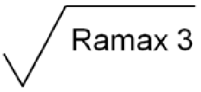
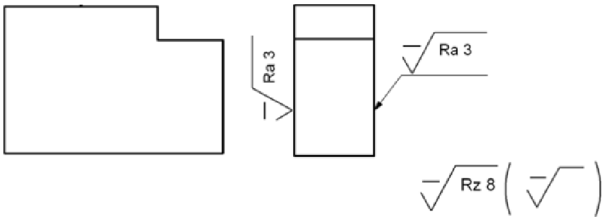
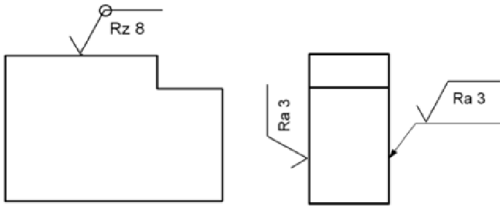
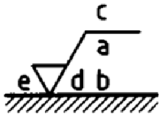
ISO 21920-1	ISO 1302
Die Einstellungsklassennummer (Scn) kann angegeben werden, um die Defaults zu spezifizieren.	Nicht festgelegt.
Nur für einige Norm-Parameter werden alle Defaults festgelegt, abhängig vom spezifizierten Grenzwert. Für alle anderen Parameter muss die Einstellungsklassennummer (Scn) oder der Nesting-Index des Profil-Filters angegeben werden, um die betreffenden Defaults zu erhalten.	Verfahren zum Erhalt der Defaults anhand des Höhen- oder Seitenkennwerts des zu untersuchenden Werkstücks
Die Höchstwert-Toleranzakzeptanzregel (früher Höchstwertregel) mit dem Symbol Tmax ist der Default, der Suffix „max“ ist nicht mehr festgelegt.	Der Suffix „max“ ist festgelegt, um die Anwendung der Höchstwertregel zu spezifizieren: 
Das graphische Symbol für „alle Oberflächen um den Außenumriss des Werkstücks“ ist nicht mehr festgelegt, um Uneindeutigkeit zu vermeiden. Dieses kann mit gleichem Aufwand durch die festgelegten Symbole angegeben werden. 	
Die Spezifikation der Bearbeitungszugabe ist nicht mehr festgelegt.	Festgelegt in Position „e“: 

Anhang J
(informativ)

Zusammenhang mit der GPS-Matrix

J.1 Allgemeines

Das in ISO 14638 angegebene ISO/GPS-Matrix-Modell gibt einen Überblick über das ISO/GPS-System, von dem dieser Teil von ISO 21920 ein Teil ist.

Die fundamentalen ISO/GPS-Regeln nach ISO 8015 gelten für diesen Teil von ISO 21920, und die Default-Entscheidungsregeln nach ISO 14253-1 gelten für Spezifikationen, die in Übereinstimmung mit diesem Teil von ISO 21920 angefertigt wurden, sofern nicht anders angegeben.

J.2 Informationen über diesen Teil von ISO 21920 und seine Anwendung

Dieser Teil von ISO 21920 legt grundlegende Informationen zur Tolerierung der profilhaften Oberflächenbeschaffenheit von Werkstücken fest. Er stellt die Ausgangsbasis dar und beschreibt die Grundlagen der Angabe der profilhaften Oberflächenbeschaffenheit.

J.3 Position im GPS-Matrix-Modell

Dieser Teil von ISO 21920 ist eine allgemeine ISO/GPS-Norm, welche Kettenglied F der Normenketten über die profilhafte und die flächenhafte Oberflächenbeschaffenheit im GPS-Matrix-Modell beeinflusst. Die in diesem Teil von ISO 21920 angegebenen Regeln und Grundsätze gelten für alle Segmente der ISO/GPS-Matrix, die mit einem ausgefüllten Punkt (•) angegeben sind.

	Kettenglieder						
	A	**B**	**C**	**D**	**E**	**F**	**G**
	Symbole und Angaben	Geometrie-element-anforderungen	Merkmale von Geometrie-elementen	Übereinstimmung und Nicht-Übereinstimmung	Messung	Messgeräte	Kalibrierung
Größenmaß							
Abstand							
Form							
Orientierung							
Ort							
Rundlauf							
Profilhafte Oberflächen-beschaffenheit	•						
Flächenhafte Oberflächen-beschaffenheit							

J.4 Zugehörige Internationale Normen

Die verwandten Internationalen Normen gehen aus den in Tabelle J.3 angegebenen Normenketten hervor.

Literaturhinweise

[1] ISO 14638, *Geometrical product specifications (GPS) — Matrix model*

[2] ISO 14253-1, *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 1: Decision rules for proving conformity or nonconformity with specifications*

[3] ISO 8015, *Geometrical product specifications (GPS) — Fundamentals — Concepts, principles and rules*

[4] ISO 1302, *Geometrical product specifications (GPS) — Indication of surface texture in technical product documentation*

[5] ISO 14253, *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 1: Decision rules for proving conformity or nonconformity with specifications*

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

[7] ISO 129, *Technical product documentation (TPD) — Presentation of dimensions and tolerances — Part 1: General principles*

Contents

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

This edition cancels and replaces the edition of ISO 1302:2002, which has been technically revised.

The main changes compared to the edition of ISO 1302:2002 are as follows:

- new criteria for indication are defined
- Tmax rule is the default tolerance acceptance rule

A list of all parts in the ISO 21920 series can be found on the ISO website.

Introduction

This part of ISO 21920 is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO 14638). It influences the chain link C of the chains of standards on profile and areal surface texture.

The ISO/GPS matrix model given in ISO 14638 gives an overview of the ISO/GPS system of which this part of ISO 21920is a part. The fundamental rules of ISO/GPS given in ISO 8015 apply to this part of ISO 21920 and the default decision rules given in ISO 14253-1 apply to the specifications made in accordance with this part of ISO 21920, unless otherwise indicated.

For more detailed information of the relation of this part of ISO 21920 to other standards and the GPS matrix model, see Annex J.

This part of ISO 21920 covers the indication of profile surface texture.

Geometrical product specifications (GPS) — Surface texture: Profile — Part 1: Indication of surface texture

1 Scope

This part of ISO 21920 specifies the rules for indication of profile surface texture in technical product documentation by means of graphical symbols. The indications of profile surface texture define requirements to the surface of a workpiece as well as the measurands for verification.

This part of ISO 21920 is only valid for profile surface texure requirements based on a single workpiece.

2 Normative references

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 21920-2:2019 *Geometrical product specifications (GPS) — Surface texture: Profile — Part 2: Terms, definitions and surface texture parameters*

ISO 21920-3:2019 *Geometrical product specifications (GPS) — Surface texture: Profile — Part 3: Specification operators*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21920-2 and ISO 21920-3 apply.

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

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Tolerance acceptance rules

4.1 General

Tolerance acceptance rules define the process of approval of a workpiece regarding its tolerance limits due to the measured value(s) of parameter(s). For profile surface texture three tolerance acceptance rules can be indicated.

4.2 Maximum tolerance acceptance rule

The maximum tolerance acceptance rule does not allow the tolerance limit of a parameter to be exceeded. The symbol of the Maximum tolerance acceptance rule is shown in Figure 1.

Tmax

Figure 1 — Symbol of the maximum tolerance acceptance rule

The maximum tolerance acceptance rule is the default case and valid with or without indication of the 'Tmax' symbol.

NOTE: The 'Tmax' symbol can be used for a higher clarity of a specification

4.3 16% tolerance acceptance rule

A specified 16% tolerance acceptance rule allows at most approximately 16 % of all measured values of a parameter to exceed the tolerance limit. The symbol of the 16% tolerance acceptance rule is shown in Figure 2.

The use of the 16% tolerance acceptance rule and the required number of measurements are defined in Annex G.

T16%

Figure 2 — Symbol of the 16% tolerance acceptance rule

The 16% tolerance acceptance rule is valid for the parameter on the line where the 'T16%' symbol is indicated.

If a bilateral tolerance is specified in one line approximately 16 % of all measured values may violate the upper limit and approximately 16 % of all measured values may violate the lower limit.

NOTE 1: The 16% tolerance acceptance rule is an instruction for the approval of a workpiece based on measured values regarding its tolerance limits.

NOTE 2: In former versions the 16% tolerance acceptance rule was named as simplified 16% rule.

NOTE 3: In contrast to former versions the 16% tolerance acceptance rule is not the default case (see Annex H for background)

4.4 Median tolerance acceptance rule

If a median tolerance acceptance rule is specified the median value of all measured values of a parameter has to meet the tolerance limits. The symbol of the Tmed tolerance acceptance rule is shown in Figure 3.

Tmed

Figure 3 — Symbol of the median tolerance acceptance rule

The Tmed tolerance acceptance rule is valid for the parameter on the line where the 'Tmed' symbol is indicated.

NOTE 1: The median tolerance acceptance rule is an instruction for the approval of a workpiece based on measured values regarding its tolerance limits.

NOTE 2: If the median value of all measured values of a parameter meets the tolerance limits the number of measured values violating the limit(s) is not determined.

NOTE 3: The use of the median tolerance acceptance rule requieres a minimal number of three measured values of a parameter. A higher number of measurements can be specified by the OR(n) requirements.

5 Criteria for indication of profile surface texture

5.1 General

Indications of profile surface texture define requirements on the surface of a workpiece as well as the measurands for verification.

NOTE: All criteria permitted for indications of profile surface texture are listed in Clauses 5.2 to 5.4 and described in Clause 7.

5.2 Mandatory indication to be explicitly specified

- Graphical symbol for profile surface tolerance
- Symbol of the surface profile parameter
- For functional parameter and for all parameter without defined defaults: indication of the profile L-filter nesting index for R- parameters or profile S-filter nesting index for W-parameters or the setting class number
- Limit of the surface profile parameter

NOTE 1: The indication of the nesting index or the setting class number is optional for all parameter listed in Table 3 or Table 6 of ISO 21920-3.

NOTE 2: It is the task of the design office to choose and indicate the functionally valid L-filter or S-filter according to erlier experience or performed testing results. The Tables 3 to 6 in ISO 21920-3 are based on extensive experience and define defaults on surfaces with low or normal functional requirements.

5.3 Optional indication to specify default deviating requirements

- Tolerance type (upper, lower or bilateral tolerance limit)
- profile S-filter type
- profile S-filter nesting index
- profile L-filter type for R- parameter or profile S-filter type for W- parameter
- profile L-filter nesting index for R- parameter or profile S-filter nesting index for W- parameter
- evaluation length or for section length based parameter: section length and number of sections
- profile F-operator type and method
- profile F-operator nesting index
- Method of profile extraction
- Profile direction
- Symbol ‘OR(n)’ to specify other requirements
- Symbol ‘Scn’ to specify a setting class number