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Drills for use prior to tapping screw threads

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FOREWORD

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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 2306 was drawn up by Technical Committee ISO/TC 29, *Small tools*.

It was approved in August 1971 by the Member Bodies of the following countries :

Austria	India	South Africa, Rep. of
Belgium	Ireland	Switzerland
Czechoslovakia	Israel	Thailand
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Australia

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Drills for use prior to tapping screw threads

0 INTRODUCTION

The diameter of a hole produced by a drill depends to some extent upon the degree of accuracy to which the drill point is ground, the material being drilled, the lubricant used, and the alignment, feed and speed of the operation.

When tapping relatively soft material, there is a tendency for the material to be squeezed down towards the root and in such cases the minor diameter of the tapped hole may become smaller than the diameter of the drill used. The tendency is very much less with harder materials, and in some cases is entirely absent.

The larger the drilled hole, within the relevant minor diameter tolerance, the more economical tapping becomes and the risk of tap breakage is reduced.

With the foregoing points in mind, the tables have been prepared as a guide to drilling prior to conventional tapping. However, it is realised that users may find it beneficial to choose their own drill diameters for certain applications. Even in these instances, stocked diameter drills should be used whenever possible.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the sizes of drills to be used prior to tapping parallel screw threads of normal length of engagement, the drill diameter being approximately equal to the nominal diameter of the thread minus the pitch.

Drill sizes are given for the following threads:

- 1) ISO metric threads (coarse and fine pitch series):
Tables 1 and 2.
- 2) ISO inch threads (UNC and UNF): Tables 3 and 4.
- 3) Pipe threads: Tables 5 and 6.

This International Standard specifies metric diameters of drills, which, except for the four sizes indicated by an asterisk, have been selected from ISO/R 235, and the dimensions shall be regarded as the only recommended dimensions to be used in the future for this purpose.

2 REFERENCES

ISO/R 7, *Pipe threads for gas list tubes and screwed fittings where pressure-tight joints are made on the threads (1/8 inch to 6 inches).*

ISO/R 228, *Pipe threads where pressure-tight joints are not made on the threads (1/8 inch to 6 inches).*

ISO/R 235, *Parallel shank twist drills jobber and stub series and Morse taper shank twist drills.*

ISO/R 261, *ISO general purpose metric screw threads — General plan.*

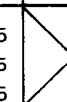
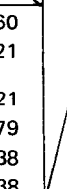
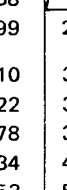
ISO/R 263, *ISO inch screw threads — General plan and selection for screws, bolts and nuts (diameter range 0.06 to 6 in).*

3 ISO METRIC THREADS

3.1 Coarse pitch series

TABLE 1

Dimensions in millimetres

Thread						Drill diameter
Nominal diameter	Pitch	Minor diameter for class				
		5H max.	6H max.	7H max.	5H,6H,7H min.	
1	0.25	0.785			0.729	0.75
1.1	0.25	0.885			0.829	0.85
1.2	0.25	0.985			0.929	0.95
1.4	0.3	1.142	1.160		1.075	1.10
1.6	0.35	1.301	1.321		1.221	1.25
1.8	0.35	1.501	1.521		1.421	1.45
2	0.4	1.657	1.679		1.567	1.60
2.2	0.45	1.813	1.838		1.713	1.75
2.5	0.45	2.113	2.138		2.013	2.05
3	0.5	2.571	2.599	2.639	2.459	2.50
3.5	0.6	2.975	3.010	3.050	2.850	2.90
4	0.7	3.382	3.422	3.466	3.242	3.30
4.5	0.75	3.838	3.878	3.924	3.688	3.70
5	0.8	4.294	4.334	4.384	4.134	4.20
6	1	5.107	5.153	5.217	4.917	5.00
7	1	6.107	6.153	6.217	5.917	6.00
8	1.25	6.859	6.912	6.982	6.647	6.80
9	1.25	7.859	7.912	7.982	7.647	7.80
10	1.5	8.612	8.676	8.751	8.376	8.50
11	1.5	9.612	9.676	9.751	9.376	9.50
12	1.75	10.371	10.441	10.531	10.106	10.20
14	2	12.135	12.210	12.310	11.835	12.00
16	2	14.135	14.210	14.310	13.835	14.00
18	2.5	15.649	15.744	15.854	15.294	15.50
20	2.5	17.649	17.744	17.854	17.294	17.50
22	2.5	19.649	19.744	19.854	19.294	19.50
24	3	21.152	21.252	21.382	20.752	21.00
27	3	24.152	24.252	24.382	23.752	24.00
30	3.5	26.661	26.771	26.921	26.211	26.50
33	3.5	29.661	29.771	29.921	29.211	29.50
36	4	32.145	32.270	32.420	31.670	32.00
39	4	35.145	35.270	35.420	34.670	35.00
42	4.5	37.659	37.799	37.979	37.129	37.50
45	4.5	40.659	40.799	40.979	40.129	40.50
48	5	43.147	43.297	43.487	42.587	43.00
52	5	47.147	47.297	47.487	46.587	47.00
56	5.5	50.646	50.796	50.996	50.046	50.50