SLOVENSKI STANDARD
SIST ISO 16589-1:2002

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Fluidna tehnika - Ustnične gredne tesnilke s termoplastičnimi tesnilnimi elementi - 1. del: Nazivne mere in tolerance

Rotary shaft lip-type seals incorporating thermoplastic sealing elements -- Part 1: Nominal dimensions and tolerances

Bagues d'étanchéité à lèvres pour arbres tournants incorporant des éléments d'étanchéité thermoplastiques -- Partie 1: Dimensions nominales et tolérances

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ICS:

23.100.60	Filtri, tesnila in onesnaževanje tekočin	Filters, seals and contamination of fluids

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INTERNATIONAL STANDARD

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Rotary shaft lip-type seals incorporating thermoplastic sealing elements —

Part 1: Nominal dimensions and tolerances

Bagues d'étanchéité à lèvres pour arbres tournants incorporant des éléments d'étanchéité thermoplastiques —

Partie 1: Dimensions nominales et tolérances

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 16589 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16589-1 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 7, *Sealing devices*.

ISO 16589 consists of the following parts, under the general title *Rotary shaft lip-type seals incorporating thermoplastic sealing elements*:

— *Part 1: Nominal dimensions and tolerances*

— *Part 2: Vocabulary*

— *Part 3: Storage, handling and installation*

— *Part 4: Performance test procedures*

— *Part 5: Identification of visual imperfections*

Annex A of this part of ISO 16589 is for information only.

Introduction

Rotary shaft lip-type seals are used to retain fluid in equipment where the differential pressure is relatively low. Typically, the shaft rotates and the housing is stationary, although in some applications the shaft is stationary and the housing rotates.

Dynamic sealing is normally the result of a designed interference fit between the shaft and a flexible element incorporated in the seal.

Similarly, a designed interference fit between the outside diameter of the seal and the diameter of the housing bore retains the seal and prevents static leakage.

Careful storage, handling and proper installation of all seals are necessary to avoid hazards, both prior to and during installation, which would adversely affect service life.

Rotary shaft lip-type seals incorporating thermoplastic sealing elements —

Part 1:
Nominal dimensions and tolerances

1 Scope

ISO 16589 describes seals utilizing sealing elements manufactured from suitably formulated compounds, based on thermoplastic materials, such as polytetrafluoroethylene (PTFE).

NOTE ISO 16589 is complementary to ISO 6194 which covers elastomeric seals.

This part of ISO 16589 specifies the nominal dimensions and tolerances of the seals, shafts and housings, as well as a dimensional identification code.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 16589. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 16589 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts*

ISO 4287:1997, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters*

ISO 4288:1996, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture*

ISO 5598:1985, *Fluid power systems and components — Vocabulary*

ISO 16589-2:2001, *Rotary shaft lip-type seals incorporating thermoplastic sealing elements — Part 2: Vocabulary*

3 Terms and definitions

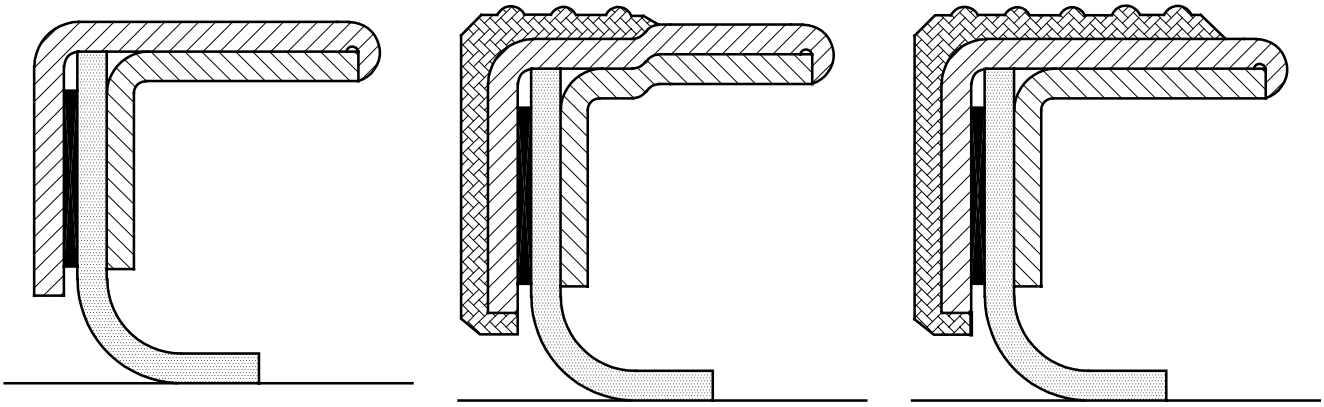
For the purposes of this part of ISO 16589, the terms and definitions given in ISO 5598 and ISO 16589-2 apply.

4 Seal types and examples

4.1 Seal outside diameter construction

The constructions shown in Figure 1 show three basic types.

NOTE Because of some variations in design details, or seals made by different manufacturers, the constructions shown are intended only as representative of the basic types.



Type 1
Metal-cased

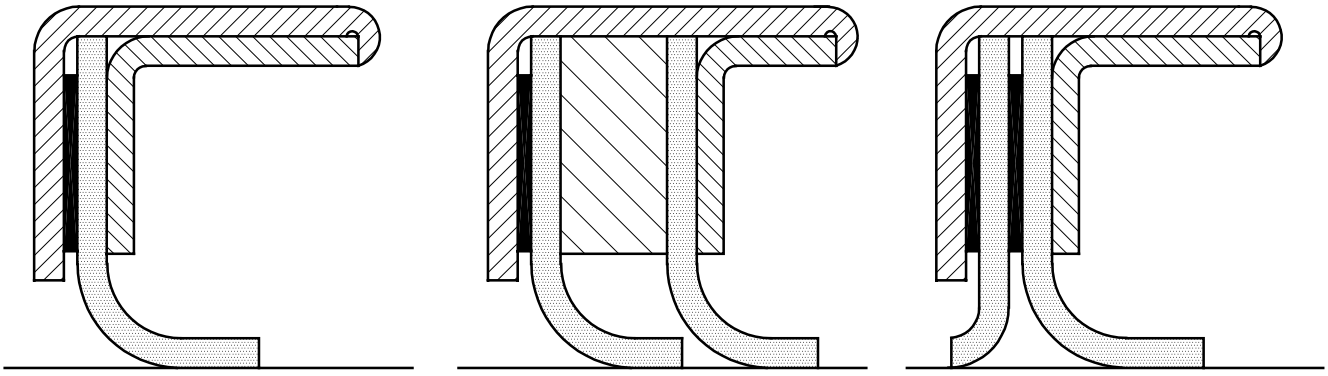
Type 2
Semi-rubber-covered metal-cased

Type 3
Rubber-covered metal-cased

Figure 1 — Three basic types of outside diameter construction

4.2 Sealing lip arrangements

Some examples of sealing lip arrangements are shown in Figure 2.



Example 1
Single lip

Example 2
Double lip in tandem

Example 3
Single lip with thermoplastic minor lip

Figure 2 — Sealing lip arrangements

The sealing lip arrangements shown in Figure 2 can be used with each seal outside diameter construction shown in Figure 1.

Hydrodynamic aids are incorporated by some manufacturers in certain applications.

The design of the sealing lip should be agreed on between manufacturer and purchaser.

5 Letter symbols

Letter symbols used in this part of ISO 16589 are as follows:

b is the nominal width of the seal and is associated with the housing bore depth (see Figure 3);

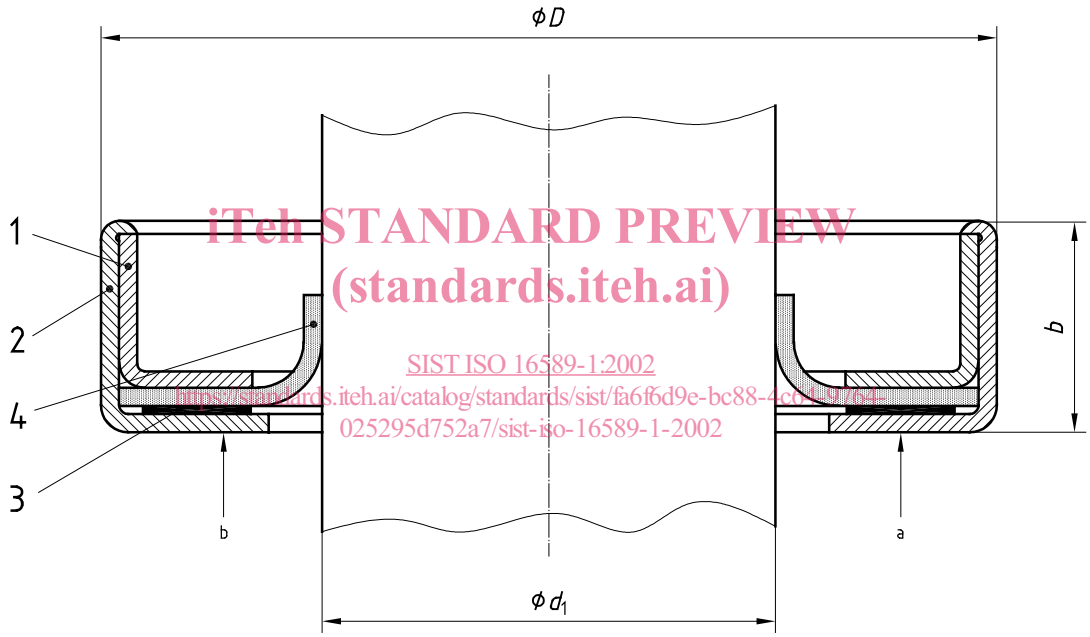
d_1 is the nominal diameter of the shaft to be used with the seal (see Figure 4);

d_2 is the minor diameter at the shaft lead-in chamfer (see Figure 4);

D is the nominal diameter of the housing bore and of the outer diameter of the seal (see Figures 3 and 5).

6 Nominal dimensions

The nominal dimensions of the seals are shown in Figure 3 and given in Table 1:



Key

1 Inner case
2 Outer case
3 Gasket (if incorporated)
4 Sealing element

a Rotation viewed from back face
b Identification (preferred location) on back side

Figure 3 — Seal