ASME B5.62M-2016

Hollow Taper Tooling With Flange-Face Contact

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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Two Park Avenue • New York, NY • 10016 USA

Date of Issuance: December 5, 2016

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FOREWORD

ASME B5.62M establishes a new American National Standard based on the "Final Report on the Research Project Interface Machine/Tool: Testing and Optimization of Machine Tools," also known as the "Aachen Reports," published in March 1994 by the Laboratory for Machine Tools and Production Engineering of the Rheinisch-Westfaelische Technical College, Aachen University, Germany.

This Standard has been created to eliminate confusion caused by different versions and translations of standards for the hollow taper shank, or HSK shank.

The HSK machine tool interface offers an alternative to the standard "steep taper," with greater stiffness, rigidity, and repeatability than provided by ASME B5.50, CAT-V, and other toolholders with 7/24 tapers.* The ASME B5 Technical Committee 45 felt that, in contrast to existing versions and translations of standards for the HSK, this Standard should contain a more comprehensive interpretation of the Aachen findings, to eliminate confusion arising from the blend of existing HSK documentation. This Standard provides the user with a comprehensive selection of options and includes supplemental information.

ASME B5.62M-2016 was approved by the American National Standards Institute on August 22, 2016.

* Final Report on Research Project — Study on Design Possibilities for the Connection Machine/Tool, August 15, 1991, page 4

ASME B5 COMMITTEE
Machine Tools — Components, Elements, Performance, and Equipment

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NOTE: The Committee would like to thank C. Koehn, Air Gaging, LLC, for his contributions to this Standard.

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General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions or a case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, B5 Standards Committee
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Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

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Interpretations. Upon request, the B5 Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the B5 Standards Committee.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may mail the request to the Secretary of the B5 Standards Committee at the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable.
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Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in the format described above may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

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Part 1
HSK Shanks

1-1 GENERAL

1-1.1 Scope

This Standard covers basic toolholder shanks with a hollow 1/9.98 taper, and simultaneous contact face and taper mating surfaces that are applicable to a range of machine tool applications. Hollow taper shank (HSK shank) Forms A, B, C, D, E, F, and T with nominal flange diameters of 25 mm to 160 mm are covered by this Standard.

1-1.2 Interchangeability

Machine tool interfaces conforming to this Standard are interchangeable with machine tool interfaces conforming to DIN 69893-1:2003, DIN 69893-2:2003, DIN 69893-5:2004, DIN 69893-6:2003, ISO 12164-1:2001, ISO 12164-2:2001, ISO 12164-3:2008, and ISO 12164-4:2008.

1-1.3 Forms

The HSK machine tool interfaces as manufactured in the seven basic shank forms (see Figure 1-1.3-1), and as customized by selection of several optional features, are suitable for use in a wide range of machine tool applications. The seven basic shank forms are as follows:

(a) Form A. Form A is the preferred design for use on machine tools with automatic tool changers. Keyways are located at the small end of the tool taper. Form A includes provision for through-tool coolant and manual tool change. See Figure 1-1.3-1, illustration (a).

(b) Form B. Like Form A, Form B is for use on machine tools with automatic tool changers, but it has a reduced taper compared to Form A. Keyways are located on the flange. Form B includes provision for through-flange coolant and manual tool change. See Figure 1-1.3-1, illustration (b).

(c) Form C. Form C is similar to Form A but is intended for use on machine tools requiring manual tool change. Tools with Form C shanks are typically used on transfer lines, or as part of a modular tooling system. See Figure 1-1.3-1, illustration (c).

(d) Form D. Form D is similar to Form B but is intended for use on machine tools requiring manual tool change. See Figure 1-1.3-1, illustration (d).

(e) Form E. Form E is similar to Form A, but it does not have keyways or orientation features. Form E is intended for high-speed machining. See Figure 1-1.3-1, illustration (e).

(f) Form F. Form F is similar to Form E but has a reduced taper size. Form F is intended for high-speed machining. See Figure 1-1.3-1, illustration (f).

(g) Form T. Form T is similar to Form A but has modifications to accommodate use with stationary tools. See Figure 1-1.3-1, illustration (g).

1-1.4 Definitions

balance: the condition in which the mass centerline and rotational centerline of a rotor are coincident.

clamp set: a mechanical device for securing a shank in the receiver.

data chip: a radio-frequency identification device.

drive key: a feature of a machine tool intended to orient the toolholder in the receiver and assist in delivery of the driving torque from the spindle nose to the tool.

keyway: the part of a machine tool that receives the drive key.

receiver: the spindle or nonrotating socket of a machine.

shank: a unit that fits directly into the spindle or nonrotating socket of a machine.

spindle: component assembly of the machine tool, the function of which is to accept the basic toolholder shank.

spindle nose: that part of a spindle into which the shank is accepted.

1-1.5 Figure Interpretation

The Part 1 figures are illustrated and labeled in accordance with ASME Y14.5.

1-2 FORMS A AND C

Form A includes provisions for automatic tool change, a data chip, an orientation notch, an access hole for manual clamping, drive keyways, and through-spindle coolant supply via coolant tube. Form C is intended for manual tool change and includes an access hole for manual clamping, drive keyways, and through-spindle coolant supply.