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INTERNATIONAL STANDARD



236 / II

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

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## Long fluted machine reamers, Morse taper shanks

*Alésoirs à machine, à goujures longues, à queue cône Morse*

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## 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 236/II results from the subdivision into two parts of ISO Recommendation R 236-1961. It was drawn up 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	India	Romania
Belgium	Israel	South Africa, Rep. of
Bulgaria	Italy	Sweden
Canada	Japan	Switzerland
Czechoslovakia	Korea, Rep. of	Turkey
Egypt, Arab Rep. of	Mexico	United Kingdom
France	Netherlands	U.S.A.
Hungary	Poland	U.S.S.R.

The Member Body of the following country expressed disapproval of the document on technical grounds :

Germany

This International Standard, together with International Standard ISO 236/I, cancels and replaces ISO Recommendation R 236-1961, of which they constitute a technical revision.

# Long fluted machine reamers, Morse taper shanks

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions of long fluted machine reamers with Morse taper shanks.

It includes three tables giving respectively :

- the recommended diameters and the corresponding dimensions in millimetres;
- the recommended diameters and the corresponding dimensions in inches;
- the corresponding dimensions, in millimetres and in inches, set out as functions of diameter steps.

Tolerances on lengths and cutting diameters are also specified.

## 2 INTERCHANGEABILITY

The numerical tables have been drawn up in such a way as to ensure that the standard dimensions in millimetres and inches correspond as closely as possible.

To this end, the complete range of diameters has been subdivided into a number of steps, the limits of which have been derived from the preferred number series for the metric values and have been converted directly to obtain the inch values; the lengths and taper shank dimensions remain the same for the metric and the inch values within a given step.

The recommended diameters in the two systems of units of measurement differ, however, and the number of recommended diameters, in a given step, also differs in one system from that in the other.

## 3 REFERENCES

ISO 236/I, *Hand reamers*.

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

ISO 521, *Machine chucking reamers with parallel shanks or Morse taper shanks*.

## 4 TOLERANCES<sup>1)</sup>

### 4.1 Cutting portion

Tolerance on diameter  $d$  measured immediately behind the lead : m6 (for reamers supplied from stock).

### 4.2 Lengths

Tolerances on lengths shall conform to the values given in table 1.

TABLE 1 – Tolerances on lengths

Total overall length $l$		Cutting edge length $l_1$		Tolerances	
over	including	over	including	mm	in
mm		in			
6	30	1/4	1 1/4	± 1	± 1/32
30	120	1 1/4	4 3/4	± 1,5	± 1/16
120	315	4 3/4	12	± 2	± 3/32
315	1 000	12	40	± 3	± 1/8

In special cases, the lengths of reamers and their shank dimensions may be chosen from the next larger or smaller range but the above tolerances will apply.

*Example :*

For the diameter 15 mm, length  $l$  may be 187 mm with  $l_1$  being 87 mm and Morse taper No. 2 or length  $l$  may be 156 mm with  $l_1$  being 76 mm and Morse taper No. 1 (see table 4).

1) For dimensions in inches, direct conversion into inches of the metric value.

5 DIMENSIONS

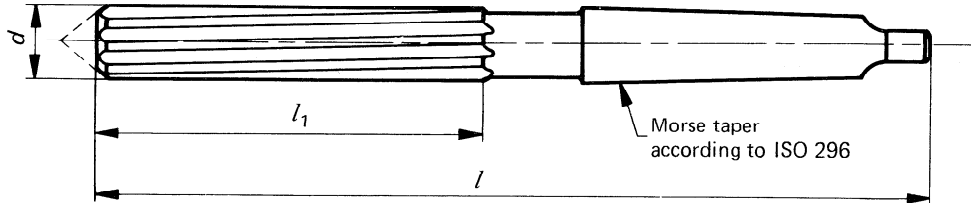


TABLE 2 – Recommended diameters and corresponding dimensions in millimetres

$d$	$l_1$	$l$	M.T.	$d$	$l_1$	$l$	M.T.	
7	54	134	1	32	133	293	4	
8	58	138		(34)	142	302		
9	62	142		(35)				
10	66	146		36				
11	71	151		(38)	152	312		
12	76	156		40				
(13)	81	161		(42)				
14		181		(44)				
(15)	87	187		45	163	323		
16		(46)						
(17)		(48)						
18	93	193	2	50	174	334		
(19)				(52)			371	
20				100	200	2	(55)	184
(21)	56							
22	(58)							
(23)	107	207	(60)					
(24)	115	242	3	(62)	194	391		
25				63				
(26)				67				
(27)				71			203	400
28				124			251	3
(30)								

Sizes in brackets should be avoided wherever possible.

TABLE 3 – Recommended diameters and corresponding dimensions in inches

<i>d</i>	<i>l</i> <sub>1</sub>	<i>l</i>	M.T.	<i>d</i>	<i>l</i> <sub>1</sub>	<i>l</i>	M.T.
1/4	2	5 1/8	1	1	4 1/2	9 1/2	3
9/32	2 1/8	5 1/4		(1 1/16)	4 7/8	9 7/8	
5/16	2 1/4	5 3/8		1 1/8			
11/32	2 7/16	5 9/16		1 1/4	5 1/4	10 1/4	4
3/8	2 5/8	5 3/4		(1 5/16)		11 9/16	
(13/32)				1 3/8	5 5/8	11 15/16	
7/16	2 13/16	5 15/16		(1 7/16)			
(15/32)	3	6 1/8		1 1/2	6	12 5/16	
1/2				(1 5/8)			
9/16				3 3/16	7 1/8	1 3/4	
5/8	3 7/16	7 3/8	(1 7/8)	6 7/8	13 3/16		
11/16	3 11/16	7 5/8	2				
3/4	3 15/16	7 7/8	2	2 1/4	7 1/4	15	
(13/16)				2 1/2	7 5/8	15 3/8	
7/8	4 3/16	8 1/8		3	8 3/8	16 1/8	

Sizes in brackets should be avoided wherever possible. <https://standards.iteh.ai/69091a9b-0eed-4585-b58b-alc1e123d505/iso-236-2-1976>

TABLE 4 – Corresponding dimensions, in millimetres and in inches, set out as functions of diameter steps

Diameter steps <i>d</i>				Corresponding lengths				M.T.
over	including	over	including	<i>l</i> <sub>1</sub>	<i>l</i>	<i>l</i> <sub>1</sub>	<i>l</i>	
mm		in		mm		in		
6,0	6,7	0.236 2	0.263 8	50	130	2	5 1/8	1
6,7	7,5	0.263 8	0.295 3	54	134	2 1/8	5 1/4	
7,5	8,5	0.295 3	0.334 6	58	138	2 1/4	5 3/8	
8,5	9,5	0.334 6	0.374 0	62	142	2 7/16	5 9/16	
9,5	10,6	0.374 0	0.417 3	66	146	2 5/8	5 3/4	
10,6	11,8	0.417 3	0.464 6	71	151	2 13/16	5 15/16	
11,8	13,2	0.464 6	0.519 7	76	156	3	6 1/8	
13,2	14,0	0.519 7	0.551 2	81	161	3 3/16	6 5/16	
14,0	15,0	0.551 2	0.590 6		181		7 1/8	
15,0	17,0	0.590 6	0.669 3	87	187	3 7/16	7 3/8	2
17,0	19,0	0.669 3	0.748 0	93	193	3 11/16	7 5/8	
19,0	21,2	0.748 0	0.834 6	100	200	3 15/16	7 7/8	
21,2	23,02	0.834 6	0.906 2	107	207	4 3/16	8 1/8	
23,02	23,6	0.906 2	0.929 1		234		9 3/16	
23,6	26,5	0.929 1	1.043 3	115	242	4 1/2	9 1/2	3
26,5	30,0	1.043 3	1.181 1	124	251	4 7/8	9 7/8	
30,0	31,75	1.181 1	1.250 0	133	260	5 1/4	10 1/4	
31,75	33,50	1.250 0	1.318 9		293		11 9/16	
33,50	37,5	1.318 9	1.476 4	142	302	5 5/8	11 15/16	4
37,5	42,5	1.476 4	1.673 2	152	312	6	12 5/16	
42,5	47,5	1.673 2	1.870 1	163	323	6 7/8	12 3/4	
47,5	50,8	1.870 1	2.000 0	174	334	6 7/8	13 3/16	
50,8	53,0	2.000 0	2.086 6		371		14 5/8	
53,0	60,0	2.086 6	2.362 2	184	381	7 1/4	15	5
60,0	67,0	2.362 2	2.637 8	194	391	7 5/8	15 3/8	
67,0	75,0	2.637 8	2.952 8	203	400	8	15 3/4	
75,0	76,2	2.952 8	3.000 0	212	409	8 3/8	16 1/8	
76,2	85,0	3.000 0	3.346 5		479		18 7/8	

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