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**Rolling bearings — Thrust needle  
roller and cage assemblies, thrust  
washers — Boundary dimensions,  
geometrical product specifications  
(GPS) and tolerance values**

*Roulements — Cages à aiguilles axiales et rondelles de butée —  
Dimensions d'encombrement, spécification géométrique des produits  
(GPS) et valeurs de tolérance*



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# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Symbols</b> .....	<b>1</b>
<b>5 Thrust needle roller and cage assemblies</b> .....	<b>3</b>
5.1 General.....	3
5.2 Dimensions and tolerances.....	3
5.3 Tolerances for the needle roller.....	4
<b>6 Thrust washers</b> .....	<b>4</b>
6.1 General.....	4
6.2 Dimensions and tolerances.....	4
<b>Annex A (informative) General characteristics suggested for application of thrust needle roller and cage assemblies and thrust washers</b> .....	<b>6</b>
<b>Annex B (informative) Functional gauging of thrust needle roller and cage assemblies and thrust washers</b> .....	<b>7</b>
<b>Bibliography</b> .....	<b>9</b>

## 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](http://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](http://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 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 5, *Needle, cylindrical and spherical roller bearings*.

This fourth edition cancels and replaces the third edition (ISO 3031:2000), which has been technically revised. The main change compared to the previous edition is the implementation of geometrical product specifications (GPS).

## Introduction

This document is a machine element geometry standard as defined in the geometrical product specification system (GPS system) presented in the matrix model of ISO 14638<sup>[8]</sup>.

The fundamental rules of ISO/GPS given in ISO 8015<sup>[5]</sup> apply to this document and the default decision rules given in ISO 14253-1<sup>[6]</sup> apply to specifications made in accordance with this document, unless otherwise indicated.

The connection between functional requirements, measuring technique and measuring uncertainty is always intended to be considered. The traditionally used measuring technique is described in ISO 1132-2<sup>[3]</sup>. For measurement uncertainty, it is intended that ISO 14253-2<sup>[7]</sup> should be considered.



# Rolling bearings — Thrust needle roller and cage assemblies, thrust washers — Boundary dimensions, geometrical product specifications (GPS) and tolerance values

## 1 Scope

This document specifies the boundary dimensions and tolerances for thrust needle roller and cage assemblies. Furthermore, it recommends dimensions and tolerances for thrust washers, i.e. raceway members, which can be used either as shaft or housing washers.

[Annex A](#) gives general characteristics for application of thrust needle roller and cage assemblies and thrust washers.

Gauging method for thrust needle roller and cage assemblies and thrust washers is given in [Annex B](#).

## 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 5593, *Rolling bearings — Vocabulary*

ISO 14405-1, *Geometrical product specifications (GPS) — Dimensional tolerancing — Part 1: Linear sizes*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5593 and ISO 14405-1 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 <http://www.electropedia.org/>

## 4 Symbols

To express that the ISO/GPS system, ISO 8015<sup>[5]</sup>, is applied, the dimensional and geometrical characteristics shall be included in the technical product documentation (for example, on the drawing).

The dimensional and geometrical specifications, associated to these characteristics are described in [Table 1](#), [Figure 1](#) and [Figure 2](#).

Descriptions for symbols are in accordance with GPS terminology.

A tolerance value associated to a characteristic is symbolised by  $t$  followed by the symbol for the characteristic, in subscript, for example  $t_{\Delta ds}$ .

In this document, the ISO default specification operator for size is in accordance with ISO 14405-1, i.e. the two-point size is valid.