BS EN 14423:2013

BSI Standards Publication

Clamp type coupling assemblies for use with steam hoses rated for pressures up to 18 bar

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National foreword

This British Standard is the UK implementation of EN 14423:2013. It supersedes BS EN 14423:2004 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/66, Rubber and plastics tubing, hoses and hose assemblies.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Clamp type coupling assemblies for use with steam hoses rated for pressures up to 18 bar

Raccords avec colliers de serrage pour tuyaux à vapeur utilisant une pression jusqu'à 18 bar

Schlaucharmaturen mit Klemmfassung für Dampf bis 18 bar

This European Standard was approved by CEN on 8 May 2013.

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Foreword

This document (EN 14423:2013) has been prepared by Technical Committee CEN/TC 218 “Rubber and plastics hoses and hose assemblies”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14423:2004.

In comparison to EN 14423:2004, the following changes have been made:

— In Clause 2, the normative references have been updated.

— Clause 3 "Terms and definitions" has been amended.

— The term "seals" has been replaced by "gaskets" (main gasket/thread gasket).

— Restrictions on nominal size DN 32 have been deleted.

— In 9.1, 9.2, 9.3 and 9.8, the material lists have been revised.

— In Clause 10, the requirements for marking of hose fittings and union nuts have been revised.

— Clause 11 "Type testing and quality control" has been restructured and amended.

— The Bibliography has been reviewed.

— The standard has been revised editorially.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the design, materials and dimensions of fittings for clamp type coupling assemblies for use with nominal sizes DN 15 to DN 50 steam and hot water hoses. It covers assemblies up to a maximum working pressure of 18 bar[1)] (corresponding to a saturated steam temperature of 210 °C).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10025-2, *Hot rolled products of structural steels — Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10087, *Free-cutting steels — Technical delivery conditions for semi-finished products, hot-rolled bars and rods*

EN 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN 10088-2, *Stainless steels — Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

EN 10213, *Steel castings for pressure purposes*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads — Part 1: Taper external threads and parallel internal threads — Dimensions, tolerances and designation*

EN 10283, *Corrosion resistant steel castings*

EN 12164, *Copper and copper alloys — Rod for free machining purposes*

EN 12168, *Copper and copper alloys — Hollow rod for free machining purposes*

EN 12420, *Copper and copper alloys — Forgings*

EN ISO 898-2, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 2: Nuts with specified property classes — Coarse thread and fine pitch thread (ISO 898-2)*

EN 22768-1:1993, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications (ISO 2768-1:1989)*

EN 22768-2:1993, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications (ISO 2768-2:1989)*

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

EN ISO 898-1, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs with specified property classes — Coarse thread and fine pitch thread (ISO 898-1)*

EN ISO 3506-1, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 1: Bolts, screws and studs (ISO 3506-1)*

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1) 1 bar = 0,1 MPa.

EN ISO 3506-2, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 2: Nuts (ISO 3506-2)*

EN ISO 4032, *Hexagon regular nuts (style 1) — Product grades A and B (ISO 4032)*

EN ISO 4042, *Fasteners — Electroplated coatings (ISO 4042)*

EN ISO 4762, *Hexagon socket head cap screws (ISO 4762)*

EN ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary (ISO 8330)*

EN ISO 15607, *Specification and qualification of welding procedures for metallic materials — General rules (ISO 15607)*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptable quality limit (AQL) for lot-by-lot inspection*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 8330 and the following apply.

3.1
DN (nominal size)
alphanumeric designation of size for components of a pipework system, which is used for reference purposes., which comprises the letters DN followed by a dimensionless whole number which is indirectly related to the physical size, in millimetres, of the bore or outside diameter of the end connections

Note 1 to entry: The number following the letters DN does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

Note 2 to entry: In those standards which use the DN designation system, any relationship between DN and component dimensions should be given, e.g. DN/OD or DN/ID.

[SOURCE: EN ISO 6708:1995, 2.1]

3.2
PN
alphanumeric designation which is used for reference purposes related to a combination of mechanical and dimensional characteristics of a component of a hose fitting and which comprises the letters PN followed by a dimensionless number

Note 1 to entry: The number following the letters PN does not represent a measurable value and should not be used for calculation purposes except where specified in the relevant standard.

3.3
arithmetical mean deviation of the assessed profile
Ra
arithmetic mean of the absolute ordinate values $Z(x)$ within a sampling length:

$$Ra = \frac{1}{lr}\int_{0}^{lr} |Z(x)| \mathrm{d}x$$

[SOURCE: EN ISO 4287:1998[2)], 4.2.1]

2) This document is currently impacted by the corrigendum EN ISO 4287:1998/AC:2008 and the draft amendment EN ISO 4287:1998/A1:2009.

3.4
main gasket
interface gasket between the male and female part of a coupling

3.5
thread gasket
flat faced gasket for threads according to EN ISO 228-1

4 General requirements

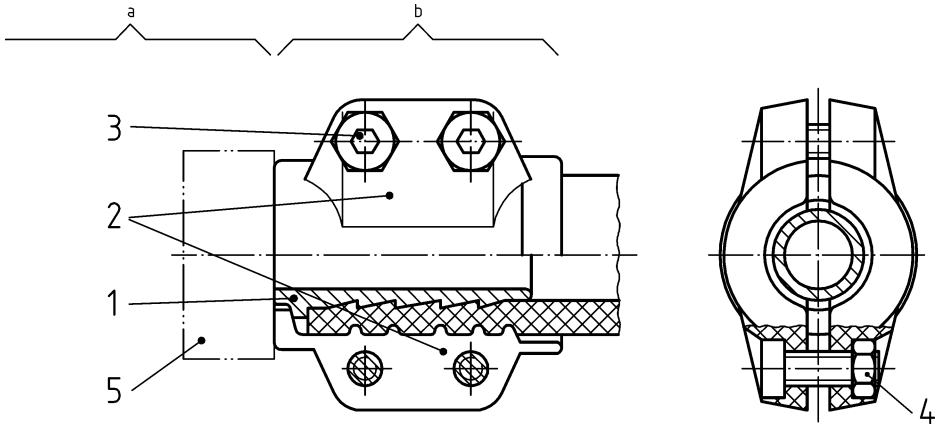
When coupling assemblies, consisting of tail end fittings and clamps of the dimensions given in Table 8, as well as bolts and nuts as specified in Table 9, are tested in accordance with Clause 11, the hose shall burst before the coupling is dismantled. The bolts shall be adjustable so that the hose is prevented from slipping.

Proof pressure shall be at 90 bar; burst pressure shall be at 180 bar at ambient temperature.

5 Design and designation of coupling assemblies

5.1 Design

A clamp type coupling assembly is shown in Figure 1.



Key
For 1 to 5 see Table 1

[a] Connector end
[b] Tail end

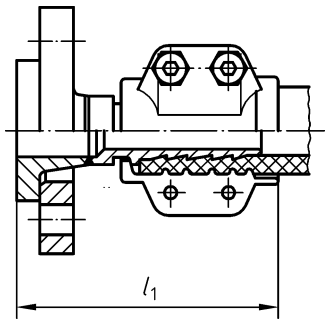
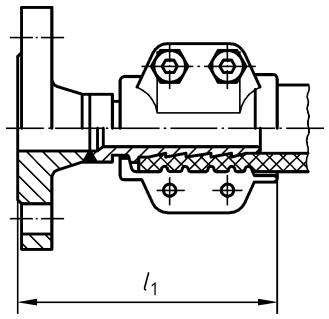
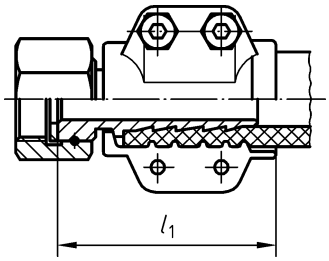
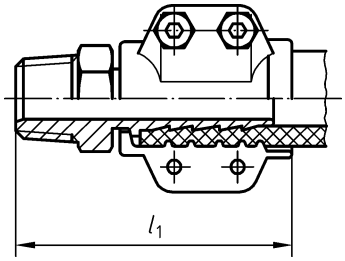
Figure 1 — Coupling assembly

Table 1 — List of coupling assembly components

Item number	Number of parts needed for one assembly	Denomination
1	1	Tail end fitting
2	2	Clamp
3	4	Hexagon socket head cap screw
4	4	Hexagon nut
5	1	Connector

NOTE A distinction is made between the connector end and the tail end of coupling assemblies. The former is the part by which the coupling is connected to an appliance or pipe (for various types of connectors, see Table 2), while the latter (including the tail end fitting and clamp) is fastened to a hose (see 7.2 and 7.4).

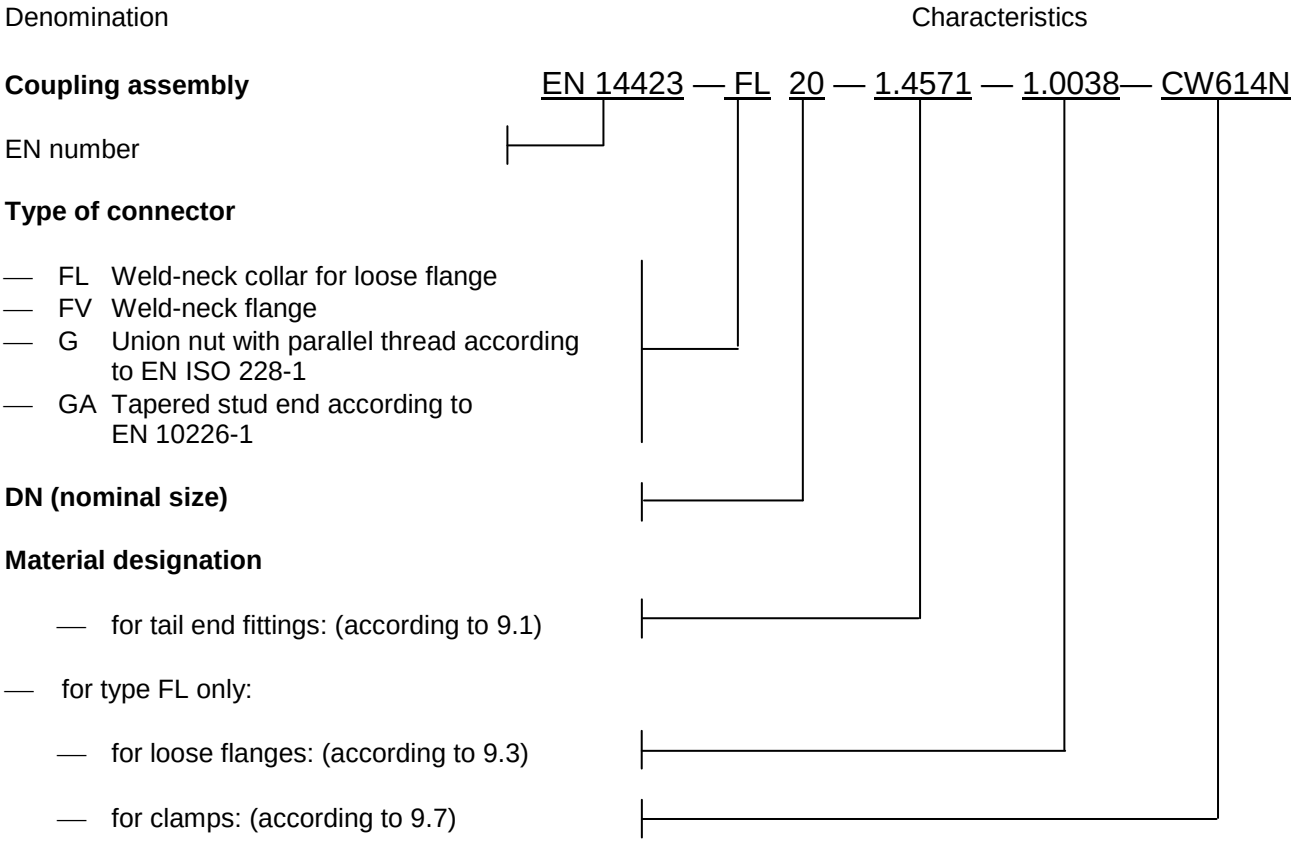
Table 2 — Types of connectors

Illustration	Type	Description	Nominal size DN	Thread size	l_1 ≈ mm	Details
	**FL**	PN 40 loose flange with weld-neck collar as in EN 1092-1	**15** **20** **25** **32** **40** **50**		110 115 115 125 140 155	See 7.3.1
	**FV**	PN 40 weld-neck flange as in EN 1092-1				See 7.3.2
	**G**	Union nut with thread gasket, with parallel thread according to EN ISO 228-1[a]	**15** **20** **25** **32** **40** **50**	G ½ G ¾ G 1 G 1¼ G 1½ G 2	80 80 80 90 105 115	See 7.3.4
	**GA**	Tapered male thread with external thread according to EN 10226-1[a]	**15** **20** **25** **32** **40** **50**	R ½ R ¾ R 1 R 1¼ R 1½ R 2	95 95 100 110 125 140	See 7.3.5

[a] Other threads may be agreed between the purchaser and manufacturer.

5.2 Ordering designation system

Example for an ordering designation:



EXAMPLE 1 Ordering designation for a type FL coupling assembly for use with DN 20 hoses, consisting of a stainless steel tail end fitting with collar (1.4571), a carbon steel (1.0038) loose flange and a wrought copper alloy (CW614N) clamp, with bolts and nuts:

Coupling assembly EN 14423 — FL 20 — 1.4571 — 1.0038 — CW614N

EXAMPLE 2 Ordering designation for a type G coupling assembly for use with DN 20 hoses, consisting of a stainless steel tail end fitting, a carbon steel (1.0038) union nut secured by a wire ring, and a wrought copper alloy (CW614N) clamp, with thread gasket, bolts and nuts:

Coupling assembly EN 14423 — G 20 — 1.0038 — CW614N

6 Hose dimensions

Careful selection of the hose fittings should be made to ensure that the inner diameter (ID) and outer diameter (OD) of the hose are within the limits and tolerances of the tails and clamps detailed in this document. Also that the materials for the couplings have been tested to withstand the temperature and pressure medium being conveyed.

7 Design and dimensions

7.1 General

The dimensions of machined fittings shall be subject to the general tolerances of Class EN 22768-m in EN 22768-1:1993 and EN 22768-2:1993.

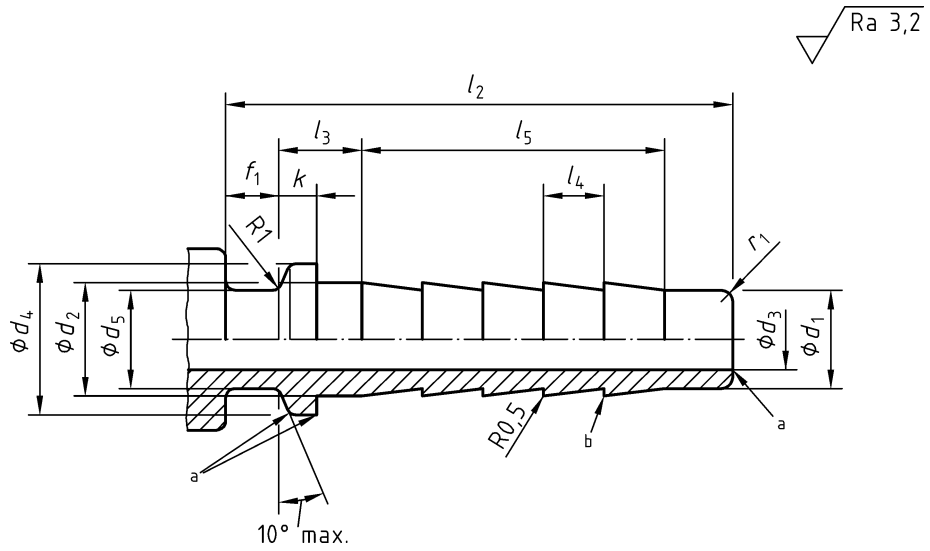
Tolerances for drop forged parts are to be agreed between the purchaser and manufacturer.

The gasket material (see 9.6) is to be agreed between purchaser and supplier.

7.2 Tail end fittings

The tail end fittings of hose couplings shall have the dimensions given in Table 3. Their outer surface shall be formed by machining, the surface roughness *Ra* of 3,2 µm.

Dimensions in millimetres



a Deburred
b Ribs

Figure 2 — Tail end fitting

Table 3 — Dimensions for tail end fittings

Dimensions in millimetres

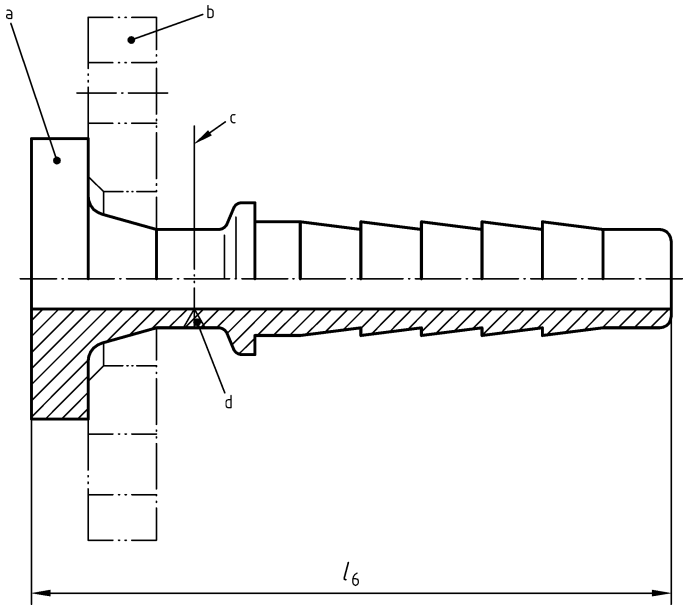
Nominal size DN	d_1 ± 0,2	d_2 ± 0,2	d_3 ± 0,3	d_4 ± 1,0	d_5 ± 0,1	f_1 + 0,5 0	k 0 − 0,2	l_2 ± 1	l_3	**Number or ribs**	l_4	l_5	r_1
15	13	15	9	20	13	6	4	62	9	4	8	40	2
20	19	21	14	26	19	6	4	62	9	4	8	40	2
25	25	27	20	33	25	6	4	62	9	4	8	40	2
32	32	34	27	40	32	7	5	72	9	5	8	48	2
40	38	40,5	33	46	38	7	5	84	13	5	10	60	2,5
50	50	52,5	44	59	50	8	6	89	12	5	10	60	2,5

7.3 Connectors

7.3.1 Hose fittings with weld-neck collar (for loose flanges) (FL)

The weld-neck collar may either be integral to the tail end fitting or welded to it (for welding requirements, see 7.3.3). The maximum length of type FL and FV fittings shall be in accordance with Table 4.

Type FL



a Weld-neck collar PN 40 according to EN 1092-1
b Loose flange PN 40 according to EN 1092-1
c Tail end fitting (see 7.2)
d Weld (optional, see 7.3.3)

Figure 3 — Hose fitting with weld-neck collar

Table 4 — Maximum length of type FL and FV fittings

Dimensions in millimetres

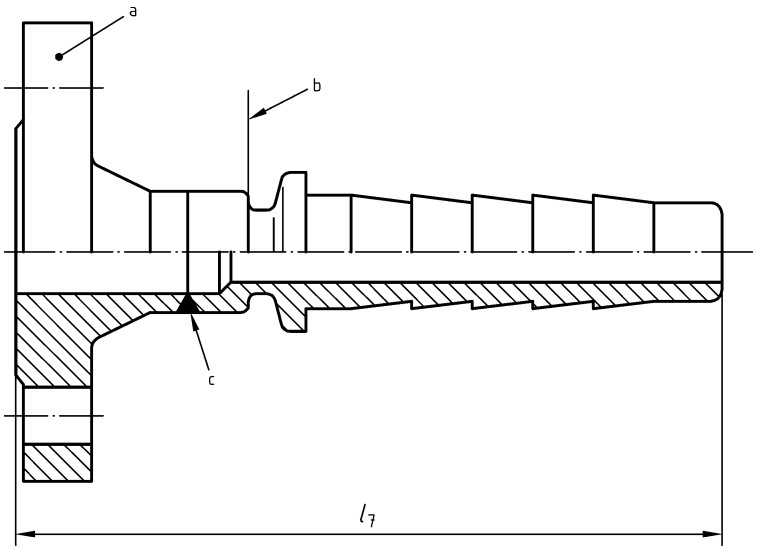
Nominal size DN	l_6, l_7 max.
15	108
20	110
25	110
32	122
40	137
50	149

EXAMPLE Ordering designation for a type FL hose fitting (SFL), (without loose flange), for use with DN 20, in carbon steel (1.0038), hoses:

Hose fitting EN 14423 — SFL 20 — 1.0038

7.3.2 Hose fittings with weld-neck flange (FV)

Type FV



a Weld-neck flange PN 40 (see EN 1092-1)
b Tail end fitting (see 7.2)
c Welding connection (see 7.3.3)

Figure 4 — Hose fitting with weld-neck flange

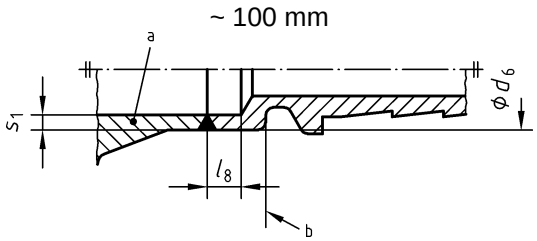
EXAMPLE Ordering designation for a type FV hose fitting (SFV) for use with DN 20 hoses, in carbon steel (1.0038):

Hose fitting EN 14423 — SFV 20 — 1.0038

7.3.3 Welding connections

Welding weld-neck collars to the tail end is optional for type FL fittings. Weld-neck flanges of type FV hose fittings shall be jointed with the tail end fitting by welding. Weld details shall be according to Table 5.

The welding procedures shall be in accordance with EN ISO 15607.



a Flange or weld-neck
b Tail end fitting

Figure 5 — Example of welded joint

Table 5 — Weld details

Dimensions in millimetres

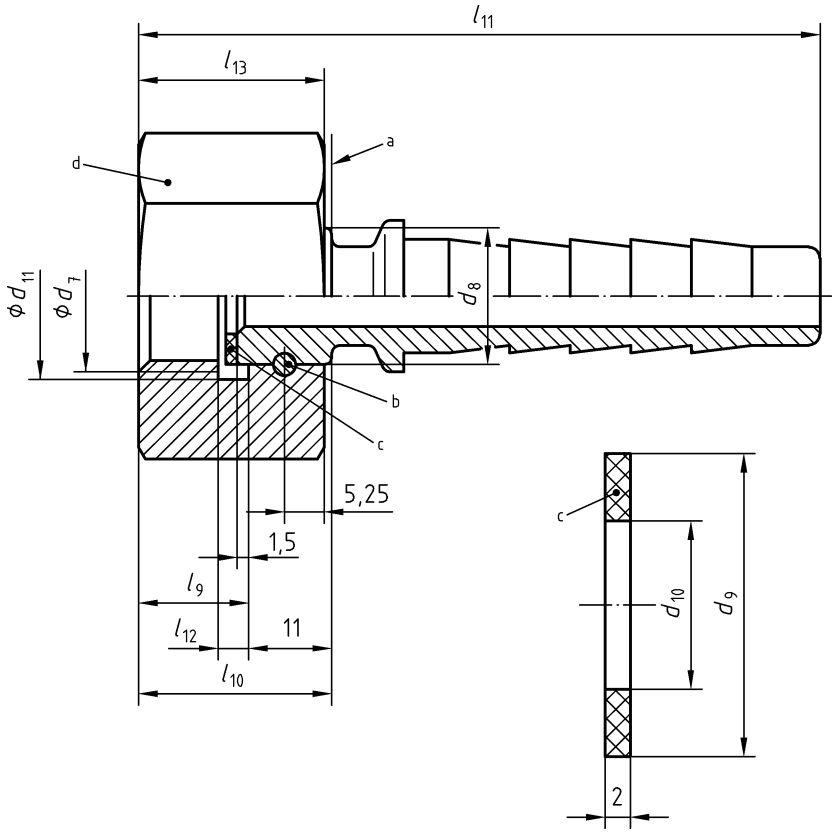
Nominal size DN	d_6	l_8	s_1
15	21,3	8	3,2
20	26,9		
25	33,7		
32	42,4	9	3,6
40	48,3	9	3,6
50	60,3	10	4

7.3.4 Hose fittings with union nut, thread according to EN ISO 228-1

A hose fitting with union nut (Type G) is shown in Figure 6. The design of type G hose fittings shall be in accordance with Table 6.

Type G

Dimensions in millimetres



a Tail end fitting (see 7.2)
b Wire ring ∅ 3 mm, nearly closed
c Thread gasket
d Width across flats, *s*

Figure 6 — Hose fitting with union nut

EXAMPLE 1 Ordering designation for a type G hose fitting (SG) with a union nut secured by a wire ring, without thread gasket, for use with DN 20 hoses made of carbon steel (1.0038):

Hose fitting EN 14423 — SG 20 — 1.0038

EXAMPLE 2 Ordering designation for a thread gasket (D) for type G hose fittings for use with DN 20 hoses:

Thread gasket EN 14423 — DG 20

The thread gasket material shall be agreed at the order, see also 9.6.

Table 6 — Dimensions of G type hose fittings

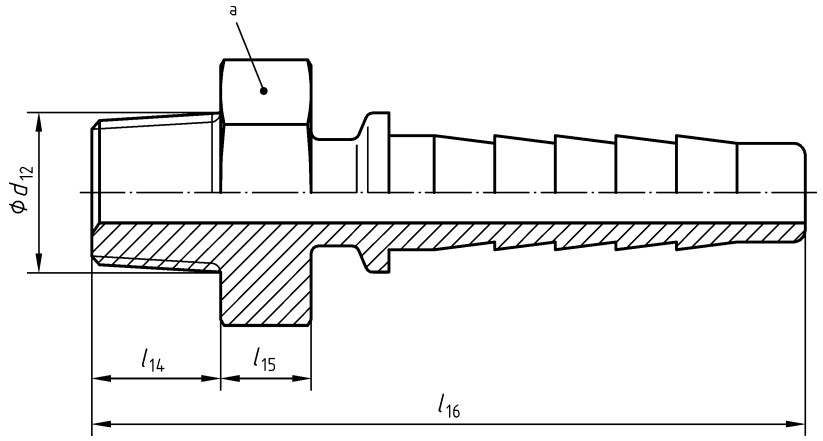
Dimensions in millimetres

Nominal size DN	**Thread size as in EN ISO 228-1** [a] d_7	d_8	d_9 0 −0,5	d_{10} ±1	d_{11} +0,2 0	l_9	l_{10} +0,5 0	l_{11}	l_{12}	l_{13}	s
15	G ½	18,3	20	13	21,5	9,5	20,5	82,5	4	20	27
20	G ¾	24	26	18	26,5	13,5	24,5	86,5		24	32
25	G 1	30,2	33	23	33,5	14,5	25,5	87,5	5	25	41
32	G 1¼	38,8	42	33	42,5	14,5	25,5	97,5			50
40	G 1½	44,8	48	38	48,5	16,5	27,5	111,5		27	55
50	G 2	56,5	60	49	60,5	17,5	28,5	119,5		28	70

[a] Other types of threads are to be agreed between purchaser and manufacturer.

7.3.5 Hose fittings with tapered male thread (R)

A hose fitting with tapered male thread (Type R) is shown in Figure 7. The design of type R hose fittings shall be in accordance with Table 7.



[a] Width across flats, s

Figure 7 — Hose fitting with tapered male thread

EXAMPLE Ordering designation for a type R hose fitting (SR) for use with DN 20 hoses, in carbon steel (1.0038):

Hose fitting EN 14423 — SR 20 — 1.0038

Table 7 — Dimensions of R type fittings

Dimensions in millimetres

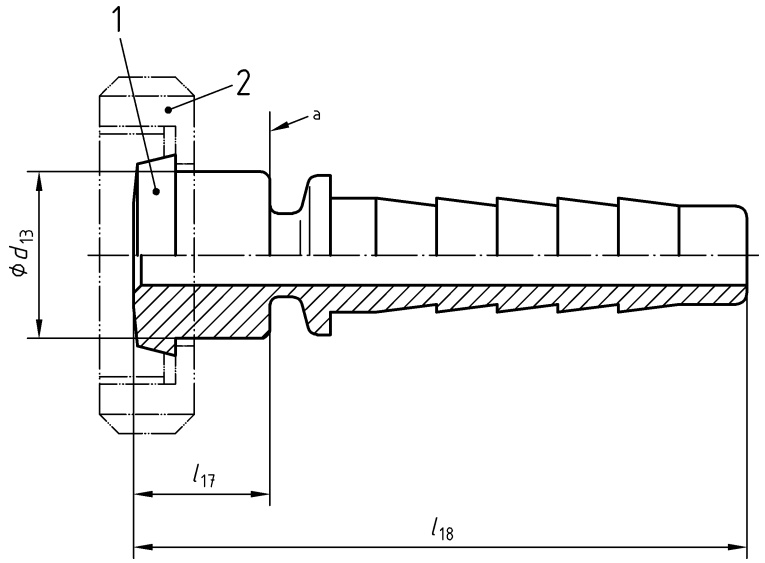
Nominal size DN	**Thread sizes as in EN 10226-1**[a] d_{12}	l_{14} min.	l_{15}	l_{16}	s
15	R ½	16	12	90	22
20	R ¾	17	12	91	27
25	R 1	21	12	95	36
32	R 1¼	21	12	105	46
40	R 1½	22	12	118	50
50	R 2	26	14	131	60

[a] Other types of threads are to be agreed between purchaser and manufacturer.

7.3.6 Hose fittings with coned end

A hose fitting with coned end (Type RI) is shown in Figure 8. The design of type RI hose fittings shall be in accordance with Table 8.

Type RI



Key
1 Cone end
2 Grooved union nut

[a] Tail end fitting (see 7.2)

Figure 8 — Hose fitting with cone end

EXAMPLE Ordering designation for a type RI hose fitting (SRI) with cone end, without union nut, for use with DN 20 hoses, made of carbon steel (1.0038):

Hose fitting EN 14423 — SRI 20 — 1.0038

Table 8 — Dimensions of RI type hose fittings

Dimensions in millimetres

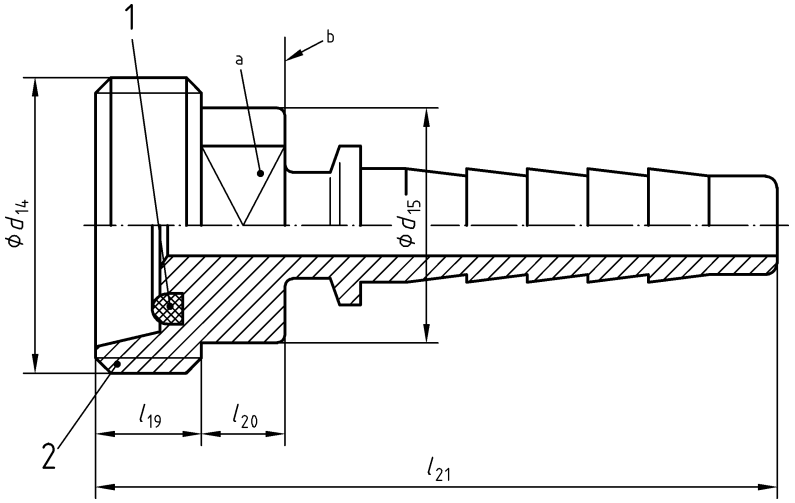
Nominal size DN	Type of cone end [a]	d_{13}	l_{17}	l_{18}
15	B15	24	17	79
20	B20	30	18	80
25	B25	35	22	84

[a] Type of conical end should be in accordance with DIN 11851.

7.3.7 Hose fittings with stud end

A hose fitting with stud end (Type RA) is shown in Figure 9. The design of type RA hose fittings shall be in accordance with Table 9.

Type RA



Key
1 Main gasket
2 Stud end

[a] Width across flats, s
[b] Tail end fitting (see 7.2)

Figure 9 — Hose fitting with stud end

EXAMPLE Ordering designation for a type RA hose fitting (SRA) with stud end, without main gasket, for use with DN 20 hoses, made of carbon steel (1.0038):

Hose fitting EN 14423 — SRA 20 — 1.0038

Table 9 — Dimensions of RA type hose fittings

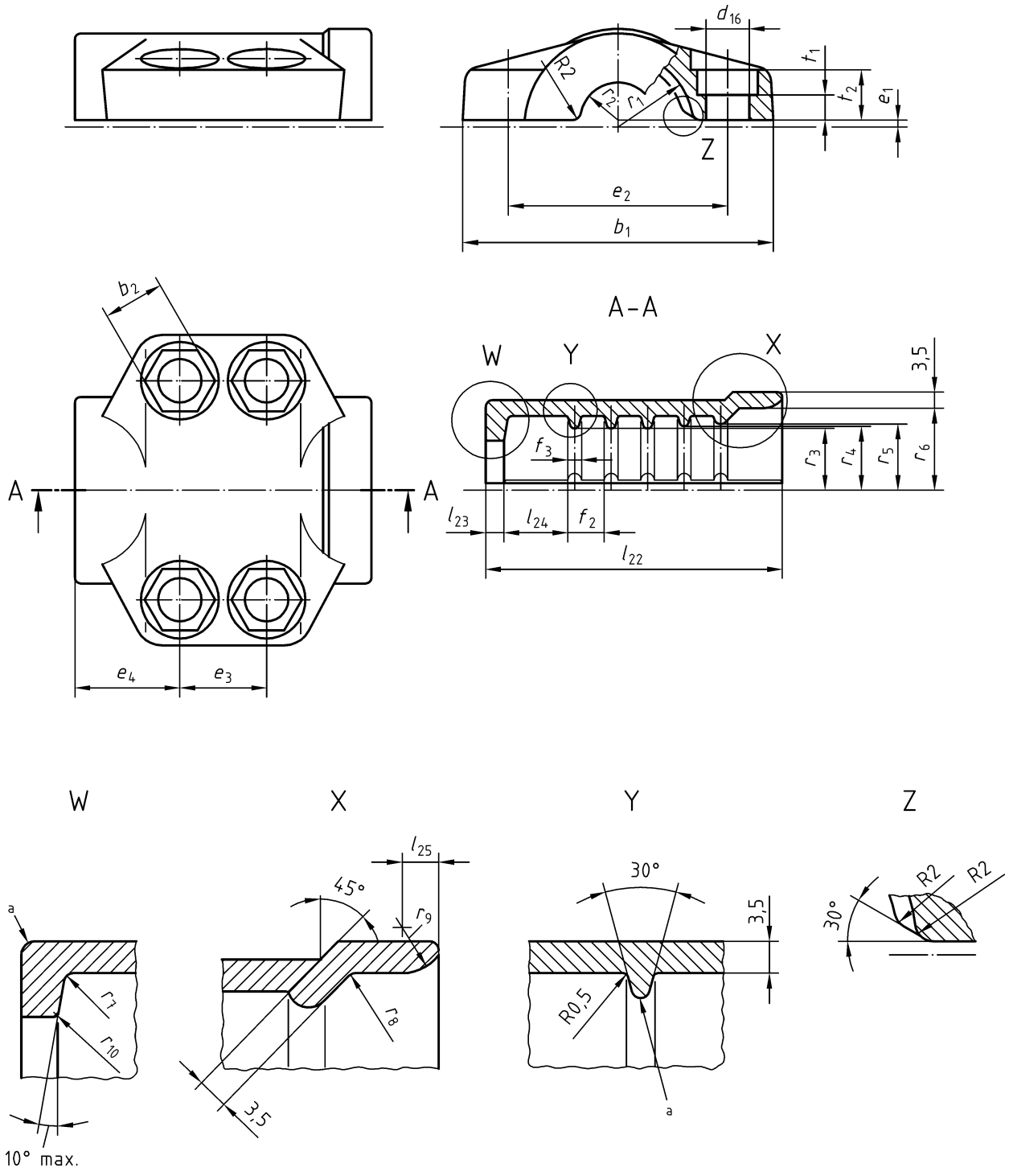
Dimensions in millimetres

Nominal size DN	**Thread size** d_{14}	d_{15}	l_{19}	l_{20}	l_{21}	S
15	Rd 34 × 1/8	28	12	9	83	24
20	Rd 44 × 1/6	31	14	10	86	27
25	Rd 52 × 1/6	40	14	11	87	36

7.4 Clamps

Clamp designs are given in Figure 10. Clamps shall be designed according to dimensions specified in Table 10.

Dimensions in millimetres



a Rounded

Figure 10 — Clamp designs

EXAMPLE Ordering designation for a clamp (KBS), for use with DN 20 hoses, in wrought copper alloy (CW614N):

Clamp EN 14423 — KBS 20 — CW614N

Table 10 — Clamp dimensions

Dimensions in millimetres

Nominal size DN	b_1	Tolerances	b_2	d_{16}	Number of ribs	e_1	e_2 ± 0,2	e_3 ± 0,2	e_4	f_2	f_3	l_{22}	l_{23}	l_{24}	l_{25}
15	53	± 1	10,3	7	5	1,5	37	16	24,5	8	3	65	4	14,5	3
20	68	± 2	13,4	9,5	5	1,5	48	19	23	8	3	65	4	14	4
25	77	+ 3 − 2	13,4	9,5	5	1,5	58	19	23	8	3	65	4	14,5	4
32	86		13,4	9,5	5	2,5	65	20	20	8	3	75	5	14	5
40	101		17,3	12	6	2,5	75	28	25	10	4	90	5	17	5
50	111		17,3	12	6	2,5	86	28	36	10	4	100	6,5	18,5	5

Nominal size DN	r_1	Tolerances	r_2	Tolerances	r_3	Tolerances	r_4	Tolerances	r_5	Tolerances	Number of ribs with r_3	with r_4	with r_5
15	12,5	± 0,25	6,75	± 0,2	9,5	± 0,2	10	± 0,2	10,5	± 0,25	3	1	1
20	16,5		9,75		13,5	± 0,25	14	± 0,25	14,5		3	1	1
25	20	± 0,3	12,75	± 0,25	17		17,5		18		3	1	1
32	24,5		16,5		21,5	± 0,3	22	± 0,3	22,5	± 0,3	3	1	1
40	27,5		19,5	± 0,3	24,5		25		25,5		3	2	1
50	34,5	± 0,4	25,5		31	± 0,4	31,5	± 0,4	32	± 0,4	3	2	1

Table 10 *(continued)*

Nominal size DN	r_6	Tolerances	r_7	r_8	r_9	r_{10}	t_1	t_2
15	14	± 0,25	1	1	4	0,5	5	10
20	18		1	1	5	0,5	5,5	11
25	21,5	± 0,3	1	1	5	0,5	6	12
32	26		2	3	6	1	6	12
40	29		2	3	6	1	7	17
50	35	± 0,4	2,5	3	6	1,3	7	17

8 Bolts and nuts

The sizes of bolts and nuts to be used with clamps shall be in accordance with Table 11.

Table 11 — Bolts and nuts

Nominal size DN	**Size of screw as in EN ISO 4762**	**Size of nuts as in EN ISO 4032**
15	M6 × 20	M6
20	M8 × 25	M8
25	M8 × 25	M8
32	M8 × 25	M8
40	M10 × 40	M10
50	M10 × 40	M10

9 Materials

9.1 Tail end fittings

Tail end fittings shall be made of the following materials or other materials having mechanical characteristics at least equivalent to those established in the European Standards listed below:

a) unalloyed steels

9SMnPb28/11SMnPb30 material number 1.0718 according to EN 10087
S235JR material number 1.0038 according to EN 10025-2
S355J0 (former St52-3U) material number 1.0553 according to EN 10025-2
S355J2G3 (former St52-3N) material number 1.0570 according to EN 10025-2

Tail end fittings shall be given a Type A4C coating as specified in EN ISO 4042.

b) stainless steels

X5CrNiMo17-12-2	material number 1.4401	according to EN 10088-1
X2CrNiMo17-13-2	material number 1.4404	according to EN 10088-1
GX5CrNiMo19-11-2	material number 1.4408	according to EN 10283
X5CrNi18-10 (not suitable for welding),	material number 1.4301	according to EN 10088-1
X6CrNiTi18-10	material number 1.4541	according to EN 10088-1
X6CrNiMoTi17-12-2	material number 1.4571	according to EN 10088-1

c) wrought copper alloys

CuZn39Pb3-H080	material number CW614N	according to EN 12420
CuZn40Pb2-H080	material number CW617N	according to EN 12420

Bars

CuZnPb3 – R360 min	material number CW614N	according to EN 12164
CuZn40Pb2 – R360 min	material number CW617N	according to EN 12164

Pipes

CuZn39Pb3 – H090 min	material number CW614N	according to EN 12168
CuZn40Pb2 – H090 min	material number CW617N	according to EN 12168

Unless otherwise specified in the order, the material used shall be at the manufacturer's discretion.

9.2 Weld-neck collars and flanges according to EN 1092-1

Weld-neck collars and flanges may be made of materials conforming to EN 1092-1 or, alternatively, shall be made of the following materials:

a) unalloyed steels

S235JR	material number 1.0038	according to EN 10025-2
S355J0 (former St52-3U)	material number 1.0553	according to EN 10025-2
S355J2G3 (former St52-3N)	material number 1.0570	according to EN 10025-2

Weld-neck collars and flanges shall be given a Type A4C coating as specified in EN ISO 4042.

b) stainless steels

X5CrNiMo17-12-2	material number 1.4401	according to EN 10088-1
X2CrNiMo17-13-2	material number 1.4404	according to EN 10088-1
GX5CrNiMo19-11-2	material number 1.4408	according to EN 10283
X6CrNiMoTi17-12-2	material number 1.4571	according to EN 10088-2
X6CrNiTi18-10	material number 1.4541	according to EN 10088-2.

Unless otherwise specified in the order, the material used shall be at the manufacturer's discretion.

9.3 Loose flanges according to EN 1092-1

Loose flanges may be made of materials conforming to EN 1092-1 or, alternatively, shall be made of the following materials:

a) unalloyed steels

S235JR	material number 1.0038	according to EN 10025-2
S355J0	material number 1.0553	according to EN 10025-2
S355J0+	material number 1.0553+N	according to EN 10025-2

Loose flanges shall be given a Type A4C coating as specified in EN ISO 4042.

b) stainless steels

X5CrNiMo17-12-2	material number 1.4401	according to EN 10088-1
X2CrNiMo17-13-2	material number 1.4404	according to EN 10088-1
GX5CrNiMo19-11-2	material number 1.4408	according to EN 10283
X5CrNi18-10	material number 1.4301	according to EN 10088-2
X6CrNiTi18-10	material number 1.4541	according to EN 10088-2
X6CrNiMoTi17-12-2	material number 1.4571	according to EN 10088-2.

Unless otherwise specified in the order, the material used shall be at the manufacturer's discretion.

9.4 Union nuts

Union nuts shall be made of stainless steel, unalloyed steel or wrought copper alloy of the same grades as those specified for tail end fittings according to 9.1.

Unless otherwise specified in the order, the material used shall be at the manufacturer's discretion.

9.5 Wire ring

The wire ring shall be made of X5CrNi18-10 material number 1.4301 steel according to EN 10088-2.

9.6 Gaskets

The materials used for gaskets (thread gaskets and main gaskets) shall be resistant to saturated steam of 210 °C and hot water of 120 °C.

Thread gaskets in Type G hose fittings shall be made from non-asbestos materials.

The materials used for main gaskets for RA Type couplings (e.g. ethylene propylene diene monomer (EPDM) or acrylic nitrile butadiene rubber (NBR)) shall be stated in the order.

9.7 Clamps

Clamps shall be made of the following materials:

a) stainless steels

X5CrNiMo17-12-2	material number 1.4401	according to EN 10088-1
X2CrNiMo17-12-2	material number 1.4404	according to EN 10088-1
GX5CrNiMo19-11-2	material number 1.4408	according to EN 10213
GX5CrNiMoNb19-11-2	material number 1.4581	according to EN 10213

b) copper-zinc-alloys (forgings from extruded products)

CuZn39Pb3-H080	material number CW 614 N	according to EN 12420
CuZn40Pb2-H080	material number CW 617 N	according to EN 12420

9.8 Bolts and nuts

Bolts and nuts should preferably be made from unalloyed steel but may also be made of other types of steel, including stainless steel.

Stainless steel bolts and nuts shall conform to group A2 or A4 and property class 50 or 70, as specified in EN ISO 3506-1 and EN ISO 3506-2.

Bolts of other types of steel shall conform to property class 8.8, as specified in EN ISO 898-1, and nuts with property Class 8 as specified in EN ISO 898-2. Bolts and nuts shall be given a Type A4C coating as specified in EN ISO 4042.

10 Marking

10.1 Hose fittings

If appropriate surface area is available, hose tails shall be clearly and durably marked with the following information:

a) EN 14423;

b) manufacturer's name or trade mark;

c) nominal size;

d) material number (at least for stainless steels).

10.2 Weld-neck collars and loose flanges

Weld-neck collars and loose flanges shall be marked in accordance with the standard corresponding to the material of manufacture, as specified in 9.2 or 9.3.

10.3 Union nuts

If appropriate surface area is available, union nuts shall be clearly and durably marked with the following information:

a) EN 14423;

b) manufacturer's name or trade mark;

c) nominal size;

d) material number (at least for stainless steels).

10.4 Clamps

Clamps shall be clearly and durably marked by embossing on the inside and the outside with the following information:

Inside: hose inner diameter and wall thickness (e.g. 19 × 7).

Outside:

a) EN 14423;

b) manufacturer's name or trade mark;

c) nominal size;

d) material number.

11 Type testing and quality control

11.1 General

As defined by the quality control processes to be carried out at the plant, the manufacturer shall verify on test samples from serial production that hose fittings safely withstand the operating stresses to be expected.

The requirements for testing the complete hose assembly is detailed in the product EN hose standard within the framework of hose assembly testing.

A quality management system (QM-System) is recommended according to EN ISO 9001.

The concept of the quality management system has to be presented if requested by the purchaser. Details can be agreed upon between purchaser and supplier.

Upon request of the purchaser the manufacturer or supplier confirms by the means of a test report 2.2 according to EN 10204 that the hose fittings comply with all requirements of this European Standard.

11.2 Type-test

Hose fittings shall be coupled together and then after a period of 10 minutes holding at ambient temperature with 5 times of the respective maximum working pressure (proof pressure) no leaks shall be observed at the interface of the hose fittings and shall withstand 10 times the respective maximum working pressure (burst pressure), using water as the test medium (see Clause 4).

Type-tests have to be carried out at least after 5 years or always in case of a technical change. This also includes changes in the manufacturing process.

Type-tests have to be carried out at least at one reference nominal diameter, e.g. NW 25, of each construction type of the product range of the manufacturer.

11.3 Sampling

Couplings shall be submitted to random testing and checked for imperfections, such as cracks or moulding defects, in accordance with inspection level II, AQL 25, as specified in ISO 2859-1.

12 Mounting of hose fittings

Careful selection of the hose fittings shall be made to ensure that the inner diameter (ID), outer diameter (OD), and maximum working pressure (WP) of the hose are within the limits and tolerances of the hose fittings detailed in this document. The materials shall be tested for the products and medium being transferred.

NOTE Any mismatch could lead to a safety issue.

Bibliography

[1] EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

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[5] EN ISO 9001, *Quality management systems — Requirements (ISO 9001)*

[6] DIN 11851, *Stainless steel fittings for the food and chemical industry — Screw pipe connections for expanding and welding*

3) This document is currently impacted by the corrigendum EN ISO 4287:1998/AC:2008 and the draft amendment EN ISO 4287:1998/A1:2009.

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