INTERNATIONAL STANDARD

**ISO 3547-3**

Third edition
2017-02

# Plain bearings — Wrapped bushes —

## Part 3: Lubrication holes, grooves and indentations

*Paliers lisses — Bagues roulées —*

*Partie 3: Trous de graissage, rainures de graissage et creux de graissage*

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Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
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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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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This document was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 3, *Dimensions, tolerances and construction details*.

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This third edition cancels and replaces the second edition (ISO 3547-3:2006), which has been technically revised.

A list of all the parts in the ISO 3547 series can be found on the ISO website.

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# Plain bearings — Wrapped bushes —

# Part 3: Lubrication holes, grooves and indentations

## 1 Scope

This document specifies dimensions of lubrication holes, grooves and bore indentations on wrapped bushes made of mono and multi-layer bearing material for plain bearing applications.

NOTE Wrapped bushes with lubrication holes, grooves or bore indentations in accordance with this document can be ordered with dimensions in accordance with ISO 3547-1 and made from materials in accordance with ISO 3547-4.

## 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.

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ISO 3547-1, *Plain bearings — Wrapped bushes — Part 1: Dimensions*

ISO 4378-1, *Plain bearings — Terms, definitions, classification and symbols — Part 1: Design, bearing materials and their properties*

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ISO 4378-4, *Plain bearings — Terms, definitions, classification and symbols — Part 4: Basic symbols*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4378-1 and ISO 4378-4 apply.

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

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

## 4 Symbols and units

See Table 1.

**Table 1 — Symbols and units**

| Symbol | Description | Unit |
|---|---|---|
| $B$ | Width of the bush | mm |
| $c$ | Edge length of the diamond-shaped lubrication indentation | mm |
| $D_i$ | Inside diameter of the bush | mm |
| $d_b$ | Diameter of the lubrication indentation | mm |
| $d_L$ | Diameter of the lubrication hole | mm |
| $D_o$ | Outside diameter of the bush | mm |
| $e$ | Distance between the lubrication grooves | mm |

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**Table 1** *(continued)*

| Symbol | Description | Unit |
|---|---|---|
| $n_1$, $n_2$ | Width of lubrication groove | mm |
| $R$ | Radius | mm |
| $s_3$ | Wall thickness | mm |
| $s_4$ | Residual wall thickness | mm |
| $t$ | Depth of the lubrication indentation | mm |
| $\alpha$ | Layout of the lubrication indentation | ° |

## 5 General

Lubrication holes, grooves and bore indentations may be carried out in the flat strip prior to forming. Dimensional changes due to forming of the strip are permissible. Marks of lubrication grooves and bore indentations produced by stamping may appear on the back of the bush. Small cracks in the bearing material in lubrication grooves and bore indentations are permissible, provided that no pieces become detached.

Untoleranced and unspecified dimensions may be specified differently subject to agreement between the user and supplier.

## 6 Lubrication holes

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See Figures 1 and 2.

For the nominal dimensions, see Table 2.

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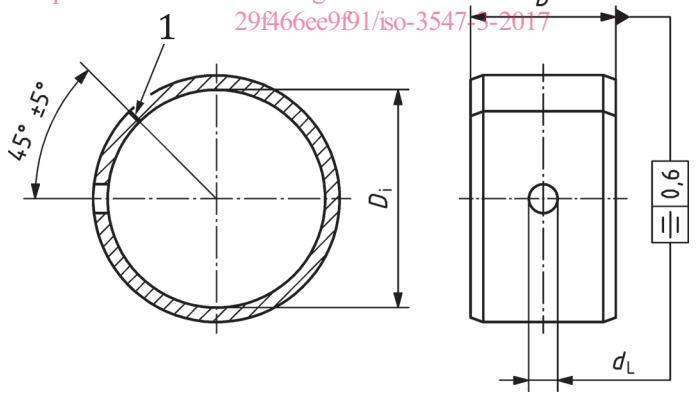
Dimensions in millimetres




**Key**

1 butt joint

**Figure 1 — Lubrication holes (Type L) — Dimensions** (see Table 2)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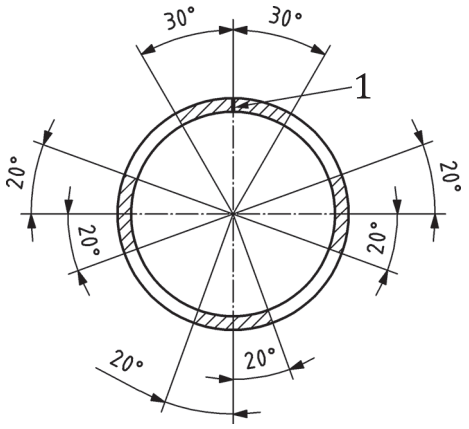


**Key**

1 butt joint

Lubrication holes in the hatched areas should be avoided as far as possible.

**Figure 2 — Lubrication holes (Type L) — Areas of bush not recommended for holes**

**Table 2 — Nominal dimensions of lubrication holes**

Dimensions in millimetres

| $D_i$ | | $d_L$ [a] |
|---|---|---|
| >14 | ≤22 | 3 |
| >22 | ≤40 | 4 |
| >40 | ≤50 | 5 |
| >50 | ≤100 | 6 |
| >100 | | 7 |

[a] Minimum dimension after forming.

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## 7 Lubrication grooves

### 7.1 General

Lubrication grooves types M1 and M2 are used for lubrication. See Figures 3 to 8 and Tables 3 to 6.

Widening of the lubrication grooves in the area of the lubrication holes, at the butt joint and at the end faces of the bush, is permissible.

Lubrication grooves are normally represented on the developed shape of the bush before forming.

Distortions to the groove shape can occur during the outside diameter forming operations.

In order to facilitate measurement, the dimensions of the bush thickness remaining at the base of the groove may be specified on the drawing as the control dimension.

### 7.2 Type M1

#### 7.2.1 General

See Figure 3 and Table 3.

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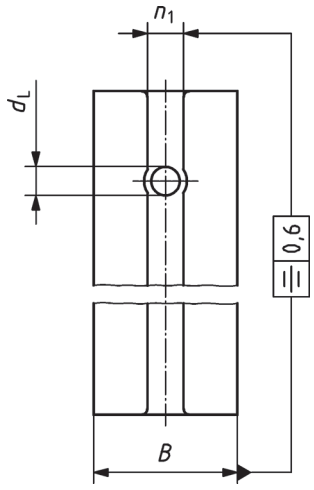


**Figure 3 — Type M1 — Dimensions** (see Table 3)

**Table 3 — Nominal dimensions of lubrication grooves type M1**

Dimensions in millimetres

| $D_i$ nominal | | $n_1$ ±0,5 Series (in accordance with ISO 3547-1) | |
|---|---|---|---|
| | | A, B, D, W | C, E |
| >14 | ≤22 | 4 | 5 |
| >22 | ≤40 | 5 | 6 |
| >40 | ≤50 | 6 | 7 |
| >50 | ≤100 | 7 | 8 |
| >100 | | 8 | 9 |

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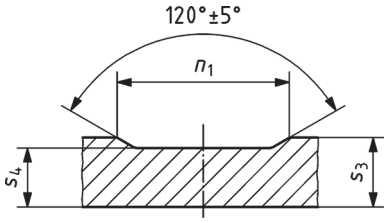
### 7.2.2 Type M1A

See Figure 4 and Table 4.

### 7.2.3 Type M1B

See Figure 5 and Table 4.




NOTE The groove cross-section is represented on an enlarged scale.

**Figure 4 — Type M1A**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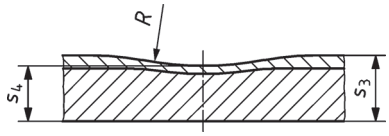


NOTE The groove cross-section is represented on an enlarged scale.

**Figure 5 — Type M1B**

**Table 4 — Nominal dimensions of lubrication grooves types M1A and M1B**

Dimensions in millimetres

| $s_3$ | | 0,75 | 1 | 1,5 | 2 | 2,5 |
|---|---|---|---|---|---|---|
| $s_{4\,-0,2}^{\ 0}$ | **M1A** | 0,65 | 0,85 | 1,3 | 1,7 | 2,2 |
| | **M1B** | — | 0,7 | 1,1 | 1,6 | 2,1 |
| $R$ | | — | 6 | 8 | 10 | 12 |

## 7.3 Type M2

### 7.3.1 General

See Figure 6 and Table 5.

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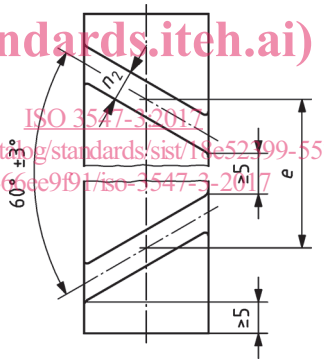


**Figure 6 — Type M2 — Dimensions** (see **Table 5**)

**Table 5 — Nominal dimensions of lubrication grooves type M2**

Dimensions in millimetres

| $D_i$ nominal | | $e$ | $n_2$ ±0,5 | |
|---|---|---|---|---|
| | | | **Series** (in accordance with ISO 3547-1) | |
| | | | **A, B, D, W** | **C, E** |
| >18 | ≤26 | 32 | 3 | 4 |
| >26 | ≤36 | 45 | 3 | 4 |
| >36 | ≤50 | 70 | 5 | 6 |
| >50 | ≤70 | 100 | 5 | 6 |
| >70 | ≤100 | 130 | 6 | 7 |
| >100 | | 140 | 7 | 8 |

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