International Standard 297

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

7/24 tapers for tool shanks for manual changing

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

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Descriptors : tools, power-operated tools, shanks, 7/24 taper shanks, spindle noses, machine tapers, specifications, dimensions.

Price based on 5 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

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.

International Standard ISO 297 was developed by Technical Committee ISO/TC 39, *Small tools*, and was circulated to the member bodies in March 1981.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Romania
Belgium	India	Spain
Brazil	Italy	Sweden
China	Japan	Switzerland
Czechoslovakia	Korea, Dem. P. Rep. of	United Kingdom
France	Korea, Rep. of	USA
Germany, F. R.	Netherlands	USSR

The member body of the following country expressed disapproval of the document on technical grounds :

Poland

This International Standard cancels and replaces ISO Recommendation R 297 and its Addenda 1, 2 and 3, of which it constitutes a technical revision.

7/24 tapers for tool shanks for manual changing

1 Scope and field of application

This International Standard specifies the dimensions, both in millimetres and in inches[1], of 7/24 tapers for spindle noses and tool shanks and equipment for manual changing.

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 shanks tapers automatic changers are specified in ISO 7388/1.

2 References

ISO 2583, *Tool shanks and equipment with 7/24 tapers — Collar dimensions.*

ISO 7388/1, *Tool shanks taper rate 7/24 for automatic tool changers — Part 1 : Shanks Nos. 40 — 45 — 50 — Dimensions.*[2]

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 metric values.

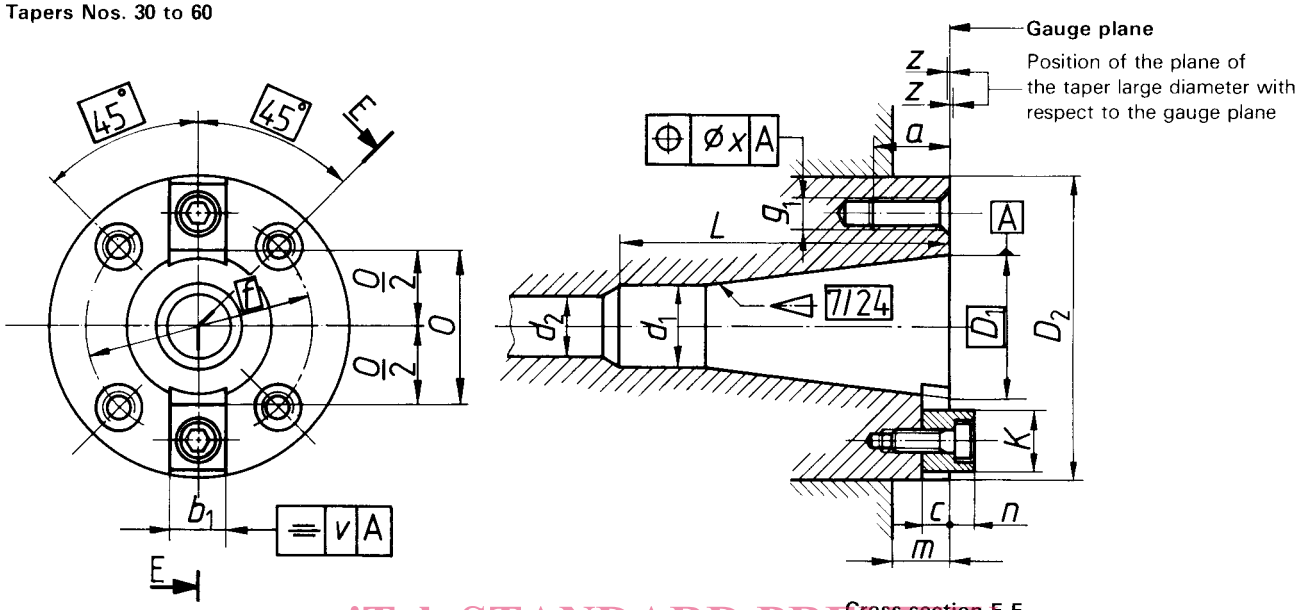
1) The inch values will be determined after acceptance of the metric values.

2) At present at the stage of draft.

4 Tapers for spindle noses

Dimensions in millimetres

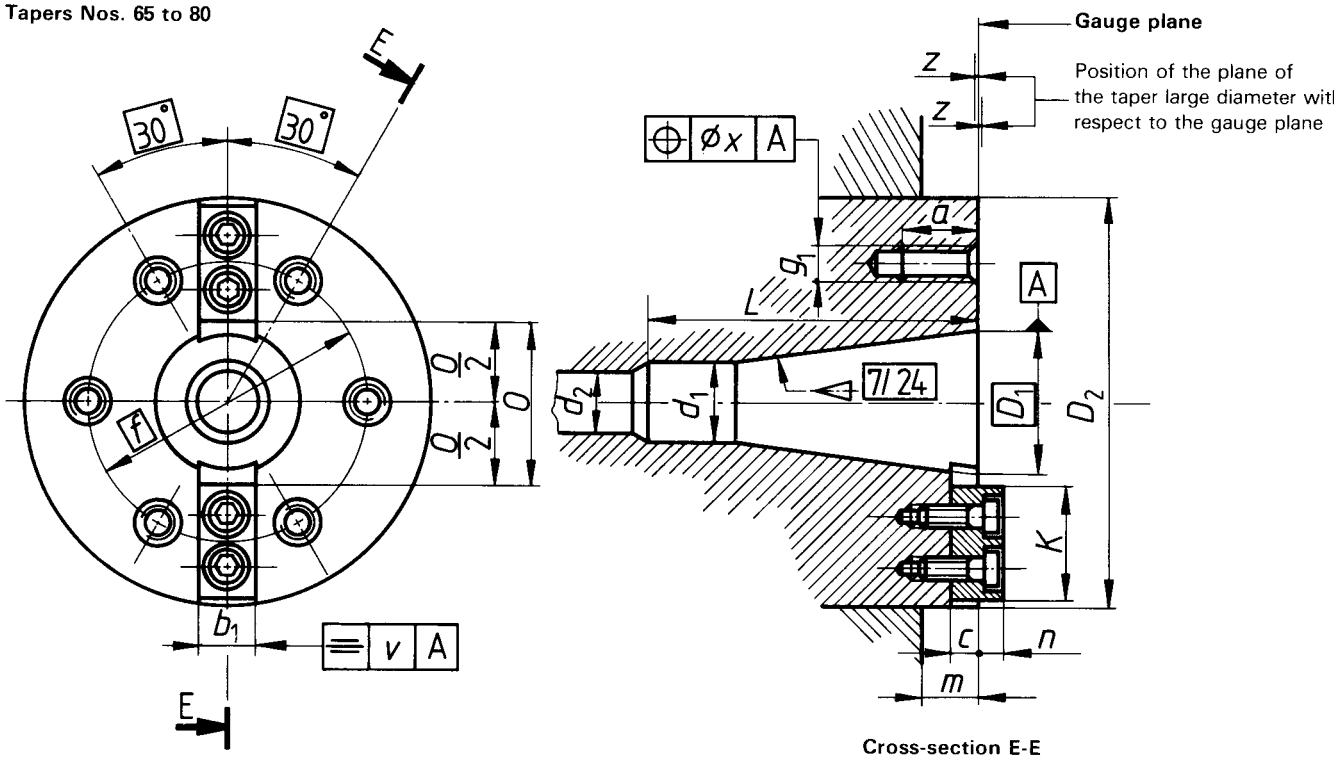
Tapers Nos. 30 to 60



Cross-section E-E

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



Cross-section E-E

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)	a min.	ϕx
30	31,750	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	44,450	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	57,150	0,4	32,4	120	21	19	0,06	9,5	9,5	30	19,5	101,600	18	80	M12	20	0,15
50	69,850	0,4	39,6	140	27	25,4	0,08	12,5	12,5	36	26,5	128,570	19	101,6	M16	25	0,20
55	88,900	0,4	50,4	178	27	25,4	0,08	12,5	12,5	48	26,5	152,400	25	120,6	M20	30	0,20
60	107,950	0,4	60,2	220	35	25,4	0,08	12,5	12,5	61	45,5	221,440	38	177,8	M20	30	0,20
65	133,350	0,4	75	265	42	32	0,10	16	16	75	58	280	38	220	M24	36	0,25
70	165,100	0,4	92	315	42	32	0,10	20	20	90	68	335	50	265	M24	45	0,25
75	203,200	0,4	114	400	56	40	0,10	25	25	108	86	400	50	315	M30	56	0,32
80	254,000	0,4	140	500	56	40	0,10	31,5	31,5	136	106	500	50	400	M30	63	0,32

1) D_1 : Basic diameter defining the gauge plane.

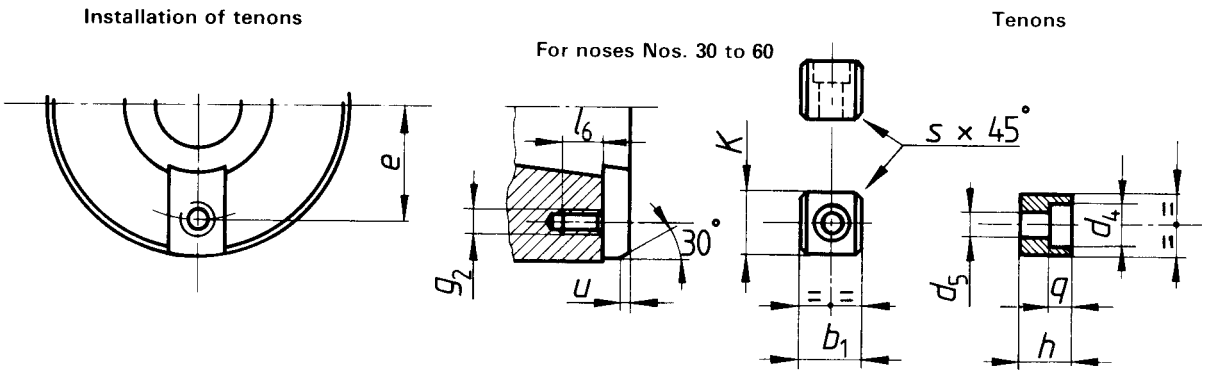
2) Opening for traction bar.

3) Assembling 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 should 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



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

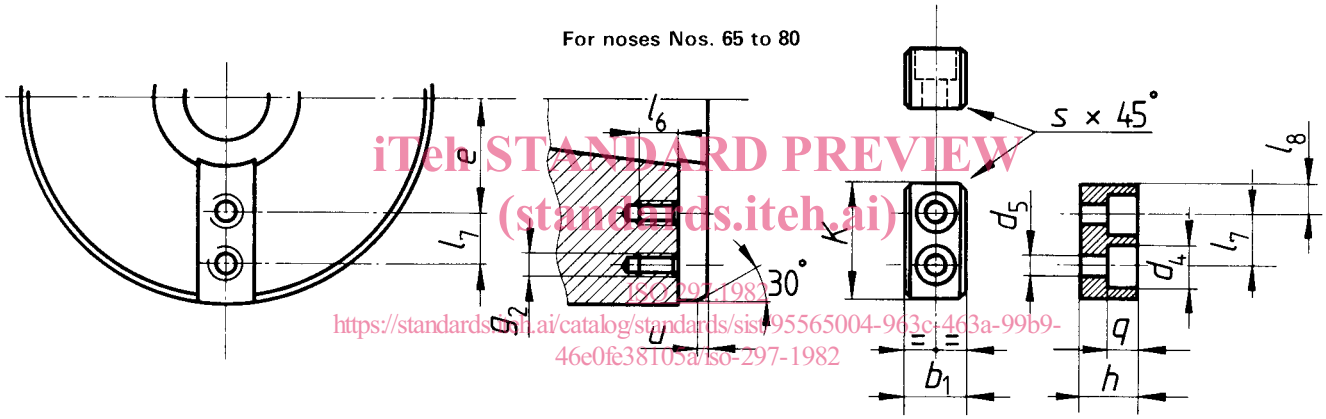


Table 2 — Complementary dimensions

Designation No.	Tenon									Slot				Screws ISO 4762	Chamfer
	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		u
30	See table 1a)	16	16,5	6,4	10,4	7	—	—	1,6	25	M 6	9	--	M 6-16	2
40		16	19,5	6,4	10,4	7	—	—	1,6	33	M 6	9	—	M 6-16	2
45		19	19,5	8,4	13,4	9	—	—	1,6	40	M 8	12	—	M 8-20	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

Dimensions in millimetres

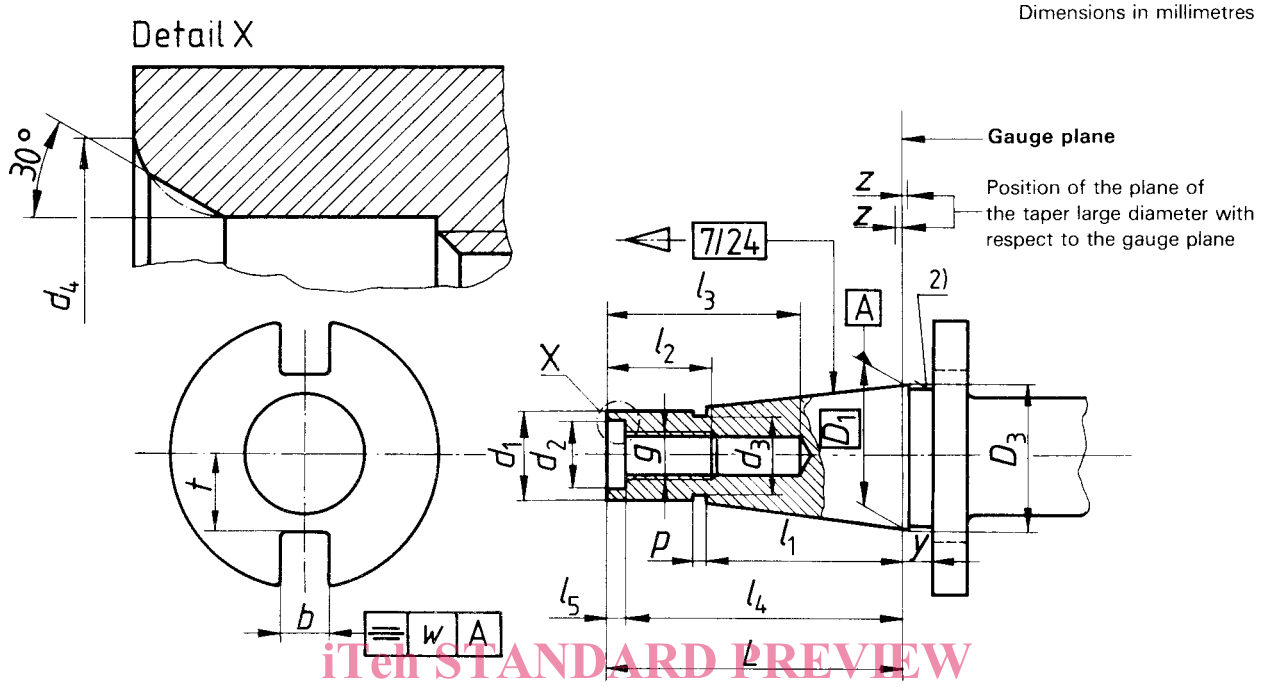


Table 3a) — Designation and dimensions

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 3)	l_2 min.	l_3 min.	l_4 $^{0}_{-0,5}$	l_5
30	31,750	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	44,450	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	57,150	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	69,850	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	88,900	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	107,950	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	133,350	0,4	246	202	75	12	72	4	32,4	72	0,3	38	52	M36	70	89	230	16
70	165,100	0,4	296	252	92	14	90	4	32,4	86	0,3	38	52	M36	70	89	280	16
75	203,200	0,4	370	307	114	16	110	5	40,5	104	0,3	50	68	M48	92	115	350	20
80	254,000	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 defined in the gauge plane.

2) Optional groove. Without groove, cylindrical joining surface with diameter $D_3 = D_1 \, ^{0}_{-0,5}$.

3) Thread diameter g : This is either a metric thread M with coarse pitch or, if expressely stated, a UN thread according to table 3b). In every case, the appropriate symbol M or UN should 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