International Standard 7/1

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

Pipe threads where pressure-tight joints are made on the threads —
Part 1 : Designation, dimensions and tolerances

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

Second edition — 1982-12-15

UDC 621.882.082.22 **Ref. No. ISO 7/1-1982 (E)**

Descriptors : pipe threads, pipe fittings, pipe joints, specifications, designation, dimensions, dimensional tolerances, definitions.

Price based on 4 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 7/1 was developed by Technical Committee ISO/TC 5, *Ferrous metal pipes 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	India	Poland
Austria	Iraq	Romania
Belgium	Ireland	South Africa, Rep. of
Brazil	Israel	Spain
China	Italy	Sweden
Denmark	Japan	Switzerland
Finland	Korea, Dem. P. Rep. of	United Kingdom
Germany, F. R.	Korea, Rep. of	
Hungary	Norway	

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

Canada
France
Netherlands
USA
USSR

This second edition cancels and replaces the first edition (i.e. ISO 7/1-1978).

Printed in Switzerland

Pipe threads where pressure-tight joints are made on the threads — Part 1 : Designation, dimensions and tolerances

1 Scope and field of application

This Part of ISO 7 specifies the designation and lays down the dimensions and tolerances of pipe threads where pressure-tight joints are made on the threads.

These threads are intended for tubes suitable for screwing, and for cocks, valves and any fittings to be connected to screwed tubes. If considered necessary, an appropriate jointing medium may be used on the thread to ensure pressure-tight joints.

The 1/16 size is given solely for connector threads (see ISO 1179); it is not intended that there should be a size of tube to match this thread.

ISO 7/2 deals with the inspection of these threads.

For pipe threads where pressure-tight joints are not made on the threads, see ISO 228/1.

2 References

ISO 7/2, *Pipe threads where pressure-tight joints are made on the threads — Part 2 : Verification by means of limit gauges.*

ISO 228/1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1 : Designation, dimensions and tolerances.*

ISO 1179, *Pipe connections, threaded to ISO 228/1, for plain end steel and other metal tubes in industrial applications.*

3 Definitions

The following terms relate to pipe threads.

3.1 gauge diameter : The basic major diameter of the thread, whether external or internal.

3.2 gauge plane : The plane, perpendicular to the axis, at which the major cone has the gauge diameter.

NOTE — When there is a chamfer at the start of the thread not exceeding one pitch in length (see 3.4) the gauge plane is theoretically located for internal threads at the face of the thread, and for external threads at a distance equal to the basic gauge length from the small end of the thread.

3.3 gauge length : On an external thread, the distance from the gauge plane to the small end of the thread.

3.4 complete thread : That part of the thread which is fully formed at both crest and root.

NOTE — When there is a chamfer at the start of the thread not exceeding one pitch in length, it is included in the length of complete thread.

3.5 incomplete thread : That part of the thread which is fully formed at the root, but truncated at the crest by its intersection with the cylindrical surface of the product.

3.6 washout thread; vanish thread : That part of the thread which is not fully formed at the root.

NOTE — The washout thread is produced by the bevel at the start of the threading tool.

3.7 major cone : An imaginary cone which just touches the crests of a taper external thread or the roots of a taper internal thread.

3.8 useful thread : The complete thread and the incomplete thread, excluding the washout thread.

3.9 fitting allowance : The length of useful thread beyond the gauge plane of an external thread required to provide for assembly with an internal thread at the upper limit of the tolerance.

3.10 wrenching allowance : The length of useful thread which is provided for wrenching beyond the position of hand-tight engagement with an internal thread at the upper limit of the tolerance.

4 Symbols and explanations

Rp Parallel internal pipe thread where pressure-tight joints are made on the threads

Rc Taper internal pipe thread where pressure-tight joints are made on the threads

R Taper external pipe thread where pressure-tight joints are made on the threads

H Height of the triangle of the thread profile perpendicular to the thread axis

h Height of the thread profile between rounded crests and roots perpendicular to the thread axis

r Radius of rounded crests and roots

P Pitch

d Basic major diameter of the thread

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

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

T_1 Tolerance for the distance of the gauge plane from pipe end

T_2 Tolerance for the position of the gauge plane of a 1 in 16 plug gauge on internal threads.

5 Dimensions

Dimensions in millimetres are given in table 2.

6 Designation

The designation of threads according to this Part of ISO 7 shall consist of the following elements in the sequence given :

6.1 The description block shall be

Pipe thread

6.2 The International Standard number block shall be

ISO 7/1

6.3 The individual item block shall be made up by

a) a letter symbol

— the letter R followed by the letter p for parallel internal threads;

— the letter R followed by the letter c for taper (conical) internal threads;

— the letter R for external threads (always taper);

b) these letter symbols are followed by the designation of the thread from column 1 of table 2.

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

Internal thread	parallel	Pipe thread ISO 7/1-Rp 1 1/2
	taper	Pipe thread ISO 7/1-Rc 1 1/2
External thread	always taper	Pipe thread ISO 7/1-R 1 1/2

$H = 0{,}960\ 491\ P$
$h = 0{,}640\ 327\ P$
$r = 0{,}137\ 329\ P$

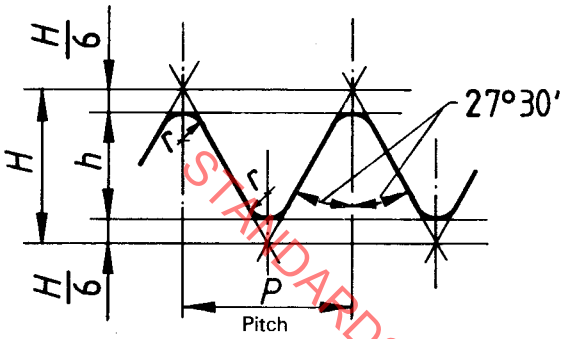

Figure 1 — Parallel thread

$H = 0{,}960\ 237\ P$
$h = 0{,}640\ 327\ P$
$r = 0{,}137\ 278\ P$

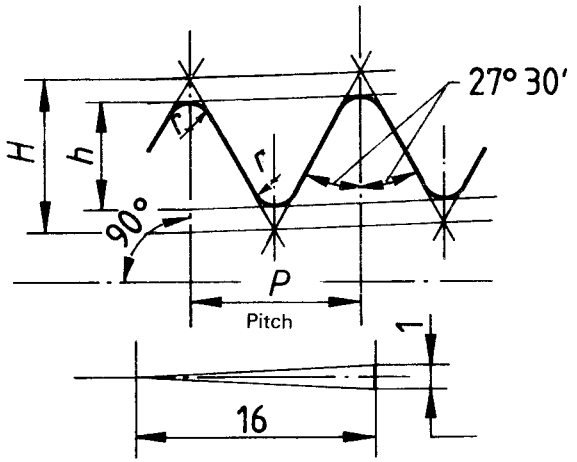

Figure 2 — Taper thread

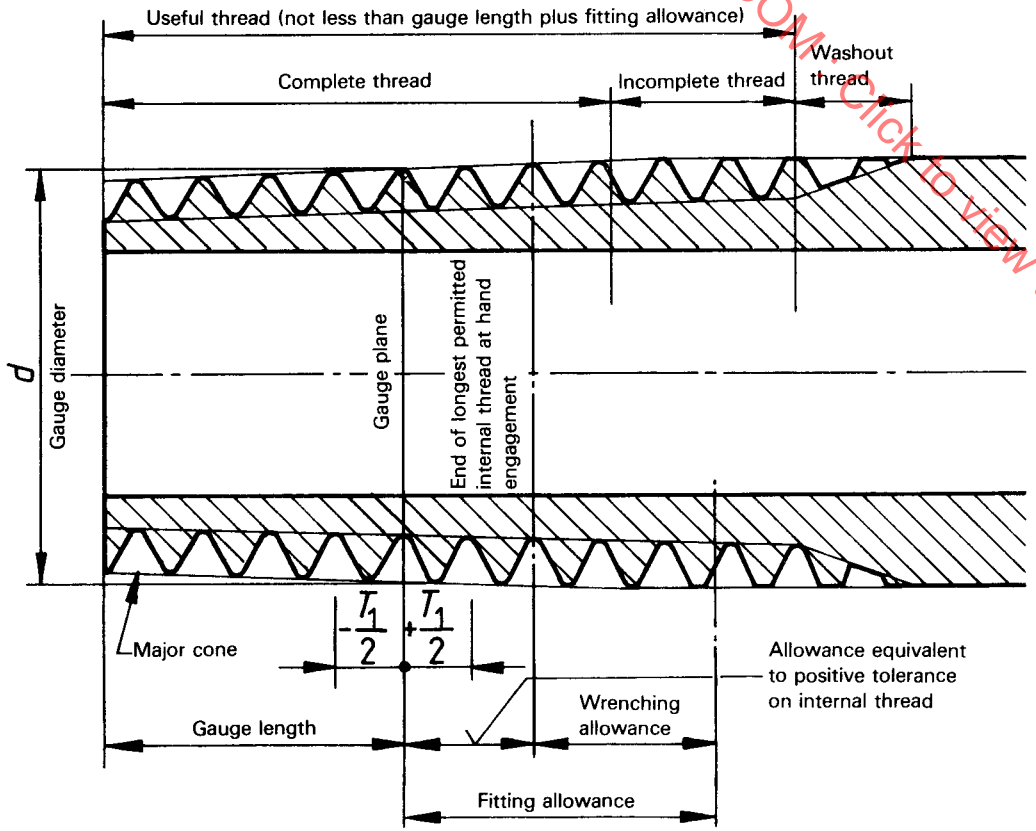

Figure 3 — Terms relating to pipe threads

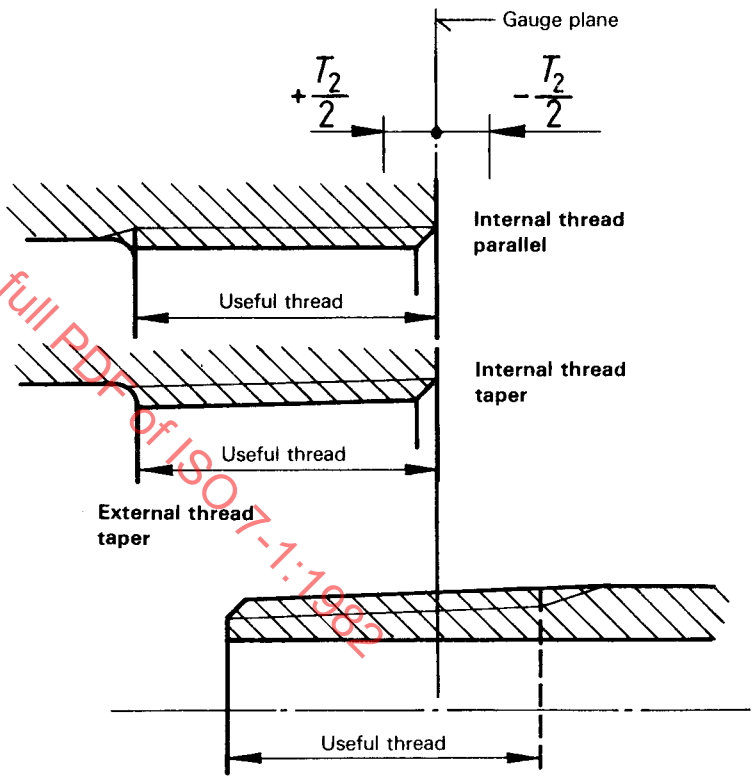

Figure 4 — Position of gauge plane, useful thread