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ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

7/24 tapers for tool shanks for manual changing

Cônes d'emmanchement d'outils à conicité 7/24 pour changement manuel

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 297 was prepared jointly by Technical Committees ISO/TC 39, *Machine tools*, and ISO/TC 29, *Small tools*.

This second edition cancels and replaces the first edition (ISO 297 : 1982) and ISO 2583 : 1972.

7/24 tapers for tool shanks for manual changing

1 Scope

This International Standard specifies the dimensions, in millimetres¹⁾, of 7/24 tapers for spindle noses and tool shanks and equipment for manual changing. It also specifies the external diameters of the collars for these tool shanks and equipment, and the positioning of the front face of the collar with respect to the taper in the case of attachment by the front face.

NOTES

1 The collars have two seatings on the periphery into which the two driving tenons on the machine spindle are fitted and are intended for the transmission of the spindle rotational movement to the tool or equipment.

2 Shank attachment can be carried out either by conventional rear clamping, using a clamping fastener screwed on the rear side of the shank, or by front clamping of the collar using a locking device mounted on the machine spindle and applying the tool or equipment on to the spindle. Only in the latter case is it necessary for the positioning of the front face of the collar with respect to the taper gauge plane having the basic diameter D_1 to be accurately specified.

This type of taper is designed for various types of machine tool spindle noses as well as for the corresponding tool shanks and equipment.

The dimensions for tool shank tapers automatic changers are specified in ISO 7388-1.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International

Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4762 : 1977, *Hexagon socket head cap screws — Product grade A.*

ISO 7388-1 : 1983, *Tool shanks with 7/24 taper for automatic tool changers — Part 1 : Shanks Nos. 40, 45 and 50 — Dimensions.*

3 Interchangeability

This International Standard provides, as regards threads, two entirely distinct types of product according to the type of thread, M or UN.

In order to distinguish between those two types, it is important that the component itself be marked with the corresponding thread symbol, each national standards body being free to adopt either of the two threads in its national standard.

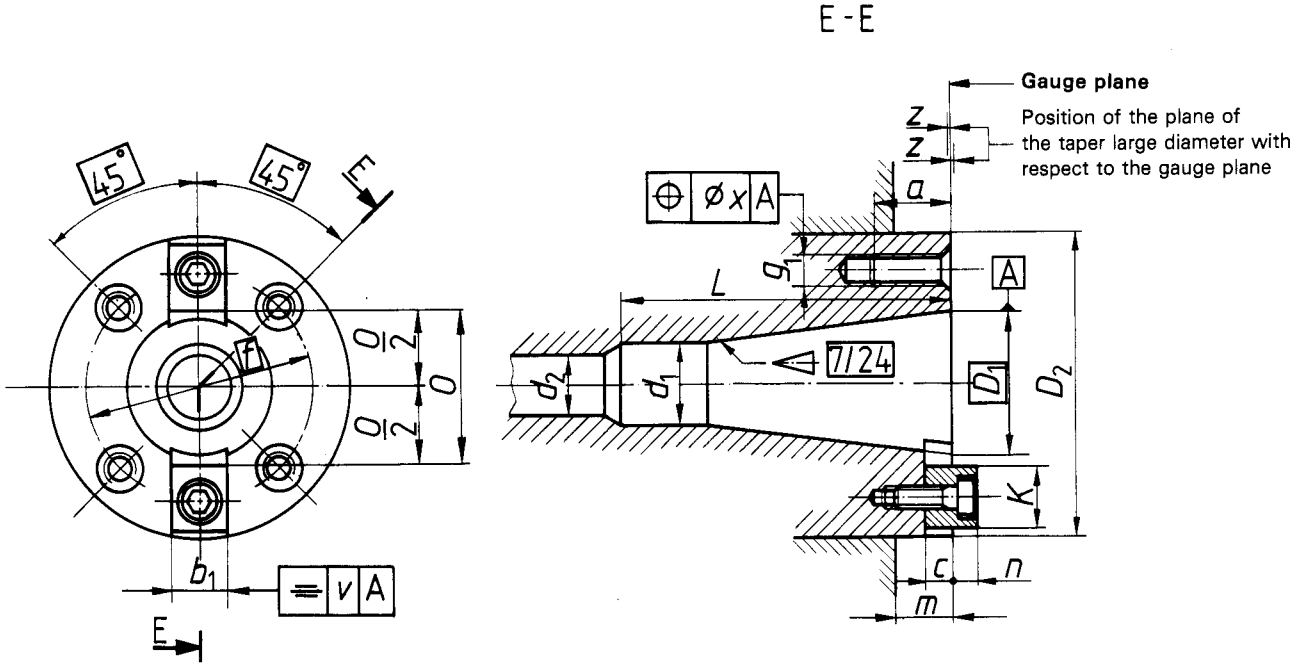
For all other dimensions, however, the products manufactured either to metric or to inch values are strictly interchangeable, though not absolutely identical. Acceptance conditions, if provided for in national standards, should therefore be such as to allow for the acceptance of products specified either in inch or in metric values.

1) The inch values will be determined after acceptance of the metric values.

4 Tapers for spindle noses

All dimensions are in millimetres.

Tapers Nos. 30 to 60



NOTE — For the spindle nose No. 60, the tenons can be fixed by two screws, as for the spindle noses Nos. 65 to 80.

Tapers Nos. 65 to 80

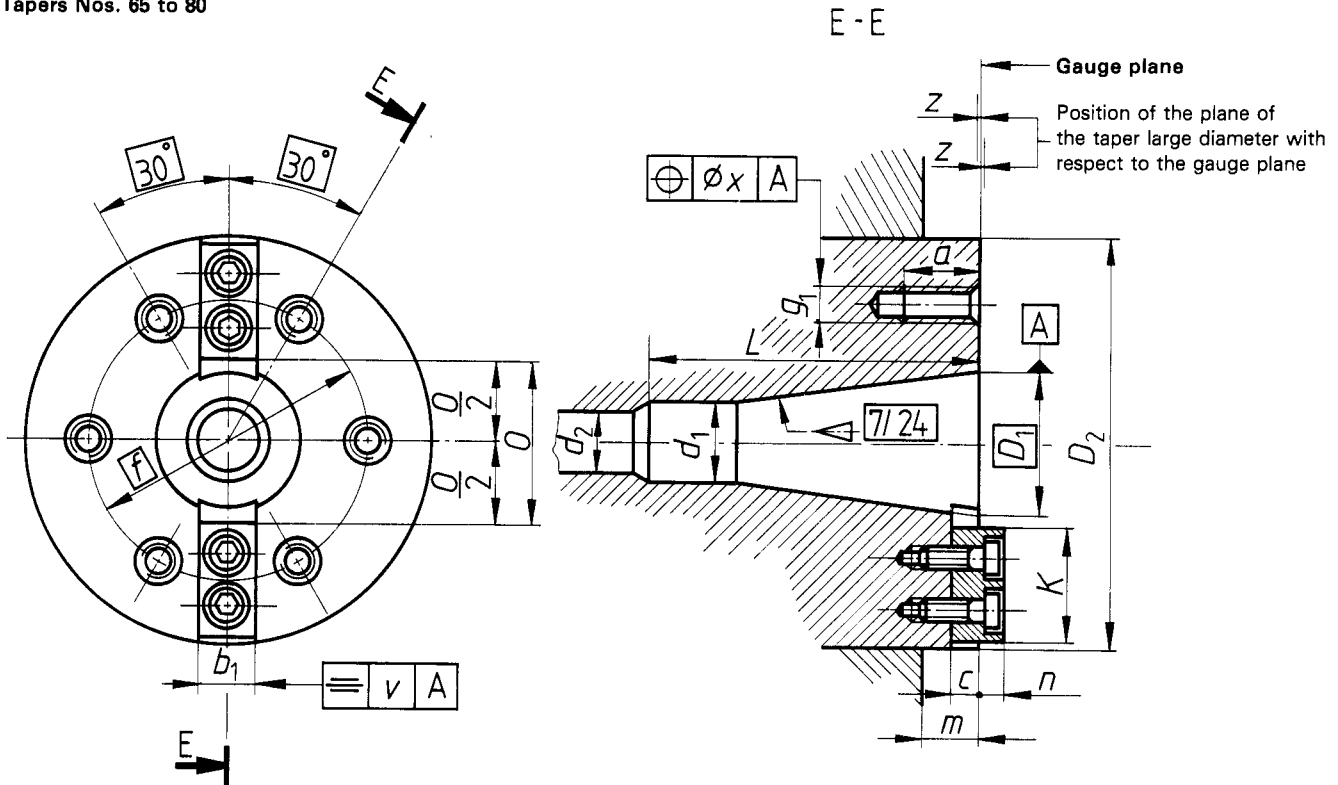


Table 1a) – Designation and dimensions

Designation No.	Taper		Recess		2)	Tenon						External centring					
	D_1 1)	z	d_1 H12	L min.	d_2 min.	b_1 3)	v	c min.	n max.	$\frac{O}{2}$ min.	K max.	D_2 h5	m min.	f	g_1 4)	α min.	x
30	31,75	0,4	17,4	73	17	15,9	0,06	8	8	16,5	16,5	69,832	12,5	54	M10	16	0,15
40	44,45	0,4	25,3	100	17	15,9	0,06	8	8	23	19,5	88,882	16	66,7	M12	20	0,15
45	57,15	0,4	32,4	120	21	19	0,06	9,5	9,5	30	19,5	101,6	18	80	M12	20	0,15
50	69,85	0,4	39,6	140	27	25,4	0,08	12,5	12,5	36	26,5	128,57	19	101,6	M16	25	0,2
55	88,9	0,4	50,4	178	27	25,4	0,08	12,5	12,5	48	26,5	152,4	25	120,6	M20	30	0,2
60	107,95	0,4	60,2	220	35	25,4	0,08	12,5	12,5	61	45,5	221,44	38	177,8	M20	30	0,2
65	133,35	0,4	75	265	42	32	0,1	16	16	75	58	280	38	220	M24	36	0,25
70	165,1	0,4	92	315	42	32	0,1	20	20	90	68	335	50	265	M24	45	0,25
75	203,2	0,4	114	400	56	40	0,1	25	25	108	86	400	50	315	M30	56	0,32
80	254	0,4	140	500	56	40	0,1	31,5	31,5	136	106	500	50	400	M30	63	0,32

1) D_1 : Basic diameter defining the gauge plane.

2) Opening for traction bar.

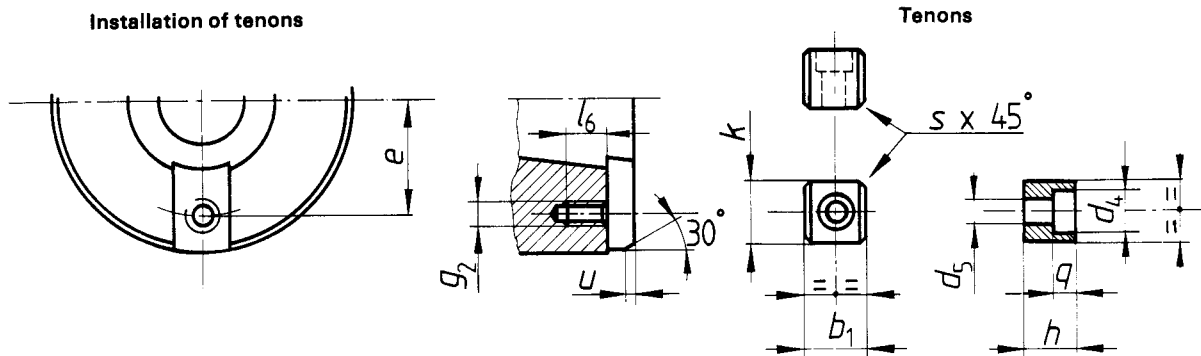
3) Assembly of the tenon in the slot: M6-h5 fit.

4) Thread diameter g_1 : this is either a metric thread M with coarse pitch or, if expressly stated, a UN thread according to table 1b). In every case, the appropriate symbol M or UN shall be marked on the component.

Table 1b) – Thread specification

Designation No.	30	40	45	50	55	60	65	70	75	80
g_1	UN 0,375-16	UN 0,500-13	UN 0,500-13	UN 0,625-11	UN 0,750-10	UN 0,750-10	UN 1,000-8	UN 1,000-8	UN 1,250-7	UN 1,250-7

For noses Nos. 30 to 60



NOTE — For spindle nose No. 60, the tenons can be fixed by two screws, as for the spindle noses Nos. 65 to 80.

For noses Nos. 65 to 80

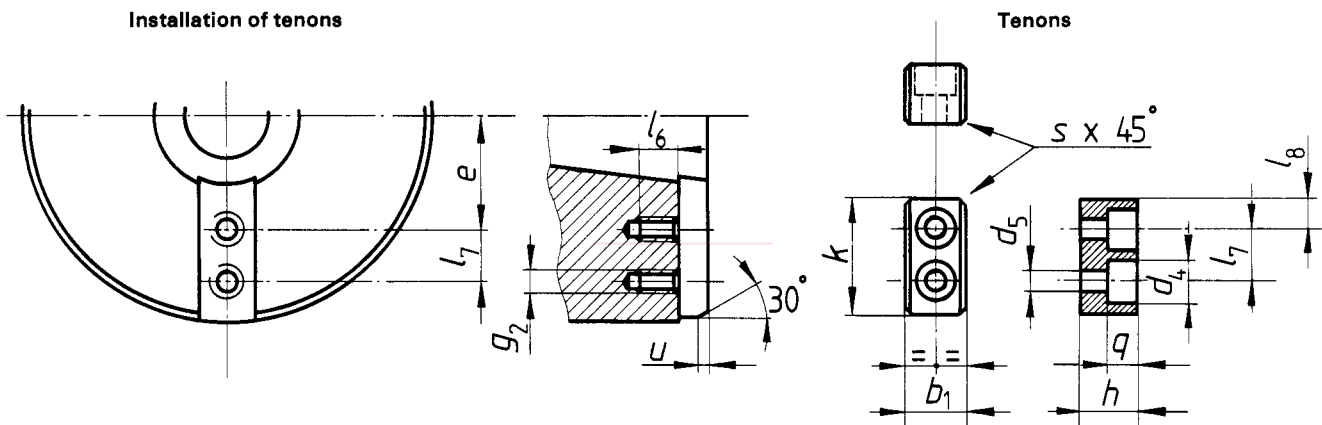
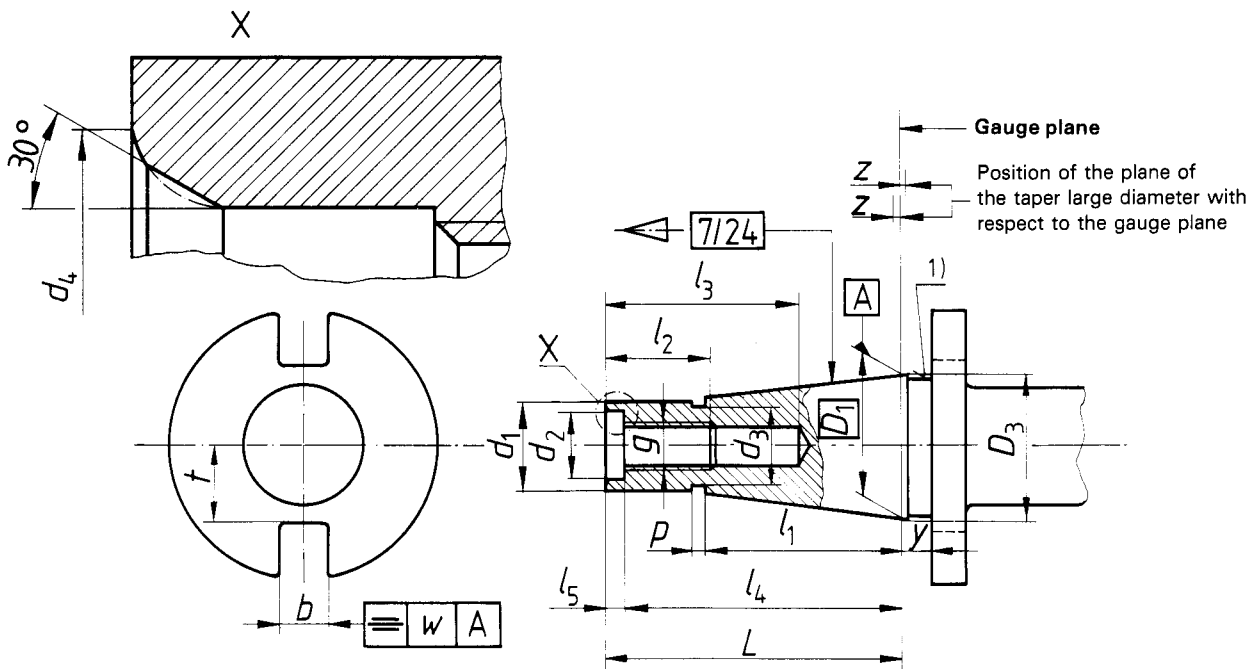


Table 2 — Complementary dimensions

Designation No.	Tenon									Slot				Screws ISO 4762	Chamfer u
	b ₁	h max.	k max.	d ₅	d ₄	q	l ₇	l ₈	s max.	e ± 0,2	g ₂	l ₆	l ₇		
30	See table 1a)	16	16,5	6,4	10,4	7	—	—	1,6	25	M6	9	—	M6 × 16	2
40		16	19,5	6,4	10,4	7	—	—	1,6	33	M6	9	—	M6 × 16	2
45		19	19,5	8,4	13,4	9	—	—	1,6	40	M8	12	—	M8 × 20	2
50		25	26,5	13	19	13	—	—	2	49,5	M12	18	—	M12 × 25	3
55		25	26,5	13	19	13	—	—	2	61,5	M12	18	—	M12 × 25	3
60		25	45,5	13	19	13	—	—	2	84	M12	18	—	M12 × 25	3
		25	45,5	13	19	13	22	11,7	2	73	M12	18	22	M12 × 25	3
65		32	58	17	25	17	28	15	2,5	90	M16	25	28	M16 × 35	4
70		40	68	17	25	17	36	16	2,5	106	M16	25	36	M16 × 45	4
75		50	86	21	31	21	42	22	2,5	130	M20	30	42	M20 × 55	4
80		63	106	21	31	21	58	24	2,5	160	M20	30	58	M20 × 65	4

5 Tapers for tool shanks

All dimensions are in millimetres.



1) Optional groove. Without groove, cylindrical joining surface with diameter $D_3 = D_1 - 0,5$.

Table 3a) – Designation and dimensions

Designation No.	Taper				Cylindrical tenon			Collar				Thread						
	D_1 1)	z	L h12	l_1	d_1 a10	p	d_3	y	b H12	t max.	w	d_2	d_4 max.	g 2)	l_2 min.	l_3 min.	l_4 0 -0,5	l_5
30	31,75	0,4	68,4	48,4	17,4	3	16,5	1,6	16,1	16,2	0,12	13	16	M12	24	34	62,9	5,5
40	44,45	0,4	93,4	65,4	25,3	5	24	1,6	16,1	22,5	0,12	17	21,5	M16	32	43	85,2	8,2
45	57,15	0,4	106,8	82,8	32,4	6	30	3,2	19,3	29	0,12	21	26	M20	40	53	96,8	10
50	69,85	0,4	126,8	101,8	39,6	8	38	3,2	25,7	35,3	0,2	26	32	M24	47	62	115,3	11,5
55	88,9	0,4	164,8	126,8	50,4	9	48	3,2	25,7	45	0,2	26	36	M24	47	62	153,3	11,5
60	107,95	0,4	206,8	161,8	60,2	10	58	3,2	25,7	60	0,2	32	44	M30	59	76	192,8	14
65	133,35	0,4	246	202	75	12	72	4	32,4	72	0,3	38	52	M36	70	89	230	16
70	165,1	0,4	296	252	92	14	90	4	32,4	86	0,3	38	52	M36	70	89	280	16
75	203,2	0,4	370	307	114	16	110	5	40,5	104	0,3	50	68	M48	92	115	350	20
80	254	0,4	469	394	140	18	136	6	40,5	132	0,3	50	68	M48	92	115	449	20

1) D_1 : Basic diameter defining the gauge plane.

2) Thread diameter g : this is either a metric thread M with coarse pitch or, if expressly stated, a UN thread according to table 3b). In every case, the appropriate symbol M or UN shall be marked on the component.

Table 3b) – Thread specification

Designation No.	30	40	45	50	55	60	65	70	75	80
g	UN 0,500-13	UN 0,625-11	UN 0,75-10	UN 1,000-8	UN 1,000-8	UN 1,25-7	UN 1,375-6	UN 1,375-6	UN 1,750-5	UN 1,750-5