P3
B	**B**	Angular-contact ball bearing with 40° contact angle Example: 7310 **B** EAT85 SU CNB
C	**C**	Angular-contact ball bearing with 15° contact angle Example: 7910 **C** T SUL P4
EA		Spherical roller bearing with higher load rating and pressed steel cage Example: 22224**EA**E4
CAM		Spherical roller bearing with floating guide ring and one-piece solid brass cage Example: 23156 **CAM** E4

NSK	RHP	Definition
C/CD		Spherical roller bearing with floating guide ring and pressed steel cage Example: 23020 **CD** E4
E	**E**	Extra capacity design Example: NU 2212 **E** T C3
EA	**EJ**	Spherical roller bearing with extra capacity design and pressed steel cage Example: 22312 **EJ**
	FS	Mounted unit insert with flinger seal Example: 1035-35DECG**FS**
J		Tapered roller bearing with contact angle as per ISO Example: HR 32215 **J**
U22		Spherical roller bearing with superior-quality surface finish on the raceways and rolling elements
U32		Cylindrical roller bearing with NJ and NUP design and modified shoulder design
U34		Cylindrical roller bearing for vibrational stress
VS	**VB**	Spherical roller bearing for vibrating screens, internal clearance C3 Example: 22317 CAM-**VS**3

3 Suffixes

Table 3.2 – External dimensions, external design and materials

NSK	RHP	Definition
E2	**W33**	For double-row cylindrical roller bearings: oil groove and lubrication holes in the outer ring (dependent on bearing size: E, E1, E2, E3, E4) Example: NN 3017 MB KR **E2** CC1 P4 (This has now been replaced by E44 only)
E4	**W33**	For spherical roller bearings: oil groove and lubrication holes in the outer ring Example: 22230 CAM **E4**
g		Bearing made from case-hardening steel. If no digits are added, the rings and the set of rolling elements are made from case-hardening steel. Additional numbers indicate which parts: g2 Outer ring only g3 Inner ring only g4 Set of rolling elements only g5 Outer and inner ring g6 Outer ring and set of rolling elements g7 Inner ring and set of rolling elements Example: 22215CA**G**M (computer-generated documents use a capital G)
-H -(h)		Bearing made from corrosion-resistant steel Example: 625-**H**-T12ZZ1MC3

NSK	RHP	Definition
K30	**K30**	Bearing with tapered bore, taper 1:30 Example: 24030 CAM **K30** E4
KR		Bearing with tapered bore but with narrower tolerance range positioned towards lower limit of ISO range (mainly for precision bearings)
S		Surface protection, phosphatised Example: RS-5012D5E7NA **S5** C3
U		Thrust ball bearing with spherical housing washer and seat washer Example: 53210 **U**
X		Bearing whose external dimensions have been changed to comply with international standards Example: 51226 **X**
/..	**/..**	For bearings with a bore size that cannot be divided by five or is larger than 480 mm: bore size Example: 63/**22** or 230/**560**

3 Suffixes

Table 3.3 – Seal and snap ring groove

The following suffixes are only used in conjunction with ball bearings.

NSK	RHP	Definition
D	**RSR**	Bearing with seal on one side (only for bores < 10 mm on NSK bearings and bores < 20 mm on RHP bearings) Example: 608 **D** MC3 NS7L
DD	**-2RSR**	Bearing with seal on both sides (only for bores < 10 mm on NSK bearings and bores < 20 mm on RHP bearings) Example: 608 **DD** MC3 PS2S
DDU	**-2RS**	Bearing with seal on both sides, example: 6208 **DDU** CM AS2S
DU	**RS**	Bearing with seal on one side, example: 6208 **DU** C3E
DUN	**RSN**	Bearing with seal on one side and snap ring groove on the opposite side Example: 6207 **DUN**
DUNR	**RSNR**	Bearing with seal on one side and snap ring groove with snap ring on the opposite side, example: 6310 **DUNR** C3 AV2S
N	**N**	Bearing with snap ring groove in the outer ring, example: 6208 **N**
NDU		Bearing with seal on one side and snap ring groove on the same side Example: 6204 **NDU**
NR	**NR**	Bearing with snap ring groove in the outer ring and snap ring Example: 6208 **NR**
NRDU		Bearing with seal on one side and snap ring groove with snap ring on the same side Example: 6205 **NRDU**
NRZ		Bearing with shield on one side and snap ring groove with snap ring on the same side, example: 6208 **NRZ**
NZ	**RSZN** **ZNB**	Bearing with shield on one side and snap ring groove on the same side Example: 6208 **NZ**

NSK	RHP	Definition
RSR		For double-row angular-contact ball bearings: bearing with contact seal and no groove in the inner ring Example: 3302 B-**RSR** TNG
V		Bearing with non-contact seals on one side, example: 6208 **V**
VV		Bearing with non-contact seals on both sides, example: 6208 **VV** CM NS7S
Z	**Z**	Bearing with shield on one side, example: 6208 **Z**
ZN	**ZN**	Bearing with shield on one side and snap ring groove on the opposite side Example: 6206 **ZN**
ZNR	**ZNR**	Bearing with shield on one side and snap ring groove with snap ring on the opposite side, example: 6202 **ZNR**
ZR	**ZR**	For double-row angular-contact ball bearings: bearing with shield and no groove in the inner ring Example: 3205 B **ZR** TNG
ZS		Bearing with removable shield on one side, example: 6326 **ZS**
ZZ	**-2Z**	Bearing with shields on both sides, example: 6208 ZZ C3E BQHS
ZZS		Bearing with removable shields on both sides Example: 6326**ZZS** C3 AS2S
2RS		Self-aligning ball bearing with contact seals on both sides (only for bearings in the 22.. and 23.. series), example: 2208-**2RS** TNG AR3N
2RSR		Bearing with contact seals on both sides in the case of double-row angular-contact ball bearings with no groove in the inner ring, example: 3207B-**2RSR** TNG YRLN
2ZR		Bearing with shields on both sides in the case of double-row angular-contact ball bearings with no groove in the inner ring Example: 3211 B-**2ZR** TNG AR3N The codes for seals may also include numbers for special materials; 8 = acrylate Example: 6205 DDU**8** C3E ENSS Combinations of Z, V and DU may also be used Example: 6006 **VDU**

3 Suffixes

Table 3.4 – Cage type

The supplementary designation for the cage type is usually added on the end of the basic designation if the bearing does not feature the cage used as standard for the respective kind of bearing.

NSK	RHP	Definition
	J	Pressed steel cage Example: 2206 E**J** W33
M	**MA**	Solid brass cage guided by the outer ring Example: 6318 **M**
MA1		Solid brass window-type cage Example: NJ 326 **MA1**
	MB	Solid brass cage guided by the inner ring Example: 22319 **MB** W33 +11
MBR		Solid brass cage guided by the rolling elements, riveted Example: NJ 312 **MBR**
MR		Solid brass cage guided by the rolling elements Example: NU 232 **MR**
T..		Polymer cage, standard material. Polyamide 66 polymeric cage reinforced with glass fibre designs and materials designated by numbers and letters. Example: NU 208E **T**; 6001 **T1X**
T		Inner ring guided laminated phenolic resin cage for precision deep groove ball bearing. Example 6205 **T**
T1X		Inner ring guided laminated phenolic resin cage for precison deep groove ball bearing. Example 6205 **T1X**
TR		Outer ring guided laminated phenolic resin cage for precision angular contact bearings. Example 80BNR 10 ST SULP4 Precision Robust series. Example 7013 C TR DBLP4 Precision Standard series
TR	**TR**	Laminated phenolic resin for spindle bearings Example: 7910 A5 **T** SUL P4
T85		Polyamide 46 cage reinforced with glass fibre Example: 7208B EA **T85** SU CNB

NSK	RHP	Definition
TNG	**TN**	Snap cage made from glass fibre reinforced polyamide 66 Example: 2204 E **TNG**
TY		Polymer cage made from polyamide 66 glass fibre reinforcement for spindle bearings. This generally superseded by **TYN**
TYN		Polymer cage made from polyamide 4.6 with glass fibre reinforcement for spindle bearings Example: 7010 C **TYN** SUL P3
V	**V**	Full complement ball bearing, or roller bearing Example: NCF 3022 **V**
W	**J**	For cylindrical roller bearings and angular-contact ball bearings: pressed steel cage Example: NU204 **W**, 7206B **W** G
Y	**Y**	Pressed brass cage Example: 6006 **Y**

Table 3.4.1 – bearing design and cage type for spherical roller bearings

NSK	RHP	Definition
C/CD		Floating guide ring, pressed steel cage
CAM		Floating guide ring, solid brass cage
	EJ	Extra capacity design with pressed steel cage
	EVB	Extra capacity design with solid brass cage

3 Suffixes

Table 3.5 – Matched bearings

A letter (L, M or H) is added to the codes marked with * to indicate the preload class. The same principle applies to SUL, SUM and SUH. For details of the special characters for internal clearance and preload, refer to 3.6 'Internal clearance'.

NSK	RHP	Definition	Arrangement
BG **BWG**	**BETNU**	Angular-contact ball bearing with 40° contact angle for installation as a pair in a face-to-face, back-to-back or tandem configuration. Axial clearance in the case of face-to-face or back-to-back arrangements (W: see 3.4 'Cage type'), example: 7210 **BG**, 7206 **BWG**	
DB*	**DB***	Pair of bearings in a back-to-back configuration, example: 7210C TYN **DB** L P4	⌀⍁
DBB*	**QB***	Quadruplex set of bearings in a back-to-back configuration Example: 7214 A5 TYN **DBBL** P4 +KL14	⌀⌀⍁⍁
DBD*	**2TB***	Triplex set of bearings in a combined tandem/back-to-back configuration Example: 7012 A5 **DBD**M P4 +KL12	⌀⌀⍁
DBT*	**3TB***	Quadruplex set of bearings in a combined tandem/back-to-back configuration Example: 7210 A5 TYN **DB**TM P4 +KLB	⌀⌀⍁⍁
DF*	**DF***	Pair of bearings in a face-to-face configuration, example: HR 31309 J **DF** +KR CA72	⍁⌀
DFD*	**2TF***	Triplex set of bearings in a combined tandem/face-to-face configuration Example: 7310 B A5 **DFD** CA13	⌀⍁⍁
DFF*	**QF***	Quadruplex set of bearings in a face-to-face configuration Example: 7916 C TYN **DFF**LP4 +KL18	⌀⌀⍁⍁
DFT*	**3TF**	Quadruplex set of bearings in a combined tandem/face-to-face configuration Example: 7014 C TYN **DFT** LP4 +KL12	⍁⌀⌀⌀
DR	**D**	Two bearings matched for even absorption of radial loads, example: NU 208 EM C3 **DR**	
DT	**DT**	Pair of bearings in a tandem configuration, example: 7210 A TYN **DT** P2	⍁⍁
DTD	**3T**	Triplex set of bearings in a tandem configuration, example: 7008 C TYN **DTD** P4	⌀⌀⌀
DTT	**4T**	Quadruplex set of bearings in a tandem configuration, example: 7013 A5 TYN **DTT** P4	⌀⌀⌀⌀

NSK	RHP	Definition
DUD	**3U**	Set of spindle bearings consisting of 3 universal bearings
QU	**4U**	Set of spindle bearings consisting of 4 universal bearings
DUH	**DUH**	Pair of spindle bearings for installation in any face-to-face, back-to-back or tandem configuration. Heavy preload in the case of face-to-face and back-to-back arrangements, example: 7214 CTYN **DUH** P4
DUL	**DUL**	Pair of spindle bearings for installation in any face-to-face, back-to-back or tandem configuration. Light preload in the case of face-to-face and back-to-back arrangements, example: 7905 A5 TYN **DUL** P4
DUM	**DUM**	Pair of spindle bearings for installation in any face-to-face, back-to-back or tandem configuration. Medium preload in the case of face-to-face and back-to-back arrangements, example: 7212 A5 TYN **DUM** P4
SUH	**SUH**	Universal spindle bearing for multiplex bearing sets with any number of bearings. Heavy preload in the case of face-to-face and back-to-back arrangements, example: 7214 A5 TYN **SUH** P4
SUL	**SUL**	Universal spindle bearing for multiplex bearing sets with any number of bearings. Light preload in the case of face-to-face and back-to-back arrangements, example: 7908 A5 TR **SUL** P4
SUM	**SUM**	Universal spindle bearing for multiplex bearing sets with any number of bearings. Medium preload in the case of face-to-face and back-to-back arrangements, example: 7004 C TR **SUM** P4
+KL(R)..		Set of bearings with annular spacers between the outer and inner rings. The subsequent number indicates the width of the rings, example: 7918 A TYN DBD P4 + **KL10**
+KR		HR31316DB + **KLR**10 Set of bearings with annular spacer between the outer rings Example: HR31309 JDF + **KR** CA90

3 Suffixes

Table 3.6 – Internal clearance

C0 (or CN) denotes normal internal clearance and is not marked on the bearings themselves or on the packaging.

NSK	RHP	Definition
C1		Internal clearance less than C2 Example: NNU 4924 MB KR E44 C**C1** P4
C2	**C2**	Internal clearance less than normal Example: 6308 **C2**
C3	**C3**	Internal clearance greater than normal Example: 22212 CAM **C3**
C4	**C4**	Internal clearance greater than C3 Example: 22232 CAM **C4**
C5	**C5**	Internal clearance greater than C4 Example: NU 2228 EM **C5**
CA..	**A..**	Special axial clearance; the figures indicate the mean value of the clearance class in µm Example: HR 31307J DF +KR **CA73**
CC.		Radial clearance for cylindrical roller bearings with non-interchangeable bearing components. The subsequent number indicates the clearance class (no number for normal clearance), example: NU 210E T7 **CC**3
CE		Radial clearance in the middle of the 'normal' class, low noise Example: 6007 **CE**

NSK	RHP	Definition
CG..	**R..**	Special radial clearance; the figures indicate the mean value of the clearance class in µm Example: 6203 T1X DDU **CG**14E
CM		Radial clearance for deep-groove ball bearings with reduced radial clearance range within the 'normal' clearance class, low noise Example: 6212 **CM**
		Radial clearance for cylindrical roller bearings with reduced radial clearance range within the 'normal' clearance class, non interchangeable rings Example: NU 214 **CM**
CP..	**G..**	Pair of bearings with special preload; the figures indicate the mean value of the preload in µm Example: 7212 B W DB **CP5**
CT		Radial clearance for cylindrical roller bearings with reduced radial clearance range within the 'normal' clearance class, low noise, interchangeable rings, example: NU 208 ET7 **CT**

3 Suffixes

Table 3.7 – Internal clearance for deep-groove ball bearings with a bore size of less than 10 mm (miniature bearings)

NSK	RHP	Definition
MC1		Radial clearance less than MC2 Example: 624 **MC1**
MC2		Radial clearance less than MC3 Example: 623 **MC2**
MC3		Radial clearance corresponds to a reduced normal clearance tolerance as per ISO5753 Example: 686 **MC3**
MC4		Radial clearance greater than MC3 Example: 625 DD **MC4** E PS2S 6
MC5		Radial clearance greater than MC4 Example: 606 ZZ **MC5** E NS7LK
MC6		Radial clearance greater than MC5 Example: 626 T1X DD **MC6** E NS7S J

Contrary to the radial clearance stipulations of ISO 5753 (see 4 'Suffixes: a comparison between NSK/RHP and two competitors' codes'), NSK produces deep-groove ball bearings with a bore size of less than 10 mm to smaller tolerance ranges than those defined in the above-mentioned standard. MC3 radial clearance corresponds to reduced normal clearance as per ISO 5753. The radial clearance class of NSK miniature bearings is always indicated.

Table 3.8 – Noise-tested bearings

NSK	RHP	Definition
CM		Low noise specification for deep-groove ball bearings and cylindrical roller bearings including reduced radial clearance tolerance; non-interchangeable rings in the case of cylindrical roller bearings Example: 6214 **CM**
CT		Low noise specification for cylindrical roller bearings including reduced radial clearance tolerance; interchangeable rings Example: NU 312 E T **CT**
E		Low noise bearing (used straight after the radial clearance code) Example: 6303 C3 E, 608 MC2 **E**
ER		Low noise bearing; tougher requirements than E, CM and CT Example: 625 ZZ1 CM3 **ER** P5 PS2L
EF		Low noise bearing; even tougher requirements than ER Example: 624 ZZ1 MC3 **EF** P4 NS7L

3 Suffixes

Table 3.9 – Dimensional, geometrical and running accuracy

Normal tolerance (P0) is not marked on the bearing or on the packaging.

NSK	RHP	Definition
P2	**P2**	P2 tolerance class as per ISO 492 Example: 7002 C TR SUL **P2**
P2A	**0**	P2A Special tolerance for Precision Angular contact thrust bearings - P2 tolerance except outside diameter
	P3	External tolerance as per P4 tolerance class, running accuracy as per P2 tolerance class Example: 7000 C TR SUL **P3**
P4	**P4**	P4 tolerance class as per ISO 492 Example: 7209 A5 TR SUL **P4**
P4A	**P4A**	P4A Special tolerance for Precision Angular contact thrust bearings - P4 tolerance expect outside diameter. Both used in combination with CRB's SU also have speed width dimensions
P5	**P5**	P5 tolerance class as per ISO 492 Example: 7206 B **P5**
P6	**P6**	P6 tolerance class as per ISO 492 Example: 6205 **P6**
PA5	**P5**	Tolerance class as per ABEC 5 Example: 7010 C TR DBL **PA5**
PA7	**P4**	Tolerance class as per ABEC 7 Example: 7213 A5 TR **PA7**
PA9	**P2**	Tolerance class as per ABEC 9 Example: 7211 C TR **PA9**
PN7A	**P4**	Accuracy class as per NSK factory standard Example: 30TAC62BDBC10**PN7**A AS2S 5
PN7B	**PN7B**	PN7B Special accuracy, bore and outside diameter exclusive to NSK for SU arrangements only

Table 3.10 – Heat treatment

Normal heat stabilisation for operating temperatures of up to 120°C is not marked on the bearing or the packaging.

NSK	RHP	Definition
S11	**S1**	Thermally stabilised for operating temperatures up to 200°C Only used for spherical roller bearings Example: 23036 CAM E4 C3 **S11**
X26	**S0**	Thermally stabilised for operating temperatures up to 150°C Example: 6304 C4 **X26**
X28	**S1**	Thermally stabilised for operating temperatures up to 200°C Example: NU 210 C3 **X28**
X29	**S2**	Thermally stabilised for operating temperatures up to 250°C Example: NU 2236 M C4 **X29**

3 Suffixes

Table 3.11 – Lubricants

Deep-groove ball bearings with seals or shields on both sides are supplied with a grease charge. The type and amount of grease varies depending on the operating conditions and bearing series.

Table 3.11.1 – Common bearing greases

NSK code	Lubricant name
A22	SHELL Aeroshell 22
A72	KLÜBER Asonic GHY72
AS2	SHELL Alvania S2
ASM	KLÜBER Asonic GLY32
BQH	KLÜBER Klueberquiet BQH72-102
D8S	KLÜBER Isoflex Super LS18
EA3	NSK Grease EA3
EA5	NSK Grease EA5
EA6	NSK Grease EA6
EA7	NSK Grease EA7
EEM	EXXON-MOBIL Polyrex EM
ENS	NSK Grease ENS
NS7	KYODO YUSHI Multemp SRL
NSC	NSK Grease NSC
PS2	KYODO YUSHI Multemp PS2
ST3	RHENUS Norlith STM3
TML	LUBCON Thermoplex 2TML
TN5	KLÜBER Isofelx Topas NB52

Table 3.11.2 – Amount of grease

The details provided here are mean values, which depend on the size and structure of the bearing (open, sealed on one side or sealed on both sides). The amount of grease used depends on the specific operating conditions. The codes for the type and amount of grease are written together at the end of the bearing designation.

Example: 6203 DDU C3E **AS2S**

NSK code	Filling amount (range in % of the bearing free space)
K	Approx. 20%
L	Approx. 20% to 30%
S	Approx. 30% to 55% (standard NSK filling)
M	Approx. 55% to 70%
F	Approx. 85% to 90%

4 Suffixes: Comparsion of codes

Table 4

NSK	RHP	Explanation	Example	SKF*	FAG*
A	**A**	Angular-contact ball bearing with contact angle of 30°	7014 A	A	
	A	Mounted unit insert fitted with set screw lock insert with flush inner ring on one side	SL 40 A		
A5	**E**	Angular-contact ball bearing with contact angle of 25°	7208 A5	ACD	E
B	**B**	Angular-contact ball bearing with contact angle of 40°	7210 B	B	B
B		Bearing with special dimensions	B 15		
B	**B**	Double-row angular-contact ball bearing with contact angle of 25°	3208 B	B	B
BG BWG	**BETNU**	Universal angular-contact ball bearing, contact angle 40°	7210 BG	BG, B(E)C	BUA
C	**C**	Angular-contact ball bearing with contact angle of 15°	7010 C	CD	C
C, CD		Spherical roller bearing with floating guide ring and pressed steel cage	22218 CD	C, CC, EC	
C0	**CN**	Normal radial clearance, not marked			CN (C0)
C1	**C1**	Radial clearance less than C2	6205 C1	C1	C1
C2	**C2**	Radial clearance less than normal	6310 C2	C2	C2
C3	**C3**	Radial clearance greater than normal	NU 312 C3	C3	C3
C4	**C4**	Radial clearance greater than C3	2214 C4	C4	C4
C5	**C5**	Radial clearance greater than C4	23156M C5	C5	C5
	CA	Normal radial clearance for roller bearings with interchangeable rings marked 'CA'	NU210 JCA		
CA..	**A..**	Special axial clearance; axial clearance is stated in µm	HR30311DJDF +KCRCA140	C..	A.., VA..
CC		Normal radial clearance, non-interchangeable rings	NN3018 CC		CNA

* No liability assumed

NSK	RHP	Explanation	Example	SKF*	FAG*
CC.		Non-interchangeable rings; radial clearance class C (see C1 to C5)	N2215 CC1		C.NA
CCG..		Special radial clearance, non-interchangeable bearing rings	NU212 M CCG52 E		
CE		Radial clearance 'normal' class, low noise	6007 CE	CNM, QE6	
CG..	**R..**	Special radial clearance	6210 CG50	C..	R..
CP..	**G..**	Special axial preload; the subsequent number is the mean axial clearance in µm	7210 CP5		
CX..		Spherical roller bearing with modified cage design (e.g. fewer rollers per row)	24122 CX G5..		
CM		Deep-groove ball bearing or cylindrical roller bearing for electric motors with reduced radial clearance and low noise	6004 CM	QE6	
D	**RSR**	Deep-groove ball bearing with d < 10 mm and contact seal on one side	608 D	RS1	RSR
DB*	**DB***	Pair of bearings in a back-to-back arrangement	7305 B DB	DB	DB
DD	**-2RSR**	Deep-groove ball bearing with d < 10 mm and contact seal on both sides	626 DD	2RS1	2RSR
	DEC	Mounted unit insert with eccentric locking collar, inner ring extended on both sides	1135-35DEC	A	
DF*	**DF***	Pair of bearings in a face-to-face configuration	31310 J DF	DF	DF
DT	**DT**	Pair of bearings in a tandem configuration	7224B DT	DT	DT
DR		Two matched bearings for even absorption of radial loads	NU312 DR	DR	K12
DU	**RS**	Deep-groove ball bearing with contact seal on one side	6010 DU	RS1	RSR

4 Suffixes: Comparsion of codes

NSK	RHP	Explanation	Example	SKF*	FAG*
DU	**DU**	Two universal angular-contact ball bearings as a set			
DUN	**RSN**	Deep-groove ball bearing with snap ring groove on one side and contact seal on the opposite side	6209 DUN	RSN	RSRN
DUNR	**RSNR**	Like DUN but with additional snap ring	6008 DUNR	RSNR	RSRNR
E	**E**	Extra capaciity design	NU213 E	E	E
E		Low noise bearing (used straight after the radial clearance code)	6000 C3E	QE6	
E4	**W33**	Spherical roller bearing with oil groove and lubrication holes	22214EA E4	W33	S
	EC	Mounted unit insert with eccentric locking collar, inner ring widened on one side	1345-45EC		
	EJ	Spherical roller bearing with extra capacity design and pressed steel cage	22308 EJ	EC, E	HL
	EP1	Imperial bearing as per ABEC1 tolerances	XLJ1½ EP1		
	EVM	Bearing with higher load rating and solid brass cage, guided by the rolling elements in the case of cylindrical roller bearings	NU208 EVM	ECM	E.M1 (M2)
	FS	For mounted units: bearing unit with two flinger seals	SL50 FS	2F	
g		Bearing made from case-hardened steel	HR31310J g	HA..	Z16
G	**U**	Universal angular-contact ball bearing for use in face-to-face, back-to-back or tandem configurations	7311 BG	G	U

* No liability assumed

NSK	RHP	Example	Example	SKF*	FAG*
	G	Mounted unit insert with relubrication facility	1240-40 G		
-H-(h)		Bearing made from corrosion-resistant steel	6003 -H-	W	Z15 Z20
H	**H**	Pair of angular-contact ball bearings with heavy preload; code always used after the suffix for the pair	7008 CTR DUH	C	H
J		For tapered roller bearings only: contact angle as per ISO	HR30312J		
K	**K**	Tapered bore (taper 1:12)	1205 K	K	K
K30	**K30**	Tapered bore (taper 1:30)	24136M K30	K30	K30
L	**L**	Pair of angular-contact ball bearings with light axial preload; code always used after the suffix for the pair	7206 CTR DUL	A	L
	LOC	Bearing with reduced outside diameter	QJ 214 LOC MB		
M	**M**	Pair of angular-contact ball bearings with medium axial preload; code always used after the suffix for the pair	7206 CTR DUM	B	M
M	**MA, MB**	Solid brass cage, rib-guided	NU212 M	MA (MB)	MA (MB)
MA1	**MA**	Solid brass window-type cage	NU226 MA1	MP	MP
MB	**MA**	Solid brass cage, outer ring rib-guided	NU232 MB	MA6	M1A
	MB	Solid brass cage, guided by the inner ring	22209 MB	MB	MB

4 Suffixes: Comparsion of codes

NSK	RHP	Example	Example	SKF*	FAG*
MBR		Solid brass cage, guided by the rolling elements	NJ326 MBR	M6	M1
MC2		Radial clearance less than MC3 (miniature bearings only)	608DDMC2E		
MC3		Radial clearance corresponds to reduced normal clearance tolerance as per ISO 5753 (miniature bearings only)	626 MC3 E		
MC4		Radial clearance greater than MC3 (miniature bearings only)	625ZZMC4E	CNH	
MC5		Radial clearance greater than MC4 (miniature bearings only)	607MC5E		
MC6		Radial clearance greater than MC5 (miniature bearings only)	625MC6E		
MR	**M**	Solid brass cage, guided by the rolling elements	6236 MR	M	M
N	**N**	Bearing with snap ring groove in the outer ring of the bearing	6210 N	N	N
NDU	**RSNB**	Deep-groove ball bearing with contact seal on one side and snap ring groove on the same side	6206 NDU	RS1NB	RSRNB
NR	**NR**	Deep-groove ball bearing with snap ring groove and snap ring	NU210 NR	NR	NR
NRDU	**RSNBR**	Like NDU but with snap ring	6307 NRDU	RS1NMR	RSRNBR
NRZ	**ZNBR**	Deep-groove ball bearing with shield on one side and snap ring groove with snap ring on the same side	6210 NRZ	ZNBR	ZRNBR
NZ	**RSZN ZNB**	Like NRZ but without snap ring	6212 NZ	ZNB	ZRNB

* No liability assumed

NSK	RHP	Explanation	Example	SKF*	FAG*
P2	**P2**	Accuracy higher than P4	NN3026 P2	P2	P2
P4	**P4**	Accuracy higher than P5	6010 P4	P4	P4
P5	**P5**	Accuracy higher than P6	NU210 P5	P5	P5
P6	**P6**	Accuracy higher than normal	NJ204 P6	P6	P6
P6C3		Accuracy P6, radial clearance C3	6209 P6C3	P63	P63
PA5	**P5**	Accuracy as per AFBMA 5	7010C PA5	PA5	T5
PA7	**P4**	Accuracy as per AFBMA 7	7913C PA7	PA7	T7
PA9	**P2**	Accuracy as per AFBMA 9	7218C PA9	PA9	T9
PN7	**P3**	Accuracy class for 'TAC' bearings as per NSK standard	30TAC62ADBC10 PN7A	P4A	P4S
	Q..	Special feature: .. denotes the specification number			
RSR	**RSR**	Bearing with contact seal, no groove in the inner ring	3302B-RSR-TNG	-LS	RSR
S		Surface protection – either phosphatised or coated with MoS_2	H2315X S	W11	
	S	Paired angular-contact ball bearings with standard axial clearance; code always used after the suffix for the pair	7206 DUS	CB	UA
S11	**S1**	Spherical roller bearings for operating temperatures up to 200°C	23126M S11		
SUH	**SUH**	Universal precision bearing, heavy preload	7918CT RSUH	GC	US
SUL	**SUL**	Universal precision bearing, light preload	7032CT RSUL	GA	UL
SUM	**SUM**	Universal precision bearing, medium preload	7236CT RSUM	GB	UM

4 Suffixes: Comparsion of codes

NSK	RHP	Explanation	Example	SKF*	FAG*
T..	**T..**	Polymer cage (additional supplementary designations may be used; see e.g. TY)	NU2208ET	T..	T..
	TB	Laminated Phenolic resin cage, guided by the inner ring	7208 BETB		TB
	TN	Polyamide cage, guided by the rolling elements	7208 BETN	P	TVP
TNG	**TNH**	Polyamide cage, guided by the rolling elements	2209E.TNG	TH	TVH
TY	**TNB**	Polyamide cage, guided by the inner ring	7207C TYNB SUL P4	TB	
U		Deep-groove ball bearing with sealing grooves	6206 UC3E		
U		Thrust ball bearing with spherical housing washer and seat washer	51106 U	U	U
V		Non-contact seal on one side	6908 V	RZ	RSD
V	**V**	Full complement roller bearing	NCF 3022 V	V	V
VS	**EVB**	Spherical roller bearing, vibrating screen design	22320 M E4 C4 VS	A15, VA405	T41A
VV		Non-contact seals on both sides	6006 VV	2RZ	2RSD
W	**J**	Pressed steel cage, one-piece	NJ 204 W	J	J
X		For thrust ball bearings: the outside diameter of the shaft washer is smaller than that of the housing washer	51417X		
X		External dimensions in line with ISO	HR32010 XJ	X	X
	X	Angular-contact ball bearing for installation as a pair, without clearance	7205BETNUX	A	0

* No liability assumed

NSK	RHP	Explanation	Example	SKF*	FAG*
X26	**S0**	Heat treatment for use at temperatures up to 150°C	6010C4 X26	S0	S0
X28	**S1**	Heat treatment for use at temperatures up to 200°C	N222C5 X28	S1	S1
X29	**S2**	Heat treatment for use at temperatures up to 250°C	N336C5 X29	S2	S2
Z	**Z**	Deep-groove ball bearing with single shield	6002 Z	Z	ZR
ZDU	**RSZ**	Bearing with sealing and shield	6211 ZDU	RS1Z	RSR.ZR
ZN	**ZN**	Deep-groove ball bearing with shield and snap ring groove on the opposite side to the shield	6309 ZN	ZN	ZRN
ZNR	**ZNR**	As ZN but with snap rings	6212 ZNR	ZNR	ZRNR
ZR	**ZR**	Bearing with shield, no groove in the inner ring	6204 ZR	Z	ZR
ZS		Removable shield on one side			
ZZ	**-2Z**	Deep-groove ball bearing with shields on both sides	6207 ZZ	2Z	2ZR
ZZS		Deep-groove ball bearing with removable shields on both sides			
2RSR		Bearing with two contact seals, no groove in the inner ring	3207B-2RSR-TNG	2LS	2RSR
2ZR	**-2ZR**	Bearing with two shields, no groove in the inner ring	3308B -2ZR	2Z	2ZR

All of the supplementary designations used by NSK and RHP which are listed in this table are explained in greater detail in **tables 2** (page 17) **and 3** (page 22).

Notes

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