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Hollow taper interface with flange contact surface ~~—~~ —

Part 1: Shanks of types A, AB, C, CB and EB

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Contents

Foreword	v
Part 1: Shanks of types A, AB, C, CB and EB	7
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Hollow taper shanks, types and dimensions	7
4.1 General	7
4.2 Hollow taper shanks of types A and AB	8
4.2.1 General	8
4.2.2 Balancing measures and basic dimensions	20
4.3 Hollow taper shank of types C and CB	74
4.3.1 Hollow taper shank of type C	74
4.3.2 Hollow taper shank of type CB and basic dimensions	77
4.4 Hollow taper shank of type EB	84
4.5 Dimensions	1
5 Balancing	7
5.1 General	7
5.2 Fine balancing of HSK-AB and HSK-CB	8
6 Design	8
6.1 HSK sizes and types	8
6.2 Medium-transfer unit	8
6.3 Clamping forces	8
6.4 Material and heat treatment	8
7 Designation	8
Annex A (informative) Clamping forces for shanks of types A, AB, C, CB and EB	10
Annex B (informative) Hollow taper shanks of types C and CB with medium-transfer unit	11
Annex C (informative) Overview of all different types of shanks	12
Bibliography	13

Foreword	4
1	5
2	5
3	5
4	6
4.1	6
4.2	6
4.2.1	6
4.2.2	13

ISO/FDIS 12164-1:2023(E)

4.3	Hollow taper shank of types C and CB	32
4.3.1	Hollow taper shank of type C	32
4.3.2	Hollow taper shank of type CB and basic dimensions	33
4.4	Hollow taper shank of type EB	36
4.5	Dimensions	37
5	Balancing	43
5.1	General	43
5.2	Fine balancing of HSK AB and HSK CB	43
6	Design	43
6.1	HSK sizes and types	43
6.2	Medium transfer unit	44
6.3	Clamping forces	44
6.4	Material and heat treatment	44
7	Designation	44
Annex A (informative)	Clamping forces for shanks of types A, AB, C, CB and EB	46
Annex B (informative)	Hollow taper shanks of types C and CB with medium transfer unit	47
Annex C (informative)	Overview of all different types of shanks	48

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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.

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), 2 (see www.iso.org/directives).

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For an explanation ~~of~~ the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by the Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with defined cutting edges, holding tools, cutting items, adaptive items and interfaces*. with defined cutting edges, holding tools, cutting items, adaptive items and interfaces.

This second edition cancels and replaces the first edition (ISO 12164-1:2001), which has been technically revised.

The main changes are as follows:

- ~~—~~ new hollow taper shank types added;
- ~~—~~ new hollow taper shank of type AB has a peripherally grooved flange collar for automatic tool change, dynamically balanced;
- ~~—~~ new hollow taper shank of type CB for manual tool change, dynamically balanced;
- ~~—~~ new hollow taper shank of type EB has a peripherally grooved flange collar for automatic tool change, symmetrically designed;
- ~~—~~ the balancing quality has been improved.

ISO/FDIS 12164-1:2023(E)

A list of all parts of the ISO_12164 series can be found on the ISO website.

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Hollow taper interface with flange contact surface —

Part 1: Shanks of types ~~A~~, AB, C, CB and EB

1 Scope

This document specifies the dimensions of hollow taper shanks with flange contact surface (HSK). These shanks are the male part of the interface to the machine tools (e. g. milling/drilling, turning and grinding machines).

This document specifies five types of shanks:

- types A, AB and EB have a peripherally grooved flange for automatic tool change;
- types C and CB have a flange without peripheral groove and can only be changed manually.

HSK types A and AB can also be changed manually via radial access bore holes in the hollow shank tapers.

This document provides information for dynamically balanced HSK-~~AB~~ and HSK-~~CB~~ shanks balancing according to ISO 16084.

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.

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

3 Terms and definitions

No terms and definitions are listed in this document.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

4 Hollow taper shanks, types and dimensions

4.1 —General

Dimensions for all parameters of all types and sizes of HSK hollow taper shanks are provided in ~~4.5.4.5~~.

Parameters of the types C, CB and EB, not specified in ~~4.3.4.3~~ and ~~4.4.4.4~~, shall be taken from ~~4.5.4.5~~. Details not specified in ~~4.5.4.5~~ shall be chosen expediently.

Only the HSK types AB and CB have balancing recesses inside the low HSK taper groove and left and right of it (see ~~Figures 1~~ ~~Figures 1~~ and ~~4.1-1.1~~). They lead, together with the corresponding balancing measures of ~~4.2.2.2~~ at the HSK shank flange, to dynamically balanced HSK shank of types AB and CB without changing their functionality.

Preferred zones for further balancing measures are specified in ~~Clause 5~~ ~~Clause 5~~.

For clamping forces for HSK shanks of types A, AB, C, CB and EB, see in ~~Annex A~~ ~~Annex A~~.

For hollow taper shanks of types C and CB with medium - transfer unit, see [Annex B, Annex B](#).

For an overview of all different types of shanks, see [Table C.1, Annex C](#).

Tolerances of form, orientation, location and run-out correspond to ISO 1101. Dimensions and tolerances of cones are in ~~accordance with~~[according to](#) ISO 3040. Tolerances not specified shall be of tolerance class "m" in accordance with ISO 2768-1.

4.2 Hollow taper shanks of types A and AB

4.2.1 General

~~Figure 1~~[Figure 1](#) provides the parameters of the types A and AB, as well as common dimensions of all hollow taper shank types with flange contact surface (also called "HSK" or "HSK shank" in this document).

The HSK of type AB is the dynamically balanced version of the hollow taper shank for automatic tool change.

Many products with HSK-shanks, e. g. adapters and/or cutting tools, have symmetrical front parts of short length and/or small diameters. They can only be balanced dynamically, i.e. in two balancing planes, by applying the measures of the HSK-AB as described in this document. There are either no other areas available for sufficient and sensible mass compensation, or restrictions of tool handling mechanisms of existing machine tools make alternative measures impossible.

All parameters of ~~Figure 1~~[Figure 1](#) but the recesses (#3) also apply to HSK of type A and can be taken from ~~Table 1, Figure 1~~[Table 1, Figure 1](#) and ~~Table 1~~[Table 1](#) show the general parameters and values of all HSK-AB and -A sizes.

The three balancing recesses at the low taper groove inside diameter d_3 (~~Figure 1~~[Figure 1](#), view Z and cross section C-C), as well as the balancing bore holes at the HSK shank flange in ~~4.2.2.2~~[4.2.2.2](#) only apply to the dynamically balanced HSK-AB. All radial bore holes (see ~~Figure 1~~[Figure 1](#)) shall be deburred.

In case of choosing any different geometry of the balancing bore holes at the shank flange the same unbalance at the same axial position of the centre of gravity shall be removed.

NOTE The positions of balancing bore holes at the HSK shank flange take mechanical restrictions of known automatic tool changing systems into account.

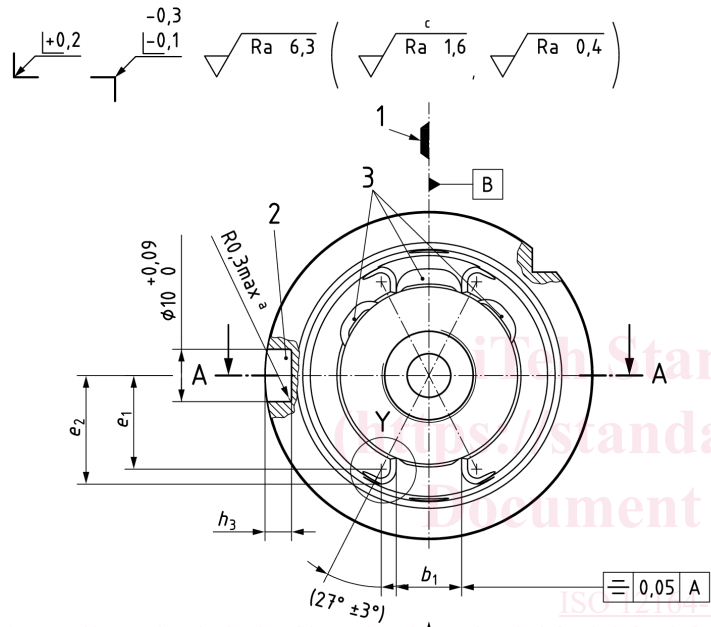
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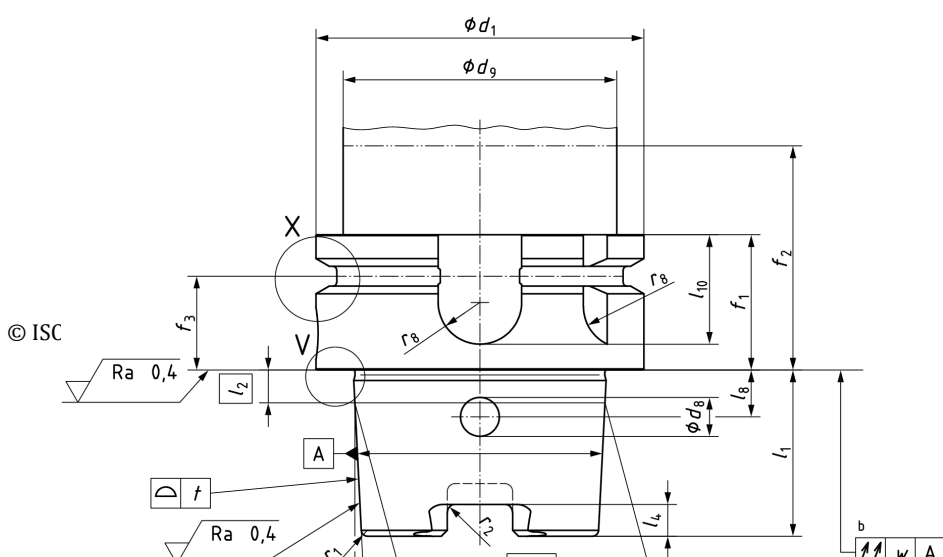
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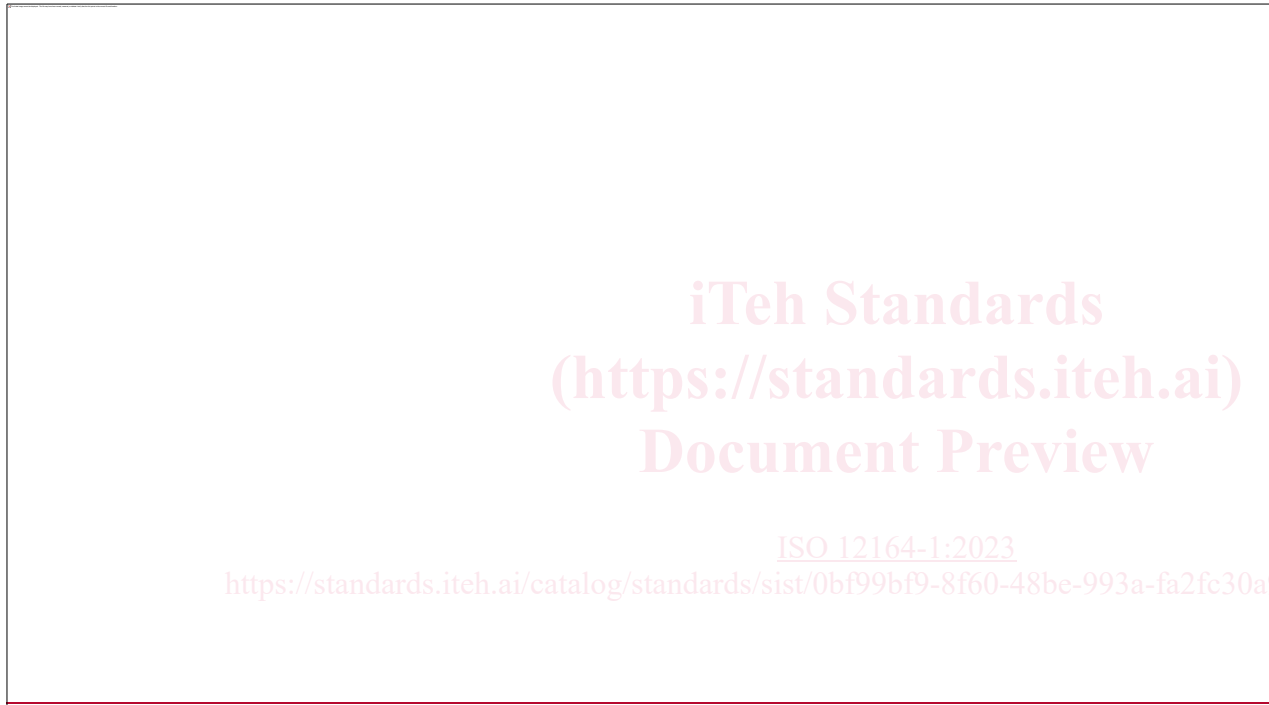
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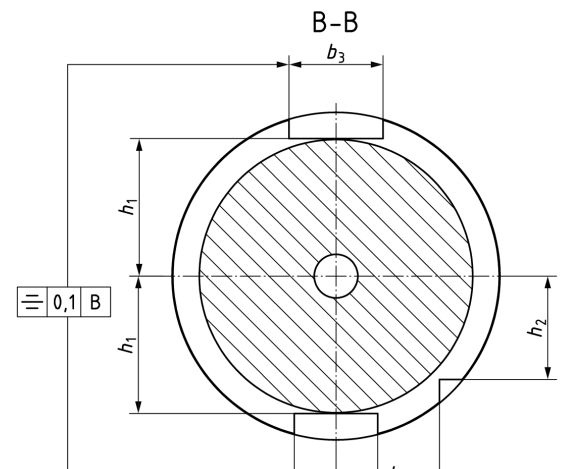
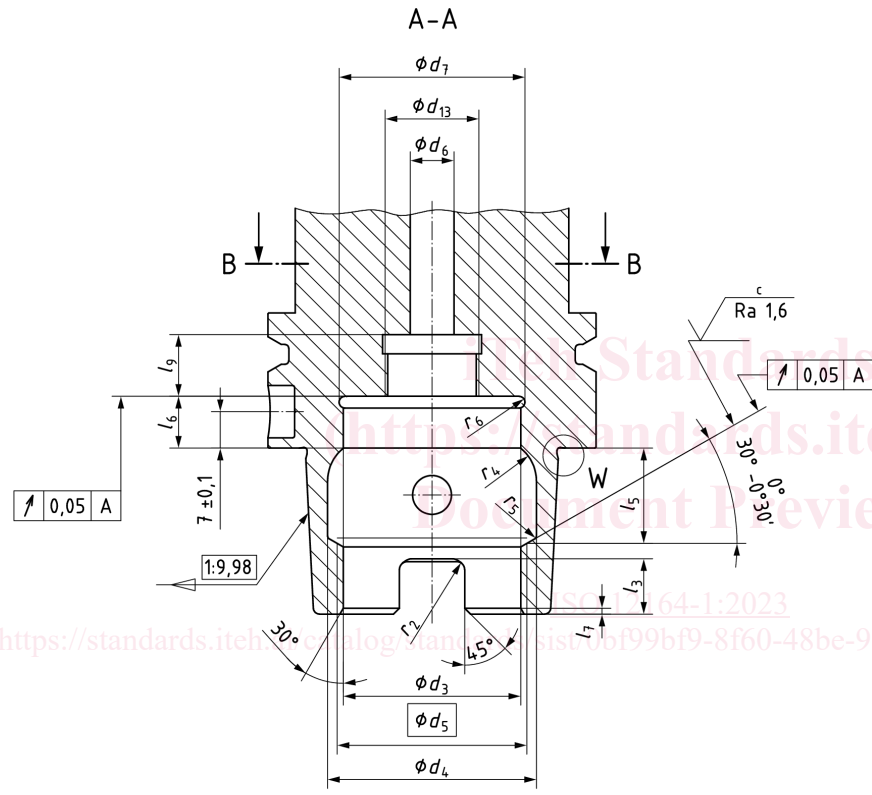


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a) HSK-A and HSK-AB main and side view

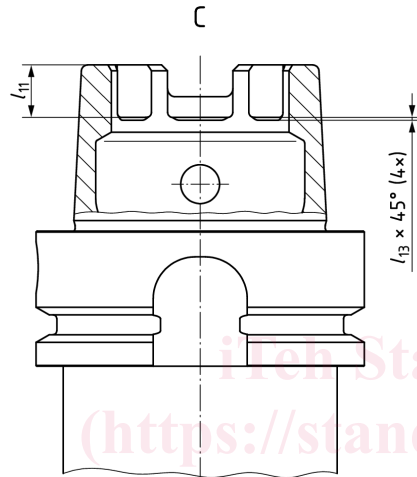




b) HSK-A and HSK-AB section A-A and section B-B



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