BS ISO 12164-4:2014

BSI Standards Publication

Hollow taper interface with flange contact surface

Part 4: Dimensions of receivers for stationary tools

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National foreword

This British Standard is the UK implementation of ISO 12164-4:2014. It supersedes BS ISO 12164-4:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee MTE/18, Tools tips and inserts for cutting applications.

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.

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INTERNATIONAL STANDARD

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Second edition
2014-12-15

Hollow taper interface with flange contact surface —

Part 4: Dimensions of receivers for stationary tools

Interfaces à cône creux-face —

Partie 4: Dimensions des nez de broches pour outils non rotatifs

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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: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 29, *Small tools*.

This second edition cancels and replaces the first edition (ISO 12164-4:2008), Figure 1 of which has been technically revised.

ISO 12164 consists of the following parts, under the general title *Hollow taper interface with flange contact surface*:

— *Part 1: Shanks — Dimensions*

— *Part 2: Receivers — Dimensions*

— *Part 3: Dimensions of shanks for stationary tools*

— *Part 4: Dimensions of receivers for stationary tools*

INTERNATIONAL STANDARD ISO 12164-4:2014(E)

Hollow taper interface with flange contact surface —

Part 4: Dimensions of receivers for stationary tools

1 Scope

This part of ISO 12164 specifies dimensions for receivers with taper and flange contact surfaces for hollow taper shanks in accordance with ISO 12164-3 to be applied to machine tools (e.g. turning machines, turning-mill machines). A range of sizes is specified.

This part of ISO 12164 specifies the receiver of type T. It is for automatic tool exchange and manual clamping, which is achieved via holes in both the receiver and the tool shank.

The torque is transmitted via the tail end of the shank through keys as well as friction.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1101, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 3040, *Geometrical product specifications (GPS) — Dimensioning and tolerancing — Cones*

3 Dimensions

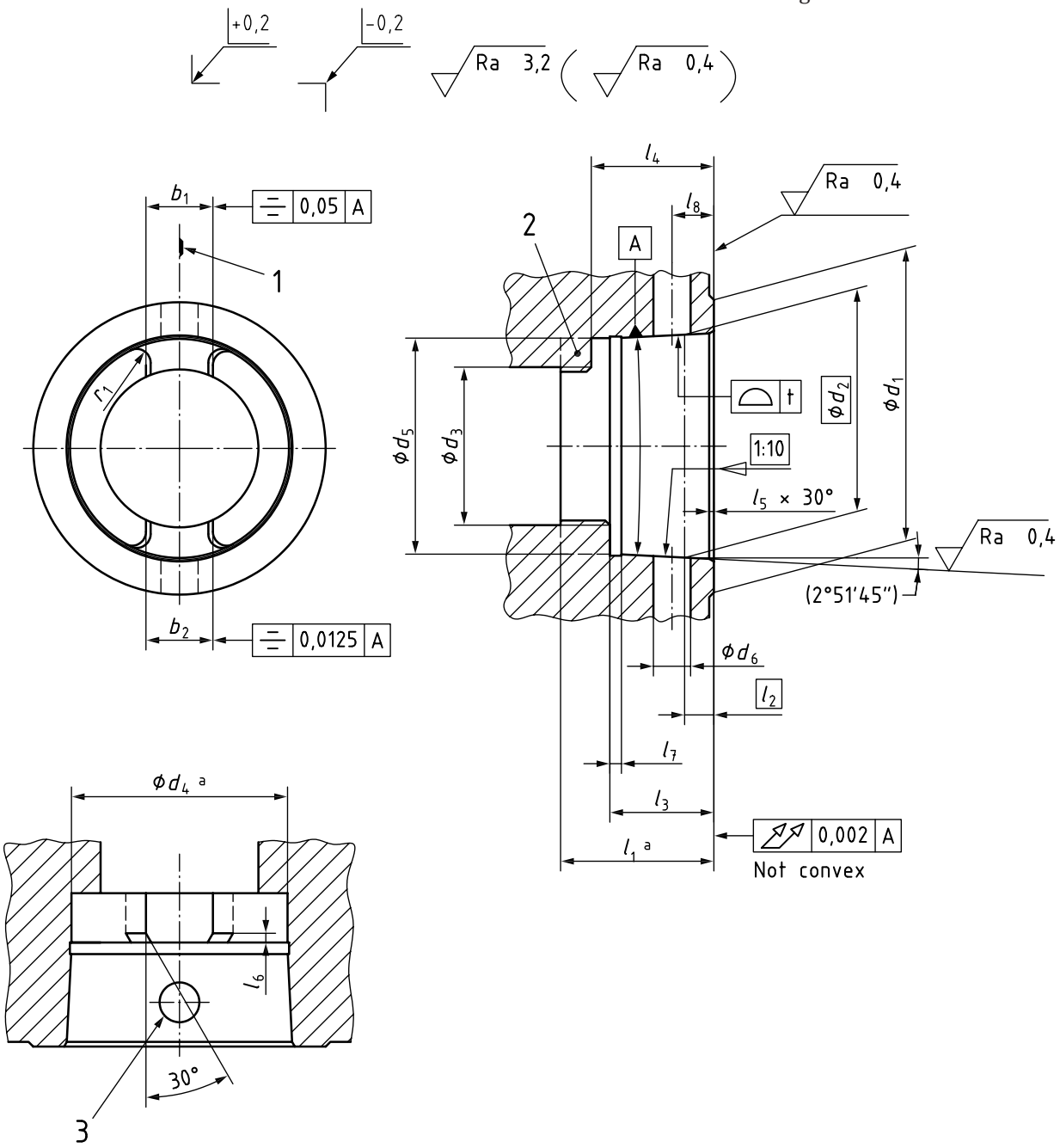
3.1 General

Dimensions of receivers for hollow taper shanks with flange contact surface for stationary tools, type T, are specified in Figure 1, Table 1, and Annex A. Details not specified in Figures 1 shall be chosen expediently. Tolerancing of form, orientation, location, and run-out is in accordance with ISO 1101. Dimensioning and tolerancing of cones are in accordance with ISO 3040. Tolerances not specified shall be of tolerance class «m» in accordance with ISO 2768-1.

3.2 Receiver for hollow taper shank, type T

The dimensions of receiver for hollow taper shanks, type T, shall be in conformance with Figure 1 and Table 1.

Dimensions in millimetres
Surface roughness values in micrometres



Key

1 cutting edge[b]
2 tenon[c]
3 hole for manual clamping[d]
a When tenons are inserted, the taper hole may be conical over the total length l_1.
b Position of the cutting edge for right-hand tools with single cutting edged.
c Tenon alternative integrated or inserted.
d Inside edge min. 0,5 mm × 45° chamfer.

Figure 1 — Dimensions of receivers

Table 1 — Dimensions

Dimensions in millimetres

Nominal size		32	40	50	63	80	100	125	160
b_1	±0,05	6,8	7,8	10,3	12,3	15,8	19,78	24,78	29,78
b_2		6,92	7,92	10,41	12,41	15,91	19,89	24,89	29,89
	tol.	$^{0}_{-0,025}$				$^{0}_{-0,03}$			
d_1	min.	32	40	50	63	80	100	125	160
d_2		23,998	29,998	37,998	47,998	59,997	74,997	94,996	119,995
d_3[a]		17	21	26	34	42	53	67	85
d_4[b]	$^{+0,1}_{0}$	23,28	29,06	36,85	46,53	58,1	72,6	92,05	116,1
d_5	$^{+0,2}_{0}$	23,8	29,6	37,5	47,2	58,8	73,4	93	118
d_6		Hole diameter to be chosen by the manufacturer							
l_1[b]	$^{+0,2}_{0}$	16,5	20,5	25,5	33	41	51	64	81
l_2		3,2	4	5	6,3	8	10	12,5	16
l_3	$^{+0,2}_{0}$	11,4	14,4	17,9	22,4	28,4	35,4	44,4	57,4
l_4	$^{+0,2}_{0}$	13,4	16,9	20,9	26,4	32,4	40,4	51,4	64,4
l_5		0,8	0,8	1	1	1,5	1,5	2	2
l_6	$^{+0,1}_{0}$	1	1	1,5	1,5	2	2	2,5	2,5
l_7	±0,1	2	2	2	2,5	3	3	4	4
l_8	±0,1	5	6	7,5	9	12	15	—	—
r_1[c]	$^{0}_{-0,05}$	1,5	2	2,5	3	4	5	6	8
t		0,001 5	0,001 5	0,002	0,002	0,002 5	0,003	0,003 5	0,003 5

a Depending on the clamping system.

b See note [a] to Figure 1.

c r_1 tangent to b_1 or b_2 and d_4.

4 Design — Hole for manual clamping

Design without hole for manual clamping is standard.

Design with hole for manual clamping is optional.

5 Designation

A receiver for hollow taper shank (HSK) in accordance with this part of ISO 12164 shall be designated by the following:

a) “Receiver for hollow taper shank”;

b) reference to this part of ISO 12164, i.e. ISO 12164-4;

c) “HSK”;

d) type: T for stationary tools;

e) nominal size, in millimetres.

EXAMPLE A receiver for hollow taper shank with flange contact surface (HSK) for stationary tools (type T) with nominal size 50 mm is designated as follows:

Receiver for hollow taper shank ISO 12164-4-HSK-T 50

Annex A
(informative)

Recommendations for use and application

A.1 Clamping system

The clamping system should be specified by the manufacturer of the receiver or machine tool spindle. The system should provide sufficient clamping force to ensure contact of the shank flange with the receiver face, as well as seating of the taper by elastic deformation. The torque transmitting capacity of the interface is substantially determined by the size of the clamping force.

A.2 Clamping forces

The recommended clamping forces are shown in Table A.1.

The clamping forces are only applied to the hollow shanks for stationary tools (type T).

Table A.1

Nominal size, mm	32	40	50	63	80	100	125	160
Clamping force, kN	5	8	14	24	37	55	86	150

Lower clamping forces can be sufficient when operational loads are low (e.g. cutting and feed forces in finish machining). Conversely, higher clamping forces can be required when high operational loads are encountered (e.g. cutting and feed forces in heavy machining).

A.3 Information about speeds and torque

The manufacturer should provide information regarding permissible speeds and torque transmitting capacities.

Bibliography

[1] ISO 12164-3, *Hollow taper interface with flange contact surface — Part 3: Dimensions of shanks for stationary tools*

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