

Undercuts and runouts for screw threads —

Part 2: Specification for ISO metric screw threads

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the General Mechanical Engineering Standards Policy Committee (GME/-) to Technical Committee GME/3, upon which the following bodies were represented:

- British Industrial Fasteners Federation
- British Railways Board
- British Turned Parts Manufacturers' Association
- Gauge and Tool Makers' Association
- Ministry of Defence
- Screw Thread Tool Manufacturers' Association Ltd.
- Society of British Aerospace Companies Ltd.
- Society of Motor Manufacturers and Traders Ltd.

This British Standard, having been prepared under the direction of the General Mechanical Engineering Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 29 November 1991

© BSI 02-1999

First published August 1970
Second edition November 1991

The following BSI references relate to the work on this standard:
Committee reference GME/3
Draft for comment 87/76252 DC

ISBN 0 580 18872 8

Amendments issued since publication

Amd. No.	Date	Comments
8584	May 1995	Indicated by a sideline in the margin

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 ISO metric external threads	1
3 ISO metric internal threads	4
Appendix A Undercuts and runouts for screw threads for heavy duty applications	6
Appendix B Lengths of runout for various angles of throat or taper lead	10
Figure 1 — Undercut (external thread)	1
Figure 2 — Runouts (external thread)	2
Figure 3 — Form of undercut (internal thread)	4
Figure 4 — Diameter of undercut (internal thread)	4
Figure 5 — Runouts (internal thread)	5
Figure 6 — Shoulder fillets	7
Figure 7 — Recessed fillet	7
Figure 8 — Length of runout produced by various angles of lead and throat	8
Table 1 — Dimensions of undercuts for ISO metric external threads	1
Table 2 — Dimensions of runouts for ISO metric external threads	3
Table 3 — Dimensions of runouts and undercuts for ISO metric internal threads	4
Table 4 — Lengths of runout for various angles of throat or taper lead	10
Publication(s) referred to	Inside back cover

Foreword

This Part of BS 1936 has been prepared under the direction of the General Mechanical Engineering Standards Policy Committee and supersedes BS 1936-2:1970 which is withdrawn.

This Part of BS 1936 covers the undercuts and runouts for both external and internal threads. For external threads it is technically equivalent to the following standards, published by the International Organization for Standardization (ISO).

ISO 3508-1976, *Thread run-outs for fasteners with thread in accordance with ISO 261 and ISO 262*.

ISO 4755-1983, *Fasteners — Thread undercuts for external metric ISO threads*.

Undercuts and runouts for internal threads are not covered by any ISO standard and the text of the 1970 edition of BS 1936-2 has therefore been retained, with some editorial changes. A full revision will be considered once comparable ISO standards are published.

Runouts for high duty threaded fasteners for aerospace applications are the subject of British Standard A231, which is identical to ISO 3353-1976.

The requirements for unified, Whitworth, B.A. and cycle thread forms are specified in BS 1936-1.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This Part of BS 1936 specifies requirements for dimensions for form, width and diameter of undercuts and runouts for ISO metric external and internal threads for use in general engineering applications. Threads may be cut or rolled without the die or tap fouling the component.

Recommendations for undercuts and runouts for high duty applications are given in Appendix A.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 ISO metric external threads

2.1 Undercuts

The form and dimensions of the undercuts shall be as given in Figure 1 and Table 1.

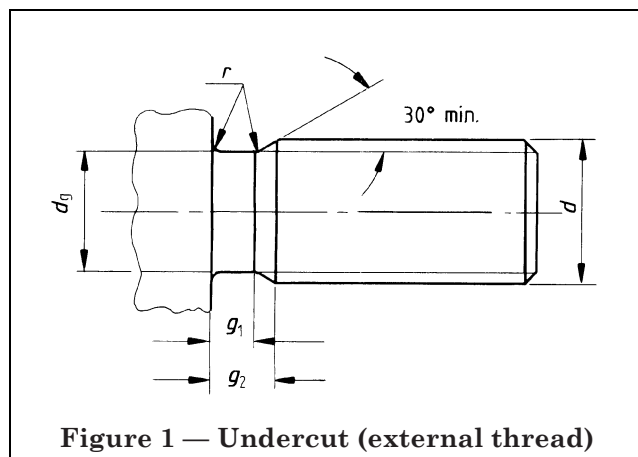


Figure 1 — Undercut (external thread)

Table 1 — Dimensions of undercuts for ISO metric external threads

Pitch of thread p	Thread diameter d (coarse thread)	d_g h13 ^a	g_1 ^b min.	g_2 max. ($\approx 3p$)	r
mm	mm	mm	mm	mm	mm
0.25	1 and 1.2	$d-0.4$	0.4	0.75	0.12
0.3	1.4	$d-0.5$	0.5	0.9	0.16
0.35	1.6 and 1.8	$d-0.6$	0.6	1.05	0.16
0.4	2	$d-0.7$	0.6	1.2	0.2
0.45	2.2 and 2.5	$d-0.7$	0.7	1.35	0.2
0.5	3	$d-0.8$	0.8	1.5	0.2
0.6	3.5	$d-1$	0.9	1.8	0.4
0.7	4	$d-1.1$	1.1	2.1	0.4
0.75	4.5	$d-1.2$	1.2	2.25	0.4
0.8	5	$d-1.3$	1.3	2.4	0.4
1	6 and 7	$d-1.6$	1.6	3	0.6
1.25	8	$d-2$	2	3.75	0.6
1.5	10	$d-2.3$	2.5	4.5	0.8
1.75	12	$d-2.6$	3	5.25	1
2	14 and 16	$d-3$	3.4	6	1
2.5	18 and 20 and 22	$d-3.6$	4.4	7.5	1.2
3	24 and 27	$d-4.4$	5.2	9	1.6
3.5	30 and 33	$d-5$	6.2	10.5	1.6
4	36 and 39	$d-5.7$	7	12	2
4.5	42 and 45	$d-6.4$	8	13.5	2.5
5	48 and 52	$d-7$	9	15	2.5
5.5	56 and 60	$d-7.7$	11	17.5	3.2
6	64 and 68	$d-8.3$	11	18	3.2

^a h12 up to and including 3 mm thread diameter, h13 thread diameter above 3 mm. Tolerance h13 is used for general applications and coarse series threads. For larger diameters and smaller pitches a reduced tolerance may be desirable. Tolerance h12 is recommended for precision engineering. (See BS 4500-1 for tolerance values.)

^b g_1 min. based on a minimum transition angle of 30°.