
**Machine tools — Connecting dimensions of
spindle noses and work holding chucks —**

**Part 1:
Conical connection**

*Machines-outils — Dimensions d'assemblage des nez de broche et
mandrins porte-pièces —*
Partie 1: Assemblage conique

ISO 702-1:2001

<https://standards.iteh.ai/catalog/standards/sist/6f6de131-8fda-41e3-869a-7a7c623aef1b/iso-702-1-2001>



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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 702 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 702-1 was prepared by Technical Committee ISO/TC 39, *Machine tools*, Subcommittee SC 8, *Work holding spindles and chucks*.

This second edition cancels and replaces the first edition (ISO 702-1:1975), of which it constitutes a technical revision.

ISO 702 consists of the following parts, under the general title *Machine tools — Connecting dimensions of spindle noses and work holding chucks*:

- *Part 1: Conical connection*
- *Part 2: Camlock type*
- *Part 3: Bayonet type*
- *Part 4: Cylindrical connection*

Machine tools — Connecting dimensions of spindle noses and work holding chucks —

Part 1: Conical connection

1 Scope

This part of ISO 702 specifies the sizes for interchangeability of tapered (type A) lathe spindle noses and corresponding connecting faces of face plates or work holding chucks.

NOTE The “Camlock”, “bayonet” and cylindrical types are dealt with in ISO 702-2, ISO 702-3 and ISO 702-4, respectively.

2 Interchangeability

In this part of ISO 702, all dimensions and tolerances are expressed in millimetres.

Although there are differences in the values of dimensions and assembly screws in metric and inch series, the connecting dimensions in Tables 1 and 2 allow for interchangeability between metric- and inch-based chucks (see also footnote a in Table 2).

3 Sizes for interchangeability

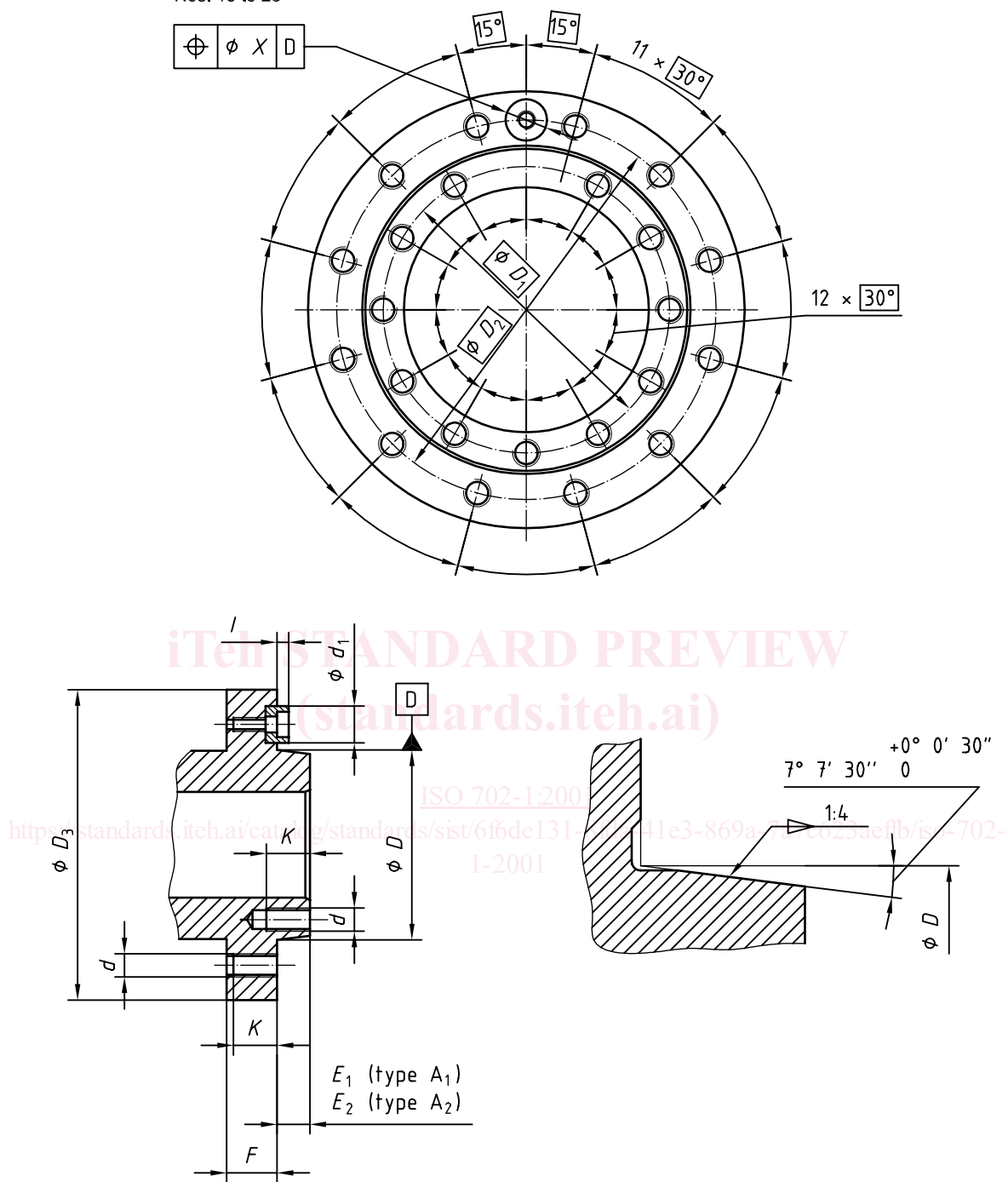
3.1 Spindle noses

See Figure 1 and Table 1.

Type A₁: Two bolt circles of diameter D_1 and D_2

Type A₂: One outer bolt circle of diameter D_2
(Type A₂ for Nos. 3 and 4; types A₁ and A₂ for Nos. 5 to 28)

Nos. 15 to 28



a All fixing holes

Figure 1 — Spindle noses (continued)

Table 1 — Dimensions of spindle noses

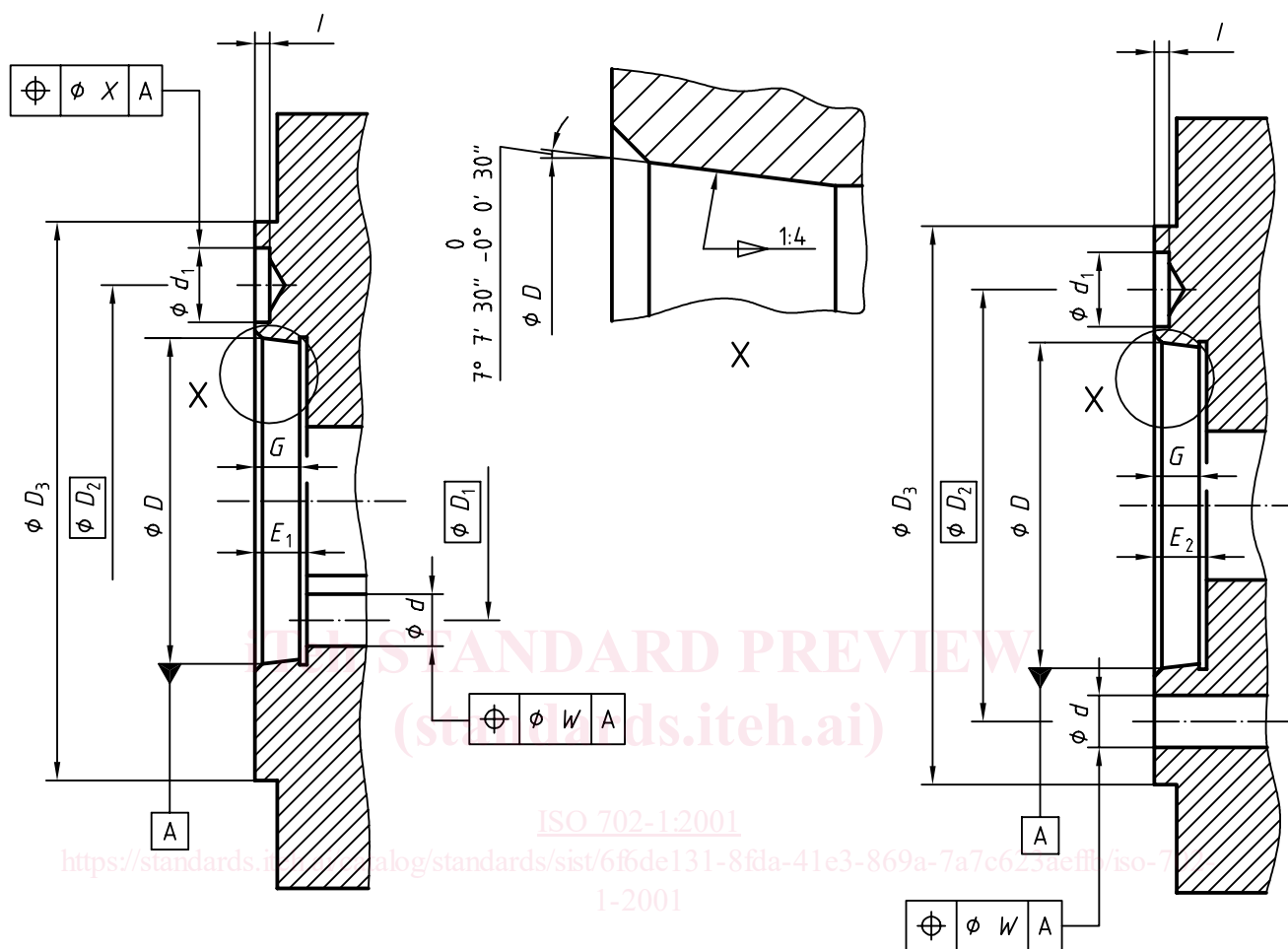
Dimension	No.									
	3	4	5	6	8	11	15	20	28	
<i>D</i>	nom.	53,975	63,513	82,563	106,375	139,719	196,869	285,775	412,775	584,225
	tol.	+0,008 0	+0,008 0	+0,010 0	+0,010 0	+0,012 0	+0,014 0	+0,016 0	+0,020 0	+0,023 0
<i>D</i> ₁	—	—	61,9	82,6	111,1	165,1	247,6	368,3	530,2	
<i>D</i> ₂	70,6	82,6	104,8	133,4	171,4	235	330,2	463,6	647,6	
<i>D</i> ₃	92	108	133	165	210	280	380	520	725	
<i>d</i>	M10	M10	M10	M12	M16	M20	M24	M24	M30	
<i>d</i> ₁ H8/h8	—	14,25	15,9	19,05	23,8	28,6	34,9	41,3	50,8	
<i>E</i> ₁ (Type A ₁) ⁰ -0,025	—	—	14,288	15,875	17,462	19,050	20,638	22,225	25,400	
<i>E</i> ₂ (Type A ₂)	11	11	13	14	16	18	19	21	24	
<i>F</i>	16	20	22	25	28	35	42	48	56	
<i>I</i>	—	5	5	5	6	8	8	8	8	
<i>K</i>	14	17	19	22	25	32	37	42	50	
<i>W</i> and <i>X</i>	0,2	0,2	0,2	0,2	0,2	0,2	0,3	0,3	0,3	
NOTE	General tolerance for untoleranced dimensions: ± 0,4 mm.									

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3.2 Connecting face dimensions

See Figure 2 and Table 2.



With inner bolt circle (for mounting on spindle nose A_1 by means of its inner bolt circle)

With outer bolt circle (for mounting on spindle nose A_1 , or spindle nose A_2 by means of its outer bolt circle)

Figure 2 — Connecting face dimensions

Table 2 — Connecting face dimensions

Dimension	No.									
	3	4	5	6	8	11	15	20	28	
<i>D</i>	nom.	53,975	63,513	82,563	106,375	139,719	196,869	285,775	412,775	584,225
	tol.	+0,003 -0,005	+0,003 -0,005	+0,004 -0,006	+0,004 -0,006	+0,004 -0,008	+0,004 -0,010	+0,004 -0,012	+0,005 -0,015	+0,006 -0,017
<i>D</i> ₁	—	—	61,9	82,6	111,1	165,1	247,6	368,3	530,2	
<i>D</i> ₂	70,6	82,6	104,8	133,4	171,4	235,0	330,2	463,6	647,6	
<i>D</i> ₃	92	108	133	165	210	280	380	520	725	
<i>d</i>	12	12	12	14	18	22	25,5 ^a	27 ^a	33	
<i>d</i> ₁	^{+0,1} ₀	—	14,7	16,3	19,45	24,2	29,4	35,7	42,1	51,6
<i>E</i> ₁ (Type A ₁)	^{+0,025} ₀	—	—	14,288	15,875	17,462	19,050	20,638	22,225	25,400
<i>E</i> ₂ min. (Type A ₂) ^b	—	—	15	16	18	20	21	23	26	
<i>G</i>	10	10	12	13	14	16	17	19	22	
<i>I</i>	—	6,5	6,5	6,5	8	10	10	10	10	
<i>W</i> and <i>X</i>	0,2	0,2	0,2	0,2	0,2	0,2	0,3	0,3	0,3	
NOTE General tolerance for untoleranced dimensions: ± 0,4 mm.										
^a These are compromise dimensions to allow for interchangeability between inch and metric chucks.										
^b <i>E</i> ₂ may be used in place of <i>E</i> ₁ only if the face plate is rigid enough not to cause bending when the screws are tightened on the inner bolt circle.										

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