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# Rolling bearings and spherical plain bearings — Search structure for electronic media — Characteristics and performance criteria identified by property vocabulary

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This British Standard is the UK implementation of ISO 21107:2015. It supersedes BS ISO 21107:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/7, Rolling bearings.

A list of organizations represented on this committee can be obtained on request to its secretary.

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# INTERNATIONAL STANDARD

# ISO 21107

Second edition
2015-12-15

# Rolling bearings and spherical plain bearings — Search structure for electronic media — Characteristics and performance criteria identified by property vocabulary

*Roulements et rotules lisses — Structure de recherche pour supports électroniques — Caractéristiques et critères de performance identifiés par le vocabulaire des propriétés*

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# Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 4, *Rolling bearings*.

This second edition cancels and replaces the first edition (ISO 21107:2004), which has been technically revised to be consistent with ISO/TS 23768-1.

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# Introduction

Electronic media are used more and more when purchasing and selling products. This also applies to the rolling bearing industry, where it can be expected that a large proportion of sales will be processed via electronic media.

One potential problem when ordering bearings is that designations, especially designations for special executions and variants, differ from one bearing supplier to another. For the electronic media business there is, therefore, a need for customers and distributors to have available a system that makes it possible to identify a bearing quickly and easily when the bearing designation is not known.

This can be achieved using a computerized search structure. The user responds to specified simple questions on a computer screen about visual bearing components (dimensions, number of rolling element rows, cage, etc.) and, if needed, about performance criteria and other characteristics. Based on these input values, the computer provides possible bearing designations and other information.

In order to facilitate programming and provide the user with the same and consistent input vocabulary, independent of supplier, this International Standard provides a standardized search structure for electronic media with a vocabulary for identifying bearings, bearing components and accessories based on ISO 5593 and other ISO/TC 4 International Standards.

When creating their own search structures, some bearing manufacturers and/or distributors may decide they have a need to customize certain properties or value domains in order to refine the selection of the possible bearing designation(s) that will meet the purchaser's requirements. If this is done, then, where possible, it is recommended that the terminology of ISO 5593 and other appropriate ISO documents for rolling bearings be used.

SI units are used in ISO International Standards, but it is recognized that the properties in this document can also be used for inch dimension products.


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INTERNATIONAL STANDARD ISO 21107:2015(E)

# Rolling bearings and spherical plain bearings — Search structure for electronic media — Characteristics and performance criteria identified by property vocabulary

## 1 Scope

This International Standard establishes a search structure and properties vocabulary for identifying rolling bearings, bearing housings, accessories and spherical plain bearings primarily with the aid of electronic media, such as the Internet.

The methodology for using this International Standard in search programs is not included.

This International Standard does not establish a search structure and an attribute vocabulary for identifying linear motion rolling bearings.

NOTE A reference dictionary for all rolling bearings in this document is defined in ISO/TS 23768-1. It contains definitions of bearing classes, data element types of descriptive properties and domains of values.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the reference document (including any amendments) applies.

ISO 1132-1, *Rolling bearings — Tolerances — Part 1: Terms and definitions*

ISO 5593, *Rolling bearings — Vocabulary*

ISO 6811, *Spherical plain bearings — Vocabulary*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 1132-1, ISO 5593, ISO 6811 and the following apply.

**3.1**
**non-leaf characterization class**
characterization class that is further subdivided into more precise characterization classes

[SOURCE: ISO/TS 23768-1:2011, 3.1.24]

**3.2**
**leaf characterization class**
characterization class that is not further subdivided into more precise characterization classes

[SOURCE: ISO/TS 23768-1:2011, 3.1.22]

**3.3**
**property**
characteristic or feature used to identify a product in detail

Note 1 to entry: Product and component designations used in ISO/TC 4 International Standards have been used throughout this International Standard as the preferred choice.

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**3.4**
**value domain**
set of permissible values

[SOURCE: ISO 22745-2:2010, 10.7]

# 4 Description and use of the search structure for electronic media

## 4.1 General

When Internet and other electronic media are used for ordering products, a system is needed to define a product easily and correctly, even when a product specification is not complete or is missing. This International Standard is built up to meet this requirement and makes it possible to identify dimensions, characteristics and demands on performance of rolling bearings, bearing housings and accessories with a standardized vocabulary.

Using the Internet, for instance, a purchaser can go to the "Home page" of a bearing manufacturer or a distributor and select a search program (individually established by each bearing manufacturer or distributor, but based on this International Standard). Then, by answering given questions (with specified alternative options), obtain a list of one or more product options with designations, availability, prices, etc.

The advantage of using a standardized search structure is that the purchaser always works with the same vocabulary, independent of manufacturer, and the risk of misunderstanding and confusion is reduced. As most properties of interest are included in the search structure, this makes programming considerably easier.

## 4.2 Layout of the search structure

The layout of the search criteria follows the general structure as used in the Internet environment, i.e. an XML (extensible mark-up language) specification for defining the data structure.

The data structure is built up in the way shown below and illustrated in Figure 1 and Table 1.

There are three levels of classification – non-leaf characterization class, leaf characterization class and property as defined in Clause 3.

**Properties** and **Value domains** to each class cover the information needed to define a product and are specified in 5.2 to 5.9 and 6.2. These properties and value domains are based on typical product ranges which can be found in manufacturers' catalogues and brochures.

Each user of this International Standard can select the applicable properties and value domains from this International Standard, and add further properties and value domains if needed. Additional value domains, either individually or as a group, can also be included under the value domain "Other". In general, the value domain "Other" is not shown in the tables, except for the properties "Tolerance" and "Clearance" with the only value domain "Normal".

It is possible to identify a product on the basis of class, properties and value domains.

For the user this is, however, not a problem when selection is made from the value domains presented in a search program. The supplier determines the product range value domains, and the programmer has to consider the logic in the value domains presented, so that combinations that are not possible are excluded during the selection process.

An example of how to use the search structure is shown in Annex A.


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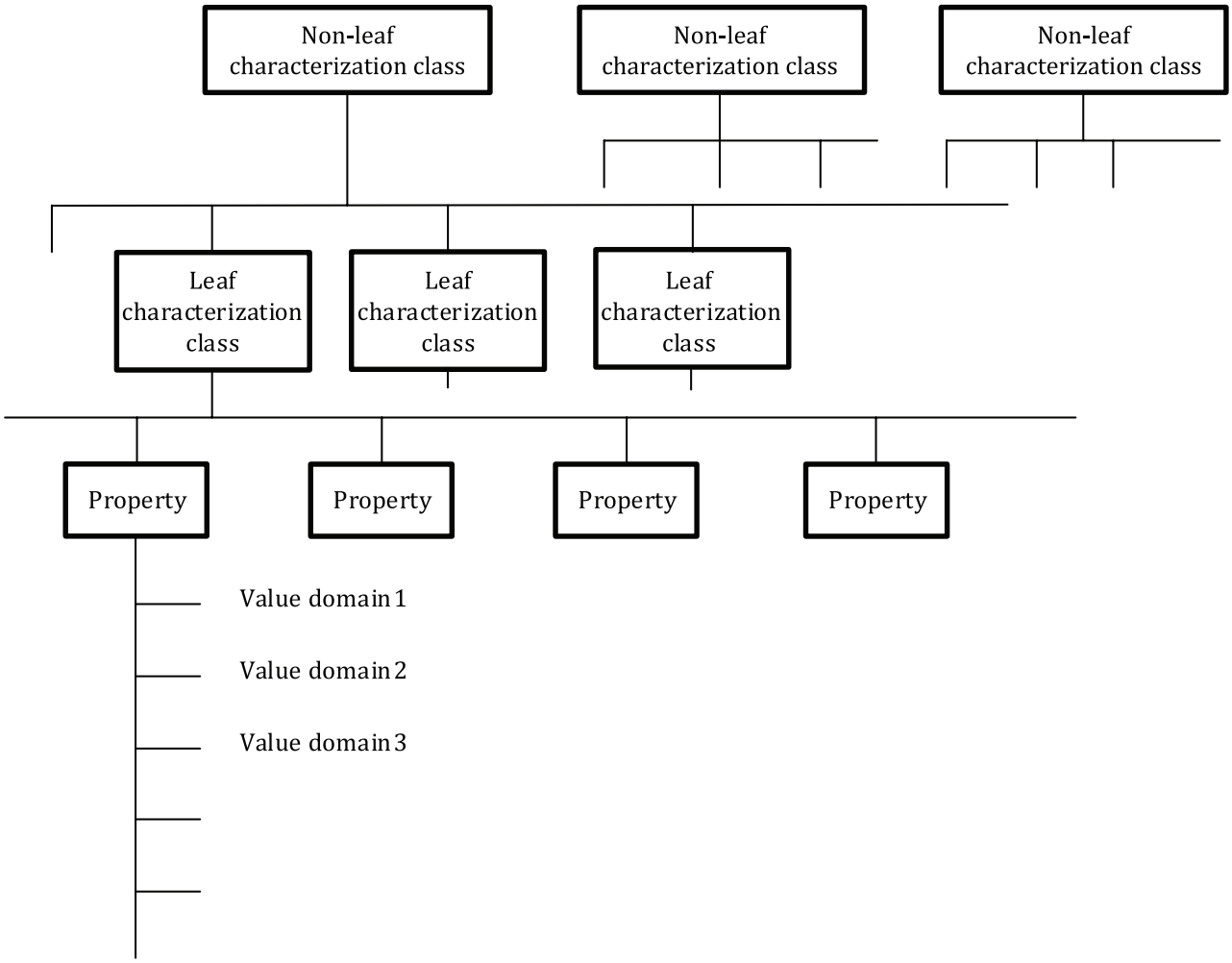


**Figure 1 — Search structure**

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**Table 1 — Description of the structure**

| Non-leaf characterization class | Leaf characterization class |
|---|---|
| Ball bearing | Deep groove ball bearings<br>Angular contact radial ball bearing<br>Angular contact thrust ball bearing<br>Thrust ball bearing<br>Self-aligning ball bearing |
| Roller bearing | Cylindrical roller bearing<br>Thrust cylindrical roller bearing<br>Needle roller bearing<br>Thrust needle roller bearing<br>Spherical roller bearing<br>Thrust spherical roller bearing<br>Tapered roller bearing<br>Thrust tapered roller bearing |
| Insert bearing, unit, housing and accessory | Insert bearing<br>Insert bearing unit<br>Insert bearing housing<br>Insert bearing accessory |
| Combined bearing | Combined bearing of radial needle roller/thrust ball type<br>Combined bearing of radial needle roller/thrust roller type |
| Rolling bearing part | Ball<br>Cylindrical roller<br>Needle roller<br>Thrust collar (L-shaped)<br>Aligning seat washer<br>Inner ring (special execution for needle roller bearing) |
| Bearing housing element | Bearing housing<br>Accessory for bearing housing<br>Bearing housing unit |
| Bearing accessory | Adapter sleeve<br>Withdrawal sleeve<br>Locknut and locking device |
| Track roller | Yoke-type track roller<br>Stud-type track roller<br>Accessory for track roller |
| Spherical plain bearing | Radial and angular contact radial spherical plain bearing<br>Thrust spherical plain bearing<br>Spherical plain bearing rod end |


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# 5 Properties and value domains for rolling bearings

## 5.1 General

The properties and value domains for leaf characterization classes of rolling bearings are given in Tables 2 to 33.

NOTE In the Tables 2 to 33, the **Properties** are shown in the row below the heading "Property and Value domain", and the **Value domains** are shown in the rows with option numbers. The order of the value domains does not have any specific meaning.

It is important to realize that the value domains shown in 5.2 to 5.9 illustrate possible options of each property. All value domains are, however, not always needed to cover the product range of a supplier. Besides, all value domains of one property can sometimes not logically be used. Taking an example from 5.3.1 *Cylindrical roller bearings*, a one row bearing with two outer ring ribs is selected. Then the value domain for selecting "Inner ring with two ribs" is to be excluded, as such a bearing is not a bearing type in regular production.

## 5.2 Ball bearings

### 5.2.1 Deep groove ball bearings

**Table 2 — Properties and value domains for deep groove ball bearings**

| Property | Value domain | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| **Number of rows** | Value | | | | | |
| **Bore type** | Cylindrical | Tapered | | | | |
| **Cage** | Sheet metal | Non-metallic | Machined metal | Without | | |
| **Filling slot** | Without | With | | | | |
| **Relubrication feature** | Without | With | | | | |
| **Sealing** | Without | Seal on both sides | Shield on both sides | Seal on one side | Shield on one side | Seal on one side, shield on the other |
| **Sealing type** | Contact | Non-contact | | | | |
| **Lubricant** | None | Grease | Solid oil | Solid lubricant | | |
| **Locating feature, bearing outer ring** | None | Snap ring groove | Snap ring (fitted) | Retaining slot | Flange | |
| **Bore diameter** | Value/Range | | | | | |
| **Outside diameter** | Value/Range | | | | | |
| **Width** | Value/Range | | | | | |
| **Matched arrangement** | No | Face-to-face (X) | Back-to-back (O) | Tandem (T) | | |
| **Radial internal clearance** | Group N (CN) | Group 2 (C2) | Group 3 (C3) | Group 4 (C4) | Group 5 (C5) | |
| **Material, bearing** | Bearing steel | Stainless steel | Ceramic | Hybrid | High temperature steel | |
| **Coating** | Without | Coated | Insulated | | | |
| **Tolerance class** | Normal | Class 6 (P6) | Class 5 (P5) | Class 4 (P4) | Class 2 (P2) | |

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