

INTERNATIONAL
STANDARD

ISO
10806

First edition
1994-08-15

**Pipework — Non-alloyed and stainless
steel fittings for corrugated flexible
metallic hoses**

*Tuyauteries — Raccords en acier non allié et acier inoxydable pour
tuyauteries métalliques flexibles onduleuses*



Reference number
ISO 10806:1994(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 10806 was prepared by Technical Committee ISO/TC 5, *Ferrous metal pipes and metallic fittings*, Subcommittee SC 11, *Flexible interlocked and convoluted metallic hoses*.

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Pipework — Non-alloyed and stainless steel fittings for corrugated flexible metallic hoses

1 Scope

This International Standard specifies the design characteristics of non-alloyed and stainless steel fittings for corrugated flexible metallic hose in accordance with the requirements of ISO 10380.

The fittings specified in this International Standard are suitable for the majority of applications. Where other types of fittings are used, their characteristics will be the subject of an agreement between the purchaser and the manufacturer.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were 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 editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 228-1:1994, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 4200:1991, *Plain end steel tubes, welded and seamless — General tables of dimensions and masses per unit length.*

ISO 6708:—¹⁾, *Pipe components — Definition of nominal size (DN).*

ISO 6761:1981, *Steel tubes — Preparation of ends of tubes and fittings for welding.*

ISO 7005-1:1992, *Metallic flanges — Part 1: Steel flanges.*

ISO 7268:1983, *Pipe components — Definition of nominal pressure.*

ISO 7369:—²⁾, *Pipework — Flexible metallic hoses — Vocabulary of general terms.*

ISO 10380:1994, *Corrugated flexible metallic hose and hose assemblies.*

3 Information to be supplied by the purchaser

The purchaser shall supply the manufacturer with all relevant information on the use of the hose assembly, including the fittings specified in this International Standard.

1) To be published. (Revision of ISO 6708:1980)

2) To be published. (Revision of ISO 7369:1983)

4 Materials

The materials for the fittings shall be selected on the basis of their suitability for the conditions under which the hose assemblies shall be used.

The materials to be used for the weldable part of the non-alloyed and stainless steel fittings are shown in table 1 of ISO 10380. The use of copper alloy and materials other than those indicated in table 1 of ISO 10380:1994 shall be subject to agreement between the manufacturer and the user.

The maximum permissible pressure shall comply with the burst requirement specified in ISO 10380:1994, subclause 9.4.

5 Method of assembly

The fittings shall be fitted to the flexible hoses as specified in ISO 10380:1994, subclause 8.3.

6 Types of fittings

The types of fittings specified in this International Standard are shown in table 1.

7 Burst pressure test

The fittings joined to the flexible pipe shall be subjected to the burst test according to the method specified in ISO 10380:1994, subclause 9.4. The connections used for the test shall comply with table 2.

For assemblies of fittings and flexible hoses with different maximum permissible pressures, the lowest value shall be taken into consideration.

Maximum permissible pressures shall only be reached at ambient temperature if allowed by the flexible hose and the method of assembly.

8 Designation

The fittings specified in this International Standard shall be designated, in the order indicated, by the following information:

- a) type of product (fitting or flange);
- b) reference to this International Standard;
- c) symbol (see table 1);
- d) nominal size (see tables 3 to 11);
- e) for flanges, the nominal pressure;
- f) grade of material (see ISO 10380).

NOTE 1 For a loose flange, the grade of material of the flanged connecting piece shall be indicated before that of the flange material (AC for non-alloyed steel).

EXAMPLES

A male fitting with a nominal size DN 50 and of stainless steel grade type 10 shall be designated as follows:

Fitting ISO 10806 M - 50 - 10

A loose flange with a nominal size DN 50 and nominal pressure PN 16, having a flanged connecting piece of stainless steel grade type 10 and a non-alloyed steel flange, shall be designated as follows:

Flange ISO 10806 B - 50 - 16 - 10 - AC

Table 1 — Types of fittings, their symbols and dimensions

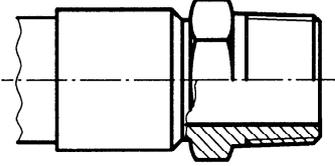
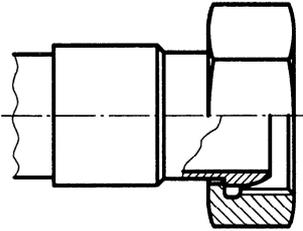
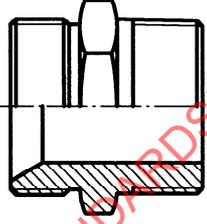
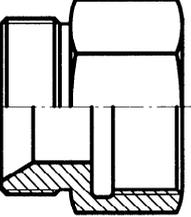
Diagram	Type	Symbol	Dimensions Figure/table
	Male	M	1/3
	Loose female on spherical support	F	2/4
	Male nipple for loose female	MM	3/5
	Female nipple for loose female	MF	4/6

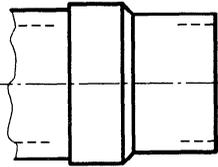
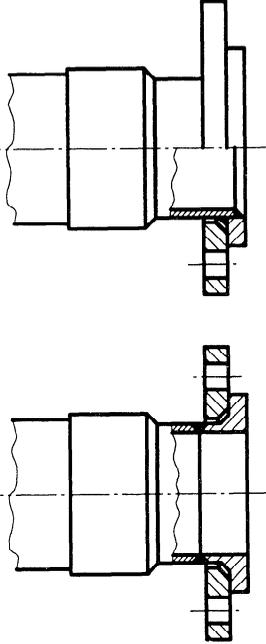
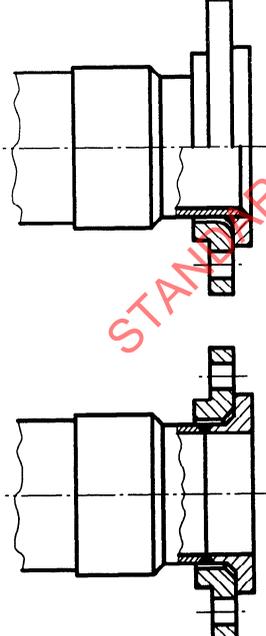
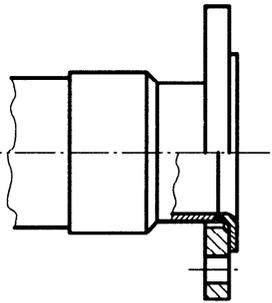
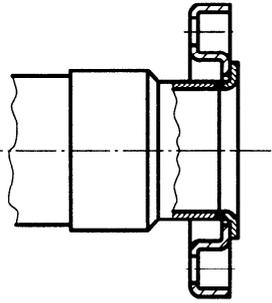
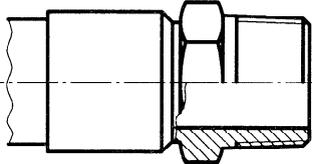
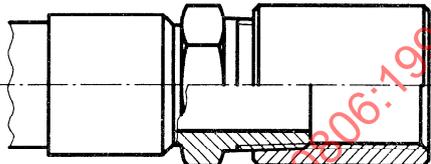
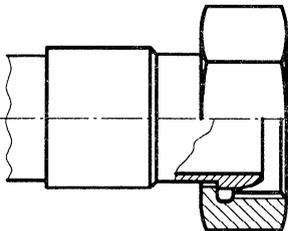
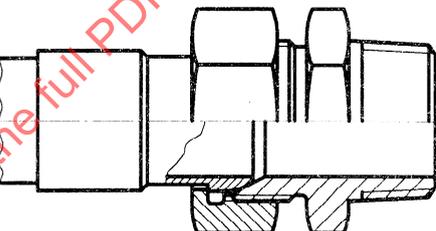
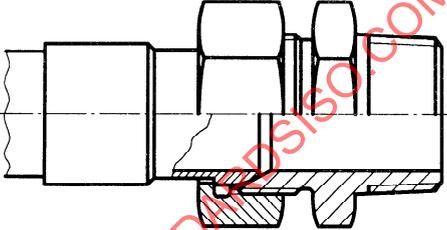
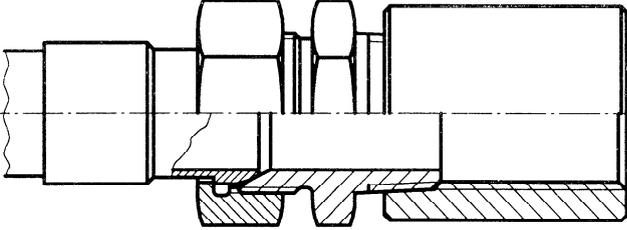
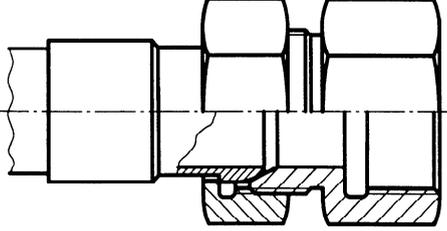
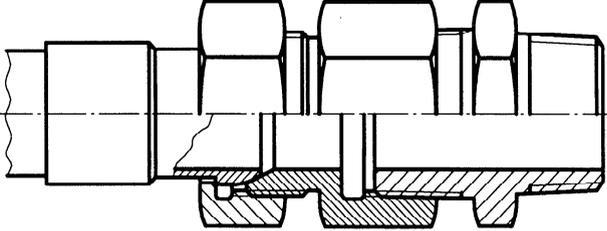
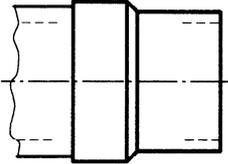
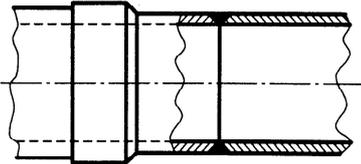
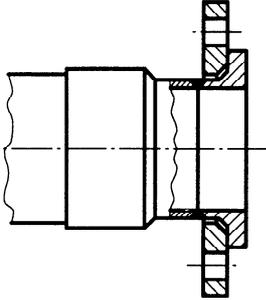
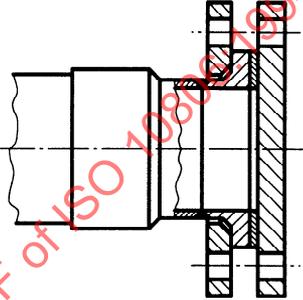
Diagram	Type	Symbol	Dimensions Figure/table
	<p>Pipe for flash-butt welding</p>	<p>T</p>	<p>5/7</p>
	<p>Loose flange ISO 7005-1, types 02 and 04</p> <p>PN 6; PN 10; PN 16; PN 25; PN 40</p>	<p>B</p>	<p>6/8</p>
	<p>Loose flange ISO 7005-1, type 15</p> <p>PN 20; PN 50; PN 100; PN 150; PN 250</p>	<p>B</p>	<p>7/9</p>

Diagram	Type	Symbol	Dimensions Figure/table
	<p>Loose flange ISO 7005-1, types 03 and 15 PN 6; PN 10; PN 16; PN 20</p>	<p>B1</p>	<p>8/10</p>
	<p>Loose flange, type 03 PN 16 (plate flange)</p>	<p>B2</p>	<p>9/11</p>

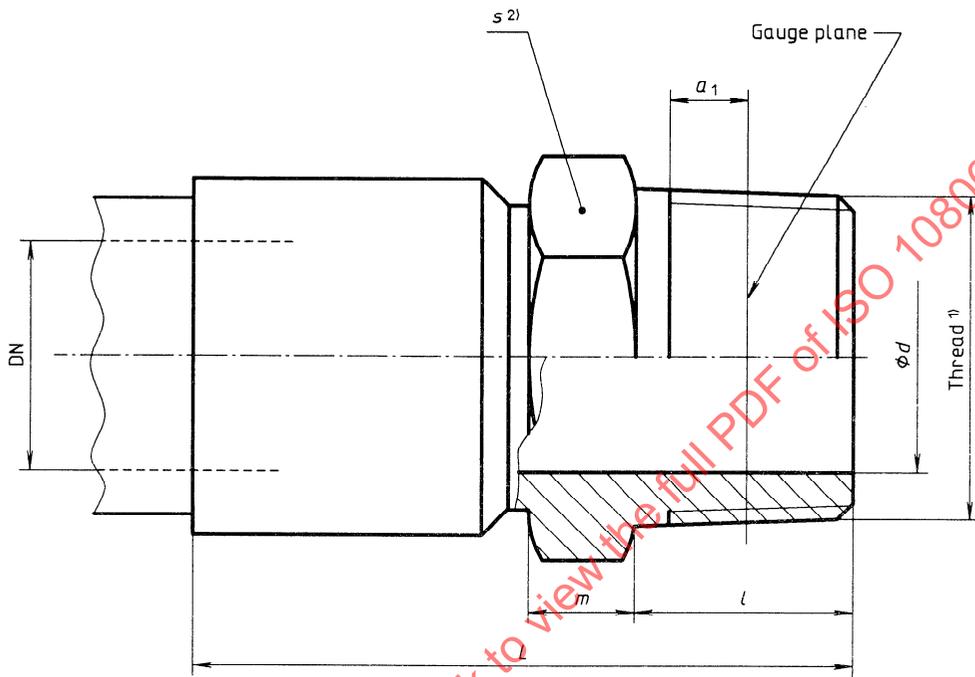
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Table 2 — Connections on test bench

Fitting assembled on flexible hose	Fitting on test bench
<p data-bbox="347 528 475 555">See figure 1</p> 	<p data-bbox="783 528 1401 555">Female fitting in accordance with ISO 4144 or ISO 4145.</p> 
<p data-bbox="347 864 475 891">See figure 2</p> 	<p data-bbox="919 864 1273 891">Fitting as shown in figure 3 or 4</p> 
<p data-bbox="276 1256 544 1283">See figure 3 with figure 2</p> 	<p data-bbox="783 1256 1401 1283">Female fitting in accordance with ISO 4144 or ISO 4145</p> 
<p data-bbox="276 1659 544 1686">See figure 4 with figure 2</p> 	<p data-bbox="783 1659 1401 1686">Male fitting in accordance with ISO 4144 or ISO 4145</p> 

Fitting assembled on flexible hose	Fitting on test bench
<p data-bbox="427 300 555 331">See figure 5</p> 	<p data-bbox="954 300 1401 331">Butt-welded tube with equal dimensions</p> 
<p data-bbox="395 560 587 591">See figures 6 to 9</p> 	<p data-bbox="938 560 1417 591">Loose or fixed flange with equal dimensions</p> 

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- 1) External tapered thread in accordance with ISO 7-1-R...
- 2) Width across flats (hexagonal plates up to DN 25, hexagonal or octagonal from DN 32 to DN 100)

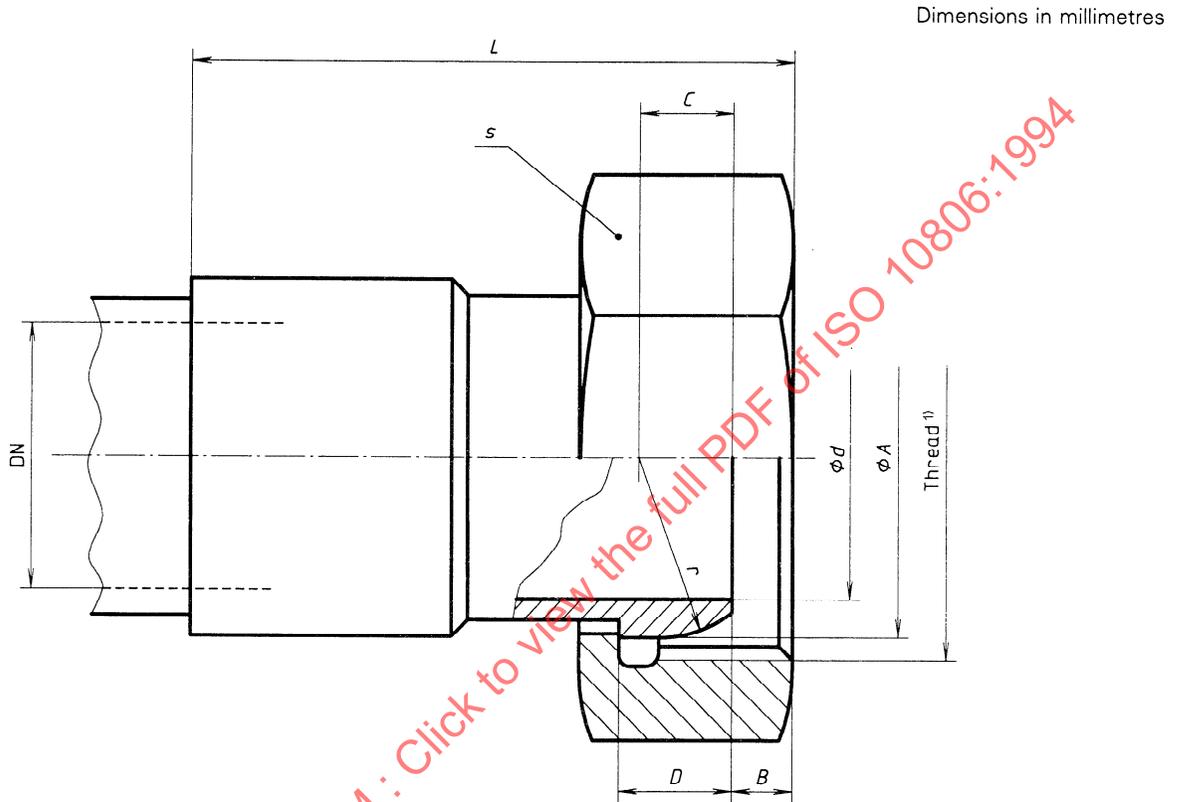
Figure 1 — Male fitting (M)

Table 3 — Dimensions (see figure 1)

Dimensions in millimetres

DN	Thread	d	l min.	a_1	s	m min.	L max.
6	R 1/8	6	8,5	2,5	12	4	40
8	R 1/4	8	12,5	3,7	14	4	45
10	R 3/8	10	13	3,7	17 ¹⁾	5	50
12	R 1/2	12	17	5	22	5	55
15	R 1/2	15	17	5	22	5	60
20	R 3/4	20	18,5	5	27 ¹⁾	5,5	65
25	R 1	25	21,5	6,4	36	6	75
32	R 1 1/4	32	24	6,4	46	6,5	85
40	R 1 1/2	40	24	6,4	50	6,5	95
50	R 2	50	29,5	7,5	65	7	100
65	R 2 1/2	65	35	9,2	80	7	105
80	R 3	80	39	9,2	90	8,5	110
100	R 4	100	46,5	10,4	115	8	120

1) Width across flats values of 19 and 30 may be used. In all cases the manufacturer shall ensure that the threads are complete along the entire working length of the thread.



1) Internal cylindrical thread in accordance with ISO 228-1-G...

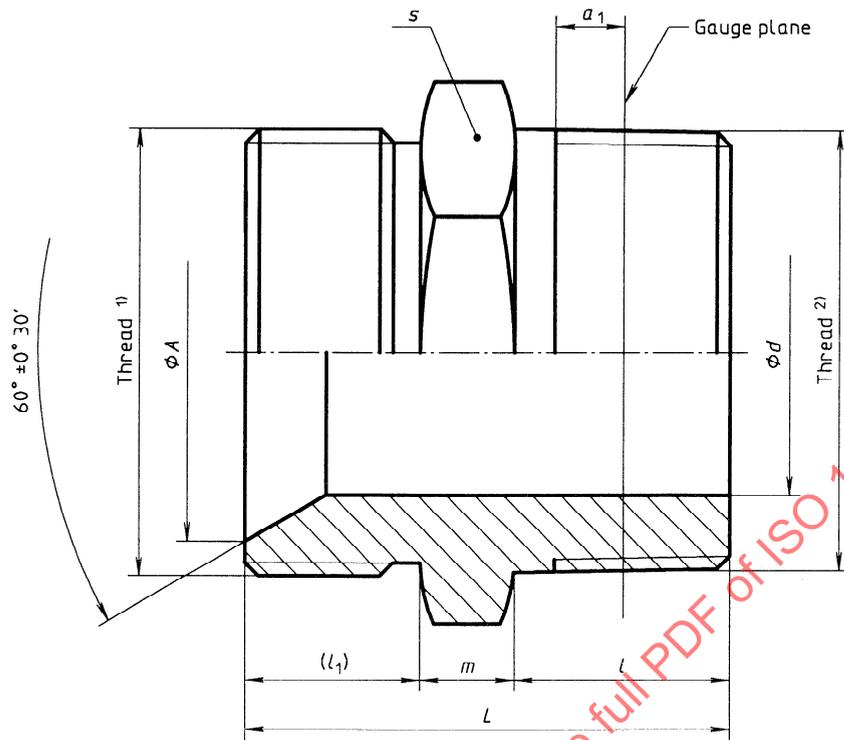
Figure 2 — Loose female on spherical support (F)

Table 4 — Dimensions (see figure 2)

Dimensions in millimetres

DN	Thread	A	B	d	C	D	r	s	L max.
6	G 1/8	8,4	3	4	3	4	4,2	14	45
8	G 1/4	11,2	4,2	7	3,5	3,8	5,6	19	50
10	G 3/8	14,8	6	9	5	5	7,4	22	50
12	G 1/2	18,4	6,5	12	6	6	9,2	27	60
20	G 3/4	23,8	8,7	17	7,3	7,8	11,9	32	65
25	G 1	30	10,5	22	9	9	15	41	75
32	G 1 1/4	38,8	10,1	29	11,4	11,4	19,4	50	80
40	G 1 1/2	44,4	12,2	34	13,4	13,8	22,2	55	95
50	G 2	56,4	16,1	44	16,4	16,9	28,2	70	105

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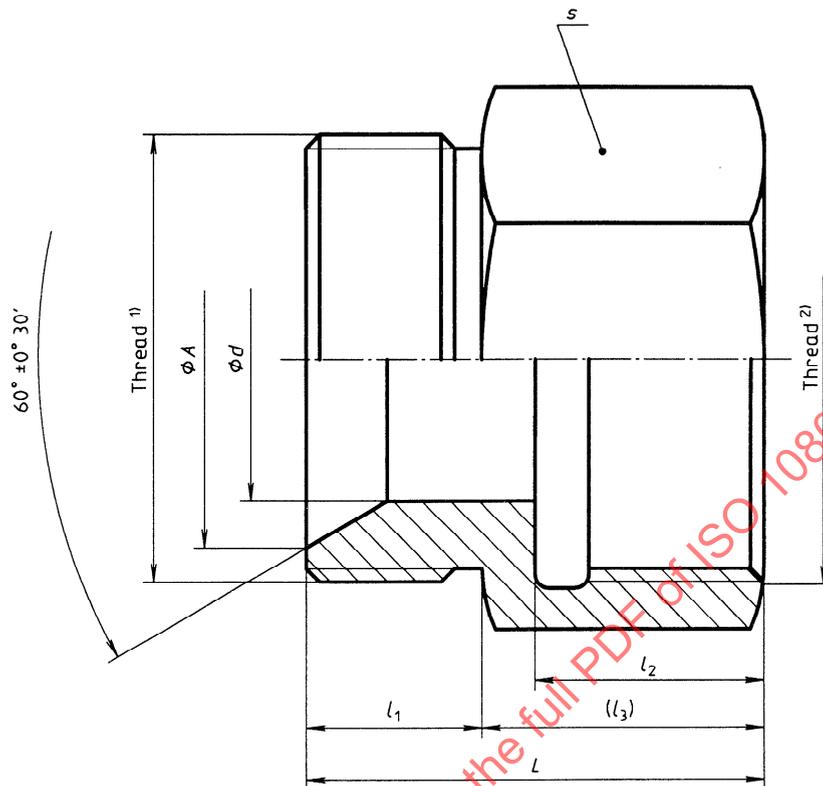
- 1) External cylindrical thread in accordance with ISO 228-1-G...B
- 2) External tapered thread in accordance with ISO 7-1-R...

Figure 3 — Male nipple for loose female (MM)

Table 5 — Dimensions (see figure 3)

Dimensions in millimetres

DN	Thread ISO 228-1	Thread ISO 7-1	A	d	l_1	m min.	l min.	L min.	a_1	s
6	G 1/8	R 1/8	7,8	5	8	4	8,5	20,5	2,5	12
8	G 1/4	R 1/4	10,4	7	10	4	12,5	26,5	3,7	14
10	G 3/8	R 3/8	13,9	9	12	5	13	30	3,7	17
12	G 1/2	R 1/2	17,5	12	14	5	17	36	5	22
20	G 3/4	R 3/4	22,8	18	16	5,5	18,5	40	5	27
25	G 1	R 1	28,7	23	18	6	21,5	45,5	6,4	36
32	G 1 1/4	R 1 1/4	36,8	30	20	6,5	24	50,5	6,4	46
40	G 1 1/2	R 1 1/2	42,7	35	22	6,5	24	52,5	6,4	50
50	G 2	R 2	54,6	45	27	7	29,5	63,5	7,5	65



- 1) External cylindrical thread in accordance with ISO 228-1-G...B
 2) Internal cylindrical thread in accordance with ISO 7-1-Rp...

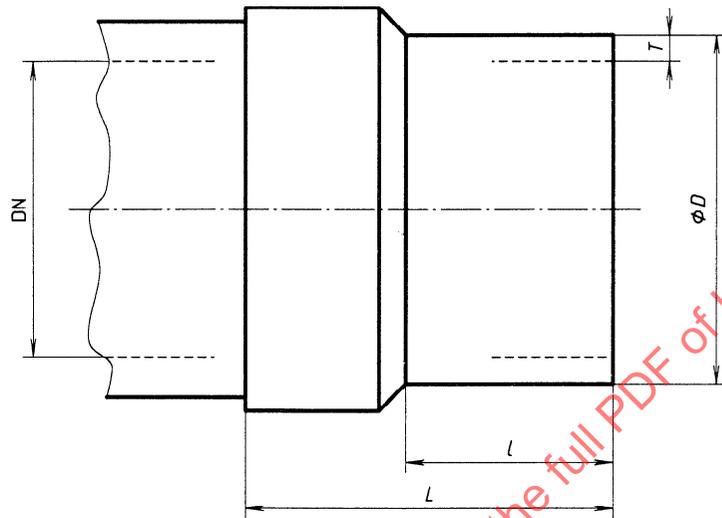
Figure 4 — Female nipple for loose female (MF)

Table 6 — Dimensions (see figure 4)

Dimensions in millimetres

DN	Thread ISO 228-1	Thread ISO 7-1	A	d	L	l_1	l_3	l_2	s
6	G 1/8	Rp 1/8	7,8	5	20	8	12	9,5	14
8	G 1/4	Rp 1/4	10,4	7	26	10	16	13,5	19
10	G 3/8	Rp 3/8	13,9	9	29,5	12	17,5	14,5	22
12	G 1/2	Rp 1/2	17,5	12	35,5	14	21,5	18	27
20	G 3/4	Rp 3/4	22,8	18	40,5	16	24,5	21	32
25	G 1	Rp 1	28,7	23	45,5	18	27,5	23,5	41
32	G 1 1/4	Rp 1 1/4	36,8	30	49	20	29	25	50
40	G 1 1/2	Rp 1 1/2	42,7	35	51,5	22	29,5	25,5	55
50	G 2	Rp 2	54,6	45	61	27	34	30	70

Dimensions in millimetres



Preparation for welding as specified in ISO 6761

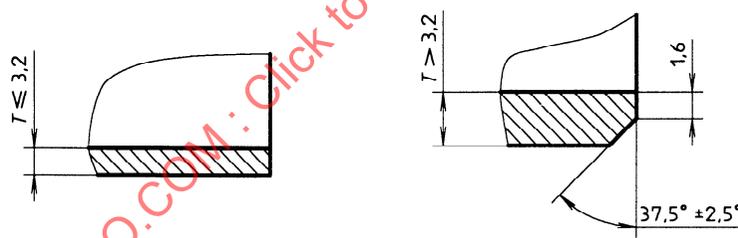


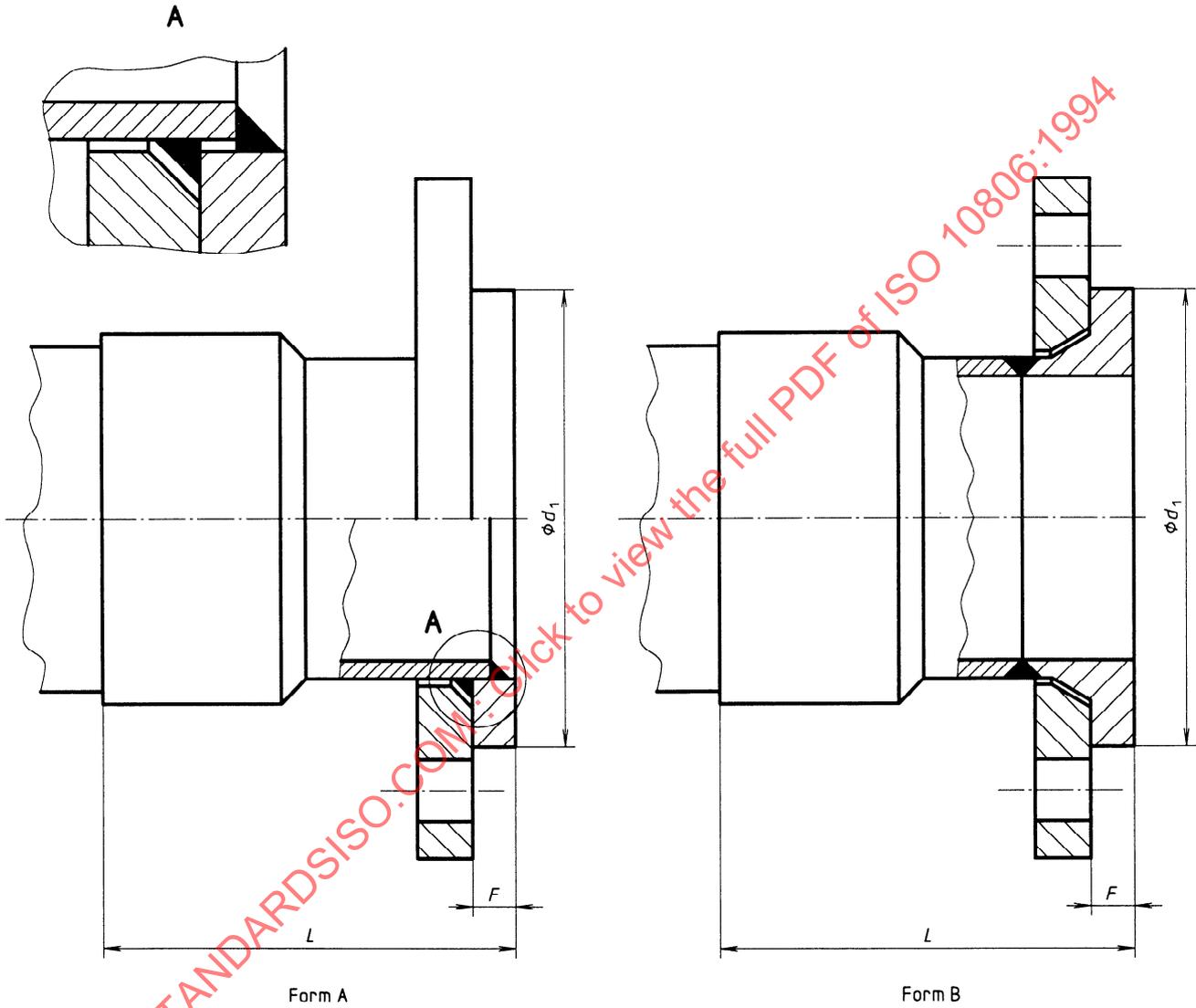
Figure 5 — Tube for butt welding (T)

Table 7 — Dimensions (see figure 5)

Dimensions in millimetres

DN	D	T min. 1)	l min.	L max.
6	10,2	1,6	25	50
8	13,5	2	25	50
10	17,2	2	25	55
15	21,3	2	25	60
20	26,9	2	30	60
25	33,7	2,3	30	65
32	42,4	2,6	30	65
40	48,3	2,6	30	75
50	60,3	2,9	40	90
65	76,1	2,9	40	95
80	88,9	3,2	40	100
100	114,3	3,6	50	105
125	139,7	4	50	120
150	168,3	4,5	70	130
200	219,1	6,3	70	140
250	273	6,3	70	145
300	323,9	7,1	70	150

1) Thickness in accordance with ISO 4200:1991, series E.



NOTE — The choice of form is at the discretion of the manufacturer.

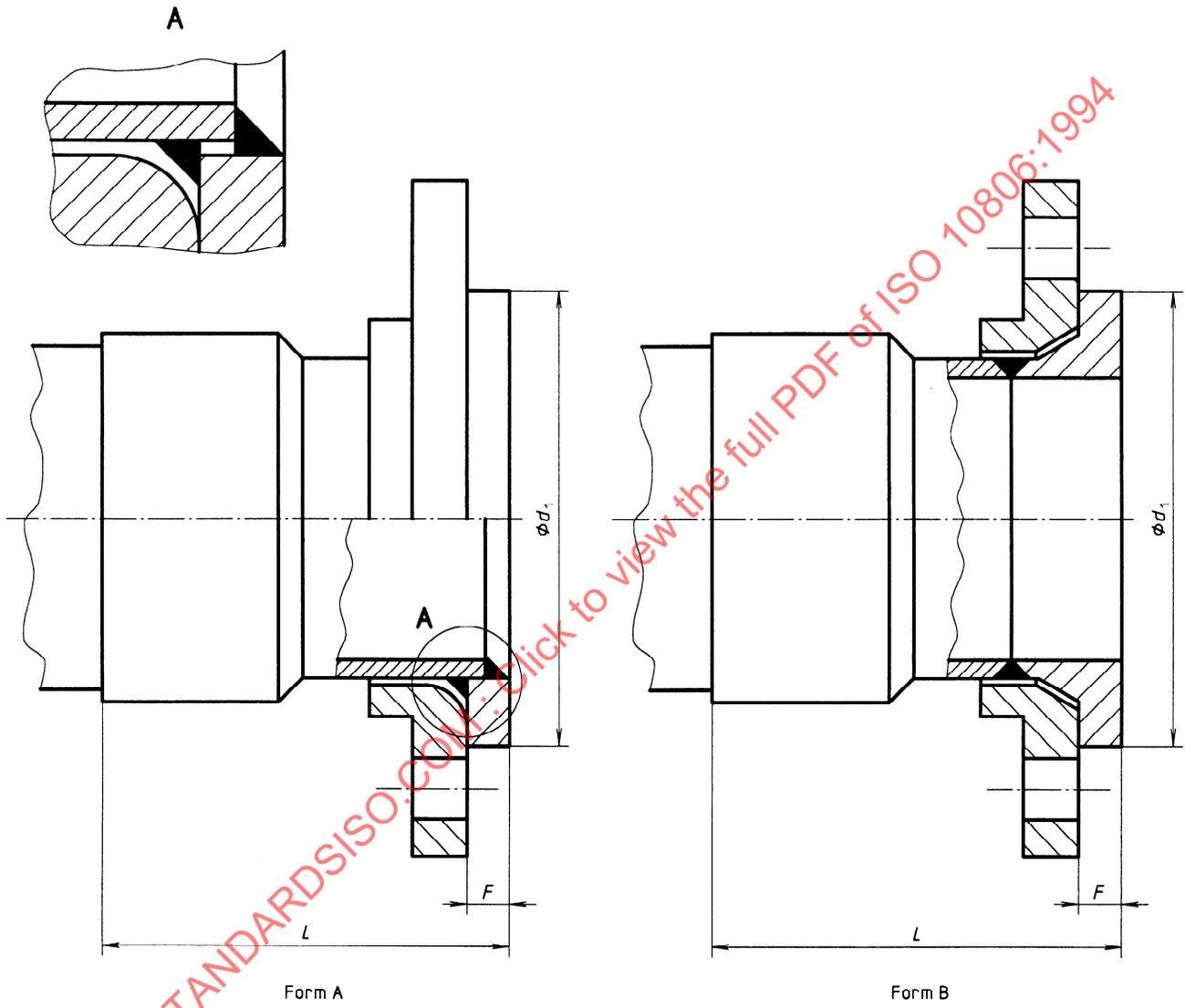
Figure 6 — Loose flange ISO 7005-1, types 02 and 04 (B)

Table 8 — Dimensions (see figure 6)

Dimensions in millimetres

DN	PN 6 ¹⁾			PN 10 ²⁾			PN 16 ³⁾			PN 25 ⁴⁾			PN 40 ⁵⁾		
	d_1	F	L max.	d_1	F	L max.	d_1	F	L max.	d_1	F	L max.	d_1	F	L max.
10	33	10	75	Use the dimensions of flanges PN 40	12	75	Use the dimensions of flanges PN 40	12	75	Use the dimensions of flanges PN 40	12	85	41	12	85
15	38	10	80		12	80		12	80		12	90	46	12	90
20	48	10	80		14	80		14	80		14	100	56	14	100
25	58	10	90		14	90		14	90		14	110	65	14	110
32	69	10	90		14	90		14	90		14	110	76	14	110
40	78	10	100		14	100		14	100		14	115	84	14	115
50	88	12	105		16	105		16	105		16	120	99	16	120
65	108	12	110		16	110		16	110		16	130	118	16	130
80	124	12	115		16	115		16	115		18	135	132	18	135
100	144	14	120		18	120		18	120		20	140	156	20	140
125	174	14	140		18	140		18	140		22	160	184	22	160
150	199	14	145	20	145	20	145	24	165	211	24	165			
200	254	16	165	266	20	165	266	20	165	274	26	180	284	28	185
250	309	18	180	319	22	180	319	22	180	330	26	190	345	30	200
300	363	18	185	370	22	185	370	22	185	389	28	195	409	34	205

- 1) For flange dimensions, see ISO 7005-1:1992, table 9.
- 2) For flange dimensions, see ISO 7005-1:1992, table 10.
- 3) For flange dimensions, see ISO 7005-1:1992, table 11.
- 4) For flange dimensions, see ISO 7005-1:1992, table 13.
- 5) For flange dimensions, see ISO 7005-1:1992, table 14.



NOTE — The choice of form is at the discretion of the manufacturer.

Figure 7 — Loose flange ISO 7005-1, type 15 (B)

Table 9 — Dimensions (see figure 7)

Dimensions in millimetres

DN	PN 20 ¹⁾			PN 50 ²⁾			PN 100 ³⁾			PN 150 ⁴⁾			PN 250 ⁵⁾		
	d_1	F	L max.	d_1	F	L max.	d_1	F	L max.	d_1	F	L max.	d_1	F	L max.
10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	35	12	85	35	12	90	35	14	95	35	16	100	35	18	105
20	43	14	90	43	14	100	43	16	105	43	18	110			
25	51	14	100	51	14	110	51	16	115						
32	63,5	14	105	63,5	14	110	63,5	16	115						
40	73	14	110	73	14	115	73	18	120						
50	92	16	115	92	16	120	92	20	125						
65	105	16	120	105	16	130									
80	127	18	125	127	18	135									
100	157,5	20	130	157,5	20	140									
125	186	22	150	186	22	160									
150	216	24	160	216	24	165									
200	270	26	170	270	28	185									
250	324	26	180	324	30	200									
300	381	28	190	381	34	205									

1) For flange dimensions, see ISO 7005-1:1992, table 12.

2) For flange dimensions, see ISO 7005-1:1992, table 15.

3) For flange dimensions, see ISO 7005-1:1992, table 16.

4) For flange dimensions, see ISO 7005-1:1992, table 17.

5) For flange dimensions, see ISO 7005-1:1992, table 18.

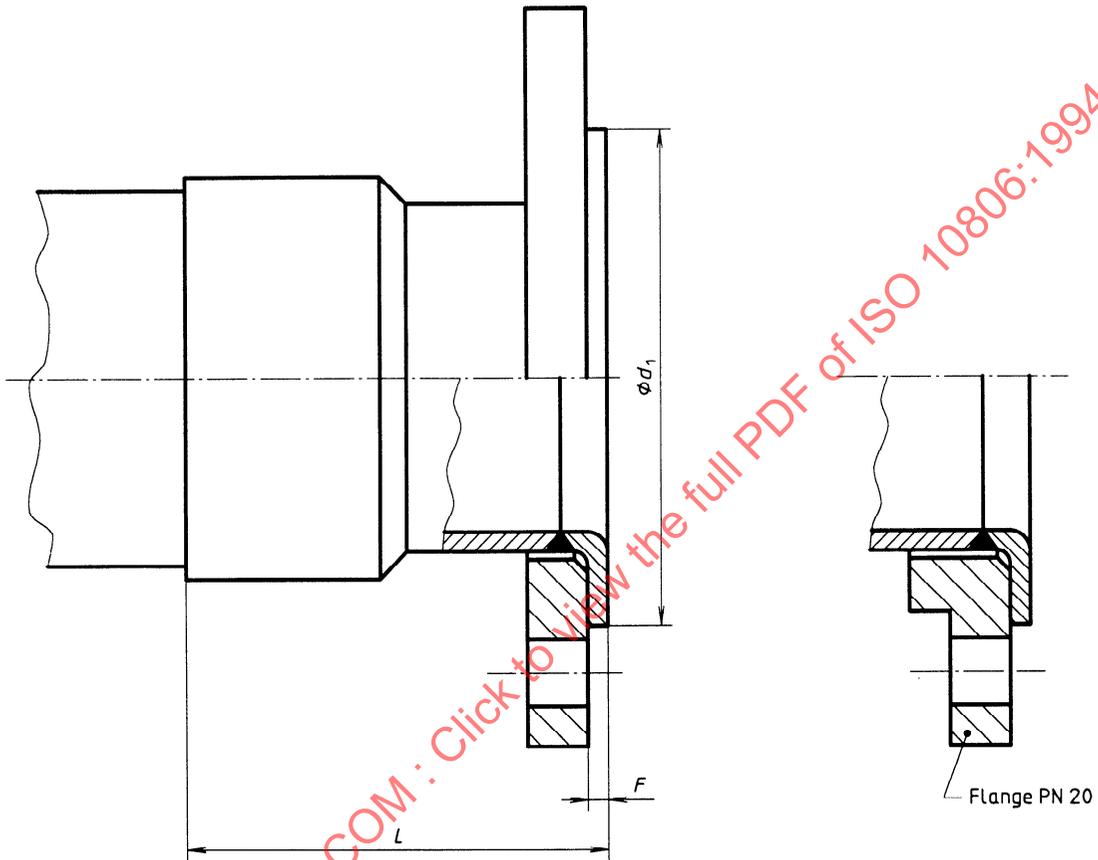


Figure 8 — Loose flange ISO 7005-1, types 03 and 15 (B1)