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**Finishing reamers for Morse and  
metric tapers, with cylindrical shanks  
and Morse taper shanks**

*Alésoirs de finition pour cônes Morse et métrique, à queue cylindrique  
et à queue cône Morse*





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## 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](http://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](http://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 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](http://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 2250:2009), 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.

# Finishing reamers for Morse and metric tapers, with cylindrical shanks and Morse taper shanks

## 1 Scope

This document specifies the dimensions of cylindrical shank socket reamers and taper shank socket reamers manufactured to produce self-holding taper sockets for self-holding taper shanks of the following designations, and which are in accordance with ISO 296:

- metric tapers no. 4 and no. 6;
- Morse tapers no. 0 to no. 6 inclusive.

NOTE Unless otherwise stated, these reamers are right-hand cutting.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 237, *Rotating tools with parallel shanks — Diameters of shanks and sizes of driving squares*

ISO 296, *Machine tools — Self-holding tapers for tool shanks*

## 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>

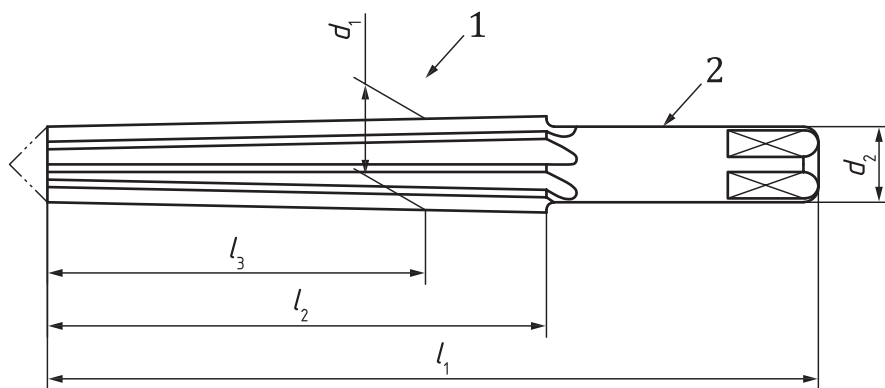
## 4 Dimensions

### 4.1 General

All dimensions are given in millimetres. The shanks and driving squares of the tools shall be in accordance with ISO 237. The Morse taper shanks shall be in accordance with ISO 296.

### 4.2 Cylindrical shank reamers

The dimensions of cylindrical shank reamers shall be as given in [Figure 1](#) and [Table 1](#).



**Key**

- 1 gauge plane
- 2 cylindrical shank in accordance with ISO 237

**Figure 1 — Cylindrical shank reamers**

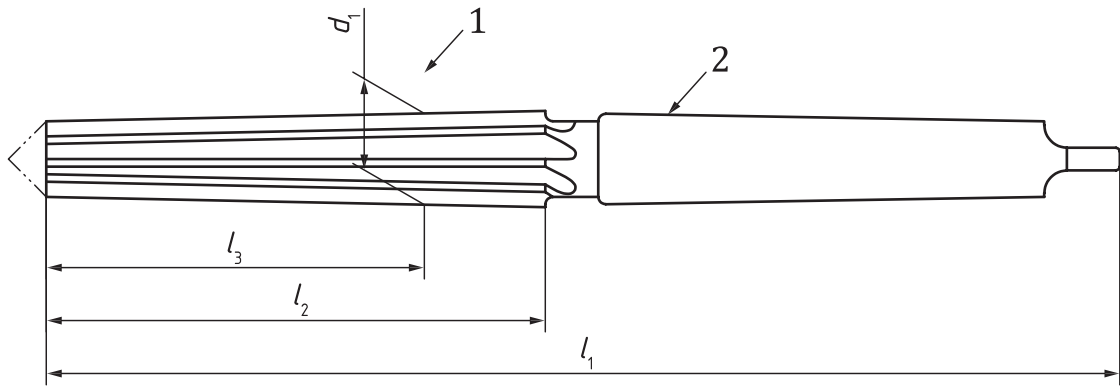
**Table 1 — Dimensions of cylindrical shank reamers**

Dimensions in millimetres

Taper		$d_1$	$l_1$	$l_2$	$l_3$	$d_2$ h9
Designation	Taper rate					
Metric No. 4	1:20,000	4,000	48	30	22	4,0
Metric No. 6	1:20,000	6,000	63	40	30	5,0
Morse No. 0	1:19,212	9,045	93	61	48	8,0
Morse No. 1	1:20,047	12,065	102	66	50	10,0
Morse No. 2	1:20,020	17,780	121	79	61	14,0
Morse No. 3	1: 19,922	23,825	146	96	76	20,0
Morse No. 4	1:19,254	31,267	179	119	97	25,0
Morse No. 5	1:19,002	44,399	222	150	124	31,5
Morse No. 6	1:19,180	63,348	300	208	176	45,0

**4.3 Morse taper shank reamers**

The dimensions of Morse taper shank reamer shall be as given in [Figure 2](#) and [Table 2](#).

**Key**

- 1 gauge plane
- 2 Morse taper in accordance with ISO 296

**Figure 2 — Morse taper shank reamer****Table 2 — Dimensions of Morse taper shank reamers**

Dimensions in millimetres

Designation	Taper		$d_1$	$l_1$	$l_2$	$l_3$
	Rate of taper					
Metric No. 4	1:20,000		4,000	106	30	22
Metric No. 6	1:20,000		6,000	116	40	30
Morse No. 0	1:19,212		9,045	137	61	48
Morse No. 1	1:20,047		12,065	142	66	50
Morse No. 2	1:20,020		17,780	173	79	61
Morse No. 3	1:19,922		23,825	212	96	76
Morse No. 4	1:19,254		31,267	263	119	97
Morse No. 5	1:19,002		44,399	331	150	124
Morse No. 6	1:19,180		63,348	389	208	176

## 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 ISO 13399 (all parts), see [Table A.1](#).

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

Symbol in ISO 2250 (this document)	Reference in ISO 2250 (this document)	Property name in the ISO 13399 series	Symbol in the ISO 13399 series	Reference in the ISO 13399 series
$d_1$	<a href="#">Figure 1</a> <a href="#">Figure 2</a> <a href="#">Table 1</a> <a href="#">Table 2</a>	cutting diameter minimum	DCN	71D0846556288
$d_2$	<a href="#">Figure 1</a> <a href="#">Table 1</a>	connection diameter machine side	DCONMS	71EBDBF5060E6
$d_2 \text{ h9}$	<a href="#">Table 1</a>	tolerance class connection diameter machine side	TCDCONMS	72719B2BD8041
$l_1$	<a href="#">Figure 1</a> <a href="#">Figure 2</a> <a href="#">Table 1</a> <a href="#">Table 2</a>	overall length	OAL	71D078EB7C086
$l_2$	<a href="#">Figure 1</a> <a href="#">Figure 2</a> <a href="#">Table 1</a> <a href="#">Table 2</a>	cutting edge length	L	71DD6C95DA49B
$l_3$	<a href="#">Figure 1</a> <a href="#">Figure 2</a> <a href="#">Table 1</a> <a href="#">Table 2</a>	distance reference point PK	LDC	726E3AAAF99A3
Morse taper in accordance with ISO 296	<a href="#">Figure 2</a> Key 2	connection size code machine side	CZCMS	71EBDBF5060E6





