

Screwing taps —

Part 4: Specification for metric ground thread taps: manufacturing tolerances

This European Standard EN 22857 has the status of a
British Standard

UDC 621.993.1:621.88.082.1

Cooperating organizations

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National foreword

This Part of BS 949 has been prepared under the direction of the Machine, Engineers and Hand Tools Standards Policy Committee and supersedes the clauses relating to ISO 2857 of BS 949-1:1976 (including amendment No. 1) which is currently undergoing revision to take this and other requirements into account. It is identical with ISO 2857:1973 including amendments No. 1:1984 and No. 2:1986 “*Ground thread taps for ISO metric threads of tolerance 4H to 8H and 4G to 6G coarse and fine pitches — Manufacturing tolerances on the threaded portion*” prepared by Technical Committee ISO/TC 29 of the International Organization for Standardization (ISO) on which the United Kingdom was represented.

In 1989 the European Committee for Standardization (CEN) accepted ISO 2587 and its amendments as the European Standard EN 22857:1989. The publication of this Part of BS 949 is to meet the obligations of the United Kingdom as a member of CEN to give EN 22857:1989 the status of a national standard, without modification.

The existing BS 949-1:1976, BS 949-2:1979 and BS 949-3:1982 are currently being revised to withdraw any conflicting requirements with EN 22857 and EN 25967:1989 (which is identical to BS 949-5), again as a United Kingdom obligation as a member of CEN, and to update them taking account of ISO 529:1975 including amendments No. 1 and No. 2, ISO 2283:1972, ISO 2284:1987 and ISO 5969:1979 which have not been adopted by CEN. It is envisaged that after the completion of these revisions BS 949 will consist of the following Parts:

- *Part 1: Specification of general dimensions;*
- *Part 2: Specification for unified thread taps: manufacturing tolerances;*
- *Part 3: Specification for pipe thread taps;*
- *Part 4: Specification for metric ground thread taps — manufacturing tolerances;*
- *Part 5: Nomenclature and terminology¹⁾.*

NOTE Textual error. It should be noted that on page 22 of the original text of ISO 2857:1973, the heading for the penultimate column should read “tolerance on $a/2$ ” not “tolerance on a and $a/2$ ” to conform with the modifications introduced by amendment No. 1:1984.

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, the EN title page, pages 2 to 22, 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⁾ Published.

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Key words: Power operated tools, taps, ISO metric threads, dimensional tolerances

English version

Ground thread taps for ISO metric threads of tolerances 4H to 8H and 4G to 6G coarse and fine pitches: Manufacturing tolerances on the threaded portion

(ISO 2857:1973 incl. Amd 1:1984 and Amd 2:1986)

Tarauds à filets rectifiés pour filetages métriques ISO de tolérance 4H à 8H et 4G à 6G à pas gros et à pas fins: Tolérances d'exécution de la partie taillée
(ISO 2857:1973, Amd 1:1984 et Amd 2:1986 inclus)

Geschliffene Gewindebohrer für metrische ISO-Gewinde mit Toleranzfeld 4H bis 8H und 4G bis 6G für Regel- und Feingewinde: Festigungstoleranzen des Gewindeteiles
(ISO 2857:1973 mit Amd 1:1984 und Amd 2:1986)

This European Standard was accepted by CEN on 9 June 1989 and is identical to the ISO standard as referred to.

CEN members are bound to comply with the requirements of the CEN/CENELEC Common Rules which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to CEN Central Secretariat has the same status as the official versions.

CEN members are the national standards organizations of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Brief history

Following consideration of the results of a Primary Questionnaire among members, the CEN Technical Board decided in March 1988 to submit the International Standard

ISO 2857:1973 including Amendment 1:1984 and Amendment 2:1986

Ground thread taps for ISO metric threads of tolerances 4H to 8H and 4G to 6G coarse and fine pitches; Manufacturing tolerances on the threaded portion

to the Formal Vote. This vote was positive.

Statement

The text of the International Standard ISO 2857:1973 including Amendment 1:1984 and Amendment 2:1986 having been approved by CEN as a European Standard without any modification according to the Common CEN/CENELEC Rules, the following countries are bound to implement this standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1 Scope and field of application

This International Standard specifies the manufacturing tolerances on the threaded portion of taps for producing the ISO metric threads of tolerance classes 4H to 8H and 4G to 6G as defined in ISO/R 965-I to III (excluding, consequently, classes 7G and 8G considered as usually produced with ground thread taps).

It is valid for the short taps specified in ISO/R 529 as well as for any other kind of ground thread taps with the same diameters and pitches.

The internal threads produced with those taps are conventionally designated by the simplified denomination of "nut" in agreement with the word used in ISO/R 965 for the general designation of all internal threads.

Annex A and Annex B give, for all threads with coarse and fine pitches, the manufacturing tolerances on the threaded position of taps for the following classes of nuts:

4H and 5H – 6H – 7H and 8H

and 4G and 5G – 6G

2 References

ISO/R 529, *Short machine taps and hand taps*.

ISO/R 724, *ISO general purpose metric screw threads — Basic dimensions*.

ISO/R 965-I, *ISO general purpose metric screw threads — Tolerances — Principles and basic data*.

ISO/R 965-II, *ISO general purpose metric screw threads — Tolerances — Limits of sizes for commercial bolt and nut threads — Medium quality*.

ISO/R 965-III, *ISO general purpose metric screw threads — Tolerances — Deviations for constructional threads*.

3 Basic data

3.1 Thread profile of nuts: see Figure 1.

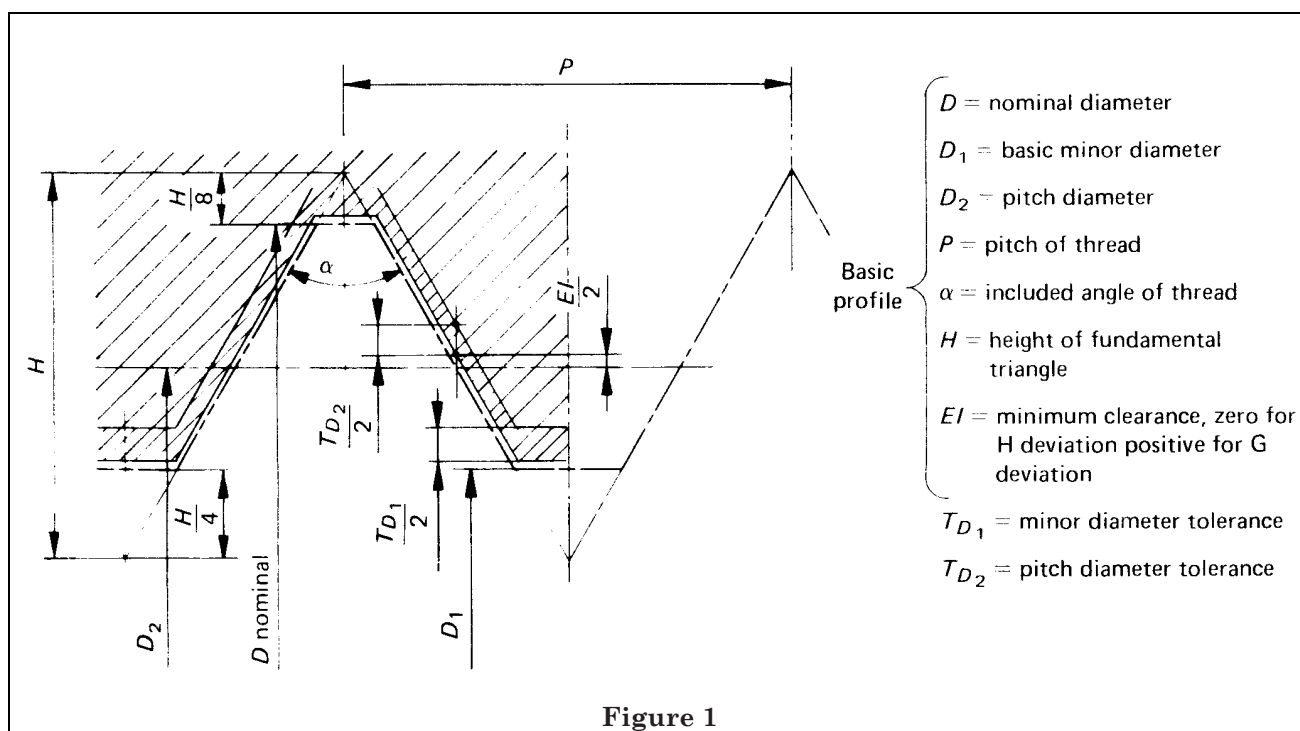


Figure 1

3.2 Thread profile of tap: see Figure 2.

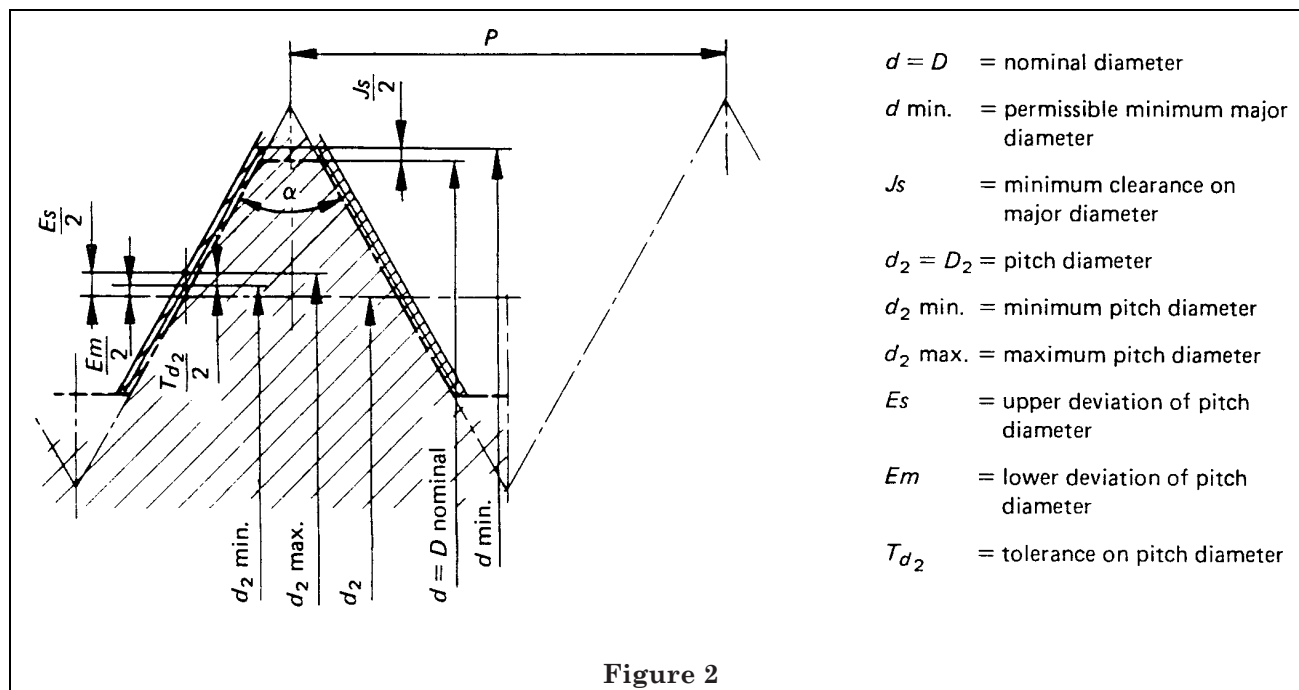


Figure 2

3.3 Tolerance classes of taps

For the production of nut classes of the following classes:

4H – 5H – 6H – 7H – 8H with zero minimum clearance,

4G – 5G – 6G with positive minimum clearance,

three tolerance classes have been accepted:

Class 1 – Class 2 – Class 3

The tolerances of these three classes are determined as indicated hereafter, in terms of a tolerance unit t , the value of which is equal to the pitch tolerance value T_{D_2} , grade 5 of the nut (extrapolated up to pitch 0,2 mm):

$t = T_{D_2}$ grade 5 of the nut.

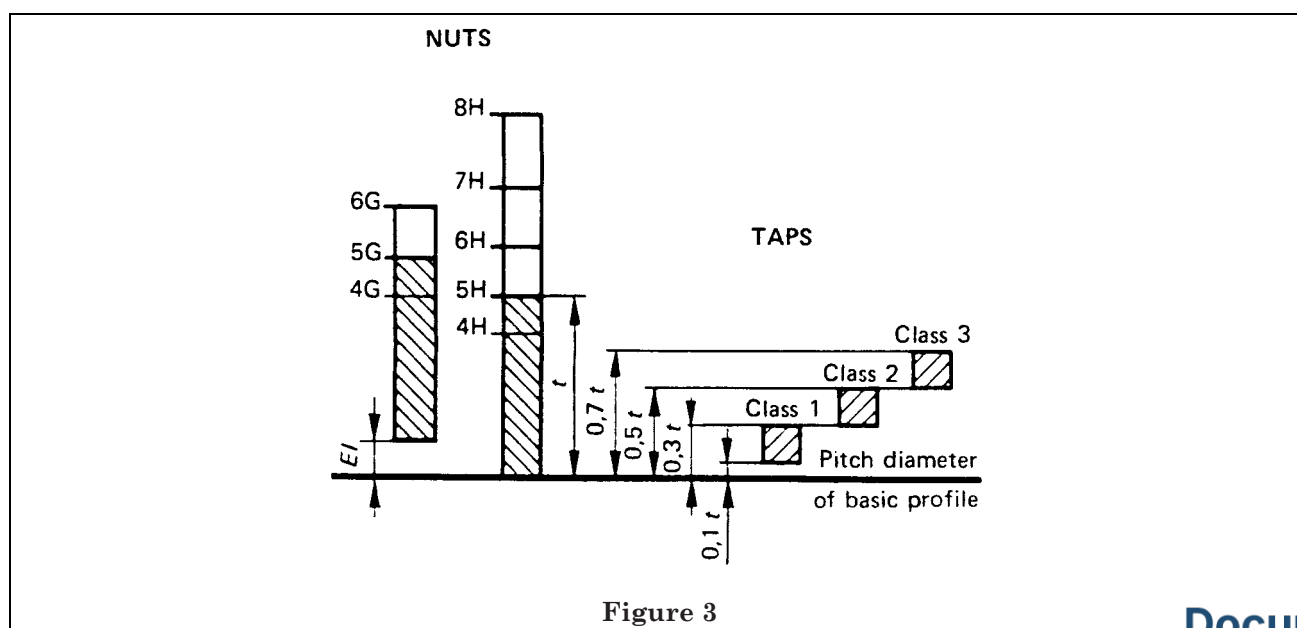


Figure 3

3.3.1 Tolerance on pitch diameter

The value for the tap pitch diameter tolerance T_{d_2} is the same for all three classes 1, 2 and 3: it is equal to 20 % of t .

The position of the tolerance of the tap with respect to the basic pitch diameter results from the lower deviation Em , the values of which are (see Figure 3):

- for tap class 1: $+0,1 t$
- for tap class 2: $+0,3 t$
- for tap class 3: $+0,5 t$

3.3.2 Choice of tolerance class of the tap with respect to the class of thread to be produced

Unless otherwise specified, the taps of classes 1 to 3 will generally be used for the manufacture of nuts of the following classes:

- Class 1: for nuts of classes 4H and 5H
- Class 2: for nuts of classes 6H and also 4G and 5G
- Class 3: for nuts of classes 7H – 8H and also 6G

This correspondance has, however, only an indicative nature, since the accuracy of tapping can vary as a function of a series of factors such as: the material to be tapped, the condition of the machine tool, the tapping attachment, the tapping speed, the lubricant, etc.

Users are therefore recommended to select in each case the most suitable class of tap for the manufacture of the required class of nut.