
**Cutting tool data representation and
exchange —**

Part 72:

**Creation of documents for the
standardized data exchange —
Definition of properties for drawing
header and their XML-data exchange**

*Représentation et échange des données relatives aux outils
coupants —*

*Partie 72: Création de la documentation pour l'échange de données
normalisées — Définition des propriétés des cartouches de plans et
leur échange de données en XML*

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Foreword

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

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

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

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 29, *Small tools*.

ISO/TS 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 70: Graphical data layout — Layer settings for tool layout* [Technical Specification]
- *Part 71: Graphical data layout — Creation of documents for the standardized data exchange — Graphical product information* [Technical Specification]
- *Part 72: Creation of documents for the standardized data exchange — Definition of properties for drawing header and their XML-data exchange* [Technical Specification]
- *Part 150: Usage guidelines* [Technical Specification]
- *Part 201: Creation and exchange of 3D models — Regular inserts* [Technical Specification]
- *Part 202: Creation and exchange of 3D models — Irregular inserts* [Technical Specification]
- *Part 203: Creation and exchange of 3D models — Replaceable inserts for drilling* [Technical Specification]

- *Part 204: Creation and exchange of 3D models — Inserts for reaming* [Technical Specification]
- *Part 301: Concept for the design of 3D models based on properties according to ISO/TS 13399-3: Modelling of thread-cutting taps, thread-forming taps and thread-cutting dies* [Technical Specification]
- *Part 302: Concept for the design of 3D models based on properties according to ISO/TS 13399-3: Modelling of solid drills and countersinking tools* [Technical Specification]
- *Part 303: Creation and exchange of 3D models — Solid end mills* [Technical Specification]
- *Part 304: Creation and exchange of 3D models — Solid milling cutters with arbor hole* [Technical Specification]
- *Part 307: Creation and exchange of 3D models — End mills for indexable inserts* [Technical Specification]
- *Part 308: Creation and exchange of 3D models — Milling cutters with arbor hole for indexable inserts* [Technical Specification]
- *Part 309: Creation and exchange of 3D models — Tool holders for indexable inserts* [Technical Specification]
- *Part 311: Creation and exchange of 3D models — Solid reamers* [Technical Specification]
- *Part 312: Creation and exchange of 3D models — Reamers for indexable inserts* [Technical Specification]
- *Part 401: Creation and exchange of 3D models — Converting, extending and reducing adaptive items* [Technical Specification]
- *Part 403: Creation and exchange of 3D models — Modelling of driven tool units* [Technical Specification]
- *Part 405: Creation and exchange of 3D models — Collets* [Technical Specification]
- *Part 406: Creation and exchange of 3D models — Modelling of connection interface* [Technical Specification]

The following parts are under preparation:

- *Part 80: Creation and exchange of 3D models — Overview and principles* [Technical Specification]
- *Part 100: Definitions, principles and methods for reference dictionaries* [Technical Specification]
- *Part 305: Creation and exchange of 3D models — Modular tooling systems with adjustable cartridges for boring* [Technical Specification]
- *Part 310: Creation and exchange of 3D models — Turning tools with carbide tips* [Technical Specification]
- *Part 313: Creation and exchange of 3D models — Creation and exchange of 3D models — Burrs* [Technical Specification]
- *Part 314: Creation and exchange of 3D models — Creation and exchange of 3D models — Cartridges for indexable inserts* [Technical Specification]
- *Part 315: Creation and exchange of 3D models — Modelling of machine operated feed out tools* [Technical Specification]

Introduction

This part of ISO/TS 13399 defines the terms, properties and definitions of the drawing frame and drawing content of a computer-aided design. The purpose of this part of ISO/TS 13399 is to provide a common way of an electronic data exchange of graphical product information. However, the aim is the simplified communication during the phase of documentation — namely on the basis of 2D drawings.

Within the 2D drawing, the aim is to separate the proper product description (2D graphic) from the users specific presentation (drawing header). Most of the design orders are forced to use the individual drawing frames of the users. Therefore, a big portion of the design expenditure is used for the creation of the documentation and not for the proper problem solution.

Drawings are one of the most important communicative devices of a producing company. Besides the description of complex workpiece geometries, most cases are request for correspondent documentation, e.g. to support NC-programming or production facilities.

This part of ISO/TS 13399 defines a standardized data exchange format for documentations. Therefore, the effort for maintenance of the documentation is reduced because the product drawing of the supplier or manufacturer is merged automatically into the individual drawing frames of the end users. This concept provides advantage for both supplier/manufacturer and end user, since the particular template is centrally maintained once only.

To support a standardized electronic product data exchange, the content of drawing headers have been examined by means of their common basic elements and the applicability. The identified data fields have been consolidated and may be used for a universal application because of a unified definition of their attributes. Thus, in a defined use case, the graphical product description (2D graphic) and the descriptive data of the product (content of the drawing header) can be merged and be filed as a complete drawing documentation.

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Cutting tool data representation and exchange —

Part 72:

Creation of documents for the standardized data exchange — Definition of properties for drawing header and their XML-data exchange

1 Scope

This part of ISO/TS 13399 defines the necessary text elements of a drawing frame and determines a standardized data exchange format. Therefore, the effort is reduced for the maintenance of documentation because the content of a drawing header is mated into a specific drawing frame by means of using XML technology and an individual mapping table. The benefit of this concept for manufacturer/supplier and end user is the advantage of a central maintenance of the appropriate templates.

This part of ISO/TS 13399 covers the following:

- identification and definition of the data fields;
- identification and definition of the structure of the data fields;
- structure of the data exchange file.

The standardization of drawing formats, e.g. drawing frame, structure of the bill of material, are outside the scope of this part of ISO/TS 13399 which is rather more intended to standardize the data exchange of the product documentations.

The following are outside the scope of this part of ISO/TS 13399:

- layer settings as defined in ISO/TS 13399-70;
- structure of the tool documentation as defined in ISO/TS 13399-71;
- applications where these standard data may be stored or referenced;
- concept of the classification of cutting tool data and their properties;
- concept of the design of 2D drawings for cutting tools;
- concept of the design of 3D models for cutting tools;
- application data for the use of those cutting tools;
- information about the reconditioning of cutting tools;
- information about additional application and usage data (e.g. coolant supply).

2 Normative references

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

ISO 10303-28, *Industrial automation systems and integration — Product data representation and exchange — Part 28: Implementation methods: XML representations of EXPRESS schemas and data, using XML schemas*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE The names and the definitions of the data fields are determined. The data fields and their attributes are listed in [Tables 1](#) and [2](#). Also, the data fields are put together in groups that are identical to the tags of the XML file. Fields are optional by default. In other cases, mandatory (M) or conditional (C) are set (see column “type of field” in [Tables 1](#) and [2](#)).

3.1 Main data

3.1.1 supplier

official name of the organization that deals with the sales and/or distribution of products and services

3.1.2 manufacturer

official name of the organization that deals with the production of products and services

Note 1 to entry: See ISO 13399-1:2006, schema: organization.organization_name.

3.1.3 drawing file

unique name of the file that files electronically the drawing content in two-dimensional directions

Note 1 to entry: This field can be specified as a file name or URL.

Note 2 to entry: See ISO 13399-1:2006, schema: external_file_id_and_location.external_id in case of file name and document_location_property.location_name + external_file_id_and_location.external_id in case of URL.

3.1.4 3D model file

unique name of either the basic 3D model or detailed 3D model file that files electronically a solid or wire frame model in three-dimensional directions

Note 1 to entry: Each of 3D model can be represented in [Table 1](#).

Note 2 to entry: This field can be specified as a file name or URL.

Note 3 to entry: See ISO 13399-1:2006, schema: external_file_id_and_location.external_id in case of file name and document_location_property.location_name + external_file_id_and_location.external_id in case of URL.

3.1.5 geometrical data file

unique name of the file that files electronically the properties according to the specifications of ISO/TS 13399-2, ISO/TS 13399-3 and ISO/TS 13399-4

Note 1 to entry: This field can be specified as a file name or URL.

3.1.6 application data file

unique name of a file that files electronically data of cutting parameters for defined machining operations in a defined structure

Note 1 to entry: This file is outside the scope of a standardized data exchange format.

Note 2 to entry: This field can be specified as a file name or URL.

3.2 Drawing data

3.2.1

manufacturer's drawing number

numerical or alphanumerical identification for a drawing of the manufacturer's product design

Note 1 to entry: This field is mandatory.

3.2.2

drawing description 1

first line of maximum four lines of an uncoded verbal description of an object, in which the importance of the description decreases at higher line number and which is always indicated

3.2.3

drawing description 2

second line of maximum four lines of a description, in which the importance of the description decreases at higher line number and which is always indicated

Note 1 to entry: This field is mandatory.

3.2.4

drawing description 3

third line of maximum four lines of a description, in which the importance of the description decreases at higher line number and which is always indicated

3.2.5

drawing description 4

fourth and last line of maximum four lines of a description, in which the importance of the description decreases at higher line number and which is always indicated

3.2.6

drawing format

designation of a paper or drawing surface size according to ISO or any other valid national standard

3.2.7

scale

ratio of the drawing size to the real size of the object

3.2.8

drawing unit base

information about the units in which the object is drawn either in millimetres (mm) or in inches (in)

3.2.9

drawing design date

calendar date when the object had been recorded by design or drawing at the first time and which cannot be changed even if the object had been later modified

3.2.10

drawing designer name

name of that person responsible for the design and drawing of the object

3.2.11

drawing approved date

calendar date when the object had been checked by design or drawing at the first time and which cannot be changed even if the object had been later modified

3.2.12

drawing approver name

name of that person responsible for the first check of the object

3.3 Revision data

3.3.1

revision number

sequential differentiation of an object with the same content but different change conditions

Note 1 to entry: This field is conditional (mandatory in case revision > 0).

3.3.2

revision change number

identifier for the descriptive content of a modification

3.3.3

revision change description

textual subsumption of the modifications done on the object

3.3.4

revision date

calendar date when the revision took place on the object

3.3.5

revision designer name

name of that person responsible for the revision of the object

3.4 Item data

3.4.1

item ID

unique identification for an item

Note 1 to entry: See ISO 13399-1:2006, schema: item.id.

3.4.2

item name

manufacturer's name of an item

Note 1 to entry: See ISO 13399-1:2006, schema: item.name.

3.4.3

item description

manufacturer's description of an item

Note 1 to entry: See ISO 13399-1:2006, schema: item.description.

3.4.4

item replacement for

name of the item that is replaced

3.5 Customer data

3.5.1

customer name

linguistic common or copyright protected name of the recipient of an item or a service

3.5.2

customer ID

unique identifier of the receiver of an item or a service created by the manufacturer or supplier

3.5.3

customer item ID

customer unique identifier of an item delivered by the manufacturer or supplier

3.5.4**customer drawing number**

customer unique identifier of the drawing delivered by the manufacturer or supplier

3.5.5**customer workpiece description**

naming or another useful description of a workpiece integrated into a manufacturing process of the end user

3.5.6**customer workpiece number**

unique identifier of a workpiece integrated into a manufacturing process of the end user

3.5.7**customer cost centre**

unique identifier according to balance for a differentiated department of the recipient of an object or a service where the object or the service is covered by means of bookkeeping

3.5.8**customer supplier number**

identifier for a manufacturer or supplier created by the end user

3.5.9**customer country**

country where the customer receives the information at the first delivery of the custom solution product

3.6 Process data**3.6.1****process description**

naming or another useful description of a defined working process

3.6.2**process number**

unique identifier of a defined working process

3.6.3**process station name**

naming or another useful description of a local working place where a defined work sequence takes place

3.6.4**process station number**

unique identifier of a local working place where a defined work sequence takes place

3.6.5**machine tool number**

unique identifier of a machine tool where the tool is used

3.6.6**workpiece material**

naming or another useful description of the material the workpiece component is made of

3.7 Bill of material (BOM) data**3.7.1****BOM item ID**

unique identification for the item in the bill of material

Note 1 to entry: See ISO 13399-1:2006, schema: item.id.

3.7.2

BOM item name

manufacturer's name of the item in the bill of material

Note 1 to entry: See ISO 13399-1:2006, schema: item.name.

3.7.3

BOM item description

manufacturer's description of the item in the bill of material

Note 1 to entry: See ISO 13399-1:2006, schema: item.description.

3.7.4

BOM item position

unique identifier for the sequential ordering of the assembly part within the bill of material of the object

3.7.5

BOM item pieces

amount of the part which is assembled in the object

3.7.6

BOM item kind

coded identifier for the kind of the part

Note 1 to entry: Indicator for the lifetime of the BOM item is shorter than the lifetime of the item.

Note 2 to entry: The following entries are allowed:

- " " = no specification;
- W = wear part.

3.7.7

BOM item attribute

coded identifier for the classification of the item in the bill of material

Note 1 to entry: The following entries are allowed:

- A = accessory (e.g. screwdriver);
- B = body;
- F = fixed part (not replaceable);
- I = insert;
- S = spare part (e.g. screw, clamp, etc.).

3.7.8

BOM item included

coded identifier for whether the component is part of the delivery or not

Note 1 to entry: The following entries are allowed:

- F = functional required;
- R = required;
- O = optional.

3.7.9

BOM item material

naming or another useful description of the material the assembly part is made of

3.7.10**BOM item size description**

naming or another useful description of size of a component of the bill of material which is not the real measure of that component

3.7.11**BOM item drawing number**

numerical or alphanumeric identification for a drawing of the component in the bill of material

3.7.12**BOM customer item ID**

customer unique identifier of the item in the bill of material

Note 1 to entry: The item is delivered by the manufacturer or supplier.

3.7.13**BOM item note**

remark additional to the item in the bill of material

4 Additional remark to the item in the bill of material**4.1 General**

[Tables 1](#) and [2](#) list the data fields with their identification numbers, sizes and foreign-language names, as defined in [Clause 3](#).

4.2 Data fields of the XML structure

[Table 1](#) lists the possible fields of the drawing header.

Table 1 — Data fields for the drawing frame — Drawing header fields

| Field ID number | Type of field | English name | French name | Number of characters |
|-----------------|---------------|-------------------------------|-----------------------------------|----------------------|
| | | Main-Data | Données principales | |
| ID10000 | O | Supplier | Fournisseur | 50 |
| ID10001 | M | Manufacturer | Fabricant | 50 |
| ID10002 | O | Drawing file | Plan | 100 |
| ID10003 | O | 3D basic model file | Modèle 3D | 100 |
| ID10006 | O | 3D detailed model file | Modèle 3D détaillé | 100 |
| ID10004 | O | Geometrical data file | Fichier des données géométriques | 100 |
| ID10005 | O | Application data file | Fichier des données d'application | 100 |
| | | Drawing-Data | Informations du plan | |
| ID12000 | M | Manufacturer's drawing number | Numéro de plan fabricant | 50 |
| ID12001 | M | Drawing description 1 | Description 1 du plan | 50 |
| ID12002 | O | Drawing description 2 | Description 2 du plan | 50 |
| ID12003 | O | Drawing description 3 | Description 3 du plan | 50 |
| ID12004 | O | Drawing description 4 | Description 4 du plan | 50 |
| ID12005 | M | Drawing format | Format du plan | 10 |
| ID12006 | M | Scale | Echelle | 10 |
| M mandatory | | | | |
| C conditional | | | | |
| O optional | | | | |

Table 1 (continued)

| Field ID number | Type of field | English name | French name | Number of characters |
|-----------------|---------------|--------------------------------|---|----------------------|
| | | Main-Data | Données principales | |
| ID12007 | M | Drawing unit base | Unité de base du plan | 2 |
| ID12008 | M | Drawing design date | Date de création du plan | 10 |
| ID12009 | M | Drawing designer name | Nom du créateur du plan | 50 |
| ID12010 | M | Drawing approved date | Date de vérification du plan | 10 |
| ID12011 | M | Drawing approver name | Nom du vérificateur du plan | 50 |
| | | Revision-Data | Informations de révision | |
| ID12100 | C | Revision number | Indice de version | 40 |
| ID12101 | O | Revision change number | Indice de révision | 40 |
| ID12102 | O | Revision change description | Description de la modification | 500 |
| ID12103 | C | Revision date | Date de révision | 10 |
| ID12104 | C | Revision designer name | Nom du créateur de la révision | 50 |
| | | Item-Data | Données du objet | |
| ID13000 | M | Item ID | Numéro du objet | 50 |
| ID13001 | M | Item name | Numéro de catalogue | 50 |
| ID13002 | O | Item description | Description de la commande | 100 |
| ID13003 | O | Item replacement for | Remplacé par | 50 |
| | | Customer-Data | Zone de données client | |
| ID21000 | O | Customer name | Nom du client | 50 |
| ID21001 | O | Customer ID | Numéro client | 20 |
| ID21002 | O | Customer item ID | Numéro d'outil client | 50 |
| ID21003 | O | Customer drawing number | Numéro de plan du client | 50 |
| ID21004 | O | Customer workpiece description | Description client de la pièce à usiner | 50 |
| ID21005 | O | Customer workpiece number | Numéro client de la pièce à usiner | 50 |
| ID21006 | O | Customer cost centre | Centre de coût client | 10 |
| ID21007 | O | Customer supplier number | Numéro fournisseur du client | 30 |
| ID21008 | O | Customer country | ... | 30 |
| | | Process-Data | Données du procédé | |
| ID22000 | O | Process description | Description du procédé | 100 |
| ID22001 | O | Process number | Numéro du procédé | 40 |
| ID22002 | O | Process station name | Nom de la station du procédé | 50 |
| ID22003 | O | Process station number | Numéro de la station du procédé | 40 |
| ID22004 | O | Machine tool number | Numéro de machine | 50 |
| ID22005 | O | Workpiece material | Matière à usiner | 50 |
| M mandatory | | | | |
| C conditional | | | | |
| O optional | | | | |

[Table 2](#) lists the possible fields of the bill of material.

Table 2 — Data fields for the drawing frame — Bill of material fields

| Field ID number | Type of field | English name | French name | Number of characters |
|-----------------|---------------|---|--|----------------------|
| | | Bill of material data (BOM-Data) | Nomenclature | |
| ID31000 | 0 | BOM item position | Position de nomenclature | 5 |
| ID31001 | 0 | BOM item pieces | Nombre de pièce de nomenclature | 3 |
| ID31002 | 0 | BOM item description | Désignation de nomenclature | 100 |
| ID31003 | 0 | BOM item material | Matière de nomenclature | 50 |
| ID31004 | 0 | BOM item name | Numéro de produit de nomenclature | 50 |
| ID31005 | 0 | BOM customer item ID | Numéro de nomenclature client de la pièce | 50 |
| ID31006 | 0 | BOM item size_description | Description de nomenclature | 30 |
| ID31007 | 0 | BOM item kind | Nom de la pièce de nomenclature | 1 |
| ID31008 | 0 | BOM item attribute | Attribut de nomenclature | 1 |
| ID31009 | 0 | BOM item included | Partie de nomenclature incluse dans la livraison | 1 |
| ID31010 | 0 | BOM item drawing number | Numéro de plan de nomenclature | 30 |
| ID31011 | 0 | BOM item ID | ... | 50 |
| ID31012 | 0 | BOM item note | ... | 200 |
| 0 optional | | | | |

4.3 Special data field

[Table 3](#) lists data fields not contained in the drawing frame structure, but necessary for the data exchange using XML schemas.

Table 3 — Special data fields for XML data exchange

| Field ID number | Type of field | English name | French name | Number of characters |
|-----------------|---------------|------------------------|------------------------------|----------------------|
| DATE | M | Document creation date | Date de création le document | 10 |
| M mandatory | | | | |

5 XML file

5.1 General

XML documents include an XML instruction with the element name “xml” at the beginning of the file to define the type of document, followed by the version number “1.0” according to ISO 10303-28 and additional attributes. This results with the following determination:

```
<?xml version="1.0" encoding="UTF-8"?>
```

The document-type definition (DTD) is shown in [Annex B](#).

5.2 XML tags

All XML tags determined in [5.5](#) shall have a start and an end element, which shall match exactly by name.

EXAMPLE begin element <tag name>
 end element </tag name>

5.3 Root element

Every XML document contains exactly one XML tag playing the role of the root element that covers all other elements. Elements covered by the root element are named “Child-elements”.

EXAMPLE For Child-elements “*Element 1*” and Child-element “*Element 2*”:

```
<root element>
  Element 1
  Element 2
</root element>
```

The number of elements covered by the root element shall be arbitrary. The number of sub-elements covered by the elements shall be open as well.

5.4 Data element

XML tags that contain values shall have a start element and an end element as well.

EXAMPLE 1 For the value “*information*”:

```
<tag-name>information</tag-name>
```

For a better description or understanding, it is allowed to add attributes to the elements which shall be covered by quotation marks.

EXAMPLE 2 For the attribute to describe an element:

```
<tag-name Desc="Description">information</tag-name>
```

5.5 XML schema determinations

5.5.1 XML tag <Admin-Data>

The reproduction of automatically calculated information of administration shall be necessary for a proper documentation and transparent traceability.

At the current time, this block contains the data field “document creation date” with its field-ID number “DATE” solely.

EXAMPLE

```
<Admin-Data>
  <DATE Desc_EN="Document creation date" FORMAT="YYYY-MM-DD">2013-10-30</DATE>
</ Admin-Data>
```

5.5.2 XML tag <Tool>

All information necessary for the creation of the document of one object shall be covered by the XML tag “Tool” within the XML file. This enables a clear differentiation between different information blocks if the XML file shall be extended later.

5.5.3 XML tag <Main-Data>

The XML tag “Main-Data” encapsulates all general data of a documentation drawing. The individual data elements are defined with their field-ID numbers “ID10###”. The additional included attribute “Desc_xx=” (description) shall improve the readability.

EXAMPLE <ID10000 Desc_EN="Supplier" Desc_FR=" Fournisseur">**supplier name**</ID10000>

If the entries of ID10000 “supplier” and ID10001 “manufacturer” are identical, the data element ID10000 shall be omitted.

5.5.4 XML tag <Drawing-Data>

The XML tag “Drawing-Data” contains all the information necessary to fill out the drawing header. The necessary revision data shall be covered with the XML child-tag “Revision-Data”, if applicable.

EXAMPLE

```
<Drawing-Data>
  <ID12000 Desc_EN="Manufacturer's drawing number">PCLCR2525M12</ID12000>
  <ID12001 multilang="true" Desc_EN="Drawing description 1">
    <Text lang="en">turning tool</Text>
  </ID12001>
  <ID12002 multilang="true" Desc_EN="Drawing description 2">
    <Text lang="en">style L</Text>
  </ID12002>
  <ID12003 multilang="true" Desc_EN="Drawing description 3">
    <Text lang="en">offset</Text>
  </ID12003>
  <ID12004 multilang="true" Desc_EN="Drawing description 4">
    <Text lang="en">#</Text>
  </ID12004>
  <ID12005 Desc_EN="Drawing format">A3</ID12005>
  <ID12006 Desc_EN="Scale">1:1</ID12006>
  <ID12007 Desc_EN="Drawing unit base">mm</ID12007>
  <ID12008 Desc_EN="Drawing design date" Format="YYYY-MM-DD">2006-03-06</ID12008>
  <ID12009 Desc_EN="Drawing designer name">Designer</ID12009>
  <ID12010 Desc_EN="Drawing approved date" Format="YYYY-MM-DD">2006-03-06</ID12010>
  <ID12011 Desc_EN="Drawing approver name">Admin</ID12011>
</Drawing-Data>
```

The block “Drawing-Data” appears once in the XML file. Data elements not necessarily needed for the creation of the drawing header are allowed to be listed as optional.

5.5.5 XML tag <Revision-Data>

Necessary modification notices of a drawing documentation shall be grouped and exchanged within the XML tag “Revision-Data”.

EXAMPLE

```
<Revision-Data>
  <ID12100 Desc_EN="Revision number">11</ID12100>
  <ID12101 Desc_EN="Revision change number">ECN123456</ID12101>
  <ID12102 multilang="true" Desc_EN="Revision change description">
    <Text lang="en">change rake angle to -6°</Text>
  </ID12102>
  <ID12103 Desc_EN="Revision date" Format="YYYY-MM-DD">2007-10-04</ID12103>
  <ID12104 Desc_EN="Revision designer name">Sysadmin2</ID12104>
</Revision-Data>
```

The block “Revision-Data” appears also once in the XML file. Its use is mandatory only if revision data are exchanged.

5.5.6 XML tag <Item-Data>

The XML tag “Item-Data” is mandatory for the XML file because the data shall be used for the identification of the item, which is documented.

EXAMPLE

```
<Item-Data>
  <ID13000 Desc_EN="Item ID">123456789012345678</ID13000>
  <ID13001 Desc_EN="Item name">R220.70-8160-09-10</ID13001>
  <ID13002 Desc_EN="Item description">Milling cutter</ID13002>
```

```
<ID13003 Desc_EN="Item replacement for">123456789012345677</ID13003>
</Item-Data>
```

Beside the correct fill out of the drawing header, this data shall also be used, e.g. for an automated ordering process within ERP systems.

NOTE The value of the data element ID13000 is also used as the identification number of the product within the inventory control system.

5.5.7 XML tag <Customer-Block>

The XML tag “Customer-Block” covers information needed for the user-specific file generation of a documentation drawing. The information is subdivided into the child-tags “Customer-Data” and “Process-Data”.

The “Customer-Block” shall be used solely for the creation of customer specific documentations and therefore shall be necessary essential for special custom solution tool or OEM equipment.

```
<Customer-Block>
    + <Customer-Data>
    + <Process-Data>
</Customer-Block >
```

Figure 1 — Structure of the Customer-Block

5.5.8 XML tag <Customer-Data>

The XML tag “Customer-Data” contains information about the user and about the usage of the product documented.

EXAMPLE

```
<Customer-Data>
<ID21000 Desc_EN="Customer name">Automotive Company</ID21000>
<ID21001 Desc_EN="Customer ID">080862</ID21001>
<ID21002 Desc_EN="Customer item ID">F9-123456</ID21002>
<ID21003 Desc_EN="Customer drawing number">98 765 4321</ID21003>
<ID21004 multilang="true" Desc_EN="Customer workpiecedescription">
  <Text lang="en">engine block</Text>
</ID21004>
<ID21005 Desc_EN="Customer workpiece number">123 456 789</ID21005>
<ID21006 Desc_EN="Customer cost centre">2255</ID21006>
<ID21007 Desc_EN="Customer supplier number">5002365</ID21007>
<ID21008 Desc_EN="Customer country">Zimbabwe</ID21008>
```

<Customer-Data>

Normally, this information is unknown for the manufacturer/supplier. Therefore, the user has maintained these data for his documentation. For the delivery of special customer tools, the user can provide the necessary data.

5.5.9 XML tag <Process-Data>

The XML tag “Process-Data” contains information about the application of the documented product within the manufacturing process.

EXAMPLE

```
<Process-Data>
<ID22000 multilang="true" Desc_EN="Process description">
  <Text lang="en">Cylinder head valve seat</Text>
</ID22000>
<ID22001 Desc_EN="Process number">OP10</ID22001>
<ID22002 multilang="true" Desc_EN="Process station name">
  <Text lang="en">Transfer line 8</Text>
```

```

</ID22002>
<ID22003 Desc_EN="Process station number">6543</ID22003>
<ID22004 Desc_EN="Machine tool number">02468</ID22004>
<ID22005 Desc_EN="Workpiece material">41 CrMo 4V</ID22005>
</Process-Data>

```

5.5.10 XML tag <Sparepart-Data>

The XML tag “Sparepart-Data” covers all the XML tags “BOM”, which describe the assembly parts and mounting parts used in the documented product.

```

<Sparepart-Data>
  +<BOM>
  +<BOM>
  +<BOM>
  +...
</ Sparepart-Data>

```

Figure 2 — Structure of the Sparepart-Data

There are as many as needed XML tag “BOM”. If the documented product does not have any assembly parts, the entire XML tag shall be omitted.

5.5.11 XML tag <BOM>

The XML tag “BOM” contains the information of exactly one assembly or mounting part.

EXAMPLE

```

<BOM>
  <ID31000 Desc_EN="BOM item position">1</ID31000>
  <ID31001 Desc_EN="BOM item pieces">1</ID31001>
  <ID31002 multilang="true" Desc_EN="BOM item description">
    <Text lang="en">shim</Text>
  </ID31002>
  <ID31003 Desc_EN="BOM item material">#</ID31003>
  <ID31004 Desc_EN="BOM item name">T15-4st</ID31004>
  <ID31005 Desc_EN="BOM customer item ID">12345678901234566</ID31005>
  <ID31006 Desc_EN="BOM item size description">T15</ID31006>
  <ID31007 Desc_EN="BOM item kind">W</ID31007>
  <ID31008 Desc_EN="BOM item attribute">S</ID31008>
  <ID31009 Desc_EN="BOM item included">R</ID31009>
  <ID31010 Desc_EN="BOM item drawing number">513.201</ID31010>
  <ID31011 Desc_EN="BOM item ID">12345678901234565</ID31011>
  <ID31012 Desc_EN="BOM item note">Replacable by thinner shim</ID31012>
</BOM>

```

5.6 Structure of the XML file

The basic structure of the XML file for a drawing documentation is shown in [Figure 3](#).

| | |
|--|---------------------------------------|
| <?xml version="1.0" encoding="UTF-8"?> | General (5.1) |
| -<Tool_Data> | Root element (5.3) |
| +<Admin-Data> | Administration data (5.5.1) |
| -<Tool> | Tool data (5.5.2) |
| -<Main-Data> | General information (5.5.3) |
| -<Drawing-Data> | Drawing data (5.5.4) |
| +<Revision-Data> | Revision data (5.5.5) |
| </Drawing-Data> | |
| +<Item-Data> | Item data (5.5.6) |
| </Main-Data> | |
| -<Customer-Block> | Customer information (5.5.7) |
| +<Customer-Data> | Customer data (5.5.8) |
| +<Process-Data> | Process data (5.5.9) |
| </Customer-Block> | |
| -<Sparepart-Data> | Bill of material information (5.5.10) |
| +<BOM> | Sparepart data (5.5.11) |
| +<BOM> | |
| +<BOM> | |
| ... | |
| </Sparepart-Data> | |
| -</Tool> | |
| -</Tool_Data> | |

Figure 3 — Basic structure of an XML file

Annex A (informative)

Example of an XML file of a turning tool

The following XML file of a tool holder with rectangular shank for indexable inserts according to ISO 5610-9 is documented as follows.

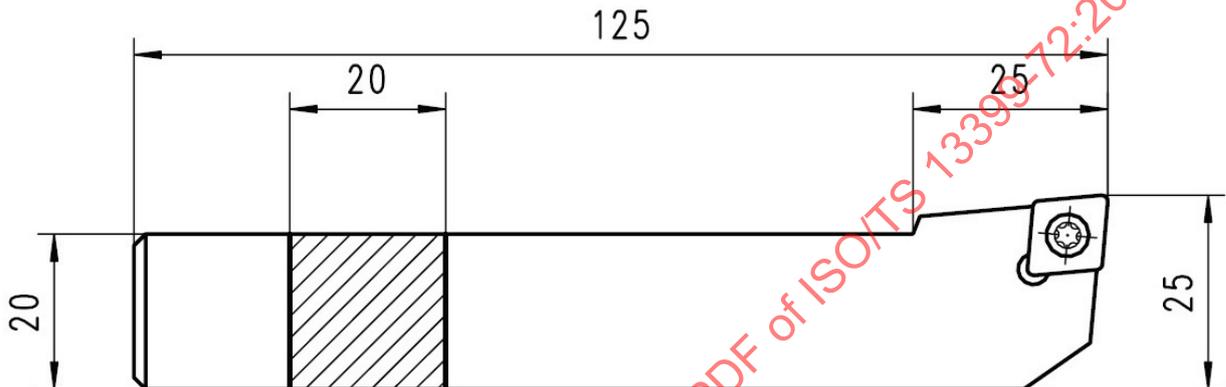


Figure A.1 — Tool holder SCLCR2020K12

XML file structure

```
<?xml version="1.0" encoding="UTF-8" ?>

<Tool_Data>
  <Admin-Data>
    <DATE Desc_EN="Document creation date" Format="YYYY-MM-DD">2013-09-30</DATE>
  </Admin-Data>
  <Tool>
    <Main-Data>
      <id10000 Desc_EN="Supplier">Tool-supplier</id10000>
      <id10001 Desc_EN="Manufacturer">Tools Ltd</id10001>
      <id10002 Desc_EN="Drawing file">75011878.dxf</id10002>

      <Drawing-data>
        <id12000 Desc_EN="Manufacturer's drawing number">123456789</id12000>

        <id12001 multilang="true" Desc_EN="Drawing description 1">
          <Text lang="en">Tool holder</Text>
        </id12001>
        <id12002 multilang="true" Desc_EN="Drawing description 2">
          <Text lang="en">SCLCR2020K12</Text>
        </id12002>
        <id12005 Desc_EN="Drawing format">A3</id12005>
        <id12006 Desc_EN="Drawing Scale">1:1</id12006>
        <id12007 Desc_EN="Drawing unit base">mm</id12007>
        <id12008 Desc_EN="Drawing design date" Format="YYYY-MM-DD">2006-03-06</
id12008>
        <id12009 Desc_EN="Drawing designer name">Sysadmin</id12009>
        <Revision-Data />
      </Drawing-data>

      <Item-data>
        <id13000 Desc_EN="Item ID"> 123456789012345678</id13000>
        <id13001 Desc_EN="Item name">SCLCR2020K12</id13001>
      </Item-data>
    </Main-Data>
  </Tool>
</Tool_Data>
```

```

        <id13002 Desc_EN="Item description">Turning tool holder</id13002>
    </Item-data>
</Main-Data>
<Customer-Block>
    <Customer-Data />
    <Process-Data />
</Customer-Block>
<Sparepart-Data>
    <BOM>
        <id31000 Desc_EN="BOM item position">1</id31000>
        <id31001 Desc_EN="BOMitem pieces">1</id31001>
        <id31002 multilang="true" Desc_EN="BOM item description">
            <Text lang="en">shim</Text>
        </id31002>
        <id31004 Desc_EN="BOM item name">123.19-621</id31004>
        <id31007 Desc_EN="BOM item kind">W</id31007>
        <id31008 Desc_EN="BOM item attribute">S</id31008>
        <id31009 Desc_EN="BOM item included">R</id31009>
    </BOM>
    <BOM>
        <id31000 Desc_EN="BOM item position">2</id31000>
        <id31001 Desc_EN="BOM item pieces">1</id31001>
        <id31002 multilang="true" Desc_EN="BOM item description">
            <Text lang="en">insert screw</Text>
        </id31002>
        <id31004 Desc_EN="BOMitem name">C05012</id31004>
        <id31007 Desc_EN="BOMitem kind">W</id31007>
        <id31008 Desc_EN="BOMitem attribute">S</id31008>
        <id31009 Desc_EN="BOM item included">R</id31009>
    </BOM>
    <BOM>
        <id31000 Desc_EN="BOM item position">3</id31000>
        <id31001 Desc_EN="BOM item pieces">1</id31001>
        <id31002 multilang="true" Desc_EN="BOM item description">
            <Text lang="en">shim screw</Text>
        </id31002>
        <id31004 Desc_EN="BOM item name">CA5008</id31004>
        <id31007 Desc_EN="BOMitem kind">W</id31007>
        <id31008 Desc_EN="BOM item attribute">S</id31008>
        <id31009 Desc_EN="BOM item included">R</id31009>
    </BOM>
    <BOM>
        <id31000 Desc_EN="BOM item position">4</id31000>
        <id31001 Desc_EN="BOM item pieces">1</id31001>
        <id31002 multilang="true" Desc_EN="BOM item description">
            <Text lang="en">wrench</Text>
        </id31002>
        <id31004 Desc_EN="BOM item name">T15-2</id31004>
        <id31007 Desc_EN="BOM item kind">W</id31007>
        <id31008 Desc_EN="BOM item attribute">S</id31008>
        <id31009 Desc_EN="BOM item included">R</id31009>
    </BOM>
</Sparepart-Data>
</Tool>
</Tool_Data>

```

