Second edition
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Geometrical product specifications (GPS) — Dimensional and geometrical tolerances for moulded parts —

Part 4: Rules and general tolerances for castings using profile tolerancing in a general datum system

Spécification géométrique des produits (GPS) — Tolérances dimensionnelles et géométriques pour les pièces moulées —

Partie 4: Tolérances générales pour les pièces moulées par tolérancement de profil dans un système général de références spécifiées

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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).

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

For an explanation of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 8062-4:2017), which has been technically revised.

The main changes are as follows:

— overall clarification regarding better applicability according to the ISO GPS system;

— overall revision of tables and figures for plausibility;

— new symbols for draft angles with symmetrical/unsymmetrical tolerance zones as already included in the model geometry or drawing outlines have been added;

— requirements for the indication in the product definition (new Clauses 5, 6 and 7) and types of specifications (new Clause 8) have been added;

— Rule I concerning the wall thickness has been added;

— Clause 9 and Annex G have been added, expanding the information previously given in former Annex A;

— new Annexes A, B and C have been added;

A list of all parts in the ISO 8062 series can be found on the ISO website.

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.

Introduction

This document is a geometrical product specification (GPS) standard and is to be regarded as a complementary ISO GPS standard. It influences chain link B of the chain of standards on size, form, orientation and location.

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

For more detailed information about the relation of this document to other standards and the GPS matrix model, see Annex I.

This document gives terms and definitions and symbols for product definition indications for tolerancing of moulded parts, which are to be used in addition to the usual standards on geometrical product specifications (GPS), such as ISO 1101, ISO 5458 and ISO 5459.

According to this document, ± tolerances are only used for sizes and the following non-features of size: wall thicknesses, fillets and chamfers. Positional tolerances are also applied for sizes specified with ± tolerances. For all other tolerancing purposes, geometrical tolerances according to ISO 1101 are used. For all other non-features of size, such as step dimension, ± tolerances are not recommended. See the ISO 14405 series for background information.

This document defines a system of tolerance grades, draft angle (taper) grades and machining allowance grades for cast metals and their alloys.

ISO/TS 8062-2 states, in relation to the accumulation method where general dimensional tolerances according to ISO 8062-3 are used, that there is not yet a clearly defined way in the context of the future system of ISO GPS standards to apply the rules for calculating the final moulded part nominal dimensions from the final machined moulded part nominal dimensions, taking into account the miscellaneous influences. One of the reasons for this problem is the lack of a proper workpiece datum system.

The general dimensional tolerances apply independently from each other (without a datum system). It is difficult or even impossible to assess what the overall shape of the workpiece can become.

The general dimensional tolerances (±tolerances) of ISO 8062-3 apply not only to sizes but also to centre distances and dimensions defining profile contours. This is in contradiction to the ISO GPS rules (e.g. ISO 14405-2).

The general tolerances of ISO 8062-4 are not in compliance with the rules of ISO 22081 with respect to the general geometrical tolerancing.

Furthermore, with 3D CAD the nominal dimensions are not always visible in the model. As the general dimensional tolerances depend on the nominal dimensions, they cannot be used anymore when only the CAD model is available. To avoid these problems this document was developed as a parallel approach fully conforming with the ISO GPS rules given in, for example, ISO 14405-2 by introducing profile tolerancing and a datum system.

If there is no datum system specified or if the datum surfaces are to be machined after moulding then only ISO 8062-3 can be applied.

For the development of a new product, it is strongly recommended that customer and foundry should discuss and agree on the method of tolerancing to be applied to the product. This also includes casting method, calculation methods, cast material and draft angles, which are crucial for the process.