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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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Foreword

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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).

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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. (standards.iteh.ai)

The committee responsible for this document is ISO/TC 4, *Rolling bearings*, Subcommittee SC 5, *Needle, cylindrical and spherical roller bearings*. ISO/DIS 3031

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This fourth edition cancels and replaces the third edition (ISO 3031:2000), which has been technically revised with the following changes:

- implemented geometrical product specifications (GPS).

Introduction

This document is a machine element geometry standard as defined in the geometrical product specification system (GPS system) as presented in matrix model of ISO 14638.^[11]

The fundamental rules of ISO/GPS given in ISO 8015^[7] apply to this document and the default decision rules given in ISO 14253-1^[8] 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^[4]. For measurement uncertainty, it is intended that ISO 14253-2^[9] be considered.

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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.

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

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1132-1,^[3] ISO 5593^[6], ISO 14405-1^[10] apply.

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4 Symbols

To express that the ISO/GPS system, ISO 8015^[2] 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.

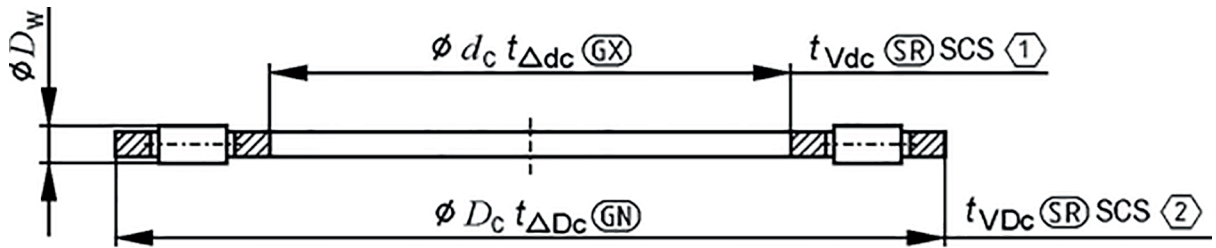
A tolerance value associated to a characteristic is symbolised by t followed by the symbol for the characteristic, for example t_{Δ_s} .

In this document, the ISO default specification operator for size is in accordance with ISO 14405-1^[10] i.e. the two-point size is valid.

Table 1 — Symbols for nominal sizes, characteristics, and specification modifiers

Symbol for nominal size ^a	Symbol for characteristic	GPS symbol and specification modifier ^{b,c}	Description ^d
d			nominal bore diameter of thrust washer
	Δds	\textcircled{GX}	deviation of a maximum inscribed size of bore diameter of thrust washer from its nominal size
	Vds	$\textcircled{LP} \textcircled{SR} SCS$	Range of two-point sizes of bore diameter of thrust washer in a specific cross section
d_c			nominal bore diameter of cage
	Δdcs	\textcircled{GX}	deviation of a maximum inscribed size of bore diameter of cage from its nominal size
	$Vdcs$	$\textcircled{LP} \textcircled{SR} SCS$	Range of two-point sizes of bore diameter of cage in a specific cross section
D			nominal outside diameter of thrust washer
	ΔDs	\textcircled{GN}	deviation of a minimum circumscribed size of outside diameter of thrust washer from its nominal size
	VDs	$\textcircled{LP} \textcircled{SR} SCS$	Range of two-point sizes of outside diameter of thrust washer in a specific cross section
D_c			nominal outside diameter of cage
	ΔDcs	\textcircled{GN}	deviation of a minimum circumscribed size of outside diameter of cage from its nominal size
	$VDcs$	$\textcircled{LP} \textcircled{SR} SCS$	Range of two-point sizes of outside diameter of cage in a specific cross section
D_w			nominal diameter of needle roller
s			nominal thickness of thrust washer
	Δs	\textcircled{LP}	deviation of a two-point size of thickness of thrust washer from its nominal size

^a Symbol as defined in ISO 15241[12] except for the format used.
^b Symbol as defined in ISO 14405-1.[10]
^c Specification modifier 3031_ed4tab1d.EPS shall not be indicated on a drawing, if the two-point size is applied for both specified limits.
^d Definition based on ISO 14405-1.[10]



Key

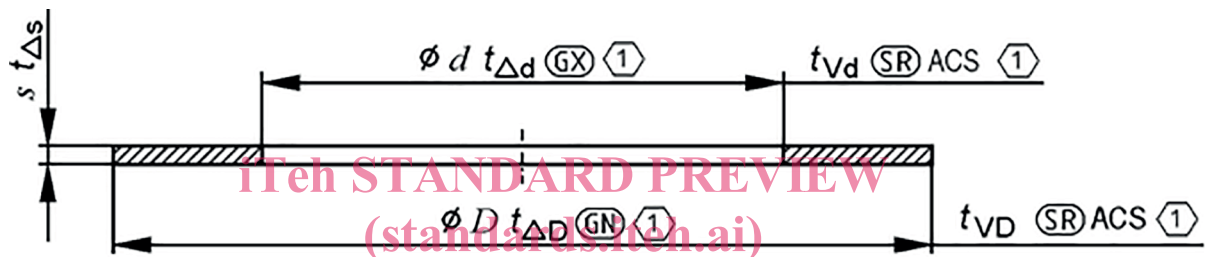


= the specific cross section with the smallest bore diameter of the cage



= the specific cross section with the largest outside diameter of the cage

Figure 1 — Thrust needle roller and cage assembly



Key



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 = the specific cross section with the smallest bore diameter of the washer



= the specific cross section with the largest outside diameter of the washer

Figure 2 — Thrust washer

5 Thrust needle roller and cage assemblies

5.1 General

Dimensions and tolerance values for thrust needle roller and cage assemblies are given in Table 2.

In Table 2, the symbols U and L are used as follows:

U = upper limit deviation;

L = lower limit deviation.

5.2 Dimensions and tolerances

See Table 2.