INTERNATIONAL STANDARD ISO 3940

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

Tapered die-sinking cutters with parallel shanks

Fraises à matrices, coniques, à queue cylindrique

First edition — 1977-06-15

UDC 621.914.2 **Ref. No. ISO 3940-1977 (E)**

Descriptors : tools, die-sinking cutters, single angle cutters, parallel shanks, dimensions.

Price based on 3 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 3940 was developed by Technical Committee ISO/TC 29, *Small tools*, and was circulated to the member bodies in November 1975.

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

Australia	Hungary	South Africa, Rep. of
Austria	India	Sweden
Belgium	Israel	Turkey
Bulgaria	Italy	United Kingdom
Egypt, Arab Rep. of	Korea, Rep. of	U.S.S.R.
France	Mexico	
Germany	Romania	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Czechoslovakia
Japan
Poland

Printed in Switzerland

Tapered die-sinking cutters with parallel shanks

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions of tapered die-sinking cutters with plain parallel or parallel flatted shanks.

These cutters are in particular intended for directly obtaining clearances of moulds, patterns and dies, when these exceed $2^{\circ}\ 52'$.

This International Standard applies to flat-end cutters and ball-nosed cutters.

Three types of cutters are standardized : short type, medium type, and long type in conjunction with the useful length l.

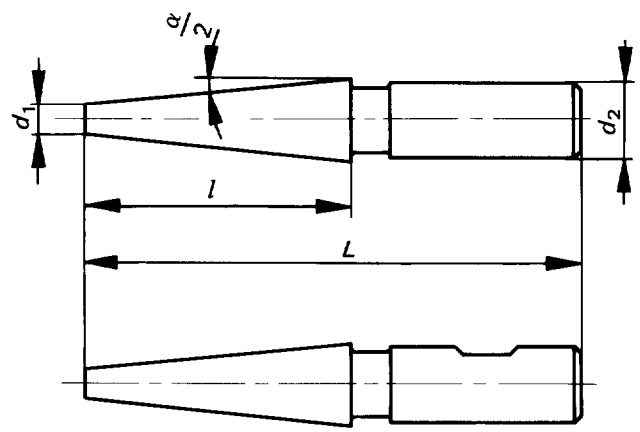
Parallel shanks are in accordance with ISO 3338/I and II.

2 REFERENCES

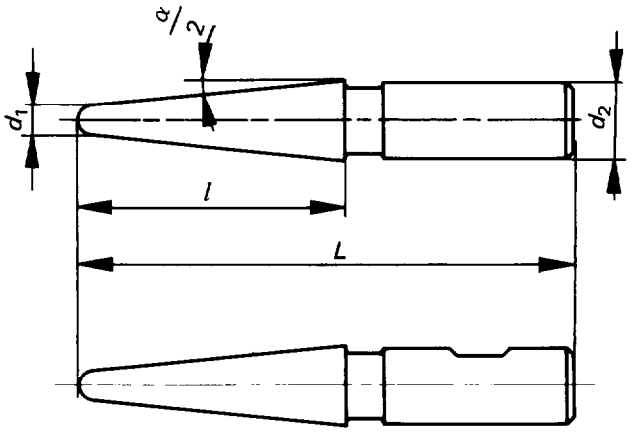
ISO 3338/I, *Parallel shanks for milling cutters — Part I : Dimensional characteristics of plain parallel shanks.*

ISO 3338/II, *Parallel shanks for milling cutters — Part II : Dimensional characteristics of parallel flatted shanks.*

3 DIMENSIONS



Flat-end cutters



Ball-nosed cutters

3.1 Short type

Dimensions in millimetres

Slope[1] or half-angle[1]	d_1 k12	d_2[2]	l	L
Slope 1/6 ($\frac{\alpha}{2} = 9° 28'$)[1] or $\frac{\alpha}{2} = 10°$[1]	(2,5)*	12	31,5	85
	4	16	36	93
	6	20	42	106
	8	25	50	120
	(12)*	32	63	135
Slope 1/10 ($\frac{\alpha}{2} = 5° 43'$)[1] or $\frac{\alpha}{2} = 5°$[1]	(2,5)*	10	37,5	85
	4	10	40	90
	6	12	40	95
	8	16	45	103
	12	20	45	106
	16	25	50	120
	20	32	63	140
Slope 1/20 ($\frac{\alpha}{2} = 2° 52'$)[1] or $\frac{\alpha}{2} = 3°$[1]	(6)*	10	40	95
	8	12	45	105
	12	16	50	109
	16	20	56	120
	20	25	63	135

* Dimensions in parentheses should be avoided whenever possible

1) Select one of these two values to designate the cutter.

2) Tolerances on d_2 : h8 for plain parallel shanks;
h6 for parallel flatted shanks.

3.2 Medium type

Dimensions in millimetres

Slope[1] or half-angle[1]	d_1 k12	d_2[2]	l	L
Slope 1/6 ($\frac{\alpha}{2} = 9° 28'$)[1] or $\frac{\alpha}{2} = 10°$[1]	4	20	56	120
	6	25	63	135
	8	32	71	145
(Slope 1/8 ($\frac{\alpha}{2} = 7° 07'$)[1] or $\frac{\alpha}{2} = 7°$[1])*	4	16	50	109
	6	20	56	120
	8	20	56	120
	12	25	63	135
Slope 1/10 ($\frac{\alpha}{2} = 5° 43'$)[1] or $\frac{\alpha}{2} = 5°$[1]	4	16	63	125
	6	16	63	125
	8	20	71	135
	12	25	71	140
	16	32	80	155
	20	32	100	175
Slope 1/20 ($\frac{\alpha}{2} = 2° 52'$)[1] or $\frac{\alpha}{2} = 3°$[1]	6	10	63	115
	(8)*	16	80	138
	12	20	80	140
	16	25	90	160
	20	25	100	170

* Dimensions in parentheses should be avoided whenever possible

3.3 Long type

Dimensions in millimetres

Slope[1] or half-angle[1]	d_1 k12	d_2[2]	l	L
Slope 1/6 $\left(\frac{\alpha}{2} = 9° 28'\right)$[1] or $\frac{\alpha}{2} = 10°$[1]	4	32	90	165
	(6)*	32	102	175
	(8)*	32	112	185
Slope 1/8* $\left(\frac{\alpha}{2} = 7° 07'\right)$[1] or $\frac{\alpha}{2} = 7°$[1]	6	25	90	160
	8	32	100	175
	12	32	112	185
Slope 1/10 $\left(\frac{\alpha}{2} = 5° 43'\right)$[1] or $\frac{\alpha}{2} = 5°$[1]	4	20	90	150
	6	25	100	170
	8	25	100	170
	12	32	125	200
	16	32	125	200
	(20)*	32	160	235
Slope 1/20 $\left(\frac{\alpha}{2} = 2° 52'\right)$[1] or $\frac{\alpha}{2} = 3°$[1]	12	25	130	200
	16	32	160	235

* Dimensions in parentheses should be avoided whenever possible

1) Select one of these two values to designate the cutter.

2) Tolerances on d_2 : h8 for plain parallel shanks;
h6 for parallel flatted shanks.