



BSI Standards Publication

## Aerospace series –

Bushes (plain and flanged), press fit and thrust washers,  
oil-retaining sintered bronze – Specification

**Publishing and copyright information**

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2019

Published by BSI Standards Limited 2019

ISBN 978 0 51327 5

ICS 030.01

The following BSI references relate to the work on this document:

Committee reference ACE/12

Draft for comment 19/30366215 DC

**Amendments/corrigenda issued since publication**

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

---

## Contents

	Page
<b>Foreword</b>	<b>ii</b>
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Packaging and corrosion prevention	1
5 Bushes	2
5.1 Material and manufacture	2
5.2 Density	2
5.3 Bush radial crushing strength	2
5.4 Oil content	2
5.5 Bush configurations	3
5.6 Housing bore limits	3
5.7 Bush bore limits	3
5.8 Concentricity	3
<i>Table 1 — Bush wall concentricity</i>	3
<i>Figure 1 — Plain bush outline</i>	4
<i>Figure 2 — Flanged bush outline</i>	4
5.9 Identification and marking (bushes)	5
<i>Table 2 — Dimensions of plain bushes</i>	6
<i>Table 3 — Dimensions of flanged bushes</i>	9
6 Thrust washers	11
6.1 Thrust washer configuration	11
<i>Figure 3 — Thrust washer outline</i>	11
6.2 Identification and marking (thrust washers)	11
<i>Table 4 — Dimensions of thrust washers</i>	12
<b>Bibliography</b>	<b>13</b>

### Summary of pages

This document comprises a front cover, and inside front cover, pages i to ii, pages 1 to 13, an inside back cover and a back cover.

---

# Foreword

## Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2019. It was prepared by Technical Committee ACE/12, *Aerospace fasteners and fastening systems*. A list of organizations represented on this committee can be obtained on request to its secretary.

## Supersession

This British Standard supersedes BS SP 94:1964+A2:2012, which is withdrawn.

## Information about this document

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at [bsigroup.com/standards](http://bsigroup.com/standards), or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or resource, or its contents, cannot be guaranteed.

## Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

*Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.*

Where words have alternative spellings, the preferred spelling of The Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

Requirements in this standard are drafted in accordance with *Rules for the structure and drafting of UK standards*, subclause C.1.1 which states, “Requirements should be expressed using wording such as: ‘When tested as described in Annex A, the product shall ...’”. This means that only those products that are capable of passing the specified test will be deemed to conform to this standard.

## Contractual and legal considerations

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

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

## 1 Scope

This British Standard specifies material, dimensions, characteristics and identification of sintered bronze plain and flanged oil-retaining bushes and oil-retaining thrust washers for aircraft use. The bushes are charged with lubricating oil and have a normal oil content of from 25% – 30% by volume, within the size range from  $\frac{3}{16}$  in. (4.8 mm) to  $2\frac{1}{2}$  in. (63.5 mm) nominal bore.

*NOTE 1* Owing to slight variations between products of different manufacturers, exact dimensions and limits for diameters are not given in this British Standard, as these dimensions are declared by respective manufacturers. Bushes supplied to this British Standard give correct bores when fitted in housings as specified.

*NOTE 2* The dimensional values depicted are in inch units and are to be regarded as the standard. Where metric mm equivalents are shown, they have been rounded. More accurate conversions should be based on the tables in BS 350, "Conversion factors and tables".

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document.<sup>1</sup> For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 1916-1:2009, *Limits and fits for engineering – Part 1: Guide to limits and tolerances*

BS 1916-3:2009, *Limits and fits for engineering – Part 3: Guide to tolerances, limits and fits for large diameters*

## 3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

### 3.1 journal diameter

diameter which acts as the bearing surface for the mating moving shaft

### 3.2 oil-retaining

bush or thrust washer made by sintering compressed metal powder with voids and pores created between the material grain matrix, serving as a reservoir for oil to lubricate the working surface during service

## 4 Packaging and corrosion prevention

**4.1** Parts shall be packed so they are not damaged in transit. They shall be protected against humidity, corrosion, dirt and other harmful agents. The packaging material in contact with the parts shall provide this protection and be grease-resistant.

**4.2** The specification number and full BS part number (see [5.9](#)) shall be legibly marked on the package<sup>2</sup>.

<sup>1</sup> Documents that are referred to solely in an informative manner are listed in the Bibliography.

<sup>2</sup> Marking a BS part number on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity.