INTERNATIONAL STANDARD 236/I

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

Hand reamers

Alésoirs à main

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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/I 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	Hungary	Romania
Austria	India	South Africa, Rep. of
Belgium	Israel	Sweden
Bulgaria	Italy	Switzerland
Canada	Japan	Turkey
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Mexico	U.S.A.
France	Netherlands	U.S.S.R.
Germany	Poland	

No Member Body expressed disapproval of the document.

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

Printed in Switzerland

Hand reamers

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the dimensions of hand reamers.

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, cutting diameters and shank 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 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/II, *Long fluted machine reamers, Morse taper shanks.*

ISO 237, *Diameters of shanks and sizes of driving squares for rotating tools with parallel shanks.*

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

4 SHANKS

The shank diameter is identical to the cutting portion diameter. The driving squares are in accordance with ISO 237 as indicated in tables 2 and 3.

5 TOLERANCES[1)]

5.1 Cutting portion

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

5.2 Shank

Tolerance on shank diameter : h9

5.3 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 may be chosen from the next larger or smaller range but the above tolerances will apply.

Example :

For the diameter 4 mm, length l_1 may be 35 mm with l being 71 mm or length l_1 may be 41 mm with l being 81 mm (see table 4).

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

6 DIMENSIONS

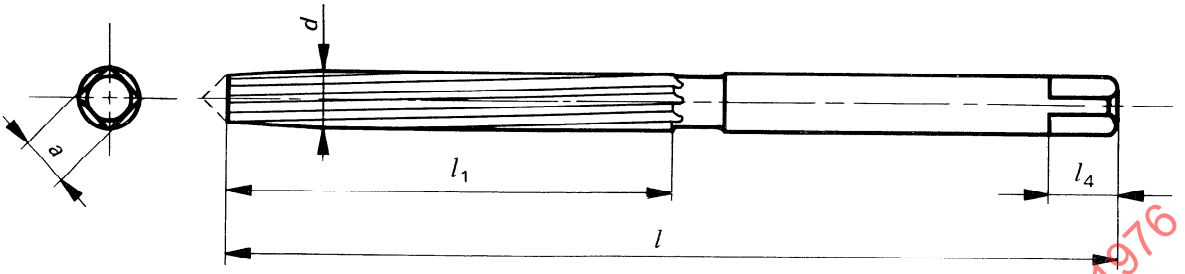

TABLE 2 — **Recommended diameters and corresponding dimensions in millimetres**

d	l_1	l	a	l_4	d	l_1	l	a	l_4
(1,5)	20	41	1,12	4	22	107	215	18,00	22
1,6	21	44	1,25		(23)				
1,8	23	47	1,40		(24)	115	231	20,00	24
2,0	25	50	1,60		25				
2,2	27	54	1,80		(26)				
2,5	29	58	2,00		(27)	124	247	22,40	26
2,8	31	62	2,24	5	28				
3,0					(30)				
3,5	35	71	2,80		32	133	265	25,00	28
4,0	38	76	3,15	6	(34)	142	284	28,00	31
4,5	41	81	3,55		(35)				
5,0	44	87	4,00	7	36				
5,5	47	93	4,50		(38)	152	305	31,50	34
6,0					40				
7,0	54	107	5,60	8	(42)				
8,0	58	115	6,30	9	(44)	163	326	35,50	38
9,0	62	124	7,10	10	45				
10,0	66	133	8,00	11	(46)				
11,0	71	142	9,00	12	(48)	174	347	40,00	42
12,0	76	152	10,00	13	50				
(13,0)					(52)				
14,0	81	163	11,20	14	(55)	184	367	45,00	46
(15,0)					56				
16,0	87	175	12,50	16	(58)				
(17,0)					(60)				
18,0	93	188	14,00	18	(62)	194	387	50,00	51
(19,0)					63				
20,0	100	201	16,00	20	67				
(21,0)					71	203	406	56,00	56

Sizes in brackets should be avoided wherever possible.

TABLE 3 — **Recommended diameters and corresponding dimensions in inches**

d	l_1	l	a	l_4
1/16	13/16	1 3/4	0,049	5/32
3/32	1 1/8	2 1/4	0,079	
1/8	1 5/16	2 5/8	0,098	3/16
5/32	1 1/2	3	0,124	1/4
3/16	1 3/4	3 7/16	0,157	9/32
7/32	1 7/8	3 11/16	0,177	
1/4	2	3 15/16	0,197	5/16
9/32	2 1/8	4 3/16	0,220	
5/16	2 1/4	4 1/2	0,248	11/32
11/32	2 7/16	4 7/8	0,280	13/32
3/8	2 5/8	5 1/4	0,315	7/16
(13/32)				
7/16	2 13/16	5 5/8	0,354	15/32
(15/32)	3	6	0,394	1/2
1/2				
9/16	3 3/16	6 7/16	0,441	9/16
5/8	3 7/16	6 7/8	0,492	5/8
11/16	3 11/16	7 7/16	0,551	23/32
3/4	3 15/16	7 15/16	0,630	25/32
(13/16)				
7/8	4 3/16	8 1/2	0,709	7/8
1	4 1/2	9 1/16	0,787	15/16
(1 1/16)	4 7/8	9 3/4	0,882	1 1/32
1 1/8				
1 1/4	5 1/4	10 7/16	0,984	1 3/32
(1 5/16)				
1 3/8	5 5/8	11 3/16	1,102	1 7/32
(1 7/16)				
1 1/2	6	12	1,240	1 11/32
(1 5/8)				
1 3/4	6 7/16	12 13/16	1,398	1 1/2
(1 7/8)	6 7/8	13 11/16	1,575	1 21/32
2				
2 1/4	7 1/4	14 7/16	1,772	1 13/16
2 1/2	7 5/8	15 1/4	1,968	2
3	8 3/8	16 11/16	2,480	2 7/16

Sizes in brackets should be avoided wherever possible.

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

Diameter steps d				lengths		lengths	
over	including	over	including	l_1	l	l_1	l
mm		in		mm		in	
1,32	1,50	0.052 0	0.059 1	20	41	25/32	1 5/8
1,50	1,70	0.059 1	0.066 9	21	44	13/16	1 3/4
1,70	1,90	0.066 9	0,074 8	23	47	29/32	1 7/8
1,90	2,12	0.074 8	0.083 5	25	50	1	2
2,12	2,36	0.083 5	0.092 9	27	54	1 1/16	2 1/8
2,36	2,65	0.092 9	0.104 3	29	58	1 1/8	2 1/4
2,65	3,00	0.104 3	0.118 1	31	62	1 7/32	2 7/16
3,00	3,35	0.118 1	0.131 9	33	66	1 5/16	2 5/8
3,35	3,75	0.131 9	0.147 6	35	71	1 3/8	2 13/16
3,75	4,25	0.147 6	0.167 3	38	76	1 1/2	3
4,25	4,75	0.167 3	0.187 0	41	81	1 5/8	3 3/16
4,75	5,30	0.187 0	0.208 7	44	87	1 3/4	3 7/16
5,30	6,00	0.208 7	0.236 2	47	93	1 7/8	3 11/16
6,00	6,70	0.236 2	0.263 8	50	100	2	3 15/16
6,70	7,50	0.263 8	0.295 3	54	107	2 1/8	4 3/16
7,50	8,50	0.295 3	0.334 6	58	115	2 1/4	4 1/2
8,50	9,50	0.334 6	0.374 0	62	124	2 7/16	4 7/8
9,50	10,60	0.374 0	0.417 3	66	133	2 5/8	5 1/4
10,60	11,80	0.417 3	0.464 6	71	142	2 13/16	5 5/8
11,80	13,20	0.464 6	0.519 7	76	152	3	6
13,20	15,00	0.519 7	0.590 6	81	163	3 3/16	6 7/16
15,00	17,00	0.590 6	0.669 3	87	175	3 7/16	6 7/8
17,00	19,00	0.669 3	0.748 0	93	188	3 11/16	7 7/16
19,00	21,20	0.748 0	0.834 6	100	201	3 15/16	7 15/16
21,20	23,60	0.834 6	0.929 1	107	215	4 3/16	8 1/2
23,60	26,50	0.929 1	1.043 3	115	231	4 1/2	9 1/16
26,50	30,00	1.043 3	1.181 1	124	247	4 7/8	9 3/4
30,00	33,50	1.181 1	1.318 9	133	265	5 1/4	10 7/16
33,50	37,50	1.318 9	1.476 4	142	284	5 5/8	11 3/16
37,50	42,50	1.476 4	1.673 2	152	305	6	12
42,50	47,50	1.673 2	1.870 1	163	326	6 7/16	12 13/16
47,50	53,00	1.870 1	2.086 6	174	347	6 7/8	13 11/16
53,00	60,00	2.086 6	2.362 2	184	367	7 1/4	14 7/16
60,00	67,00	2.362 2	2.637 8	194	387	7 5/8	15 1/4
67,00	75,00	2.637 8	2.952 8	203	406	8	16
75,00	85,00	2.952 8	3.346 5	212	424	8 3/8	16 11/16