

INTERNATIONAL STANDARD



2901

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

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

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

First edition — 1977-10-01

STANDARD PREVIEW
(standards.iteh.ai)

[ISO 2901:1977](https://standards.iteh.ai/catalog/standards/sist/51ff0c9f-46d7-48ce-a1fd-6ad781911212/iso-2901-1977)

<https://standards.iteh.ai/catalog/standards/sist/51ff0c9f-46d7-48ce-a1fd-6ad781911212/iso-2901-1977>

UDC 621.882.082.4

Ref. No. ISO 2901-1977 (E)

Descriptors : screw threads, trapezoidal threads, specifications, profiles, dimensions.

Price based on 3 pages

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.

International Standard ISO 2901 was developed by Technical Committee ISO/TC 1, *Screw threads*, and was circulated to the member bodies in June 1976.

It has been approved by the member bodies of the following countries :

Austria	India	Romania
Belgium	Ireland	South Africa, Rep. of
Brazil	Italy	Spain
Canada	Korea, Rep. of	Sweden
Denmark	Mexico	Switzerland
Finland	Netherlands	U.S.A.
France	New Zealand	U.S.S.R.
Germany	Norway	
Hungary	Poland	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Japan
United Kingdom

ISO metric trapezoidal screw threads – Basic profile and maximum material profiles

1 SCOPE AND FIELD OF APPLICATION

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

2 REFERENCE

ISO 2903, ISO metric trapezoidal screw threads – Tolerances.

3 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.

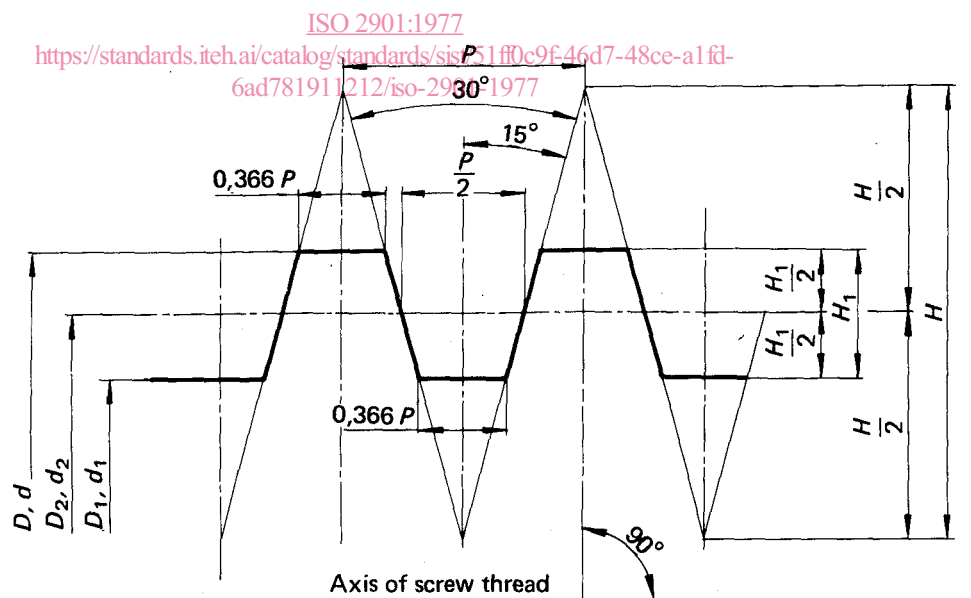


FIGURE 1 – Basic profile

- 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

4 BASIC PROFILE DIMENSIONS

See table 1.

5 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 $0,15 P$.

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

6 DIMENSIONS FOR MAXIMUM MATERIAL PROFILES

See table 2.

TABLE 1 – Basic profile dimensions
Dimensions in millimetres

Pitch P	H $1,866 P$	$H/2$ $0,933 P$	H_1 $0,5 P$	$0,366 P$
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

TABLE 2 – Dimensions for maximum material profiles
Dimensions in millimetres

Pitch P	a_c	$H_4 = h_3$	R_1 max.	R_2 max.
1,5	0,15	0,9	0,075	0,15
2	0,25	1,25	0,125	0,25
3	0,25	1,75	0,125	0,25
4	0,25	2,25	0,125	0,25
5	0,25	2,75	0,125	0,25
6	0,5	3,5	0,25	0,5
7	0,5	4	0,25	0,5
8	0,5	4,5	0,25	0,5
9	0,5	5	0,25	0,5
10	0,5	5,5	0,25	0,5
12	0,5	6,5	0,25	0,5
14	1	8	0,5	1
16	1	9	0,5	1
18	1	10	0,5	1
20	1	11	0,5	1
22	1	12	0,5	1
24	1	13	0,5	1
28	1	15	0,5	1
32	1	17	0,5	1
36	1	19	0,5	1
40	1	21	0,5	1
44	1	23	0,5	1

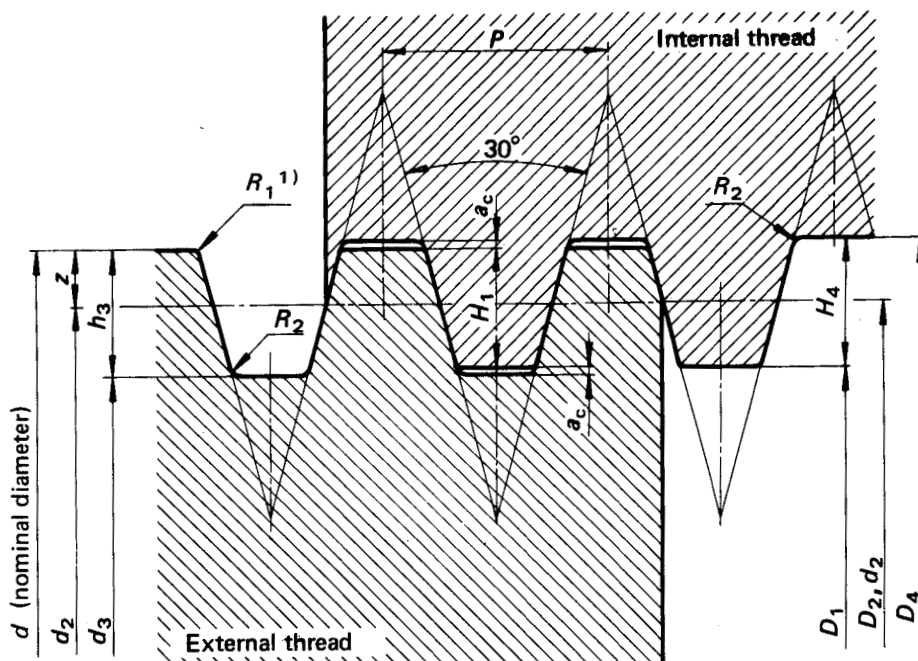


FIGURE 2 — Profiles for threads with clearance on the crest and without clearance on the flank

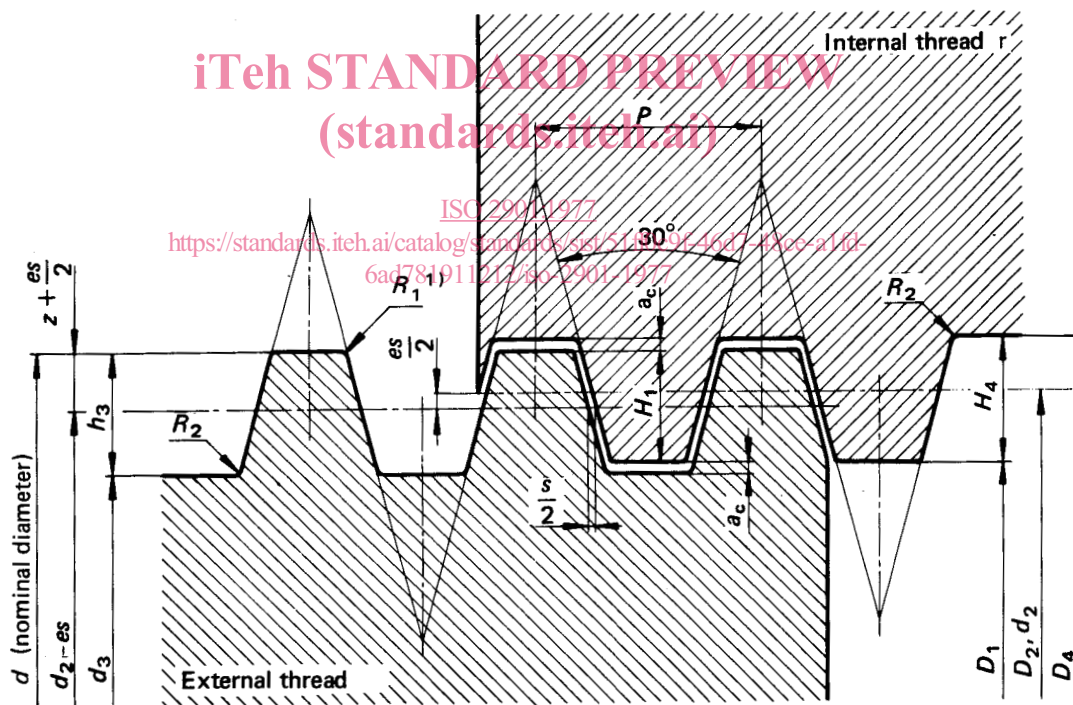


FIGURE 3 — Profiles for threads with clearance on the crest and on the flank

$$H_1 = 0,5 P$$

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

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

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

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

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

$$D_4 = d + 2 a_c$$

$$a_c = \text{crest clearance}$$

$$es = \text{fundamental deviation on external threads}^{2)}$$

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

$$R_{1\text{max.}} = 0,5 a_c$$

$$R_{2\text{max.}} = a_c$$

1) It is recommended to provide for a rounding or a chamfer equal to $0,5 a_c$ or less at the major diameter of the external threads.

2) See ISO 2903, table 1.