TC 123

# INTERNATIONAL STANDARD ISO 4379

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

## Plain bearings — Solid copper alloy bushes — Dimensions and tolerances

*Paliers lisses — Bagues massives en alliages de cuivre — Dimensions et tolérances*

First edition — 1978-11-15



UDC 621.822.5 : 669.3

Ref. No. ISO 4379-1978 (E)

**Descriptors** : bearings, plain bearings, bearing bushes, copper products, specifications, dimensions, dimensional tolerances.



Price based on 5 pages

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4379 was developed by Technical Committee ISO/TC 123, *Plain bearings*, and was circulated to the member bodies in December 1976.



It has been approved by the member bodies of the following countries :



| | | |
|---|---|---|
| Austalia | Italy | Spain |
| Bulgaria | Korea, Rep. of | Turkey |
| Chile | Mexico | United Kingdom |
| France | Netherlands | U.S.A. |
| Germany, F.R. | Philippines | U.S.S.R. |
| India | Romania | Yugoslavia |
| Ireland | South Africa, Rep. of | |

The member body of the following country expressed disapproval of the document on technical grounds :

Sweden



Printed in Switzerland

# Plain bearings — Solid copper alloy bushes — Dimensions and tolerances



## 1 SCOPE AND FIELD OF APPLICATION



This International Standard specifies dimensions and tolerances applicable to solid copper alloy bushes, cylindrical and flanged, in the range 6 to 200 mm inside diameters.

The inside diameters taken as the basic dimension for this type of bearing have been chosen to accord with known shaft sizes, and existing ISO International Standards.

Two series of outside diameters have been included in order to provide for the possibility of some of the sizes being adopted for plain bearings made from other materials, and to allow for the use of materials of differing strengths.

This International Standard applies to solid bushes for general uses; thicker bushes can always be specified for special applications.

## 2 REFERENCES

ISO/R 286, *ISO system of limits and fits — Part 1 : General, tolerances and deviations.*

ISO/R 468, *Surface roughness.*

ISO/R 775, *Cylindrical and 1/10 conical shaft ends.*

ISO 2340, *Clevis pins — Metric series.*

ISO 2341, *Clevis pins with heads — Metric series.*

ISO 2795, *Plain bearings made from sintered material — Dimensions and tolerances.*

ISO 3547, *Plain bearings — Wrapped bushes — Dimensions, tolerances and methods of checking.*

## 3 SYMBOLS

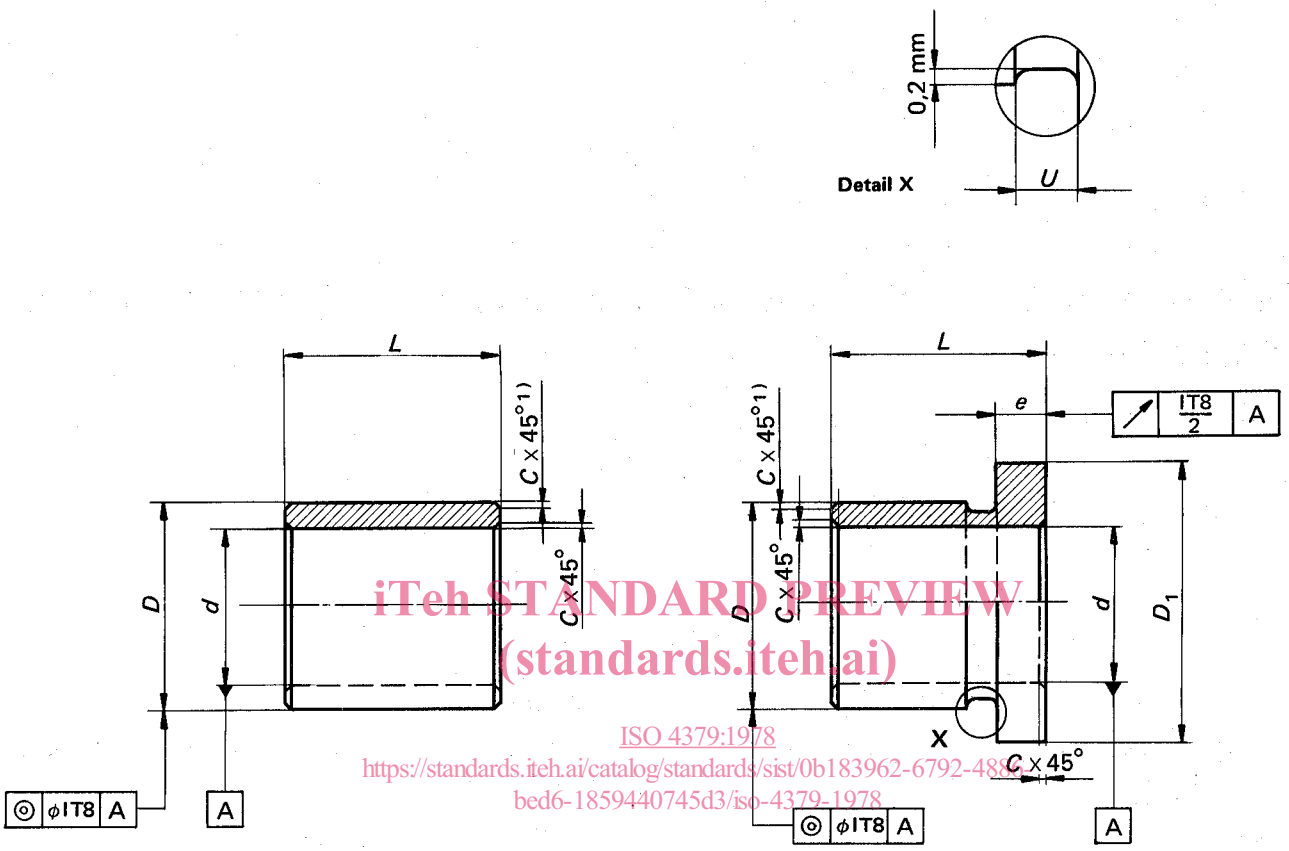




FIGURE 1 – **Cylindrical bush**

FIGURE 2 – **Flanged bush**

$D$ = bush outside diameter
$d$ = bush inside diameter
$L$ = bush width
$D_1$ = flange diameter
$e$ = flange thickness
$C$ = chamfer width
$U$ = width of undercut

1) The chamfer on the outside surface shall be normally at 45°. Alternatively a chamfer of 15° may be provided, the details of which shall be subject to agreement between the user and the manufacturer.

## 4 DIMENSIONS

### 4.1 Cylindrical bushes

TABLE 1

Dimensions in millimetres

| Inside diameter *d* | Outside diameter *D* | | Widths *L* | | | Chamfer width *C* |
|---|---|---|---|---|---|---|
| | a | b | | | | |
| 6 | 10 | 12 | 6 | 10 | | 0,3 |
| 8 | 12 | 14 | 6 | 10 | | 0,3 |
| 10 | 14 | 16 | 6 | 10 | | 0,3 |
| 12 | 16 | 18 | 10 | 15 | 20 | 0,5 |
| 14 | 18 | 20 | 10 | 15 | 20 | 0,5 |
| 15 | 19 | 21 | 10 | 15 | 20 | 0,5 |
| 16 | 20 | 22 | 12 | 15 | 20 | 0,5 |
| 18 | 22 | 24 | 12 | 20 | 30 | 0,5 |
| 20 | 24 | 26 | 15 | 20 | 30 | 0,5 |
| 22 | 26 | 28 | 15 | 20 | 30 | 0,5 |
| 24* | 28 | 30 | 15 | 20 | 30 | 0,5 |
| 25 | 30 | 32 | 20 | 30 | 40 | 0,5 |
| 27* | 32 | 34 | 20 | 30 | 40 | 0,5 |
| 28 | 34 | 36 | 20 | 30 | 40 | 0,5 |
| 30 | 36 | 38 | 20 | 30 | 40 | 0,5 |
| 32 | 38 | 40 | 20 | 30 | 40 | 0,8 |
| 33• | 40 | 42 | 20 | 30 | 40 | 0,8 |
| 35 | 41 | 45 | 30 | 40 | 50 | 0,8 |
| 36* | 42 | 46 | 30 | 40 | 50 | 0,8 |
| 38 | 45 | 48 | 30 | 40 | 50 | 0,8 |
| 40 | 48 | 50 | 30 | 40 | 60 | 0,8 |
| 42 | 50 | 52 | 30 | 40 | 60 | 0,8 |
| 45 | 53 | 55 | 30 | 40 | 60 | 0,8 |
| 48 | 56 | 58 | 40 | 50 | 60 | 0,8 |
| 50 | 58 | 60 | 40 | 50 | 60 | 0,8 |
| 55 | 63 | 65 | 40 | 50 | 70 | 0,8 |
| 60 | 70 | 75 | 40 | 60 | 80 | 0,8 |
| 65 | 75 | 80 | 50 | 60 | 80 | 1,0 |
| 70 | 80 | 85 | 50 | 70 | 90 | 1,0 |
| 75 | 85 | 90 | 50 | 70 | 90 | 1,0 |
| 80 | 90 | 95 | 60 | 80 | 100 | 1,0 |
| 85 | 95 | 100 | 60 | 80 | 100 | 1,0 |
| 90 | 105 | 110 | 60 | 80 | 120 | 1,0 |
| 95 | 110 | 115 | 60 | 100 | 120 | 1,0 |
| 100 | 115 | 120 | 80 | 100 | 120 | 1,0 |
| 105 | 120 | 125 | 80 | 100 | 120 | 1,0 |
| 110 | 125 | 130 | 80 | 100 | 120 | 1,0 |
| 120 | 135 | 140 | 100 | 120 | 150 | 1,0 |
| 130 | 145 | 150 | 100 | 120 | 150 | 2,0 |
| 140 | 155 | 160 | 100 | 150 | 180 | 2,0 |
| 150 | 165 | 170 | 120 | 150 | 180 | 2,0 |
| 160 | 180 | 185 | 120 | 150 | 180 | 2,0 |
| 170 | 190 | 195 | 120 | 180 | 200 | 2,0 |
| 180 | 200 | 210 | 150 | 180 | 250 | 2,0 |
| 190 | 210 | 220 | 150 | 180 | 250 | 2,0 |
| 200 | 220 | 230 | 180 | 200 | 250 | 2,0 |



* These diameters are especially intended for bushes for clevis pins.

NOTE – With some materials, especially cold-drawn material, it is possible to make bushes with thinner walls. It is also agreed to make bushes with thicker walls for justified special applications.

If required, dimensions may be selected from ISO 3547.

## 4.2 Flanged bushes

TABLE 2

Dimensions in millimetres

| Inside diameter $d$ | Outside diameter $D$ | Flange diameter $D_1$ | Widths $L$ | | | Flange thickness $e$ | Chamfer width $C$ | Width of undercut $U$ |
|---|---|---|---|---|---|---|---|---|
| 6 | 12 | 14 | 6 | 10 | | 3 | 0,3 | 1 |
| 8 | 14 | 18 | 6 | 10 | | 3 | 0,3 | 1 |
| 10 | 16 | 20 | 6 | 10 | | 3 | 0,3 | 1 |
| 12 | 18 | 22 | 10 | 15 | 20 | 3 | 0,5 | 1 |
| 14 | 20 | 25 | 10 | 15 | 20 | 3 | 0,5 | 1 |
| 15 | 21 | 27 | 10 | 15 | 20 | 3 | 0,5 | 1 |
| 16 | 22 | 28 | 12 | 15 | 20 | 3 | 0,5 | 1,5 |
| 18 | 24 | 30 | 12 | 20 | 30 | 3 | 0,5 | 1,5 |
| 20 | 26 | 32 | 15 | 20 | 30 | 3 | 0,5 | 1,5 |
| 22 | 28 | 34 | 15 | 20 | 30 | 3 | 0,5 | 1,5 |
| 24* | 30 | 36 | 15 | 20 | 30 | 3 | 0,5 | 1,5 |
| 25 | 32 | 38 | 20 | 30 | 40 | 4 | 0,5 | 1,5 |
| 27* | 34 | 40 | 20 | 30 | 40 | 4 | 0,5 | 1,5 |
| 28 | 36 | 42 | 20 | 30 | 40 | 4 | 0,5 | 1,5 |
| 30 | 38 | 44 | 20 | 30 | 40 | 4 | 0,5 | 2 |
| 32 | 40 | 46 | 20 | 30 | 40 | 4 | 0,8 | 2 |
| 33* | 42 | 48 | 20 | 30 | 40 | 5 | 0,8 | 2 |
| 35 | 45 | 50 | 30 | 40 | 50 | 5 | 0,8 | 2 |
| 36* | 46 | 52 | 30 | 40 | 50 | 5 | 0,8 | 2 |
| 38 | 48 | 54 | 30 | 40 | 50 | 5 | 0,8 | 2 |
| 40 | 50 | 58 | 30 | 40 | 60 | 5 | 0,8 | 2 |
| 42 | 52 | 60 | 30 | 40 | 60 | 5 | 0,8 | 2 |
| 45 | 55 | 63 | 30 | 40 | 60 | 5 | 0,8 | 2 |
| 48 | 58 | 66 | 40 | 50 | 60 | 5 | 0,8 | 2 |
| 50 | 60 | 68 | 40 | 50 | 60 | 5 | 0,8 | 2 |
| 55 | 65 | 73 | 40 | 50 | 70 | 5 | 0,8 | 2 |
| 60 | 75 | 83 | 40 | 60 | 80 | 7,5 | 0,8 | 2 |
| 65 | 80 | 88 | 50 | 60 | 80 | 7,5 | 1,0 | 2 |
| 70 | 85 | 95 | 50 | 70 | 90 | 7,5 | 1,0 | 2 |
| 75 | 90 | 100 | 50 | 70 | 90 | 7,5 | 1,0 | 3 |
| 80 | 95 | 105 | 60 | 80 | 100 | 7,5 | 1,0 | 3 |
| 85 | 100 | 110 | 60 | 80 | 100 | 7,5 | 1,0 | 3 |
| 90 | 110 | 120 | 60 | 80 | 120 | 10 | 1,0 | 3 |
| 95 | 115 | 125 | 60 | 100 | 120 | 10 | 1,0 | 3 |
| 100 | 120 | 130 | 80 | 100 | 120 | 10 | 1,0 | 3 |
| 105 | 125 | 135 | 80 | 100 | 120 | 10 | 1,0 | 3 |
| 110 | 130 | 140 | 80 | 100 | 120 | 10 | 1,0 | 3 |
| 120 | 140 | 150 | 100 | 120 | 150 | 10 | 1,0 | 3 |
| 130 | 150 | 160 | 100 | 120 | 150 | 10 | 2,0 | 4 |
| 140 | 160 | 170 | 100 | 150 | 180 | 10 | 2,0 | 4 |
| 150 | 170 | 180 | 120 | 150 | 180 | 10 | 2,0 | 4 |
| 160 | 185 | 200 | 120 | 150 | 180 | 12,5 | 2,0 | 4 |
| 170 | 195 | 210 | 120 | 180 | 200 | 12,5 | 2,0 | 4 |
| 180 | 210 | 220 | 150 | 180 | 250 | 15 | 2,0 | 4 |
| 190 | 220 | 230 | 150 | 180 | 250 | 15 | 2,0 | 4 |
| 200 | 230 | 240 | 180 | 200 | 250 | 15 | 2,0 | 4 |

* These diameters are especially intended for bushes for clevis pins.

## 5 TOLERANCES

### 5.1 Tolerances on diameters

The tolerances on diameters of both plain and flanged bushes shall be in accordance with table 3.

TABLE 3

| Inside diameter $d$[1] | Outside diameter $D$ | | Housing diameter | Flange diameter $D_1$ |
|---|---|---|---|---|
| | ⩽ 120 mm | > 120 mm | | |
| E6 | s6 | r6 | H7 | d11 |

1) The probable tolerance on $d$ after fitting into the housing would normally be H8 but it depends on the design of the housing and on its material.

When the bushes are to be used in conjunction with ready-made precision ground shafts, the tolerance on the inside diameter $d$ shall be D6, so that the probable tolerance after fitting is F8.

### 5.2 Coaxiality

The axis of the outside surface of the bush, to the dimension of which the tolerance frame is connected (see figures 1 and 2), shall be contained in a cylinder of diameter IT8 coaxial with the axis of surface A. The value of IT8 shall be that which applies to the outside diameter.

### 5.3 Tolerance on width

The tolerance on the width $L$ of both plain and flanged bushes shall be h13.

### 5.4 Flange run-out

The axial run-out of the flange shall not be greater than half of the value of IT8 applied to the flange diameter (see figure 2) during one complete revolution about the axis of surface A.

## 6 SURFACE FINISH

The maximum surface roughness of the inside and outside surfaces shall be $R_a = 1{,}6$ µm.

On all other surfaces the maximum surface roughness shall be $R_a = 6{,}3$ µm.