INTERNATIONAL STANDARD 238

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

Reduction sleeves and extension sockets for tools with Morse taper shanks

Douilles de réduction et allonges pour outils au 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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 29 has reviewed ISO Recommendation R 238 and found it technically suitable for transformation. International Standard ISO 238 therefore replaces ISO Recommendation R 238-1961 to which it is technically identical.

ISO Recommendation R 238 was approved by the Member Bodies of the following countries :

Belgium	India	Portugal
Czechoslovakia	Italy	Romania
France	Mexico	Sweden
Germany	Netherlands	Switzerland
Greece	Pakistan	United Kingdom
Hungary	Poland	U.S.S.R.

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

U.S.A.

No Member Body disapproved the transformation of ISO/R 238 into an International Standard.

Printed in Switzerland

Reduction sleeves and extension sockets for tools with Morse taper shanks

1 SCOPE AND FIELD OF APPLICATION

This International Standard lays down the dimensions of the following two pieces of equipment :

1) reduction sleeves for tools with Morse taper shanks;

2) extension sockets for tools with Morse taper shanks.

It comprises, for each of them, two tables giving respectively the dimensions in millimetres and the corresponding dimensions in inches.

2 INTERCHANGEABILITY

The numerical values given, whether in millimetres or in inches, automatically ensure interchangeability with the corresponding machines and tools, whatever the system of units employed.

The mating dimensions of the sleeves and sockets are in fact in accordance with those specified in ISO 296 for Morse taper shanks, which were determined so as to give the same guarantee of interchangeability.

2.1 Reduction sleeves

In the reduction sleeves in millimetres and in inches, the inside taper is always strictly the same as the standard Morse taper of the same number, even in its length.

The same applies to the outside taper, except for the length, however, which is sometimes equal to, sometimes greater than, that of the standard taper of the same number.

2.2 Extension sockets

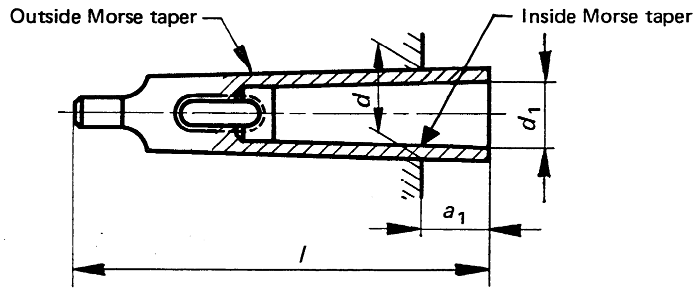
The statements made above concerning the Morse taper dimensions of the reduction sleeves are equally applicable to the extension sockets, under the same conditions.

The tables in 4.1 and 4.2, in millimetres and in inches, also specify, for the latter, the diameter of the parallel portion and the minimum value for the total length l_2.

Lengths l_2 above this minimum should be selected to suit requirements, but preference should be given to multiples of 5 mm or 1/4 inch, or even 10 mm or 1/2 inch.[1)]

1) This minimum will be either the minimum value shown in the tables or the slightly larger one indicated in the relevant note as "reinforced minimum".

3 REDUCTION SLEEVES FOR TOOLS WITH MORSE TAPER SHANKS



Example of the method of designating a reduction sleeve with outside Morse taper 4, and inside Morse taper 2 :

Reduction sleeve Morse 4 × 2

3.1 Dimensions in millimetres

Outside taper M.T. No.	d	l	a_1	Inside taper M.T. No.	d_1
2	17,780	92	17	1	12,065
3	23,825	99	5	1	12,065
		112	18	2	17,780
4	31,267	124	6,5	(1)	12,065
				2	17,780
		140	22,5	3	23,825
5	44,399	156	6,5	(1)	12,065
				(2)	17,780
				3	23,825
		171	21,5	4	31,267
6	63,348	218	8	(1)	12,065
				(2)	17,780
				3	23,825
				4	31,267
				5	44,399

The use of those sizes where the inside taper is shown in brackets should be avoided whenever possible.

3.2 Dimensions in inches

Outside taper				Inside taper	
M.T. No.	d	l	a_1	M.T. No.	d_1
2	0.700	$3\frac{5}{8}$	$\frac{11}{16}$	1	0.475
3	0.938	$3\frac{7}{8}$	$\frac{3}{16}$	1	0.475
		$4\frac{3}{8}$	$\frac{11}{16}$	2	0.700
4	1.231	$4\frac{7}{8}$	$\frac{1}{4}$	(1)	0.475
				2	0.700
		$5\frac{1}{2}$	$\frac{7}{8}$	3	0.938
5	1.748	$6\frac{1}{8}$	$\frac{1}{4}$	(1)	0.475
				(2)	0.700
				3	0.938
		$6\frac{3}{4}$	$\frac{27}{32}$	4	1.231
6	2.494	$8\frac{9}{16}$	$\frac{5}{16}$	(1)	0.475
				(2)	0.700
				3	0.938
				4	1.231
				5	1.748

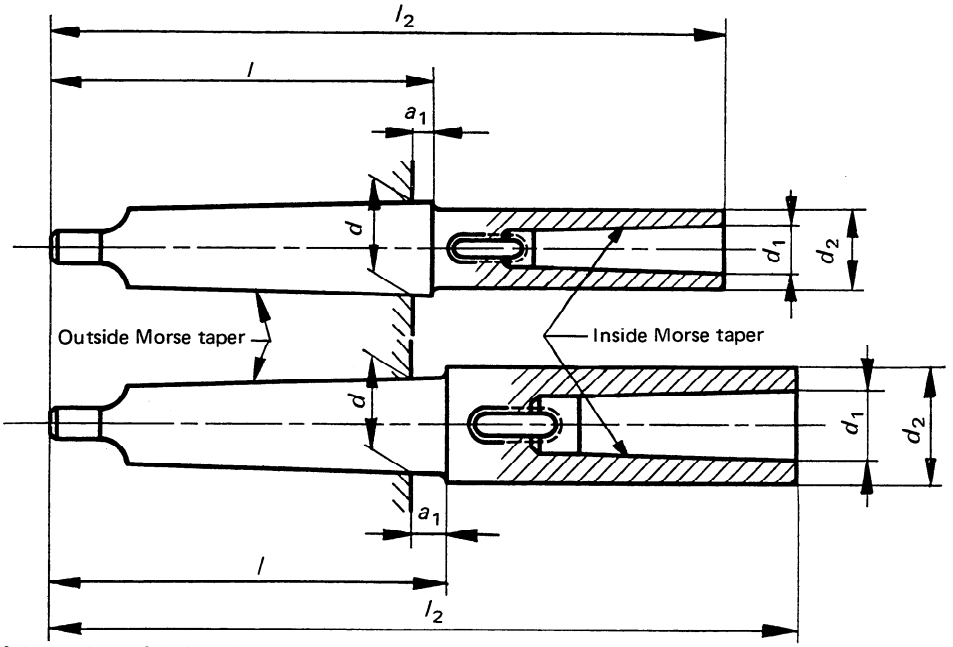
The use of those sizes where the inside taper is shown in brackets should be avoided whenever possible.

Note relating to the tables in 3.1 and 3.2.

Morse taper

in accordance with ISO 296 dealing with self-holding tapers for tool shanks (except for the dimensions a_1 and l which are greater for certain tools than the corresponding dimensions a and l_2 given in ISO 296).

4 EXTENSION SOCKETS FOR TOOLS WITH MORSE TAPER SHANKS



Example of the method of designating an extension socket with outside Morse taper 4 and inside Morse taper 2 :

Extension socket Morse 4 × 2

4.1 Dimensions in millimetres

Outside taper				Inside taper			
M.T. No.	d	l	a_1	M.T. No.	d_1	d_2	l_2*
1	12,065	69	7	1	12,065	20	145
				(2)	17,780	30	160
2	17,780	84	9	1	12,065	20	160
				2	17,780	30	175
				(3)	23,825	36	196
3	23,825	99	5	1	12,065	20	175
		103	9	2	17,780	30	194
				3	23,825	36	215
				(4)	31,267	48	240
4	31,267	124	6,5	(1)	12,065	20	200
				2	17,780	30	215
		128	10,5	3	23,825	36	240
				4	31,267	48	265
				(5)	44,399	63	300
5	44,399	156	6,5	(1)	12,065	20	232
				(2)	17,780	30	247
				3	23,825	36	268
		163	13,5	4	31,267	48	300
				5	44,399	63	335
6	63,348	218	8	(1)	12,065	20	294
				(2)	17,780	30	309
				(3)	23,825	36	330
				4	31,267	48	355
				5	44,399	63	390

The use of those sizes where the inside taper is shown in brackets should be avoided whenever possible.

* See note 1, in 4.2.

4.2 Dimensions in inches

Outside taper				Inside taper			
M.T. No.	d	l	a_1	M.T. No.	d_1	d_2	l_2* min.
1	0.475	$2^3/_4$	$^9/_{32}$	1	0.475	0.787	$5^3/_4$
				(2)	0.700	1.181	$6^3/_8$
2	0.700	$3^3/_8$	$^{11}/_{32}$	1	0.475	0.787	$6^3/_8$
				2	0.700	1.181	$6^7/_8$
				(3)	0.938	1.417	$7^3/_4$
3	0.938	$3^7/_8$	$^3/_{16}$	1	0.475	0.787	$6^7/_8$
		$4^1/_8$	$^{11}/_{32}$	2	0.700	1.181	$7^5/_8$
				3	0.938	1.417	$8^1/_2$
				(4)	1.231	1.890	$9^3/_8$
4	1.231	$4^7/_8$	$^1/_4$	(1)	0.475	0.787	$7^7/_8$
				2	0.700	1.181	$8^1/_2$
		5	$^{13}/_{32}$	3	0.938	1.417	$9^3/_8$
				4	1.231	1.890	$10^1/_2$
				(5)	1.748	2.480	$11^7/_8$
5	1.748	$6^1/_8$	$^1/_4$	(1)	0.475	0.787	$9^1/_8$
				(2)	0.700	1.181	$9^3/_4$
				3	0.938	1.417	$10^5/_8$
		$6^3/_8$	$^{17}/_{32}$	4	1.231	1.890	$11^7/_8$
				5	1.748	2.480	$13^1/_4$
6	2.494	$8^9/_{16}$	$^5/_{16}$	(1)	0.475	0.787	$11^5/_8$
				(2)	0.700	1.181	$12^1/_8$
				(3)	0.938	1.417	13
				4	1.231	1.890	14
				5	1.748	2.480	$15^3/_8$

The use of those sizes where the inside taper is shown in brackets should be avoided whenever possible.

* See note 1, below.

Notes relating to the tables in 4.1 and 4.2.

1 *Minimum length*

The minimum shown for l_2 is the normal. The minimum described as "reinforced" comprises the same values, increased as follows :

5 mm or 1/4 in for extension sockets with inside tapers 1 to 3,

10 mm or 1/2 in for those with inside tapers 4 and 5.

For the choice of length l_2 above the minimum shown above, give preference, to suit requirements, to lengths in multiples of

5 mm or 1/4 in

10 mm or 1/2 in

2 *Morse tapers*

Morse tapers are in accordance with ISO 296 dealing with self-holding tapers for tool shanks (except for the dimensions a_1 and l which are greater for certain tools than the corresponding dimensions a and l_2 given in ISO 296).

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