TECHNICAL SPECIFICATION

ISO/TS 13399-5

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Cutting tool data representation and exchange —

Part 5: Reference dictionary for assembly items

Représentation et échange des données relatives aux outils coupants —

Partie 5: Dictionnaire de référence de termes pour les éléments d'assemblage

Reference number
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Foreword

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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 normative 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;

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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order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn.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again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.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/TS 13399-4 was prepared by Technical Committee ISO/TC 29, *Small tools*.

ISO 13399 consists of the following parts, under the general title *Cutting tool data representation and exchange*:

— *Part 1: Overview, fundamental principles and general information model*

— *Part 2: Reference dictionary for the cutting items* [Technical Specification]

— *Part 3: Reference dictionary for tool items* [Technical Specification]

— *Part 4: Reference dictionary for adaptive items* [Technical Specification]

— *Part 5: Reference dictionary for assembly items* [Technical Specification]

— *Part 50: Reference dictionary for reference systems and common concepts* [Technical Specification]

— *Part 60: Reference dictionary for connection systems* [Technical Specification]

— Part 100: *Definitions, principles and methods for reference dictionaries* [Technical Specification]

Introduction

ISO 13399 provides the means to achieve an electronic representation of cutting tool data by providing the information structure needed to describe various data about cutting tools and cutting tool assemblies. It is intended to facilitate the use, manipulation and exchange of cutting tool data within and between manufacturing, distribution and usage.

This part of ISO 13399 defines the terms, properties and definitions for components that are used to create an assembly of a cutting tool with defined cutting edges. The purpose of this part of ISO 13399 is to provide a reference dictionary to support the use of the general information model defined in ISO 13399-1.

A cutting tool with defined cutting edges is used on a machine tool to remove workpiece material through a shearing action at the cutting edge(s) of the tool. Cutting tool data are characteristics of the cutting tool and its use that must be known and evaluated in order to make manufacturing decisions and to perform manufacturing operations.

ISO 13399 includes the data representation of everything between the workpiece and the machine tool. Information about inserts (e.g. regular and irregular shaped replaceable cutting items), solid tools (e.g. solid drill and solid endmill), assembled tools (e.g. boring bars, indexable drills and indexable milling cutters), adaptors (e.g. milling arbor and chucks), components (e.g. shims, screws and clamps) or any combination of the above can be exchanged.

Possible assemblies of the components of a cutting tool are illustrated in Figure 1.

The cutting tool data described include, but are not limited to, geometrical and dimensional data, identification and designation data, miscellaneous and spare part data, cutting material data, and component connectivity.

The use of the tool information model established by ISO 13399 will provide increased productivity for the user in the same way as do the tools. The effective management of tool information will improve the management of the tools themselves. Use of the tool information model will enable the identification of the “right” tool in every operation — from tool purchase, through planning, set-up in machine-tools, maintenance and reuse of the tools — with short lead times and with high reliability and product quality. Tool users will benefit from improved support from the tool vendors who will be able to provide a standard information product to accompany the tool products. Computer interfaces for information exchange will be more efficient.

The objective of ISO 13399 is to provide the means to represent the information that describes cutting tools in a computer-sensible form that is independent of any particular computer system. Such a representation will facilitate the processing and exchange of cutting tool data within and between different software systems and computer platforms and support the application of this data in manufacturing planning, cutting operations and the supply of tools. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and for archiving. The methods that are used for these representations are those developed by ISO TC 184, *Industrial automation systems and integration*, SC 4, *Industrial data*, for the representation of product data by using standardized information models and reference dictionaries.

An information model is a formal specification of types of ideas, facts and processes which together describe a portion of interest of the real world and which provides an explicit set of interpretation rules. Information is knowledge of ideas, facts and/or processes. Data are symbols or functions that represent information for processing purposes. Data are interpreted to extract information by using rules for how that should be done and a dictionary to define the terms that identify the data. Everyone in a communication process must use the same information model, the same set of explicit rules and the same dictionary in order to avoid misunderstanding. If an information model and its dictionary are written in a computer-sensible language then there is the additional benefit that they can be *computer-processable*.

An engineering information model is therefore a specification for data that establishes the meaning of that data in a particular engineering context. A model has to be developed by formal methods to ensure that it meets the needs of the situation that it represents. An engineering information model defines: the information objects that represent the concepts in an engineering application, the attributes of the objects and their relationships and the constraints that add further meaning. An information model is an abstract concept that can be used repeatedly for any example of the real-world situation that it represents. An instance of the model is produced when it is populated with the data items and their values that are applicable to a particular example of that situation.

This part of ISO 13399 uses the following resources developed by ISO TC 184/SC 4:

a) the EXPRESS language according to ISO 10303-11 for defining the information model;

b) the file format for data exchange derived from the model and defined in ISO 10303-21;

c) the data dictionary defined in ISO 13584.

ISO 13399 is intended for use by manufacturers, tool vendors or producers, and developers of manufacturing software, among others. It provides a common structure for exchanging data about cutting tools (see Figure 1), and is intended to allow or improve several capabilities, including

— provision of a common set of definitions for use in describing cutting tools and cutting tool assemblies,

— the integration and sharing of cutting tool and assembly data between software applications,

— direct import of vendor cutting tool data into customer databases or applications, and

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

Different companies use different business models to determine their need for the communication of information about their products. For example, one cutting tool manufacturer could regrind its customers' tools while another could allow its customers to do the regrinding and provide the information to enable them to do so. Therefore, the two cutting tool manufacturers could have a different set of cutting tool properties to communicate using the information model and dictionaries provided by ISO 13399.

ISO 13399 defines only that information which could be communicated; it does not specify what information must be communicated.

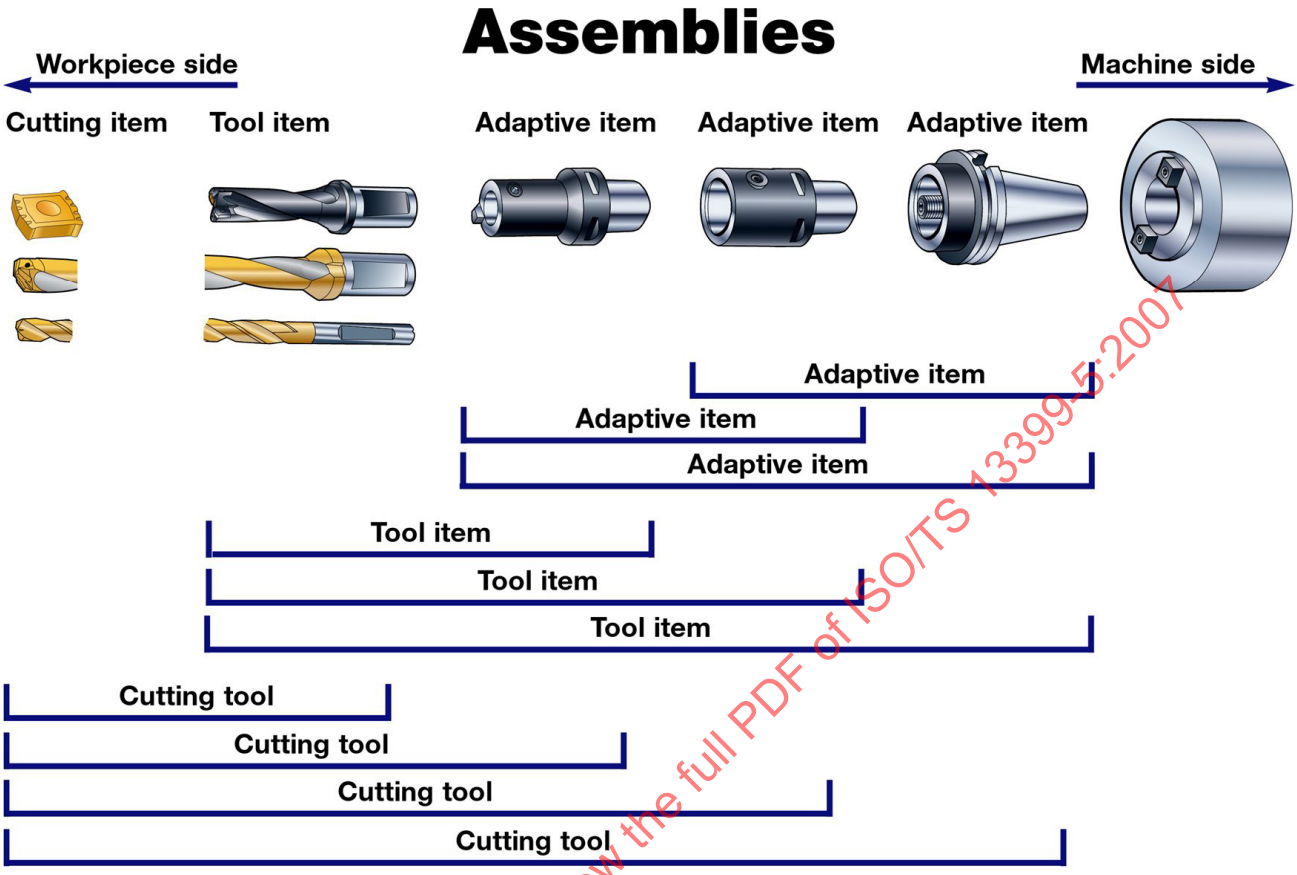

Figure 1 — Examples of different types of assemblies of items

Cutting tool data representation and exchange —

Part 5:
Reference dictionary for assembly items

1 Scope

This part of ISO 13399 specifies a reference dictionary for assembly items for cutting tools, together with their descriptive properties and domains of values.

This part of ISO 13399 specifies a reference dictionary that contains

a) definitions and identifications of the classes of assembly items, with an associated classification scheme,

b) definitions and identifications of the data element types that represent the properties of assembly items,

c) definitions and identifications of domains of values for describing the above 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 13399. It is associated with a computer-sensible and human-readable definition, and with a computer-sensible identification. Identification of a dictionary entry allows unambiguous reference to it from any application that implements the information model defined in ISO 13399-1.[1)]

The following is within the scope of this part of ISO 13399:

— standard data that represent the various classes of assembly items;

— standard data that represent the various properties of assembly items;

— standard data that represent domains of values used for properties of assembly items;

— a single implementation method by which the standard data defined in this part ISO 13399 can be exchanged (see ISO 10303-21).

The following is not within its scope:

— specialized or expert knowledge on the design and use of cutting tools;

— rules used to determine the information that should be communicated;

— applications where these standard data may be stored or referenced;

— implementation methods other than the one defined in this part of ISO 13399 by which the standard data can be exchanged and referenced;

1) Definitions and identifications of dictionary entries are defined by means of standard data that 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 and IEC SC 3D, and in its extensions according to ISO 13584-24 and ISO 13584-25.

— information models for cutting tools;

— definitions of classes and properties for cutting items, tool items, adaptive items, reference systems and common concepts, or for connection systems, these being covered by other parts of ISO 13399;

— definitions of items for general engineering use that may be specified by other organizations and included in other dictionaries approved by ISO.

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/TS 13399-100, *Cutting tool data representation and exchange — Part 100: Definitions, principles and methods for reference dictionaries*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TS 13399-100 and the following apply.

3.1
applicable property
property that is defined for some family of items and that applies to any member of this family

[ISO 13584-24]

3.2
basic semantic unit
entity that provides an absolute and universal identification of classes and data element types in an application domain

[ISO 13584-42]

3.3
chip
material removed from a workpiece by a cutting process

[ISO/TS 13399-2]

3.4
cutting tool
device or assembly of items for removing material from a workpiece through a shearing action at the defined cutting edge or edges of the device

NOTE A cutting tool could be the assembly of one or more adaptive items, a tool item and several cutting items on a tool item. See Figure 1.

[ISO 13399-1]

3.5
data
representation of facts, concepts or instructions in a formal manner suitable for communication, interpretation or processing by human beings or computers

[ISO 10303-1]

3.6
data element type
unit of data for which the identification, description and value representation have been specified

[ISO 13584-42]

3.7
data exchange
storing, accessing, transferring and archiving of data

[ISO 10303-1]

3.8
data type
domain of values

[ISO 10303-11]

3.9
dictionary
structured set of entries with one and only one meaning corresponding to each entry and one and only one entry identifying a single meaning

[ISO 13584-511]

NOTE In ISO 13399, a dictionary is a formal and computer-sensible representation of an ontology.

3.10
entity
class of information defined by its attributes that establishes a domain of values defined by common attributes and constraints

NOTE Adapted from ISO 10303-11.

3.11
entity data type
representation of an entity

[ISO 10303-11]

3.12
entity instance
named unit of data that represents a unit of information within the class defined by an entity

NOTE It is a member of the domain established by an entity data type.

[ISO 10303-11]

3.13
family of items
simple or generic family of items

[ISO 13584-42]

3.14
generic family of items
grouping of simple or generic families of items for the purpose of classification or for associating common information

[ISO 13584-42]

3.15
implementation method
means for computers to process or exchange data

[ISO 10303-1]

3.16
information
facts, concepts or instructions

[ISO 10303-1]

3.17
information model
formal description of a bounded set of information to meet a specific requirement

[ISO 10303-1]

3.18
machine side
identification of a direction pointing towards the machine

3.19
machined surface
surface produced by the action of a cutting tool

[ISO 3002-1]

3.20
ontology
explicit and consensual specification of concepts of an application domain independent of any use of these concepts

[ISO 13584-511]

NOTE In ISO 13399 a dictionary is the formal and computer-sensible representation of an ontology.

3.21
property
characteristic of a product or process that may be represented by a data element type

NOTE Adapted from ISO 13584-42.

3.22
simple family of items
set of items in which each item may be described by the same group of properties

[ISO 13584-42]

3.23
visible property
property that is defined for some family of items that may or may not be applicable to the different members of the family

[ISO 13584-42]

3.24
workpiece
object on which a cutting action is performed

[ISO/TS 13399-2]

3.25
workpiece side
identification of a direction pointing towards the workpiece

[ISO/TS 13399-2]

4 Abbreviated terms

BSU basic semantic unit

DET data element type

5 Representation of the ontology concepts as dictionary entries

In the following subclauses, a concept in the ontology is identified by a name in lower-case characters. The name of a class that represents the concept in the dictionary is identified by bold, lower-case characters with multiple words linked by an underscore character.

EXAMPLE "insert clamp" is the name of a concept in the ontology. **insert_clamp** is the identifier of the class in the dictionary that represents the concept.

Each entry in the dictionary, whether a class or a property, is identified with a numerical code (BSU) that is generated at random when the dictionary is compiled. A BSU can be made unique by the addition of a code that is a reference to the supplier of the dictionary. Each classified item in the following subclauses is associated with its definition from the dictionary.

The structure of the classification is summarized in Annex B. The complete definitions of the classes in this part of ISO 13399 are provided in Annex C. The properties applicable to these classes are defined in Annex D.

5.1 assembly_item_type

An **assembly_item_type** is a family of objects that enable the combination of items to form a cutting tool.

assembly_item_type has the following subclasses:

— **bearing;**

— **bush;**

— **centre_pin;**

— **collet;**

— **coolant_deflector;**

— **driving_key;**

— **driving_ring;**

— **externally_threaded_fastener_component;**

— **insert_clamp;**

— **insert_clamping_system;**

— **insert_lever;**

— **insert_shim;**

— **imsert_wedge;**

— **nest;**

— **nozzle;**

— **pin;**

— **pin;**

— **retaining_ring;**

— **screw_thread_lining;**

— **sealing_ring;**

— **sleeve;**

— **spacer;**

— **spring.**

5.1.1 bearing

A **bearing** is an object used to support a load and reduce the friction between two surfaces.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.2 bush

A **bush** is a hollow cylindrical object that fits in a hole.

NOTE 1 A **bush** may act as a **bearing.**

NOTE 2 This class is for general engineering use and is not specific to cutting tools.

NOTE 3 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.3 centre_pin

A **centre_pin** is an elongated rigid object secured to the tool item that locates and holds an insert and or a shim by its central hole.

5.1.4 collet

A **collet** is a segmented band that can be expanded or contracted to grip a shaft.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class may become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.5 coolant_deflector

A **coolant_deflector** is a device used to change the direction of flow of a coolant supply.

5.1.6 driving_key

A **driving_key** is a object that fits in slots in components of an assembly and that transmits torque from one component to the other and/or locates two such components.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.7 driving_ring

A **driving_ring** is an annular shaped object with integral keys or keyways that transmits torque from one component of an assembly to another.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.8 externally_threaded_fastener_component

An **externally_threaded_fastener_component** is an item class case of class representing.

NOTE 1 Externally_threaded_fastener_component is defined in ISO 13584-511.

NOTE 2 The BSU of an externally threaded component is defined in ISO 1384-511.

NOTE 3 The applicable properties for these subclasses are inherited from ISO 13584-111.

externally_threaded_fastener_component has the following subclasses:

— **deflection_screw;**

— **differential_screw;**

— **eccentric_screw;**

— **insert_screw;**

— **lever_screw;**

— **hollow_screw.**

5.1.8.1 deflection_screw

A **deflection_screw** is a screw with a conical portion of the shaft that can deflect to bear on the insert to hold it in place.

5.1.8.2 differential_screw

A **differential_screw** is an externally threaded fastener without a head, with a double threaded shank having two different pitches (one greater than the other), i.e. right-hand and left-hand threaded portions, mainly used for fastening insert wedges or cantilever clamps.

5.1.8.3 eccentric_screw

An **eccentric_screw** is an externally threaded fastener with a round head that is not concentric with the shank.

5.1.8.4 insert_screw

An **insert_screw** is a screw with a conical head used mainly for holding a cutting item on a tool item.

5.1.8.5 lever_screw

A **lever_screw** is an externally threaded fastener without a head and with a waist used for holding an insert lever in contact with the insert.

5.1.8.6 hollow_screw

A **hollow_screw** is an externally threaded fastener used for holding a shim in a pocket with a central threaded through hole into which an insert screw can go to hold the insert.

5.1.9 insert_clamp

An **insert_clamp** is a part of an insert clamping system that applies force to an insert.

insert_clamp has the following subclasses:

— **cantilever_clamp**

— **floating_wedge_clamp;**

— **lever_top_clamp;**

— **wedge_clamp.**

5.1.9.1 cantilever_clamp

A **cantilever_clamp** is a rigid object with an extended arm used to apply a downward force to an insert.

5.1.9.2 floating_wedge_clamp

A **floating_wedge_clamp** is an object used to apply a downward force on an insert by movement of part of the object along the surface of a wedge.

5.1.9.3 lever_top_clamp

A **lever_top_clamp** is an object used to apply a downward force on an insert by the action of a lever.

5.1.9.4 wedge_clamp

A **wedge_clamp** is a part of an insert clamping system that applies a downward force and a sideways force to lock a cutting item

5.1.9.5 insert_wedge

An **insert_wedge** is an object in the shape of a wedge that applies downward force to lock and insert.

5.1.10 insert_clamping_system

An **insert_clamping_system** is a family of assemblies of objects for holding a cutting item on a tool item.

insert_clamping_system has the following subclasses:

— **cantilever_clamping;**

— **deflection_screw_clamping;**

— **eccentric_screw_clamping;**

— **floating_wedge_clamping;**

— **insert_screw_clamping;**

— **integrated_clamping;**

— **lever_insert_clamping;**

— **lever_top_clamping;**

— **wedge_clamping.**

5.1.10.1 cantilever_clamping

A **cantilever_clamping** is an assembly for applying a holding force by a rigid cantilever arm.

5.1.10.2 deflection_screw_clamping

A **deflection_screw_clamping** is an assembly for applying a holding force by the bending of a symmetric screw caused by interference with the tool item.

5.1.10.3 eccentric_screw_clamping

An **eccentric_screw_clamping** is an assembly for applying a holding force by the eccentric rotation of a portion of a screw.

5.1.10.4 floating_wedge_clamping

A **floating_wedge_clamping** is an assembly for applying a holding force by the combined effect of a downward force and the lateral movement actuated by the surface of a wedge.

5.1.10.5 insert_screw_clamping

An **insert_screw_clamping** is an assembly for applying a holding force by the bearing surface of a symmetric screw acting on the surface of a hole in the cutting item.

NOTE The axis of the threaded hole in the tool item is not coincident with the axis of the hole in the insert.

5.1.10.6 integrated_clamping

An **integrated_clamping** is an assembly for holding a cutting item in a tool item by the deflection of part of the tool item.

5.1.10.7 lever_insert_clamping

A **lever_insert_clamping** is an assembly for applying a holding force by the action of the end of a lever pressing on the inside of a hole in the cutting item.

5.1.10.8 lever_top_clamping

A **lever_top_clamping** is an assembly for applying a holding force on the top surface of a cutting item by the rotation of a lever about a pivot.

5.1.10.9 wedge_clamping

A **wedge_clamping** is an assembly for applying a holding force to an insert by the lateral movement of one or more wedge surfaces.

5.1.11 insert lever

An **insert_lever** is an object that rotates about a pivot to apply a force to hold an insert onto a tool item.

5.1.12 insert_shim

An **insert_shim** is an object placed between a cutting item and a tool item.

NOTE A shim is used to provide a hard surface to support the cutting item and to protect the tool item from damage if the cutting item is broken.

5.1.13 insert_wedge

An **insert_wedge** is an object with at least two surfaces inclined to each other used for holding an insert.

5.1.14 nest

A **nest** is an assembly item that contains a seat or pocket that cradles and positions a replaceable cutting item but does not lock the replaceable cutting item by itself.

5.1.15 nozzle

A **nozzle** is an object with an aperture to direct the flow of a liquid or a gas.

5.1.16 pin

A **pin** is a thin rod-shaped object with parallel or tapered form.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.17 retaining_ring

A **retaining_ring** is an annular shaped object that fits into a groove to prevent the separation of two components.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.18 screw_thread_lining

A **screw_thread_lining** is a helical coil that is used to protect and repair internal threads.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.19 sealing_ring

A **sealing_ring** is an annular shaped object that prevents the passage of a fluid or gas.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.20 sleeve

A **sleeve** is a cylindrical object with an inner surface that may be cylindrical, tapered or profiled, which fits over a shaft.

NOTE 1 The length of the cylinder is greater than the wall thickness and the critical dimensions are on the diameters of the object.

NOTE 2 This class is for general engineering use and is not specific to cutting tools.

NOTE 3 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.21 spacer

A **spacer** is an object that separates two components at a defined distance.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.22 spring

A **spring** is an object that can store elastic energy by deforming under an applied load and can release the energy and return to its original shape or position when the load is removed.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

spring has the following subclasses:

— **cup_spring;**

— **flat_wire_compression_spring;**

— **gas_spring;**

— **helical_coil_spring;**

— **helical_disk_spring;**

— **leaf_spring.**

5.1.22.1 cup_spring

A **cup_spring** is an object where elastic energy stored in the deflection of an annulus.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.22.2 flat_wire_compression_spring

A **flat_wire_compression_spring** is a cylindrical spring formed from waved strip.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become a item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.22.3 gas_spring

A **gas_spring** is an object where elastic energy is stored in a compressed gas.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.22.4 helical_coil_spring

A **helical_coil_spring** is an object where elastic energy is stored in a helix of either rectangular or circular cross-section wire.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.22.5 helical_disk_spring

A **helical_disk_spring** is a cylindrical spring formed from two intersecting coiled disks.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

5.1.22.6 leaf_spring

A **leaf_spring** is an object where elastic energy is stored in the deflection of a bent strip.

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item_class_case_of an entry in another dictionary conforming to ISO 13584.

6 Properties for connection interface feature

The properties that are applicable to items defined in Clause 5 are defined in Annex D, where the association of a property with a class is also specified. In the compilation of the dictionary all properties are visible properties at the root class of the dictionary and are made applicable properties at the class level where they apply. The names of properties that may be applicable to assembly item types, with their identification codes (BSU), are shown in Table 1.

NOTE The value domains for properties are specified in ISO/TS 13399-100.

EXAMPLE The unique BSU for **pin_end_shape**: 112/1///13399/71EC5E54A9B4F.

Table 1 — Property names and identification codes

Property name	Identification code (BSU)	Property name	Identification code (BSU)
adjustability	71EBBA9E78025	conn code machine side	71D102AE3B252
conn code workpiece side	71D102AE8A5A9	connection bore diameter max	71EBDBF4D0F49
connection bore diameter min	71EBDBF49F96C	diameter inner	71FAD51836C93
diameter outer	71FAD51880679	flanged	71EC659BC21E3
hand	71CF29872F0AB	height	71EC61D8F250D
insert seat size code	71CEAEBF2A69F	insert shape code	71CE7A9F0C79F
length	71EC61D6B66E6	pin end shape	71EC5E54A9B4F
pin fixing method	71FAD53253A1B	section style	71EC65A21E9D4
shaft diameter	71FAD52B8F653	shaft length	71FAD52C3FC9E
spring coefficient	71FAE06BBB597	taper angle	71EAC4A2B6544
taper gradient	71CEAEC02FEBD		

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 technical specification 13399 part (5) version (1)}

is assigned to this part of ISO 13399.

The meaning of this value is as defined in ISO/IEC 8824-1 and described in ISO 13584-1.

A.2 Dictionary identification

The dictionary defined in this part of ISO 13399 is assigned the object identifier:

{ISO technical specification 13399 part (5) version (1) object (1) tool items (1)}

Annex B
(informative)

Classification table

Table B.1 shows the classification structure of the generic families in the dictionary with an expanded structure for the class of assembly item type. The purpose of the table is to show the relationships between the classes related to assembly item types and the other classes in ISO 13399.

NOTE Annex C contains the full definition of all the classes that are subclasses of assembly item type.

Table B.1 — Classification structure

Classes	Parent class	Class BSU
cutting tool library	Root class	71CE7A72B6DA7
adaptive item type	71CE7A72B6DA7	71EAD37F18F34
adjustment	71CE7A72B6DA7	71ED884159C90
assembly item type	71CE7A72B6DA7	71CE7A795C05C
bearing	71CE7A795C05C	71EC56BC68ED7
bush	71CE7A795C05C	71EC61E259139
centre pin	71CE7A795C05C	71FAD519268DE
collet	71CE7A795C05C	71EC61E726811
coolant deflector	71CE7A795C05C	71ED80E62E75A
driving key	71CE7A795C05C	71EC56B51596E
driving ring	71CE7A795C05C	71EC56B58A355
externally threaded fastener component	71CE7A795C05C	71FA4B678C52A
deflection screw	71FA4B678C52A	71FC030E04050
differential screw	71FA4B678C52A	71FAE07C0A4A6
eccentric screw	71FA4B678C52A	71FAE07B90EEC
insert screw	71FA4B678C52A	71ED798F61BC2
lever screw	71FA4B678C52A	71FAE07BCAC80
hollow screw	71FA4B678C52A	71FC81BA3ECE9
insert clamp	71CE7A795C05C	71ED80DF6F976
cantilever clamp	71ED80DF6F976	71FAD54E002D6
floating wedge clamp	71ED80DF6F976	71FAD54E5A5BF
lever top clamp	71ED80DF6F976	71FAD54E2FE26
wedge clamp	71ED80DF6F976	71FAD54EABA17
insert clamping system	71CE7A795C05C	71EC56BAC1A7E
cantilever clamping	71EC56BAC1A7E	71EC56D6D0499
deflection screw clamping	71EC56BAC1A7E	71EC56D97E8B0
eccentric screw clamping	71EC56BAC1A7E	71EC56D908782
floating wedge clamping	71EC56BAC1A7E	71EC56D7601AD
insert screw clamping	71EC56BAC1A7E	71EC56D8A655A

Table B.1 (*continued*)

Classes	Parent class	Class BSU
integrated clamping	71EC56BAC1A7E	71FAD547E744B
lever insert clamping	71EC56BAC1A7E	71EC6588A8C9E
lever top clamping	71EC56BAC1A7E	71EC56D71B815
wedge clamping	71EC56BAC1A7E	71EC56D828198
insert lever	71CE7A795C05C	71ED80DFB6371
insert shim	71CE7A795C05C	71EC56BD5DCD8
insert wedge	71CE7A795C05C	71EC56B608ADC
nest	71CE7A795C05C	71EAD70F1B95A
nozzle	71CE7A795C05C	71ED80E1EC9F6
pin	71CE7A795C05C	71EC56B5B6465
retaining ring	71CE7A795C05C	71EC5A6E9F6F0
screw thread lining	71CE7A795C05C	71EC56BA2E64E
sealing ring	71CE7A795C05C	71EC5A6E85D77
sleeve	71CE7A795C05C	71EC56BBA9A2E
spacer	71CE7A795C05C	71EC5A6CFD68B
spring	71CE7A795C05C	71EC56BA16ACB
cup spring	71EC56BA16ACB	71EC56E165BC7
flat wire compression spring	71EC56BA16ACB	71EC56E106606
gas spring	71EC56BA16ACB	71EC56E1C4C7D
helical coil spring	71EC56BA16ACB	71EC56E04199D
helical disk spring	71EC56BA16ACB	71EC56E0D4D19
leaf spring	71EC56BA16ACB	71EC56E223664
bolt hole circle	71CE7A72B6DA7	71E02520881F1
connection interface feature	71CE7A72B6DA7	71DF8C37D9115
coolant supply	71CE7A72B6DA7	71DF8C3C065EB
cutting item feature	71CE7A72B6DA7	71DD6C82F72DA
cutting item type	71CE7A72B6DA7	71D1AA6C8FC75
cutting operation	71CE7A72B6DA7	71DFF83D21D50
cutting tool	71CE7A72B6DA7	71CE7A7A5038B
flange	71CE7A72B6DA7	71EC5A767182E
keyway	71CE7A72B6DA7	71DF5C026BCE7
locking mechanism	71CE7A72B6DA7	71EBAB85BB5FA
reference system	71CE7A72B6DA7	71CF2968F7A9E
runout axial	71CE7A72B6DA7	71EDD2B84143C
runout radial	71CE7A72B6DA7	71EDD2B858274
tool item feature	71CE7A72B6DA7	71DD70376771D
tool item type	71CE7A72B6DA7	71E01A004C775
tool thread external	71CE7A72B6DA7	71FC1D22BF4CD
tool thread internal	71CE7A72B6DA7	71FC1D25097D7

Annex C
(informative)

Class definitions

The content of this annex is limited to the classes of assembly items.

The layout of the information for each class in this annex is:

BSU code – version number **Revision number**

preferred name **short name**

Definition

NOTE

REMARKS

Properties:

Subclasses:

Illustration reference: <BSU of reference diagram> Figure <Annex.illustration number>

NOTE An entry may not contain all the information specified in the layout.

71CE7A795C05C-1 **1**

assembly item type **spare part**

family of objects that enable the combination of items to form a cutting tool

Sub-classes:

71EAD70F1B95A-001 nest

71EC56B51596E-001 driving key

71EC56B58A355-001 driving ring

71EC56B5B6465-001 pin

71EC56B608ADC-001 insert wedge

71EC56BA16ACB-001 spring

71EC56BA2E64E-001 screw thread lining

71EC56BAC1A7E-001 insert clamping system

71EC56BBA9A2E-001 sleeve

71EC56BC68ED7-001 bearing

71EC56BD5DCD8-001 insert shim

71EC5A6CFD68B-001 spacer

71EC5A6E85D77-001 sealing ring

71EC5A6E9F6F0-001 retaining ring

71EC61E259139-001 bush

71EC61E726811-001 collet

71ED80DF6F976-001 insert clamp

71ED80DFB6371-001 insert lever

71ED80E1EC9F6-001 nozzle

71ED80E62E75A-001 coolant deflector

71FAD519268DE-001 centre pin

71EC56BC68ED7-1 1

bearing bearing

object to support a load and reduce the friction between two surfaces

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC61E259139-1 1

bush bush

hollow cylindrical object that fits in a hole

NOTE 1 A bush may act as a bearing.

NOTE 2 This class is for general engineering use and is not specific to cutting tools.

NOTE 3 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71FAD519268DE-1 **1**

centre pin **ctpn**

elongated rigid object secured to the tool item that locates and holds a insert and or a shim by its central hole

Properties:

71EC5E54A9B4F-1 pin end shape

71EC61D6B66E6-1 length

71EC659BC21E3-1 flanged

71FAD52B8F653-1 shaft diameter

71FAD52C3FC9E-1 shaft length

71FAD53253A1B-1 pin fixing method

Illustration reference: 71FC81BB78797-1 Figure E.1

71EC61E726811-1 **1**

collet **collet**

segmented band that can be expanded or contracted to grip a shaft

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

Properties:

71CEAEC02FEBD-1 taper gradient

71D102AE3B252-1 conn code machine side

71D102AE8A5A9-1 conn code workpiece side

71EAC4A2B6544-1 taper angle

71EBDBF49F96C-1 connection bore diameter min

71EBDBF4D0F49-1 connection bore diameter max

Illustration reference: 71FC81BB81C3F-1 Figure E.2

71ED80E62E75A-1 **1**

coolant deflector **cndf**

device to change the direction of flow of a coolant supply.

71EC56B51596E-1 **1**

driving key **key**

object that fits in slots in components of an assembly to transmit torque from one component to the other and or to locate the two components

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC56B58A355-1 **1**

driving ring **drvr**

annular shaped object with integral keys or keyways that transmits torque from one component of an assembly to another

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71FC030E04050-1 **1**

deflection screw **dflscw**

screw with a conical portion of the shaft that can deflect to bear on the insert to hold it in place

Illustration reference: 71FC81BF6A3D7-1 Figure E.3

71FAE07C0A4A6-1 **1**

differential screw **dfscw**

externally threaded fastener without a head with double threaded shank with right hand and left hand threaded portions mainly used for fastening insert wedges

Illustration reference: 71FC81BF90A1C-1 Figure E.4

71FAE07B90EEC-1 **1**

eccentric screw **ecscw**

externally threaded fastener with a round head that is not concentric with the shank

Illustration reference: 71FC81BFA8EB2-1 Figure E.5

71ED798F61BC2-1 **1**

insert screw **inscw**

screw with countersunk bearing surface used mainly for holding a cutting item on a tool item

Illustration reference: 71FC81C00A9DC-1 Figure E.6

71FAE07BCAC80-1 **1**

lever screw **lvscw**

externally threaded fastener without a head and with a waist used for holding an insert lever in contact with the insert

Illustration reference: 71FC81C06F018-1 Figure E.7

71FC81BA3ECE9-1 **1**

hollow screw **hlwscw**

externally threaded fastener for holding a shim in a pocket with a central threaded through hole into which an insert screw can go to hold the insert

Illustration reference: 71FC81C09F745-1 Figure E.8

71ED80DF6F976-1 **1**

insert clamp **insclp**

object to apply a clamping force to an insert

Sub-classes:

71FAD54E002D6-001 cantilever clamp

71FAD54E2FE26-001 lever top clamp

71FAD54E5A5BF-001 floating wedge clamp

71FAD54EABA17-001 wedge clamp

71FAD54E002D6-1 **1**

cantilever clamp **cantclp**

rigid object with an extended arm to apply a downward force to an insert

Illustration reference: 71FC81BB600BE-1 Figure E.9

71FAD54E5A5BF-1 **1**

floating wedge clamp **flwdclp**

object to apply a downward force on an insert by movement of part of the object along the surface of a wedge

Illustration reference: 71FC81BFDA994-1 Figure E.10

71FAD54E2FE26-1 **1**

lever top clamp **lvtclp**

object to apply a downward force on an insert by the action of a lever

Properties:

71CF29872F0AB-1 hand

Illustration reference: 71FC81C058D8C-1 Figure E.11

71FAD54EABA17-1 **1**

wedge clamp **wdgclp**

object with the shape of a wedge that applies a downward force to an insert and presses the insert against the centre pin

Illustration reference: 71FC81C0C226C-1 Figure E.12

71EC56BAC1A7E-1 **1**

insert clamping system **insclp**

family of assemblies of objects for holding a cutting item on a tool item

Sub-classes:

71EC56D6D0499-001 cantilever clamping

71EC56D71B815-001 lever top clamping

71EC56D7601AD-001 floating wedge clamping

71EC56D828198-001 wedge clamping

71EC56D8A655A-001 insert screw clamping

71EC56D908782-001 eccentric screw clamping

71EC56D97E8B0-001 deflection screw clamping

71EC6588A8C9E-001 lever insert clamping

71FAD547E744B-001 integrated clamping

71EC56D6D0499-1 **1**

cantilever clamping **ctlclp**

assembly for applying a holding force by a rigid cantilever arm

Illustration reference: 71FC81BB47CB6-1 Figure E.13

71EC56D97E8B0-1 **1**

deflection screw clamping **dfscp**

assembly for applying a holding force by the bending of a symmetric screw caused by interference with the tool item

Illustration reference: 71FC81BF7C967-1 Figure E.14

71EC56D908782-1 **1**

eccentric screw clamping **ecscp**

assembly for applying a holding force by the eccentric rotation of a portion of a screw

Illustration reference: 71FC81BFB0906-1 Figure E.15

71EC56D7601AD-1 **1**

floating wedge clamping **fwgcp**

assembly for applying a holding force by the combined effect of a downward force and the lateral movement actuated by the surface of a wedge

Illustration reference: 71FC81BFC67A8-1 Figure E.16

71EC56D8A655A-1 **1**

insert screw clamping **scwcp**

assembly for applying a holding force by the bearing surface of a symmetric screw acting on the surface of a hole in the cutting item

NOTE The axis of the threaded hole in the tool item is not coincident with the axis of the hole in the insert.

Illustration reference: 71FC81BFF7E00-1 Figure E.17

71FAD547E744B-1 **1**

integrated clamping **intclp**

assembly for holding a cutting item in a tool item by the deflection of part of the tool item

Illustration reference: 71FC81C013D25-1 Figure E.18

71EC6588A8C9E-1 **1**

lever insert clamping **lvicp**

assembly for applying a holding force by the action of the end of a lever pressing on the inside of a hole in the cutting item

Illustration reference: 71FC81C045E35-1 Figure E.19

71EC56D71B815-1 **1**

lever top clamping **lvtcp**

assembly for applying a holding force on the top surface of a cutting item by the rotation of a lever about a pivot

Illustration reference: 71FC81C0B61A4-1 Figure E.20

71EC56D828198-1 **1**

wedge clamping **wgcp**

assembly for applying a holding force by the lateral movement of one or more wedge surfaces

Illustration reference: 71FC81C0DB15E-1 Figure E.21

71ED80DFB6371-1 **1**

insert lever **lvr**

object that rotates about a pivot to apply a force to hold an insert onto a tool item

Illustration reference: 71FC81C03BC41-1 Figure E.22

71EC56BD5DCD8-1 **1**

insert shim **shim**

object placed between a cutting item and a tool item

NOTE The uses of the shim are to position the cutting item and to protect it from damage.

Illustration reference: 71FC81C08B291-1 Figure E.23

71EC56B608ADC-1 **1**

insert wedge **wedge**

object with at least two surfaces inclined to each other used for holding an insert

Properties:

71CF29872F0AB-1 hand

Illustration reference: 71FC81C0EF5E9-1 Figure E.24

71EAD70F1B95A-1 **1**

nest **nest**

assembly item that contains a seat or pocket that cradles and positions a replaceable cutting item but does not lock the replaceable cutting item by itself

Properties:

71CE7A9F0C79F-1 insert shape code

71CEAEBF2A69F-1 insert seat size code

Illustration reference: 71FC81C077498-1 Figure E.25

71ED80E1EC9F6-1 **1**

nozzle **nzl**

object with an aperture to direct the flow of a liquid or a gas

Properties:

71EBBA9E78025-1 adjustability

71FAD51836C93-1 diameter inner

71EC56B5B6465-1 **1**

pin **pin**

thin rod-shaped object with parallel or tapered form

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC5A6E9F6F0-1 **1**

retaining ring **rtrg**

annular shaped object that fits into a groove to prevent the separation of two components

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC56BA2E64E-1 **1**

screw thread lining **thread lining**

helical coil that modifies an existing internal thread

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC5A6E85D77-1 **1**

sealing ring **slrg**

annular shaped object that prevents the passage of a fluid or gas

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC56BBA9A2E-1 **1**

sleeve **sleeve**

cylindrical object with a inner surface that may be cylindrical or tapered or profiled that fits over a shaft

NOTE 1 The length of the cylinder is greater than the wall thickness and the critical dimensions are on the diameters of the object.

NOTE 2 This class is for general engineering use and is not specific to cutting tools.

NOTE 3 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC5A6CFD68B-1 **1**

spacer **spcr**

object that separates two components at a defined distance

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC56BA16ACB-1 **1**

spring **spring**

object that can store elastic energy by deforming under an applied load and can release the energy and return to its original shape or position when the load is removed

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

Properties:

71FAE06BBB597-1 spring coefficient

Sub-classes:

71EC56E04199D-001 helical coil spring

71EC56E0D4D19-001 helical disk spring

71EC56E106606-001 flat wire compression spring

71EC56E165BC7-001 cup spring

71EC56E1C4C7D-001 gas spring

71EC56E223664-001 leaf spring

71EC56E165BC7-1 **1**

cup spring **spcp**

object where elastic energy is stored in the deflection of an annulus

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC56E106606-1 **1**

flat wire compression spring **spfwc**

a cylindrical spring formed from waved strip

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

Properties:

71EC61D6B66E6-1 length

71FAD51836C93-1 diameter inner

71FAD51880679-1 diameter outer

71EC56E1C4C7D-1 **1**

gas spring **spgs**

object where elastic energy is stored in a compressed gas

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

71EC56E04199D-1 **1**

helical coil spring **sphc**

object where elastic energy is stored in a helix of either rectangular or circular cross-section wire

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

Properties:

71EC65A21E9D4-1 section style

71FAD51836C93-1 diameter inner

71FAD51880679-1 diameter outer

71EC56E0D4D19-1 **1**

helical disk spring **sphd**

cylindrical spring formed from two intersecting coiled disks

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

Properties:

71FAD51836C93-1 diameter inner

71FAD51880679-1 diameter outer

71EC56E223664-1 **1**

leaf spring **splf**

object where elastic energy is stored in the deflection of a bent strip

NOTE 1 This class is for general engineering use and is not specific to cutting tools.

NOTE 2 This class can become an item class case of an entry in another dictionary conforming to ISO 13584.

Properties:

71EC61D6B66E6-1 length

71EC61D8F250D-1 height

Annex D
(informative)

Assembly item property definitions

The layout of the entries in this annex is as follows:

BSU – version number **Revision number** **Value format**

data type group data type unit identifier

preferred name **short name** SYMBOL

definition

source of definition

BSU of condition property = name of condition property

Non-quantifiable code = meaning of code

Source of code definition

NOTE

REMARKS:

Illustration reference: <BSU of reference diagram> Figure <Annex.illustration number>

Visible class:

Applicable classes:

NOTE 1 An entry may not contain all the information specified in the layout.

NOTE 2 The value formats of properties are specified in ISO 13399-100.

71EBBA9E78025-1 **1** **X1**

simple boolean

adjustability **adjby** ADJBY

indicator for if an item is adjustable

NOTE A value of 0 means that the item is not adjustable. A value of 1 means that the item is adjustable.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71ED80E1EC9F6-1	nozzle

71D102AE3B252-1 **1** **X 14**

simple string

conn code machine side **ccms** CCMS

identifier for the capability to connect a component of a cutting tool to another component on the machine side

NOTE 1 The value of a code is constructed from the combination of the item feature class short name and the values of connection size code, variant, connection units basis, coolant supply property and form type.

NOTE 2 Two items can be connected together if they have the same value of the code.

NOTE 3 The connection code is not applicable to assembly items in general, but to the collet class.

REMARKS: The term is connection code machine side. Example for a cylindrical shank conforming to ISO 3338-2 with shank diameter of 25 mm, with internal coolant: ZYL025010M1EXT.

Illustration reference: 71FC0E0CEB7FE-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C37D9115-1	connection interface feature
71E01A004C775-1	tool item type
71EAD37F18F34-1	adaptive item type
71EC61E726811-1	collet

71D102AE8A5A9-1 **1** **X 14**

simple string

conn code workpiece side **ccws** CCWS

identifier for the capability to connect a component to another component of a cutting tool on the workpiece side

NOTE 1 The value of a code is constructed from the combination of the item feature class short name and the values of connection size code, variant, connection units basis, coolant supply property and form type.

NOTE 2 Two items can be connected together if they have the same value of the code.

NOTE 3 The connection code is not applicable to cutting items or assembly items in general, but is to the collet class.

REMARKS: The term is connection code workpiece side. Example for a collet chuck adaptor fitting a DIN 6499 collet of size of 16 mm without coolant: SZD016002M0INT.

Illustration reference: 71FC0E0CF0C10-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C37D9115-1	connection interface feature
71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04C377D-1	broach
71E01A05104CF-1	turn
71E0251F304E1-1	rotating borer
71EAD37F18F34-1	adaptive item type
71EC61E726811-1	collet

71EBDBF4D0F49-1 **1** **NR2 S.3.3**

level max real measure mm

connection bore diameter max **dcbx** DCBX

greatest internal diameter of an adaptive item that can participate in a connection

71EBDBF130AE6-1 = side

REMARKS: The term is connection bore diameter maximum.

Illustration reference: 71FC0A6DE2884-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EAD3871D313-1	converter
71EC61E726811-1	collet

71EBDBF49F96C-1 **1** **NR2 S..3.3**

level min real measure mm

connection bore diameter min **dcbn** DCBN

least internal diameter of an adaptive item that can participate in a connection

71EBDBF130AE6-1 = side

Illustration reference: 71FC0A6DFD0F8-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EAD3871D313-1 converter

71EC61E726811-1 collet

71FAD51836C93-1 **1** **NR2 S..3.3**

simple real measure mm

diameter inner **dinn** DINN

distance between parallel tangents to the inner surface of a cylindrical object

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EC56E04199D-1 helical coil spring

71EC56E0D4D19-1 helical disk spring

71EC56E106606-1 flat wire compression spring

71ED80E1EC9F6-1 nozzle

71FAD51880679-1 **1** **NR2 S..3.3**

simple real measure mm

diameter outer **diout** DIOUT

distance between parallel tangents to the outer surface of a cylindrical object

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EC56E04199D-1 helical coil spring

71EC56E0D4D19-1 helical disk spring

71EC56E106606-1 flat wire compression spring

71EC659BC21E3-1 **1** **X1**

simple boolean

flanged **flgd** FLGD

indicator for whether an object possesses a flange

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71FAD519268DE-1 centre pin

71CF29872F0AB-1 **1** **X 1**

simple non-quantitative code

hand **hand** HAND

identifier used for the direction of rotation of rotating tool items and rotating adaptive items and for the position of the cutting edge of a stationary tool item and for the position of the connection used for a tool item or adaptive item with respect to the axis of the item and for the orientation of a replaceable cutting item with respect to the insert reference system and for the orientation of a clamp

L = left hand

N = neutral (both) hand

R = right hand

ISO 3002-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D0808DA853B-1 master insert

71E01A004C775-1 tool item type

71EC56B608ADC-1 insert wedge

71FAD54E2FE26-1 ever top clamp

71EC61D8F250D-1 **1** **NR2 S..3.3**

simple real measure mm

height **hth** HTH

largest dimension of an object above a base level

Illustration reference: 71FC0A6FF9CF8-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EC56E223664-1 leaf spring

71CEAEBF2A69F-1 **1** **X 17**

simple string

insert seat size code **ssc** SSC

identifier for the size of a replaceable cutting item and the seat on a tool item or an assembly item.

NOTE The value of this identifier depends on both the shape of the cutting item and the size of the cutting item.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D0808DA853B-1 master insert

71D1066F279AD-1 cartridge

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A05104CF-1 turn

71E0251F304E1-1 rotating borer

71EAD70F1B95A-1 nest

71CE7A9F0C79F-1 **1** **X 17**

simple non-quantitative code

insert shape code **sc** SC

identifier for the shape of a regular insert.

E = rhombic 75 degree included angle

A = parallelogram 85 degree included angle

B = parallelogram 82 degree included angle

C = rhombic 80 degree included angle

D = rhombic 55 degree included angle

H = hexagonal

K = parallelogram 55 degree included angle

L = rectangular

M = rhombic 86 degree included angle

O = octagonal

P = pentagonal

R = round

S = square

T = triangular 60 degree included angle

V = rhombic 35 degree included angle

W = trigon

ISO 1832:2004, 4.1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D0808DA853B-1 master insert

71D1AA486FF89-1 equilat equiang

71D1AA489FD6E-1 nonequilat nonequiang

71D1AA6635E76-1 round insert

71D1AE11B8B77-1 equilat nonequiang

71D1AE120D96E-1 nonequilat equiang

71EAD70F1B95A-1 nest

71EC61D6B66E6-1 **1** **NR2 S..3.3**

simple real measure mm

length **lth** LTH

distance between the ends of an object or feature

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EC56E106606-1 flat wire compression spring

71EC56E223664-1 leaf spring

71FAD519268DE-1 centre pin

71EC5E54A9B4F-1 **1** **X 17**

simple non-quantitative code

pin end shape **pnes** PNES

identifier for the form of the top termination of a rigid centre pin

con = conical

cyl = cylindrical

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71FAD519268DE-1 centre pin

71FAD53253A1B-1 **1** **X 17**

simple non-quantitative code

pin fixing method **pnfx** PNFX

mechanism for securing a rigid centre pin in a tool item

groove = groove for locking pin

hole = threaded hole

null = no fixing method

thread = external thread

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71FAD519268DE-1 centre pin

71EC65A21E9D4-1 **1** **X 17**

simple non-quantitative code

section style **scty** SCTY

description of the shape of the cross section of an object or feature

circular = circular

profiled = profiled

rectangular = rectangular

square = square

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EC56E04199D-1 helical coil spring

71FAD52B8F653-1 **1** **NR2 S..3.3**

simple real measure mm

shaft diameter **sfdm** SFDM

width of the main functional portion of a cylindrical object

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71FAD519268DE-1 centre pin

71FAD52C3FC9E-1 **1** **NR2 S..3.3**

simple real measure mm

shaft length **sftl** SFTL

longitudinal dimension of the main functional portion of a cylindrical object

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71FAD519268DE-1 centre pin

71FAE06BBB597-1 **1** **NR2 S..3.3**

simple real measure N/m

spring coefficient **spcf** SPCF

ratio between the applied force and the reciprocal of the deflection

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71EC56BA16ACB-1 spring

71EAC4A2B6544-1 **1** **NR2 S..3.3**

simple real measure deg

taper angle **ta** TA

included angle between generatrixes in the axial plane section

ISO 1119

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0540BE7-1 slab mill

71E01A05D27A8-1 end mill

71E01A06A8A08-1 countersink drill

71E01A0751456-1 conical drill

71E01A07D2A1B-1 tapered reamer

71E01A081855D-1 tapered broach

71E01A0E34C7F-1 conical tap

71EC61E726811-1 collet

71EF07E037025-1 slotting cutter

71CEAEC02FEBD-1 **1** **NR2 S..3.3**

simple real

taper gradient **tg** TG

ratio of the difference between the diameters of two sections to the distance between these sections

ISO 1119

REMARKS: Also known as rate of taper

Illustration reference: 71FC1960E0485-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DD700C151B5-1 threading profile

71E01A0540BE7-1 slab mill

71E01A05D27A8-1 end mill

71E01A06A8A08-1 countersink drill

71E01A0751456-1 conical drill

71E01A07D2A1B-1 tapered reamer

71E01A081855D-1 tapered broach

71E01A0E34C7F-1 conical tap

71EC61E726811-1 collet

71EF07E037025-1 slotting cutter

Annex E
(informative)

Illustrations of assembly item classes

See Figures E.1 to E.25.

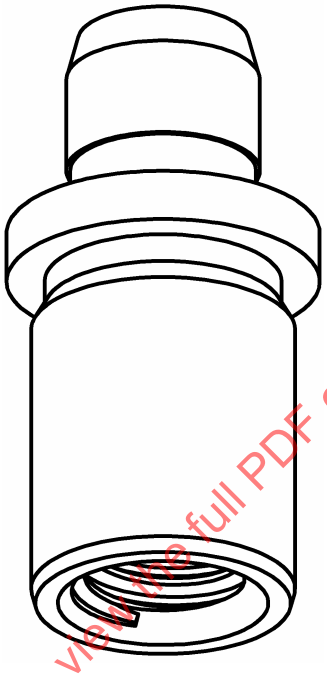

Figure E.1 — Centre pin

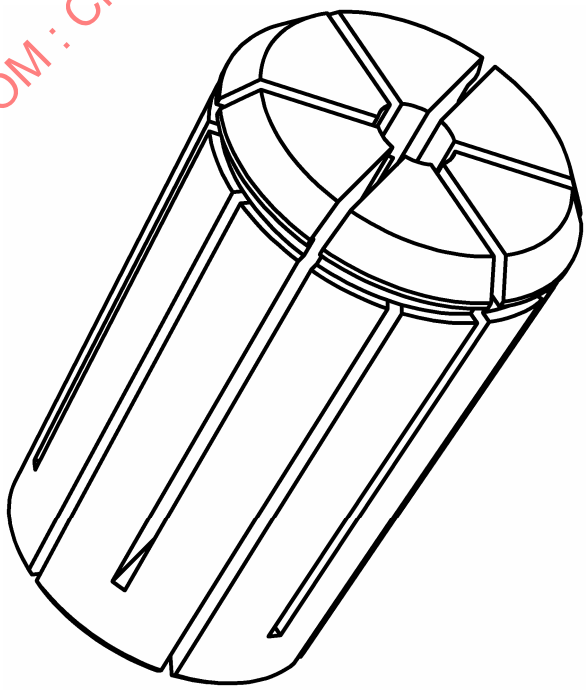

Figure E.2 — Collet

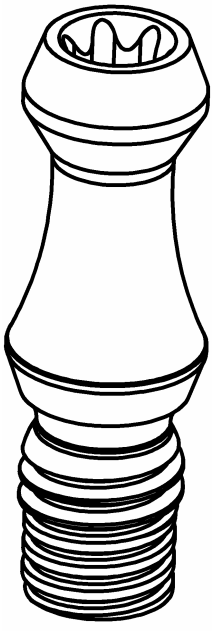

Figure E.3 — Deflection screw

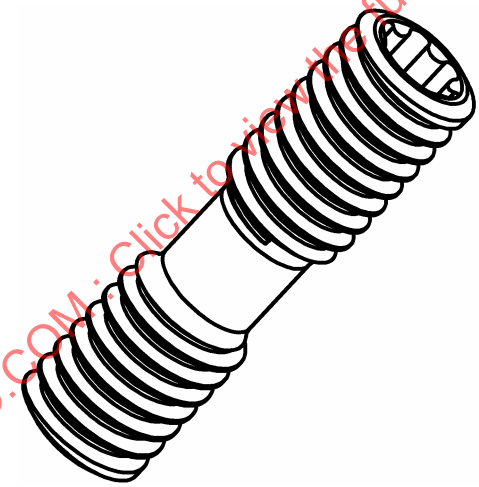

Figure E.4 — Differential screw

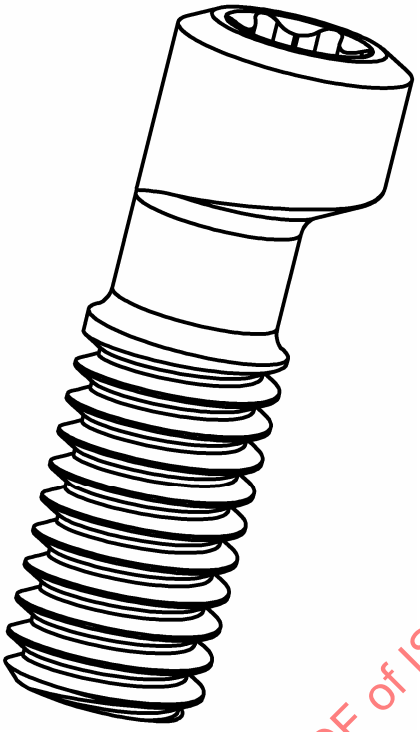

Figure E.5 — Eccentric screw

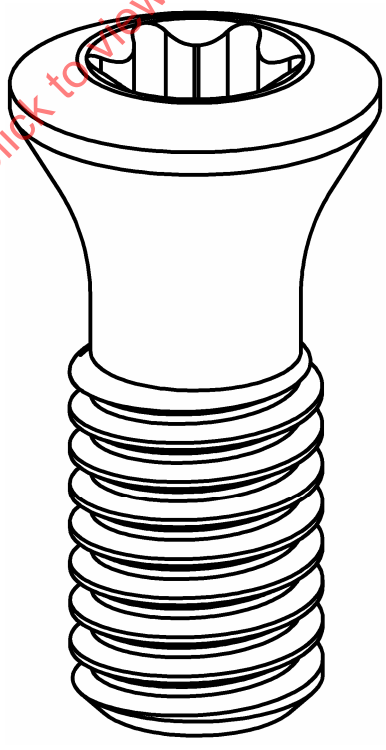

Figure E.6 — Insert screw