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DD ISO/TS 13399-60:2007

Incorporating corrigendum March 2011

Cutting tool data representation and exchange —

Part 60: Reference dictionary for connection systems

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British Standards

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National foreword

This Draft for Development was published by BSI. It is the UK implementation of ISO/TS 13399-60:2007, incorporating corrigendum March 2011.

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

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

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

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

The UK participation in its preparation was entrusted to Technical Committee MTE/18, Tools tips and inserts for cutting applications.

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

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

This Draft for Development was published under the authority of the Standards Policy and Strategy Committee on 31 May 2007

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Date	Comments
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TECHNICAL SPECIFICATION

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First edition
2007-01-15

Cutting tool data representation and exchange —

Part 60: Reference dictionary for connection systems

Représentation et échange des données relatives aux outils coupants —

Partie 60: Dictionnaire de référence pour les systèmes de connexion

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Foreword

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

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;

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

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

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 13399-60 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]

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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 connection systems of cutting tools with defined cutting edges. 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*.

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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.

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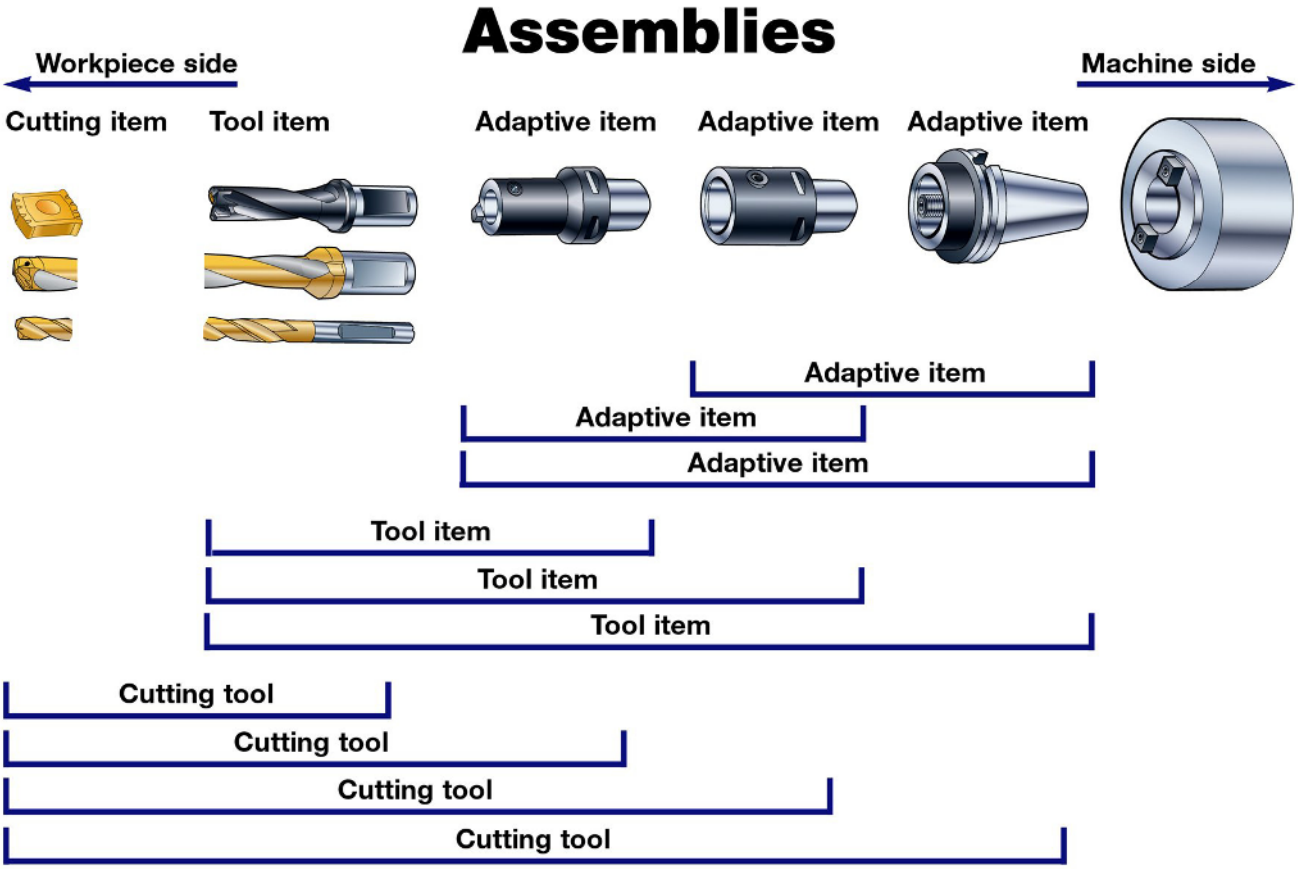

Figure 1 — Examples of different types of assemblies of items

Since the content of those dictionaries evolves according to industrial innovations and constant improvement of technology in cutting tools, a Maintenance Agency has been established for the purposes of:

— correcting errors in the entries of existing classes and properties;

— adding new properties to existing classes;

— adding new classes and their properties;

— managing the status of those properties and classes;

— migrating the dictionary to subsequent editions of ISO 13399 (all parts).

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The secretariat of this Maintenance Agency has been assigned to

Union de Normalisation de la Mécanique

F-92038 Paris La Défense CEDEX

France

by the ISO Technical Management Board.

The website of the Maintenance Agency is available at:
http://www.unm.fr/en/general/iso13399/default.htm.

The reference dictionaries are available in the form of EXPRESS files on the website of the Maintenance Agency. These files are considered complementary to this Technical Specification; they can be freely downloaded and used for cutting tool data representation and exchange.

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

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Cutting tool data representation and exchange —

Part 60:
Reference dictionary for connection systems

1 Scope

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

This part of ISO 13399 specifies a reference dictionary that contains

a) definitions and identifications of the classes of connection systems for cutting tools, with an associated classification scheme,

b) definitions and identifications of the data element types that represent the properties of connection systems for cutting tools,

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 connection systems for cutting tools;

— standard data that represent the various properties connection systems for cutting tools;

— standard data that represent domains of values used for properties of connection systems for cutting tools;

— 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.

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— 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, tool items, assembly items, adaptive items, or for reference systems and common concepts, 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
cutting tool
device or assembly of items for removing material from a workpiece through a shearing action at the defined cutting edge or edges of the device

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

[ISO 13399-1]

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

[ISO 10303-1]

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

[ISO 13584-42]

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

[ISO 10303-1]

3.8
data type
domain of values

[ISO 10303-11]

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

[ISO 13584-511]

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

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

NOTE Adapted from ISO 10303-11.

3.11
entity data type
representation of an entity

[ISO 10303-11]

3.12
entity instance
named unit of data that represents a unit of information within the class defined by an entity and which is a member of the domain established by an entity data type

[ISO/TS 13399-2]

3.13
family of items
simple or generic family of items

[ISO 13584-42]

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

[ISO 13584-42]

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3.15
implementation method
means for computers to process or exchange data

[ISO 10303-1]

3.16
information
facts, concepts or instructions

[ISO 10303-1]

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

[ISO 10303-1]

3.18
machine side
identification of a direction pointing towards the machine

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

[ISO 3002-1]

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

[ISO 13584-511]

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

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

NOTE Adapted from ISO 13584-42.

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

[ISO 13584-42]

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

[ISO 13584-42]

3.24
workpiece
object on which a cutting action is performed

[ISO/TS 13399-2]

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3.25
workpiece side
identification of a direction pointing towards the workpiece

[ISO/TS 13399-2]

4 Abbreviated terms

BSU basic semantic unit

DET data element type

5 Representation of the ontology concepts as dictionary entries

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

EXAMPLE "connection interface feature" is the name of a concept in the ontology. **connection_interface_feature** is the identifier of the class in the dictionary that represents the concept.

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

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

5.1 connection_interface_feature

connection_interface_feature is a generic family of those parts of a tool item or assembly item that form a coupling to another tool item or assembly item or machine tool. Definitions and further sub-division of these classes can be found in Annex C.

connection_interface_feature has the following subclasses: [2)]

— **ABS_System_Komet**;

— **AIF_Adjustable_Interface_Dihart**;

— **AWN_Prisma_connection_Schwanog**;

— **BFA_drill_chuck_connection**;

— **BKA_boring_head_connection**;

— **BKC_boring_head_connection_Coromant**;

— **BRP_Bridgeport_connection**;

---

2) The identifications for some of these entities are derived from commercial trade names and company names that may be protected. Their use in this part of ISO 13399 is justified by their being in common use with no accepted generic alternatives. This information is given for the convenience of users of this part of ISO 13399 and does not constitute an endorsement by ISO of these products.

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— **BTS_Block_Tool_System_Coromant**;

— **BUF_boring_and_chamfer_system**;

— **CBC_Coromant_bridge_connection**;

— **CCB_Coromant_CoroBore**;

— **CCM_Coromant_Cap_Mounting**;

— **CCS_Coromant_Capto_system**;

— **CDB_Coromant_Duobore**;

— **CFB_Coromant_Fine_Boring**;

— **CKB_Kaiser_bore_connection**;

— **CKS_Kaiser_shank_connection**;

— **CMB_Coromant_Modular_boring**;

— **CMS_Coromant_Modular_Serrated_mounting**;

— **FCM_Flexible_Coupling_Modular**;

— **FDA_milling_arbor_connection**;

— **FLC_flange_connection_Coromant**;

— **FLK_flange_connector_Kennametal**;

— **FTS_Flexible_Tooling_System_Kennametal**;

— **GMS_Graflex_Modular_System_SECO**;

— **GRL_Granlund_connection**;

— **HEE_HE-/HF-system_EMUGE**;

— **HFS_head_fitting_system_Mapal**;

— **HSK_hollow_taper_shank**;

— **HSZ_hollow_cylindrical_shank**;

— **HTS_deep_drilling_system**;

— **KKG_stub_taper**;

— **KKH_cartridge_interface**;

— **KMB_Kennametal_ModBore_system**;

— **KMC_Kennametal_cartridge_mounting**;

— **KMM_Kennametal_Micro_system**;

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— **KMT_KM-UTS_system_Kennametal/Widia**;

— **KRS_Kennametal_Romicron_system**;

— **KVT_KV_system_Kennametal**;

— **MBS_Multi_Blade_System_Coromant**;

— **MCS_modular_cartridge_system_Kennametal**;

— **MEG_metric_taper**;

— **MKG_Morse_taper**;

— **MVS_modular_connection_system_Wohlhaupter**;

— **NCT_Novex-NC-Tools_Walter**;

— **PMC_prismatic_connection_Coromant**;

— **PMD_prismatic_connection_standard**;

— **PMK_prismatic_connection_Kennametal**;

— **PMS_prismatic_connection_SECO**;

— **RFX_Rotaflex_system_Widia**;

— **SAC_screw_ connection_Coromant**;

— **SBA_SBA-system_Komet**;

— **SCA_SECO_cartridge_mounting**;

— **SCR_SECO_crownlock_connection**;

— **SKG_Steep_taper**;

— **SMM_SECO_minimaster**;

— **SMS_SECO_modular_serrated_connection**;

— **SPK_holding_arbor**;

— **SRT_SECO_R2_shank**;

— **STH_automotive_shank**;

— **SWB_quick_change_connection**;

— **SZB_collet_shortened_design_Biax**;

— **SZC_collet_connection_Coromant**;

— **SZD_collet_connection_standard**;

— **SZE_collet_connection_Erikson**;

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— **SZP_collet_Eminent-Perman**;

— **SZR_collet_KSF_Roehm**;

— **SZS_collet_Steinel_Bohrmaster**;

— **URM_Urma_connection**;

— **UTS_UTS_Widia**;

— **VAS_Variant_System_Coromant**;

— **VKT_rectangular_connection**;

— **VLS_Varilock_System_Coromant**;

— **ZYL_cylindrical_shank_connection**;

— **ZYV_VDI_shank.**

6 Properties for connection interface feature

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

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

Table 1 — Property names and identification codes

Property name	Identification code (BSU)
connection code machine side	71D102AE3B252
connection code workpiece side	71D102AE8A5A9

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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 (60) version (1)}

is assigned to this part of ISO 13399.

The meaning of this value is defined in ISO/IEC 8824-1 and is 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 (60) version (1) object (1) connection interface (1)}

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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 class of connection interface feature. The purpose of the table is to show the relationships between the classes related to the connection interface feature and the other classes in ISO 13399.

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

Table B.1 — Classification structure

Classes	Parent class	Class BSU
cutting tool library	Root class	71CE7A72B6DA7
adaptive item type	71CE7A72B6DA7	71EAD37F18F34
adjustment	71CE7A72B6DA7	71ED884159C90
assembly item type	71CE7A72B6DA7	71CE7A795C05C
bolt hole circle	71CE7A72B6DA7	71E02520881F1
connection interface feature	71CE7A72B6DA7	71DF8C37D9115
ABS System Komet	71DF8C37D9115	71ED66AC44D48
variant 01 of ABS System Komet	71ED66AC44D48	71EF07EABDA7A
variant 02 of ABS System Komet	71ED66AC44D48	71EF07EB0646B
AIF Adjustable Interface Dihart	71DF8C37D9115	71EF0BAE19FE3
variant 01 of AIF Adjustable Interface Dihart	71EF0BAE19FE3	71EF0BAE384FA
AWN Prisma connection Schwanog	71DF8C37D9115	71EF0BAE640B8
variant 01 of AWN Prisma connection Schwanog	71EF0BAE640B8	71EF0BAE84362
BFA drill chuck connection	71DF8C37D9115	71ED66B6D07DD
variant 01 of BFS drill chuck connection	71ED66B6D07DD	71EF07FF67B22
variant 02 of BFS drill chuck connection	71ED66B6D07DD	71EF07FF8342C
variant 03 of BFS drill chuck connection	71ED66B6D07DD	71EF07FF9A5F1
BKA boring head connection	71DF8C37D9115	71ED66AC8B274
variant 01 of BKA boring head connection	71ED66AC8B274	71EF07F476F41
variant 02 of BKA boring head connection	71ED66AC8B274	71EF07F4BD4DB
variant 03 of BKA boring head connection	71ED66AC8B274	71EF07F4EADA0
variant 04 of BKA boring head connection	71ED66AC8B274	71EF07F50A5F7
variant 05 of BKA boring head connection	71ED66AC8B274	71EF07F53004D
variant 06 of BKA boring head connection	71ED66AC8B274	71EF07F54F030
BKC boring head connection Coromant	71DF8C37D9115	71ED66B62F072
variant 01 of BKC boring head connection Coromant	71ED66B62F072	71EF08001A258

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Table B.1 (*continued*)

Classes	Parent class	Class BSU
BRP Bridgeport connection	71DF8C37D9115	71ED66B6EEC90
variant 01 of BRP Bridgeport connection	71ED66B6EEC90	71EF0804A302F
BTS Block Tool System Coromant	71DF8C37D9115	71ED66B0A4FC6
variant 01 of BTS Block Tool System	71ED66B0A4FC6	71EF0804C4329
BUF boring and chamfer system	71DF8C37D9115	71EF0BAEE28FC
variant 01 of BUF boring and chamfer system	71EF0BAEE28FC	71EF0BAF5FE3B
CBC Coromant bridge connection	71DF8C37D9115	71EF0BB8284F3
variant 01 of CBC Coromant bridge connection	71EF0BB8284F3	71EF0BB840816
CCB Coromant CoroBore	71DF8C37D9115	71EF0BB5F2859
variant 01 of CCB Coromant Corobore	71EF0BB5F2859	71EF0BB61BF20
variant 02 of CCB Coromant Corobore	71EF0BB5F2859	71EF0BB6E82EB
CCM Coromant Cap Mounting	71DF8C37D9115	71EF0BB70F7C7
variant 01 of CCM Coromant Cap Mounting	71EF0BB70F7C7	71EF0BB71801D
CCS Coromant Capto system	71DF8C37D9115	71ED66B709CAF
variant 01 of CCM Coromant Capto Sysytem	71ED66B709CAF	71EF0804EB914
CDB Coromant Duobore	71DF8C37D9115	71FACDBFF369F
variant 01 of CDB Coromant Duobore	71FACDBFF369F	71FACDC0554A1
variant 02 of CDB Coromant Duobore	71FACDBFF369F	71FACDC1144DE
CFB Coromant Fine Boring	71DF8C37D9115	71EF0BB74011A
variant 01 of CFB Coromant Fine Boring	71EF0BB74011A	71EF0BB74922A
variant 02 of CFB Coromant Fine Boring	71EF0BB74011A	71EF0BB763D01
variant 03 of CFB Coromant Fine Boring	71EF0BB74011A	71EF0BB775C8C
CKB Kaiser bore connection	71DF8C37D9115	71EF0BB792410
variant 01 of CKB Kaiser bore connection	71EF0BB792410	71EF0BB7BEFEC
CKS Kaiser shank connection	71DF8C37D9115	71EF0BB7DFCAE
variant 01 of CKS Kaisernshank connection	71EF0BB7DFCAE	71EF0BB804A8A
CMS Coromant Modular Serrated mounting	71DF8C37D9115	71EF080049770
variant 01 of CMS Coromant Modular Serrated system	71EF080049770	71EF080072664
variant 02 of CMS Coromant Modular Serrated system	71EF080049770	71EF08045D1DC
CUD Coromant U-drill connection	71DF8C37D9115	71FACDC80C1ED
variant 01 of CUD Coromant U-drill connection	71FACDC80C1ED	71FACDC87FE41
FCM Flexible Coupling Modular	71DF8C37D9115	71ED66ACB787C
variant 01 of FCM flexible coupling modular system	71ED66ACB787C	71EF07F5962C7
variant 02 of FCM flexible coupling modular system	71ED66ACB787C	71EF07F5CC5E9

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Table B.1 (*continued*)

Classes	Parent class	Class BSU
FDA milling arbor connection	71DF8C37D9115	71ED66ACCAECB
variant 01 of FDA milling arbor	71ED66ACCAECB	71EF07F616F76
variant 02 of FDA milling arbor	71ED66ACCAECB	71EF07F6D9E5E
variant 03 of FDA milling arbor	71ED66ACCAECB	71EF07FB0C25D
variant 11 of FDA milling arbor	71ED66ACCAECB	71EF07FB3EFA1
variant 12 of FDA milling arbor	71ED66ACCAECB	71EF07FB6287C
variant 13 of FDA milling arbor	71ED66ACCAECB	71EF07FB984BB
variant 21 of FDA milling arbor	71ED66ACCAECB	71EF07FBDC4EF
variant 22 of FDA milling arbor	71ED66ACCAECB	71EF07FC1A78F
variant 23 of FDA milling arbor	71ED66ACCAECB	71EF07FC4228F
FLC flange connection Coromant	71DF8C37D9115	71EF0BB934E10
variant 01 of FLC flange connection Coromant	71EF0BB934E10	71EF0BB94B9C4
FLK flange connector Kennametal	71DF8C37D9115	71ED66B162A10
variant 02 of FLK flange connection Kennametal	71ED66B162A10	71EF08050689D
variant 03 of FLK flange connection Kennametal	71ED66B162A10	71EF0BB99721C
variant 04 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBE406B1
variant 05 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBE6A270
variant 06 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBE88271
variant 07 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBEA15EE
variant 08 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBEBE60D
variant 09 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBEE8C20
variant 10 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBEFDE0D
variant 11 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBF1AD8C
variant 12 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBF43055
variant 13 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBF4C436
variant 14 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBF67333
variant 15 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBF7F75A
variant 16 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBF9869E
variant 17 of FLK flange connection Kennametal	71ED66B162A10	71EF0BBFBD19F
FTS Flexible Tooling System	71DF8C37D9115	71ED66B653708
variant 01 of FTS Flexible Tooling System Kennametal	71ED66B653708	71EF0BBFDAEA7
GMS Graflex Modular System SECO	71DF8C37D9115	71ED66AD18B20
variant 01 of GMS Graflex modular system	71ED66AD18B20	71EF07FC94651
GRL Granlund connection	71DF8C37D9115	71ED66AD3543F
variant 01 of GRL Granlund connection	71ED66AD3543F	71EF07FD3C287
HEE HE-/HF-system EMUGE	71DF8C37D9115	71EF0BC1B193C
variant 01 of HEE HE-/HF system EMUGE	71EF0BC1B193C	71EF0BC26EC04

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Table B.1 (*continued*)

Classes	Parent class	Class BSU
HFS head fitting system Mapal	71DF8C37D9115	71EF0BC29E34D
variant 01 of HFS head fitting system Mapal	71EF0BC29E34D	71EF0BC2B94A3
HSK hollow taper shank	71DF8C37D9115	71ED66B71F0A5
variant 01 of HSK hollow taper shank	71ED66B71F0A5	71EF0BC00EF7A
variant 02 of HSK hollow taper shank	71ED66B71F0A5	71EF0BC053A2A
variant 03 of HSK hollow taper shank	71ED66B71F0A5	71EF0BC085D25
variant 04 of HSK hollow taper shank	71ED66B71F0A5	71EF0BC0CCD59
HSZ hollow cylindrical shank	71DF8C37D9115	71ED66AD7B0D9
variant 01 of HSZ hollow cylindrical shank	71ED66AD7B0D9	71EF07FD7F301
variant 02 of HSZ hollow cylindrical shank	71ED66AD7B0D9	71EF0BC790F48
variant 03 of HSZ hollow cylindrical shank	71ED66AD7B0D9	71EF0BC7E4010
HTS deep drilling system	71DF8C37D9115	71ED66ADA5674
variant 01 of HTS deep drilling system Kennametal	71ED66ADA5674	71EF0BC823EAA
variant 02 of HTS deep drilling system Kennametal	71ED66ADA5674	71EF0BC8D1F91
KKG stub taper	71DF8C37D9115	71EF0BC91557B
variant 01 of KKG stub taper	71EF0BC91557B	71EF0BC9214D1
variant 02 of KKG stub taper	71EF0BC91557B	71EF0BC949990
KKH cartridge interface	71DF8C37D9115	71ED66B17CDFB
variant 01 of KKH ISO cartridge mounting	71ED66B17CDFB	71EF0BC984FAA
KMB Kennametal ModBore system	71DF8C37D9115	71ED66B65F546
variant 01 of KMB ModBore System Kennametal	71ED66B65F546	71EF0BC9FBDB7
variant 02 of KMB ModBore System Kennametal	71ED66B65F546	71EF0BCA2A5E6
KMC Kennametal cartridge mounting	71DF8C37D9115	71ED66B19A2E0
variant 02 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F685CEF
variant 03 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F6CC58B
variant 04 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F6E4567
variant 05 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F6F9430
variant 06 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F71619F
variant 07 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F730A50
variant 08 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F74607B
variant 09 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F75CACB
variant 10 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F773A6B
variant 11 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F78E88A
variant 12 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F7AF2F3
variant 13 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F7D7E43
variant 14 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F7F009F
variant 15 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F8038C3
variant 16 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F810899
variant 17 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F826471

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Table B.1 (*continued*)

Classes	Parent class	Class BSU
variant 18 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F84D9E8
variant 19 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F858DB9
variant 20 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F86F70F
variant 21 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F884E83
variant 22 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F89C4E9
variant 23 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F8B170D
variant 24 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F8BCB2D
variant 25 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F8D168B
variant 26 of KMC Kennametal cartridge mounting	71ED66B19A2E0	71EF16F91618D
KMM Kennametal Micro system	71DF8C37D9115	71EF16F97D172
variant 01 of KMM Kennametal micro system	71EF16F97D172	71EF16F9A3BAE
variant 02 of KMM Kennametal micro system	71EF16F97D172	71EF16F9BF2B6
KMT KM-UTS system Kennametal/Widia	71DF8C37D9115	71ED66B74D6DF
variant 01 of KMT KM-UTS system Kennametal/Widia	71ED66B74D6DF	71EF16F9D45A6
variant 02 of KMT KM-UTS system Kennametal/Widia	71ED66B74D6DF	71EF16FA26760
variant 03 of KMT KM-UTS system Kennametal/Widia	71ED66B74D6DF	71EF16FE1F4DB
variant 04 of KMT KM-UTS system Kennametal/Widia	71ED66B74D6DF	71EF16FE2A60C
KRS Kennametal Romicron system	71DF8C37D9115	71ED66B983935
variant 01 of KRS Kennametal Romicron System	71ED66B983935	71EF16FE6C4DD
variant 02 of KRS Kennametal Romicron System	71ED66B983935	71EF16FE88AAB
KVT KV system Kennametal	71DF8C37D9115	71ED66B999EED
variant 01 of KVT KV system Kennametal	71ED66B999EED	71EF16FEBD7E4
variant 02 of KVT KV system Kennametal	71ED66B999EED	71EF16FED3D33
MBS Multi Blade System Coromant	71DF8C37D9115	71EF16FEFE0AF
variant 01 of MBS Multi Blade	71EF16FEFE0AF	71EF16FF1EB17
MCS modular cartridge system Kennametal	71DF8C37D9115	71ED66B1C3A98
variant 01 of MCS modular cartridge system Kennametal	71ED66B1C3A98	71EF16FF5C435
variant 02 of MCS modular cartridge system Kennametal	71ED66B1C3A98	71EF16FF75F49
variant 03 of MCS modular cartridge system Kennametal	71ED66B1C3A98	71EF16FF96879
variant 04 of MCS modular cartridge system Kennametal	71ED66B1C3A98	71EF16FFA94C6
MEG metric taper	71DF8C37D9115	71ED66B9B5DB8
variant 10 of MEG metric taper	71ED66B9B5DB8	71EF1E87A1AFC
variant 11 of MEG metric taper	71ED66B9B5DB8	71EF1E87C88D7
variant 12 of MEG metric taper	71ED66B9B5DB8	71EF1E87D60B5
variant 13 of MEG metric taper	71ED66B9B5DB8	71EF1E87FABF2
variant 20 of MEG metric taper	71ED66B9B5DB8	71EF1E88337E1
variant 21 of MEG metric taper	71ED66B9B5DB8	71EF1E884C33B
variant 22 of MEG metric taper	71ED66B9B5DB8	71EF1E886526B

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Classes	Parent class	Class BSU
variant 23 of MEG metric taper	71ED66B9B5DB8	71EF1E887AC99
variant 30 of MEG metric taper	71ED66B9B5DB8	71EF1E88A9D3B
variant 31 of MEG metric taper	71ED66B9B5DB8	71EF1E88D832F
variant 32 of MEG metric taper	71ED66B9B5DB8	71EF1E88F44A3
variant 33 of MEG metric taper	71ED66B9B5DB8	71EF1E89126E9
variant 40 of MEG metric taper	71ED66B9B5DB8	71EF1E8940F72
variant 41 of MEG metric taper	71ED66B9B5DB8	71EF1E895BA49
variant 42 of MEG metric taper	71ED66B9B5DB8	71EF1E8983142
variant 43 of MEG metric taper	71ED66B9B5DB8	71EF1E899E483
MKG Morse taper	71DF8C37D9115	71ED66B9CF5A0
variant 10 of MKG morse taper	71ED66B9CF5A0	71EF1E89BDD01
variant 11 of MKG morse taper	71ED66B9CF5A0	71EF1E89EB4C2
variant 12 of MKG morse taper	71ED66B9CF5A0	71EF1E8A033CA
variant 13 of MKG morse taper	71ED66B9CF5A0	71EF1E8A1AACC
variant 20 of MKG morse taper	71ED66B9CF5A0	71EF1E8A38E35
variant 21 of MKG morse taper	71ED66B9CF5A0	71EF1E8E2EE7E
variant 22 of MKG morse taper	71ED66B9CF5A0	71EF1E8E4A3B4
variant 23 of MKG morse taper	71ED66B9CF5A0	71EF1E8E797B3
variant 30 of MKG morse taper	71ED66B9CF5A0	71EF1E8E931E0
variant 31 of MKG morse taper	71ED66B9CF5A0	71EF1E8EADB27
variant 32 of MKG morse taper	71ED66B9CF5A0	71EF1E8ECB31A
variant 33 of MKG morse taper	71ED66B9CF5A0	71EF1E8EF27D8
variant 40 of MKG morse taper	71ED66B9CF5A0	71EF1E8F157CF
variant 41 of MKG morse taper	71ED66B9CF5A0	71EF1E8F42243
variant 42 of MKG morse taper	71ED66B9CF5A0	71EF1E8F6F981
variant 43 of MKG morse taper	71ED66B9CF5A0	71EF1E8F8B318
MVS modular connection system Wohlhaupter	71DF8C37D9115	71ED66AE75E58
variant 01 of MVS modular connection system Wohlhaupter	71ED66AE75E58	71EF1E8FB6234
NCT Novex-NC-Tools Walter	71DF8C37D9115	71ED66B9F6D76
variant 01 of NCT Novex-NC-Tools Walter	71ED66B9F6D76	71EF1E8FFD738
PMC prismatic connection Coromant	71DF8C37D9115	71EF1E9030508
variant 01 of PMC prismatic connection Coromant	71EF1E9030508	71EF1E906A58B
variant 02 of PMC prismatic connection Coromant	71EF1E9030508	71EF1E9082FF5
variant 04 of PMC prismatic connection Coromant	71EF1E9030508	71EF1E90F24F5
variant 07 of PMC prismatic connection Coromant	71EF1E9030508	71EF1E91159E3
PMD prismatic connection standard	71DF8C37D9115	71ED66B1DF8E1
variant 01 of PMD prismatic connection standard	71ED66B1DF8E1	71EF1E915B0BD
PMK prismatic connection Kennametal	71DF8C37D9115	71ED66B5E2C68

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Classes	Parent class	Class BSU
variant 01 of PMK prismatic connection Kennametal	71ED66B5E2C68	71EF1E918967F
PMS prismatic connection SECO	71DF8C37D9115	71EF1E91D5D4F
variant 01 of PMS prismatic connection SECO	71EF1E91D5D4F	71EF1E91EFA2F
RFX Rotaflex system Widia	71DF8C37D9115	71ED66ADD852B
variant 01 of RFX Rotaflex system Widia	71ED66ADD852B	71EF2242723DD
SAC screw connection Coromant	71DF8C37D9115	71EF2242B4D39
variant 01 of SAC screw connection Coromant	71EF2242B4D39	71EF22434D3F1
variant 02 of SAC screw connection Coromant	71EF2242B4D39	71EF2243668E1
variant 03 of SAC screw connection Coromant	71EF2242B4D39	71EF224379DA9
SBA SBA-system Komet	71DF8C37D9115	71EF2242CDE99
variant 01 of SBA SBA-system Komet	71EF2242CDE99	71EF224394D8C
SCA SECO cartridge mounting	71DF8C37D9115	71EF2242E8099
variant 01 of SCA SECO cartridge mounting	71EF2242E8099	71EF2243AFA09
variant 02 of SCA SECO cartridge mounting	71EF2242E8099	71EF2243CB404
variant 03 of SCA SECO cartridge mounting	71EF2242E8099	71EF2243E36FF
SCR SECO crownlock connection	71DF8C37D9115	71EF224302CF7
variant 01 of SCR SECO crownlock connection	71EF224302CF7	71EF2247CCF24
SKG Steep taper	71DF8C37D9115	71ED66BA0F1F7
variant 10 of SKG steep taper	71ED66BA0F1F7	71EF224817F39
variant 11 of SKG steep taper	71ED66BA0F1F7	71EF2248594F2
variant 16 of SKG steep taper	71ED66BA0F1F7	71EF2248775E3
variant 17 of SKG steep taper	71ED66BA0F1F7	71EF22489E8A3
variant 20 of SKG steep taper	71ED66BA0F1F7	71EF2248B8EAB
variant 21 of SKG steep taper	71ED66BA0F1F7	71EF2248CF17E
variant 26 of SKG steep taper	71ED66BA0F1F7	71EF2248DA3F5
variant 27 of SKG steep taper	71ED66BA0F1F7	71EF22490384F
variant 30 of SKG steep taper	71ED66BA0F1F7	71EF22492256B
variant 31 of SKG steep taper	71ED66BA0F1F7	71EF224948944
variant 36 of SKG steep taper	71ED66BA0F1F7	71EF2249532BC
variant 37 of SKG steep taper	71ED66BA0F1F7	71EF224979825
variant 40 of SKG steep taper	71ED66BA0F1F7	71EF224996880
variant 41 of SKG steep taper	71ED66BA0F1F7	71EF2249B2AF9
variant 46 of SKG steep taper	71ED66BA0F1F7	71EF2249D9BD8
variant 47 of SKG steep taper	71ED66BA0F1F7	71EF224A0E1FD
variant 50 of SKG steep taper	71ED66BA0F1F7	71EF224A4275A
variant 51 of SKG steep taper	71ED66BA0F1F7	71EF224A59B6E
variant 56 of SKG steep taper	71ED66BA0F1F7	71EF224A70519
variant 57 of SKG steep taper	71ED66BA0F1F7	71EF224A8BA27

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Classes	Parent class	Class BSU
SMM SECO minimaster	71DF8C37D9115	71EF224AAA436
variant 01 of SMM SECO minimaster	71EF224AAA436	71EF224ADA70A
SMS SECO modular serrated connection	71DF8C37D9115	71EF224ABDBD9
variant 01 of SMS SECO modular serrated connection	71EF224ABDBD9	71EF224AEF279
SPK holding arbor	71DF8C37D9115	71ED66ADFAA9B
variant 01 of SPK holding arbor	71ED66ADFAA9B	71EF25FA05521
variant 02 of SPK holding arbor	71ED66ADFAA9B	71EF25FA3739C
variant 03 of SPK holding arbor	71ED66ADFAA9B	71EF25FA830B8
variant 04 of SPK holding arbor	71ED66ADFAA9B	71EF25FAAB512
variant 05 of SPK holding arbor	71ED66ADFAA9B	71EF25FADB60F
variant 06 of SPK holding arbor	71ED66ADFAA9B	71EF25FAF655C
variant 07 of SPK holding arbor	71ED66ADFAA9B	71EF25FB14928
variant 08 of SPK holding arbor	71ED66ADFAA9B	71EF25FB3DCEC
variant 09 of SPK holding arbor	71ED66ADFAA9B	71EF25FB6D150
variant 10 of SPK holding arbor	71ED66ADFAA9B	71EF25FB8DE89
variant 11 of SPK holding arbor	71ED66ADFAA9B	71EF25FBB4F22
variant 12 of SPK holding arbor	71ED66ADFAA9B	71EF25FC1BBDA
SRT SECO R2 shank	71DF8C37D9115	71EF25FC490BF
variant 01 of SRT SECO R2 shank	71EF25FC490BF	71EF25FC62677
STH automotive shank	71DF8C37D9115	71ED66AE29B8D
variant 01 of STH automotive shank	71ED66AE29B8D	71EF25FCB20D6
SWB quick change connection	71DF8C37D9115	71ED66AE588FA
variant 01 of SWB quick change connection	71ED66AE588FA	71F8F4AAB6B82
SZB collet shortened design Biax	71DF8C37D9115	71EF2955BD8F5
variant 01 of SZB collet shortened design Biax	71EF2955BD8F5	71F8F4ACA903C
SZC collet connection Coromant	71DF8C37D9115	71EF2955D5933
variant 01of SZC collet connection Coromant	71EF2955D5933	71F8F4AD0700A
variant 02 of SZC collet connection Coromant	71EF2955D5933	71F8F4AD0A9D3
SZD collet connection standard	71DF8C37D9115	71ED66BA26E2E
variant 01 of SZD collet connection standard	71ED66BA26E2E	71F8F4ADCFB28
variant 02 of SZD collet connection standard	71ED66BA26E2E	71F8F4ADDFD29
variant 03 of SZD collet connection standard	71ED66BA26E2E	71F8F4ADE49F6
variant 04 of SZD collet connection standard	71ED66BA26E2E	71F8F4ADE904D
variant 11 of SZD collet connection standard	71ED66BA26E2E	71F8F4ADF72B3
variant 12 of SZD collet connection standard	71ED66BA26E2E	71F8F4ADFB413
variant 13 of SZD collet connection standard	71ED66BA26E2E	71F8F4ADFFFF9
SZE collet connection Erikson	71DF8C37D9115	71EF2955F7771
variant 03 of SZE collet connection Erikson	71EF2955F7771	71F8F4AEABB7A
variant 04 of SZE collet connection Erikson	71EF2955F7771	71F8F4AEBB269

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Classes	Parent class	Class BSU
SZP collet Eminent-Perman	71DF8C37D9115	71EF29560D5F6
variant 01 of SZP collet Eminent-Perman	71EF29560D5F6	71F8F4AFC5115
Classes	Parent class	Class BSU
SZR collet KSF Roehm	71DF8C37D9115	71EF2956256D4
variant 01 of SZR collet KSF Roehm	71EF2956256D4	71F8F4B457636
SZS collet Steinel Bohrmaster	71DF8C37D9115	71EF29563BB7E
variant 01 of SZS collet Steinel Bohrmaster	71EF29563BB7E	71F8F4B475442
variant 02 of SZS collet Steinel Bohrmaster	71EF29563BB7E	71F8F4B479EA2
variant 03 of SZS collet Steinel Bohrmaster	71EF29563BB7E	71F8F4B47DB96
URM Urma connection	71DF8C37D9115	71EF2956584ED
variant 01 of URM Urma connection	71EF2956584ED	71F8F4B4A6D29
UTS UTS Widia	71DF8C37D9115	71EF29566E0D4
variant 01 of UTS UTS Widia	71EF29566E0D4	71F8F4B4C5B9A
VAS Variant System Coromant	71DF8C37D9115	71ED66AEA108B
variant 01 of VAS Variant System Coromant	71ED66AEA108B	71F8F4B4DF852
VKT rectangular connection	71DF8C37D9115	71ED66B5FAE04
variant 01 of VKT rectangular connection	71ED66B5FAE04	71F8F4B51A785
VLS Varilock System Coromant	71DF8C37D9115	71ED66AEBC779
variant 01 of VLS Varilock System Coromant	71ED66AEBC779	71F8F4B4F1367
ZYL cylindrical shank connection	71DF8C37D9115	71ED66AF2175B
variant 01 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5348DB
variant 03 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5390AF
variant 04 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B53E3D2
variant 10 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B54FA0D
variant 11 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B554639
variant 13 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B56465A
variant 14 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B56A63D
variant 15 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B56FE57
variant 16 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B57F583
variant 17 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5853C1
variant 18 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B58A106
variant 19 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B597D0B
variant 20 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5ACE12
variant 21 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5B212B
variant 22 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5B7D42
variant 23 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5C5EC2
variant 24 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B5D1A6B
variant 50 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B82CEDE
variant 53 of ZYL cylindrical shank connection	71ED66AF2175B	71F8F4B832F8A

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Table B.1 (*continued*)

Classes	Parent class	Class BSU
ZYV VDI shank	71DF8C37D9115	71ED66AF4BEFE
variant 01 of ZYV VDI shank	71ED66AF4BEFE	71F8F4B863718
variant 02 of ZYV VDI shank	71ED66AF4BEFE	71F8F4B87213D
coolant supply	71CE7A72B6DA7	71DF8C3C065EB
cutting item feature	71CE7A72B6DA7	71DD6C82F72DA
cutting item type	71CE7A72B6DA7	71D1AA6C8FC75
cutting operation	71CE7A72B6DA7	71DFF83D21D50
cutting tool	71CE7A72B6DA7	71CE7A7A5038B
flange	71CE7A72B6DA7	71EC5A767182E
keyway	71CE7A72B6DA7	71DF5C026BCE7
locking mechanism	71CE7A72B6DA7	71EBAB85BB5FA
reference system	71CE7A72B6DA7	71CF2968F7A9E
runout axial	71CE7A72B6DA7	71EDD2B84143C
runout radial	71CE7A72B6DA7	71EDD2B858274
tool item feature	71CE7A72B6DA7	71DD70376771D
tool item type	71CE7A72B6DA7	71E01A004C775
tool thread external	71CE7A72B6DA7	71FC1D22BF4CD
tool thread internal	71CE7A72B6DA7	71FC1D25097D7

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Annex C
(informative)

Class definitions

The content of this annex is limited to the classes of the connection interface feature.

The information for each class is presented as follows.

BSU Code – version number **Revision number**

Preferred name **Short name**

Synonymous name

Definition

NOTE

REMARKS

Illustration reference: Figure <Annex.figure number>

Properties:

Subclasses:

NOTE A particular entry may not have all the elements of this presentation.

71DF8C37D9115-1 **1**

connection interface feature **connect**

family of features of those parts of a tool item or adaptive item that forms a coupling to another tool item or adaptive item or machine tool

Properties:

71D102AE3B252-1 conn code machine side

71D102AE8A5A9-1 conn code workpiece side

Subclasses:

71ED66AC44D48-001 ABS System Komet

71ED66AC8B274-001 BKA boring head connection

71ED66ACB787C-001 FCM Flexible Coupling Modular

71ED66ACCAECB-001 FDA milling arbor connection

71ED66AD18B20-001 GMS Graflex Modular System SECO

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71ED66AD3543F-001	GRL Granlund connection
71ED66AD7B0D9-001	HSZ hollow cylindrical shank
71ED66ADA5674-001	HTS deep drilling system
71ED66ADD852B-001	RFX Rotaflex system Widia
71ED66ADFAA9B-001	SPK holding arbor
71ED66AE29B8D-001	STH automotive shank
71ED66AE588FA-001	SWB quick change connection
71ED66AE75E58-001	MVS modular connection system Wohlhaupter
71ED66AEA108B-001	VAS Variant System Coromant
71ED66AEBC779-001	VLS Varilock System Coromant
71ED66AF2175B-001	ZYL cylindrical shank connection
71ED66AF4BEFE-001	ZYV VDI shank
71ED66B0A4FC6-001	BTS Block Tool System Coromant
71ED66B162A10-001	FLK flange connector Kennametal
71ED66B17CDFB-001	KKH cartridge interface
71ED66B19A2E0-001	KMC Kennametal cartridge mounting
71ED66B1C3A98-001	MCS modular cartridge system Kennametal
71ED66B1DF8E1-001	PMD prismatic connection standard
71ED66B5E2C68-001	PMK prismatic connection Kennametal
71ED66B5FAE04-001	VKT rectangular connection
71ED66B62F072-001	BKC boring head connection Coromant
71ED66B653708-001	FTS Flexible Tooling System
71ED66B65F546-001	KMB Kennametal ModBore system
71ED66B6D07DD-001	BFA drill chuck connection
71ED66B6EEC90-001	BRP Bridgeport connection
71ED66B709CAF-001	CCS Coromant Capto system
71ED66B71F0A5-001	HSK hollow taper shank
71ED66B74D6DF-001	KMT KM-UTS system Kennametal/Widia
71ED66B983935-001	KRS Kennametal Romicron system
71ED66B999EED-001	KVT KV system Kennametal

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71ED66B9B5DB8-001	MEG metric taper
71ED66B9CF5A0-001	MKG Morse taper
71ED66B9F6D76-001	NCT Novex-NC-Tools Walter
71ED66BA0F1F7-001	SKG Steep taper
71ED66BA26E2E-001	SZD collet connection standard
71EF080049770-001	CMS Coromant Modular Serrated mounting
71EF0BAE19FE3-001	AIF Adjustable Interface Dihart
71EF0BAE640B8-001	AWN Prisma connection Schwanog
71EF0BAEE28FC-001	BUF boring and chamfer system
71EF0BB5F2859-001	CCB Coromant CoroBore
71EF0BB70F7C7-001	CCM Coromant Cap Mounting
71EF0BB74011A-001	CFB Coromant Fine Boring
71EF0BB792410-001	CKB Kaiser bore connection
71EF0BB7DFCAE-001	CKS Kaiser shank connection
71EF0BB8284F3-001	CBC Coromant bridge connection
71EF0BB934E10-001	FLC flange connection Coromant
71EF0BC1B193C-001	HEE HE-/HF-system EMUGE
71EF0BC29E34D-001	HFS head fitting system Mapal
71EF0BC91557B-001	KKG stub taper
71EF16F97D172-001	KMM Kennametal Micro system
71EF16FEFE0AF-001	MBS Multi Blade System Coromant
71EF1E9030508-001	PMC prismatic connection Coromant
71EF1E91D5D4F-001	PMS prismatic connection SECO
71EF2242B4D39-001	SAC screw connection Coromant
71EF2242CDE99-001	SBA SBA-system Komet
71EF2242E8099-001	SCA SECO cartridge mounting
71EF224302CF7-001	SCR SECO crownlock connection
71EF224AAA436-001	SMM SECO minimaster
71EF224ABDBD9-001	SMS SECO modular serrated connection
71EF25FC490BF-001	SRT SECO R2 shank

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71EF2955BD8F5-001 SZB collet shortened design Biax

71EF2955D5933-001 SZC collet connection Coromant

71EF2955F7771-001 SZE collet connection Erikson

71EF29560D5F6-001 SZP collet Eminent-Perman

71EF2956256D4-001 SZR collet KSF Roehm

71EF29563BB7E-001 SZS collet Steinel Bohrmaster

71EF2956584ED-001 URM Urma connection

71EF29566E0D4-001 UTS UTS Widia

71FACDBFF369F-001 CDB Coromant Duobore

71FACDC80C1ED-001 CUD Coromant U-drill connection

71ED66AC44D48-1 1

ABS System Komet ABS

connection of cylindrical external shape with cylindrical mating surfaces on the machine side and the workpiece side with the values of dimensions conforming to Komet ABS [3)] with a sliding pin though the machine side connection to locate into the body of the workpiece side

Illustration reference: Figure E.1.

Subclasses:

71EF07EABDA7A-001 variant 01 of ABS System Komet

71EF07EB0646B-001 variant 02 of ABS System Komet

71EF07EABDA7A-1 1

variant 01 of ABS System Komet ABS-01

normal version of ABS System Komet

71EF07EB0646B-1 1

variant 02 of ABS System Komet ABS-02

version of ABS System Komet with tenon drive feature conforming to the dimensions of the ABS-N design

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3) ABS is a registered trademark.

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71EF0BAE19FE3-1 **1**

AIF Adjustable Interface Dihart **AIF**

connection of cylindrical external shape with a cylindrical mating surfaces on the workpiece side and a planar surface secured by screws from the machine side connection.

Illustration reference: Figure E.2.

Subclasses:

71EF0BAE384FA-001 variant 01 of AIF Adjustable Interface Dihart

71EF0BAE384FA-1 **1**

variant 01 of AIF Adjustable Interface Dihart **AIF-01**

normal version of AIF Adjustable Interface Dihart

71EF0BAE640B8-1 **1**

AWN Prisma connection Schwanog **AWN**

connection with dovetail mating surfaces conforming to the dimensions of the Schwanog Prisma system

Illustration reference: Figure E.3.

Subclasses:

71EF0BAE84362-001 variant 01 of AWN Prisma connection Schwanog

71EF0BAE84362-1 **1**

variant 01 of AWN Prisma connection Schwanog **AWN-01**

normal version of AWN Prisma connection Schwanog

71ED66B6D07DD-1 **1**

BFA drill chuck connection **BFA**

connection with conical mating surfaces held by an interference fit between the two surfaces

Illustration reference: Figure E.4.

Subclasses:

71EF07FF67B22-001 variant 01 of BFS drill chuck connection

71EF07FF8342C-001 variant 02 of BFS drill chuck connection

71EF07FF9A5F1-001 variant 03 of BFS drill chuck connection

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71EF07FF67B22-1 **1**

variant 01 of BFS drill chuck connection **BFA-01**

version of BFS drill chuck connection with dimensions conforming to a Morse taper type

71EF07FF8342C-1 **1**

variant 02 of BFS drill chuck connection **BFA-01**

version of BFS drill chuck connection with dimensions conforming to a Jacobs taper type

71EF07FF9A5F1-1 **1**

variant 03 of BFS drill chuck connection **BFA-03**

version of BFS drill chuck connection with dimensions conforming to a tapered mandrel

71ED66AC8B274-1 **1**

BKA boring head connection **BKA**

connection with flanged mating surfaces located by a central boss and secured by screws into the machine side connector

Illustration reference: Figure E.5

Subclasses:

71EF07F476F41-001 variant 01 of BKA boring head connection

71EF07F4BD4DB-001 variant 02 of BKA boring head connection

71EF07F4EADA0-001 variant 03 of BKA boring head connection

71EF07F50A5F7-001 variant 04 of BKA boring head connection

71EF07F53004D-001 variant 05 of BKA boring head connection

71EF07F54F030-001 variant 06 of BKA boring head connection

71EF07F476F41-1 **1**

variant 01 of BKA boring head connection **BKA-01**

version of BKA boring head connection for use with interchangeable heads system H

71EF07F4BD4DB-1 **1**

variant 02 of BKA boring head connection **BKA-02**

version of BKA boring head connection conforming to the dimensions of the Hertel boring heads system

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71EF07F4EADA0-1 **1**

variant 03 of BKA boring head connection **BKA-03**

version of BKA boring head connection for use with adjustable boring heads A

71EF07F50A5F7-1 **1**

variant 04 of BKA boring head connection **BKA-04**

version of BKA boring head connection for use with interchangeable screw-on boring heads

71EF07F53004D-1 **1**

variant 05 of BKA boring head connection **BKA-04**

version of BKA boring head connection with dimensions conforming to Erikson tenth set boring ring

71EF07F54F030-1 **1**

variant 06 of BKA boring head connection **BKA-06**

version of BKA boring head connection with dimensions conforming to Erikson tenth set screw-on-boring head

71ED66B62F072-1 **1**

BKC boring head connection Coromant **BKC**

connection of generally cylindrical form conforming to the dimensions of Coromant system 580 [4] for connecting boring tool items secured by locking screws from the periphery of the machine side connector locating in threads in the workpiece side connector

Illustration reference: Figure E.6.

Subclasses:

71EF08001A258-001 variant 01 of BKC boring head connection Coromant

71EF08001A258-1 **1**

variant 01 of BKC boring head connection Coromant **BKC-01**

normal version of BKC boring head connection Coromant

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4) Coromant system 580 is the trade name of a product supplied by AB Sandvik Coromant. This information is given for the convenience of users of this part of ISO 13399 and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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71ED66B6EEC90-1 **1**

BRP Bridgeport connection **BRP**

connection with cylindrical mating surfaces with a conical section at the entry. The machine side connector is located by a pin in the machine side connector that locates in a groove in the workpiece side connector and the assembly is secured by a screw into the workpiece side connector

Illustration reference: Figure E.7.

Subclasses:

71EF0804A302F-001 variant 01 of BRP Bridgeport connection

71EF0804A302F-1 **1**

variant 01 of BRP Bridgeport connection **BRP-01**

normal version of BRP Bridgeport connection with dimensions confirming to R8

71ED66B0A4FC6-1 **1**

BTS Block Tool System Coromant **BTS**

connector with rectangular mating surfaces conforming to the dimensions of the Coromant Block Tool System[5)] and a locking mechanism using a male form on the machine side connector that can be withdrawn by a drawbar to expand the workpiece side connector

Illustration reference: Figure E.8.

Subclasses:

71EF0804C4329-001 variant 01 of BTS Block Tool System

71EF0804C4329-1 **1**

variant 01 of BTS Block Tool System **BTS-01**

normal version of BTS Block Tool System Coromant

71EF0BAEE28FC-1 **1**

BUF boring and chamfer system **BUF**

connection with cylindrical mating surfaces with components located by a guiding pin and secured by a locking screw

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5) Block Tool System is the trade name of a product supplied by AB Sandvik Coromant. This information is given for the convenience of users of this part of ISO 13399 and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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Illustration reference: Figure E.9.

Subclasses:

71EF0BAF5FE3B-001 variant 01 of BUF boring and chamfer system

71EF0BAF5FE3B-1 1

variant 01 of BUF boring and chamfer system BUF-01

normal version of the BUF boring and chamfer system

71EF0BB8284F3-1 1

CBC Coromant bridge connection CBC

connection to a slide in a bridge by means of a keyway slot

Subclasses:

71EF0BB840816-001 variant 01 of CBC Coromant bridge connection

71EF0BB840816-1 1

variant 01 of CBC Coromant bridge connection CBC-01

normal version of CBC Coromant bridge connection

Illustration reference: Figure E.10.

71EF0BB5F2859-1 1

CCB Coromant CoroBore CCB

connection to hold adjustable cartridges of a boring tool assembly conforming to the dimensions of the Coromant CoroBore [6] system

Subclasses:

71EF0BB61BF20-001 variant 01 of CCB Coromant Corobore

71EF0BB6E82EB-001 variant 02 of CCB Coromant Corobore

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6) CoroBore is the trade name of a product supplied by AB Sandvik Coromant. This information is given for the convenience of users of this part of ISO 13399 and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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71EF0BB61BF20-1 **1**

variant 01 of CCB Coromant Corobore **CCB-01**

version of CCB Coromant Corobore with three cartridges with radial adjustments

Illustration reference: Figure E.11.

71EF0BB6E82EB-1 **1**

variant 02 of CCB Coromant Corobore **CCB-02**

version of CCB Coromant Corobore with one cartridge with radial adjustments

Illustration reference: Figure E.12.

71EF0BB70F7C7-1 **1**

CCM Coromant Cap Mounting **CCM**

connection of cylindrical form to connect a milling cutter to an arbor secured by screws

Illustration reference: Figure E.13.

Subclasses:

71EF0BB71801D-001 variant 01 of CCM Coromant Cap Mounting

71EF0BB71801D-1 **1**

variant 01 of CCM Coromant Cap Mounting **CCM-01**

normal version of a CCM Coromant Cap Mounting

71ED66B709CAF-1 **1**

CCS Coromant Capto system **CCS**

connection with mating surfaces in the form of a tapered hollow polygon [7)]

Illustration reference: Figure E.14.

Subclasses:

71EF0804EB914-001 variant 01 of CCM Coromant Capto Sysytem

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7) Capto and Duobore are the trade names of products supplied by AB Sandvik Coromant. This information is given for the convenience of users of this part of ISO 13399 and does not constitute an endorsement by ISO of the products named. Equivalent products may be used if they can be shown to lead to the same results.

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71EF0804EB914-1 **1**

variant 01 of CCM Coromant Capto Sysytem **CCS-01**

normal version of CCM Coromant Capto System

71FACDBFF369F-1 **1**

CDB Coromant Duobore **CDB**

connection between a dual boring cartridge assembly and another adaptive item [7)]

NOTE Duobore is a registered trade mark of AB Sandvik Coromant.

Subclasses:

71FACDC0554A1-001 variant 01 of CDB Coromant Duobore

71FACDC1144DE-001 variant 02 of CDB Coromant Duobore

71FACDC0554A1-1 **1**

variant 01 of CDB Coromant Duobore **CDB-01**

version of CDB Coromant Duobore with radial adjustment and axial adjustment by the addition of a shim

Illustration reference: Figure E.15.

71FACDC1144DE-1 **1**

variant 02 of CDB Coromant Duobore **CDB-01**

version of CDB Coromant Duobore with radial adjustment and axial adjustment by movement of a cartridge

Illustration reference: Figure E.16.

71EF0BB74011A-1 **1**

CFB Coromant Fine Boring **CFB**

connections to enable the assembly of a fine boring tool conforming to the dimensions of a Coromant Fine Boring Unit

Subclasses:

71EF0BB74922A-001 variant 01 of CFB Coromant Fine Boring

71EF0BB763D01-001 variant 02 of CFB Coromant Fine Boring

71EF0BB775C8C-001 variant 03 of CFB Coromant Fine Boring

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71EF0BB74922A-1 **1**

variant 01 of CFB Coromant Fine Boring CFB-01

version of CFB Coromant Fine Boring to hold a cartridge to enable the assembly of a fine boring tool

Illustration reference: Figure E.17.

71EF0BB763D01-1 **1**

variant 02 of CFB Coromant Fine Boring CFB-02

version of CFB Coromant Fine Boring to connect a boring head to a boring adaptor to enable the assembly of a fine boring tool

Illustration reference: Figure E.18.

71EF0BB775C8C-1 **1**

variant 03 of CFB Coromant Fine Boring CFB-03

version of CFB Fine Boring to connect a boring unit into a boring bar secured by three screws into the machine side connector to enable the assembly of a fine boring tool

Illustration reference: Figure E.19.

71EF0BB792410-1 **1**

CKB Kaiser bore connection **CKB**

connection of cylindrical form with cylindrical mating surfaces located with two diametrical keys on the machine side connector and secured by a pin through the two components

Illustration reference: Figure E.20.

Subclasses:

71EF0BB7BEFEC-001 variant 01 of CKB Kaiser bore connection

71EF0BB7BEFEC-1 **1**

variant 01 of CKB Kaiser bore connection CKB-01

normal version of CKB Kaiser bore connection

71EF0BB7DFCAE-1 **1**

CKS Kaiser shank connection **CKS**

connection of cylindrical form with cylindrical mating surfaces located with two diametrical keys on the workpiece side connector and secured by a pin through the two components

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