

This is a preview of "BS ISO 5597:2018". [Click here to purchase the full version from the ANSI store.](#)



BSI Standards Publication

**Hydraulic fluid power — Cylinders — Dimensions and tolerances of housings for single-acting piston and rod seals in reciprocating applications**

---

This is a preview of "BS ISO 5597:2018". [Click here to purchase the full version from the ANSI store.](#)

## National foreword

This British Standard is the UK implementation of ISO 5597:2018. It supersedes BS ISO 5597:2010, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MCE/11, Fluid seals and their housings.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2018  
Published by BSI Standards Limited 2018

ISBN 978 0 580 51770 9

ICS 23.100.20

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2018.

### Amendments/corrigenda issued since publication

| Date | Text affected |
|------|---------------|
|------|---------------|

---

This is a preview of "BS ISO 5597:2018". [Click here to purchase the full version from the ANSI store.](#)

Third edition  
2018-05-01

---

---

## **Hydraulic fluid power — Cylinders — Dimensions and tolerances of housings for single-acting piston and rod seals in reciprocating applications**

*Transmissions hydrauliques — Vérins — Dimensions et tolérances  
des logements de joints d'étanchéité pour pistons et tiges de piston à  
simple effet dans les applications à mouvement alternatif*



Reference number  
ISO 5597:2018(E)

© ISO 2018

This is a preview of "BS ISO 5597:2018". Click here to purchase the full version from the ANSI store.



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2018, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

This is a preview of "BS ISO 5597:2018". [Click here to purchase the full version from the ANSI store.](#)

## 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>2</b>  |
| <b>5 Seal housings</b> .....  | <b>2</b>  |
| 5.1 General.....  | 2         |
| 5.2 Axial length.....   | 3         |
| 5.3 Radial depth.....   | 3         |
| <b>6 Dimensions and tolerances</b> .....                              | <b>3</b>  |
| 6.1 Piston seal housing dimensions.....                               | 3         |
| 6.2 Rod seal housing dimensions.....                                  | 3         |
| 6.3 Radial seal space tolerances.....                                 | 3         |
| 6.4 Housing length.....   | 4         |
| <b>7 Extrusion gap</b> .....  | <b>4</b>  |
| <b>8 Surface roughness</b> .....                                      | <b>4</b>  |
| 8.1 General.....  | 4         |
| 8.2 Sliding and static sealing surfaces.....                          | 4         |
| <b>9 Lead-in chamfer</b> .....  | <b>5</b>  |
| <b>10 Identification statement (reference to this document)</b> ..... | <b>6</b>  |
| <b>Bibliography</b> .....   | <b>16</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 131, *Fluid power systems*, Subcommittee SC 7, *Sealing devices*.

This third edition cancels and replaces the second edition (ISO 5597:2010) which has been technically revised to ensure consistency with ISO 3320.

The main changes compared to the previous edition are:

- Seal housing sizes for a 60 mm diameter cylinder bore added to [Table 3](#);
- 400 mm and 450 mm diameter rods added to [Table 5](#).
- [Table 1](#) has been modified to indicate that, for some seal housings, the axial lengths (seal groove lengths) are too short for the surface roughness to be measured with five sampling lengths.

This is a preview of "BS ISO 5597:2018". [Click here to purchase the full version from the ANSI store.](#)

## Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Sealing devices are used to contain the pressurized fluid with components having elements with linear motion, i.e. hydraulic cylinders. These sealing devices are used with both cylinder rod and piston seal housings.

This document is one of a series of standards covering dimensions and tolerances of housings.

This is a preview of "BS ISO 5597:2018". [Click here to purchase the full version from the ANSI store.](#)



This is a preview of "BS ISO 5597:2018". [Click here to purchase the full version from the ANSI store.](#)

# Hydraulic fluid power — Cylinders — Dimensions and tolerances of housings for single-acting piston and rod seals in reciprocating applications

## 1 Scope

This document establishes the preferred range of nominal dimensions and associated tolerances for a series of hydraulic cylinder rod and piston seal housings for reciprocating applications in the following range of dimensions:

- for cylinders of 16 mm to 500 mm;
- for rods of 6 mm to 450 mm.

An additional range of seal housings is detailed in this document to meet the reduced envelope requirements of the 160 bar (16 MPa)<sup>1)</sup> compact series of ISO 6020-2; these smaller section seals require stricter piston rod and cylinder bore tolerances. The range of dimensions is as follows:

- cylinders of 25 mm to 200 mm;
- rods of 12 mm to 140 mm.

This document does not give details of seal design, since the manner of construction of seals varies with each manufacturer. The design and material of the seal and any incorporated anti-extrusion components are determined by conditions such as temperature and pressure.

This document only applies to the dimensional criteria of products manufactured in conformity with this document; it does not apply to their functional characteristics.

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

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

ISO 6020-2, *Hydraulic fluid power — Mounting dimensions for single rod cylinders, 16 MPa (160 bar) series — Part 2: Compact series*

## 3 Terms and definitions

For the purposes of this document, the definitions given in ISO 5598 apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

---

1) 1 bar = 100 kPa = 10<sup>5</sup> Pa = 0,1 MPa; 1 Pa = 1 N/m<sup>2</sup>.