International Standard ISO 3419

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Non-alloy and alloy steel butt-welding fittings

Accessoires à souder bout à bout en acier non allié et allié

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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 3419 was developed by Technical Committee ISO/TC 5, *Metal pipes and fittings*, and was circulated to the member bodies in November 1979.

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

Australia	Germany, F.R.	South Africa, Rep. of
Austria	Hungary	Spain
Belgium	India	Sweden
Brazil	Israel	Switzerland
Canada	Italy	USA
Czechoslovakia	Korea, Rep. of	USSR
Finland	Netherlands	
France	Romania	

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

Japan
United Kingdom

This second edition cancels and replaces the first edition (i.e. ISO 3419-1975).

Printed in Switzerland

Non-alloy and alloy steel butt-welding fittings

1 Scope and field of application

This International Standard specifies the dimensions, tolerances and generally used grades of non-alloy, low-alloy and alloy steels for butt-welding bends (type 2D (90° and 180°) and 3D (45°, 90° and 180°), concentric and eccentric reducers, tees, caps and stub ends with quality requirements as used for piping work.

2 References

ISO 404, *Steel and steel products — General technical delivery requirements.*[1]

ISO 2604/2, *Steel products for pressure purposes — Quality requirements — Part 2 : Wrought seamless tubes.*

ISO 2604/3, *Steel products for pressure purposes — Quality requirements — Part 3 : Electric resistance and induction-welded tubes.*

ISO 2604/4, *Steel products for pressure purposes — Quality requirements — Part 4 : Plates.*

ISO 3183, *Oil and natural gas industries — Steel line pipe.*[2]

ISO 3545, *Steel tubes and tubular shaped accessories with circular cross-section — Symbols to be used in specifications for steel tubes.*[2]

ISO 3845, *Oil and natural gas industries — High-test steel line pipe.*[2]

ISO 4200, *Plain end steel tubes, welded and seamless — General tables of dimensions and conventional masses per unit length.*

ISO 6708, *Pipe components — Definition of nominal size.*

3 Designation

The fittings shall be designated by the type (i.e. bend, reducer, cap, tee, stub end), the angle (for bends), the outside diameter(s), the thickness, and the grade of steel followed by a reference to this International Standard.

Example of designation :

Butt-welding bend 3D-90-60,3 × 2,9-TS 4 ISO 3419

Supplementary requirements may be agreed between the purchaser and the manufacturer and shall be specified in the enquiry and order.

4 Definitions and symbols

DN = Nominal size (see ISO 6708)

D = Major outside diameter

D_1 = Minor outside diameter

d = Major inside diameter

d_1 = Minor inside diameter

T = Thickness adjacent to D

T_1 = Thickness adjacent to D_1

C = Centreline dimension for 180° bends

B = Dimension from the back to the face for 180° bends

F = Dimension from centreline to the face d for 90° bends, for equal tees and for reducing tees

H = Dimension from centreline tangent intersection to face for 45° bends and from centreline to face at d_1 for reducing tees

K = Total height of caps

L = Overall length of reducers

R, R_1 = Radii of curves of bends and reducers

Q = Tolerance for angular alignment

U = Tolerance for alignment of faces of 180° bends

P = Tolerance for perpendicular alignment

1) At present at the stage of draft. (Revision of ISO/R 404-1964.)

2) At present at the stage of draft.

5 Materials

5.1 The grades of steel to be used are as follows :

TS4, TS9, TS10, TS18, TS32, TS34, TS37, TS43 (ISO 2604/2)

TW4, TW9, TW10 (ISO 2604/3)

P5, P9, P18, P32, P34, P43 (ISO 2604/4)

E24-1, E24-2 (ISO 3183)

E29, E32, E36, E39, E41, E45 (ISO 3845)

5.2 Other grades of steel specified in ISO 2604/2, ISO 2604/3 and ISO 2604/4 may be supplied by agreement between the purchaser and manufacturer.

5.3 The fittings shall be manufactured from

a) seamless tubes;

b) welded tubes or welded plate material; the welds shall be made with filler metal and tested by a non-destructive method to be agreed between purchaser and manufacturer;

c) plate.

6 Dimensions and tolerances

6.1 Dimensions

The dimensions are specified in the tables below :

6.1.1 Bends 2D

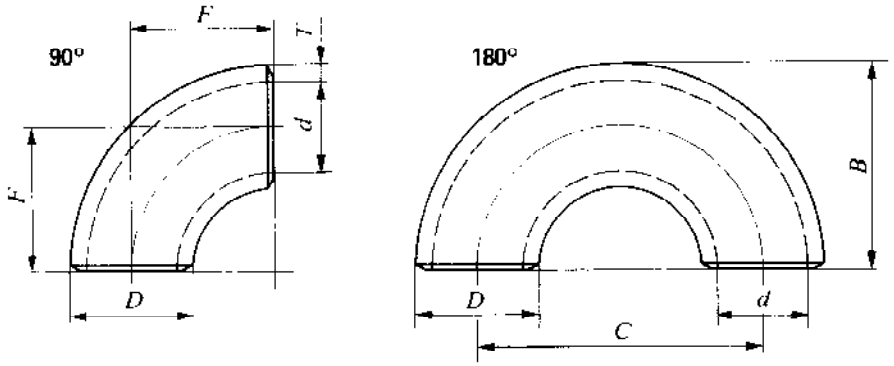

Figure 1 — Bends 2D

NOTE — Taking account of current usage and manufacture, only two series of thicknesses are specified.

Table 1 — Dimensions of bends 2D

DN	*D* mm	*T* mm	*F* mm	*C* mm	*B* mm	Conventional mass[1] kg ≈ Bend 90°
50	60,3	4 5,6	51	102	81	0,44 0,60
65	76,1	5 7,1	63	127	102	0,87 1,2
80	88,9	5,6 8	76	152	121	1,4 1,9
100	114,3	6,3 8,8	102	203	159	2,6 3,6
125	139,7	6,3 10	127	254	197	4,1 6,4
150	168,3	7,1 11	152	305	237	6,7 10
200	219,1	8 12,5	203	406	313	13 20
250	273	10	254	508	391	26
300	323,9	10	305	610	467	37
350	355,6	11	356	711	533	52
400	406,4	12,5	406	813	610	77
450	457		457	914	686	
500	508		508	1 016	762	
600	610		610	1 220	914	

1) For information only.