DD ISO/TS 23768-1:2011

BSI Standards Publication

Rolling bearings

Part 1: Reference dictionary for rolling bearings

bsi.

...making excellence a habit.™

National foreword

This Draft for Development is the UK implementation of ISO/TS 23768-1:2011.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards.*

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into an international Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

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.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 56111 5

ICS 01.040.21; 21.100.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This Draft for Development was published under the authority of the Standards Policy and Strategy Committee on 31 January 2012.

Amendments issued since publication

Date	Text affected

DD ISO/TS 23768-1:2011

TECHNICAL SPECIFICATION

ISO/TS 23768-1

First edition
2011-12-01

Rolling bearings — Parts library —

Part 1: Reference dictionary for rolling bearings

Roulements — Bibliothèque de composants —

Partie 1: Dictionnaire de référence des roulements

Reference number
ISO/TS 23768-1:2011(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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.

ISO 23768-1 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*.

ISO 23768 consists of the following parts, under the general title *Rolling bearings — Parts library*:

— *Part 1: Reference dictionary for rolling bearings* [Technical Specification]

The intent is that a reference dictionary for linear motion rolling bearings will form the subject of a part 2 and a reference dictionary for spherical plain bearings will form the subject of a part 3.

Introduction

This part of ISO 23768 defines the means to achieve an electronic representation of rolling bearing data by providing a reference dictionary needed to describe various data about rolling bearings. This part of ISO 23768 is intended to facilitate the use, manipulation and exchange of rolling bearing data for manufacturing, distribution and usage.

Rolling bearing data consist of entities of the rolling bearing application domain together with their descriptive properties and domains of values. Descriptive properties specified by this part of ISO 23768 include, but are not limited to, geometrical and dimensional data, identification and designation data, miscellaneous and spare part data, material data.

Each entity, property or domain of values defines an entry of the rolling bearing reference dictionary. The rolling bearing reference dictionary constitutes the formal and computer-sensible representation of the rolling bearing data. Each rolling bearing datum is associated with a computer-sensible and human-readable definition, and with a computer-sensible identification. Identification of a dictionary entry allows for unambiguous reference from any application. Definitions and identifications of dictionary entries consist of instances of the EXPRESS entity data types defined in the common dictionary schema, resulting from a joint effort between ISO/TC 184/SC 4/WG 2 and IEC SC 3D, or in its extensions defined in the logical series of parts of ISO 13584.

This part of ISO 23768 is intended for use, among others, by manufacturers, rolling bearing vendors or producers, and developers of manufacturing software. This part of ISO 23768 is intended to allow or improve several capabilities, including:

— the provision of a common set of definitions for use in describing rolling bearings,

— the integration and sharing of rolling bearing data between software applications,

— direct import of vendor rolling bearing data into customer databases or applications, and

— a reduction of the level of effort required for manufacturers to maintain accurate and current rolling bearing information from multiple sources and for multiple applications.

Some of the definitions of classes and properties of rolling bearings are taken from International Standards on rolling bearings and from Reference [11].

Rolling bearings — Parts library —

Part 1:
Reference dictionary for rolling bearings

1 Scope

This part of ISO 23768 specifies a reference dictionary for all rolling bearings described in the various International Standards relevant to rolling bearings, together with their descriptive properties and domains of values.

This part of ISO 23768 specifies a reference dictionary that contains:

— a definition of a general class of bearings intended to be further extended by reference dictionaries specifying bearings in other International Standards;

— definitions and identifications of the classes of rolling bearings as they are described in the various International Standards relevant to rolling bearings, with associated classification scheme;

— definitions and identifications of data element types that represent properties of rolling bearings;

— definitions and identifications of domains of values that prove useful for describing the above-mentioned data element types.

Each class, property or domain of values of this application domain constitutes an entry of the reference dictionary defined in this part of ISO 23768. It is associated with a computer-sensible and a human-readable definition, and with a computer-sensible identification. Identification of a dictionary entry allows for unambiguous reference from any application.

Definitions and identifications of dictionary entries are defined by means of standard data, which consist of instances of the EXPRESS entity data types defined in the common dictionary schema, resulting from a joint effort between ISO/TC 184/SC 4/WG 2 and IEC SC 3D, and in their extensions defined in ISO 13584-24 and ISO 13584-25.

The following are within the scope of this part of ISO 23768:

— standard data that represent the classes of rolling bearings;

— standard data that represent the properties of rolling bearings;

— standard data that represent domains of values used for properties of rolling bearings.

The following are outside of the scope of this part of ISO 23768:

— methodology for structuring parts families used for specifying standard data defined in this part of ISO 23768;

— an implementation method by which the standard data defined in this part of ISO 23768 can be exchanged.

NOTE 1 The structure of the physical file used for exchanging the standard data defined in this part of ISO 23768 is specified in ISO 10303-21. This physical file containing all the standard data for rolling bearings is also provided as Annex E.

NOTE 2 The physical file used for exchanging the standard data is compliant with ISO 13584-42:1998.

NOTE 3 It is intended to provide an OntoML-based (XML) representation of the standard data when ISO 13584-32 (OntoML) is published.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 199, *Rolling bearings — Thrust bearings — Tolerances*

ISO 286-1, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

ISO 492, *Rolling bearings — Radial bearings — Tolerances*

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

ISO 1998-1, *Petroleum industry — Terminology — Part 1: Raw materials and products*

ISO 3096, *Rolling bearings — Needle rollers — Dimensions and tolerances*

ISO 4378-1, *Plain bearings — Terms, definitions, classification and symbols — Part 1: Design, bearing materials and their properties*

ISO 5593:1997, *Rolling bearings — Vocabulary*

ISO 7063, *Rolling bearings — Needle roller bearing track rollers — Boundary dimensions and tolerances*

ISO 9628, *Rolling bearings — Insert bearings and eccentric locking collars — Boundary dimensions and tolerances*

ISO 10303-1, *Industrial automation systems and integration — Product data representation and exchange — Part 1: Overview and fundamental principles*

ISO 10303-11, *Industrial automation systems and integration — Product data representation and exchange — Part 11: Description methods: The EXPRESS language reference manual*

ISO 10303-21, *Industrial automation systems and integration — Product data representation and exchange — Part 21: Implementation methods: Clear text encoding of the exchange structure*

ISO 13584-1, *Industrial automation systems and integration — Parts library — Part 1: Overview and fundamental principles*

ISO 13584-24, *Industrial automation systems and integration — Parts library — Part 24: Logical resource: Logical model of supplier library*

ISO 13584-25, *Industrial automation systems and integration — Parts library — Part 25: Logical resource: Logical model of supplier library with aggregate values and explicit content*

ISO 13584-42:1998[1)] , *Industrial automation systems and integration — Parts library — Part 42: Description methodology: Methodology for structuring parts families*

ISO 13584-511, *Industrial automation systems and integration — Parts library — Part 511: Mechanical systems and components for general use — Reference dictionary for fasteners*

ISO 21107, *Rolling bearings and spherical plain bearings — Search structure for electronic media — Characteristics and performance criteria identified by attribute vocabulary*

ISO/IEC 8824-1, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation — Part 1*

ISO/IEC Guide 77-2, *Guide for specification of product properties and classes — Part 2: Technical principles and guidance*

IEC 61360-2, *Standard data element types with associated classification scheme for electric components — Part 2: EXPRESS dictionary schema*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 286-1, ISO 1998-1, ISO 3096, ISO 4378-1, ISO 5593, ISO 10303-1, ISO 10303-11, ISO 13584-1, ISO 13584-24, ISO 13584-42 and ISO/IEC Guide 77-2 and the following apply.

3.1 Terms and definitions

3.1.1
applicable property
AP
property that is defined for some family of parts and that shall apply to any part that belongs to this family of parts

[ISO 13584-24:2003, definition 3.3.]

EXAMPLE For a roller bearing generic family of parts, the bore diameter is an applicable property: this characteristic applies to any bearing.

3.1.2
basic semantic unit
BSU
entity that provides an absolute and universal identification of certain objects of the application domain

EXAMPLE Classes, data element types.

NOTE Adapted from ISO 13584-42:1998, definition 3.4.1.

3.1.3
characteristic of a part
part characteristic
constant property, characteristic of a part, of which the value is fixed once the part is defined

[ISO 13584-24:2003, definition 3.12]

NOTE Changing the value of a characteristic of a part means changing the part.

EXAMPLE For a rolling bearing, the bore diameter and the outside diameter are part characteristics.

1) Withdrawn. (Replaced by ISO 13584-42:2010)

3.1.4
categorization class
class of products that constitutes an element of a categorization

EXAMPLE *Rolling bearing part* and *bearing housing element* are examples of product categorization class defined in this part of ISO 23768.

NOTE There is no property associated with a categorization class.

3.1.5
common dictionary schema
information model for a dictionary, using the EXPRESS modelling language, resulting from a joint effort between ISO TC 184/SC 4/WG 2 and IEC SC 3D

NOTE 1 Adapted from ISO 13584-42:1998, definition 3.4.3.

NOTE 2 The common dictionary schema is specified in IEC 61360-2, and its content is provided in Annex D of ISO 13584-42:1998.

3.1.6
data
representation of information in a formal manner suitable for communication, interpretation, or processing by human beings or computers

[ISO 10303-1:1994, definition 3.2.14]

3.1.7
data element type
DET
unit of data for which the identification, the description and value representation have been specified

[ISO 13584-42:1998, definition 3.4.4]

3.1.8
data exchange
storing, accessing, transferring, and archiving of data

[ISO 10303-1:1994, definition 3.2.15]

3.1.9
data type
DT
domain of values

[ISO 10303-11:2004, definition 3.3.5]

3.1.10
dictionary
table consisting of a series of entries. One meaning corresponds to each entry in the dictionary and one dictionary entry identifies one single meaning

[ISO 13584-1:2001, definition 3.1.2]

NOTE 1 In ISO 13584 (all parts), a dictionary is the formal and computer-sensible representation of an ontology.

NOTE 2 In ISO 13584 (all parts), the kinds of meaning intended to constitute dictionary entries are

— supplier,

— class,

— property,

— program library,

— type,

— table, and

— document.

NOTE 3 In ISO 13584 (all parts), the information that represents a dictionary entry is split into three entities:

— a **basic_semantic_unit** (BSU), that provides for reference,

— a **dictionary_element** that describes the dictionary entry by means of attributes, and

— possibly, a **content_item** entity that describes the dictionary entry by describing its content.

3.1.11
dictionary data
set of data that describes hierarchies of families of parts and properties of these parts

[ISO 13584-42:1998, definition 3.4.6]

3.1.12
dictionary element
set of attributes that constitutes the dictionary description of certain objects of the application domain

EXAMPLE Classes, data element types.

NOTE Adapted from ISO 13584-42:1998, definition 3.4.7.

3.1.13
entity
class of information defined by common properties

[ISO 10303-11:2004, definition 3.3.6]

3.1.14
entity data type
representation of an entity

NOTE An entity data type establishes a domain of values defined by common attributes and constraints.

[ISO 10303-11:2004, definition 3.3.7]

3.1.15
entity (data type) instance
named entity data type value

NOTE The name of an entity instance is used for referencing the instance.

[ISO 10303-11:2004, definition 3.3.8]

3.1.16
family of parts
simple or generic family of parts

See ISO 13584-42:1998.

3.1.17
generic family of parts
grouping of simple or generic families of parts done for purposes of classification or for factoring common information

See ISO 13584-42:1998.

3.1.18
implementation method
technique used by computers to exchange data that is described using the EXPRESS data specification language

3.1.19
is-case-of relationship
relationship providing a formal expression of the fact that an object conforms to the partial specification defined by another object

[ISO 13584-24:2003, definition 3.62]

3.1.20
item
thing that can be characterized by means of a characterization class to which it belongs and a set of property value pairs

NOTE 1 This definition supersedes the definition given in ISO 13584-24:2003, that was the following: “a thing that can be captured by a class structure and a set of properties”.

NOTE 2 In ISO 13584 (all parts), both products and features of products that correspond to composite properties are items.

3.1.21
item class
set of items with common properties

See ISO 13584-42:1998.

3.1.22
leaf characterization class
characterization class that is not further subdivided into more precise characterization classes

[ISO/IEC Guide 77-2:2008, definition 2.11]

3.1.23
library integrated information model
LIIM
EXPRESS schema that integrates resource constructs from different EXPRESS schemas for representing supplier libraries for the purpose of exchange and that is associated with conformance requirements

[ISO 13584-24:2003, definition 3.72]

3.1.24
non-leaf characterization class
characterization class that is further subdivided into more precise characterization classes

See ISO/IEC Guide 77-2:2008, definition 2.11.

3.1.25
ontology
explicit and consensual specification of concepts of an application domain independent of any use of these concepts

NOTE In ISO 13584 (all parts), a dictionary is the formal and computer-sensible representation of ontology.

[ISO 13584-511:2006, definition 3.1.20]

3.1.26
part
material or functional element that is intended to constitute a component of different products

[ISO 13584-1:2001, definition 3.1.16]

3.1.27
property
information that may be represented by a data element type

[ISO 13584-42:1998, definition 3.4.10]

3.1.28
simple family of parts
set of parts of which each part may be described by the same group of properties

See ISO 13584-42:1998.

3.1.29
visible property
property that is defined for some families of parts and that may or may not apply to the different parts of this family of parts

See ISO 13584-42:1998.

EXAMPLE For a generic family of bearings, contact angle is a visible property: it is clearly defined for any rolling bearing, but only thrust angular contact ball bearing, angular contact ball bearing or tapered roller bearing have a value for this property. Contact angle would then be a visible (it has a clear meaning for all the rolling bearings) and applicable (it may be used to describe any kind of rolling bearing) property.

NOTE The code of the class where a property is defined as visible is part of the identification of the data element type that represents this property.

3.1.30
standard data
requirement on a software system defined by means of EXPRESS entity (data type) instances that are supposed to be recognized by this software system

[ISO 13584-24:2003, definition 3.99]

3.1.31
superclass
class that is one step above another class in class inclusion hierarchy

NOTE In the common ISO 13584/IEC 61360 dictionary model, a class has at most one superclass specified by means of an *is-a* relationship.

[ISO/IEC Guide 77-2:2008, definition 2.22]

3.2 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

ABS Abstract class

AP Applicable property

BSU Basic semantic unit

DC Definition class

DCR Date of current revision

DCV Date of current version

DER Derived value

DET Data element type

DOD Date of original definition

DT Data type

LIIM Library integrated information model

PLS Preferred letter symbol

PTC Property type classification

SD Simplified drawing

SDD Source document of definition

VF Value format

4 Representation of ontology concepts as dictionary entries

4.1 Bearing classes

4.1.1 Modelled classes

The bearing class is classified in a single subclass in this part of ISO 23768 (see Figure 1): rolling bearing.

NOTE The role of this classification level is to allow for the extension of the bearing reference dictionary by adding other subclasses to the bearing class.

EXAMPLE The bearing reference dictionary does not represent plain bearings. It may be extended by creating a new subclass of the bearing class.

The rolling bearing class is classified into the following eight subclasses (see Figure 1):

— ball bearing;

— roller bearing;

— combined bearing;

— insert bearing, unit housing and accessory;

— rolling bearing part;

— bearing housing element;

— bearing accessory;

— track roller.

All modelled classes defined in this part of ISO 23768 are shown in Annex C.

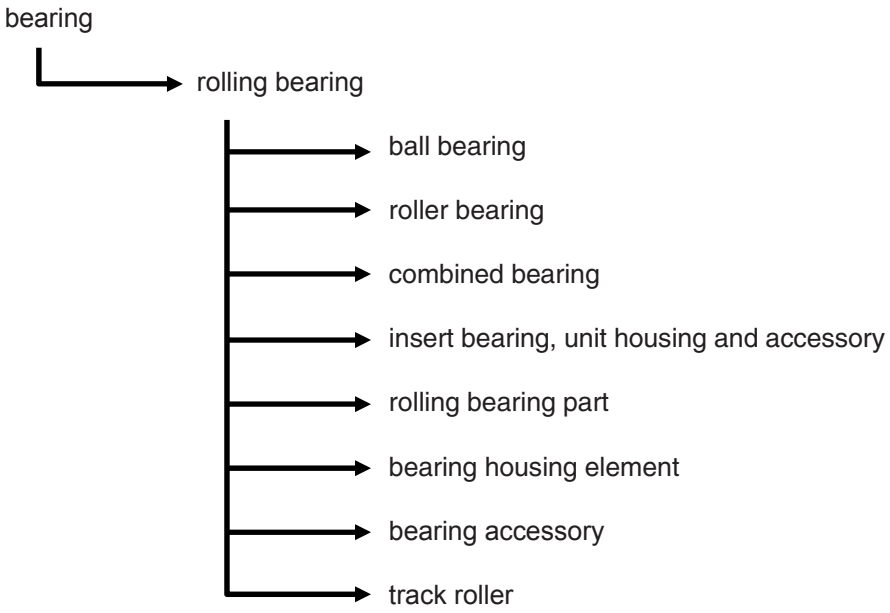


Figure 1 — Subclasses of the bearing and the rolling bearing classes in this part of ISO 23768

4.1.1.1 Class constructor

The **item_class** class specified in **ISO13584_extended_dictionary_schema** is used for describing the rolling bearing data dictionary defined in this part of ISO 23768 (see Figure 2).

NOTE 1 Words in bold letters and words linked with possible underscores stand for names given to the items declared in the underlying ISO 13584/IEC 61360 SERIES reference model for describing data dictionaries.

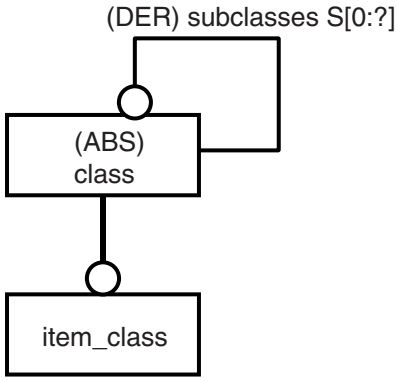


Figure 2 — Class used in this part of ISO 23768

EXAMPLE 1 In this part of ISO 23768*, insert bearing* is an **item_class**.

In this part of ISO 23768, three kinds of classes are distinguished (see Figure 3).

— Categorization classes: they are not associated to properties and are structured hierarchically through a superclass/subclass relationship denoting an inclusion.

EXAMPLE 2 *Bearing housing element* and *bearing accessory* are categorization classes.

— Non-leaf characterization classes: they define an abstraction of a set of products that fulfil the same function and that share a number of common properties. They can be subdivided into more precise characterization classes. They can be linked either to some categorization classes through a superclass/subclass relationship denoting inclusion, or to others non-leaf characterization classes through a superclass/subclass relationship denoting a generalization/specialization relationship allowing properties inheritance.

EXAMPLE 3 *Rolling bearing* and *ball bearing* are non-leaf characterization classes.

— Leaf characterization classes: they define characterization classes that are not further subdivided into more precise characterization classes. They can be linked either to some categorization classes through a superclass/subclass relationship denoting inclusion, or to non-leaf characterization classes through a superclass/subclass relationship denoting a generalization/specialization relationship allowing properties inheritance.

NOTE 2 Leaf characterization classes inherit the properties that are defined in their super (categorization or characterization) classes, and when required, set properties as being applicable.

EXAMPLE 4 *Adapter sleeve* and *deep groove ball bearing* are examples of leaf characterization classes.

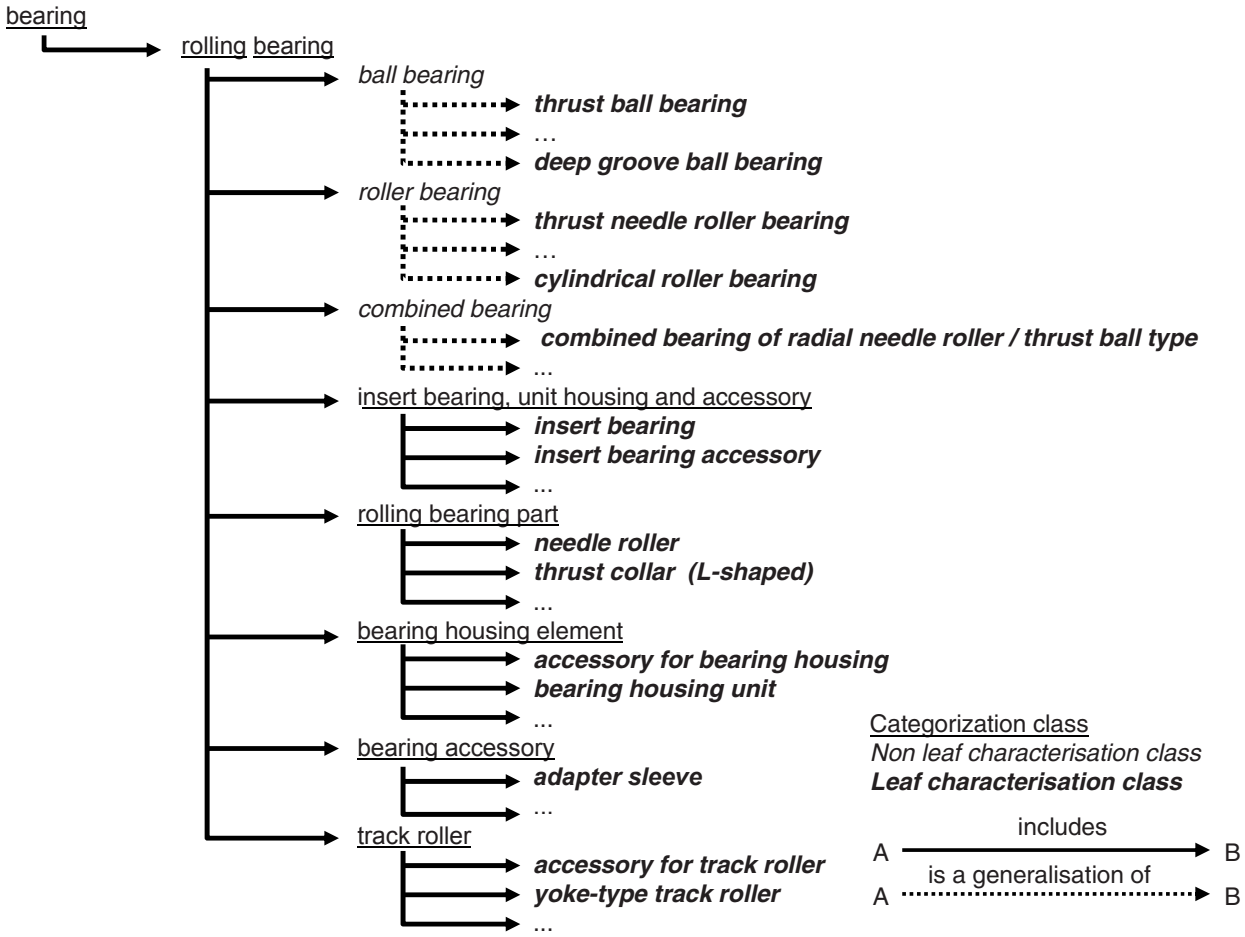


Figure 3 — Structure of the reference dictionary for rolling bearings

The role of the upper section of a standardized characterization hierarchy is to organize the various aspects of a product domain using class inclusion relationships. This may lead to defining abstract classes that gather items that are different in nature, e.g. part classes and feature classes provided that some visible properties need to be shared at these levels. Such classes are said to be abstract because all members of such classes are necessarily also members of some of their subclasses.

Below the upper section of the hierarchy, a characterization class of parts shall be created only when it is possible and advisable either

— to order or to search for a part by characterizing it as a member of this characterization class, or

— to associate a functional model to such a characterization class of parts, i.e. when a user can reasonably choose a part of such a characterization class to represent a significant state (phase) of his/her design process.

The classification of *rolling bearing*s is presented in Annex B.

4.1.2 Referenced class

Most reference dictionaries need properties, such as *part number* and *manufacturer name*. These properties are non-technical properties and should not be created again and again in each domain specific data dictionary, but shall be referenced from a reference source.

NOTE 1 It is likely for such a reference source to be a reference dictionary of non-technical properties.

NOTE 2 The reference mechanism used is based on the *is-case-of* relationship defined in ISO 13584-24.

The *bearing* class, root of the reference dictionary described in this part of ISO 23768, references the *mechanical components for general use* defined in ISO 13584-511.

NOTE 3 In this part of ISO 23768, no property is imported from ISO 13584-511. Reference to the mechanical components for general use is, nevertheless, in preparation for future use of non-technical properties, which this class defines.

4.1.3 Attributes used

In this part of ISO 23768, classes are defined by means of the following information elements specified in ISO 13584-42:

a) code;

b) superclass;

c) preferred name;

d) subclass selection properties;

e) visible properties;

f) applicable properties;

g) class value assignment;

h) definition;

i) source document of definition;

j) date of current version;

k) date of current revision;

l) date of original definition;

m) note;

n) remark;

o) version number;

p) revision number;

q) simplified drawing.

The following information elements, specified in ISO 13584-42, are not used for defining the classes specified in this part of ISO 23768:

— short name;

— synonymous name;

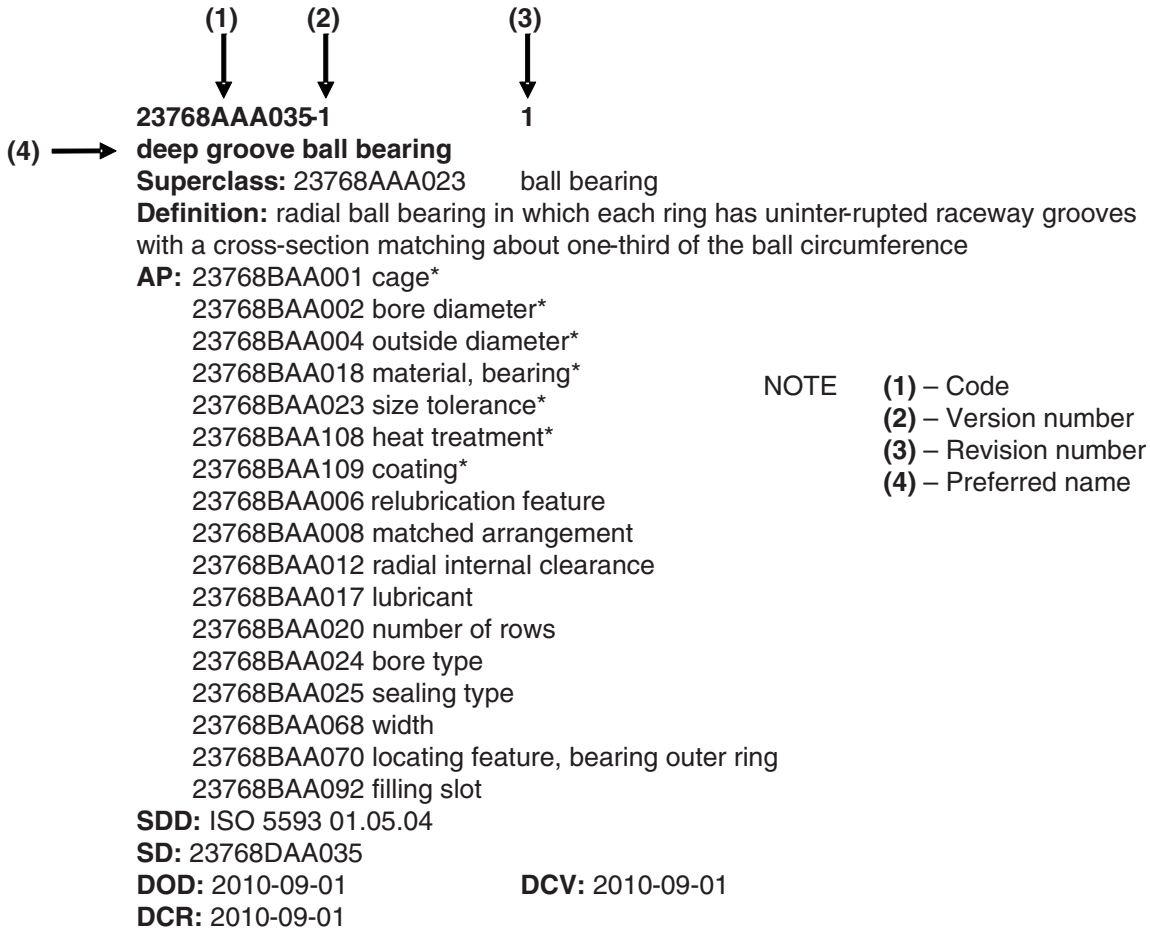
— visible types;

— applicable types.

4.1.4 Layout

Definition classes of all bearing parts, including all their attributes, are listed in Annex C.

Figure 4 shows the documentation style of bearing class definitions.



NOTE (1) represents the code; (2) represents the version number; (3) represents the revision number; (4) represents the preferred name.

Figure 4 — Layout of class definitions

The class definition layout is according to the following principles:

— abbreviated terms defined in 3.2 are used for the corresponding attribute names;

— mandatory attributes shall appear in the definition list;

— optional attributes are omitted when empty;

— each class indicated in **superclass**, or property indicated in **applicable property** (**AP**) shall include both its code and its preferred name;

— all the properties applicable to a class (either applicable at the level of the class or inherited as applicable from a superclass) are listed; those properties that were specified as applicable in a superclass are distinguished using the "*" character at the end of the property name.

NOTE The **remark** attribute can appear in some class descriptions. Indeed, ISO 13584-42:1998 does not support the representation of property value restrictions which apply in the context of the described class, whereas it is an important aspect of the reference dictionary specified in this part of ISO 23768. Thus, the remark attribute is used for that purpose: its content is intended to be automatically processed in order to provide in the future a new reference dictionary, including the property value restriction mechanisms, which are expected to be available in the next edition of ISO 13584-42.

EXAMPLE The value domain of the rolling element property defined at the bearing class level is an enumeration of string codes (**non_quantitative_code_type**). Specified codes are: balls, spherical rollers, needles, cylindrical rollers and rollers. For the yoke-type track roller class, only balls, needles and cylindrical rollers apply. It is expressed informally (textually) by using the **remark** attribute of the yoke-type track roller class.

4.2 Bearing property definitions

4.2.1 Modelled data types

In this part of ISO 23768, properties play the role of characterization properties.

4.2.2 Imported properties

In this part of ISO 23768, no property is imported.

4.2.3 Attributes used

In this part of ISO 23768, properties are defined by means of the following information elements specified in ISO 13584-42:1998:

a) code;

b) definition class;

c) data type;

d) preferred name;

e) definition;

f) preferred letter symbol;

g) unit;

h) format;

i) note;

j) remark;

k) source document of definition;

l) value format;

m) date of original definition;

n) date of current version;

o) date of current revision;

p) version number;

q) revision number.

The following information elements, specified in ISO 13584-42, are not used for defining properties specified in this part of ISO 23768:

— condition;

— short name;

— formula;

— synonymous letter symbols;

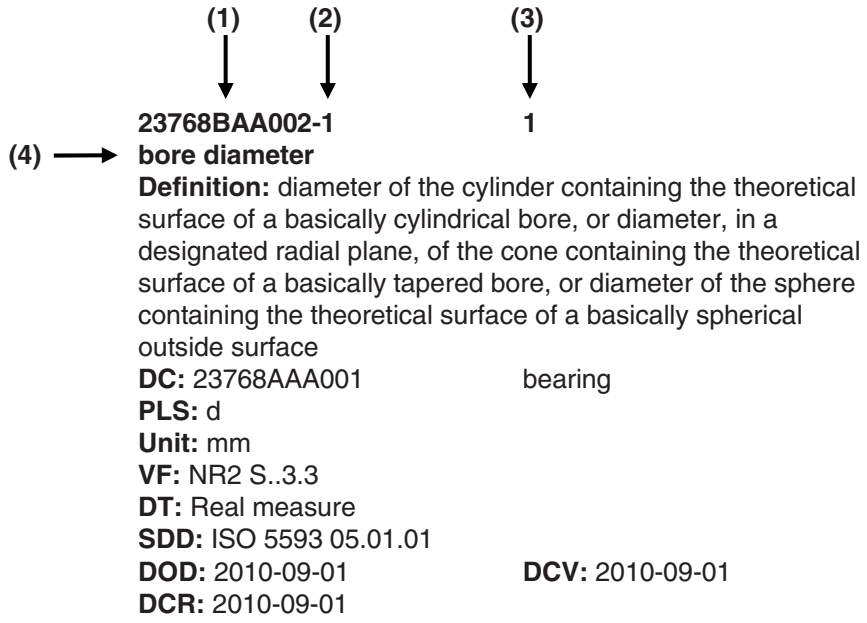
— synonymous name;

— property type classification.

4.2.4 Layout

Properties definitions, including all their attributes, are listed in Annex D.

Figure 5 shows the documentation style of bearings property definitions.



NOTE (1) represents the code; (2) represents the version number; (3) represents the revision number; (4) represents the preferred name.

Figure 5 — Layout of properties

The property definition layout is according to the following principles:

— abbreviated terms defined in 3.2 are used for the corresponding attribute names;

— mandatory attributes shall appear in the definition list;

— optional attributes are omitted when empty;

— the class indicated in the definition class (DC) shall include its code followed by its preferred name.

4.3 Property data types

4.3.1 Data types used

Five data types are used for the properties modelled in this part of ISO 23768. They are:

— **real_measure_type** for geometrical properties (a real value associated to a unit);

— **string_type** for properties describing by a string of characters;

— **int_type** for numbering properties;

— **non_quantitative_code_type** (enumeration of string codes) and **non_quantitative_int_type** (enumeration of integer codes) for all the others characteristic properties.

4.3.2 Attributes used

This part of ISO 23768 does not use attributes for the data type definitions.

5 Classification principles

5.1 Connection to pre-existing classifications

This part of ISO 23768 has no connection to pre-existing classifications.

5.2 Class hierarchy

The class hierarchy has been constructed from classes defined in ISO 21107. These classes have been organized hierarchically according to the structuration rules defined in ISO 13584-42:1998 (RULE 1 to RULE 8).

NOTE 1 Rules are guidelines used when creating a standardized (or supplier) characterization hierarchy.

In addition to RULE 1 to RULE 8 defined in ISO 13584-42, the following rules are also applicable to this part of ISO 23768.

Additional rule 1 Define lower level classes only when needed for properties' definitions. The role of non-leaf (non-property) classes of the lower section (“generic families of parts”) is only to precisely define the meaning of each property. Thus, in the lower level of the hierarchy, introduce a new subclass if and only if it is required to define the domain of meaning of a property. No class shall exist which is distinguished from another class only by the values of some properties.

NOTE 2 Non-leaf component is allowed for the potential user extension in this part of ISO 23768.

Additional rule 2 All the properties defined in ISO 21107 are defined in this data dictionary.

Additional rule 3 The coding style for this part of ISO 23768 (see Figure 6) is the following:

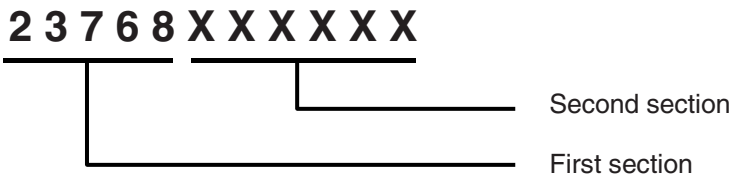


Figure 6 — Coding style

— eleven characters in total, divided into two sections;

— the first section is a five-character constant string “23768” identifying the bearings dictionary defined in this part of ISO 23768;

— the second section is a sequence of six characters without defined meaning.

6 Computer-sensible description

6.1 External file

ISO 13584 (all parts) specifies an external file reference mechanism to assign additional documentation in electronic or non-electronic form to the product, task/activity or definitions of the bearings dictionary.

In this part of ISO 23768, the reference mechanism of the external file for the bearings dictionary is shown in Figure 7.

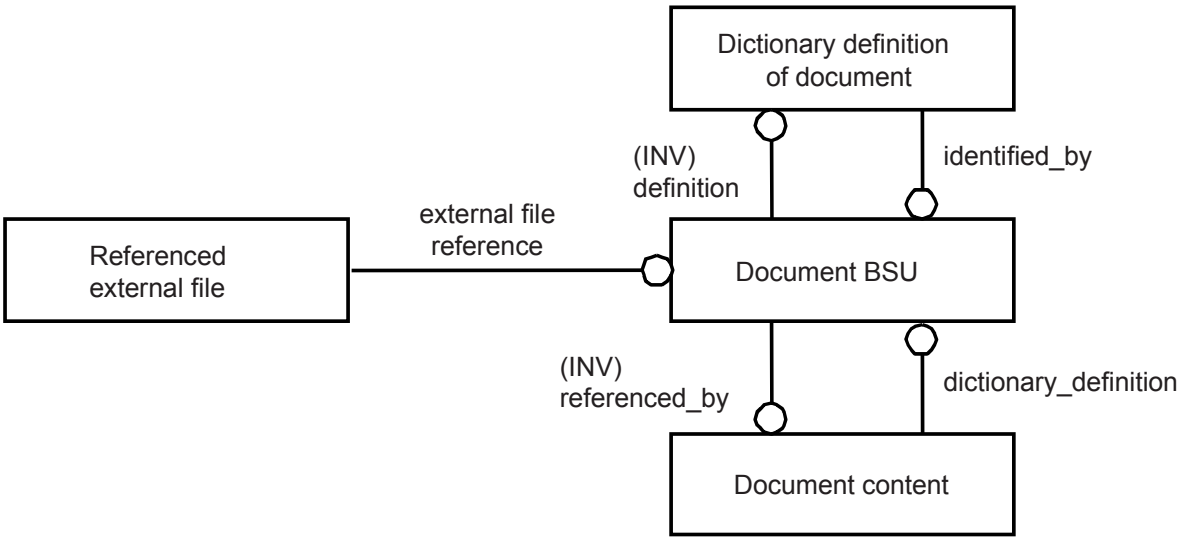


Figure 7 — External file reference mechanism

In the rolling bearings dictionary, an external file is referenced by the **referenced_graphics**, which is the subtype of the **graphics,** to specify the **simplified_drawing** attribute of the simple family of parts. The domain of the **graphics_reference** attribute of the **referenced_graphics** is **document_BSU**. Based on the **document_BSU**, the computer can find the corresponding **document_element** and **document_content**. So the computer can access and process the document.

EXAMPLE The **simplified_drawing** attribute of the class identified by the 23768AAA035 code (*deep groove ball bearing*) references 23768DAA035, which is the code of the external file that represents this particular bearing. The last five alphanumeric characters of the code are the same as those of the class to which it belongs.

NOTE In this part of ISO 23768, all graphic documents are provided in the JPG format.

6.2 Information model and conformance class

This part of ISO 23768 conforms to the library integrated information model LIIM 25 defined in ISO 13584-25. Conformance class 2 addresses those implementation methods that support conformance class 1 and that support aggregate data types and values. An implementation of conformance class 2 of library integrated information model LIIM 25 shall support the following entities and related constructs.

```
SCHEMA ISO13584_25_IEC61360_5_liim_schema;

USE FROM ISO13584_IEC61360_dictionary_schema
    (axis1_placement_type,
    axis2_placement_2d_type,
    axis2_placement_3d_type,
    boolean_type,
    class_BSU,
    class_instance_type,
    class_value_assignment,
    complex_type,
    component_class,
    condition_DET,
    data_type_BSU,
    data_type_element,
    dates,
    dependent_P_DET,
    dic_unit,
    dic_value,
    entity_instance_type,
    identified_document,
    int_currency_type,
    int_measure_type,
    int_type,
    integer_type,
    item_class,
    item_names,
    label_with_language,
    level_type,
    material_class,
    mathematical_string,
    named_type,
    non_dependent_P_DET,
    non_quantitative_code_type,
    non_quantitative_int_type,
    non_si_unit,
    number_type,
    placement_type,
    property_BSU,
    property_DET,
```

```
        real_currency_type,
        real_measure_type,
        real_type,
        string_type,
        supplier_BSU,
        supplier_element,
        value_domain);

USE FROM ISO13584_IEC61360_language_resource_schema
        (global_language_assignment, present_translations,
        translated_label, translated_text);

USE FROM ISO13584_instance_resource_schema (null_value,
        primitive_value, null_or_primitive_value, simple_value,
        null_or_simple_value, number_value, null_or_number_value,
        integer_value, null_or_integer_value, real_value,
        null_or_real_value, boolean_value, null_or_boolean_value,
        translatable_string_value, translated_string_value, string_value,
        null_or_translatable_string_value, complex_value,
        null_or_complex_value,
        entity_instance_value,
        null_or_entity_instance_value,
        defined_entity_instance_value,
        controlled_entity_instance_value,
        STEP_entity_instance_value,
        PLIB_entity_instance_value,
        property_or_data_type_BSU,
        level_spec_value,
        null_or_level_spec_value,
        int_level_spec_value,
        null_or_int_level_spec_value,
        real_level_spec_value,
        null_or_real_level_spec_value,
        property_value,
        context_dependent_property_value,
        dic_class_instance,
        null_or_dic_class_instance,
        dic_component_instance,
        dic_feature_instance,
        dic_material_instance,
        lib_component_instance,
        lib_feature_instance,
        lib_material_instance,
        dic_f_model_instance,
        lib_f_model_instance);

USE FROM ISO13584_IEC61360_dictionary_aggregate_extension_schema
        (entity_instance_type_for_aggregate, list_type, set_type,
        bag_type, array_type, set_with_subset_constraint_type);

USE FROM ISO13584_extended_dictionary_schema (dictionary,
        dictionary_in_standard_format, library_iim_identification,
        view_exchange_protocol_identification, representation_type,
```

```
        geometric_representation_context_type,
        representation_reference_type, program_reference_type,
        program_library_BSU, document_BSU,
        supplier_program_library_relationship,
        class_document_relationship, representation_P_DET,
        class_related_dictionary_element, program_library_element,
        document_element, document_element_with_http_access,
        document_element_with_translated_http_access,
        referenced_document,
        referenced_graphics,
        feature_class,
        functional_model_class,
        fm_class_view_of,
        functional_view_class,
        non_instantiable_functional_view_class,
        view_control_variable_range,
        item_class_case_of,
        component_class_case_of,
        material_class_case_of,
        feature_class_case_of,
        a_posteriori_case_of,
        a_posteriori_view_of);

    USE FROM ISO13584_external_file_schema
        (standard_simple_program_protocol,
        non_standard_simple_program_protocol,
        linked_interface_program_protocol, standard_data_protocol,
        non_standard_data_protocol, http_protocol,
        program_library_content, document_content,
        representation_reference, program_reference,
        property_value_external_item, message, illustration,
        A6_illustration, A9_illustration, translated_external_content,
        not_translated_external_content,
        not_translatable_external_content, language_specific_content,
        external_file_unit, http_file, http_class_directory,
        simple_program_protocol);

    USE FROM ISO13584_aggregate_value_schema
        (aggregate_entity_instance_value, list_value, set_value,
        bag_value, array_value, set_with_subset_constraint_value);

    USE FROM ISO13584_library_content_schema (library,
        library_in_standard_format, explicit_item_class_extension,
        explicit_functional_model_class_extension,
        property_classification, property_value_recommended_presentation);

    USE FROM measure_schema (amount_of_substance_measure, area_measure,
        context_dependent_measure, context_dependent_unit,
        conversion_based_unit, count_measure, derived_unit,
        derived_unit_element, dimensional_exponents,
        electric_current_measure, global_unit_assigned_context,
        length_measure, length_measure_with_unit, length_unit,
        luminous_intensity_measure, mass_measure, measure_value,
```

```
        measure_with_unit, named_unit, numeric_measure, parameter_value,
        plane_angle_measure, positive_length_measure,
        positive_plane_angle_measure, ratio_measure, si_unit,
        solid_angle_measure, thermodynamic_temperature_measure,
        time_measure, volume_measure);

USE FROM person_organization_schema (address, organization, person);

USE FROM date_time_schema (date, date_and_time, local_time,
        calendar_date, ordinal_date, week_of_year_and_day_date);

USE FROM geometry_schema (axis1_placement, axis2_placement_2D,
        axis2_placement_3D, geometric_representation_context, placement);

USE FROM representation_schema
        (representation,
        representation_context,
        representation_item);

USE FROM application_context_schema
        (application_context,
        application_context_element,
        application_protocol_definition);

END_SCHEMA; -- ISO13584_25_IEC61360_5_liim_schema
```

Annex A
(normative)

Information object registration

A.1 Document identification

In order to provide for unambiguous identification of an information object in an open system, the object identifier:

{ iso standard 23768 part (1) version (1) }

is assigned to this part of ISO 23768. The syntax and the meaning of this value is defined in ISO/IEC 8824-1.

A.2 Dictionary identification

The dictionary defined in this part of ISO 23768 is assigned to object identifier:

{ iso standard 23768 part (1) version (1) object (1) bearings (1) }

Annex B
(normative)

Classification of rolling bearings

B.1 General

This annex specifies the classification structure and codes of each class defined in this part of ISO 23768.

B.2 Rolling bearings classification

The classification structure is defined as follows (see Table B.1).

Table B.1 — Classification structure of classes

Classification structure	Code	Superclass
bearing	23768AAA001	-
rolling bearing	23768AAA006	23768AAA001
ball bearing	23768AAA023	23768AAA006
angular contact radial ball bearing	23768AAA033	23768AAA023
angular contact thrust ball bearing	23768AAA032	23768AAA023
deep groove ball bearing	23768AAA035	23768AAA023
self-aligning ball bearing	23768AAA034	23768AAA023
thrust ball bearing	23768AAA031	23768AAA023
bearing accessory	23768AAA002	23768AAA006
adapter sleeve	23768AAA007	23768AAA002
locknut	23768AAA008	23768AAA002
bearing housing element	23768AAA004	23768AAA006
accessory for bearing housing	23768AAA015	23768AAA004
bearing housing	23768AAA017	23768AAA004
bearing housing unit	23768AAA016	23768AAA004
combined bearing	23768AAA021	23768AAA006
combined bearing of radial needle roller / thrust ball type	23768AAA025	23768AAA021
combined bearing of radial needle roller / thrust roller type	23768AAA026	23768AAA021
insert bearing, unit housing and accessory	23768AAA022	23768AAA006
insert bearing	23768AAA030	23768AAA022
insert bearing accessory	23768AAA027	23768AAA022
insert bearing housing	23768AAA029	23768AAA022
insert bearing unit	23768AAA028	23768AAA022

Table B.1 — Classification structure of classes (*continued*)

Classification structure	Super-class	Code
roller bearing	23768AAA024	23768AAA006
cylindrical roller bearing	23768AAA043	23768AAA024
needle roller bearing	23768AAA040	23768AAA024
spherical roller bearing	23768AAA041	23768AAA024
tapered roller bearing	23768AAA042	23768AAA024
thrust cylindrical roller bearing	23768AAA039	23768AAA024
thrust needle roller bearing	23768AAA036	23768AAA024
thrust spherical roller bearing	23768AAA037	23768AAA024
thrust tapered roller bearing	23768AAA038	23768AAA024
rolling bearing part	23768AAA003	23768AAA006
aligning seat washer	23768AAA013	23768AAA003
ball	23768AAA012	23768AAA003
cylindrical roller	23768AAA014	23768AAA003
inner ring	23768AAA011	23768AAA003
needle roller	23768AAA009	23768AAA003
thrust collar (L-shaped)	23768AAA010	23768AAA003
track roller	23768AAA005	23768AAA006
accessory for track roller	23768AAA018	23768AAA005
stud -type track roller	23768AAA020	23768AAA005
yoke-type track roller	23768AAA019	23768AAA005

Annex C
(normative)

Definitions of rolling bearing classes

C.1 General

This annex specifies the definitions of classes defined in this part of ISO 23768.

C.2 Classes defined in this part of ISO 23768

Definitions of classes defined in this part of ISO 23768 are the following:

23768AAA001-1 1

bearing

Definition: support or guide by which a moving part is located with respect to other parts of a mechanism

SDD: ISO 4378-1 1.1

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA002-1 1

bearing accessory

Superclass: 23768AAA006 rolling bearing

Definition: element for the mounting or the locking of a bearing on its seating

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA003-1 1

rolling bearing part

Superclass: 23768AAA006 rolling bearing

Definition: one of the individual parts comprising a rolling bearing but excluding all accessories

AP: 23768BAA047 part material

23768BAA110 part coating

SDD: ISO 5593 02.01.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA004-1 1

bearing housing element

Superclass: 23768AAA006 rolling bearing

Definition: equipped bearing housing or housing part

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA005-1 1

track roller

Superclass: 23768AAA006 rolling bearing

Definition: radial rolling bearing with a heavy section outer ring, intended for use as a roller to roll on a track, for example a cam track

SDD: ISO 5593 01.02.07

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA006-1 1

rolling bearing"

Superclass: 23768AAA001 bearing

Definition: bearing operating with rolling (rather than sliding) motion between the parts supporting load and moving in relation to each other, which

comprises raceway members and rolling elements with or without means for their spacing and/or guiding

SDD: ISO 5593 01.01.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA007-1 1

adapter sleeve"

Superclass: 23768AAA002 bearing accessory

Definition: axially slotted sleeve with a cylindrical bore, a tapered outside surface and an external screw thread at its small end

AP: 23768BAA002 bore diameter

23768BAA031 thread diameter

23768BAA032 width

23768BAA033 holes for oil injection

23768BAA034 adapter sleeve type

SDD: ISO 5593 07.02.03

SD: 23768DAA007

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA008-1 1

locknut"

Superclass: 23768AAA002 bearing accessory

Definition: (for axial location of rolling bearings) nut with a cylindrical outside surface with axial slots for locking the nut by one of the outer tabs of a lockwasher and for the application of a hook spanner

AP: 23768BAA004 outside diameter

23768BAA035 thread diameter

23768BAA036 locking device

23768BAA037 width

23768BAA038 for use with sleeve

23768BAA039 nut for hydraulic mounting

SDD: ISO 5593 07.02.05

SD: 23768DAA008

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA009-1 1

needle roller"

Superclass: 23768AAA003 rolling bearing part

Definition: cylindrical roller of small diameter with a large ratio of length to diameter

Note: it is generally accepted that the length is between three and ten times the diameter, which does not usually exceed 5 mm. The ends of a needle roller may be one of several shapes.

AP: 23768BAA047 part material*

23768BAA110 part coating*

23768BAA040 diameter

23768BAA041 length

23768BAA043 needle roller type

23768BAA101 needle roller grade

Remark:

23768BAA047(part material)={1, 2, 3}

SDD: ISO 5593 02.05.06

SD: 23768DAA009

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA010-1 1

thrust collar (L-shaped)"

Superclass: 23768AAA003 rolling bearing part

Definition: separable ring having an L-shaped section, the outer part of which serves as an inner ring rib for a cylindrical roller radial bearing

AP: 23768BAA047 part material*

23768BAA110 part coating*

23768BAA002 bore diameter

23768BAA022 for use with bearing

23768BAA044 width in bore

Remark:

23768BAA047(part material)={1, 2}

23768BAA110(part coating)={1}

SDD: ISO 5593 02.01.10

SD: 23768DAA010

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA011-1 1

inner ring"

Superclass: 23768AAA003 rolling bearing part

Definition: bearing ring incorporating the raceway(s) on its outside surface

AP: 23768BAA047 part material*

23768BAA110 part coating*

23768BAA002 bore diameter

23768BAA004 outside diameter

23768BAA006 relubrication feature

23768BAA012 radial internal clearance

23768BAA016 width, inner ring

23768BAA023 tolerance class

23768BAA046 special raceway feature

Remark:

23768BAA023(tolerance class)={PN, P6, P5}

23768BAA047(part material)={1, 2}

23768BAA110(part coating)={1}

23768BAA012(radial internal clearance)={CN, C2, C3, C4}

23768BAA006(relubrication feature)={1, 2}

SDD: ISO 5593 02.03.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA012-1 1

ball"

Superclass: 23768AAA003 rolling bearing part

Definition: spherical rolling element

AP: 23768BAA047 part material*

23768BAA110 part coating*

23768BAA010 ball grade

23768BAA040 diameter

Remark:

23768BAA047(part material)={1, 2, 3}

SDD: ISO 5593 02.05.01

SD: 23768DAA012

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA013-1 1

aligning seat washer "

Superclass: 23768AAA003 rolling bearing part

Definition: washer used between an aligning housing washer and the thrust-supporting surface of a housing, one face of which has a concave spherical surface matching the spherical back face of the aligning housing washer

AP: 23768BAA047 part material*

23768BAA110 part coating*

23768BAA004 outside diameter

23768BAA022 for use with bearing

23768BAA048 height

Remark:

23768BAA047(part material)={1, 2}

23768BAA110(part coating)={1}

SDD: ISO 5593 02.04.05

SD: 23768DAA013

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA014-1 1

cylindrical roller"

Superclass: 23768AAA003 rolling bearing part

Definition: roller the generatrix of the outside surface of which is a basically straight line parallel with the roller axis

AP: 23768BAA047 part material*

23768BAA110 part coating*

23768BAA040 diameter

23768BAA041 length

Remark:

23768BAA047(part material)={1, 2, 3}

SDD: ISO 5593 02.05.05

SD: 23768DAA014

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA015-1 1

accessory for bearing housing"

Superclass: 23768AAA004 bearing housing element

Definition: bearing housing additional element for protection or positionning purposes

AP: 23768BAA004 outside diameter

23768BAA052 width

23768BAA053 housing designation

23768BAA054 accessory type

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA016-1 1

bearing housing unit"

Superclass: 23768AAA004 bearing housing element

Definition: unit composed of a bearing housing, of one or two bearings, and of mounting or locking accessories, ready to be integrated in an installation

AP: 23768BAA002 bore diameter

23768BAA005 pitch diameter of bolt holes

23768BAA009 centre distance between bolt holes

23768BAA011 centre height

23768BAA019 material, housing

23768BAA021 number of bolt holes for fasteners

23768BAA026 bearing housing seal type

23768BAA027 housing type

23768BAA028 fastening bolt hole type

23768BAA049 housing configuration

23768BAA050 bearing configuration

23768BAA051 mounting arrangement

23768BAA055 bearing insert

Remark:

23768BAA027(housing type)={1, 2, 3, 4}

23768BAA028(fastening bolt hole type)={1, 2, 5}

23768BAA019(material, housing)={1, 2, 3}

SD: 23768DAA016

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA017-1 1

bearing housing"

Superclass: 23768AAA004 bearing housing element

Definition: part of a bearing mounting, surrounding the bearing and having an inside surface matching the outside surface of the bearing outer ring or housing washer or of the aligning housing ring or aligning seat washer

AP: 23768BAA005 pitch diameter of bolt holes

23768BAA009 centre distance between bolt holes

23768BAA011 centre height

23768BAA019 material, housing

23768BAA021 number of bolt holes for fasteners

23768BAA026 bearing housing seal type

23768BAA027 housing type

23768BAA028 fastening bolt hole type

23768BAA042 seating diameter for seal

23768BAA049 housing configuration

23768BAA050 bearing configuration

23768BAA051 mounting arrangement

Remark:

23768BAA027(housing type)={1, 2, 3, 4}

23768BAA028(fastening bolt hole type)={1, 2, 5}

23768BAA019(material, housing)={1, 2, 3}

SDD: ISO 5593 07.01.01

SD: 23768DAA017

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA018-1 1

accessory for track roller"

Superclass: 23768AAA005 track roller

Definition: element allowing the lubrication, the protection or the tightening of a track roller

AP: 23768BAA058 for use with track roller

23768BAA059 accessory type

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA019-1 1

yoke-type track roller"

Superclass: 23768AAA005 track roller

Definition: track roller rolling bearing intended for mounting in a yoke

AP: 23768BAA001 cage

23768BAA002 bore diameter

23768BAA006 relubrication feature

23768BAA013 sealing

23768BAA012 radial internal clearance

23768BAA015 width, outer ring

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA020 number of rows

23768BAA023 tolerance class

23768BAA029 bearing part

23768BAA030 rolling element

23768BAA056 number of flanges on outer ring

23768BAA057 outer ring profile

23768BAA060 application

23768BAA061 width, total

23768BAA062 axial guidance of outer ring

23768BAA102 functional outside diameter

23768BAA103 type

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA030(rolling element)={1, 2, 3}

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA012(radial internal clearance)={CN, C2, C3, C4, C5}

23768BAA013(sealing)={1, 11, 12};

23768BAA006(relubrication feature)={1, 2}

23768BAA001(cage)={4, 5}

23768BAA017(lubricant)={1, 2}

23768BAA018(material, bearing)={1, 2}

23768BAA109(coating)={1}

23768BAA029(bearing part)={12, 13}

SDD: ISO 5593 01.02.08

SD: 23768DAA019

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA020-1 1

stud-type track roller"

Superclass: 23768AAA005 track roller

Definition: track roller rolling bearing in which the inner member is extended on one side in the form of a shaft for cantilever mounting of the bearing

AP: 23768BAA001 cage

23768BAA006 relubrication feature

23768BAA012 radial internal clearance

23768BAA013 sealing

23768BAA015 width, outer ring

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA020 number of rows

23768BAA023 tolerance class

23768BAA030 rolling element

23768BAA056 number of flanges on outer ring

23768BAA057 outer ring profile

23768BAA063 feature for tightening

23768BAA104 stud alignment

23768BAA105 functional outside diameter

23768BAA106 stud diameter

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA030(rolling element)={1, 2, 3}

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA012(radial internal clearance)={CN, C2, C3, C4, C5}

23768BAA013(sealing)={1, 11, 12};

23768BAA006(relubrication feature)={3, 4, 5}

23768BAA001(cage)={4, 5}

23768BAA017(lubricant)={1, 2}

23768BAA018(material, bearing)={1, 2}

23768BAA109(coating)={1}

SDD: ISO 5593 01.02.09

SD: 23768DAA020

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA021-1 1

combined bearing"

Superclass: 23768AAA006 rolling bearing

Definition: bearing of which radial and axial functions are separated by different rolling ways

AP: 23768BAA002 bore diameter

23768BAA004 outside diameter

23768BAA012 radial internal clearance

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA023 tolerance class

23768BAA030 rolling element

23768BAA065 axial load

23768BAA068 width

23768BAA071 thrust part

23768BAA072 special feature

23768BAA073 rolling bearing type

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA030(rolling element)={1}

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA012(radial internal clearance)={CN, C2, C3, C4, C5}

23768BAA017(lubricant)={1, 2}

23768BAA018(material, bearing)={1, 2, 6, 7}

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA022-1 1

insert bearing, unit housing and accessory"

Superclass: 23768AAA006 rolling bearing

Definition: insert bearing unit or insert bearing (unit) parts (insert bearing, housing and accessory)

SD: 23768DAA022

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA023-1 1

ball bearing"

Superclass: 23768AAA006 rolling bearing

Definition: rolling bearing with balls as rolling elements

AP: 23768BAA001 cage

23768BAA002 bore diameter

23768BAA004 outside diameter

23768BAA018 material, bearing

23768BAA023 tolerance class

23768BAA108 heat treatment

23768BAA109 coating

SDD: ISO 5593 01.05.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA024-1 1

roller bearing"

Superclass: 23768AAA006 rolling bearing

Definition: rolling bearing with rollers as rolling elements

AP: 23768BAA002 bore diameter

23768BAA004 outside diameter

SDD: ISO 5593 01.06.01

SD: 23768DAA024

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA025-1 1

combined bearing of radial needle roller / thrust ball type"

Superclass: 23768AAA021 combined bearing

Definition: bearing of which radial and axial functions are respectively separated by a needle roller bearing and a thrust ball bearing

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA012 radial internal clearance*

23768BAA017 lubricant*

23768BAA018 material, bearing*

23768BAA023 tolerance class*

23768BAA030 rolling element*

23768BAA065 axial load*

23768BAA068 width*

23768BAA071 thrust part*

23768BAA072 special feature*

23768BAA073 rolling bearing type*

23768BAA108 heat treatment*

23768BAA109 coating*

SD: 23768DAA025

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA026-1 1

combined bearing of radial needle roller / thrust roller type"

Superclass: 23768AAA021 combined bearing

Definition: bearing of which radial and axial functions are respectively separated by a needle roller bearing and a thrust roller bearing

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA012 radial internal clearance*

23768BAA017 lubricant*

23768BAA018 material, bearing*

23768BAA023 tolerance class*

23768BAA030 rolling element*

23768BAA065 axial load*

23768BAA068 width*

23768BAA071 thrust part*

23768BAA072 special feature*

23768BAA073 rolling bearing type*

23768BAA108 heat treatment*

23768BAA109 coating*

SD: 23768DAA026

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA027-1 1

insert bearing accessory"

Superclass: 23768AAA022 insert bearing, unit housing and accessory

Definition: element allowing vibrations damping or the insert bearing protection

AP: 23768BAA002 bore diameter

23768BAA005 pitch diameter of bolt holes

23768BAA021 number of bolt holes for fasteners

23768BAA077 outside locating diameter

23768BAA078 width

23768BAA079 insert bearing accessory material

23768BAA080 accessory type

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA028-1 1

insert bearing unit"

Superclass: 23768AAA022 insert bearing, unit housing and accessory

Definition: unit composed of an insert bearing housing, an insert bearing and some accessories, ready to be integrated in an installation, and having an auto-aligning function

AP: 23768BAA005 pitch diameter of bolt holes

23768BAA007 retaining feature, inner ring

23768BAA009 centre distance between bolt holes

23768BAA011 centre height

23768BAA013 sealing

23768BAA014 overall width

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA019 material, housing

23768BAA021 number of bolt holes for fasteners

23768BAA024 bore type

23768BAA025 sealing type

23768BAA027 housing type

23768BAA028 fastening bolt hole type

23768BAA074 flanged housing type

23768BAA075 relubrication nipple

23768BAA076 relubrication hole

23768BAA081 unit sealing

23768BAA082 bearing width, total

23768BAA107 shaft diameter

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA027(housing type)={1, 2, 3}

23768BAA028(fastening bolt hole type)={3, 4}

23768BAA019(material, housing)={1, 4, 5}

23768BAA013(sealing)={4, 5, 6, 10};

23768BAA024(bore type)={1, 2, 3, 4}

23768BAA017(lubricant)={2, 3}

23768BAA018(material, bearing)={1, 2, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1}

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA029-1 1

insert bearing housing"

Superclass: 23768AAA022 insert bearing, unit housing and accessory

Definition: part of a bearing mounting, surrounding the bearing and having an inside spherical surface matching the outside surface of the bearing outer ring

AP: 23768BAA003 spherical seating diameter

23768BAA005 pitch diameter of bolt holes

23768BAA009 centre distance between bolt holes

23768BAA011 centre height

23768BAA014 overall width

23768BAA019 material, housing

23768BAA021 number of bolt holes for fasteners

23768BAA027 housing type

23768BAA028 fastening bolt hole type

23768BAA074 flanged housing type

23768BAA075 relubrication nipple

23768BAA076 relubrication hole

Remark:

23768BAA027(housing type)={1, 2, 3}

23768BAA028(fastening bolt hole type)={3, 4}

23768BAA019(material, housing)={1, 4, 5}

SDD: ISO 5593 07.01.01

SD: 23768DAA029

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA030-1 1

insert bearing"

Superclass: 23768AAA022 insert bearing, unit housing and accessory

Definition: radial rolling bearing with a spherical outside surface and an extended inner ring with a locking device

Note: bearing originally designed for being used in insert bearing units

AP: 23768BAA001 cage

23768BAA002 bore diameter

23768BAA004 outside diameter

23768BAA006 relubrication feature

23768BAA007 retaining feature, inner ring

23768BAA013sealing

23768BAA015 width, outer ring

23768BAA016 width, inner ring

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA024 bore type

23768BAA025 sealing type

23768BAA030 rolling element

23768BAA083 rubber collar

23768BAA084 outside diameter type

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA030(rolling element)={1, 2}

23768BAA006(relubrication feature)={1, 2}

23768BAA013(sealing)={4, 5, 6, 10}

23768BAA001(cage)={1, 2, 3}

23768BAA024(bore type)={1, 2, 3, 4}

23768BAA017(lubricant)={2, 3}

23768BAA018(material, bearing)={1, 2, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1}

SDD: ISO 5593 01.02.04

SD: 23768DAA030

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA031-1 1

thrust ball bearing"

Superclass: 23768AAA023 ball bearing

Definition: thrust rolling bearing with balls as rolling elements

AP: 23768BAA001 cage*

23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA018 material, bearing*

23768BAA023 tolerance class*

23768BAA108 heat treatment*

23768BAA109 coating*

23768BAA020 number of rows

23768BAA067 height

23768BAA087 housing washer type

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4}

23768BAA001(cage)={1, 2, 3}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

23768BAA087(housing washer type)={3, 4}

SDD: ISO 5593 01.05.10

SD: 23768DAA031

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA032-1 1

angular contact thrust ball bearing"

Superclass: 23768AAA023 ball bearing

Definition: thrust ball bearing with a nominal contact angle greater than 45° and smaller than 90°

AP: 23768BAA001 cage*

23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA018 material, bearing*

23768BAA023 tolerance class*

23768BAA108 heat treatment*

23768BAA109 coating*

23768BAA006 relubrication feature

23768BAA008 matched arrangement

23768BAA013 sealing

23768BAA017 lubricant

23768BAA020 number of rows

23768BAA025 sealing type

23768BAA064 contact angle

23768BAA065 axial load

23768BAA067 height

23768BAA069 number of matched bearings

23768BAA070 locating feature, bearing outer ring

23768BAA085 matched condition (axial clearance/preload)

23768BAA087 housing washer type

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA006(relubrication feature)={1, 2}

23768BAA013(sealing)={1, 2, 3, 4, 5, 6}

23768BAA001(cage)={1, 2, 3, 4}

23768BAA017(lubricant)={1, 2, 3}

23768BAA008(matched arrangement)={1, 2, 3, 4, 5, 6}

23768BAA070(locating feature, bearing outer ring)={1, 2, 3, 4, 5}

23768BAA018(material, bearing)={1, 2, 3, 4, 5, 6, 7, 8}

23768BAA069(number of matched bearings)={1, 2, 3, 4}

23768BAA087(housing washer type)={1, 2}

SDD: ISO 5593 01.03.03

SD: 23768DAA032

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA033-1 1

angular contact radial ball bearing"

Superclass: 23768AAA023 ball bearing

Definition: rolling bearing with a nominal contact angle greater than 0° but less than 90°

AP: 23768BAA001 cage*

23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA018 material, bearing*

23768BAA023 tolerance class*

23768BAA108 heat treatment*

23768BAA109 coating*

23768BAA006 relubrication feature

23768BAA008 matched arrangement

23768BAA013 sealing

23768BAA017 lubricant

23768BAA020 number of rows

23768BAA025 sealing type

23768BAA064 contact angle

23768BAA066 arrangement of contact angle

23768BAA068 width

23768BAA069 number of matched bearings

23768BAA070 locating feature, bearing outer ring

23768BAA085 matched condition (axial clearance/preload)

23768BAA086 universal matching bearing

23768BAA088 axial internal clearance

23768BAA089 ring type

23768BAA090 contact type

23768BAA091 outer ring with only one raceway shoulder

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA013(sealing)={1, 2, 3, 4, 5, 6}

23768BAA006(relubrication feature)={1, 2}

23768BAA001(cage)={1, 2, 3, 4}

23768BAA017(lubricant)={1, 2, 3}

23768BAA008(matched arrangement)={1, 2, 3, 4, 5, 6}

23768BAA070(locating feature, bearing outer ring)={1, 2, 3, 4, 5}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

23768BAA069(number of matched bearings)={1, 2, 3, 4}

SDD: ISO 5593 01.02.03 modified

SD: 23768DAA033

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA034-1 1

self-aligning ball bearing"

Superclass: 23768AAA023 ball bearing

Definition: ball bearing which can accommodate angular misalignment and angular motion between the axes of its raceways due to one raceway being spherical

AP: 23768BAA001 cage*

23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA013 sealing

23768BAA018 material, bearing*

23768BAA023 tolerance class*

23768BAA108 heat treatment*

23768BAA109 coating*

23768BAA006 relubrication feature

23768BAA012 radial internal clearance

23768BAA017 lubricant

23768BAA024 bore type

23768BAA025 sealing type

23768BAA068 width

23768BAA070 locating feature, bearing outer ring

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA012(radial internal clearance)={CN, C2, C3, C4, C5}

23768BAA013(sealing)={1, 2, 3, 4, 5};

23768BAA006(relubrication feature)={1, 2}

23768BAA001(cage)={1, 2, 3}

23768BAA024(bore type)={1, 2}

23768BAA017(lubricant)={1, 2, 3}

23768BAA070(locating feature, bearing outer ring)={1, 2, 3, 4}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

SDD: ISO 5593 01.01.08 modified

SD: 23768DAA034

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA035-1 1

deep groove ball bearing"

Superclass: 23768AAA023 ball bearing

Definition: radial ball bearing in which each ring has uninterrupted raceway grooves with a cross-section matching about one-third of the ball circumference

AP: 23768BAA001 cage*

23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA018 material, bearing*

23768BAA023 tolerance class*

23768BAA108 heat treatment*

23768BAA109 coating*

23768BAA006 relubrication feature

23768BAA008 matched arrangement

23768BAA012 radial internal clearance

23768BAA013 sealing

23768BAA017 lubricant

23768BAA020 number of rows

23768BAA024 bore type

23768BAA025 sealing type

23768BAA068 width

23768BAA070 locating feature, bearing outer ring

23768BAA092 filling slot

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA012(radial internal clearance)={CN, C2, C3, C4, C5}

23768BAA013(sealing)={1, 2, 3, 4, 5, 6}

23768BAA006(relubrication feature)={1, 2}

23768BAA001(cage)={1, 2, 3, 4}

23768BAA024(bore type)={1, 2}

23768BAA017(lubricant)={1, 2, 3}

23768BAA008(matched arrangement)={1, 2, 3, 4}

23768BAA070(locating feature, bearing outer ring)={1, 2, 3, 4, 5}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

SDD: ISO 5593 01.05.04

SD: 23768DAA035

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA036-1 1

thrust needle roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: thrust rolling bearing with needle rollers as rolling elements

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA001 cage

23768BAA029 bearing part

23768BAA067 height

23768BAA101 needle roller grade

Remark:

23768BAA001(cage)={1, 2}

23768BAA029(bearing part)={1, 6, 7, 8, 10, 11}

SDD: ISO 5593 01.06.14

SD: 23768DAA036

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA037-1 1

thrust spherical roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: self-aligning, thrust rolling bearing with convex rollers or concave rollers as rolling elements

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA001 cage

23768BAA018 material, bearing

23768BAA023 tolerance class

23768BAA067 height

23768BAA070 locating feature, bearing outer ring

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA023(tolerance class)={PN, P6, P5}

23768BAA001(cage)={1, 2, 3}

23768BAA070(locating feature, bearing outer ring)={1, 4}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

SDD: ISO 5593 01.06.15

SD: 23768DAA037

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA038-1 1

thrust tapered roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: thrust rolling bearing with tapered rollers as rolling elements

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA001 cage

23768BAA013 sealing

23768BAA017 lubricant

23768BAA023 tolerance class

23768BAA029 bearing part

23768BAA065 axial load

23768BAA067 height

Remark:

23768BAA023(tolerance class)={PN, P6, P5}

23768BAA013(sealing)={1, 7, 8, 9}

23768BAA001(cage)={4, 5}

23768BAA017(lubricant)={1, 2, 3}

23768BAA029(bearing part)={1, 6, 7, 8}

SDD: ISO 5593 01.06.13

SD: 23768DAA038

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA039-1 1

thrust cylindrical roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: thrust rolling bearing with cylindrical rollers as rolling elements

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA001 cage

23768BAA020 number of rows

23768BAA023 tolerance class

23768BAA029 bearing part

23768BAA065 axial load

23768BAA067 height

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4}

23768BAA001(cage)={2, 3}

23768BAA029(bearing part)={1, 6, 7, 8, 9}

SDD: ISO 5593 01.06.12

SD: 23768DAA039

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768AAA040-1 1

needle roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: radial rolling bearing with needle rollers as rolling elements

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA001 cage

23768BAA006 relubrication feature

23768BAA012 radial internal clearance

23768BAA013 sealing

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA020 number of rows

23768BAA023 tolerance class

23768BAA025 sealing type

23768BAA029 bearing part

23768BAA068 width

23768BAA093 number of ribs, outer ring

23768BAA094 aligning feature

23768BAA095 outer ring type

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA023(tolerance class)={PN, P6, P5}

23768BAA012(radial internal clearance)={CN, C2, C3, C4}

23768BAA013(sealing)={1, 2, 3};

23768BAA006(relubrication feature)={1, 2}

23768BAA001(cage)={4, 5}

23768BAA017(lubricant)={1, 2, 3}

23768BAA018(material, bearing)={1, 2}

23768BAA109(coating)={1}

23768BAA029(bearing part)={1, 2, 5, 6}

23768BAA093(number of ribs, outer ring)={1, 3, 4, 5, 6}

SDD: ISO 5593 01.06.05

SD: 23768DAA040

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA041-1 1

spherical roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: self-aligning, radial rolling bearing with convex rollers or concave rollers as rolling elements

Note: in the case of convex rollers, the outer ring has a spherical raceway, in the case of concave rollers, the inner ring has a spherical raceway

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA001 cage

23768BAA006 relubrication feature

23768BAA012 radial internal clearance

23768BAA013 sealing

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA020 number of rows

23768BAA023 tolerance class

23768BAA024 bore type

23768BAA025 sealing type

23768BAA068 width

23768BAA070 locating feature, bearing outer ring

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4}

23768BAA012(radial internal clearance)={CN, C2, C3, C4, C5}

23768BAA013(sealing)={1, 2, 3, 4, 5, 6}

23768BAA006(relubrication feature)={1, 2}

23768BAA001(cage)={1, 2, 3}

23768BAA024(bore type)={1, 2}

23768BAA017(lubricant)={1, 2, 3}

23768BAA070(locating feature, bearing outer ring)={1, 2, 3, 4}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

SDD: ISO 5593 01.06.09

SD: 23768DAA041

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA042-1 1

tapered roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: radial rolling bearing with tapered rollers as rolling elements

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA006 relubrication feature

23768BAA008 matched arrangement

23768BAA013 sealing

23768BAA015 width, outer ring

23768BAA016 width, inner ring

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA020 number of rows

23768BAA023 tolerance class

23768BAA024 bore type

23768BAA025 sealing type

23768BAA029 bearing part

23768BAA064 contact angle

23768BAA066 arrangement of contact angle

23768BAA069 number of matched bearings

23768BAA070 locating feature, bearing outer ring

23768BAA096 width, total

23768BAA097 single-row bearing for matching, pre-adjusted

23768BAA098 single-row bearing

Remark:

23768BAA023(tolerance class)={PN, P5, P4, P2, P6X}

23768BAA006(relubrication feature)={1, 2}

23768BAA013(sealing)={1,2,3,4,5,6}

23768BAA024(bore type)={1, 2}

23768BAA017(lubricant)={1, 2, 3}

23768BAA070(locating feature, bearing outer ring)={1, 3, 4, 5}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

23768BAA069(number of matched bearings)={1, 2, 3}

23768BAA029(bearing part)={1, 14, 15}

SDD: ISO 5593 01.06.04

SD: 23768DAA042

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768AAA043-1 1

cylindrical roller bearing"

Superclass: 23768AAA024 roller bearing

Definition: radial rolling bearing with cylindrical rollers as rolling elements

AP: 23768BAA002 bore diameter*

23768BAA004 outside diameter*

23768BAA001 cage

23768BAA006 relubrication feature

23768BAA012 radial internal clearance

23768BAA013 sealing

23768BAA017 lubricant

23768BAA018 material, bearing

23768BAA020 number of rows

23768BAA023 tolerance class

23768BAA024 bore type

23768BAA025 sealing type

23768BAA029 bearing part

23768BAA068 width

23768BAA070 locating feature, bearing outer ring

23768BAA093 number of ribs, outer ring

23768BAA099 number of ribs, inner ring

23768BAA100 loose rib

23768BAA108 heat treatment

23768BAA109 coating

Remark:

23768BAA023(tolerance class)={PN, P6, P5, P4, P2}

23768BAA012(radial internal clearance)={CN, C2, C3, C4, C5}

23768BAA013(sealing)={1, 2, 3, 4, 5, 6}

23768BAA006(relubrication feature)={1, 2}

23768BAA001(cage)={1, 2, 3, 4}

23768BAA024(bore type)={1, 2}

23768BAA017(lubricant)={1, 2, 3}

23768BAA070(locating feature, bearing outer ring)={1, 2, 3, 4, 5}

23768BAA018(material, bearing)={1, 2, 3, 4, 5}

23768BAA108(heat treatment)={1}

23768BAA109(coating)={1, 2}

23768BAA029(bearing part)={1, 2, 3, 4, 5, 6}

23768BAA093(number of ribs, outer ring)={1, 2, 3, 4, 5, 6}

SDD: ISO 5593 01.06.03

SD: 23768DAA043

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

Annex D
(normative)

Definitions of rolling bearing properties

D.1 General

This annex specifies the definitions of properties defined in this part of ISO 23768.

D.2 Properties defined in this part of ISO 23768

Definitions of properties in this part of ISO 23768 are the following.

23768BAA001-1 1

cage"

Definition: bearing part which partly surrounds all or several of the rolling elements and moves with them

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=sheet metal

2=non metallic

3=machined metal

4=without

5=with

SDD: ISO 5593 02.01.19

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA002-1 1

bore diameter"

Definition: diameter of the cylinder containing the theoretical surface of a basically cylindrical bore, or diameter, in a designated radial plane, of the cone containing the theoretical surface of a basically tapered bore, or diameter of the sphere containing the theoretical surface of a basically spherical outside surface

DC: 23768AAA001 bearing

PLS: d

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 5593 05.01.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA003-1 1

spherical seating diameter"

Definition: diameter of the spherical surface of a housing in which an insert bearing is mounted

DC: 23768AAA029 insert bearing housing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA004-1 1

outside diameter"

Definition: diameter of the cylinder containing the theoretical surface of a basically cylindrical bore (cylindrical outside surface), or diameter, in a designated radial plane, of the cone containing the theoretical surface of a basically tapered bore, or diameter of the sphere containing the theoretical surface of a basically spherical outside surface

DC: 23768AAA001 bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 5593 05.01.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA005-1 1

pitch diameter of bolt holes"

Definition: diameter of the circle passing through the centre of the bolt holes

DC: 23768AAA001 bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA006-1 1

relubrication feature"

Definition: means which allows lubricant to reach the rolling or sliding surface

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=with

2=without

3=centre of stud at the ribbed end

4=centre of stud at the ribbed and threaded ends

5=radial hole in stud shank

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA007-1 1

retaining feature, inner ring"

Definition: means of fastening of the inner ring on the shaft

DC: 23768AAA022 insert bearing, unit housing and accessory

VF: X 17

DT: Enumeration of codes

1=eccentric locking collar

2=grub screw locking

3=concentric locking collar

4=adapter sleeve

5=slot in inner ring

6=none

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA008-1 1

matched arrangement"

Definition: several rolling bearings which have been selected or manufactured to have predetermined characteristics (for example preload or clearance) when mounted together in a specific way

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=no

2=face-to-face (X)

3=back-to-back (O)

4=tandem

5=combination of back-to-back (O) and tandem

6=combination of face-to-face (X) and tandem

SDD: 5593 03.01.06 modified

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA009-1 1

centre distance between bolt holes"

Definition: distance between the centres of the fixing holes

DC: 23768AAA001 bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA010-1 1

ball grade"

Definition: specific combination of dimensional, form, surface roughness and sorting tolerances for balls

DC: 23768AAA012 ball

VF: X 17

DT: Enumeration of codes

G3=grade 3

G5=grade 5

G10=grade 10

G16=grade 16

G20=grade 20

G24=grade 24

G28=grade 28

G40=grade 40

G60=grade 60

G100=grade 100

G200=grade 200

SDD: ISO 5593 05.04.08

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA011-1 1

centre height"

Definition: distance from mounting face (or base) to centreline of seating diameter

DC: 23768AAA001 bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA012-1 1

radial internal clearance"

Definition: arithmetical mean of the radial distances through which one of the rings may be displaced relative to the other, from one eccentric extreme position to the diametrically opposite extreme position, in different angular directions and without being subjected to any external load

DC: 23768AAA001 bearing

VF: X..2

DT: Enumeration of codes

CN=group N

C2=group 2

C3=group 3

C4=group 4

C5=group 5

SDD: ISO 1132-1 8.1.1

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA013-1 1

sealing"

Definition: circular closure comprising one or several parts, affixed to one bearing ring or bearing washer and extending towards the other ring or washer, with which it makes contact or forms a narrow labyrinth-shaped gap, for the purpose of preventing leakage of lubricant or ingress of foreign substances

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=without

2=seal on one side

3=shield on one side

4=seal on both sides

5=shield on both sides

6=seal on one side, shield on the other

7=with cap

8=with contact seal

9=with cap and contact seal

10=seal and flinger on both sides

11=contact seals

12=gap seals

13=dust cover on both sides

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA014-1 1

overall width"

Definition: distance between the two side faces of a housing

DC: 23768AAA001 bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 1132-1 5.3.1 modified

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA015-1 1

width, outer ring"

Definition: distance between the two side faces of a rolling bearing outer ring

DC: 23768AAA001 bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 1132-1 5.3.1 modified

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA016-1 1

width, inner ring"

Definition: distance between the two side faces of a rolling bearing inner ring

DC: 23768AAA001 bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 1132-1 5.3.1 modified

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA017-1 1

lubricant"

Definition: any substance which, when interposed between two surfaces in relative motion, reduces friction increases wear resistance

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=none

2=grease

3=solid oil

4=MoS2 grease

SDD: ISO 1998-1 1.60.011

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA018-1 1

material, bearing"

Definition: material which can be used for bearing

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=bearing steel

2=stainless steal

3=ceramic

4=hybrid

5=high temperature steel

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA019-1 1

material, housing"

Definition: material which can be used for housings

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=cast iron

2=spheroidal graphite cast iron

3=cast steel

4=composite

5=sheet metal

6=steel

7=die cast aluminium

8=casting zinc alloy

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA020-1 1

number of rows"

Definition: number of rows of rolling elements

DC: 23768AAA001 bearing

VF: NR1 S..4

DT: Integer

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA021-1 1

number of bolt holes for fasteners"

Definition: number of holes allowing the fixation of the bearing by means of bolts or screws

DC: 23768AAA001 bearing

VF: NR1 S..4

DT: Integer

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA022-1 1

for use with bearing"

Definition: bearing designation to which the part is intended to be used

DC: 23768AAA001 bearing

VF: X 17

DT: String

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA023-1 1

tolerance class"

Definition: tolerance classes for radial bearings as defined in ISO 492 and for thrust bearings as defined in ISO 199

DC: 23768AAA001 bearing

VF: X..3

DT: Enumeration of codes

PN=normal (PN)

P6=class 6 (P6)

P5=class 5 (P5)

P4=class 4 (P4)

P2=class 2 (P2)

P6X=class 6X (P6X)

Note: tolerance P6X replaces tolerance P6 thrust tapered roller bearing

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA024-1 1

bore type"

Definition: form of the bore of the inner ring of rolling bearing

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=cylindrical

2=tapered

3=square

4=hexagonal

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA025-1 1

sealing type"

Definition: contact or non-contact sealing design

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=contact

2=non-contact

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA026-1 1

bearing housing seal type"

Definition: type of seal design for housings

DC: 23768AAA004 bearing housing element

VF: X 17

DT: Enumeration of codes

1=felt seal

2=lip seal

3=V-ring seal

4=labyrinth seal

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA027-1 1

housing type"

Definition: housing design

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=plummer block (pillow block)

2=take-up housing

3=flanged

4=two bearing housing

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA028-1 1

fastening bolt hole type"

Definition: design of bolt hole

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=holes (casting)

2=holes (drilling)

3=plain holes

4=threaded holes

5=without holes

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA029-1 1

bearing part"

Definition: one of the individual parts comprising a rolling bearing but excluding all accessories

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=complete bearing

2=bearing without inner ring

3=bearing without outer ring

4=outer ring

5=inner ring

6=roller and cage assembly

7=shaft washer

8=housing washer

9=central washer

10=thrust washer

11=roller and cage assembly with washer having centering feature

12=complete track roller

13=track roller without inner ring

14=inner ring, cage and roller assembly

15=outer ring (cup)

SDD: ISO 5593 02.01.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA030-1 1

rolling element"

Definition: ball or roller which rolls between raceways

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=balls

2=needle rollers

3=cylindrical rollers

SDD: ISO 5593 02.01.18

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA031-1 1

thread diameter"

Definition: tapered sleeve threading nominal diameter

DC: 23768AAA007 adapter sleeve

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA032-1 1

width"

Definition: distance between the two radial planes in contact with the two element ends

DC: 23768AAA007 adapter sleeve

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA033-1 1

holes for oil injection"

Definition: hole intended to inject oil facilitating the rolling bearing withdrawal

DC: 23768AAA007 adapter sleeve

VF: X 17

DT: Enumeration of codes

1=without

2=with

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA034-1 1

adapter sleeve type"

Definition: adapter or withdrawal sleeve

DC: 23768AAA007 adapter sleeve

VF: X 17

DT: Enumeration of codes

1=adapter sleeve (threads on thinner end)

2=withdrawal sleeve (threads on thicker end)

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA035-1 1

thread diameter"

Definition: nominal diameter of thread

DC: 23768AAA008 locknut

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA036-1 1

locking device"

Definition: element to avoid nut rotation

DC: 23768AAA008 locknut

VF: X 17

DT: Enumeration of codes

1=lockwasher

2=locking clip

3=incorporated in the locknut

4=none

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA037-1 1

width"

Definition: distance between the two radial planes in contact with the two element ends

DC: 23768AAA008 locknut

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA038-1 1

for use with sleeve"

Definition: adapter sleeve designation to which the accessory is intended to be used

DC: 23768AAA008 locknut

VF: X 17

DT: String

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA039-1 1

nut for hydraulic mounting"

Definition: presence of a nut for the rolling bearing mounting by oil pressure

DC: 23768AAA008 locknut

VF: X 17

DT: Enumeration of codes

1=yes

2=no

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA040-1 1

diameter"

Definition: distance between two parallel planes tangential to the surface of a ball, or distance between two tangents to the surface of a roller, parallel to each other and in a plane perpendicular to the roller axis (a radial plane)

DC: 23768AAA003 rolling bearing part

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 5593 04.04.07 and 04.04.08

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA041-1 1

length"

Definition: distance between the two radial planes which just contain the extremities of a roller

DC: 23768AAA003 rolling bearing part

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 5593 04.04.09

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA042-1 1

seating diameter for seal"

Definition: seal nominal seating diameter

DC: 23768AAA017 bearing housing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA043-1 1

needle roller type

Definition: shape at the end of a needle roller

DC: 23768AAA009 needle roller

VF: X 17

DT: Enumeration of codes

1=flat ends

2=rounded ends

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA044-1 1

width in bore"

Definition: width of thrust collar protruding beyond inner ring face

DC: 23768AAA010 thrust collar (L-shaped)

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA046-1 1

special raceway feature"

Definition: special feature of the surface of a load supporting part of a rolling bearing, suitably prepared as a rolling track for the rolling elements

DC: 23768AAA011 inner ring

VF: X 17

DT: Enumeration of codes

1=none

2=without lead chamfer

3=for use with seals

4=with allowance for finish grinding

SDD: ISO 5593 02.02.01 modified

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA047-1 1

part material"

Definition: material type which can be used for bearing parts

DC: 23768AAA003 rolling bearing part

VF: X 17

DT: Enumeration of codes

1=bearing steel

2=stainless steel

3=ceramic

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA048-1 1

height"

Definition: axial distance between the two outermost faces of a aligning seat washer

DC: 23768AAA013 aligning seat washer

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA049-1 1

housing configuration"

Definition: number of parts of which the housing is constituted

DC: 23768AAA004 bearing housing element

VF: X 17

DT: Enumeration of codes

1=one-piece

2=two-pieces

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA050-1 1

bearing configuration"

Definition: bearing mounting nature

DC: 23768AAA004 bearing housing element

VF: X 17

DT: Enumeration of codes

1=adapter sleeve

2=cylindrical bore

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA051-1 1

mounting arrangement"

Definition: mounting position of a housing or housing unit at the end of a shaft or not at the end of a shaft

DC: 23768AAA004 bearing housing element

VF: X 17

DT: Enumeration of codes

1=through shaft

2=shaft end

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA052-1 1

width"

Definition: distance between the two radial planes in contact with the two element ends

DC: 23768AAA015 accessory for bearing housing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA053-1 1

housing designation"

Definition: housing designation to which the accessory can be used

DC: 23768AAA015 accessory for bearing housing

VF: X 17

DT: String

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA054-1 1

accessory type"

Definition: accessory type

DC: 23768AAA015 accessory for bearing housing

VF: X 17

DT: Enumeration of codes

1=end cover

2=locating ring

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA055-1 1

bearing insert"

Definition: type of bearing inserted in the bearing housing

DC: 23768AAA016 bearing housing unit

VF: X 17

DT: Enumeration of codes

1=spherical roller bearing

2=self-aligning ball bearing

3=cylindrical roller bearing

4=angular contact ball bearing

5=deep groove ball bearing

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA056-1 1

number of flanges on outer ring"

Definition: number of flanges on the outside of a bearing outer ring for axial guidance

DC: 23768AAA005 track roller

VF: X 17

DT: Enumeration of codes

1=none

2=two

3=one

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA057-1 1

outer ring profile"

Definition: profile shape of the outer diameter of the track roller

DC: 23768AAA005 track roller

VF: X 17

DT: Enumeration of codes

1=crowned

2=cylindrical

3=U-profil

4=V-profil

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA058-1 1

for use with track roller"

Definition: accessory to be used with track roller

DC: 23768AAA018 accessory for track roller

VF: X 17

DT: String

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA059-1 1

accessory type"

Definition: accessory type

DC: 23768AAA018 accessory for track roller

VF: X 17

DT: Enumeration of codes

1=locknut

2=lubrication nipple

3=lubrication adapter

4=closing plug

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA060-1 1

application"

Definition: recommandation of usage

DC: 23768AAA019 yoke-type track roller

VF: X 17

DT: Enumeration of codes

1=support roller

2=lift mast roller

3=chain guide roller

4=back-up roller

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA061-1 1

width, total"

Definition: overall width of inner ring and side washers of yoke-type track roller

DC: 23768AAA019 yoke-type track roller

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 7063

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA062-1 1

axial guidance of outer ring"

Definition: presence of a guidance of the outer ring in axial direction

DC: 23768AAA019 yoke-type track roller

VF: X 17

DT: Enumeration of codes

1=yes

2=no

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA063-1 1

feature for tightening"

Definition: indication of the tightening tool recess

DC: 23768AAA020 stud-type track roller

VF: X 17

DT: Enumeration of codes

1=screw driver slot

2=hexagon socket

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA064-1 1

contact angle"

Definition: angle between a plane perpendicular to a bearing axis (a radial plane) and the line of action [the nominal line of action] of the resultant of the forces transmitted by a bearing ring or washer to a rolling element

DC: 23768AAA006 rolling bearing

Unit: Degree

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 5593 04.02.10

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA065-1 1

axial load"

Definition: load acting in a direction parallel with the bearing axis

DC: 23768AAA006 rolling bearing

VF: X 17

DT: Enumeration of codes

1=single-direction

2=double-direction

SDD: ISO 5593 06.02.02

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA066-1 1

arrangement of contact angle"

Definition: arrangement of two rolling bearings mounted side-by-side on the same shaft such that they operate as a unit

DC: 23768AAA006 rolling bearing

VF: X 17

DT: Enumeration of codes

1=back-to-back (X)

2=face-to-face (O)

3=tandem (T)

SDD: ISO 5593 03.01.01

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA067-1 1

height"

Definition: distance between the two theoretical washer back faces designated to bound the height of a thrust bearing

DC: 23768AAA006 rolling bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 1132-1 5.3.13

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA068-1 1

width"

Definition: distance between the points of intersection of the bearing axis and the two planes tangential to the actual ring faces designated to bound the width of a radial bearing where one inner ring face and one outer ring face are designated to bound the width

DC: 23768AAA006 rolling bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 5593 05.02.07

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA069-1 1

number of matched bearings"

Definition: number of rolling bearings forming a matched unit

DC: 23768AAA006 rolling bearing

VF: X 17

DT: Enumeration of codes

1=two

2=three

3=four

4=five

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA070-1 1

locating feature, bearing outer ring"

Definition: axial locating feature mode of the outer ring

DC: 23768AAA006 rolling bearing

VF: X 17

DT: Enumeration of codes

1=none

2=snap ring groove

3=snap ring (fitted)

4=retaining notch

5=flange

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA071-1 1

thrust part"

Definition: thrust part with or without cage

DC: 23768AAA021 combined bearing

VF: X 17

DT: Enumeration of codes

1=with cage

2=without cage

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA072-1 1

special feature"

Definition: special feature of a combined bearing

DC: 23768AAA021 combined bearing

VF: X 17

DT: Enumeration of codes

1=thrust part with retaining part

2=flanged outer ring with holes

3=flanger outer ring without holes

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA073-1 1

rolling bearing type"

Definition: presence indication of an inner ring

DC: 23768AAA021 combined bearing

VF: X 17

DT: Enumeration of codes

1=complete rolling bearing

2=rolling bearing without inner ring

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA074-1 1

flanged housing type"

Definition: design of the flanged housing

DC: 23768AAA022 insert bearing, unit housing and accessory

VF: X 17

DT: Enumeration of codes

1=square

2=oval

3=round

4=triangular

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA075-1 1

relubrication nipple"

Definition: presence indication of a relubrication nipple

DC: 23768AAA022 insert bearing, unit housing and accessory

VF: X 17

DT: Enumeration of codes

1=with

2=without

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA076-1 1

relubrication hole"

Definition: presence indication of a relubrication hole

DC: 23768AAA022 insert bearing, unit housing and accessory

VF: X 17

DT: Enumeration of codes

1=yes

2=no

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA077-1 1

outside locating diameter"

Definition: outside locating diameter of the accessory (except for cast iron end cap)

DC: 23768AAA027 insert bearing accessory

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA078-1 1

width"

Definition: distance between the two external faces of the accessory

DC: 23768AAA027 insert bearing accessory

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA079-1 1

insert bearing accessory material"

Definition: material type of the accessory

DC: 23768AAA027 insert bearing accessory

VF: X 17

DT: Enumeration of codes

1=composite

2=sheet metal

3=cast iron

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA080-1 1

accessory type"

Definition: accessory type

DC: 23768AAA027 insert bearing accessory

VF: X 17

DT: Enumeration of codes

1=end cap

2=rubber collar

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA081-1 1

unit sealing"

Definition: means of protection for the unit

DC: 23768AAA028 insert bearing unit

VF: X 17

DT: Enumeration of codes

1=without

2=end cap

3=rubber flingers

4=plain flingers

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA082-1 1

bearing width, total"

Definition: overall width of the bearing

DC: 23768AAA028 insert bearing unit

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 9628

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA083-1 1

rubber collar"

Definition: presence indication of rubber collar

Note: fitted on outer ring

DC: 23768AAA030 insert bearing

VF: X 17

DT: Enumeration of codes

1=no

2=yes

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA084-1 1

outside diameter type"

Definition: design of outside diameter

DC: 23768AAA030 insert bearing

VF: X 17

DT: Enumeration of codes

1=spherical

2=cylindrical

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA085-1 1

matched condition (axial clearance/preload)"

Definition: rolling bearings which have been selected or manufactured to have predetermined characteristics, usually preload or clearance, when mounted together in a specified way

DC: 23768AAA023 ball bearing

VF: X 17

DT: Enumeration of codes

1=small clearance

2=medium clearance

3=large clearance

4=light preload

5=medium preload

6=heavy preload

7=special clearance

8=special preload

SDD: ISO 5593 03.01.06

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA086-1 1

universal matching bearing"

Definition: radial rolling bearing which, when used together with one or more similar bearing(s), selected at random, yields predetermined characteristics in a paired or stack mounting

DC: 23768AAA023 ball bearing

VF: X 17

DT: Enumeration of codes

1=no

2=yes

Note: delivered individually

SDD: ISO 5593 01.02.10

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA087-1 1

housing washer type"

Definition: type of bearing washer which is intended to be mounted in a housing

DC: 23768AAA023 ball bearing

VF: X 17

DT: Enumeration of codes

1=one-piece

2=two-pieces

3=flat back face

4=spherical back face

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA088-1 1

axial internal clearance"

Definition: <bearing capable of taking axial load in both directions, non-preloaded> arithmetical mean of the axial distances through which one of the rings may be displaced relative to the other, from one axial extreme position to the opposite extreme position, without being subjected to any external load

Note: this property applies to a single bearing

DC: 23768AAA033 angular contact radial ball bearing

PLS: Ga

VF: X 17

DT: Enumeration of codes

CN=group N

C2=group 2

C3=group 3

C4=group 4

C5=group 5

SDD: ISO 5593 05.08.03

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA089-1 1

ring type"

Definition: design of the ring

DC: 23768AAA033 angular contact radial ball bearing

VF: X 17

DT: Enumeration of codes

1=one-piece inner and outer rings

2=two-piece inner ring

3=two-piece outer ring

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA090-1 1

contact type"

Definition: rolling bearing with a nominal contact angle greater than 0° but less than 90°

DC: 23768AAA033 angular contact radial ball bearing

VF: X 17

DT: Enumeration of codes

1=normal contact (two-point contact)

2=four-point contact

3=three-point contact

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA091-1 1

outer ring with only one raceway shoulder"

Definition: outer ring of a ball bearing with one shoulder completely or partly removed

DC: 23768AAA033 angular contact radial ball bearing

VF: X 17

DT: Enumeration of codes

1=removable outer ring

2=non-removable outer ring

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA092-1 1

filling slot"

Definition: slot in a rib or a shoulder of a bearing ring or bearing washer to permit the insertion of rolling elements

DC: 23768AAA035 deep groove ball bearing

VF: X 17

DT: Enumeration of codes

1=without

2=with

SDD: ISO 5593 02.02.09

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

23768BAA093-1 1

number of ribs, outer ring"

Definition: number of ribs on outer ring

DC: 23768AAA024 roller bearing

VF: X 17

DT: Enumeration of codes

1=none

2=one

3=two

4=three

5=four

6=five

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA094-1 1

aligning feature"

Definition: indication of a self-aligning possibility

DC: 23768AAA040 needle roller bearing

VF: X 17

DT: Enumeration of codes

1=without

2=with

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA095-1 1

outer ring type"

Definition: design of the outer ring

DC: 23768AAA040 needle roller bearing

VF: X 17

DT: Enumeration of codes

1=machined (solid)

2=drawn cup with open ends

3=drawn cup with one closed end

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA096-1 1

width, total"

Definition: axial distance between the back face of the outer ring and that of the inner ring

DC: 23768AAA042 tapered roller bearing

Unit: mm

VF: NR2 S..3.3

DT: Real measure

SDD: ISO 5593 04.03.04 Note

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA097-1 1

single-row bearing for matching, pre-adjusted"

Definition: indication of pre-adjustment for matching

DC: 23768AAA042 tapered roller bearing

VF: X 17

DT: Enumeration of codes

1=yes

2=no

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA098-1 1

single-row bearing"

Definition: rolling bearing with one row of tapered rollers

DC: 23768AAA042 tapered roller bearing

VF: X 17

DT: Enumeration of codes

1=yes

2=no

Note: for special pre-set adjustment arrangements

SDD: ISO 5593 01.01.02 modified

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA099-1 1

number of ribs, inner ring"

Definition: number of ribs on the inner ring

DC: 23768AAA043 cylindrical roller bearing

VF: X 17

DT: Enumeration of codes

1=none

2=one

3=two

4=three

5=four

6=five

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA100-1 1

loose rib"

Definition: separable basically flat washer the outer or inner part of which serves as an inner ring rib or outer ring rib for a cylindrical roller radial bearing

DC: 23768AAA043 cylindrical roller bearing

VF: X 17

DT: Enumeration of codes

1=none

2=loose rib (flat washer)

3=thrust collar (L-shaped)

SDD: ISO 5593 02.01.09

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA101-1 1

needle roller grade"

Definition: specific combination of diameter and form tolerances for needle roller, characteristic of its level of accuracy

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

G2=grade 2

G3=grade 3

G5=grade 5

SDD: ISO 3096 03.14

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA102-1 1

functional outside diameter"

Definition: track roller functional nominal outside diameter

DC: 23768AAA019 yoke-type track roller

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA103-1 1

type"

Definition: indication on the demountability of the track roller

DC: 23768AAA019 yoke-type track roller

VF: X 17

DT: Enumeration of codes

1=separable

2=non-separable

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA104-1 1

stud alignment"

Definition: misalignment of the functional outside diameter in relation to the track roller axis

DC: 23768AAA020 stud-type track roller

VF: X 17

DT: Enumeration of codes

1=centric

2=eccentric

3=centric with eccentric collar

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA105-1 1

functional outside diameter"

Definition: track roller functional nominal outside diameter

DC: 23768AAA020 stud-type track roller

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA106-1 1

stud diameter"

Definition: diameter of the stud

DC: 23768AAA020 stud-type track roller

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA107-1 1

shaft diameter"

Definition: bore diameter of bearing and of eccentric locking collar

Note: In case that a tapered bore inner ring is used with an adapter sleeve, the shaft diameter is different from the bore diameter in the inner ring

DC: 23768AAA028 insert bearing unit

PLS: d

Unit: mm

VF: NR2 S..3.3

DT: Real measure

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA108-1 1

heat treatment"

Definition: treatment which can be used for bearings

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=dimensionally stabilized

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA109-1 1

coating"

Definition: coating which can be used for bearings

DC: 23768AAA001 bearing

VF: X 17

DT: Enumeration of codes

1=coated

2=insulated

3=chromium plated

4=phosphate coated

5=MoS2 coated

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

23768BAA110-1 1

part coating"

Definition: covering type which can be used for bearing parts

DC: 23768AAA003 rolling bearing part

VF: X 17

DT: Enumeration of codes

1=coated

DOD: 2010-09-01 **DCV:** 2010-09-01

DCR: 2010-09-01

———————

Annex E
(informative)

Computer-interpretable listings

The complete ontology of rolling bearings in accordance with the descriptions defined in ISO 13584-25, conformance class 2 (EXPRESS file) is available at: http://standards.iso.org/iso/ts/23768/-1/. This physical file uses the implementation method defined in ISO 10303-21. This file is considered complementary to this Technical Specification (this part of ISO 23768); it can be freely downloaded and used.

The following permission notice and disclaimer shall be included in all copies of this file ("the File"), and derivations of the File:

Permission is hereby granted, free of charge in perpetuity, to any person obtaining a copy of the File, to use, copy, modify, merge and distribute free of charge, copies of the File for the purposes of developing, implementing, installing and using software based on the File, and to permit persons to whom the File is furnished to do so, subject to the following conditions:

THE FILE IS PROVIDED “AS IS”, WITHOUT WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE FILE OR THE USE OR OTHER DEALINGS IN THE FILE.

In addition, any modified copy of the File shall include the following notice:

THIS FILE HAS BEEN MODIFIED FROM THE FILE DEFINED IN ISO/TS 23768-1, AND SHOULD NOT BE INTERPRETED AS COMPLYING WITH THAT TECHNICAL SPECIFICATION.

Annex F
(informative)

Simplified illustrations of rolling bearing classes

F.1 General

This annex gives a set of simplified illustrations of component classes defined in this part of ISO 23768.

F.2 Simplified illustrations defined in this part of ISO 23768

Simplified illustrations defined in this part of ISO 23768 are the following (see Table F.1):

Table F.1 — Simplified illustrations of classes

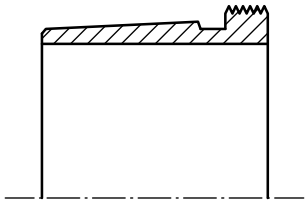
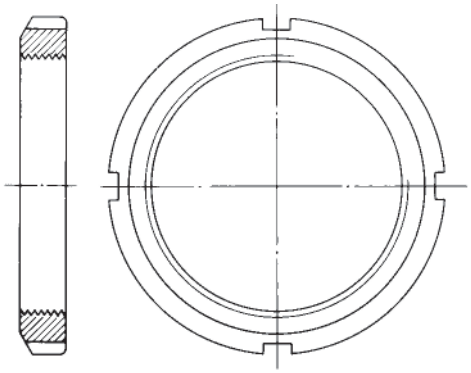
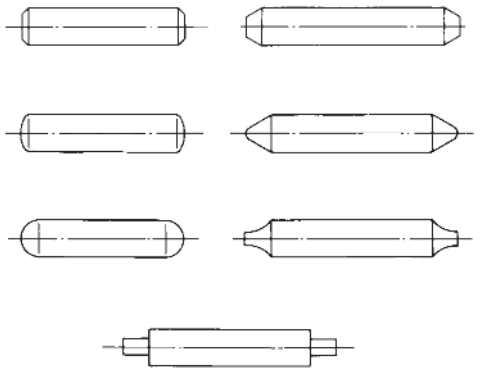
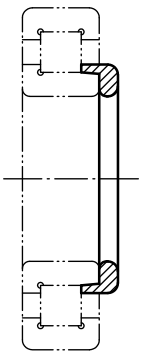
Code	Preferred name	Code	Preferred name
23768DAA007	Adapter sleeve	23768DAA008	Locknut
			
23768DAA009	Needle roller	23768DAA010	Thrust collar (L-shaped)
			

Table F.1 — Simplified illustrations of classes (*continued*)

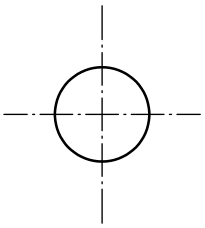
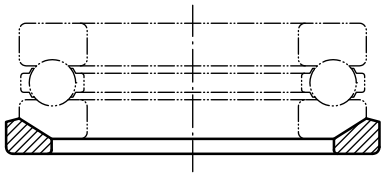
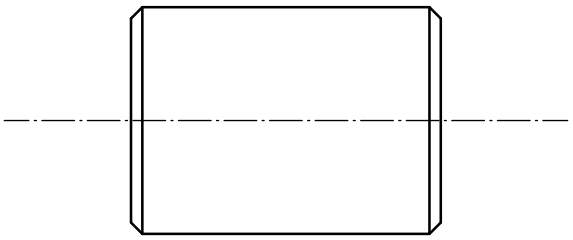
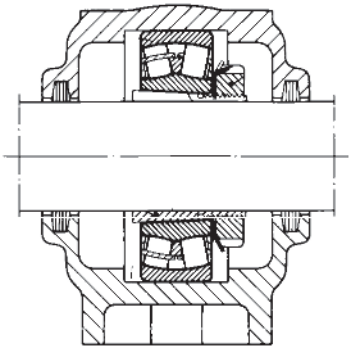
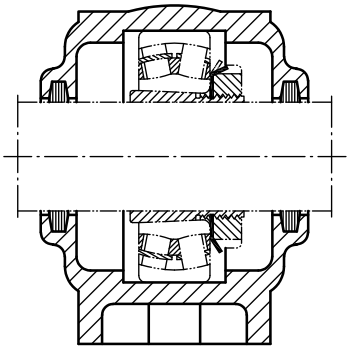
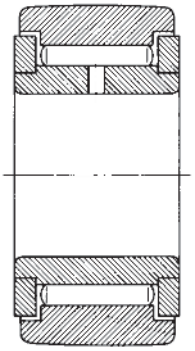
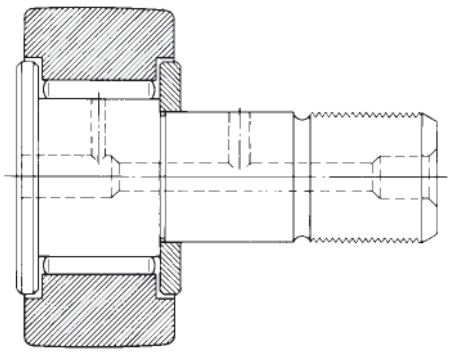
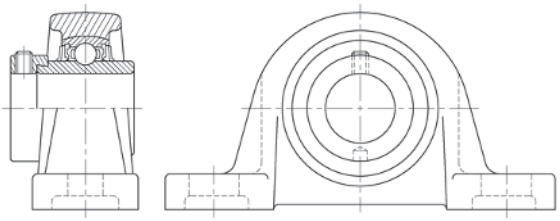
Code	Preferred name	Code	Preferred name
23768DAA012	Ball	23768DAA013	Aligning seat washer
			
23768DAA014	Cylindrical roller	23768DAA016	Bearing housing unit
			
23768DAA017	Bearing housing	23768DAA019	Yoke-type track roller
			
23768DAA020	Stud-type track roller	23768DAA022	Insert bearing, unit housing and accessory
			

Table F.1 — Simplified illustrations of classes (*continued*)

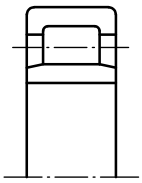
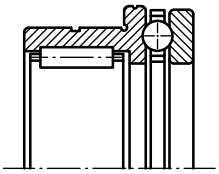
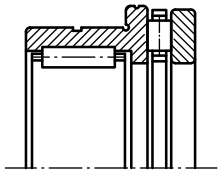
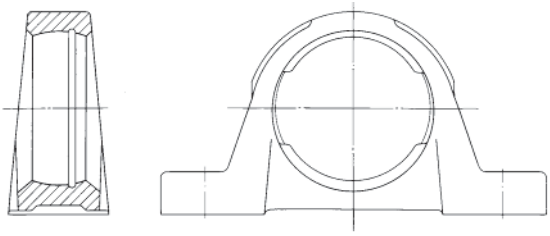
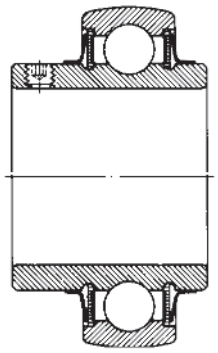
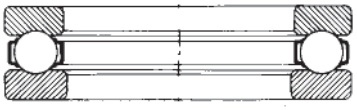
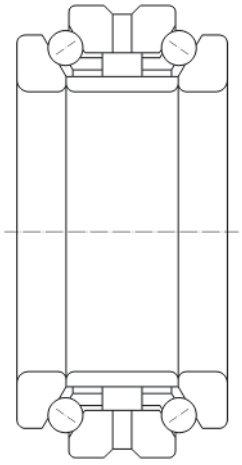
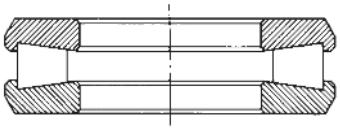
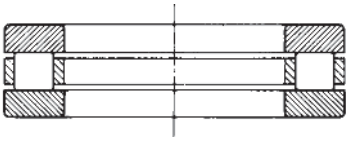
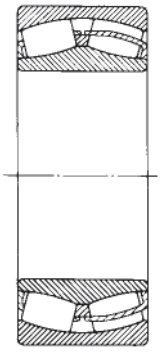
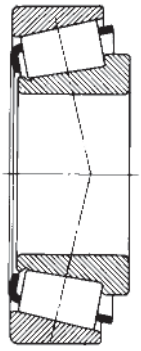
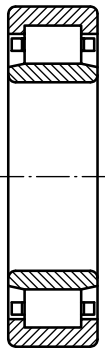
Code	Preferred name	Code	Preferred name
23768DAA024	Roller bearing	23768DAA025	Combined bearing of radial needle roller / thrust ball type
			
23768DAA026	Combined bearing of radial needle roller / thrust roller type	23768DAA029	Insert bearing housing
			
23768DAA030	Insert bearing	23768DAA031	Thrust ball bearing
			
23768DAA032	Angular contact thrust ball bearing	23768DAA033	Angular contact radial ball bearing
			

Table F.1 — Simplified illustrations of classes (*continued*)

Code	Preferred name	Code	Preferred name
23768DAA034	Self-aligning ball bearing	23768DAA035	Deep groove ball bearing
			
23768DAA036	Thrust needle roller bearing	23768DAA037	Thrust spherical roller bearing
			
23768DAA038	Thrust tapered roller bearing	23768DAA039	Thrust cylindrical roller bearing
			
23768DAA040	Needle roller bearing	23768DAA041	Spherical roller bearing
			
23768DAA042	Tapered roller bearing	23768DAA043	Cylindrical roller bearing
			

Bibliography

[1] ISO 15241:2001, *Rolling bearings — Symbols for quantities*

[2] ISO 13584-20, *Industrial automation systems and integration — Parts library — Part 20: Logical resource: Logical model of expressions*

[3] ISO 13584-26, *Industrial automation systems and integration — Parts library — Part 26: Logical resource: Information supplier identification*

[4] ISO 13584-31, *Industrial automation systems and integration — Parts library — Part 31: Implementation resources: Geometric programming interface*

[5] ISO 13584-32, *Industrial automation systems and integration — Parts library — Part 32: Implementation resources: OntoML: Product ontology markup language*

[6] ISO 13584-35, *Industrial automation systems and integration — Parts library — Part 35: Implementation resources: Spreadsheet interface for parts library*

[7] ISO 13584-101, *Industrial automation systems and integration — Parts library — Part 101: Geometrical view exchange protocol by parametric program*

[8] ISO 13584-102, *Industrial automation systems and integration — Parts library — Part 102: View exchange protocol by ISO 10303 conforming specification*

[9] ISO 13584-501, *Industrial automation systems and integration — Parts library — Part 501: Reference dictionary for measuring instruments — Registration procedure*

[10] IEC 61360-4, *Standard data element types with associated classification scheme for electric components — Part 4: IEC reference collection of standard data element types, component classes and terms*

[11] *Machinery's Handbook*. 26th ed., Industrial Press Inc., New York, U.S.A.

Index

ICS 01.040.21; 21.100.20
Price based on 67 pages

This page deliberately left blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards -based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

Useful Contacts:

Customer Services
Tel: +44 845 086 9001
Email (orders): orders@bsigroup.com
Email (enquiries): cservices@bsigroup.com

Subscriptions
Tel: +44 845 086 9001
Email: subscriptions@bsigroup.com

Knowledge Centre
Tel: +44 20 8996 7004
Email: knowledgecentre@bsigroup.com

Copyright & Licensing
Tel: +44 20 8996 7070
Email: copyright@bsigroup.com

bsi.

...making excellence a habit.™