INTERNATIONAL STANDARD

ISO 494

Third edition
2017-02

Cylindrical shank twist drills — Long series

Forets à queue cylindrique — Série longue

Reference number
ISO 494:2017(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with defined cutting edges, cutting items.*

This third edition cancels and replaces the second edition (ISO 494:2009), of which it constitutes a minor revision with the following change:

— added Annex A, giving the relationship between the symbols of this document and the symbols according to the ISO 13399 series.

Cylindrical shank twist drills — Long series

1 Scope

This document specifies the dimensions of cylindrical shank twist drills having working lengths in the long series.

The cylindrical shank jobber and stub series drills and Morse taper shank drills are given in ISO 235.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

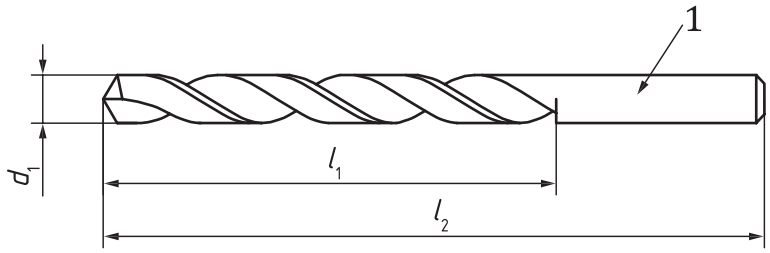
4 Dimensions

4.1 General

All dimensions and tolerances are given in millimetres.

4.2 General dimensions

The dimensions of cylindrical shank twist drills shall be in accordance with the dimensions shown in Figure 1 and given in Table 1.



Key

1 recess optional

Figure 1 — Dimensions of cylindrical shank twist drill

Table 1 — Dimensions of cylindrical shank twist drill

$d_{1\,h8}$	l_1	l_2	$d_{1\,h8}$	l_1	l_2	$d_{1\,h8}$	l_1	l_2	$d_{1\,h8}$	l_1	l_2
1,00	33	56	6,10	97	148	11,20	128	195	19,75	166	254
1,10	37	60	6,20			11,30			20,00		
1,20	41	65	6,30			11,40			20,25	171	261
1,30			6,40			11,50			20,50		
1,40	45	70	6,50			11,60			20,75		
1,50			6,60			11,70			21,00		
1,60	50	76	6,70			11,80			21,25	176	268
1,70			6,80	102	156	11,90	134	205	21,50		
1,80	53	80	6,90			12,00			21,75		
1,90			7,00			12,10			22,00		
2,00	56	85	7,10			12,20			22,25		
2,10			7,20			12,30			22,50	180	275
2,20	59	90	7,30			12,40			22,75		
2,30			7,40			12,50			23,00		
2,40	62	95	7,50			12,60			23,25		
2,50			7,60	109	165	12,70			23,50		
2,60			7,70			12,80			23,75	185	282
2,70	66	100	7,80			12,90			24,00		
2,80			7,90			13,00			24,25		
2,90			8,00			13,10			24,50		
3,00			8,10			13,20			24,75		
3,10	69	106	8,20			13,30	140	214	25,00		
3,20			8,30			13,40			25,25	190	290
3,30			8,40			13,50			25,50		
3,40	73	112	8,50			13,60			25,75		
3,50			8,60	115	175	13,70			26,00		
3,60			8,70			13,80			26,25		
3,70			8,80			13,90			26,50		
3,80	78	119	8,90			14,00			26,75	195	298
3,90			9,00			14,25	144	227	27,00		
4,00			9,10			14,50			27,25		
4,10			9,20			14,75			27,50		
4,20			9,30			15,00			27,75		
4,30	82	126	9,40			15,25	149	220	28,00		
4,40			9,50			15,50			28,25	201	307
4,50			9,60	121	184	15,75			28,50		
4,60			9,70			16,00			28,75		
4,70			9,80			16,25	154	235	29,00		
4,80	87	132	9,90			16,50			29,25		
4,90			10,00			16,75			29,50		
5,00			10,10			17,00			29,75		
5,10			10,20			17,25	158	241	30,00		
5,20			10,30			17,50			30,25		
5,30			10,40			17,75			30,50		

Table 1 *(continued)*

$d_{1\,h8}$	l_1	l_2	$d_{1\,h8}$	l_1	l_2	$d_{1\,h8}$	l_1	l_2	$d_{1\,h8}$	l_1	l_2
5,40	91	139	10,50	128	195	18,00	162	247	30,75	207	316
5,50			10,60			18,25			31,00		
5,60			10,70			18,50			31,25		
5,70			10,80			18,75			31,50		
5,80			10,90			19,00					
5,90			11,00			19,25	166	254			
6,00			11,10			19,50					

4.3 Lengths set out as functions of diameter steps

The lengths set out as functions of diameter steps shall be as given in Table 2.

Table 2 — Lengths set out as functions of diameter steps

Diameter ranges d_1		**Corresponding lengths**	
Over	**Up to and including**	l_1	l_2
0,95	1,06	33	56
1,06	1,18	37	60
1,18	1,32	41	65
1,32	1,50	45	70
1,50	1,70	50	76
1,70	1,90	53	80
1,90	2,12	56	85
2,12	2,36	59	90
2,36	2,65	62	95
2,65	3,00	66	100
3,00	3,35	69	106
3,35	3,75	73	112
3,75	4,25	78	119
4,25	4,75	82	126
4,75	5,30	87	132
5,30	6,00	91	139
6,00	6,70	97	148
6,70	7,50	102	156
7,50	8,50	109	165
8,50	9,50	115	175
9,50	10,60	121	184
10,60	11,80	128	195
11,80	13,20	134	205
13,20	14,00	140	214
14,00	15,00	144	220

NOTE For tolerance on lengths, lengths l_1 and l_2 may vary, within one diameter step, between the minimum and maximum limits corresponding respectively to the figures given for the nearest lower or upper step.

EXAMPLE For diameter d_1 = 4 mm, length l_1 may vary between 73 mm and 82 mm from the nominal value 78 mm and length l_2 may vary between 112 mm and 126 mm from the nominal value 119 mm.

Table 2 *(continued)*

Diameter ranges d_1		Corresponding lengths	
Over	**Up to and including**	l_1	l_2
15,00	16,00	149	227
16,00	17,00	154	235
17,00	18,00	158	241
18,00	19,00	162	247
19,00	20,00	166	254
20,00	21,20	171	261
21,20	22,40	176	268
22,40	23,60	180	275
23,60	25,00	185	282
25,00	26,50	190	290
26,50	28,00	195	298
28,00	30,00	201	307
30,00	31,50	207	316

NOTE For tolerance on lengths, lengths l_1 and l_2 may vary, within one diameter step, between the minimum and maximum limits corresponding respectively to the figures given for the nearest lower or upper step.

EXAMPLE For diameter d_1 = 4 mm, length l_1 may vary between 73 mm and 82 mm from the nominal value 78 mm and length l_2 may vary between 112 mm and 126 mm from the nominal value 119 mm.

5 Cutting length

The cutting length shall be at the manufacturer's discretion. Unless otherwise specified, these drills shall be right-hand cutting.

6 Shank

The cylindrical shank twist drills shall be manufactured without tenon drive.

Annex A
(informative)

Relationship between designations in this document and the ISO 13399 series

For the relationship between the designations in this document and preferred symbols according to the ISO 13399 series, see Table A.1.

Table A.1 — Relationship between designations in this document and the ISO 13399 series

Symbol in ISO 494 (this document)	Reference in ISO 494 (this document)	Property name in the ISO 13399 series	Symbol in the ISO 13399 series	Reference in the ISO 13399 series
d_1	Figure 1 Table 1	cutting diameter	DC	71D084653E57F
l_1	Figure 1 Table 1	length chip flute	LCF	71DCCC27DEF53
l_2	Figure 1 Table 1	overall length	OAL	71D078EB7C086
	[a]	connection diameter machine side	DCONMS	71EBDBF5060E6

[a] DCONMS has the same size as d_1 (DC) in Figure 1.

Bibliography

[1] ISO 235, *Parallel shank jobber and stub series drills and Morse taper shank drills*

ICS 25.100.30

Price based on 6 pages