

# INTERNATIONAL STANDARD

**ISO**  
**2901**

Second edition  
1993-10-15

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## **ISO metric trapezoidal screw threads — Basic profile and maximum material profiles**

*Filetages métriques trapézoïdaux ISO — Profil de base et profils à  
maximum de matière*



Reference number  
ISO 2901:1993(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 2901 was prepared by Technical Committee ISO/TC 1, *Screw threads*.

This second edition cancels and replaces the first edition (ISO 2901:1977), figures 2 and 3 of which have been technically revised.

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International Organization for Standardization  
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# ISO metric trapezoidal screw threads — Basic profile and maximum material profiles

## 1 Scope

This International Standard specifies the basic profile and maximum material profiles of ISO metric trapezoidal screw threads.

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2903:—<sup>1)</sup>, *ISO metric trapezoidal screw threads — Tolerances*.

## 3 Symbols

|     |                                                      |
|-----|------------------------------------------------------|
| $D$ | major diameter of internal thread                    |
| $d$ | major diameter of external thread (nominal diameter) |

|       |                                                         |
|-------|---------------------------------------------------------|
| $D_2$ | pitch diameter of internal thread                       |
| $d_2$ | pitch diameter of external thread                       |
| $D_1$ | minor diameter of internal thread                       |
| $d_1$ | minor diameter of external thread                       |
| $P$   | pitch                                                   |
| $H$   | height of fundamental triangle                          |
| $H_1$ | height of basic profile                                 |
| $a_c$ | crest clearance                                         |
| $es$  | fundamental deviation on external threads <sup>2)</sup> |

## 4 Basic profile

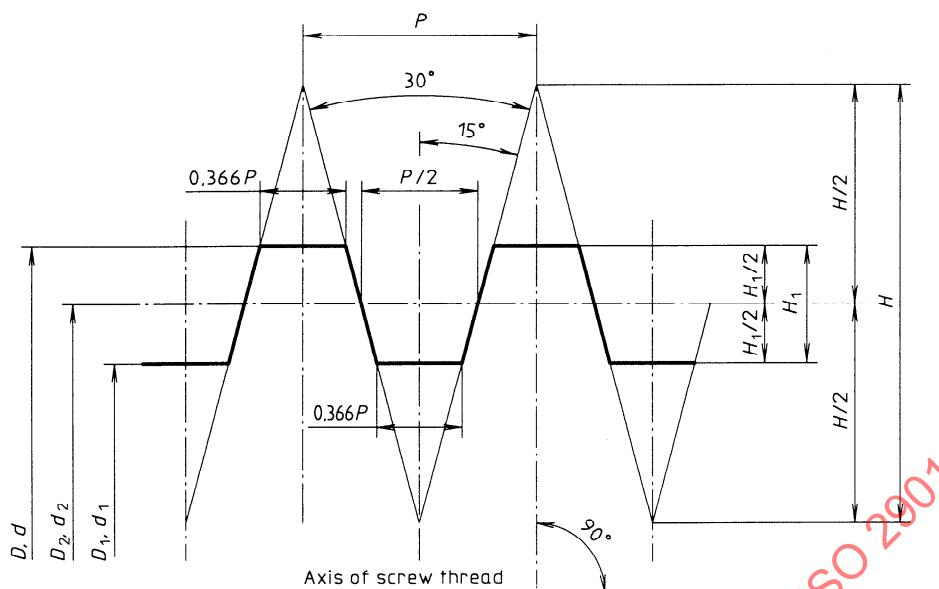
The basic profile is the theoretical profile, and this is associated with the basic sizes of the major, pitch and minor diameters of the thread. The deviations are applied to the basic sizes.

## 5 Basic profile dimensions

These dimensions are shown in figure 1 and given in table 1.

1) To be published. (Revision of ISO 2903:1977)

2) See ISO 2903:1993, table 1.



### Figure 1 — Basic profile

## 6 Maximum material profiles

These profiles have prescribed clearances on the major, minor and pitch diameters referring to the basic profile.

In the case of manufacture by rolling the profile at the minor diameter can be modified in order to obtain a larger rounding on the root of the thread. The minor diameter  $d_3$  of the external thread may in this case be reduced by  $0,15P$ .

If modifications of these profiles become necessary, due to the particular methods of manufacture, they shall be agreed between the customer and the manufacturer.

## 7 Dimensions for maximum material profiles

These dimensions are shown in figures 2 and 3 and given in either table 2 or the following formulae:

$$H_1 = 0,5P$$

$$h_3 = H_4 = H_1 + a_c = 0,5P + a_c$$

$$z = 0,25P = H_1/2$$

$$d_3 = d - 2 \times h_3 = d - 2(0,5P + a_c)$$

$$d_2 = D_2 = d - 2z = d - 0,5P$$

$$D_1 = d - 2H_1 = d - P$$

$$D_4 = d + 2a_c$$

$$s = 0,267\ 95es$$

$$R_1 \text{ max.} = 0,5a_c$$

$$R_2 \text{ max.} = a_c$$

**Table 1 — Basic profile dimensions**

Dimensions in millimetres

| <b>Pitch</b><br><i>P</i> | <i>H</i><br>1,866 <i>P</i> | <i>H</i> /2<br>0,933 <i>P</i> | <i>H</i> <sub>1</sub><br>0,5 <i>P</i> | 0,366 <i>P</i> |
|--------------------------|----------------------------|-------------------------------|---------------------------------------|----------------|
| 1,5                      | 2,799                      | 1,400                         | 0,75                                  | 0,549          |
| 2                        | 3,732                      | 1,866                         | 1                                     | 0,732          |
| 3                        | 5,598                      | 2,799                         | 1,5                                   | 1,098          |
| 4                        | 7,464                      | 3,732                         | 2                                     | 1,464          |
| 5                        | 9,330                      | 4,665                         | 2,5                                   | 1,830          |
| 6                        | 11,196                     | 5,598                         | 3                                     | 2,196          |
| 7                        | 13,062                     | 6,531                         | 3,5                                   | 2,562          |
| 8                        | 14,928                     | 7,464                         | 4                                     | 2,928          |
| 9                        | 16,794                     | 8,397                         | 4,5                                   | 3,294          |
| 10                       | 18,660                     | 9,330                         | 5                                     | 3,660          |
| 12                       | 22,392                     | 11,196                        | 6                                     | 4,392          |
| 14                       | 26,124                     | 13,062                        | 7                                     | 5,124          |
| 16                       | 29,856                     | 14,928                        | 8                                     | 5,856          |
| 18                       | 33,588                     | 16,794                        | 9                                     | 6,588          |
| 20                       | 37,320                     | 18,660                        | 10                                    | 7,320          |
| 22                       | 41,052                     | 20,526                        | 11                                    | 8,052          |
| 24                       | 44,784                     | 22,392                        | 12                                    | 8,784          |
| 28                       | 52,248                     | 26,124                        | 14                                    | 10,248         |
| 32                       | 59,712                     | 29,856                        | 16                                    | 11,712         |
| 36                       | 67,176                     | 33,588                        | 18                                    | 13,176         |
| 40                       | 74,640                     | 37,320                        | 20                                    | 14,640         |
| 44                       | 82,104                     | 41,052                        | 22                                    | 16,104         |

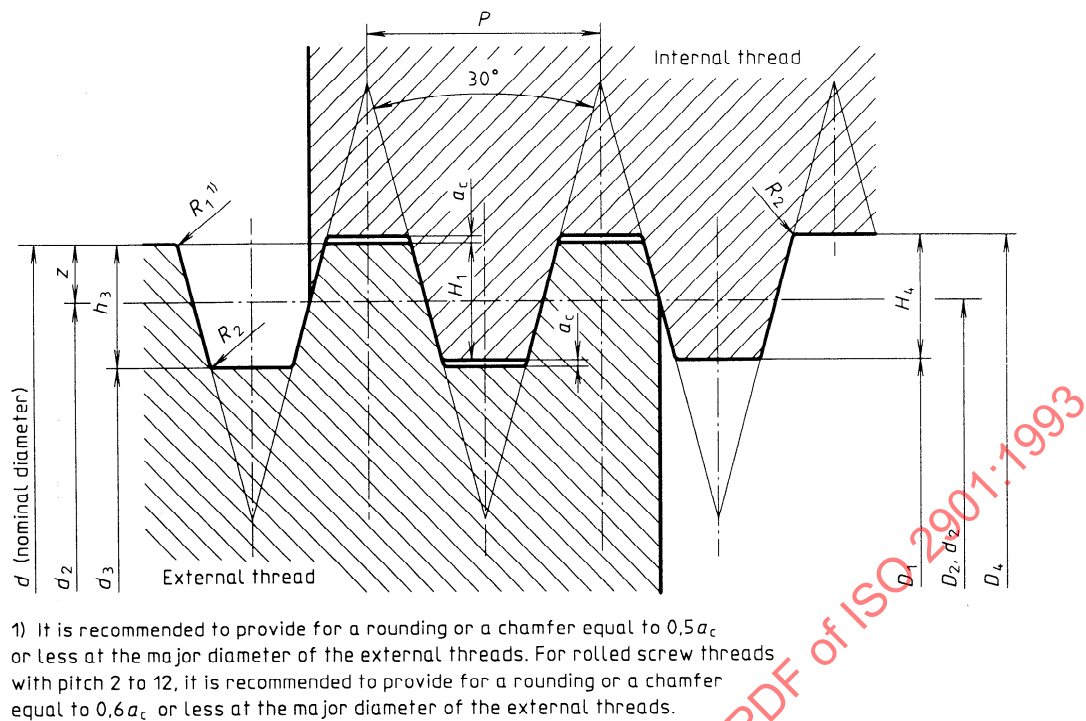


Figure 2 — Profiles for threads with clearance on the crest and without clearance on the flank

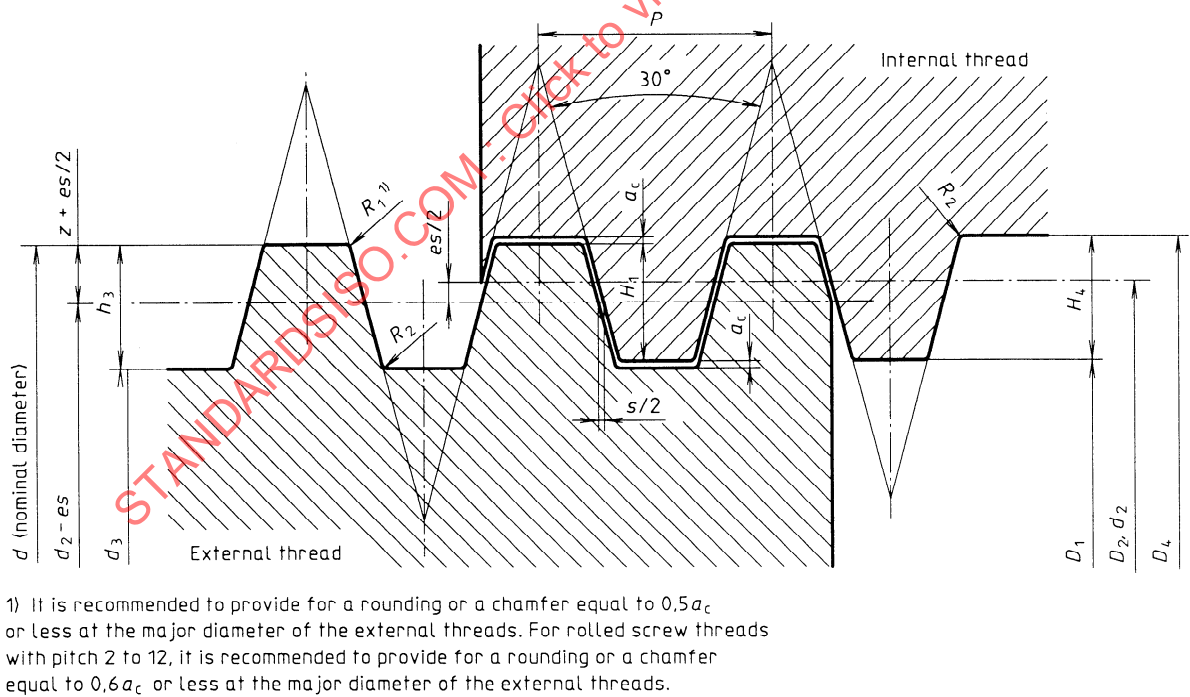


Figure 3 — Profiles for threads with clearance on the crest and on the flank