TECHNICAL SPECIFICATION

ISO/TS 13399-3

First edition
2007-01-15

Cutting tool data representation and exchange —

Part 3: Reference dictionary for tool items

Représentation et échange des données relatives aux outils coupants —

Partie 3: Dictionnaire de référence pour les éléments relatifs aux outils

Reference number
ISO/TS 13399-3:2007(E)

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Published in Switzerland

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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order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn.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again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.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 13399-3 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 those portions of a cutting tool that support one or more cutting items with defined cutting edges. Tool items include, but are not limited to, turning tools, milling tools, drilling tools, and threading tools. The purpose of this part 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.

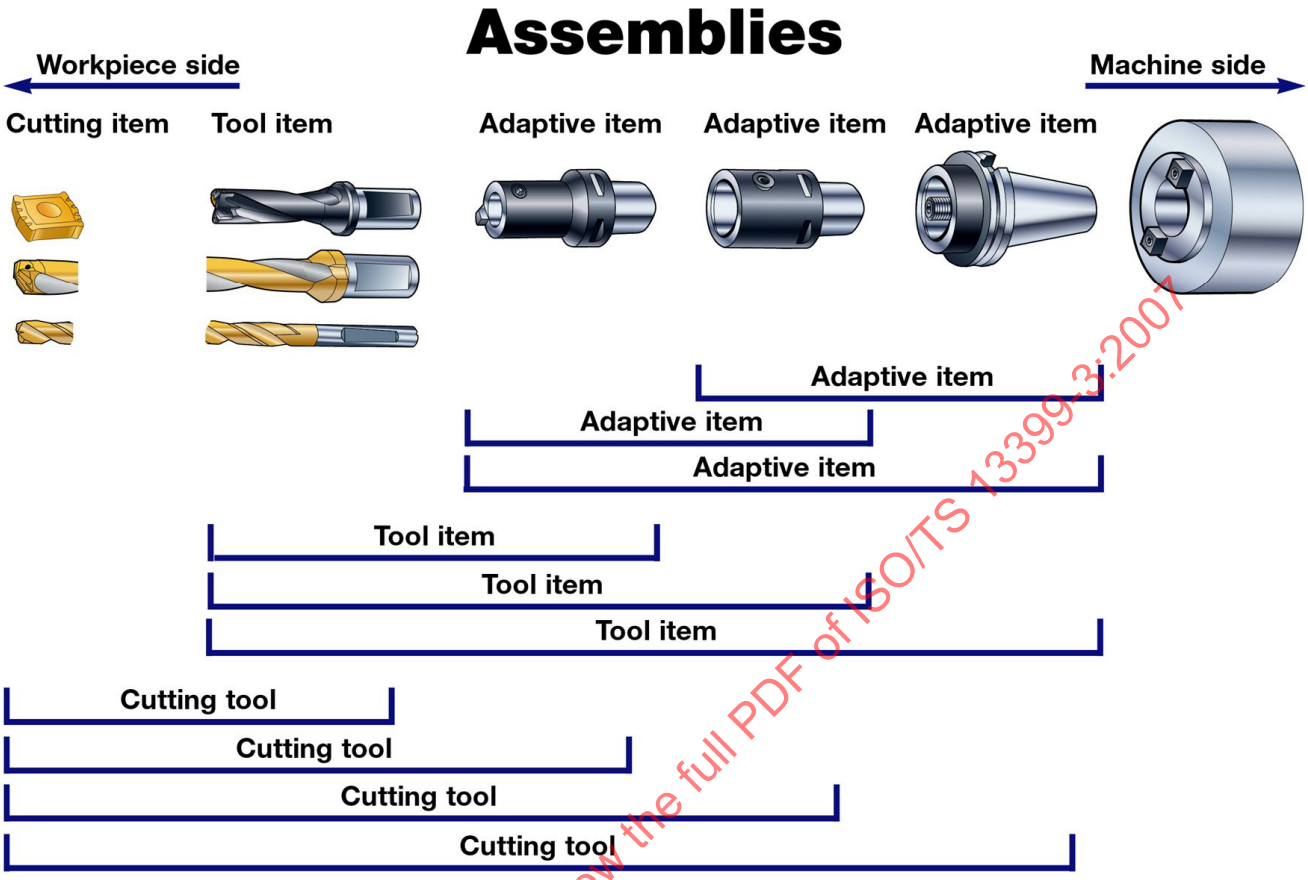

Figure 1 — Examples of different types of assemblies of items

Cutting tool data representation and exchange —

Part 3:
Reference dictionary for tool items

1 Scope

This part of ISO 13399 specifies a reference dictionary for tool items, 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 tool items and their features, with an associated classification scheme,

b) definitions and identifications of the data element types that represent the properties of tool items and their features,

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 tool items and tool item features;

— standard data that represent the various properties of tool items and tool item features;

— standard data that represent domains of values used for properties of tool items and tool item features;

— 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;

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.

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

— information models for cutting tools;

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

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
coordinate axis system
right-handed rectangular Cartesian coordinate system in three-dimensional space with three principal axes labelled X, Y and Z

[ISO/TS 13399-50]

3.5
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]

3.6
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]

3.7
data element type
unit of data for which the identification, description and value representation have been specified

[ISO 13584-42]

3.8
data exchange
storing, accessing, transferring and archiving of data

[ISO 10303-1]

3.9
data type
domain of values

[ISO 10303-11]

3.10
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.

3.11
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.

3.12
entity data type
representation of an entity

[ISO 10303-11]

3.13
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]

3.14
family of items
simple or generic family of items

[ISO 13584-42]

3.15
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]

3.16
implementation method
means for computers to process or exchange data

[ISO 10303-1]

3.17
information
facts, concepts or instructions

[ISO 10303-1]

3.18
information model
formal description of a bounded set of information to meet a specific requirement

[ISO 10303-1]

3.19
machine side
identification of a direction pointing towards the machine

3.20
machined surface
surface produced by the action of a cutting tool

[ISO 3002-1]

3.21
mirror plane
xz plane in the coordinate axis system

[ISO/TS 13399-50]

3.22
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.

3.23
property
characteristic of a product or process that may be represented by a data element type

NOTE Adapted from ISO 13584-42.

3.24
simple family of items
set of items in which each item may be described by the same group of properties

[ISO 13584-42]

3.25
transient surface
part of the surface which is formed on the workpiece by the cutting operation and is removed during the following cutting action either during the following revolution of the tool or the workpiece or by the following cutting edge

[ISO 3002-1]

3.26
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]

3.27
workpiece
object on which a cutting action is performed

[ISO/TS 13399-2]

3.28
workpiece side
identification of a direction pointing towards the workpiece

[ISO/TS 13399-2]

3.29
work surface
surface that is to be removed on the workpiece

[ISO 3002-1]

3.30
xy plane
plane in the coordinate axis system that contains the X and Y axes with the normal of the plane in the positive Z direction

[ISO/TS 13399-50]

3.31
xyw plane
plane in the coordinate axis system related to the xy plane by the rotation angle PHI about the X axis in a counter clockwise direction and located at a distance XYWD from the origin of the coordinate axis system

[ISO/TS 13399-50]

3.32
xz plane
plane in the coordinate axis system that contains the X and Z axes with the normal of the plane in the positive Y direction

[ISO/TS 13399-50]

3.33
xzw plane
plane in the coordinate axis system related to the xz plane by the rotation angle KAPPA about the Z axis in a counter clockwise direction and located at a distance XZWD from the origin of the coordinate axis system

[ISO/TS 13399-50]

3.34
yz plane
plane in the coordinate axis system that contains the Y and Z axes with the normal of the plane in the positive X direction

[ISO/TS 13399-50]

3.35
yzw plane
plane in the coordinate axis system related to the yz plane by the rotation angle RHO about the Y axis in a counter clockwise direction and located at a distance YZWD from the origin of the coordinate axis system

[ISO/TS 13399-50]

NOTE The xzw plane, the xyw plane and the yzw plane are mutually perpendicular.

4 Abbreviated terms

BSU basic semantic unit

DET data element type

5 Representation of the ontological 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 joined by an underscore character.

EXAMPLE "tool item type" is the name of a concept in the ontology: **tool_item_type** is the identifier of the class in the dictionary that represents the concept.

Data for tool items are grouped into two main classes: **tool_item_feature** and **tool_item_type**. The items in the classification of **tool_item_type** are identified by a label that is derived from the main application of a tool. However, it should be recognised that a tool may be used for more than one type of cutting operation. A **tool_item_feature** is an aspect of a **tool_item_type** that could not exist in isolation from the **tool_item_type**.

Some of the definitions of properties that are applicable to tool items are defined in terms of a coordinate axis system. The coordinate system is the same for adaptive items, cutting items and tool items and is defined in ISO/TS 13399-50. The applications of this coordinate system to tool items are described in this part of. All functional dimensions of a tool item that uses replaceable cutting items are defined on the assembly of the tool item and the master insert. The convention followed is "the tool in hand".

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 tool item classes are provided in Annex C. The properties applicable to tool item classes are defined in Annex D.

5.1 tool_item_feature

tool_item_feature is a generic family of characteristics of a tool item that cannot exist independently of the tool item. **tool_item_feature** has the following subclasses:

— **chip_management**;

— **drill_point**;

— **guide_pilot_feature**;

— **pilot_drill_feature**;

— **tool_hub**;

5.1.1 chip_management

chip_management is a generic class of features of the tool body or assembly to control the direction of motion of the chip.

5.1.2 drill_point

A **drill_point** is the part of a drill that first makes contact with the workpiece.

5.1.3 guide_pilot_feature

A **guide_pilot_feature is a** portion of a cylindrical tool in front of the cutting portion that acts to limit the sideways movement of the tool in operation.

5.1.4 pilot_drill_feature

A **pilot_drill_feature** is part of a larger drill for guiding the main cutting operation.

5.1.5 tool_hub

A **tool_hub** is the central part of a disk-shaped tool item with increased thickness.

5.2 tool_item_type

A **tool_item_type** is a generic family of items that support or hold one or more cutting items in a cutting operation. **tool_item_type** has the following subclasses:

— **broach**;

— **burr_tool**;

— **cartridge**;

— **drill**;

— **mill**;

— **ream**;

— **rotating_borer**;

— **threading_die**;

— **threading_tap**;

— **turn**.

5.2.1 broach

broach is a generic family of items designed for use mainly in broaching operations. **broach** has the following subclasses:

— **cylindrical_broach**;

— **disk_ broach**;

— **prismatic_ broach**;

— **tapered_broach**.

5.2.1.1 cylindrical_broach

A **cylindrical_broach** is a tool item used for changing the dimensions of an existing profile that has a constant circular cross section and cutting edges around the whole circumference.

5.2.1.2 disk_broach

A **disk_broach** is a disk-shaped tool item used for changing the dimensions of an existing profile and that has the cutting edges on the periphery of the disk.

5.2.1.3 prismatic_broach

A **prismatic_broach** is a tool item with a rectangular cross section used for changing the dimensions of an existing profile and that has cutting items on one side of the cross section.

5.2.1.4 tapered_broach

A **tapered_broach** is a tool item for changing the dimensions of an existing profile that that has a continuously varying cross section with cutting edges surrounding the cross section.

NOTE The cross section can be rectangular or circular or elliptical.

5.2.2 burr_tool

A **burr_tool** is a small rotating tool for removing areas of roughness from a machined edge

5.2.3 cartridge

A **cartridge** is a tool item that carries a solid cutting edge or locks a replaceable insert and is designed to be mounted onto either an adaptive item or a tool item.

5.2.4 drill

drill is a generic family of items designed for use mainly in drilling operations. **drill** has the following subclasses:

— **centre_drill**;

— **chamfer_drill**;

— **conical_drill**;

— **core_drill**;

— **counterbore_dril**l;

— **countersink_drill**;

— **deep_hole_drill**;

— **pilot_drill**;

— **step_drill**;

— **trepanning_drill**;

— **twist_drill**.

5.2.4.1 centre_drill

A **centre_drill** is a tool item for creating a hole for the location of a subsequent operation.

NOTE This drill is usually a solid drill.

5.2.4.2 chamfer_drill

A **chamfer_drill** is a tool item for creating a chamfer in or on a hole.

5.2.4.3 conical_drill

A **conical_drill** is a tool item for forming a cone shaped hole.

5.2.4.4 core_drill

A **core_drill** is a tool item without a central cutting point or means of starting a hole.

5.2.4.5 counterbore_drill

A **counter_bore_drill** is a tool item for creating a counterbore section of a hole.

5.2.4.6 countersink_drill

A **countersink_drill** is a tool item for creating a countersink section of a hole.

5.2.4.7 deep_hole_drill

A **deep_hole_drill** is a tool item for creating a hole usually deeper than ten times the diameter of the tool item.

5.2.4.8 pilot_drill

A **pilot_drill** is a tool item that is added to a larger drill for guiding the main cutting operation.

5.2.4.9 step_drill

A **step_drill** is a tool item for creating a stepped hole.

5.2.4.10 trepanning_drill

A **trepanning_drill** is a tool item used to cut a deep face groove leaving a plug of material equal to the inner diameter.

NOTE The tool can be small to leave a boss on a component or large to create a large hole but not produce all the cut material to swarf.

5.2.4.11 twist_drill

A **twist_drill** is a solid tool item with helical chip flutes.

5.2.5 mill

mill is a generic family of items designed for use mainly in milling operations. **mill** has the following subclasses:

— **double_half_side_mill**;

— **end_mill**;

— **face_mill**;

— **half_side_mill**;

— **ring_mill**;

— **slab_mill**;

— **slotting_cutter**;

— **threading_grooving_mill**.

5.2.5.1 double_half_side_mill

A **double_half_side_mill** is a milling cutter that cuts on both sides and part of the periphery and is used for enlarging an existing slot.

NOTE The X axis is perpendicular to the slot being enlarged, the cutting width is less than half the cutting diameter (CW<CD/2) and the mounting is normally a bore mount.

5.2.5.2 end_mill

An **end_mill** is a milling cutter with an integral shank.

NOTE The X axis is either perpendicular or parallel to the surface being machined and the tool has a cutting diameter of less than 150mm (CD<150mm).

5.2.5.3 face_mill

A **face_mill** is a milling cutter that produces a flat surface on the workpiece although the cutting edges on the periphery remove most of the workpiece material.

NOTE The X axis is perpendicular to the surface being machined, there is one row of inserts, the mounting is usually a bore with transverse keyways and the depth of cut is less than cutting diameter (DOC<CD).

5.2.5.4 half_side_mill

A **half_side_mill** is a milling cutter that cuts on the periphery and one side.

NOTE The X axis is perpendicular to the main workpiece surface being produced, the depth of cut is less than half the cutting diameter (DOC<CD/2) and the mounting is normally a bore mount.

5.2.5.5 ring_mill

A **ring_mill** is a milling cutter that cuts on the internal annular surface and both sides.

NOTE The X axis is perpendicular to the slot being produced and the cutting width is less than half the cutting diameter (CW<CD/2).

5.2.5.6 slab_mill

A **slab_mill** is a milling cutter with cutting edges on the periphery for machining large surfaces.

NOTE The tool axis is parallel to the workpiece surface, the mounting surface is a bore and the useable length is greater than cutting diameter (LU>CD).

5.2.5.7 slotting_cutter

A **slotting_cutter** is a milling cutter that cuts on the periphery and both sides.

NOTE The X axis is perpendicular to the slot being produced, the cutting width is less than half the cutting diameter (CW<CD/2) and the mounting is normally a bore mount.

5.2.5.8 threading_grooving_mill

A **threading_grooving_mill** is a milling cutter that cuts on its periphery to produce a groove or a thread.

NOTE The X axis is parallel to the groove width or to the axis of thread being cut and the mill can either be designed with an integral shank or with a bore mount.

5.2.6 ream

ream is a generic family of items designed for use mainly in reaming operations. **ream** has the following subclasses:

— **cylindrical_reamer**;

— **profile_reamer**;

— **stepped_reamer**;

— **tapered_reamer**.

5.2.6.1 cylindrical_reamer

A **cylindrical_reamer** is a tool item used for reaming a cylindrical surface.

5.2.6.2 profile_reamer

A **profile_reamer** is a tool item for reaming a non-regular surface.

5.2.6.3 stepped_reamer

A **stepped_reamer** is a tool for reaming a hole with more than one diameter.

5.2.6.4 tapered_reamer

A **tapered_reamer** is a tool item for reaming a conical hole.

5.2.7 rotating_borer

A **rotating_borer** is an assembly of cutting item or items, tool item or items and adaptive item or items to enlarge an existing hole.

5.2.8 threading_die

threading_die is a generic family of items used for external threading operations. **threading_die** has the following subclasses:

— **cylindrical_die**;

— **hexagonal_die**.

5.2.8.1 cylindrical_die

A **cylindrical_die** is a threading die whose outside shape is cylindrical.

5.2.8.2 hexagonal_die

A **hexagonal_die** is a threading die whose outside shape is hexagonal.

5.2.9 threading_tap

threading_tap is a generic family of items designed to form an internal thread in an existing hole in a workpiece. **threading_tap** has the following subclasses:

— **conical_tap**;

— **cylindrical_tap**.

5.2.9.1 conical_tap

A **conical_tap** is a tool item that creates tapered internal threads.

5.2.9.2 cylindrical_tap

A **cylindrical_tap** is a tool item that creates internal cylindrical threads.

5.2.10 turn

turn is a generic family of items designed for use mainly in internal and external turning operations. **turn** has the following subclasses:

— **boring_bar**;

— **prismatic_tool_holder**;

— **system_tool**.

5.2.10.1 boring_bar

A **boring_bar** is a tool item with a cylindrical cross section shank mainly used for internal turning operations.

5.2.10.2 prismatic_tool_holder

A **prismatic_toll_holder** is a tool item with prismatic cross section shank mainly used for external turning operations.

NOTE The class includes, but is not limited to, square shanks, rectangular shanks, cartridges and cut-off blades.

5.2.10.3 system_tool

A **system_tool** is a tool item with a manufacturer's specific connection used for external and, or, internal turning operations.

6 Properties for tool item features and tool item types

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 tool item features and tool item types, with their identification codes (BSU), are shown in Table 1. The order of the names in the table should be read in rows from left to right.

NOTE 1 The value domains for properties are specified in ISO/TS 13399-100.

Table 1 — Property names and identification codes

Property name	Identification code (BSU)	Property name	Identification code (BSU)
a dimension on lf	71D0793ECEF9A	a dimension on wf	71CF299431CAC
adjustability	71EBBA9E78025	adjustment axial property	71D0845BB2310
adjustment radial property	71D0845C34AB9	axial groove outside daimeter maximum	71D07543FD182
axial groove outside diameter minimum	71CF299354332	balance quality code	71DF151EA5CF1
balanced by design	71EAC0CAB861F	ball nosed property	71D1AE0CB32D1
blade reinforcement radius	71CF2992DBC44	body clearance depth	71EAC81F88336
body diameter	71ED6A9AF7D1D	body diameter maximum	71D08462F8185
body half taper angle	71EAC472BD116	body height	71EBB332C60EB
body length	71ED6AA478A3D	body length maximum	71DCD3B16750B
body material code	71DF1523224D8	body width	71EBB33230236
bolt hole circle property	71EDCB7490ED5	burr type code	71DF1523869EE
cartridge size code	71DF1523EE184	clamping length	71EBAF896BE9A
clamping length maximum	71ED6E54B15C4	clamping length minimum	71EBB339ED2BD
clamping type code	71CF298EEB4F5	clamping width	71EBAF85006BD
clearance angle axial	71EAC83CD450B	clearance angle normal	71ED6E5CD0DAE
clearance angle orthogonal	71D08418C3B4D	clearance angle radial	71EAC83B73825
coating property	71DD703B84298	connection code machine side	71D102AE3B252
connection code workpiece side	71D102AE8A5A9	connection retaining knob thread size	71CF298A76B66
connection bore depth	71EAC48CAD407	connection bore diameter	71E01D92C41E8
connection count workpiece side	71EDD2C17746F	connection diameter	71EBDBF5060E6
connection size code	71FC193318002	connection unit basis	71ED6E16D5978
contact surface diameter machine side	71D087D97FCE3	coolant supply property	71EBB342CC751
cutting length minimum bore diameter	71CF299287FD3	cutting depth maximum	71CEAEBD5A66A
cutting diameter internal maximum	71D0846570977	cutting diameter internal minimum	71D084655A2F7
cutting diameter internal	71D0846545C4E	cutting diameter	71D084653E57F
cutting diameter maximum	71D084656CE32	cutting diameter minimum	71D0846556288
cutting diameter size code	71DF1527D828C	cutting edge centre count	71DCD0033973E
cutting edge count	71CEAE9B489F4	cutting end count	71DCD00CBBC2A
cutting item count	71DF8C52B8926	cutting pitch density	71DF15283219C
cutting pitch differential	71DF152D8CF7D	cutting width	71CEAEBE2B825
cutting width maximum	71D07569F8BC3	cutting width minimum	71D0756A28B42

Table 1 (*continued*)

Property name	Identification code (BSU)	Property name	Identification code (BSU)
damping property	71CED03D70452	data chip provision	71CF29869CA0F
depth of cut maximum	71D07576C0558	design configuration style code	71CF2993DC583
drill back taper	71EAC81AD9AE1	drilling profile property	71D1AE126DEFD
drive angle	71D08096F930C	drive count	71E0306423B2A
drop head design	71EAC49F75413	face effective cutting edge count	71DCD00239812
face mounted insert count	71DCD0029BBE7	flange diameter	71EC61D8A1771
flute count	71DCCFEBB883E	flute design code	71DCCFEC645BD
flute helix angle	71DCCFEC20115	flute helix hand	71DCCFF654756
flute helix pitch	71DCCFF6A1A13	fluted land width	71EAC8210DF36
functional height	71CF29994E737	functional length	71DCD39338974
functional length minimum	71EBC1EB8456A	functional length secondary	71D078F5BEDBE
functional width	71CF29984CDA7	functional width 2	71D193F495583
functional width secondary	71CF299874B1E	groove depth minimum bore diameter	71CF298FB10E4
guide element property	71EE070696F08	guide pilot diameter	71ED6A7A6E6A2
hand	71CF29872F0AB	head back offset length	71D075730A82B
head back offset width	71D075731F172	head bottom offset height	71CF298F073D3
head bottom offset length	71CF298F4E487	head diameter	71E03062EC034
head length	71D07574A61E8	hub diameter	71D087D3B17B0
hub property	71DF5C078FF46	hub thickness	71D087D3F5E07
inclination angle	71D075754F8A3	insert adjustable count	71DF1538E7378
insert interface code	71CE7A9936610	insert seat size code	71CEAEBF2A69F
interlocking capabilty	71DF1526AC952	keyway property	71DF5C0761888
length chip flute	71DCCC27DEF53	master insert identification	71CF298FDE0EF
minimum bore diameter	71D07543367C5	mounting hole angle	71EAC0F064E2D
mounting hole distance	71EAC0E9FA4CD	mounting hole distance 2	71EAC0EF68BB7
mounting hole height	71EAC0EFA1BF3	neck diameter	71EAC48EC5DE0
neck length	71EBC1E026769	overall length minimum	71EBC1E8857BE
overall height	71D078EB73E87	overall length	71D078EB7C086
overall width	71CF299257986	peripheral effective cutting edge count	71DCCFF75E485
peripheral mounted insert count	71DCD00054F65	pilot drill protrusion	71EAC49030828
pilot protruding length	71DCCFD24119E	plug chamfer diameter	71EBC1EA293DC
plug style	71E02C679DC6D	plunge depth maximum	71D08099F1DDC
point angle	71DCCC4FEF366	point length	71DCCFD064042
premachined hole diameter	71DCCC5A4FD18	profile specification	71DF8C5D91804
protruding length	71DCD394BB20E	qualified tool code	71D078ED2C21E

Table 1 (*continued*)

Property name	Identification code (BSU)	Property name	Identification code (BSU)
rake angle axial	71CF29990C41F	rake angle normal	71CF2998EBD46
rake angle orthogonal	71D0808F8F719	rake angle radial	71CF2998A1609
ramping angle maximum	71DF1538632D9	revolutions per minute maximum	71DF153A691F2
row identifier	71CED04867743	runout axial adjustment	71D0845C77193
runout axial property	71EDD2B883F77	runout radial	71DF8C660035E
runout radial adjustment	71D0846298D19	runout radial property	71EDD2B8B8C5B
shank cross sectional shape code	71CF2988A5874	shank diameter	71CF29862B277
shank height	71CF29883E014	shank length	71CF298870946
shank width	71CF298751FCF	step count	71DCCC3BD1B96
step diameter length	71DCCC3DFA23A	step distance	71DCCC47221E0
step included angle	71DF151D6E547	stock removal maximum	71EBC1EC0BB22
stock removal minimum	71EBC1EBC839F	stock removal recommended	71EBC1EC3E8B6
tangentially mounted insert	71EAC496E7425	tap type identifier	71DF153B4ABCD
taper angle	71EAC4A2B6544	tapered	71EC659C9B3CE
thread diameter	71E02C5C2EED3	thread diameter size	71EBBAA3BCA70
tool changer interference diameter maximum	71CF298A3A99A	tool changer interference length minimum	71CF2989AF0E0
tool cutting edge angle type code	71D078F6E9893	tool cutting edge angle	71D078F683C9B
tool holder shape code	71D078FD4E7BE	tool lead angle	71D078F77616B
tool style code	71D078FBF6C68	torque	71DF153B14F02
unit system	71EBBA9ED6C0A	usable length	71EBB33490FDA
usable length diameter ratio	71DCCC62CD9EE	usable length maximum	71CF2992BDBCC
web taper	71EAC823D95A7	web thickness	71EAC82313165
weight of item	71CED03C97AAB		
work piece parting diameter maximum	71D0757C787B8		

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 (3) 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 (3) version (1) object (1) tool items (1)}

Annex B
(informative)

Classification structure

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

NOTE Annex C contains the full definition of all the classes that are relevant to tool items. Definitions of reference systems that are used in the definition of some properties can be found in ISO 13399-50.

Table B.1 — Classification structure

Classes	Parent class	Subclass
cutting tool library	Root class	71CE7A72B6DA7
adaptive item type	71CE7A72B6DA7	71EAD37F18F34
adjustment	71CE7A72B6DA7	71ED884159C90
assembly item type	71CE7A72B6DA7	71CE7A795C05C
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
chip management	71DD70376771D	71DF8C3FD03AF
drill point	71DD70376771D	71DF8C5B8F7B5
guide pilot feature	71DD70376771D	71E019C497CDF
pilot drill feature	71DD70376771D	71EE070754DE2
tool hub	71DD70376771D	71DF5C02D0271
tool item type	71CE7A72B6DA7	71E01A004C775
broach	71E01A004C775	71E01A04C377D
cylindrical broach	71E01A04C377D	71E0250E32A07
disk broach	71E01A04C377D	71E01A082DE72
prismatic broach	71E01A04C377D	71E01A0838E9B

Table B.1 (*continued*)

Classes			Parent class	Subclass
		tapered broach	71E01A04C377D	71E01A081855D
	burr tool		71E01A004C775	71E02C544BABE
	cartridge		71E01A004C775	71D1066F279AD
	drill		71E01A004C775	71E01A00BD93C
		centre drill	71E01A00BD93C	71E01A073CA28
		chamfer drill	71E01A00BD93C	71E01A069566C
		conical drill	71E01A00BD93C	71E01A0751456
		core drill	71E01A00BD93C	71FAE7AAE8247
		counterbore drill	71E01A00BD93C	71E01A06BF88D
		countersink drill	71E01A00BD93C	71E01A06A8A08
		deep hole drill	71E01A00BD93C	71E01A065F635
		pilot drill	71E01A00BD93C	71E01D8A88F65
		step drill	71E01A00BD93C	71E01A067F73C
		trepanning drill	71E01A00BD93C	71E01A0769982
		twist drill	71E01A00BD93C	71E01A0608FE4
	mill		71E01A004C775	71E01A008D13F
		double half side mill	71E01A008D13F	71EF07DFC283C
		end mill	71E01A008D13F	71E01A05D27A8
		face mill	71E01A008D13F	71E01A05B627B
		half side mill	71E01A008D13F	71E01A05EA320
		ring mill	71E01A008D13F	71E01A0600702
		slab mill	71E01A008D13F	71E01A0540BE7
		slotting cutter	71E01A008D13F	71EF07E037025
		threading grooving mill	71E01A008D13F	71EF07E083383
	ream		71E01A004C775	71E01A04A8AEC
		cylindrical reamer	71E01A04A8AEC	71E01A07BC535
		profile reamer	71E01A04A8AEC	71E01A07ECCCF
		stepped reamer	71E01A04A8AEC	71E01A07FF350
		tapered reamer	71E01A04A8AEC	71E01A07D2A1B
	rotating borer		71E01A004C775	71E0251F304E1
	threading die		71E01A004C775	71E01A04F70F7
		cylindrical die	71E01A04F70F7	71E01A0E4EE75
		hexagonal die	71E01A04F70F7	71E01A0E79239
	threading tap		71E01A004C775	71E01A04E0236
		conical tap	71E01A04E0236	71E01A0E34C7F
		cylindrical tap	71E01A04E0236	71E01A0A5355D
	turn		71E01A004C775	71E01A05104CF
		boring bar	71E01A05104CF	71E01A0E9CBA9

Table B.1 (*continued*)

Classes	Parent class	Subclass
prismatic tool holder	71E01A05104CF	71E01A0E85121
system tool	71E01A05104CF	71E01A0EAF067
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 tool item features and tool item types.

The information for each class is presented as follows.

BSU Code – version number **Revision number**

preferred name **short name**

Definition

NOTE

REMARKS

Properties:

Subclasses:

71DD70376771D-1 **1**

tool item feature **tif**

characteristic of a tool item that cannot exist independently of the tool item

Subclasses:

71DF5C02D0271-001 tool hub

71DF8C3FD03AF-001 chip management

71DF8C5B8F7B5-001 drill point

71E019C497CDF-001 guide pilot feature

71EE070754DE2-001 pilot drill feature

71DF8C3FD03AF-1 **1**

chip management **chpmg**

feature of the tool body or assembly to control the direction of motion of the chip

Properties:

71DCCC27DEF53-1	length chip flute
71DCCFEC20115-1	flute helix angle
71DCCFEC645BD-1	flute design code
71DCCFF654756-1	flute helix hand
71DCCFF6A1A13-1	flute helix pitch

71DF8C5B8F7B5-1 **1**

drill point **dpt**

part of a drill that first makes contact with the workpiece

Properties:

71DCCC4FEF366-1	point angle
71DCCFD064042-1	point length
71DF8C660035E-1	runout radial

71E019C497CDF-1 **1**

guide pilot feature **gpy**

portion of a cylindrical tool in front of the cutting portion that acts to limit the sideways movement of the tool in operation

Properties:

71DCCFD24119E-1	pilot protruding length
71ED6A7A6E6A2-1	guide pilot diameter

71EE070754DE2-1 **1**

pilot drill feature **pdrl**

part of a larger drill for guiding the main cutting operation

Properties:

71EAC49030828-1	pilot drill protrusion

71DF5C02D0271-1 1

tool hub tihub

central part of a disk-shaped tool item with increased thickness

Properties:

71D087D3B17B0-1 hub diameter

71D087D3F5E07-1 hub thickness

71E01A004C775-1 1

tool item type titp

family of items that support or hold one or more cutting items in a cutting operation

NOTE Dimensions and properties of tool items assume the presence of at least one master insert.

Properties:

71CE7A9936610-1 insert interface code

71CEAE9B489F4-1 cutting edge count

71CED03C97AAB-1 weight of item

71CF29869CA0F-1 data chip provision

71CF29872F0AB-1 hand

71CF298FDE0EF-1 master insert identification

71D078EB7C086-1 overall length

71D078FBF6C68-1 tool style code

71D102AE3B252-1 connection code machine side

71DD703B84298-1 coating property

71DF1523224D8-1 body material code

71DF153B14F02-1 torque

71DF8C52B8926-1 cutting item count

71EBB342CC751-1 coolant supply property

71EBBA9ED6C0A-1 unit system

71ED6E16D5978-1 connection unit basis

71FC193318002-1 connection size code

Subclasses:

71D1066F279AD-001	cartridge
71E01A008D13F-001	mill
71E01A00BD93C-001	drill
71E01A04A8AEC-001	ream
71E01A04C377D-001	broach
71E01A04E0236-001	threading tap
71E01A04F70F7-001	threading die
71E01A05104CF-001	turn
71E0251F304E1-001	rotating borer
71E02C544BABE-001	burr tool

71E01A04C377D-1 **1**

broach **broach**

family of items designed for use mainly in broaching operations

Properties:

71CEAEBD5A66A-1	cutting depth maximum
71CEAEBF2A69F-1	insert seat size code
71CF298EEB4F5-1	clamping type code
71CF2998A1609-1	rake angle radial
71CF29990C41F-1	rake angle axial
71D08096F930C-1	drive angle
71D0845BB2310-1	adjustment axial property
71D0845C34AB9-1	adjustment radial property
71D102AE8A5A9-1	connection code workpiece side
71DCCFEBB883E-1	flute count
71DCCFEC20115-1	flute helix angle
71DCCFEC645BD-1	flute design code
71DCCFF654756-1	flute helix hand
71DCCFF6A1A13-1	flute helix pitch

71DCD39338974-1 functional length

71DCD394BB20E-1 protruding length

71DF1523EE184-1 cartridge size code

71DF15283219C-1 cutting pitch density

71DF152D8CF7D-1 cutting pitch differential

71DF1538E7378-1 insert adjustable count

71DF5C0761888-1 keyway property

71EAC496E7425-1 tangentially mounted insert

71EAC83B73825-1 clearance angle radial

71EAC83CD450B-1 clearance angle axial

71EBBA9E78025-1 adjustability

71EBC1EBC839F-1 stock removal minimum

71EBC1EC0BB22-1 stock removal maximum

71EBC1EC3E8B6-1 stock removal recommended

71EBDBF5060E6-1 connection diameter

71EDD2B883F77-1 runout axial property

71EDD2B8B8C5B-1 runout radial property

Subclasses:

71E01A081855D-001 tapered broach

71E01A082DE72-001 disk broach

71E01A0838E9B-001 prismatic broach

71E0250E32A07-001 cylindrical broach

71E0250E32A07-1 **1**

cylindrical broach **cylbch**

tool item used for changing the dimensions of an existing profile that has a constant circular cross section and cutting edges around the whole circumference

Properties:

71CED03D70452-1 damping property

71CED04867743-1 row identifier

71CF29862B277-1 shank diameter

71CF298870946-1 shank length

71CF2989AF0E0-1 tool changer interference length minimum

71CF298A3A99A-1 tool changer interference diameter maximum

71CF298A76B66-1 connection retaining knob thread size

71CF2992BDBCC-1 usable length maximum

71D07576C0558-1 depth of cut maximum

71D08462F8185-1 body diameter maximum

71D084653E57F-1 cutting diameter

71D087D97FCE3-1 contact surface diameter machine side

71DCCC27DEF53-1 length chip flute

71DCCC5A4FD18-1 premachined hole diameter

71DCCFF75E485-1 peripheral effective cutting edge count

71DCD00054F65-1 peripheral mounted insert count

71DCD00239812-1 face effective cutting edge count

71DCD0029BBE7-1 face mounted insert count

71DCD3B16750B-1 body length maximum

71DF151EA5CF1-1 balance quality code

71E01D92C41E8-1 connection bore diameter

71EAC0CAB861F-1 balanced by design

71EAC48CAD407-1 connection bore depth

71EDCB7490ED5-1 bolt hole circle property

71E01A082DE72-1 1

disk broach dskbroach

disk shaped tool item used for changing the dimensions of an existing profile and that has the cutting edges on the periphery of the disk

Properties:

71CEAEBE2B825-1 cutting width

71D07569F8BC3-1 cutting width maximum

71D0756A28B42-1	cutting width minimum
71D08462F8185-1	body diameter maximum
71D084653E57F-1	cutting diameter
71D0846556288-1	cutting diameter minimum
71D084656CE32-1	cutting diameter maximum
71E01D92C41E8-1	connection bore diameter
71EAC48CAD407-1	connection bore depth
71EBB332C60EB-1	body height
71ED6A9AF7D1D-1	body diameter

71E01A0838E9B-1 **1**

prismatic broach **psmbroach**

tool item with a constant rectangular cross section used for changing the dimensions of an existing profile and that has cutting items on one side of the cross section

Properties:

71CEAEBE2B825-1	cutting width
71CF298751FCF-1	shank width
71CF29883E014-1	shank height
71CF298870946-1	shank length
71CF299257986-1	overall width
71CF2992BDBCC-1	usable length maximum
71CF29994E737-1	functional height
71D078EB73E87-1	overall height
71D08418C3B4D-1	clearance angle orthogonal
71DCD3B16750B-1	body length maximum
71EBAF85006BD-1	clamping width
71EBB33230236-1	body width
71EBB332C60EB-1	body height
71EBB33490FDA-1	usable length
71ED6AA478A3D-1	body length
71ED6E5CD0DAE-1	clearance angle normal

71E01A081855D-1 **1**

tapered broach **tpbroach**

tool item for changing the dimensions of an existing profile and that has continuously varying cross section with cutting edges surrounding the cross section

NOTE The cross section can be rectangular or circular or elliptical.

Properties:

71CED04867743-1 row identifier

71CF29862B277-1 shank diameter

71CF298870946-1 shank length

71CF298A76B66-1 connection retaining knob thrd sze

71CF2992BDBCC-1 usable length maximum

71D0846298D19-1 runout radial adjustment

71D08462F8185-1 body diameter maximum

71D084653E57F-1 cutting diameter

71D0846556288-1 cutting diameter minimum

71D084656CE32-1 cutting diameter maximum

71DCCC5A4FD18-1 premachined hole diameter

71DCD3B16750B-1 body length maximum

71EAC4A2B6544-1 taper angle

71EBB33490FDA-1 usable length

71EC659C9B3CE-1 tapered

71ED6A9AF7D1D-1 body diameter

71ED6AA478A3D-1 body length

71E02C544BABE-1 **1**

burr tool **burr**

small rotating tool item for removing areas of roughness from a machined edge

Properties:

71CEAEBD5A66A-1 cutting depth maximum

71CF29862B277-1 shank diameter

71CF298870946-1	shank length
71CF2992BDBCC-1	usable length maximum
71D084653E57F-1	cutting diameter
71DCD39338974-1	functional length
71DF1523869EE-1	burr type code
71EBB33490FDA-1	usable length
71ED6A9AF7D1D-1	body diameter

71D1066F279AD-1 **1**

cartridge **cartridge**

tool item that carries a solid cutting edge or locks a replaceable insert and is designed to be mounted onto either an adaptive item or a tool item

Properties:

71CEAEBE2B825-1	cutting width
71CEAEBF2A69F-1	insert seat size code
71CF298751FCF-1	shank width
71CF29883E014-1	shank height
71CF298870946-1	shank length
71CF2988A5874-1	shank cross sectional shape code
71CF298EEB4F5-1	clamping type code
71CF298F073D3-1	head bottom offset height
71CF298F4E487-1	head bottom offset length
71CF299257986-1	overall width
71CF2992DBC44-1	blade reinforcement radius
71CF299354332-1	axial groove outside diameter minumum
71CF299431CAC-1	a dimension on wf
71CF29984CDA7-1	functional width
71CF299874B1E-1	functional width secondary
71CF2998A1609-1	rake angle radial
71CF2998EBD46-1	rake angle normal

71CF29990C41F-1	rake angle axial
71CF29994E737-1	functional height
71D07543367C5-1	minimum bore diameter
71D07543FD182-1	axial groove outside diameter maximum
71D07569F8BC3-1	cutting width maximum
71D0756A28B42-1	cutting width minimum
71D075730A82B-1	head back offset length
71D075731F172-1	head back offset width
71D07574A61E8-1	head length
71D075754F8A3-1	inclination angle
71D0757C787B8-1	work piece part diam max
71D078EB73E87-1	overall height
71D078F5BEDBE-1	functional length secondary
71D078F683C9B-1	tool cutting edge angle
71D078F6E9893-1	tool cutting edge angle type code
71D078F77616B-1	tool lead angle
71D078FD4E7BE-1	tool holder shape code
71D0793ECEF9A-1	a dimension on lf
71D0808F8F719-1	rake angle orthogonal
71D08418C3B4D-1	clearance angle orthogonal
71D0845BB2310-1	adjustment axial property
71D0845C34AB9-1	adjustment radial property
71D0846298D19-1	runout radial adjustment
71D193F495583-1	functional width 2
71DCD39338974-1	functional length
71DF1523EE184-1	cartridge size code
71EAC0E9FA4CD-1	mounting hole distance
71EAC0EF68BB7-1	mounting hole distance 2
71EAC0EFA1BF3-1	mounting hole height
71EAC0F064E2D-1	mounting hole angle

71EAC496E7425-1	tangentially mounted insert
71EAC83B73825-1	clearance angle radial
71EAC83CD450B-1	clearance angle axial
71EBB33230236-1	body width
71EBB332C60EB-1	body height
71EBBA9E78025-1	adjustability
71ED6AA478A3D-1	body length
71ED6E5CD0DAE-1	clearance angle normal

71E01A00BD93C-1 **1**

drill **drill**

family of items designed for use mainly in drilling operations

Properties:

71CEAEBD5A66A-1	cutting depth maximum
71CEAEBF2A69F-1	insert seat size code
71CF29862B277-1	shank diameter
71CF298870946-1	shank length
71CF2989AF0E0-1	tool changer interference length minimum min
71CF298A3A99A-1	tool changer interference diameter maximum
71CF298A76B66-1	connection retaining knob thread size
71CF298EEB4F5-1	clamping type code
71CF2992BDBCC-1	usable length maximum
71CF2998A1609-1	rake angle radial
71CF29990C41F-1	rake angle axial
71D08096F930C-1	drive angle
71D0845BB2310-1	adjustment axial property
71D0845C34AB9-1	adjustment radial property
71D0845C77193-1	runout axial adjustment
71D0846298D19-1	runout radial adjustment
71D08462F8185-1	body diameter maximum

71D084653E57F-1	cutting diameter
71D0846556288-1	cutting diameter minimum
71D084656CE32-1	cutting diameter maximum
71D087D97FCE3-1	contact surface diameter machine side
71D102AE8A5A9-1	connection code workpiece side
71DCCC27DEF53-1	length chip flute
71DCCFEBB883E-1	flute count
71DCCFEC20115-1	flute helix angle
71DCCFEC645BD-1	flute design code
71DCCFF654756-1	flute helix hand
71DCCFF6A1A13-1	flute helix pitch
71DCD00239812-1	face effective cutting edge count
71DCD0029BBE7-1	face mounted insert count
71DCD39338974-1	functional length
71DCD394BB20E-1	protruding length
71DCD3B16750B-1	body length maximum
71DF151EA5CF1-1	balance quality code
71DF153A691F2-1	revolutions per minute maximum
71EAC0CAB861F-1	balanced by design
71EAC496E7425-1	tangentially mounted insert
71EAC83B73825-1	clearance angle radial
71EAC83CD450B-1	clearance angle axial
71EBB33490FDA-1	usable length
71EBDBF5060E6-1	connection diameter
71ED6A9AF7D1D-1	body diameter
71EDD2B883F77-1	runout axial property
71EDD2B8B8C5B-1	runout radial property

Subclasses:

71E01A0608FE4-001	twist drill
71E01A065F635-001	deep hole drill

71E01A067F73C-001 step drill

71E01A069566C-001 chamfer drill

71E01A06A8A08-001 countersink drill

71E01A06BF88D-001 counterbore drill

71E01A073CA28-001 centre drill

71E01A0751456-001 conical drill

71E01A0769982-001 trepanning drill

71E01D8A88F65-001 pilot drill

71FAE7AAE8247-001 core drill

71E01A073CA28-1 1

centre drill cntdrill

tool item for creating a hole for the location of a subsequent operation

NOTE This drill is usually a solid drill.

Properties:

71D1AE126DEFD-1 drilling profile property

71DCCC3BD1B96-1 step count

71DCCC3DFA23A-1 step diameter length

71DCCC47221E0-1 step distance

71DCCC4FEF366-1 point angle

71DCCFD064042-1 point length

71DCD00CBBC2A-1 cutting end count

71DF151D6E547-1 step included angle

71E01A069566C-1 1

chamfer drill cfdrill

tool item for creating a chamfer in or on a hole

Properties:

71D1AE126DEFD-1 drilling profile property

71DCCC5A4FD18-1 premachined hole diameter

71DCCFD24119E-1 pilot protruding length

71DF1538E7378-1 insert adjustable count

71EAC48EC5DE0-1 neck diameter

71EAC81F88336-1 body clearance depth

71EBC1E026769-1 neck length

71EC61D8A1771-1 flange diameter

71ED6AA478A3D-1 body length

71E01A0751456-1 1

conical drill cnldrill

tool item for forming a cone shaped hole

NOTE This drill is usually a solid drill.

Properties:

71DCCC4FEF366-1 point angle

71DCCC62CD9EE-1 usable length diameter ratio

71DCCFD064042-1 point length

71DF1538E7378-1 insert adjustable count

71EAC4A2B6544-1 taper angle

71EAC81F88336-1 body clearance depth

71EAC8210DF36-1 fluted land width

71EAC82313165-1 web thickness

71EAC823D95A7-1 web taper

71EC61D8A1771-1 flange diameter

71EC659C9B3CE-1 tapered

71FAE7AAE8247-1 1

core drill crdrl

tool item without a central cutting point or means of starting a hole

NOTE The tool is used to enlarge an existing hole, for example in a casting, and has the characteristics of a reamer.

Properties:

71DCCC62CD9EE-1	usable length diameter ratio
71DF1538E7378-1	insert adjustable count
71EAC81F88336-1	body clearance depth
71EAC8210DF36-1	fluted land width

71E01A06BF88D-1 **1**

counterbore drill **cbdrill**

tool item for creating a counterbore section of a hole

Properties:

71D07574A61E8-1	head length
71DCCC5A4FD18-1	premachined hole diameter
71DCCC62CD9EE-1	usable length diameter ratio
71DCCFD24119E-1	pilot protruding length
71DF1538E7378-1	insert adjustable count
71DF5C0761888-1	keyway property
71E01D92C41E8-1	connection bore diameter
71E03062EC034-1	head diameter
71EAC48CAD407-1	connection bore depth
71EAC48EC5DE0-1	neck diameter
71EAC81F88336-1	body clearance depth
71EBC1E026769-1	neck length
71EC61D8A1771-1	flange diameter
71ED6AA478A3D-1	body length
71EE070696F08-1	guide element property

71E01A06A8A08-1 **1**

countersink drill **cskdrill**

tool item for creating a countersunk section of a hole

Properties:

71D07574A61E8-1	head length
71DCCC5A4FD18-1	premachined hole diameter
71DCCC62CD9EE-1	usable length diameter ratio
71DCCFD24119E-1	pilot protruding length
71DF1538E7378-1	insert adjustable count
71DF5C0761888-1	keyway property
71E01D92C41E8-1	connection bore diameter
71E03062EC034-1	head diameter
71EAC48CAD407-1	connection bore depth
71EAC48EC5DE0-1	neck diameter
71EAC49030828-1	pilot drill protrusion
71EAC4A2B6544-1	taper angle
71EAC81F88336-1	body clearance depth
71EBC1E026769-1	neck length
71EC61D8A1771-1	flange diameter
71EC659C9B3CE-1	tapered
71ED6AA478A3D-1	body length
71EE070696F08-1	guide element property

71E01A065F635-1 1

deep hole drill **dhdrill**

tool item for creating a hole usually deeper than ten times the diameter of the tool item

Properties:

71D07574A61E8-1	head length
71DCCC62CD9EE-1	usable length diameter ratio
71DCCFD24119E-1	pilot protruding length
71DF1538E7378-1	insert adjustable count
71E03062EC034-1	head diameter
71EE070696F08-1	guide element property

71E01D8A88F65-1 **1**

pilot drill **pilot**

tool item that is added to a larger drill for guiding the main cutting operation

Properties:

71DCCC4FEF366-1	point angle
71DCCFD064042-1	point length
71DF1538E7378-1	insert adjustable count

71E01A067F73C-1 **1**

step drill **stpdrill**

tool item for creating a stepped hole

Properties:

71DCCC3BD1B96-1	step count
71DCCC3DFA23A-1	step diameter length
71DCCC47221E0-1	step distance
71DCCC4FEF366-1	point angle
71DCCC62CD9EE-1	usable length diameter ratio
71DCCFD064042-1	point length
71DCCFD24119E-1	pilot protruding length
71DF151D6E547-1	step included angle
71DF1538E7378-1	insert adjustable count
71EAC81F88336-1	body clearance depth
71EAC8210DF36-1	fluted land width
71EAC82313165-1	web thickness
71EAC823D95A7-1	web taper
71EC61D8A1771-1	flange diameter
71ED6AA478A3D-1	body length
71EE070696F08-1	guide element property

71E01A0769982-1 **1**

trepanning drill **trpdrill**

tool item used to cut a deep face groove leaving a plug of material equal to the inner diameter

NOTE The tool can be small to leave a boss on a component or large to create a large hole but not produce all the material as swarf.

Properties:

71D0846545C4E-1	cutting diameter internal
71D084655A2F7-1	cutting diameter internal minimum
71D0846570977-1	cutting diameter internal maximum
71DF1538E7378-1	insert adjustable count
71DF5C0761888-1	keyway property
71EC61D8A1771-1	flange diameter
71ED6AA478A3D-1	body length

71E01A0608FE4-1 **1**

twist drill **twdrill**

solid tool item with helical chip flutes

Properties:

71DCCC4FEF366-1	point angle
71DCCC62CD9EE-1	usable length diameter ratio
71DCCFD064042-1	point length
71DF1527D828C-1	cutting diameter size code
71DF1538E7378-1	insert adjustable count
71EAC81AD9AE1-1	drill back taper
71EAC81F88336-1	body clearance depth
71EAC8210DF36-1	fluted land width
71EAC82313165-1	web thickness
71EAC823D95A7-1	web taper
71EC61D8A1771-1	flange diameter

71E01A008D13F-1 **1**

mill **mill**

family of rotating tool items intended mainly for use in milling operations

Properties:

71CEAEBD5A66A-1	cutting depth maximum
71CED04867743-1	row identifier
71CF29862B277-1	shank diameter
71CF298870946-1	shank length
71CF2989AF0E0-1	tool changer interference length minimum lgth min
71CF298A3A99A-1	tool changer interference diameter maximum
71CF298A76B66-1	connection retaining knob thread size
71CF298EEB4F5-1	clamping type code
71CF2992BDBCC-1	usable length maximum
71CF2998A1609-1	rake angle radial
71CF29990C41F-1	rake angle axial
71D07576C0558-1	depth of cut maximum
71D078F683C9B-1	tool cutting edge angle
71D078F77616B-1	tool lead angle
71D08096F930C-1	drive angle
71D0845BB2310-1	adjustment axial property
71D0845C34AB9-1	adjustment radial property
71D0845C77193-1	runout axial adjustment
71D0846298D19-1	runout radial adjustment
71D08462F8185-1	body diameter maximum
71D084653E57F-1	cutting diameter
71D0846556288-1	cutting diameter minimum
71D084656CE32-1	cutting diameter maximum
71D087D97FCE3-1	contact surface diameter machine side
71D102AE8A5A9-1	connection code workpiece side
71DCCFEBB883E-1	flute count

71DCCFEC20115-1	flute helix angle
71DCCFEC645BD-1	flute design code
71DCCFF654756-1	flute helix hand
71DCCFF6A1A13-1	flute helix pitch
71DCCFF75E485-1	peripheral effective cutting edge count
71DCD00054F65-1	peripheral mounted insert count
71DCD00239812-1	face effective cutting edge count
71DCD0029BBE7-1	face mounted insert count
71DCD39338974-1	functional length
71DCD394BB20E-1	protruding length
71DCD3B16750B-1	body length maximum
71DF151EA5CF1-1	balance quality code
71DF15283219C-1	cutting pitch density
71DF152D8CF7D-1	cutting pitch differential
71DF1538E7378-1	insert adjustable count
71DF153A691F2-1	revolutions per minute maximum
71EAC0CAB861F-1	balanced by design
71EAC496E7425-1	tangentially mounted insert
71EAC83B73825-1	clearance angle radial
71EAC83CD450B-1	clearance angle axial
71EBDBF5060E6-1	connection diameter
71ED6A9AF7D1D-1	body diameter
71EDD2B883F77-1	runout axial property
71EDD2B8B8C5B-1	runout radial property

Subclasses:

71E01A0540BE7-001	slab mill
71E01A05B627B-001	face mill
71E01A05D27A8-001	end mill
71E01A05EA320-001	half side mill
71E01A0600702-001	ring mill

71EF07DFC283C-001 double half side mill

71EF07E037025-001 slotting cutter

71EF07E083383-001 threading grooving mill

71EF07DFC283C-1 1

double half side mill dhsmill

milling cutter that cuts on both sides and part of the periphery and is used for enlarging an existing slot.

NOTE 1 The X axis is perpendicular to the slot being enlarged and the cutting width is less than half the cutting diameter (CW<CD/2).

NOTE 2 The mounting is normally a bore mount.

Properties:

71CEAEBE2B825-1 cutting width

71D07569F8BC3-1 cutting width maximum

71D0756A28B42-1 cutting width minimum

71DF1526AC952-1 interlocking capability

71DF5C0761888-1 keyway property

71DF5C078FF46-1 hub property

71E01D92C41E8-1 connection bore diameter

71E0306423B2A-1 drive count

71EAC48CAD407-1 connection bore depth

71EC61D8A1771-1 flange diameter

71ED6AA478A3D-1 body length

71E01A05D27A8-1 1

end mill edmil

milling cutter with an integral shank

NOTE The X axis is either perpendicular or parallel to the surface being machined and the tool has a cutting diameter of less than 150mm (CD<150mm).

Properties:

71CED03D70452-1 damping property

71D07543367C5-1 minimum bore diameter

71D07574A61E8-1 head length

71D08099F1DDC-1 plunge depth maximum

71D1AE0CB32D1-1 ball nosed property

71DCCC62CD9EE-1 usable length diameter ratio

71DCD0033973E-1 cutting edge centre count

71DCD00CBBC2A-1 cutting end count

71DF1538632D9-1 ramping angle maximum

71E03062EC034-1 head diameter

71EAC472BD116-1 body half taper angle

71EAC48EC5DE0-1 neck diameter

71EAC4A2B6544-1 taper angle

71EAC81F88336-1 body clearance depth

71EAC82313165-1 web thickness

71EAC823D95A7-1 web taper

71EBB33490FDA-1 usable length

71EBC1E026769-1 neck length

71EC61D8A1771-1 flange diameter

71EC659C9B3CE-1 tapered

71ED6AA478A3D-1 body length

71E01A05B627B-1 1

face mill **fcmill**

milling cutter that produces a flat surface on the workpiece although the cutting edges on the periphery remove most of the workpiece material

NOTE 1 The X axis is perpendicular to the surface being machined, there is one row of inserts, and the depth of cut is less than cutting diameter (DOC<CD).

NOTE 2 The mounting is usually a bore with transverse keyways.

Properties:

71CEAEBE2B825-1 cutting width

71D07543367C5-1 minimum bore diameter

71D07569F8BC3-1 cutting width maximum

71D0756A28B42-1 cutting width minimum

71D08099F1DDC-1 plunge depth maximum

71DCCC27DEF53-1 length chip flute

71DF1526AC952-1 interlocking capability

71DF1538632D9-1 ramping angle maximum

71DF5C0761888-1 keyway property

71DF5C078FF46-1 hub property

71EAC48CAD407-1 connection bore depth

71EBB33490FDA-1 usable length

71EC61D8A1771-1 flange diameter

71ED6AA478A3D-1 body length

71E01A05EA320-1 1

half side mill hsdmill

milling cutter that cuts on the periphery and one side

NOTE 1 The X axis is perpendicular to the main workpiece surface being produced and the depth of cut is less than half the cutting diameter (DOC<CD/2).

NOTE 2 The mounting is normally a bore mount.

Properties:

71D08099F1DDC-1 plunge depth maximum

71DF1526AC952-1 interlocking capabilty

71DF5C0761888-1 keyway property

71DF5C078FF46-1 hub property

71E01D92C41E8-1 connection bore diameter

71E0306423B2A-1 drive count

71EAC48CAD407-1 connection bore depth

71EC61D8A1771-1 flange diameter

71E01A0600702-1 1

ring mill rgmill

milling cutter that cuts on the internal annular surface and both sides.

NOTE The X axis is perpendicular to the slot being produced and the cutting width is less than half the cutting diameter (CW<CD/2).

Properties:

71CEAEBE2B825-1 cutting width

71D07569F8BC3-1 cutting width maximum

71D0756A28B42-1 cutting width minimum

71D0846545C4E-1 cutting diameter internal

71D084655A2F7-1 cutting diameter internal minimum

71D0846570977-1 cutting diameter internal maximum

71DF1526AC952-1 interlocking capability

71E01A0540BE7-1 1

slab mill slbmill

milling cutter with cutting edges on the periphery for machining large surfaces

NOTE 1 The tool axis is parallel to the workpiece surface and the useable length is greater than cutting diameter (LU>CD).

NOTE 2 The mounting surface is a bore.

Properties:

71CEAEBE2B825-1 cutting width

71D07569F8BC3-1 cutting width maximum

71D0756A28B42-1 cutting width minimum

71DCCC62CD9EE-1 usable length diameter ratio

71DF1526AC952-1 interlocking capabilty

71DF5C0761888-1 keyway property

71DF5C078FF46-1 hub property

71E01D92C41E8-1 connection bore diameter

71E0306423B2A-1 drive count

71EAC48CAD407-1 connection bore depth

71EAC4A2B6544-1 taper angle

71EBB33490FDA-1 usable length

71EC61D8A1771-1 flange diameter

71EC659C9B3CE-1 tapered

71ED6AA478A3D-1 body length

71EF07E037025-1 1

slotting cutter slitting cutter

milling cutter that cuts on the periphery and both sides

NOTE 1 The X axis is perpendicular to the slot being produced, the cutting width is less than half the cutting diameter (CW<CD/2).

NOTE 2 The mounting is normally a bore mount.

Properties:

71CEAEBE2B825-1 cutting width

71D07569F8BC3-1 cutting width maximum

71D0756A28B42-1 cutting width minimum

71DF1526AC952-1 interlocking capabilty

71DF5C0761888-1 keyway property

71DF5C078FF46-1 hub property

71E01D92C41E8-1 connection bore diameter

71E0306423B2A-1 drive count

71EAC48CAD407-1 connection bore depth

71EAC4A2B6544-1 taper angle

71EC61D8A1771-1 flange diameter

71EC659C9B3CE-1 tapered

71EF07E083383-1 1

threading grooving mill tgvmill

milling cutter that cuts on its periphery to produce a groove or a thread

NOTE 1 The X axis is parallel to the groove width or to the axis of thread being cut.

NOTE 2 The mill can either be designed with an integral shank or with a bore mount.

Properties:

71CEAEBE2B825-1	cutting width
71CF298FB10E4-1	groove depth minimum bore diameter
71D07569F8BC3-1	cutting width maximum
71D0756A28B42-1	cutting width minimum
71EAC48EC5DE0-1	neck diameter
71EBB33490FDA-1	usable length
71EBC1E026769-1	neck length
71EC61D8A1771-1	flange diameter
71ED6AA478A3D-1	body length

71E01A04A8AEC-1 1

ream ream

family of items designed for use mainly in reaming operations

Properties:

71CEAEBD5A66A-1	cutting depth maximum
71CEAEBF2A69F-1	insert seat size code
71CF29862B277-1	shank diameter
71CF298870946-1	shank length
71CF2989AF0E0-1	tool changer interference length minimum length min
71CF298A3A99A-1	tool changer interference diameter maximum
71CF298A76B66-1	conn ret knob third size
71CF298EEB4F5-1	clamping type code
71CF2992BDBCC-1	usable length maximum
71CF2998A1609-1	rake angle radial
71CF29990C41F-1	rake angle axial
71D07574A61E8-1	head length
71D08096F930C-1	drive angle
71D0845BB2310-1	adjustment axial property
71D0845C34AB9-1	adjustment radial property

71D08462F8185-1	body diameter maximum
71D084653E57F-1	cutting diameter
71D0846556288-1	cutting diameter minimum
71D084656CE32-1	cutting diameter maximum
71D087D97FCE3-1	contact surface diameter machine side
71DCCC27DEF53-1	length chip flute
71DCCC5A4FD18-1	premachined hole diameter
71DCCC62CD9EE-1	usable length diameter ratio
71DCCFEBB883E-1	flute count
71DCCFEC20115-1	flute helix angle
71DCCFEC645BD-1	flute design code
71DCCFF654756-1	flute helix hand
71DCCFF6A1A13-1	flute helix pitch
71DCCFF75E485-1	peripheral effective cutting edge count
71DCD00054F65-1	peripheral mounted insert count
71DCD00239812-1	face effective cutting edge count
71DCD0029BBE7-1	face mounted insert count
71DCD39338974-1	functional length
71DCD394BB20E-1	protruding length
71DCD3B16750B-1	body length maximum
71DF151EA5CF1-1	balance quality code
71DF15283219C-1	cutting pitch density
71DF152D8CF7D-1	cutting pitch differential
71DF1538E7378-1	insert adjustable count
71DF153A691F2-1	revolutions per minute maximum
71DF5C0761888-1	keyway property
71E01D92C41E8-1	connection bore diameter
71EAC0CAB861F-1	balanced by design
71EAC472BD116-1	body half taper angle
71EAC48CAD407-1	connection bore depth

71EAC48EC5DE0-1	neck diameter
71EAC83B73825-1	clearance angle radial
71EAC83CD450B-1	clearance angle axial
71EBB33490FDA-1	usable length
71EBBA9E78025-1	adjustability
71EBC1E026769-1	neck length
71EBC1EBC839F-1	stock removal minimum
71EBC1EC0BB22-1	stock removal maximum
71EBC1EC3E8B6-1	stock removal recommended
71EBDBF5060E6-1	connection diameter
71EC61D8A1771-1	flange diameter
71ED6A9AF7D1D-1	body diameter
71EDD2B883F77-1	runout axial property
71EDD2B8B8C5B-1	runout radial property
71EE070696F08-1	guide element property

Subclasses:

71E01A07BC535-001	cylindrical reamer
71E01A07D2A1B-001	tapered reamer
71E01A07ECCCF-001	profile reamer
71E01A07FF350-001	stepped reamer

71E01A07BC535-1 **1**

cylindrical reamer **cylream**

tool item used for reaming a cylindrical surface

71E01A07ECCCF-1 **1**

profile reamer **prfream**

tool item for reaming a non-regular surface

Properties:

71D0846545C4E-1	cutting diameter internal
71D084655A2F7-1	cutting diameter internal minimum
71D0846570977-1	cutting diameter internal maximum
71DF8C5D91804-1	profile specification
71ED6AA478A3D-1	body length

71E01A07FF350-1 **1**

stepped reamer **stpream**

tool item for reaming a hole with more than one diameter

Properties:

71DCCC3BD1B96-1	step count
71DCCC3DFA23A-1	step diameter length
71DCCC47221E0-1	step distance
71DF151D6E547-1	step included angle
71ED6AA478A3D-1	body length

71E01A07D2A1B-1 **1**

tapered reamer **tapream**

tool item for reaming a conical hole

Properties:

71DF1527D828C-1	cutting diameter size code
71EAC4A2B6544-1	taper angle
71EC659C9B3CE-1	tapered

71E0251F304E1-1 **1**

rotating borer **rotbor**

assembly of cutting item or items, tool item or items and adaptive item or items to enlarge an existing hole

Properties:

71CEAEBD5A66A-1	cutting depth maximum
71CEAEBF2A69F-1	insert seat size code
71CF29862B277-1	shank diameter
71CF298A76B66-1	connecting retaining knob thread size
71CF298EEB4F5-1	clamping type code
71CF299287FD3-1	cutting length minimum bore diameter
71CF2998A1609-1	rake angle radial
71CF29990C41F-1	rake angle axial
71D07543367C5-1	minimum bore diameter
71D07576C0558-1	depth of cut maximum
71D08096F930C-1	drive angle
71D084653E57F-1	cutting diameter
71D0846545C4E-1	cutting diameter internal
71D0846556288-1	cutting diameter minimum
71D084655A2F7-1	cutting diameter internal minimum
71D084656CE32-1	cutting diameter maximum
71D0846570977-1	cutting diameter internal maximum
71D087D97FCE3-1	contact surface diameter machine side
71D102AE8A5A9-1	connection code workpiece side
71DCD394BB20E-1	protruding length
71DCD3B16750B-1	body length maximum
71DF151EA5CF1-1	balance quality code
71DF1538E7378-1	insert adjustable count
71DF153A691F2-1	revolutions per minute maximum
71DF5C0761888-1	keyway property
71E01D92C41E8-1	connection bore diameter
71EAC0CAB861F-1	balanced by design
71EAC48CAD407-1	connection bore depth
71EBDBF5060E6-1	connection diameter

71EC61D8A1771-1 flange diameter

71ED6A9AF7D1D-1 body diameter

71ED6AA478A3D-1 body length

71EDD2B883F77-1 runout axial property

71EDD2B8B8C5B-1 runout radial property

71EDD2C17746F-1 connection count workpiece side

71E01A04F70F7-1 1

threading die die

family of items used for external threading operations

Properties:

71DF153A691F2-1 revolutions per minute maximum

71E02C5C2EED3-1 thread diameter

71EBB332C60EB-1 body height

71EBBAA3BCA70-1 thread diameter size

71EBDBF5060E6-1 connection diameter

71ED6AA478A3D-1 body length

71EDD2B883F77-1 runout axial property

71EDD2B8B8C5B-1 runout radial property

Subclasses:

71E01A0E4EE75-001 cylindrical die

71E01A0E79239-001 hexagonal die

71E01A0E4EE75-1 1

cylindrical die cyldie

threading die whose outside shape is cylindrical

Properties:

71D08462F8185-1 body diameter maximum

71E01A0E79239-1 **1**

hexagonal die **hxldie**

threading die whose outside shape is hexagonal

Properties:

71EBB33230236-1 body width

71E01A04E0236-1 **1**

threading tap **tap**

family of items designed to form an internal thread in an existing hole in a workpiece

Properties:

71CEAEBD5A66A-1 cutting depth maximum

71CF29862B277-1 shank diameter

71CF298870946-1 shank length

71CF2992BDBCC-1 usable length maximum

71CF2998A1609-1 rake angle radial

71CF29990C41F-1 rake angle axial

71D07574A61E8-1 head length

71D07576C0558-1 depth of cut maximum

71DCCC27DEF53-1 length chip flute

71DCCC5A4FD18-1 premachined hole diameter

71DCCFEBB883E-1 flute count

71DCCFEC20115-1 flute helix angle

71DCCFEC645BD-1 flute design code

71DCCFF654756-1 flute helix hand

71DCCFF6A1A13-1 flute helix pitch

71DCD00CBBC2A-1 cutting end count

71DCD39338974-1 functional length

71DCD394BB20E-1 protruding length

71DCD3B16750B-1 body length maximum

71DF153A691F2-1 revolutions per minute maximum

71DF153B4ABCD-1	tap type identifier
71E02C5C2EED3-1	thread diameter
71E02C679DC6D-1	plug style
71EAC472BD116-1	body half taper angle
71EAC48EC5DE0-1	neck diameter
71EAC82313165-1	web thickness
71EAC823D95A7-1	web taper
71EBB332C60EB-1	body height
71EBB33490FDA-1	usable length
71EBBAA3BCA70-1	thread diameter size
71EBC1E026769-1	neck length
71EBC1EA293DC-1	plug chamfer diameter
71EBDBF5060E6-1	connection diameter
71ED6AA478A3D-1	body length
71EDD2B883F77-1	runout axial property
71EDD2B8B8C5B-1	runout radial property

Subclasses:

71E01A0A5355D-001	cylindrical tap
71E01A0E34C7F-001	conical tap

71E01A0E34C7F-1 **1**

conical tap **cnltap**

tool item that creates tapered internal threads

Properties:

71EAC4A2B6544-1	taper angle
71EC659C9B3CE-1	tapered

71E01A0A5355D-1 **1**

cylindrical tap **cyltap**

tool item that creates internal cylindrical threads

71E01A05104CF-1 **1**

turn **turn**

family of items designed for use mainly in internal and external turning operations

Properties:

71CEAEBD5A66A-1	cutting depth maximum
71CEAEBE2B825-1	cutting width
71CEAEBF2A69F-1	insert seat size code
71CED03D70452-1	damping property
71CF2988A5874-1	shank cross sectional shape code
71CF298EEB4F5-1	clamping type code
71CF298F073D3-1	head bottom offset height
71CF298F4E487-1	head bottom offset length
71CF298FB10E4-1	groove depth minimum bore diameter
71CF299257986-1	overall width
71CF299287FD3-1	cutting length minimum bore diameter
71CF2992DBC44-1	blade reinforcement radius
71CF299354332-1	axial groove outside diameter minimum
71CF299431CAC-1	a dimension on wf
71CF29984CDA7-1	functional width
71CF299874B1E-1	functional width secondary
71CF2998A1609-1	rake angle radial
71CF2998EBD46-1	rake angle normal
71CF29990C41F-1	rake angle axial
71CF29994E737-1	functional height
71D07543FD182-1	axial groove outside diameter maximum
71D07569F8BC3-1	cutting width maximum
71D0756A28B42-1	cutting width minimum
71D075730A82B-1	head back offset length
71D075731F172-1	head back offset width
71D07574A61E8-1	head length

71D075754F8A3-1 inclination angle

71D0757C787B8-1 work piece part diameter maximum

71D078EB73E87-1 overall height

71D078F5BEDBE-1 functional length secondary

71D078F683C9B-1 tool cutting edge angle

71D078F6E9893-1 tool cutting edge angle type code

71D078F77616B-1 tool lead angle

71D078FD4E7BE-1 tool holder shape code

71D0793ECEF9A-1 a dimension on lf

71D0808F8F719-1 rake angle orthogonal

71D08418C3B4D-1 clearance angle orthogonal

71D102AE8A5A9-1 connection code workpiece side

71D193F495583-1 functional width 2

71DCD39338974-1 functional length

71EAC496E7425-1 tangentially mounted insert

71EAC49F75413-1 drop head design

71EAC83B73825-1 clearance angle radial

71EAC83CD450B-1 clearance angle axial

71EBDBF5060E6-1 connection diameter

71ED6E5CD0DAE-1 clearance angle normal

Subclasses:

71E01A0E85121-001 prismatic tool holder

71E01A0E9CBA9-001 boring bar

71E01A0E9CBA9-1 1

boring bar brgbar

tool item with cylindrical cross section shank mainly used for internal turning operations

Properties:

71CF29862B277-1 shank diameter

71CF298751FCF-1 shank width

71CF29883E014-1 shank height

71CF298870946-1 shank length

71CF2993DC583-1 design configuration style code

71D07543367C5-1 minimum bore diameter

71E03062EC034-1 head diameter

71EBAF896BE9A-1 clamping length

71EBB339ED2BD-1 clamping length minimum

71EBC1E8857BE-1 overall length minimum

71EBC1EB8456A-1 functional length minimum

71ED6E54B15C4-1 clamping length maximum

71E01A0E85121-1 **1**

prismatic tool holder **prsmtool**

tool item with prismatic cross section shank mainly used for external turning operations

NOTE The class includes, but is not limited to, square shanks, rectangular shanks, cartridges and cut-off blades.

Properties:

71CF298751FCF-1 shank width

71CF29883E014-1 shank height

71CF298870946-1 shank length

71D078ED2C21E-1 qualified tool code

71EBAF85006BD-1 clamping width

71EBB33230236-1 body width

71EBB332C60EB-1 body height

71EBC1EB8456A-1 functional length minimum

71E01A0EAF067-1 **1**

system tool **systool**

tool item with manufacturer's specific connection used for external and, or, internal turning operations.

Annex D
(informative)

Tool item property definitions

The presentation 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

synonymous name

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: Figure<Annex.illustration number>

Visible class:

Applicable classes:

NOTE 1 An entry might not necessarily contain all the information specified.

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

71D0793ECEF9A-1 **1** **NR2 S..3.3**

simple real measure mm

a dimension on lf **lfa** LFA

dimension from the cutting reference point in the direction of the lf dimension to the plane perpendicular to the feed direction and tangential to the secondary corner of the main cutting edge

ISO 5610:1997, 4.4.1

Illustration reference: Figure E.2.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF299431CAC-1 **1** **NR2 S..3.3**

simple real measure mm

a dimension on wf **wfa** WFA

dimension from the cutting reference point in the direction of the f dimension to the plane perpendicular to the feed direction and tangential to the secondary corner of the main cutting edge

Illustration reference: Figure E.1.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

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

71D0845BB2310-1 **1** **X1**

simple boolean

adjustment axial property **adjap** ADJAP

possession of an axial adjustment feature over which a cutting edge can be moved parallel to the axis of the tool item or a tool item can be moved parallel to the axis of an adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71D0845C34AB9-1 **1** **X1**

simple boolean

adjustment radial property **adjrp** ADJRP

possession of an radial adjustment feature over which a cutting edge can be moved perpendicular to the axis of the tool item or a tool item can be moved perpendicular to the axis of an adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71D07543FD182-1 **1** **NR2 S..3.3**

simple real measure mm

axial groove outside diameter maximum **daxx** DAXX

maximum diameter of an axial groove that can be cut without interference between the workpiece and any part of the tool item on the first cut, measured on that point of the cutting edge that creates the outside diameter of the groove.

NOTE The term is: axial groove outside diameter maximum.

Illustration reference: Figure E.14.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF299354332-1 **1** **NR2..3.3**

simple real measure mm

axial groove outside diameter minimum **daxn** DAXN

minimum diameter of an axial groove that can be cut without interference between the workpiece and any part of the tool item on the first cut, measured on that point of the cutting edge that creates the outside diameter of the groove.

NOTE The term is: axial groove outside diameter maximum.

Illustration reference: Figure E.14.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71DF151EA5CF1-1 **1** **X 17**

simple string

balance quality code **blq** BLQ

identifier for the residual out-of-balance effect of a rotating tool

ISO 1940-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E0250E32A07-1	cylindrical broach
71E0251F304E1-1	rotating borer
71EAD385E51A0-1	reducer
71EAD3871D313-1	converter
71EEBDADB63BE-1	extender

71EAC0CAB861F-1 **1** **X1**

simple boolean

balanced by design **bbd** BBD

Identifier whether the tool item or adaptive item is designed with its center of gravity on the rotational center line or not.

NOTE Balanced by design is not determined by rotational testing.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E0250E32A07-1	cylindrical broach
71E0251F304E1-1	rotating borer
71EAD385E51A0-1	reducer
71EAD3871D313-1	converter
71EEBDADB63BE-1	extender

71D1AE0CB32D1-1 **1** **X1**

simple boolean

ball nosed property **bnp** BNP

possession of a ball nosed profile by a cutting item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DDA089C8D1E-1 specific profile insert

71E01A05D27A8-1 end mill

71CF2992DBC44-1 **1** **NR2..3.3**

simple real measure mm

blade reinforcement radius **blrad** BLRAD

measure of the curve of the reinforced section of a tool item that determines the maximum diameter of a workpiece that can be parted or cut off.

Illustration reference: Figure E.3.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71EAC81F88336-1 **1** **NR2 S..3.3**

simple real measure mm

body clearance depth **bcdp** BCDP

radial distance from the leading edge of the land to the portion of a fluted land reduced in diameter to provide diameter clearance

NOTE Twice the value of the body clearance depth subtracted from the cutting diameter equals the body clearance diameter.

ISO 5419

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05D27A8-1	end mill
71E01A0608FE4-1	twist drill
71E01A067F73C-1	step drill
71E01A069566C-1	chamfer drill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill
71E01A0751456-1	conical drill
71EAC81A64368-1	regrinding
71FAE7AAE8247-1	core drill

71ED6A9AF7D1D-1 **1** **NR2 S..3.3**

simple real measure mm

body diameter **bd** BD

distance between parallel tangents on the circular cross section of a tool item or an adaptive item

NOTE For an item with several changes in external form the multiple values of body diameter would be aggregated with indexable identifiers.

Illustration reference: Figure E.18.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A081855D-1	tapered broach
71E01A082DE72-1	disk broach
71E0251F304E1-1	rotating borer
71E02C544BABE-1	burr tool

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71D08462F8185-1 **1** **NR2 S..3.3**

simple real measure mm

body diameter maximum **bdx** BDX

largest diameter of the body of a tool item or an adaptive item

Illustration reference: Figure E.18.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A081855D-1 tapered broach

71E01A082DE72-1 disk broach

71E01A0E4EE75-1 cylindrical die

71E0250E32A07-1 cylindrical broach

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71EAC472BD116-1 **1** **NR2 S..3.3**

simple real measure deg

body half taper angle **bhta** BHTA

angle of the transition between two diameters of the body of a tool item or adaptive item measured from the item axis

NOTE 1 This angle is not used for any connection taper.

NOTE 2 Applicable for both tool items and adaptive items.

Illustration reference: Figure E.18.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1 ream

71E01A04E0236-1 threading tap

71E01A05D27A8-1 end mill

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71EBB332C60EB-1 **1** **NR2 S..3.3**

simple real measure mm

body height **htb** HTB

distance measured along the Z axis between the extremes of the body excluding any protrusion of the locking mechanisms

Illustration reference: Figure E.22.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A04E0236-1 threading tap

71E01A04F70F7-1 threading die

71E01A082DE72-1 disk broach

71E01A0838E9B-1 prismatic broach

71E01A0E85121-1 prismatic tool holder

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71EEBDADB63BE-1 extender

71ED6AA478A3D-1 **1** **NR2 S..3.3**

simple real measure mm

body length **lb** LB

distance measured along the X axis from that point of the item closest to the workpiece, including the cutting item for a tool item but excluding a protruding locking mechanism for an adaptive item, to a defined change in the external form of a tool item or an adaptive item

NOTE For an item with several changes in external form the multiple values of body length would be aggregated with indexable identifiers.

Illustration reference: Figure E.22.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A04E0236-1	threading tap
71E01A04F70F7-1	threading die
71E01A0540BE7-1	slab mill
71E01A05B627B-1	face mill
71E01A05D27A8-1	end mill
71E01A067F73C-1	step drill
71E01A069566C-1	chamfer drill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill
71E01A0769982-1	trepanning drill
71E01A07ECCCF-1	profile reamer
71E01A07FF350-1	stepped reamer
71E01A081855D-1	tapered broach
71E01A0838E9B-1	prismatic broach
71E0251F304E1-1	rotating borer
71EAD385E51A0-1	reducer
71EAD3871D313-1	converter
71EAD388173EE-1	driver
71EEBDADB63BE-1	extender
71EF07DFC283C-1	double half side mill
71EF07E083383-1	threading grooving mill

71DCD3B16750B-1 **1** **NR2 S..3.3**

simple real measure mm

body length maximum **lbx** LBX

distance measured along the X axis from that point of the item closest to the workpiece, including the cutting item for a tool item but excluding a protruding locking mechanism for an adaptive item, to either the front of the flange on a flanged body or the beginning of the connection interface feature on the machine side for cylindrical or prismatic shanks.

NOTE If a connection interface feature overlaps with the body of the item then this dimension of the body length includes the overlapping portion of the connection interface feature.

Illustration reference: Figure E.17.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04E0236-1 threading tap

71E01A081855D-1 tapered broach

71E01A0838E9B-1 prismatic broach

71E0250E32A07-1 cylindrical broach

71E0251F304E1-1 rotating borer

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71EEBDADB63BE-1 extender

71DF1523224D8-1 **1** **X 17**

simple string

body material code **bmc** BMC

identifer for the main material constituent of the tool item or adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1	tool item type
71EAD37F18F34-1	adaptive item type

71EBB33230236-1 **1** **NR2 S..3.3**

simple real measure mm

body width **wb** WB

distance measured along the Y axis between the extremes of the body excluding any protrusion of the locking mechanisms

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A0838E9B-1	prismatic broach
71E01A0E79239-1	hexagonal die
71E01A0E85121-1	prismatic tool holder
71EAD385E51A0-1	reducer
71EAD3871D313-1	converter
71EAD388173EE-1	driver
71EEBDADB63BE-1	extender

71EDCB7490ED5-1 **1** **X1**

simple boolean

bolt hole circle property **bhcp** BHCP

possession of a bolt hole circle

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E0250E32A07-1	cylindrical broach
71EAD385E51A0-1	reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71EEBDADB63BE-1 extender

71DF1523869EE-1 **1** **X 17**

simple string

burr type code **btc** BTC

identifier for a type of burr

ISO 7755-1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E02C544BABE-1 burr tool

71DF1523EE184-1 **1** **X 17**

simple string

cartridge size code **casc** CASC

identifier for the size of a cartridge

ISO 5608, ISO 5611

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A04C377D-1 broach

71EAD3871D313-1 converter

71EBAF896BE9A-1 **1** **NR2 S..3.3**

simple real measure mm

clamping length **lsc** LSC

dimension of the length of that portion of a tool item or an adaptive item that can participate in a connection

Illustration reference: Figures E.25 and E.26.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0E9CBA9-1 boring bar

71EAD3871D313-1 converter

71ED6E54B15C4-1 **1** **NR2 S..3.3**

simple real measure mm

clamping length maximum **lscx** LSCX

greatest portion of the connection feature that is necessary to ensure the normal function of the tool item or the adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0E9CBA9-1 boring bar

71EAD3871D313-1 converter

71EBB339ED2BD-1 **1** **NR2 S..3.3**

level min real measure mm

clamping length minimum **lscn** LSCN

smallest portion of the connection feature that is necessary to ensure that no damage is caused neither to the tool item nor to the adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0E9CBA9-1 boring bar

71EAD3871D313-1 converter

71CF298EEB4F5-1 **1** **X 1**

simple non-quantitative code

clamping type code **mtp** MTP

identifier for the type of clamping mechanism to hold the replaceable insert on the tool item

C = clamp on top of insert

D = clamp on top of insert and into hole

M = clamp on top of insert and through hole

N = clamp into notch of insert

P = clamp with pin through hole

S = clamp with screw through hole

W = Wedge clamping

ISO 5608

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A05104CF-1 turn

71E0251F304E1-1 rotating borer

71EBAF85006BD-1 **1** **NR2 S..3.3**

simple real measure mm

clamping width **wsc** WSC

dimension of the width of that portion of a tool item or an adaptive item that can participate in a connection

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0838E9B-1	prismatic broach
71E01A0E85121-1	prismatic tool holder
71EAD385E51A0-1	reducer
71EAD3871D313-1	converter

71EAC83CD450B-1 **1** **NR2 S..3.3**

simple real measure deg

clearance angle axial **alp** ALP

angle between the flank of the major or minor cutting edge and a plane parallel to the yz-plane passing through that cutting edge measured in the xz-plane

NOTE This property is applicable to tool items.

ISO 3002-1

Illustration reference: Figure E.23.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A05104CF-1	turn
71EAC81A64368-1	regrinding

71ED6E5CD0DAE-1 **1** **NR2 S..3.3**

simple real measure mm

clearance angle normal **aln** ALN

angle between the major flank of the master insert and the tool cutting edge plane measured in a plane whose normal is parallel to the main cutting edge

NOTE This property is applicable to tool items.

Illustration reference: Figure E.23.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71E01A0838E9B-1 prismatic broach

71D08418C3B4D-1 **1** **NR2 S..3.3**

simple real measure deg

clearance angle orthogonal **alo** ALO

angle between the major flank of the master insert and the tool cutting edge plane measured in a plane perpendicular to the tool cutting edge plane

NOTE This property is applicable to tool items.

ISO 3002-1:1982, 5.1.4.4

Illustration reference: Figure E.23.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71E01A0838E9B-1 prismatic broach

71EAC83B73825-1 **1** **NR2 S..3.3**

simple real measure deg

clearance angle radial **alf** ALF

angle between the flank of the major or minor cutting edge and a plane parallel to the xz-plane passing through that cutting edge measured in the yz-plane

NOTE This property is applicable to tool items.

ISO 3002-1

Illustration reference: Figure E.23.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A05104CF-1	turn
71EAC81A64368-1	regrinding

71DD703B84298-1 **1** **X1**

simple boolean

coating property **ctp** CTP

possession of a coating by a cutting item type

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1AA6C8FC75-1	cutting item type
71E01A004C775-1	tool item type

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

simple string

connection code machine side ccms CCMS

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

The value of a code shall be 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 1 Two items can be connected together if they have the same value of the code.

NOTE 2 The connection code is not applicable to assembly items in general but is applicable to the collet class.

REMARKS: Example for a cylindrical shank conforming to ISO 3338-2 with shank diameter of 25 mm, with internal coolant: ZYL025010M1EXT.

Illustration reference: ISO/TS 13399-4:2006, Figure E.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

connection code workpiece side ccws CCWS

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

The value of a code shall be 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 1 Two items can be connected together if they have the same value of the code.

NOTE 2 The connection code is not applicable to cutting items or assembly items in general but is applicable to the collet class.

REMARKS: Example for a collet chuck adaptor fitting a DIN 6499 collet of size 16 mm without coolant: SZD016002M0INT.

Illustration reference: ISO/TS 13399-4:2006, Figure E.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

71CF298A76B66-1 1 X 17

simple string

connection retaining knob thread size crks CRKS

identifier for the size of the thread size of the device that pulls a cutting tool into the machine tool

71EBDBF130AE6-1 = side

Illustration reference: Figure E.21.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A081855D-1 tapered broach

71E0250E32A07-1 cylindrical broach

71E0251F304E1-1 rotating borer

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71EAC48CAD407-1 1 NR2 S..3.3

simple real measure mm

connection bore depth cbdp CBDP

depth of the hole in the centre of a tool or adaptive item used for making a connection.

71EBDBF130AE6-1 = side

Illustration reference: Figure E.19.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1 ream

71E01A0540BE7-1 slab mill

71E01A05B627B-1 face mill

71E01A05EA320-1 half side mill

71E01A06A8A08-1 countersink drill

71E01A06BF88D-1 counterbore drill

71E01A082DE72-1 disk broach

71E0250E32A07-1 cylindrical broach

71E0251F304E1-1 rotating borer

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71EEBDADB63BE-1 extender

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71E01D92C41E8-1 **1** **NR2 S..3.3**

simple real measure mm

connection bore diameter **dcb** DCB

diameter of the hole in the centre of a tool or adaptive item used for making a connection.

71EBDBF130AE6-1 = side

Illustration reference: Figure E.19.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1 ream

71E01A0540BE7-1 slab mill

71E01A05EA320-1 half side mill

71E01A06A8A08-1 countersink drill

71E01A06BF88D-1 counterbore drill

71E01A082DE72-1 disk broach

71E0250E32A07-1 cylindrical broach

71E0251F304E1-1 rotating borer

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71EEBDADB63BE-1 extender

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71EDD2C17746F-1 **1** **NR1 ..4**

simple integer

connection count workpiece side **cconws** CCONWS

effective numbers of connections that can participate in a connection between any component of a cutting tool, except cutting items and assembly items, on the workpiece side

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E0251F304E1-1 rotating borer

71EAD3871D313-1 converter

71EBDBF5060E6-1 **1** **NR2 S..3.3**

level nom real measure mm

connection diameter **dcon** DCON

nominal dimension of the diameter of a cylindrical portion of a tool item or an adaptive item that can participate in a connection

71EBDBF130AE6-1 = side

Illustration reference: Figure E.8.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A04E0236-1	threading tap
71E01A04F70F7-1	threading die
71E01A05104CF-1	turn
71E0251F304E1-1	rotating borer
71EAD37F18F34-1	adaptive item type

71FC193318002-1 **1** **X 17**

simple string

connection size code **czc** CZC

identifer for the size of the connection between items of a cutting tool, excluding cutting items

NOTE The connection to the machine tool is included.

71EBDBF130AE6-1 = side

Illustration reference: ISO/TS 13399-4:2006, Figure E.1.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1	tool item type
71EAD37F18F34-1	adaptive item type

71ED6E16D5978-1 **1** **X 1**

simple non-quantitative code

connection unit basis **cub** CUB

Label to identify the system of units in which the design of the connection is defined.

C = Coded neither metric nor inch

M = Metric

N = Inch

NOTE The C value of this property is used to identify the design basis of tapered shanks such as steep taper.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1 tool item type

71EAD37F18F34-1 adaptive item type

71D087D97FCE3-1 **1** **NR2 S..3.3**

simple real measure mm

contact surface diameter machine side **dcsfms** DCSFMS

diameter of the surface on the machine side forming the contact between a tool item and an adaptor item

Illustration reference: Figure E.4.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E0250E32A07-1 cylindrical broach

71E0251F304E1-1 rotating borer

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71EBB342CC751-1 **1** **X1**

simple boolean

coolant supply property **csp** CSP

identification for whether a tool item or an adaptive item has a coolant supply

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1 tool item type

71EAD37F18F34-1 adaptive item type

71CF299287FD3-1 **1** **NR2..3.3**

simple real measure mm

cutting length minimum bore diameter **clmbd** CLMBD

distance on a cutting tool that defines how far the tool can cut from the start of the minimum bore diameter of a workpiece

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05104CF-1 turn

71E0251F304E1-1 rotating borer

71CEAEBD5A66A-1 **1** **NR2 S..3.3**

level max real measure mm

cutting depth maximum **cdx** CDX

maximum penetration of a cutting edge in the feed direction on the first infeed motion measured parallel to the feed direction

Illustration reference: Figure E.12.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DD700BFD9B9-1 grooving parting profile

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A04E0236-1 threading tap

71E01A05104CF-1 turn

71E0251F304E1-1 rotating borer

71E02C544BABE-1 burr tool

71D0846570977-1 **1** **NR2 S..3.3**

simple real measure mm

cutting diameter internal maximum **dcinx** DCINX

maximum internal cutting diameter

largest adjustable internal diameter of a circle created by a cutting reference point revolving around the tool axis of a rotating tool item .

NOTE The normal of the machined peripheral surface points away from the axis of the cutting tool.

Illustration reference: Figure E.13.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0600702-1 ring mill

71E01A0769982-1 trepanning drill

71E01A07ECCCF-1 profile reamer

71E0251F304E1-1 rotating borer

71D084655A2F7-1 **1** **NR2 S..3.3**

simple real measure mm

cutting diameter internal minumum **dcinn** DCINN

minimum internal cutting diameter

smallest adjustable internal diameter of a circle created by a cutting reference point revolving around the tool axis of a rotating tool item.

NOTE The normal of the machined peripheral surface points away from the axis of the cutting tool.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0600702-1 ring mill

71E01A0769982-1 trepanning drill

71E01A07ECCCF-1 profile reamer

71E0251F304E1-1 rotating borer

71D0846545C4E-1 **1** **NR2 S..3.3**

simple real measure mm

cutting diameter internal **dcin** DCIN

internal cutting diameter

diameter of a circle created by a cutting reference point revolving around the tool axis of a rotating tool item

NOTE The normal of the machined peripheral surface points away from the axis of the cutting tool.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0600702-1 ring mill

71E01A0769982-1 trepanning drill

71E01A07ECCCF-1 profile reamer

71E0251F304E1-1 rotating borer

71D084653E57F-1 **1** **NR2 S..3.3**

simple real measure mm

cutting diameter **dc** DC

external cutting diameter

diameter of a circle created by a cutting reference point revolving around the tool axis of a rotating tool item

NOTE The normal of the machined peripheral surface points towards the axis of the cutting tool.

Illustration reference: Figure E.12.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A081855D-1 tapered broach

71E01A082DE72-1 disk broach

71E0250E32A07-1 cylindrical broach

71E0251F304E1-1 rotating borer

71E02C544BABE-1 burr tool

71D084656CE32-1 **1** **NR2 S..3.3**

simple real measure mm

cutting diameter maximum **dcx** DCX

max external cutting diameter

largest diameter of a circle created by a cutting edge revolving around the tool axis of a rotating tool item

NOTE The normal of the machined peripheral surface points towards the axis of the cutting tool.

REMARKS: Also used for adjustable tool items and for those tool items having a range of cutting diameters

Illustration reference: Figure E.13.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A081855D-1 tapered broach

71E01A082DE72-1 disk broach

71E0251F304E1-1 rotating borer

71D0846556288-1 **1** **NR2 S..3.3**

simple real measure mm

cutting diameter minimum **dcn** DCN

min external cutting diameter

smallest diameter of a circle created by a cutting edge revolving around the tool axis of a rotating tool item

NOTE The normal of the machined peripheral surface points towards the axis of the cutting tool.

REMARKS: Also used for adjustable tool items and for those tool items having a range of cutting diameters.

Illustration reference: Figure E.13.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A081855D-1 tapered broach

71E01A082DE72-1 disk broach

71E0251F304E1-1 rotating borer

71DF1527D828C-1 **1** **X 17**

simple string

cutting diameter size code **cdsc** CDSC

identifer for the cutting diameter of a tool item

REMARKS: For example, drill sizes can be identified by either letters or numbers.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0608FE4-1 twist drill

71E01A07D2A1B-1 tapered reamer

71DCD0033973E-1 **1** **NR1 S..4**

simple integer

cutting edge centre count **znc** ZNC

number of cutting edges that are able to cut across the center of the tool item axis

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05D27A8-1 end mill

71CEAE9B489F4-1 **1** **NR1 S..4**

simple integer

cutting edge count **cedc** CEDC

number of edges of a cutting profile that can participate in the cutting process

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1AA486FF89-1 equilateral equiangular

71D1AA489FD6E-1 non-equilateral non-equiangular

71D1AA6635E76-1 round insert

71D1AE11B8B77-1 equilateral non-equiangular

71D1AE120D96E-1 non-equilateral equiangular

71DD700BE1D04-1 drilling profile

71DD700BFD9B9-1 grooving parting profile

71DD700C151B5-1 threading profile

71DDA089C8D1E-1 specific profile insert

71E01A004C775-1 tool item type

71DCD00CBBC2A-1 **1** **NR1 S..4**

simple integer

cutting end count **nce** NCE

label that defines whether a tool item has cutting capabilities on one or both ends

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04E0236-1 threading tap

71E01A05D27A8-1 end mill

71E01A073CA28-1 centre drill

71DF8C52B8926-1 **1** **NR1 S..4**

simple integer

cutting item count **cict** CICT

number of cutting items on a working face

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1 tool item type

71DF15283219C-1 **1** **X 17**

simple string

cutting pitch density **cpdn** CPDN

identifier for the density of inserts in a cutter

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71DF152D8CF7D-1 **1** **X1**

simple boolean

cutting pitch differential **cpdf** CPDF

identifier for if the spacing of a sequence of cutting edges is not-equal

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71CEAEBE2B825-1 **1** **NR2 S..3.3**

simple real measure mm

cutting width **cw** CW

width of the cut made by the cutting item(s) as it (they) penetrates into the work surface.

NOTE This is also used as a property of a tool item.

Illustration reference: Figure E.12.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71DD700BFD9B9-1 grooving parting profile

71E01A05104CF-1 turn

71E01A0540BE7-1 slab mill

71E01A05B627B-1 face mill

71E01A0600702-1 ring mill

71E01A082DE72-1 disk broach

71E01A0838E9B-1 prismatic broach

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71EF07E083383-1 threading grooving mill

71D07569F8BC3-1 **1** **NR2 S..3.3**

level max real measure mm

cutting width maximum **cwx** CWX

maximum width of the cut made by a particular combination of a tool item and cutting item(s)

NOTE This is a property of the tool item.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71E01A0540BE7-1 slab mill

71E01A05B627B-1 face mill

71E01A0600702-1 ring mill

71E01A082DE72-1 disk broach

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71EF07E083383-1 threading grooving mill

71D0756A28B42-1 **1** **NR2 S..3.3**

level min real measure mm

cutting width minimum **cwn** CWN

minimum width of the cut made by a particular combination of a tool item and cutting item(s).

NOTE This is a property of the tool item.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71E01A0540BE7-1 slab mill

71E01A05B627B-1 face mill

71E01A0600702-1 ring mill

71E01A082DE72-1 disk broach

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71EF07E083383-1 threading grooving mill

71CED03D70452-1 **1** **X1**

simple boolean

damping property **dpc** DPC

ability to reduce the amplitude of vibrations

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05104CF-1 turn

71E01A05D27A8-1 end mill

71E0250E32A07-1 cylindrical broach

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EEBDADB63BE-1 extender

71CF29869CA0F-1 **1** **NR1 S..1**

simple non-quantitative integer

data chip provision **dcp** DCP

indication of provision for a data chip on a tool item or an adaptive item

0 = not exist

1 = exist

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1 tool item type

71EAD37F18F34-1 adaptive item type

71D07576C0558-1 **1** **NR2 S..3.3**

level max real measure mm

depth of cut maximum **apmx** APMX

maximum engagement of the cutting edge or edges with the workpiece measured perpendicular to the feed motion.

ISO 3002-3:1984, 6.1.1

Illustration reference: Figure E.8.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DD700BFD9B9-1 grooving parting profile

71E01A008D13F-1 mill

71E01A04E0236-1 threading tap

71E0250E32A07-1 cylindrical broach

71E0251F304E1-1 rotating borer

71CF2993DC583-1 **1** **X 1**

simple non-quantitative code

design configuration style code dcc DCC

identifier for the composition and features of a tool item

NOTE The values are constrained to be those in the source document.

A = steel body with internal coolant supply

B = steel body with devibration

C = steel head with carbide shank

D = steel body with devibration and internal coolant supply

E = steel head with carbide shank and internal coolant supply

F = steel head with carbide shank and devibration

G = steel head with carbide shank and devibration and internal coolant supply

H = heavy metal body

J = heavy metal body with internal coolant supply

S = steel body

ISO 6261:1995, 4.1

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0E9CBA9-1 boring bar

71EAC81AD9AE1-1	**1**	**X 17**
simple	string	
drill back taper	**dbt**	DBT

reduction in diameter from the outer corners towards the shank expressed by the ratio of the reduction in diameter and the length of measurement

ISO 5419

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0608FE4-1 twist drill

71EAC81A64368-1 regrinding

71D1AE126DEFD-1	**1**	**X1**
simple	boolean	

drilling profile property **drprfp** DRPRF

possession of a drilling profile by a cutting item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DDA089C8D1E-1 specific profile insert

71E01A069566C-1 chamfer drill

71E01A073CA28-1 centre drill

71D08096F930C-1 **1** **NR2 S..3.3**

simple real measure deg

drive angle **drva** DRVA

angle between the driving mechanism locator on a tool item and the main cutting edge

Illustration reference: Figure E.7.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E0251F304E1-1 rotating borer

71E0306423B2A-1 **1** **NR1 S..1**

simple integer

drive count **drvct** DRVCT

number of drives that are on an assembly item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0540BE7-1 slab mill

71E01A05EA320-1 half side mill

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71EAC49F75413-1 **1** **X1**

simple boolean

drop head design **dhd** DHD

identifier for a dropped head design of a tool item or an adaptive item for upside down machining operations.

NOTE 0 = no dropped head design; 1 = dropped head design.

Illustration reference: Figure E.26.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05104CF-1 turn

71DCD00239812-1 **1** **NR1 S..4**

simple integer

face effective cutting edge count **zeff** ZEFF

number of cutting edges that are effective on the face of a tool item

NOTE Used also for inside mounted inserts that do not produce a diameter.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E0250E32A07-1 cylindrical broach

71DCD0029BBE7-1 **1** **NR1 S..4**

simple integer

face mounted insert count **znf** ZNF

total number of inserts mounted on the face of the tool item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E0250E32A07-1 cylindrical broach

71EC61D8A1771-1 **1** **NR2 S..3.3**

simple real measure mm

flange diameter **df** DF

dimension between two parallel tangents on the outside edge of a flange

Illustration reference: ISO/TS 13399-50:2006, Figure E.4.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1 ream

71E01A0540BE7-1 slab mill

71E01A05B627B-1 face mill

71E01A05D27A8-1 end mill

71E01A05EA320-1 half side mill

71E01A0608FE4-1 twist drill

71E01A067F73C-1 step drill

71E01A069566C-1 chamfer drill

71E01A06A8A08-1 countersink drill

71E01A06BF88D-1 counterbore drill

71E01A0751456-1 conical drill

71E01A0769982-1 trepanning drill

71E0251F304E1-1 rotating borer

71EC5A767182E-1 flange

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71EF07E083383-1 threading grooving mill

71DCCFEBB883E-1 **1** **NR1 S..4**

simple integer measure

flute count **nof** NOF

number of chip removal paths on a item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A04E0236-1 threading tap

71DCCFEC645BD-1 **1** **X 3**

simple non-quantitative code

flute design code **fdc** FDC

identifier for the design of the flute

DSK = differential chip flute

GSK = straight chip flute

SSK = spiral (helical) chip flute

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C3FD03AF-1 chip management

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A04E0236-1 threading tap

71DCCFEC20115-1 **1** **NR2 S..3.3**

simple real measure deg

flute helix angle **fha** FHA

constant angle measured from the tool axis at which the flute helix cuts the periphery of the tool

Illustration reference: Figure E.20.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C3FD03AF-1 chip management

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A04E0236-1 threading tap

71DCCFF654756-1 **1** **X 1**

simple non-quantitative code

flute helix hand **fhh** FHH

identifier for the direction of the flute helix.

L = left hand flute

N = neutral (straight) flute

R = right hand flute

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C3FD03AF-1	chip management
71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A04E0236-1	threading tap

71DCCFF6A1A13-1 **1** **NR2 S..3.3**

simple real measure mm

flute helix pitch **fhp** FHP

distance between equivalent points on the periphery of the tool item by revolving one turn.

Illustration reference: Figure E.16.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C3FD03AF-1	chip management
71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A04E0236-1	threading tap

71EAC8210DF36-1 **1** **NR2 S..3.3**

simple real measure mm

fluted land width **flw** FLW

distance between the leading edge of the margin and the heel

ISO 5419

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0608FE4-1 twist drill

71E01A067F73C-1 step drill

71E01A0751456-1 conical drill

71EAC81A64368-1 regrinding

71FAE7AAE8247-1 core drill

71CF29994E737-1 **1** **NR2..7.3**

simple real measure mm

functional height **hf** HF

cutting height

distance from the xy-plane of the tool item to the cutting point

Illustration reference: Figure E.1.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71E01A0838E9B-1 prismatic broach

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71DCD39338974-1 **1** **NR2 S..3.3**

simple real measure mm

functional length **lf** LF

distance from the gauge plane or from the end of the shank, if a gauge plane does not exist, to the cutting reference point determined by the main function of the tool

NOTE The functional length is multiplicated on stepped tools

Illustration reference: Figure E.1.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A04E0236-1 threading tap

71E01A05104CF-1 turn

71E02C544BABE-1 burr tool

71EAD37F18F34-1 adaptive item type

71EBC1EB8456A-1 **1** **NR2 S..3.3**

simple real measure mm

functional length minimum **lfn** LFN

least distance from the gauge plane or from the end of the shank, if a gauge plane does not exist, to the cutting reference point determined by the main function of the tool

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0E85121-1 prismatic tool holder

71E01A0E9CBA9-1 boring bar

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71EEBDADB63BE-1 extender

71D078F5BEDBE-1 **1** **NR2 S..3.3**

simple real measure mm

functional length secondary **lfs** LFS

distance from the yz-plane to a plane tangential to the secondary cutting corner as determined by the main function of the tool

Illustration reference: Figure E.4.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF29984CDA7-1 **1** **NR2..7.3**

simple real measure mm

functional width **wf** WF

f dimension

distance between the cutting reference point and the rear backing surface of a turning tool or the axis of a boring bar

ISO 5609, ISO 5610

Illustration reference: Figure E.4.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71D193F495583-1 **1** **NR2 S..3.3**

simple real measure mm

functional width 2 **wf2** WF2

distance between the cutting reference point and the front seating surface of a turning tool

ISO 5608: 1996, Clause 5

Illustration reference: Figure E.2.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF299874B1E-1 **1** **NR2..7.3**

simple real measure mm

functional width secondary **wfs** WFS

distance between the xz-plane and a plane tangential to the secondary cutting corner as determined by the main function of the tool

Illustration reference: Figure E.4.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF298FB10E4-1 **1** **NR2..7.3**

simple real measure mm

groove depth minimum bore diameter **gdmb** GDMB

maximum groove depth that can be cut at the minimum bore diameter.

NOTE The term is groove depth minimum bore diameter.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05104CF-1 turn

71EF07E083383-1 threading grooving mill

71EE070696F08-1 **1** **X1**

simple boolean

guide element property **gep** GEP

identifier for the existence of guide elements supporting the operation of the tool item or adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1 ream

71E01A065F635-1 deep hole drill

71E01A067F73C-1 step drill

71E01A06A8A08-1 countersink drill

71E01A06BF88D-1 counterbore drill

71ED6A7A6E6A2-1 **1** **NR2 S..3.3**

simple real measure mm

guide pilot diameter **gpd** GPD

diameter of the portion of a cylindrical tool in front of the cutting portion that acts to limit the sideways movement of the tool in operation

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E019C497CDF-1 guide pilot feature

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 lever top clamp

71D075730A82B-1 **1** **NR2 S..7.3**

simple real measure mm

head back offset length **hbkl** HBKL

dimension of the length of the reinforced portion of the back of the head of a tool item measured from the cutting point.

NOTE Mainly applicable to tool items of a rectangular cross section.

Illustration reference: Figure E.24.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71D075731F172-1 **1** **NR2 S..7.3**

simple real measure mm

head back offset width **hbkw** HBKW

dimension of the width of the reinforced portion of the back of the head of a tool item measured from the rear backing surface

NOTE Only applicable to tool items of a rectangular cross section.

Illustration reference: Figure E.24.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF298F073D3-1 **1** **NR2..7.3**

simple real measure mm

head bottom offset height **hbh** HBH

distance from the xy-plane of a tool item or adaptive item to the bottom of the head

Illustration reference: Figure E.25.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF298F4E487-1 **1** **NR2..7.3**

simple real measure mm

head bottom offset length **hbl** HBL

dimension of the length of the reinforced portion of the bottom of the head of a tool item measured from the cutting point.

NOTE Only applicable to tool items of a rectangular cross section.

Illustration reference: Figure E.25.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71E03062EC034-1 **1** **NR2 S..3.3**

simple real measure mm

head diameter **hdd** HDD

distance between two parallel tangents of the circular cross section of a head

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05D27A8-1 end mill

71E01A065F635-1 deep hole drill

71E01A06A8A08-1 countersink drill

71E01A06BF88D-1 counterbore drill

71E01A0E9CBA9-1 boring bar

71D07574A61E8-1 **1** **NR2 S..7.3**

simple real measure mm

head length **lh** LH

length of the head of a tool item

ISO 5610:1998, 4.2

Illustration reference: Figure E.2.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A04A8AEC-1	ream
71E01A04E0236-1	threading tap
71E01A05104CF-1	turn
71E01A05D27A8-1	end mill
71E01A065F635-1	deep hole drill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill

71D087D3B17B0-1 **1** **NR2 S..3.3**

simple real measure mm

hub diameter **dhub** DHUB

diameter of the hub portion of a tool body

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF5C02D0271-1 tool hub

71DF5C078FF46-1 **1** **X1**

simple boolean

hub property **hbp** HBP

possession of a hub by a tool item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0540BE7-1	slab mill
71E01A05B627B-1	face mill

71E01A05EA320-1 half side mill

71EF07DFC283C-1 double half side mill

71EF07E037025-1 slotting cutter

71D087D3F5E07-1 **1** **NR2 S..3.3**

simple real measure mm

hub thickness **thub** THUB

total through thickness of the hub of a disc tool item.

Illustration reference: Figure E.12.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF5C02D0271-1 tool hub

71D075754F8A3-1 **1** **NR2 S..7.3**

simple real measure deg

inclination angle **lams** LAMS

angle between the tool rake plane and a plane parallel to the xy-plane measured in the tool cutting edge plane

ISO 3002-1:1982, 5.1.1.3

Illustration reference: Figure E.23.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71DF1538E7378-1 **1** **NR1 S..4**

simple integer

insert adjustable count **zadj** ZADJ

number of inserts whose position at their location can be adjusted

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A0608FE4-1	twist drill
71E01A065F635-1	deep hole drill
71E01A067F73C-1	step drill
71E01A069566C-1	chamfer drill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill
71E01A0751456-1	conical drill
71E01A0769982-1	trepanning drill
71E01D8A88F65-1	pilot drill
71E0251F304E1-1	rotating borer
71FAE7AAE8247-1	core drill

71CE7A9936610-1 **1** **X 17**

simple string

insert interface code **iic** IIC

identifier for the condition that a particular replaceable cutting item can be mounted on a particular tool item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D0808DA853B-1	master insert
71D1AA486FF89-1	equilateral equiangular
71D1AA489FD6E-1	non-equilateral non-equiangular
71D1AA6635E76-1	round insert
71D1AE11B8B77-1	equilateral non-equiangular

71D1AE120D96E-1 non-equilateral equiangular

71DDA089C8D1E-1 specific profile insert

71E01A004C775-1 tool item type

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

71DF1526AC952-1 **1** **X1**

simple boolean

interlocking capabilty **lcb** LCB

identifier for the capability to form assemblies of tool items that position cutting edges in sequence along a line or curve

REMARKS: Normally used for milling cutters.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0540BE7-1	slab mill
71E01A05B627B-1	face mill
71E01A05EA320-1	half side mill
71E01A0600702-1	ring mill
71EF07DFC283C-1	double half side mill
71EF07E037025-1	slotting cutter

71DF5C0761888-1 **1** **X1**

simple boolean

keyway property **kyp** KYP

possession of a keyway by either a tool item or an adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A0540BE7-1	slab mill
71E01A05B627B-1	face mill
71E01A05EA320-1	half side mill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill
71E01A0769982-1	trepanning drill
71E0251F304E1-1	rotating borer
71EAD385E51A0-1	reducer
71EAD3871D313-1	converter
71EAD388173EE-1	driver
71EEBDADB63BE-1	extender
71EF07DFC283C-1	double half side mill
71EF07E037025-1	slotting cutter

71DCCC27DEF53-1 **1** **NR2 S..3.3**

simple real measure mm

length chip flute **lcf** LCF

length of the chip flute measured from the spot point to the end of the flute.

Illustration reference: Figure E.5.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C3FD03AF-1 chip management

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04E0236-1 threading tap

71E01A05B627B-1 face mill

71E0250E32A07-1 cylindrical broach

71CF298FDE0EF-1 **1** **X 17**

simple string

master insert identification **miid** MIID

identifier for a nominal replaceable cutting item used for defining the dimensions of a cutting tool.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1 tool item type

71D07543367C5-1 **1** **NR2 S..7.3**

simple real measure mm

minimum bore diameter **dmin** DMIN

minimum diameter that can be cut without interference between the workpiece and any part of the cutting tool.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05B627B-1 face mill

71E01A05D27A8-1 end mill

71E01A0E9CBA9-1 boring bar

71E0251F304E1-1 rotating borer

71EAC0F064E2D-1 **1** **NR2 S..3.3**

simple real measure deg

mounting hole angle **mha** MHA

Angle between the xy-plane and the centre of the mounting hole measured in the xz-plane

ISO 5611

Illustration reference: Figure E.22.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71EAC0E9FA4CD-1 **1** **NR2 S..3.3**

simple real measure mm

mounting hole distance **mhd** MHD

Dimension measured from the end of a tool item, including any adjusting screw, to the center of the mounting hole

ISO 5611

Illustration reference: Figure E.22.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71EAC0EF68BB7-1 **1** **NR2 S..3.3**

simple real measure mm

mounting hole distance 2 **mhd2** MHD2

dimension measured from the center of the first mounting hole to the center of the second mounting hole

ISO 5611

Illustration reference: Figure E.22.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71EAC0EFA1BF3-1 **1** **NR2 S..3.3**

simple real measure mm

mounting hole height **mhh** MHH

distance from the base of the tool item to the intersection of the center of the mounting hole with the rear backing surface of the tool item

ISO 5611

Illustration reference: Figure E.22.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71EAC48EC5DE0-1 **1** **NR2 S..3.3**

simple real measure mm

neck diameter **dn** DN

diameter of that portion of a tool item body or adaptive item body that is smaller than the diameters on either side of it

NOTE A neck allows undercutting without interfering with the workpiece.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1	ream
71E01A04E0236-1	threading tap
71E01A05D27A8-1	end mill
71E01A069566C-1	chamfer drill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill
71EF07E083383-1	threading grooving mill

71EBC1E026769-1 **1** **NR2 S..3.3**

simple real measure mm

neck length **ln** LN

length of that portion of a tool item body or adaptive item body where the diameter is smaller than the diameters on either side of it

NOTE A neck allows undercutting without interfering with the workpiece.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1	ream
71E01A04E0236-1	threading tap
71E01A05D27A8-1	end mill
71E01A069566C-1	chamfer drill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill
71EF07E083383-1	threading grooving mill

71EBC1E8857BE-1 **1** **NR2 S..3.3**

simple real measure mm

overall length minimum **oaln** OALN

least allowable length of an item after regrinding

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0E9CBA9-1 boring bar

71EAC81A64368-1 regrinding

71D078EB73E87-1 **1** **NR2 S..7.3**

simple real measure mm

overall height **oah** OAH

largest dimension of an item in the direction of the Z-axis that would cause interference, including the master insert and clamping where applicable

Illustration reference: Figure E.1.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71E01A0838E9B-1 prismatic broach

71EAD385E51A0-1 reducer

71EAD3871D313-1 converter

71EAD388173EE-1 driver

71EEBDADB63BE-1 extender

71D078EB7C086-1 **1** **NR2 S..7.3**

simple real measure mm

overall length **oal** OAL

largest dimension of an item in the direction of the X axis

Illustration reference: Figure E.2.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A004C775-1	tool item type
71EAD37F18F34-1	adaptive item type

71CF299257986-1 **1** **NR2..7.3**

simple real measure mm

overall width **oaw** OAW

largest dimension of an item in the direction of the Y-axis including the master insert where applicable

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A05104CF-1	turn
71E01A0838E9B-1	prismatic broach
71EAD385E51A0-1	reducer
71EAD3871D313-1	converter
71EAD388173EE-1	driver
71EEBDADB63BE-1	extender

71DCCFF75E485-1 **1** **NR1 S..4**

simple integer

peripheral effective cutting edge count **zefp** ZEFP

number of cutting edges that are effective around the periphery of the tool item

NOTE Used also for outside mounted inserts that produce a diameter.

REMARKS: It influences the calculation of the feed.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A04A8AEC-1	ream
71E0250E32A07-1	cylindrical broach

71DCD00054F65-1 **1** **NR1 S..4**

simple integer

peripheral mounted insert count **znp** ZNP

total number of inserts mounted on the periphery of the cutting profile

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A04A8AEC-1 ream

71E0250E32A07-1 cylindrical broach

71EAC49030828-1 **1** **NR2 S..3.3**

simple real measure mm

pilot drill protrusion **pdp** PDP

distance from the cutting reference point of a pilot drill to cutting edges that form the bottom of the hole measured along the tool axis.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A06A8A08-1 countersink drill

71EE070754DE2-1 pilot drill feature

71DCCFD24119E-1 **1** **NR2 S..3.3**

simple real measure mm

pilot protruding length **ppl** PPL

distance from the outer most point of the pilot to the cutting reference point that forms the cutting diameter measured in a plane parallel to the tool feed plane

NOTE Applies to both guide pilots and pilot drills.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E019C497CDF-1	guide pilot feature
71E01A065F635-1	deep hole drill
71E01A067F73C-1	step drill
71E01A069566C-1	chamfer drill
71E01A06A8A08-1	countersink drill
71E01A06BF88D-1	counterbore drill

71EBC1EA293DC-1 **1** **NR2 S..3.3**

simple real measure mm

plug chamfer diameter **plcd** PLCD

diameter of that section of a plug tap that first contacts the workpiece

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04E0236-1	threading tap

71E02C679DC6D-1 **1** **X 2**

simple non-quantitative code

plug style **plg** PLG

identifer for the shape of the bottom of a plug tap

FB = full bottom one to two pitch

MB = modified bottom two to four pitch

PC = plug chamfer three to six pitch

SB = semi-bottom two to 2.5 pitch

TC = tapered chamfer seven to ten pitch

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04E0236-1 threading tap

71D08099F1DDC-1 **1** **NR2 S..3.3**

simple real measure mm

plunge depth maximum **az** AZ

that portion of the maximum depth of cut that can be achieved without interference between the tool item and the workpiece when the plunging direction is perpendicular to the primary feed direction.

Illustration reference: Figure E.11.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05B627B-1 face mill

71E01A05D27A8-1 end mill

71E01A05EA320-1 half side mill

71DCCC4FEF366-1 **1** **NR2 S..3.3**

simple real measure deg

point angle **sig** SIG

angle between the major cutting edge and the same cutting edge rotated 180 degrees about its tool axis

NOTE The angle is twice the value of the cutting edge angle.

ISO 10899, DIN 1414-1

Illustration reference: Figure E.5.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C5B8F7B5-1 drill point

71E01A0608FE4-1 twist drill

71E01A067F73C-1 step drill

71E01A073CA28-1 centre drill

71E01A0751456-1 conical drill

71E01D8A88F65-1 pilot drill

71DCCFD064042-1 1 NR2 S..3.3

simple real measure mm

point length pl PL

distance from the front point or chisel edge of the cutting tool to the point that forms the full cutting diameter, measured parallel to the tool axis

Illustration reference: Figure E.5.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C5B8F7B5-1 drill point

71E01A0608FE4-1 t twist drill

71E01A067F73C-1 step drill

71E01A073CA28-1 centre drill

71E01A0751456-1 conical drill

71E01D8A88F65-1 pilot drill

71DCCC5A4FD18-1 1 NR2 S..3.3

simple real measure mm

premachined hole diameter phd PHD

minimum allowed hole diameter to avoid interference between the tool body and workpiece.

NOTE To allow the use of a guide pilot.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A04A8AEC-1 ream

71E01A04E0236-1 threading tap

71E01A069566C-1 chamfer drill

71E01A06A8A08-1 countersink drill

71E01A06BF88D-1 counterbore drill

71E01A081855D-1 tapered broach

71E0250E32A07-1 cylindrical broach

71DF8C5D91804-1 **1** **X 17**

simple string

profile specification **prspc** PRSPC

identifer for formal definition of the shape of a working face or cutting profile

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A07ECCCF-1 profile reamer

71DCD394BB20E-1 **1** **NR2 S..3.3**

simple real measure mm

protruding length **lpr** LPR

projection length

dimension from the yz-plane to the furthest point of the tool item or adaptive item measured in the -X direction

NOTE 1 For tool items the protruding length can be equal to the functional length if the furthest point is the cutting reference point.

NOTE 2 For adaptive items the protruding length can be equal to the functional length if the furthest point is the origin of the coordinate system workpiece side.

Illustration reference: Figure E.7.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A04E0236-1 threading tap

71E0251F304E1-1 rotating borer

71EAD37F18F34-1 adaptive item type

71D078ED2C21E-1 **1** **X 1**

simple non-quantitative code

qualified tool code **qtc** QTC

identifer for a tool with dimensions F and LF or F2 and LF having tolerances of +/-0.08 mm

NOTE F is equivalent to f1 in the source document.

B = contact surfaces on rear backing and front

F = contact surface on the front

Q = contact surface on the rear backing

ISO 5608:1995, Clause 5

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A0E85121-1 prismatic tool holder

71CF29990C41F-1 **1** **NR2 S..3.3**

simple real measure deg

rake angle axial **gamp** GAMP

back rake angle

angle between the tool rake plane and a plane parallel to the xy-plane measured in a plane parallel to the xz-plane

ISO 3002-1:1982, 5.1.2.3

Illustration reference: Figure E.27.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A04E0236-1	threading tap
71E01A05104CF-1	turn
71E0251F304E1-1	rotating borer

71CF2998EBD46-1 **1** **NR2 S..7.3**

simple real measure deg

rake angle normal **gamn** GAMN

angle between the tool rake plane and a plane parallel to the xy-plane, measured in a plane whose normal is the major cutting edge of the tool

ISO 3002-1:1982, 5.1.2.1

Illustration reference: Figure E.23.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1	cartridge
71E01A05104CF-1	turn

71D0808F8F719-1 **1** **NR2 S..3.3**

simple real measure deg

rake angle orthogonal **gamo** GAMO

angle between the tool rake plane and a plane parallel to the xy-plane measured in a plane perpendicular to the tool cutting edge plane

ISO 3002-1:1982, 5.1.2.4

Illustration reference: Figure E.27.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A05104CF-1 turn

71CF2998A1609-1 **1** **NR2 S..7.3**

simple real measure deg

rake angle radial **gamf** GAMF

side rake angle

angle between the tool rake plane and a plane paralle to the xy-plane measured in a plane parallel to the yz-plane

Illustration reference: Figure E.27.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04C377D-1 broach

71E01A04E0236-1 threading tap

71E01A05104CF-1 turn

71E0251F304E1-1 rotating borer

71DF1538632D9-1 **1** **NR2 S..3.3**

level max real measure deg

ramping angle maximum **rmpx** RMPX

maximum angle for infeeding of a tool item to avoid interference with the workpiece

Illustration reference: Figure E.11.

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A05B627B-1 face mill

71E01A05D27A8-1 end mill

71DF153A691F2-1 **1** **NR1 S..6**

level max integer

revolutions per minute maximum **rpmx** RPMX

maximum rotational speed allowed for an item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A04A8AEC-1 ream

71E01A04E0236-1 threading tap

71E01A04F70F7-1 threading die

71E0251F304E1-1 rotating boring

71EAD37F18F34-1 adaptive item type

71CED04867743-1 **1** **X 1**

simple non-quantitative code

row identifier **rid** RID

identifer for whether a tool item has cutting edges on one level or on multiple levels

M = Multiple

S = Single

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A081855D-1	tapered broach
71E0250E32A07-1	cylindrical broach

71D0845C77193-1 **1** **NR2 S..3.3**

simple real measure microns

runout axial adjustment **adjar** ADJAR

magnitude of the range of adjustment parallel to the X axis to align cutting edges into the same axial position

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71EDD2B84143C-1	runout axial

71EDD2B883F77-1 **1** **X1**

simple boolean

runout axial property **rnap** RNAP

identifier for the capability of adjustment to the axial runout of a tool item or an adaptive item

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71E01A008D13F-1	mill
71E01A00BD93C-1	drill
71E01A04A8AEC-1	ream
71E01A04C377D-1	broach
71E01A04E0236-1	threading tap
71E01A04F70F7-1	threading die

71E0251F304E1-1 rotating borer

71DF8C660035E-1 **1** **NR2 S..3.3**

simple real measure mm

runout radial **rnr** RNR

total indicator runout

total variation of all cutting reference points from the X axis measured perpendicular to the X axis in a defined plane of rotation

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71DF8C5B8F7B5-1 drill point

71EDD2B858274-1 runout radial

71D0846298D19-1 **1** **NR2 S..3.3**

simple real measure microns

runout radial adjustment **adjrr** ADJRR

magnitude of the range of adjustment perpendicular to the X axis to align cutting edges to the same radial position

Visible class:

71CE7A72B6DA7-1 cutting tool library

Applicable classes:

71D1066F279AD-1 cartridge

71E01A008D13F-1 mill

71E01A00BD93C-1 drill

71E01A081855D-1 tapered broach

71EDD2B858274-1 runout radial

71EDD2B8B8C5B-1 **1** **X1**

simple boolean

runout radial property **rnrp** RNRP

identifier for the capability of adjustment to the radial runout of a tool item or an adaptive item