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**Specifikacija geometrijskih veličin izdelka - Geometrijsko toleriranje - Reference in sistemi referenc - Dopolnilo A1 (ISO 5459:2011/DAM 1:2022)**

Geometrical product specifications (GPS) - Geometrical tolerancing - Datums and datum systems - Amendment 1 (ISO 5459:2011/DAM 1:2022)

Geometrische Produktspezifikation (GPS) - Geometrische Tolerierung - Bezüge und Bezugssysteme - Änderung 1 (ISO 5459:2011/DAM 1:2022)

Spécification géométrique des produits (GPS) - Tolérancement géométrique - Références spécifiées et systèmes de références spécifiées - Amendement 1 (ISO 5459:2011/DAM 1:2022)

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**ICS:**

17.040.10	Tolerance in ujemi	Limits and fits
17.040.40	Specifikacija geometrijskih veličin izdelka (GPS)	Geometrical Product Specification (GPS)

**SIST EN ISO 5459:2011/oprA1:2022**      **en,fr,de**



# DRAFT AMENDMENT

## ISO 5459:2011/DAM 1

ISO/TC 213

Secretariat: BSI

Voting begins on:  
2022-10-24Voting terminates on:  
2023-01-16

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## Geometrical product specifications (GPS) — Geometrical tolerancing — Datums and datum systems

### AMENDMENT 1

*Spécification géométrique des produits (GPS) — Tolérancement géométrique — Références spécifiées et systèmes de références spécifiées*

AMENDEMENT 1

ICS: 17.040.10; 01.100.20

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SIST EN ISO 5459:2011/oprA1:2022

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**ISO/CEN PARALLEL PROCESSING**



Reference number  
ISO 5459:2011/DAM 1:2022(E)

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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](http://www.iso.org/directives)).

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This document was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).



# Geometrical product specifications (GPS) — Geometrical tolerancing — Datums and datum systems

## AMENDMENT 1

### 1 Clause 2

*Replace Clause 2 by the following.*

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 128-2:2020, *Technical product documentation (TPD) — General principles of representation — Part 2: Basic conventions for lines*

ISO 1101:2017, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 2692, *Geometrical product specifications (GPS) — Geometrical tolerancing — Maximum material requirement (MMR), least material requirement (LMR) and reciprocity requirement (RPR)*

ISO 17450-1, *Geometrical product specifications (GPS) — General concepts — Part 1: Model for geometrical specification and verification*

ISO 17450-2, *Geometrical product specifications (GPS) — General concepts — Part 2: Basic tenets, specifications, operators, uncertainties and ambiguities*

ISO 81714-1, *Design of graphical symbols for use in the technical documentation of products — Part 1: Basic rules*

### 2 Clause 3

*Replace the first sentence by the following:*

For the purposes of this document, the terms and definitions given in ISO 1101, ISO 2692, ISO 17450-1, ISO 17450-2 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

*Delete definitions 3.14, 3.16, 3.22 and renumber the definitions.*

*Add at the end of Clause 3 the following new terms and definitions.*

#### 3.20

##### **datum coordinate system**

coordinate system established from a datum system

Note 1 to entry: The datum coordinate system can be used to describe the degrees of freedoms which are locked by the datum system.

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Note 2 to entry: Using a datum coordinate system is optional.

**3.20.1 datum coordinate system indicator**  
indication defining a coordinate system

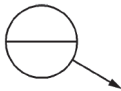
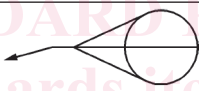
**3.20.2 datum coordinate system identifier**  
label identifying a coordinate system

**3 Clause 4**

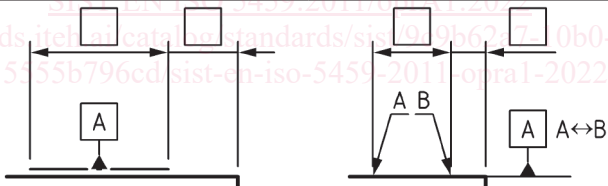
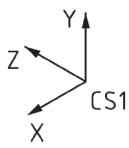
Replace the first row of Table 1 by the following.

Datum feature indicator			7.2.1
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Add the following new rows to Table 1 after the row "Moveable datum target frame".

Single datum target indicator		7.4.2.1
Moveable datum target indicator		7.4.2.1

Add the following new rows at the end of Table 1.

Restricted datum feature		7.4.2.4
Indication of a situation feature of a datum or a datum system	(A-B)[PL]	7.4.2.11
Datum coordinate system	 3D representation	Annex G

In Table 2 add the following new lines before the line [DV] and add the at the end of Table 2.

[SV]	Variable size	7.4.2.2
[SF]	Fixed size	7.4.2.2

In Table 2 add the following note at the end of Table 2.

NOTE To refer to other symbols in link with filtration and association, see Table 6 and Table H.1.



#### 4 Subclause 6.1

Replace the NOTE by the following.

NOTE Datums and datum systems are situation features, not coordinate systems. A complete datum system (allowing to lock all degrees of freedom) is a set of a point, a line and a plane (the point on the line in the plane). Coordinate systems can be built on datums, see Annex G.

#### 5 Subclause 6.2.1

Replace the whole 6.2.1 by the following.

The recommended status (variable or fixed) of the intrinsic characteristics is described in 6.2.2, 6.2.3 or 6.2.4. For rules, see also Rule 2 (2.A to 2.E) in 7.4.2.2.

For datums with virtual conditions, see ISO 2692.

For the issue of orientation and location constraints in datum systems, see Annex I.

#### 6 Subclause 6.2.2

Replace the whole 6.2.2 by the following.

The recommended status of the intrinsic characteristics for a single feature is:

- variable for the linear size of a feature of size (see Table 3);
- fixed for the angular size of a feature of size (see Table 3);
- fixed for an intrinsic characteristic which is not the size of a feature of size.

**Table 3 — Recommended status of intrinsic characteristics of features of size**

Feature of size	Invariance class	Intrinsic characteristic	Recommended status
Cylinder	Cylindrical	Diameter	Variable See example in C.1.2
Sphere	Spherical	Diameter	Variable See example in C.1.4
Two parallel opposite planes	Planar	Distance between the two planes	Variable See example in C.1.10
Cone	Revolute	Angle	Fixed See example in C.1.3
Wedge	prismatic	angle	Fixed See example in C.1.9

#### 7 Subclause 6.2.3

Replace the first sentence by the following.

The recommended status (variable or fixed) of the intrinsic characteristics of each associated feature establishing the common datum is as in 6.2.2.

#### 8 Subclause 6.2.4

Replace the first sentence by the following.

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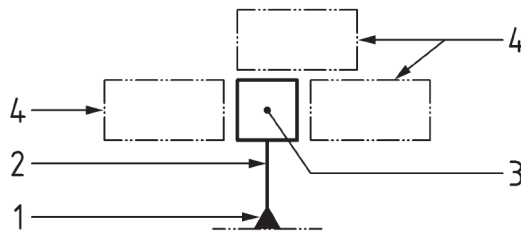
The recommended status (variable or fixed) of the intrinsic characteristics of each associated feature establishing the datum system is as in 6.2.2.

**9 Subclause 7.2.1**

Replace the whole 7.2.1 by the following.

A single feature to be used as a datum feature shall be indicated in a single place by a datum feature indicator. The datum feature indicator consists of a box connected to a filled datum triangle or an open datum triangle by a leader line, and optional adjacent indications (see Figure 5).

NOTE There is no difference in meaning between a filled and an open datum triangle.

**Key**

- 1 datum triangle
- 2 leader line
- 3 datum feature identifier area
- 4 adjacent indication area

**Figure 5 — Datum feature indicator**

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**10 Subclause 7.2.3.3**

Replace twice "ISO 128-24:1999" by "ISO 128-2:2020".

**11 Subclause 7.3**

Replace the first paragraph by the following.

The datum (or datum system) is specified in the datum section of the tolerance indicator as described in ISO 1101:2017, 8.2.

The datum (or datum system) is specified in an intersection plane indicator, or an orientation plane indicator, or a direction feature indicator or a collection plane indicator as described in ISO 1101:2017, Clauses 13 to 16.

See more details in Rule 6 in 7.4.2.6.

**12 Subclause 7.4.2.1**

In the first paragraph, replace the two first indents by the following.

- as an extension of a dimension line [see Figure 18 a) and Figure 18 b)];

- on a tolerance frame pointing to an extension of a dimension line for the surface [see Figure 18 e) and Figure 18 f)];

Replace Figure 18 by the following.

a)		
b)		
c)		
d)		
e)		
f)		
	<b>For 2D representation</b>	<b>For 3D representation</b>

**Figure 18 — Attachment of a datum indicator for a single datum feature considered a feature of size**

In the paragraph after Figure 18, replace "complimentary" by "complementary".

Replace the four indents between Figure 18 and Figure 19 by the following.

- on the outline of the surface [see Figure 19 a)],
- on an extension line of the surface [see Figure 19 b)],
- on a reference line with a leader line having as terminator a dot [see Figure 19 c) for hidden surface and Figure 19 d) for visible surface],
- on a tolerance frame pointing directly to the surface [see Figure 19 e)],

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- on a tolerance frame pointing to an extension line of the surface [see Figure 19 f)],
- on a tolerance frame pointing to a reference line with a leader line having as terminator a dot [see Figure 19 g)].

NOTE It is recommended to indicate the datum indicator on a view where the surface is not hidden.

Replace Figure 19 by the following.

a)		
b)		Non-applicable
c)		Non-applicable
d)		
e)		
f)		Non-applicable
g)		
	For 2D representation	For 3D representation

Figure 19 — Attachment of a datum indicator for a single datum feature not considered a feature of size

### 13 Subclause 7.4.2.2

Replace the entire 7.4.2.2 by the following.

#### 7.4.2.2.1 Rule 2.A

If no dimension value is indicated above the dimension line placed in extension of the datum feature indicator, then the size of the associated feature of size shall be considered:

- variable for the linear size of a feature of size [see Table 3 and Figure 19bis a)];
- fixed for the angular size of a feature of size (see Table 3). The size value is taken from the CAD model. If the fixed size is different from the value in the CAD model, then the Rules 2.B or 2.E shall be used.

#### 7.4.2.2.2 Rule 2.B

If the dimension value indicated above the dimension line placed in extension of the datum feature indicator is a TED, then the size of the associated feature of size shall be considered fixed [see Figure 19bis e)].

#### 7.4.2.2.3 Rule 2.C

If the dimension value indicated above the dimension line placed in extension of the datum feature indicator has a tolerance value (individual or general), then the size of the associated feature of size shall be considered variable [see Figure 19bis b)].

#### 7.4.2.2.4 Explicit indication of the status of the size

##### 7.4.2.2.4.1 General

The status of the size of the associated feature of size used to establish a datum can be defined independently of the indication of a dimension above the dimension line placed in extension of the datum feature indicator with the explicit indication [SV] or [SF] placed immediately after the datum identifier letter in the datum section of a specification. In this case, the Rules 2.A, 2.B and 2.C are superseded by the Rules 2.D and 2.E.

##### 7.4.2.2.4.2 Rule 2.D

When the [SV] modifier is indicated in the datum section, then the size of the associated feature of size used to establish a datum shall be considered variable [see Figure 19bis c) and Figure 19bis d)].

##### 7.4.2.2.4.3 Rule 2.E

When the [SF] modifier is indicated in the datum section, then the size of the associated feature of size used to establish a datum shall be considered fixed.

When the modifier [SFnn] is used to define the fixed size of the associated feature of size, then the value of the size shall be indicated without a space after the "SF", for example [SF10], [SF30°] in the datum section.

NOTE 1 The modifiers [SV] and [SF] apply to both features of linear size and features of angular size.

NOTE 2 When the datum feature is a feature of size, if TEDs are indicated indirectly by a statement in or near the title block that TEDs are extracted from the CAD file, for example by the following statement: "TED's according to CAD model 12345 rev abc", it is recommended that the [SF] or [SV] modifier is used in all cases to prevent misinterpretation.

