Holcim

Strength. Performance. Passion.

Materials under scope of Naming convention

Bearings

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Version	Description / Changes	Person	Date
Ver 2.2a	First official version	Javier Conde / Htl	22.09.2014

1. Bearing

There is an important list of Bearings maintained at EMEA centralized level. In the PCS family of bearings, 12 PCS are considered in Virtual Warehouse.

A material can be defined either in the virtual warehouse or in the normal stock. The difference between both of them lies in the mandatory and optional characteristics. Mandatory characteristics have to be completed in any case independent where they are stored.

2. Key characteristics to consider a Bearing part of the VW

Initially the main criteria to select the bearings to be include in VW were the price and the inner diameter. A threshold of 200€ and an inner diameter of 150mm were chosen for first selection. In standard coding of a bearing the inner diameter can be derived by the bore reference, that is why bore reference was taken as characteristic for the size.

So basically, the key characteristic to include a Bearing inside VW is:

Bore ref
ZNC_BEARING_DIAMETER
≥ 30

In the manual a proper explanation for the bore reference, and the different cases will be presented.

The distribution of mandatory and optional characteristics between virtual and standard warehouse is as follows: (M = mandatory; O = optional)

030201_vw

Characteristic Name	Commodity	Bearing Series code	Bore ref	Extention	Clearance	DIN/ISO code	Type	Warehouse Type
Characteristic Technical Name	ZNC_COMMODITY	ZNC_BEARING_CODE	ZNC_BEARING_DIAMETER	ZNC_BEARING_CODE_EXTENSION	ZNC_CLEARANCE	ZNC_DIN_ISO_CODE	ZNC_TYPE	ZNC_WAREHOUSE
030201	M	M	M	M	O	O	O	M
030201_vw	M	M	M	M	M	O	O	M
Data type	Char	Char	Char	Char	Char	Char	Char	Char
Number of Charts	7	15	4	20	2	30	30	2
Decimal places	0	0	0	0	0	0	0	0
Unit								

As for example in VW the “Clearance” was defined as a mandatory field, while in the normal warehouse it is optional.

3. PCS maintained at EMEA centralized level

The 12 different PCS maintained at EMEA centralized level, correspond to different type of bearings, below you can find a table with the equivalence between PCS – and bearing type with the abbreviation:

PCS	Type	Abbrev
030201	Angular contact ball	ACBB
030202	Barrel roller	BRB
030203	Cylindrical roller	CRB
030204	Deep Grove ball	DGBB
030205	Four point ball	FPBB
030206	Magneto Type	MB
030207	Needle roller	NRB
030208	Self-Aligning ball	SABB
030209	Spherical roller	SRB
030210	Tapered roller	TRB
030211	Thrust ball	TBB
030212	Y-Type	YTB

4. Characteristics of the Bearings

The bearings of all the different categories are defined by a group of characteristics, independently which PCS they have. The characteristics contain different predefined values, but the type of characteristics is the same for all the objects.

During the Naming Convention Project, seven characteristics have been defined which determinate a bearing:

- Commodity
- Bearing Series Code
- Bore reference
- Extention
- Clearance
- DIN/ISO Code
- Type

In order to maintain a comprehensive naming convention, normally the SKF denomination is used. It does not imply to use only SKF but it leads to a unique denomination. This solution has been chosen to avoid to have the same bearing with different naming conventions depending on the supplier. With mapping tables, available from all suppliers, it is possible to derive the bearing code of an alternative supplier.

Using a standard bearing catalog from a supplier it is possible to assign the correct values to the different characteristics.

- **Basic designation of a bearing**

A basic designation typically contains three to five digits. Some products, like cylindrical roller bearings, can have a combination of alphanumeric characters. The number and letter combinations have the following meaning:

The first digit or letter or combination of letters identifies the bearing type and eventually a basic variant.

The following two digits identify the ISO dimension series. The first digit indicates the width or height series (dimensions B, T or H). The second digit identifies the diameter series (dimension D).

The last two digits of the basic designation identify the size code of the bearing bore. The size code multiplied by 5 gives the bore diameter (d) in mm.

The most important exceptions in the basic bearing designation system are:

In a few cases the digit for the bearing type or the first digit of the dimension series identification is omitted. These digits are shown in brackets in table 1.

Bearings with a bore diameter of 10, 12, 15 or 17 mm have the following size code identifications:
00 = 10 mm
01 = 12 mm
02 = 15 mm
03 = 17 mm

For bearings with a bore diameter < 10 mm, or ≥ 500 mm, the bore diameter is generally given in millimetres (uncoded). The size identification is separated from the rest of the bearing designation by an oblique stroke, e.g. 618/8 (d = 8 mm) or 511/530 (d = 530 mm). This is also true of standard bearings in accordance with ISO 15:2011 that have a bore diameter of 22, 28 or 32 mm, e.g. 62/22 (d = 22 mm).

For some bearings with a bore diameter < 10 mm, such as deep groove, self-aligning and angular contact ball bearings, the bore diameter is also given in millimetres (uncoded) but is not separated from the series designation by an oblique stroke, e.g. 629 or 129 (d = 9 mm).

Bore diameters that deviate from the standard bore diameter of a bearing are uncoded and given in millimetres up to three decimal places. This bore diameter identification is part of the basic designation and is separated from the basic designation by an oblique stroke, e.g. 6202/15.875 (d = 15,875 mm = 5/8 in).

Characteristics used in naming convention:

- **Commodity – Fixed Value**

The commodity is a fixed value and in this case is “BEARING”.

- **Bearing Series Code – Mandatory**

The bearing series code is a combination of two parameters, “Type Code” and “Series”.

The bearing code includes a lot of information regarding the construction. A typical bearing code is 6203ZZ. This code can be divided into its components:

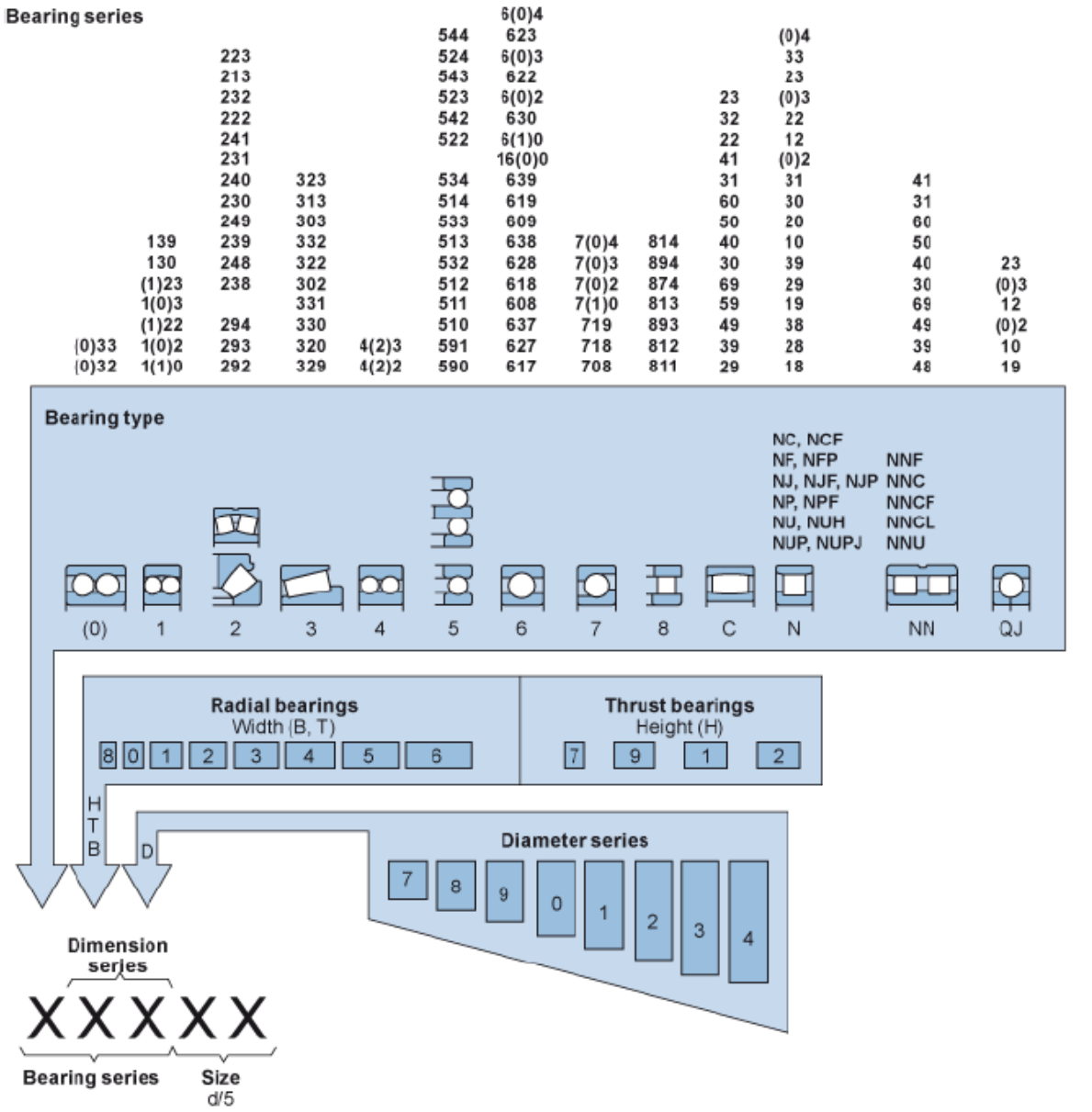
6203ZZ

Which means:

- Type code
- Series
- Bore
- Suffix

The first number, indicates the *“**Type Code**”*. Despite each manufacturer uses their own numbers, there are a few that could be considered standard in the industry. Once the Type is identified, it is possible to look for the corresponding PCS:

As mentioned before as basis for naming convention the standard SKF denomination was taken:



Code	Bearing type	Code	Bearing type	Code	Bearing type
0	Double row angular contact ball bearing	7	Single row angular contact ball bearing	QJ	Four-point contact ball bearing
1	Self-aligning ball bearing	8	Cylindrical roller thrust bearing	T	Tapered roller bearing in accordance with ISO 355
2	Spherical roller bearing, spherical roller thrust bearing	C	CARB toroidal roller bearing		
3	Tapered roller bearing	N	Cylindrical roller bearing. Two or more letters are used to identify the number of the rows or the configuration of the flanges, e.g. NJ, NU, NUP, NN, NNU, NNCF etc.		
4	Double row deep groove ball bearing				
5	Thrust ball bearing				
6	Single row deep groove ball bearing				

For the creation of PCS family this code was used, as for example:

- **1** : Self-Aligning Ball Bearing (**SABB**) > PCS: **030208**
- **2** : Spherical Roller Bearing (**SRB)** > PCS: **030209**
- **5** : Thrust Ball Bearing (**TBB**) > PCS: **030211**

and others

The *Bearing Series* is derived from the first letters as shown in the above figure.

In the standard naming convention for bearings this code was as well used for virtual warehouse:

Codes for most important Bearing series	**Bearing Series code**
Deep groove ball	160, 618, 619, 60, 62, 622, 63, 623, 64
Angular contact ball	72B, 73B, B719, B70, B72, 32B, 33DA
Four point ball	QJ2, QJ3
Self-Aligning ball	12, 13, 22, 23, 112, 113, 115, 116
Cylindrical roller	N2, N3, N4, NJ2, NJ3, NJ22, NJ23, NU10, NU2, NU3, NU4, NU22, NU23, NUP2, NUP3, NUP22, NUP23, NN30, NNU49, NCF29V, NCF30V, NNCF49, NNF50
Tapered roller	302, 303, 313, 320, 322, 323, 329, 330, 331, 332
Spherical roller	213, 222, 223, 230, 231, 232, 233, 239, 240, 241
Thrust ball	511, 512, 513, 514, 532, 533, 534, 522, 523, 524, 542, 543, 544
Cylindrical roller thrust	811, 812
Spherical roller thrust	292, 293, 294

- **Bore Reference - Mandatory**

Indication of the inner diameter of the bearing, as mentioned at the beginning a diameter of 150mm was chosen as a starting point. For the reason of international standards not the diameter has been taken as characteristic but the bore reference, which for standard bearings is diameter divided by 5. Example: Diameter of 150mm corresponds to bore reference 30.

For the Virtual Warehouse will be only considered Bearings with a Bore Ref higher than 30 , which is a reasonable value for a material to be shared between plants.

- **Extension – Mandatory**

The extension indicates any special feature of the Bearing. There is a wide range of possible values for this parameter. In the next chapter a short summary of SKF prefixes and suffixes will be explained.

The designations of most SKF rolling bearings follow a system that may consist of a basic designation with or without one or more prefixes and/or suffixes, as shown in the table and the examples below.

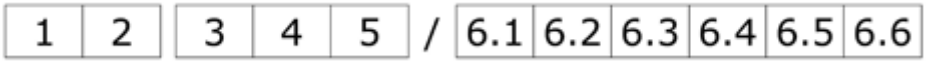
Prefixes and suffixes provide additional information about the bearing.

Prefixes are mainly used to identify components of a bearing. They can also identify bearing variants.

Suffixes identify designs or variants, which differ in some way from the original design or from the current basic design. The suffixes are divided into groups. When more than one special feature is to be identified, suffixes are provided in the order shown in the table below.

Details of the significance of specific prefixes and suffixes are given in the relevant product sections of the suppliers catalog.

Designation system



1	Prefixes
2	Basic Designation
3	Suffix – Internal design
4	Suffix – External design (seals, snap, ring groove, etc.)
5	Suffix – Cage design
6.1	Suffix – Materials, heat tratment
6.2	Suffix – Accuracy, clearance, preload, quit running
6.3	Suffix – Bearing sets, matched bearings
6.4	Suffix – Stabilization
6.5	Suffix – Lubrication
6.6.	Suffix – Other variants

Example: **23064 CCK/W33**

23064	2	Basic designation
CC	3	Suffix – Internal design
K	4	Suffix – External design (seals, snap ring groove, etc)
W33	6.5	Suffix – Lubrication

- **Clearance – Mandatory only in VW**

Virtually all rolling element bearings are designed with a specific internal clearance. Either the inner ring or the outer ring is fixed and the other ring is free to move, displacement can take place in either an axial or radial direction. This amount of displacement (radially or axially) is termed the internal clearance and, depending on the direction, is called the radial internal clearance or the axial internal clearance. Generally, internal clearances are designated from C1 (the tightest) through to C5 (the loosest or largest). The 'normal' clearance is CN, if the bearing clearance is not stated in the bearing reference it is assumed to be normal clearance.

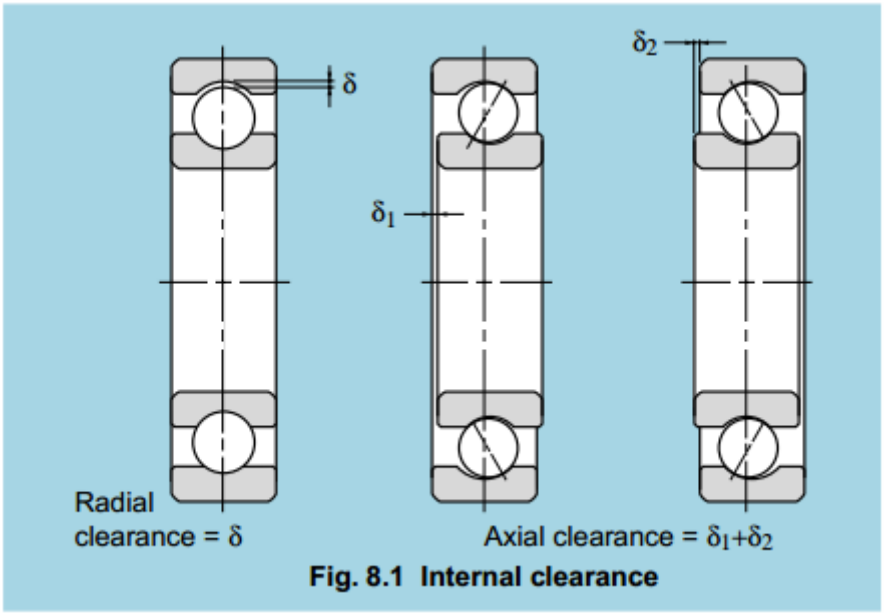


Fig. 8.1 Internal clearance

- **DIN/ISO Code – Optional**

Codification related with the different standardization normative for the bearings.

- **Type – Optional**

The type is fixed to the PCS, as we saw before, each PCS corresponds to a different type of Bearing, that is defined with the first/two first characters of the codification. The different types and abbreviations are showed at the beginning of this chapter.

5. Naming convention in material description

A specific language in SAP was developed to generate the descriptions of the materials of Naming Convention, this language is called “Z2”. When a material is created, a standard description in Z2 language is generated automatically, based on the different characteristics.

The fields that completes the “Short description” and “Long description” in the bearings are as follows:

Short description:

<Commodity> <Bearing Series Code> <Bore Ref> <Extention>

Long description:

<Commodity> <Bearing Series Code> <Bore Ref> <Extention> <Clearance> <DIN/ISO Code> <Type><Warehouse type>

An example of the short and long description is:

Short Description:

Bearing NU 215 EMC

Long Description:

Bearing NU 215 EMC C3 DIN320 CRB ST