
INTERNATIONAL STANDARD



1651

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

Tube drawing mandrels

Mandrins d'étirage de tubes

First edition — 1974-12-15

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[ISO 1651:1974](#)

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UDC 621.774.37.073

Ref. No. ISO 1651-1974 (E)

Descriptors : tools, mandrels, tube drawing, dimensions.

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 1651 and found it technically suitable for transformation. International Standard ISO 1651 therefore replaces ISO Recommendation R 1651-1970 to which it is technically identical.

ISO Recommendation R 1651 was approved by the Member Bodies of the following countries :

Belgium	India	South Africa, Rep. of
Czechoslovakia	Ireland	Spain
Egypt, Arab Rep. of	Israel	Switzerland
Finland	Italy	Thailand
France	Netherlands	Turkey
Greece	Poland	United Kingdom
Hungary	Portugal	Yugoslavia

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

Sweden

The Member Body of the following country disapproved the transformation of ISO/R 1651 into an International Standard :

Germany

Tube drawing mandrels

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1 SCOPE AND FIELD OF APPLICATION

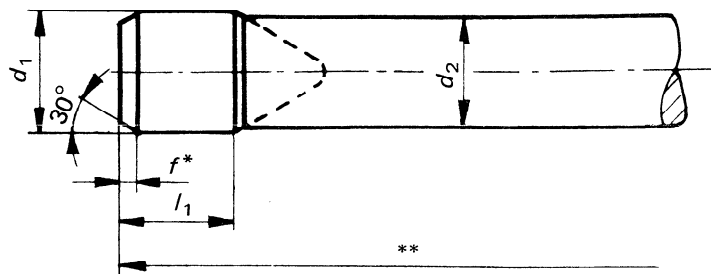
This International Standard specifies the general dimensions of tube drawing mandrels with respect to their diameter d_1 .
It applies to brazed drawing mandrels and sleeved drawing mandrels.

The dimensions have been determined taking existing practice into account as far as possible.

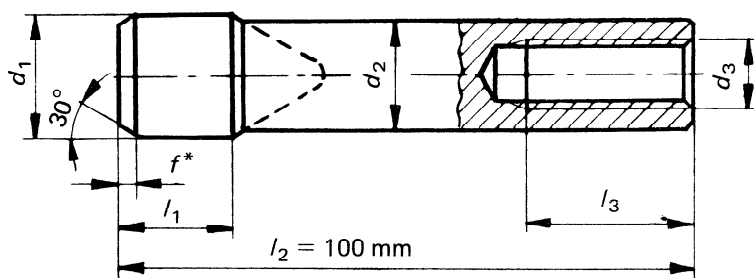
Threads are given in both measurement systems (metric and in inches) so as to allow the use of these mandrels on any machine.

2 BRAZED DRAWING MANDRELS

Form A – Welded on rod



Form B – With female thread



Form C – With male thread

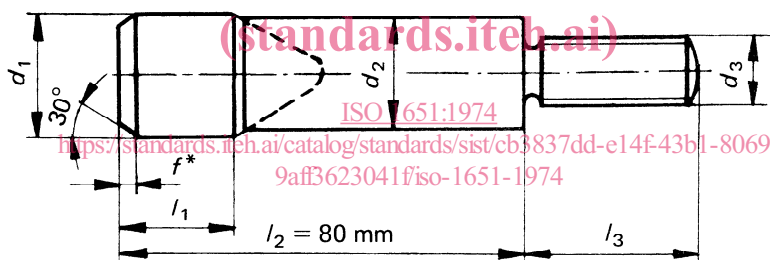


TABLE 1

Dimensions in millimetres

Form	d_1			d_2	l_1	f^* max.	Form B			Form C		
	above	up to	tolerance				d_3	l_3	d_3	l_3	Metric thread	Inch thread
A	3	6	+0,01 0	$d_2 = d_1$	10	2	—	—	—	—	—	—
	6	8			12		—	—	—	—		
B,C	8	10	+0,01 0	$d_2 = d_1 - 0,2 - 0,6$	15	2	M 5	Nº 10 – 32 UNF	10	M 6	$\frac{1}{4}$ – 20 UNC	12
	10	12,5			18		M 6	$\frac{1}{4}$ – 20 UNC	12	M 8	$\frac{5}{16}$ – 18 UNC	16
	12,5	16			20		M 8	$\frac{5}{16}$ – 18 UNC	16	M10	$\frac{3}{8}$ – 16 UNC	20
	16	20	+0,02 0		22		M10	$\frac{3}{8}$ – 16 UNC	20	M12	$\frac{1}{2}$ – 13 UNC	24
	20	25			25		M12	$\frac{1}{2}$ – 13 UNC	24	M16	$\frac{5}{8}$ – 11 UNC	32

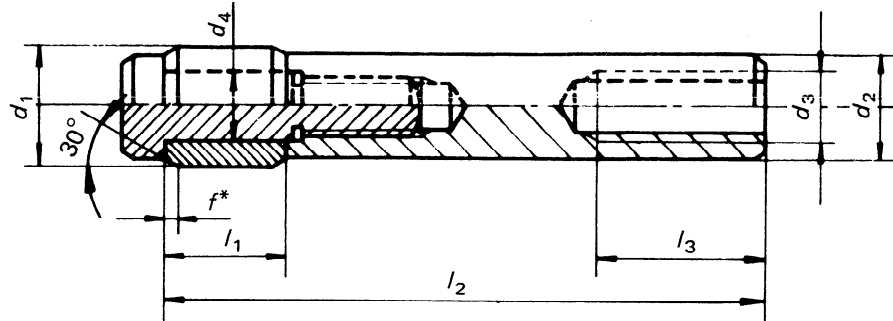
* A radius can be provided in place of a chamfer if required.

** The total length should be subject to agreement between manufacturer and purchaser.

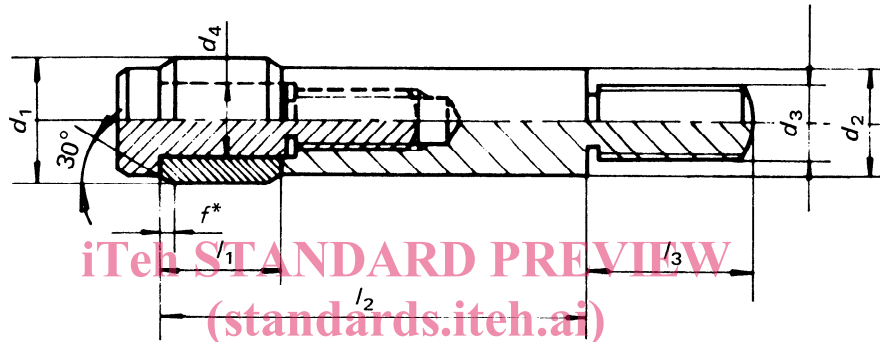
NOTE – Details not stated are left to the discretion of the manufacturer.

3 SLEEVED DRAWING MANDRELS

Form D – With female thread



Form E – With male thread



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TABLE 2
ISO 1651:1974

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Dimensions in millimetres

Form	d ₁			d ₂	d ₄	l ₁	f* max.	Form D			Form E					
								above	up to	tolerance	d ₃	l ₂	l ₃	d ₃		l ₂
	Metric thread	Inch thread	Metric thread											Inch thread		
D,E	8	10	+0,01 0	d ₂ = d ₁ - 0,2	d ₄ ≈ 0,5 d ₁	15	2	M 5	N ^o 10 – 32 UNF	100	10	M 6	1/4 – 20 UNC	80	12	
	10	12,5				18		M 6	1/4 – 20 UNC		12	M 8	5/16 – 18 UNC		16	
	12,5	16				20		M 8	5/16 – 18 UNC		16	M10	3/8 – 16 UNC		20	
	16	20	+0,02 0			22	2	M10	3/8 – 16 UNC	100	20	M12	1/2 – 13 UNC	80	24	
	20	25				25		M12	1/2 – 13 UNC		24	M16	5/8 – 11 UNC		110	32
	25	32				28		M16	5/8 – 11 UNC		150					
	32	40	+0,02 0			30	2	M20	3/4 – 10 UNC	150	35	M20	3/4 – 10 UNC	110	35	
	40	50				35		M24	1 – 8 UNC		40	M24	1 – 8 UNC		40	
	50	60				35		M30	1 1/4 – 7 UNC		45	M30	1 1/4 – 7 UNC		45	
	60	70	+0,03 0			40	2	M30	1 1/4 – 7 UNC	180	45	M30	1 1/4 – 7 UNC	125	45	
	70	80						M36	1 1/2 – 6 UNC		54	M36	1 1/2 – 6 UNC		54	
	80	100						M42	1 3/4 – 5 UNC		63	M42	1 3/4 – 5 UNC		63	

* A radius can be provided in place of a chamfer if required.

NOTE – Details not stated are left to the discretion of the manufacturer.

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