INTERNATIONAL STANDARD

ISO 12164-2

First edition
2001-12-01

Hollow taper interface with flange contact surface —

Part 2: Receivers — Dimensions

Interfaces à cône creux-face —

Partie 2: Nez de broche — Dimensions

Reference number
ISO 12164-2:2001(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 12164 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 12164-2 was prepared by Technical Committee ISO/TC 29, *Small tools*.

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*

Annex A of this part of ISO 12164 is for information only.

Hollow taper interface with flange contact surface —

Part 2:
Receivers — Dimensions

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 12164-1 to be applied on machine tools (e.g. turning machines, drilling machines, milling machines and grinding machines). A range of sizes is specified.

This part of ISO 12164 specifies two styles of receiver. Style A is for automatic tool exchange and style C is for manual clamping which is achieved via holes in both the receiver and the tool shank.

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

2 Normative references

There are no normative references at present.

ISO 1101:—[1)], *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 2768-1:1989, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 3040:1990, *Technical drawings — Dimensioning and tolerancing — Cones*

ISO 12164-1, *Hollow taper interface with flange contact surface — Part 1: Shanks — Dimensions*

3 Dimensions

3.1 General

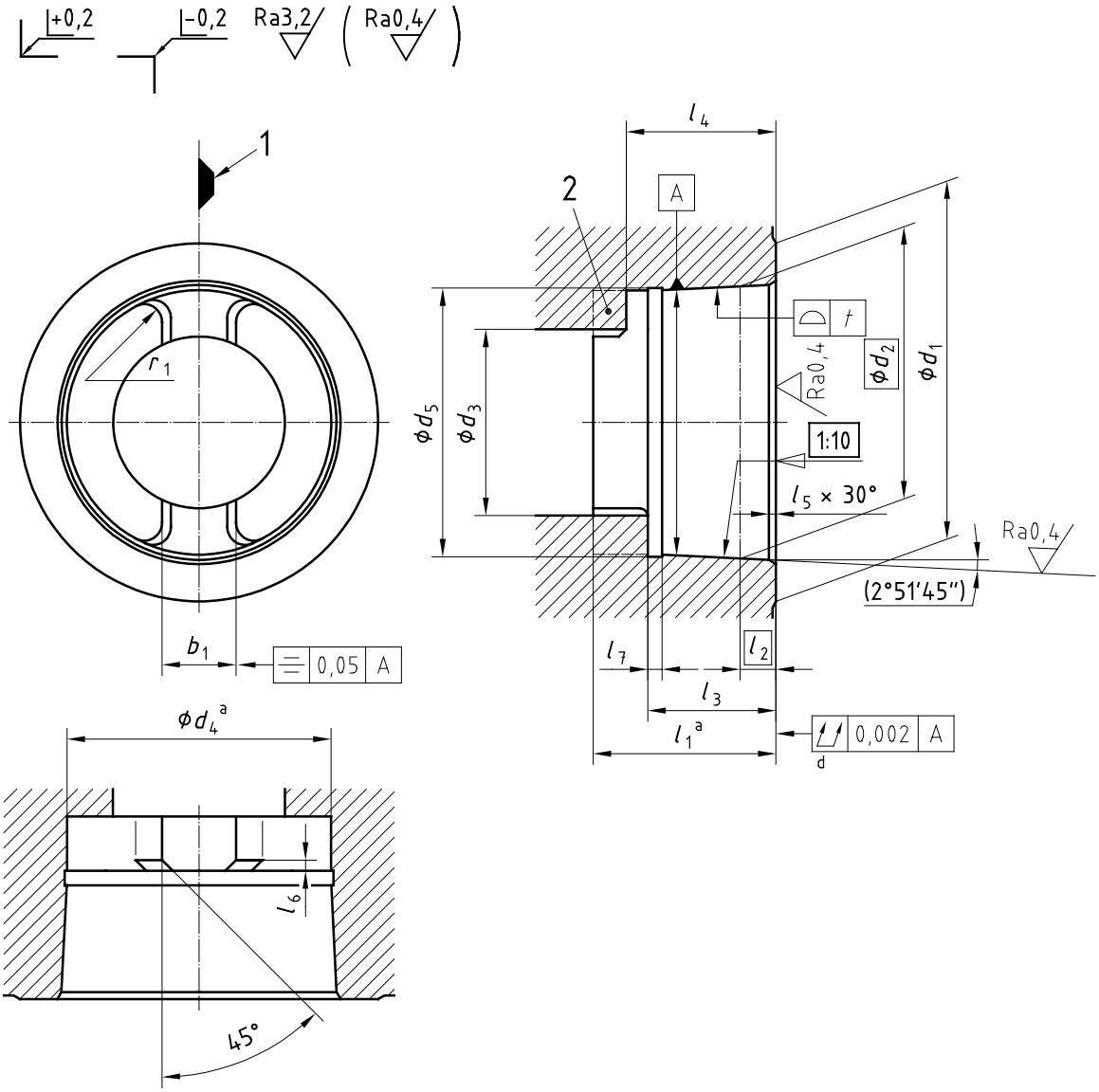
Dimensions of receivers for hollow taper shanks with flange contact surfaces for automatic tool exchange are specified in Figure 1 and Table 1, and additional dimensions of receivers for hollow taper shanks with flange contact surfaces for manual tool exchange are specified in Figure 2 and Table 2. Tolerancing of form, orientation, location and run-out is in accordance with ISO 1101. Dimensioning and tolerancing of cones is in accordance with ISO 3040. Details not specified shall be chosen expediently. Tolerances not specified shall be of tolerance class “m” in accordance with ISO 2768-1.

1) To be published. (Revision of ISO 1101:1983)

3.2 Receiver for hollow shank, style A

See Figure 1 and Table 1.

Dimensions in millimetres,
surface roughness values in micrometers



Key

1 Cutting edge [b]
2 Tenon [c]

[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 edge

[c] Tenon alternative integrated or inserted

[d] Not convex

Figure 1

Table 1 — Dimensions

Dimensions in millimetres

Nominal size		32	40	50	63	80	100	125	160
b_1	$\pm$ 0,05	6,8	7,8	10,3	12,3	15,8	19,78	24,78	29,78
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
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	$\pm$ 0,1	2	2	2	2,5	3	3	4	4
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.

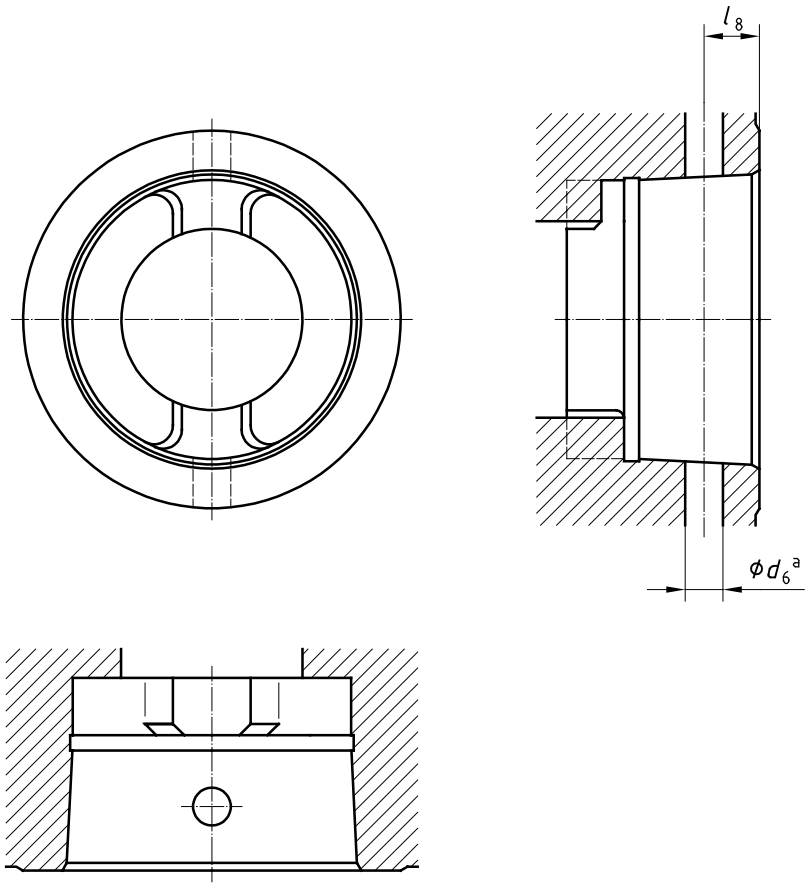
[b] See note a to Figure 1.

[c] r_1 tangent to b_1 and d_4.

3.3 Receiver for hollow taper shank, style C

See Figure 2 and Table 2.

For non-specified dimensions, see Figure 1.



a Inside edge min. 0,5 mm × 45° chamfer.

Figure 2

Table 2 — Additional dimensions of style C[a]

Dimensions in millimetres

Nominal size	32	40	50	63	80	100
l_8 ± 0,1	5	6	7,5	9	12	15
d_6	Hole diameter to be chosen by the manufacturer.					

a All other dimensions see style A.

4 Designation

A receiver for hollow taper shanks in accordance with this part of ISO 12164 shall be designated by:

a) “Receiver for hollow taper shank”

b) Reference to this part of ISO 12164, i.e. ISO 12164-2;

c) “HSK”;

d) Type: A or C;

e) Nominal size, in millimetres.

EXAMPLE 1 A receiver for hollow taper shanks (HSK) for automatic tool exchange, of type A and with nominal size 50 mm is designated as follows:

Receiver for hollow taper shank ISO 12164-2-HSK-A 50

EXAMPLE 2 A receiver for hollow taper shanks (HSK) for manual tool exchange, of type C and with nominal size 50 mm is designated as follows:

Receiver for hollow taper shank ISO 12164-2-HSK-C 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 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

Variations of taper shank and receiver size within the specified limits of tolerance will cause the portion of the clamping force acting on the flange surface to vary. However, the clamping forces given in Table A.1 will ensure that the portion acting on the flange surface is never less than 75 % of the total. The flange contact surface is decisive for the torque transmitting capacity and stiffness of the hollow taper interface.

The clamping forces listed in Table A.1 only apply to hollow taper shanks style A and style C.

Table A.1

Nominal size, mm	32	40	50	63	80	100	125	160
Clamping force, kN	5	6,8	11	18	28	45	70	115

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.

ICS 25.060.20

Price based on 6 pages