
International Standard



228/1

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Pipe threads where pressure-tight joints are not made on the threads —

Part 1 : Designation, dimensions and tolerances

Filetages de tuyauterie pour raccordement sans étanchéité dans le filet — Partie 1 : Désignation, dimensions et tolérances

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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 228/1 was developed by Technical Committee ISO/TC 5, *Ferrous metal pipe and metallic fittings*, and was circulated to the member bodies in January 1981.

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

Australia	France	Korea, Rep. of
Austria	Germany, F. R.	Norway
Belgium	Hungary	Poland
Bulgaria	India	Romania
China	Iraq	South Africa, Rep. of
Czechoslovakia	Israel	Sweden
Denmark	Italy	Switzerland
Egypt, Arab Rep. of	Japan	United Kingdom
Finland	Korea, Dem. P. Rep. of	

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

Canada
Netherlands
USA
USSR

This second edition cancels and replaces the first edition (i.e. ISO 228/1-1978).

Pipe threads where pressure-tight joints are not made on the threads —

Part 1 : Designation, dimensions and tolerances

1 Scope and field of application

This part of ISO 228 specifies the designation and lays down the dimensions and the tolerances of pipe threads where pressure-tight joints are not made on the threads.

These threads are intended for the mechanical assembly, of the component parts of fittings, cocks and valves, accessories, etc.

If such assemblies must be made pressure-tight, this will be effected by compressing two tightening surfaces outside the threads, and by interposing an appropriate jointing medium, if necessary.

ISO 228/2 deals with the inspection of these threads.

For pipe threads where pressure-tight joints are made on the threads, see ISO 7/1.

2 References

ISO 7/1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Designation, dimensions and tolerances.*¹⁾

ISO 228/2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges.*

3 Symbols and explanations

- G Pipe thread where pressure-tight joints are not made on the threads
- A Tighter class of tolerance of external pipe threads where pressure-tight joints are not made on the threads
- B Wider class of tolerance of external pipe threads where pressure-tight joints are not made on the threads
- H Height of the triangle of the thread profile.
- h Height of the thread profile with rounded crests and roots

r Radius of rounded crests and roots

P Pitch

d Basic major diameter of the external thread

$D = d$; Basic major diameter of the internal thread

$d_1 = d - 1,280\ 654\ P$; basic minor diameter of the external thread

$D_1 = D - 1,280\ 654\ P = d_1$; basic minor diameter of the internal thread

$d_2 = d - 0,640\ 327\ P$; basic pitch diameter of the external thread

$D_2 = D - 0,640\ 327\ P = d_2$; basic pitch diameter of the internal thread

T_{d2} Tolerance on the pitch diameter on the external thread

T_{D2} Tolerance on the pitch diameter of the internal thread

T_d Tolerance on the major diameter of the external thread

T_{D1} Tolerance on the minor diameter of the internal thread

4 Dimensions

The profile of these threads is identical with that of the parallel thread specified in ISO 7/1. The internal and external threads covered by this International Standard are both parallel.

The crests of the threads may be truncated to the limits of tolerance as given in columns 14 and 15 of the table, except on internal threads when they are likely to be assembled with external threads to ISO 7/1.

The tolerances on the pitch diameter of the internal threads correspond to the positive deviation of the diameter tolerances in ISO 7/1, with the exception of those for diameter 1/16, 1/8, 1/4 and 3/8, for which slightly higher values have been specified.

1) At present at the stage of draft. (Revision of ISO 7/1-1978.)

For external threads, two classes of tolerances on the pitch diameter have been specified (see table 2) :

Class A (column 10) : entirely negative, equivalent in size to the negative tolerance for the internal thread.

Class B (column 11) : entirely negative, value twice that of class A.

The choice between class A and class B depends on the conditions of application and shall be made in product standards where threads to ISO 228/1 are specified.

Dimensions in millimetres are given in table 2.

5 Designation

The designation of threads according to this International Standard shall consist of the following elements in the sequence given :

5.1 The description block shall be

Pipe thread

5.2 The International Standard number block shall be

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5.3 The individual item block shall be

- the letter G followed by the designation of the thread from column 1 of table 2 for internal threads (one class of tolerance only);
- the letter G followed by the designation of the thread from column 1 of table 2 and the letter A for class A external threads;
- the letter G followed by the designation of the thread from column 1 of table 2 and the letter B for class B external threads.

Table 1 — Examples of the complete designation for a thread 1 1/2

Internal thread	(one tolerance only)	Pipe thread	ISO 228/1-G 1 1/2
External thread	tolerance class A	Pipe thread	ISO 228/1-G 1 1/2 A
	tolerance class B	Pipe thread	ISO 228/1-G 1 1/2 B

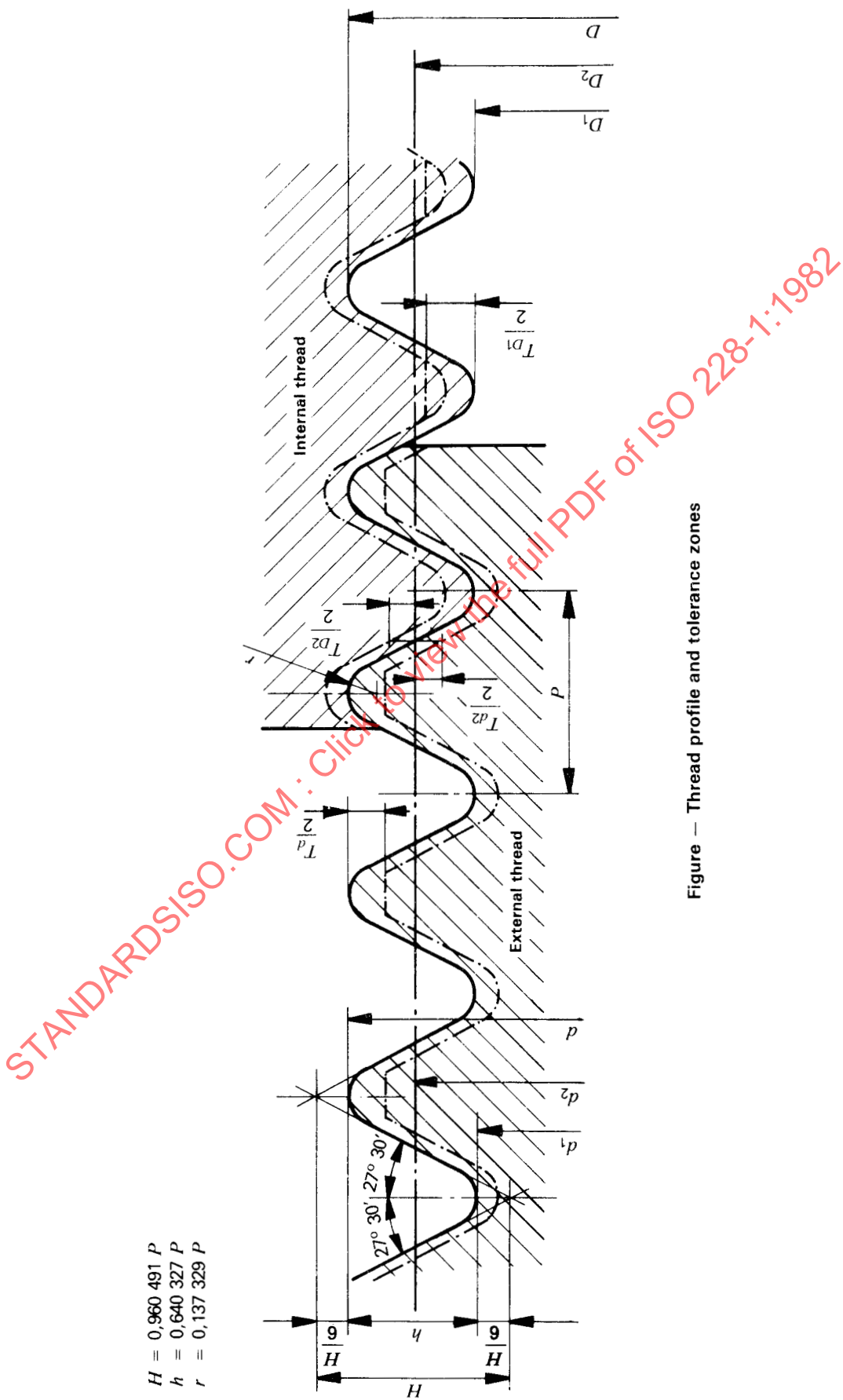


Figure — Thread profile and tolerance zones

Table 2 — Thread dimensions

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Designation of thread	Number of threads in 25.4 mm	Pitch P	Depth of thread h	Basic diameters			Permissible tolerances on pitch diameter ¹⁾						Tolerance on the minor diameter		Tolerance on the major diameter	
				Major $d = D$	Pitch $d_2 = D_2$	Minor $d_1 = D_1$	Internal thread T_{D2}		External thread T_{d2}		Internal thread T_{D1}		External thread T_d			
		mm	mm	mm	mm	mm	Lower deviation	Upper deviation	Lower deviation class A	Lower deviation class B	Upper deviation	Lower deviation	Upper deviation	Lower deviation	Upper deviation	
1/16	28	0,907	0,581	7,723	7,142	6,561	0	+ 0,107	- 0,107	- 0,214	0	0	+ 0,282	- 0,214	0	
1/8	28	0,907	0,581	9,728	9,147	8,566	0	+ 0,107	- 0,107	- 0,214	0	0	+ 0,282	- 0,214	0	
1/4	19	1,337	0,856	13,157	12,301	11,445	0	+ 0,125	- 0,125	- 0,250	0	0	+ 0,445	- 0,250	0	
3/8	19	1,337	0,856	16,662	15,806	14,950	0	+ 0,125	- 0,125	- 0,250	0	0	+ 0,445	- 0,250	0	
1/2	14	1,814	1,162	20,955	19,793	18,631	0	+ 0,142	- 0,142	- 0,284	0	0	+ 0,541	- 0,284	0	
5/8	14	1,814	1,162	22,911	21,749	20,587	0	+ 0,142	- 0,142	- 0,284	0	0	+ 0,541	- 0,284	0	
3/4	14	1,814	1,162	26,441	25,279	24,117	0	+ 0,142	- 0,142	- 0,284	0	0	+ 0,541	- 0,284	0	
7/8	14	1,814	1,162	30,201	29,039	27,877	0	+ 0,142	- 0,142	- 0,284	0	0	+ 0,541	- 0,284	0	
1	11	2,309	1,479	33,249	31,770	30,291	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0	
1 1/8	11	2,309	1,479	37,897	36,418	34,939	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0	
1 1/4	11	2,309	1,479	41,910	40,431	38,952	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0	
1 1/2	11	2,309	1,479	47,803	46,324	44,845	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0	
1 3/4	11	2,309	1,479	53,746	52,267	50,788	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0	
2	11	2,309	1,479	59,614	58,135	56,656	0	+ 0,180	- 0,180	- 0,360	0	0	+ 0,640	- 0,360	0	
2 1/4	11	2,309	1,479	65,710	64,231	62,752	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
2 1/2	11	2,309	1,479	75,184	73,705	72,226	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
2 3/4	11	2,309	1,479	81,534	80,055	78,576	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
3	11	2,309	1,479	87,884	86,405	84,926	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
3 1/2	11	2,309	1,479	100,330	98,851	97,372	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
4	11	2,309	1,479	113,030	111,551	110,072	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
4 1/2	11	2,309	1,479	125,730	124,251	122,772	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
5	11	2,309	1,479	138,430	136,951	135,472	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
5 1/2	11	2,309	1,479	151,130	149,651	148,172	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	
6	11	2,309	1,479	163,830	162,351	160,872	0	+ 0,217	- 0,217	- 0,434	0	0	+ 0,640	- 0,434	0	

1) For thin-walled parts, the tolerances apply to the mean pitch diameter, which is the arithmetical mean of two diameters measured at right angles to each other.